



Pradhan Mantri Gram Sadak Yojana

Draft
Guidelines
for
Quality Monitoring by National Quality Monitors
under
Third Tier of Quality Mechanism

National Rural Roads Development Agency
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Index of Contents

	Topics	Page No.
1.	Introduction	3
2.	Arrangements of Inspection	5
3.	Prioritization of Works for Inspection	7
4.	Information and Details to be furnished to NQM by PIU	8
5.	Inspection, Observation and Grading of Works	10
6.	Reporting, Entry in Website and Performance Evaluation of NQMs	18

List of Annexure

1. Annexure 1 – Requirement of Man power, Equipments and Implements.
2. Annexure 2 – Procedure to use PMGSY website.
3. Annexure 3 – Item-wise observations, their method, frequency and awardable quality grading
4. Format 1 – Part I – Work Information
5. Format 1 – Part II – Observations of NQM for Ongoing/Completed Work

1. Introduction

The State Governments are responsible for implementation of Pradhan Mantri Gram Sadak Yojana (PMGSY) in the State, as such; it is the responsibility of the State Government to ensure quality of road works under this programme. However, since the programme lays special emphasis on the quality and timely completion of road works, a three tier quality management mechanism has been operationalised.

The standards for quality of works have been prescribed under the publication 'Ministry of Rural Development, Specifications for Rural Roads published by IRC in August, 2004' (hereinafter referred to as Specifications). The comprehensive details about rural roads are provided in Rural Roads Manual IRC SP: 20, 2002. In order to provide detailed guidance to the field engineers about the tests and testing procedures, the NRRDA has published Quality Control Hand Book (being revised by IRC) and for recording the test results, Quality Control Registers have been prescribed.

The *first tier* of quality management mechanism is envisaged as in-house quality control system to ensure the implementation of quality standards by way of carrying out mandatory tests, however, the *second tier* is envisaged as independent quality check and monitoring mechanism to be operationalised by the States. Whereas, the State Governments are responsible for quality management through operationalization of the first two tiers, the National Rural Roads Development Agency (NRRDA) arranges for quality monitoring through independent monitors termed as National Quality Monitors (NQMs). The objective of this *third tier* of quality mechanism is to monitor the quality of road works executed by the States with a view to ensure that the road works under the programme conform to standards and to see whether the quality management mechanism in the State is effective. The role of this tier is to provide guidance to State implementation machinery and the field engineers rather than 'fault finding', as such; the shortcomings are identified by the NQMs and a feedback is provided to the States for improvement.

The National Quality Monitors are performing inspection of works since March, 2002. The guidelines for inspection and reporting formats were prescribed during the initial period of operationalization of this tier of QM; however, based on the feedback from various stakeholders, the guidelines and reporting formats were revised in July, 2004. Having gathered the experience of independent Quality Monitoring of rural roads in last four years and based on the valuable suggestions and feedback has been provided not only by the State officials and NQMs but also by the field officers and auditing agencies, it is felt that certain revisions in respect of the following items are necessary.

1. The attention of the third tier of QM should focus on the quality of work, guidance related to quality rather than other aspects.
2. The observations of the NQMs should be objectively based on defined methods.
3. The NQM should be more accountable for the observations he has made.

Therefore, as an endeavor to continuously update to achieve the targets of best of the quality, the guidelines and reporting format for inspection of works under third tier are being revised and the process of continuous performance evaluation of National

Quality Monitors by way of periodic review of reports and field verification by reputed institutions is envisaged.

Under the revised guidelines, the PIU and the NQM would also be required to use OMMAS website www.pmgsonline.nic.in extensively. The NQM would be required to download the list of works in the district to be visited by him/her and make mandatory online entry of sub-item grading in the website which would generate the item grading as well as the overall grading and also enable the States, PIUs and the NRRDA to carry out the further analysis of NQM reports. To enable the NQM to make online entry, he/she would be given the log-in and the password for limited data entry. The PIU would be able to generate Part-I Work Information from the OMMAS using the PIU Log-in.

2. Arrangements of Inspection

The NQMs shall be given the programme to inspect the works in designated State and designated districts during the designated months. The States shall continue to making necessary arrangements for visit of NQMs. The detailed guidelines for arrangement of inspection of NQMs are given below:

1. The National Quality Monitors will be sent the letter of request with programme of inspection of works. The copy of the letter will also be endorsed to the States for making necessary arrangements and for information to concerned PIU.
2. On receipt of the letter the SQC shall contact the NQM and get the tentative programme of inspection. In case, the SQC does not contact the NQM, the NQM may take initiative. As soon as the programme of inspection is finalized, the NQM shall invariably inform NRRDA about the programme of his visit in the prescribed Fax/ Mail Back Form only and in no other way. It has been observed that sometimes, some NQMs keep on trying to contact the SQC without any results, in such cases; the NQMs shall fax the programme to SQC. ***It shall be the duty and responsibility of the SQC to contact the NQM and concerned PIU and finalize the dates and programme of NQM as per mutual convenience of NQM and PIU.***
3. It shall be responsibility of the SQC to ensure adequate arrangements for inspection of NQM. In these revised guidelines, it is mandatory for the NQM to make observations on the basis of quality control tests/ hand-feel tests/ measurements performed under his personal supervision for which necessary equipments, staff and implements would be required; therefore, ***it shall be the personal responsibility of the SQC to ensure that requisite staff and equipments are provided to NQM for performing/ getting performed required tests*** (List of equipments and staff required for inspection is enclosed as **Annexure 1**).
4. The details of schedule of visit will be available on website www.pmgsyonline.nic.in in the last week of the preceding month to enable the SQC and PIUs to make necessary arrangements. Detailed procedure to use website for viewing schedule, taking list of work and online data entry for sub-item grading is given in 'User Manual for NQMs' at Annexure 2.
5. The NQM is required to inspect maximum of three districts in a single visit in one State in a month. In case of hill States where connectivity is poor and more time is taken in travel, the NQM may be allotted less number of districts also.
6. *In the present format, the NQM is required to perform/ get performed the prescribed tests which would take time and it would not be possible to make desired observations in a day for one completed work of maximum 3km length or 2 ongoing works each of maximum 3km length in which about 50% work has been completed, as such; the NQM should finalize a suitable programme to spend not more than 3 days in each district inspecting not more than 1 completed work or 1 completed and one on-going work in just initial stages or 2 on-going works both with less than 50% physical progress. The inspection of 1-2 road works is suggested with a view that normally, a road in PMGSY would not be of a length more than 3 Km, however; if the length of*

road work is more, every 3 Km length or part thereof shall be treated as another work. It must be clearly understood that the observations required during the work should be made with due care and diligence. **In no case, the superficial inspection/ observations would be accepted by NRRDA.**

7. The NQM is expected to make his own arrangements to travel up to nearest rail/ air head of one of the District Headquarters of the State allotted to him. The PIU shall make necessary arrangements for transport required for inspection of works within the District and from one District to the next. The PIU may make arrangements of boarding of NQM in Government Guest Houses/ Inspection Bungalows but in case of non-availability of such an accommodation, the NQM may stay in private Hotels/ Guest Houses and the reimbursement to NQM for boarding charges will be done by NRRDA as per '*Honorarium and Traveling Allowance Bye Laws 2006 for National Quality Monitors*'.

8. The programme of inspection is valid for the inspection of works for only the months mentioned in letter of request; therefore, in no case should the inspection spill over to the next month. This is necessary as the same district might have been allotted to another NQM for the next month. The inspection of works would therefore not be valid for purposes of reimbursement of expenses by NRRDA for a month other than the allotted one.

9. The NQM shall not be entitled for remunerations including travel expenses etc. for such inspections which are carried out in contravention to the guidelines or found to be superficial.

3. Prioritization of Works for Inspection

It has been noticed that the NQMs are not able to inspect the works as per the priorities given in the guidelines. It is also noticed that either the PIUs have tendency to offer the works of their choice for inspection or some NQMs prefer to inspect the works which are situated at convenient locations. It has been therefore decided that the NQM before proceeding to the concerned district for inspection would log on to PMGSY website and obtain the list of works in the district and after obtaining the list, he will select the works as per the criteria for prioritization of works given in this guidelines. The NQM is required to not only take the list from website but also required to enter the grading of work online. Therefore, the arrangements to provide access for data entry regarding the inspections are being made. *(the module for online entry of the reports and grading etc is being developed, therefore; the reporting for the month of January and February, 2007 shall be done in hard copy, however, as soon as the module is ready User Manual and process to enter the reports online shall be separately communicated).* **Guidelines for NQMs to use website www.pmgsonline.nic.in for taking the list of works is given in Annexure 2.**

While inspecting the works, the NQM shall prioritize the selection of roads as follows:

1. **Priority 1** shall be to inspect works which are at earthwork stage. This is with a view to examine the system and procedures which is being followed by the PIU and the Contractor. NQM intervention at this stage would help in ensuring that subsequent stages of the work are carried out after system deficiencies are removed. Under this category it would be sufficient that only one work of the contract package is examined. (As the PIU and Contractor would be common). In the next visit, the other NQM should inspect any other road in progress under the same package.
2. **Priority 2** ongoing works (excluding Phase I and II works) which have not been inspected at all by NQM before.
3. **Priority 3** shall be ongoing works that have not been inspected by NQM in the last 8 months.
4. **Priority 4** shall be inspection of completed works and which have not been inspected by NQM in the 6 month period upon completion.
5. Works of Phase I and II shall not be inspected by NQM unless specifically requested by SQC or NRRDA.
6. The same ongoing road work shall not be inspected if the previous inspection by NQM is less than 8 months earlier and no ongoing or complete road work shall be inspected if it has been inspected twice before by any NQMs.
7. If the NQM is inspecting any road after the inspection by a SQM, he shall inspect the work with a view to analyze the quality of work in light of the observations made by SQM also.
8. Complaint cases and ATR cases shall be got inspected on case to case basis.

4. Information and Details to be furnished to NQM by PIU

The SQC shall ensure that the information as detailed in the following paragraphs is provided to NQM by the head of PIU.

1. The PIU shall furnish the phase-wise list of road works to the NQM in the format given below in which the details about previous inspections shall compulsorily be mentioned. The PIU shall also make available a road map showing the location of roads to enable planning of the itinerary and selection of works to be inspected.

Name of PIU _____ Date _____

Name of Road	Phase and Date of Start	% Progress	Details of Inspt. (if any) by SQM/ NQM		Action Taken/ Rectification Done and whether re-inspected
			Name of NQM/SQM	Date of Inspt.	

2. The NQM shall compare the above list with the list obtained from web and inconsistencies shall be pointed out to PIU. The NQM shall select roads out of this list in accordance with the priority given in the guidelines, and shall enclose a copy of the list of roads given to him by the Programme Implementing Unit indicating the comparison and inconsistencies observed in the list along with his report to the SQC and NRRDA.
3. After the NQM selects the roads to be visited, the PIU shall provide the necessary works information in respect of the road in Part I of the Inspection Report Format (enclosed as **Format 1**). The PIUs are supposed to update data on OMMAS, as such; majority of information prescribed in Part I - Work Information shall be available in the OMMAS database. *The arrangements for downloading the information from website are being made and in future, the format of Part I – Work Information would be downloaded by the PIU from his own login and handed over to the NQM after filling information in the blank spaces.* It is expected that the PIU would provide this information to the NQM without wasting any time.
4. The PIU shall produce to NQM the original DPR of the work being inspected along with working drawings.
5. The PIU shall produce the Quality Control Registers Part I and Part II to enable the NQM to understand the details of tests conducted.
6. The NQM shall get some hand feel tests and field test conducted under this personal supervision as such, the PIU shall necessarily provide the essential equipment and facilities and manpower to NQM for the purpose.

7. The road which has already been inspected by NQM earlier may also be selected by NQM for inspection (*the road inspected by NQM shall not be inspected by other NQM till 6 months after the inspection of earlier NQM*). The PIU shall provide the copy of report of SQM/NQM to NQM, so that while inspecting the work, the NQM could look into the issues raised by SQM/ NQM. If, there is marked difference in the observations of NQM/SQM made during the previous visits, the NQM is also required to analyze the reasons for difference in observations, therefore; **it is mandatory for PIU to provide copy of NQM/SQM inspections conducted earlier.**

5. Inspection, Observation and Grading of Works

The objective of third tier of Quality Monitoring under PMGSY, i.e. inspection of road works by national level independent monitors is to identify shortcomings in respect of quality of road works and to guide the PIUs about the specifications, good practices and effective execution of works with desired quality. The role of these monitors is to critically examine the road works and give feedback about quality of road works and quality management related shortcomings to the State level quality management team and NRRDA to enable systemic improvements. After the selection of work for inspection as detailed in Chapter 3, the PIU would furnish the details of work in the prescribed format as detailed in Chapter 4. The NQM should visit the work and perform **critical inspection** of the entire work.

5.1 How to make observations: There could be many methods of inspecting, making observations and evaluating various items and sub-items involved in construction of a rural road. With a view to achieve uniformity, objectivity in observations and evaluation, the efforts have been made to standardize the methods of observations and evaluation. Various items and sub-items involved in construction of a rural road have been listed in **Annexure 3**. Each of the sub-items shown in the Appendix shall be examined by NQM as per the method of observation mentioned in column – 4 and as per the frequency mentioned in column – 5. The quality of the sub-item/item would be quantified in one of the 2/3 grades prescribed in column – 6. **The NQM shall base his observations on the method of field tests, hand feel tests, measurements and visual observations as specified in column – 4 of the Annexure 3 only and in no other way.**

The NQM shall record observations at the space provided in Format-1 Part-II.

5.2 How to organize inspection: The NQM is expected to traverse through the entire road length to ascertain the quantum of work such as length of road, number of CDs, protection works, side drains, catch water drains, rigid pavement and other aspects of the work. After the traverse, the NQM would decide about the locations for detailed observations.

In case of on-going work/item of work it is easier to take samples of material; however, in case of completed work/item it may be difficult to take samples. As can be seen from **Annexure 3**, the tests are generally required to be made in one kilometer, as such, in case of completed work, it is suggested that after traversing the entire length of the road, the NQM should select one such spot in every kilometer, which is fairly representative of the overall quality of the road in that kilometer. The observations can be made on this spot by digging a pit either on pavement or at half pavement and half shoulder, as decided by the NQM.

5.3 Grading of Works: The quality of every item and sub-item of work would be evaluated by the NQM on the basis observations made as per prescribed standard method. The grading would be recorded in every item and abstracted at appropriate space provided in Part III of the format. The grading of work would be done with an intention to quantify the observations showing level of **satisfaction in relation to the specification** of the work/item under observation. The objective would be to indicate to the Executing Agency, as to whether the material or workmanship is acceptable, or unacceptable. If the item is unacceptable, the improvement could be done by either

replacement of the entire material/portion of work or by rectification in workmanship or material. The grading should be able to indicate to the PIU/ State, the level of intervention required for improvement. Therefore, based on the type of item and method of observation, each item/ sub-item of work would be graded in any of the categories i.e. '*Satisfactory (S)*', '*Requires Improvement (RI)*' or '*Unsatisfactory (U)*' out of the categories prescribed as per column 6 of the **Annexure 3**. Based on grading, the PIU shall take action for rectification of defect, therefore, it is very important to record the defect as well as the suggestive method by which the rectification could be done. The NQM shall record, in the space provided in Part II observation sheet, **the grade as well as clear and express reasons for grading the item of work as 'RI' or 'U' along with his suggestions for improvement**. The reasons and suggestions shall be recorded clearly in such a way that there are no ambiguities or contradictions with observations in other items. The detailed method of making observations and grading of item/ sub-item of works is given in paragraphs below.

5.4 How to fill up the reporting format and grade the items/ sub-items of the work: The detailed guidelines for making observations, filling up of the inspection format and grading are given below. It shall be ensured by the NQM that space provided for observations are not left blank without any observations. *The space for observations in respect of items not executed should be filled up by writing "Item not executed" but if material is available at site, testing shall be done and observations be made for the quality of material.*

5.5 Observations on Quality Arrangements: In case of ongoing works this item shall be examined. The observations about establishment of field laboratory would be made. It should be carefully seen that whether the field laboratory has adequate equipments and whether the equipments are being used to actually test the material and workmanship of the road work.

If field laboratory has not been established, 'U' grade would be awarded; if laboratory is established but does not have sufficient equipments or the equipments have not been used, 'RI' grade would be awarded; if field laboratory with sufficient equipments has been established and equipments are being used 'S' grade would be awarded.

5.6 Attention to Quality: Two types of observations are required to be made in this item. The first observation is regarding the maintenance of Quality Control Register Part I and II in case of ongoing works. It should be carefully seen that whether adequate number of tests as per prescribed mandatory frequency have been carried out or not (see abstract of tests in Quality Control Register). The other observation would be about the verification of test results recorded by the Contractor/PIU. In the subsequent paragraphs, the process for sampling and field testing is mentioned, the results of field tests carried out by NQMs shall be cross referenced with the test results recorded in Quality Control Register Part-I and the comment on correctness of the test results shall be recorded by the NQM.

If, record of tests is properly maintained and monitored through Quality Control Register Part I and II, all the tests as per prescribed frequency have been carried out 'S' grade would be awarded. If, the above items have been partly attended 'RI' grade would be awarded and if, these items have not been attended by PIU 'U' grade would be awarded.

On verification of the test results recorded by the PIU, the sub-item about verification of test results would be graded. The grading would be 'S' if test results recorded by Contractor/PIU reasonably matches with the test results obtained by NQM after field testing at the same location otherwise the item would be graded 'U'.

5.7 Observations on geometrics: In case of ongoing and completed works, the observations shall be made for this item. The measurements about the road way width, carriage way width and adequacy of camber shall be made at a selected RD and shall be tabulated in reporting format. The observations about execution of horizontal curve, superelevation and extra widening *as per the provisions of DPR* shall be made and entered at relevant space in the reporting format. If, it is felt that the provisions about camber, superelevation, extra widening etc. has not been made in DPR but are required as per field conditions, in such cases, clear observations should be made in the space provided under 'General Observations' at the end of reporting format. If above items have been executed properly as provided in DPR 'S' grade would be awarded otherwise 'U' grade would be awarded.

5.8 Observations about the quality of work- General: The observation about the quality of work is required to be made for every item and sub-item of construction in the manner given in subsequent sub-paragraphs. In case of flexible pavements the observation about sub-grade, sub-base, base-course and surface course are required to be made for on-going as well as completed works. In case of on-going works/items under observations, it is easy to take samples; however, in case the item under observation is already complete or the entire work is complete it is required to take at least one observation pit of appropriate size and depth in every Km. The observations in case of completed works shall be based on tests performed on samples drawn from these observation pits. After reconnaissance, a location of fairly representative quality of road may be identified for digging a pit. The size of pit could be about 30cm x 30cm and upto a depth where the sub-grade starts. The pit should be dug with the help of appropriate tools but the observation should start right from application of the digging tool. Needless to add that the observation about sub-base course, base-course and sub-grade can be taken from the same pit and it may not be generally required to dig more than one pit in one Km.

From the surface course, the material of PMC/surface dressing may be removed and kept separately. The top layer of WBM can be removed, thickness of layer can be measured and course aggregate and fine aggregates can be separated easily. The gradation test can be performed on these samples of aggregate. The hand-feel tests for plasticity may be performed on fine aggregates. For ascertaining the adequacy of compaction, hand-feel test is mentioned in sub-para b of sub-para C below. The same process can be repeated in other layers of WBM. If it is difficult to distinguish between the different layers of WBM, still the gradation tests can be performed and fair assessment about the gradation of the aggregates, adequacy of compaction, plasticity of the screening/filler material may be done.

After making observations about WBM, the observations about thickness, gradation and plasticity of material can be easily made for GSB but for adequacy of compaction, sand replacement/core cutter method may be adopted. After making observations about GSB, the observations about the sub-grade could be easily made.

5.9 Observation of Earth Work and Sub-grade: The Earth Work in rural roads could be either for embankment construction or for formation cutting. The observations shall be made for ongoing as well as completed works. The award of grades shall be done for earthwork in embankment and for cutting based on the type of works involved. There may be situations where either of the two sub-items would be involved but in exceptional cases where both the items have been executed, the grading of both the items may be suitably done. The NQM shall make the observations in the following manner.

(a) Earthwork and Sub-grade in Embankment:

(i) Suitability of material for embankment construction: The NQM shall make detailed observations at-least at one location per kilometer and the RD at which observation is made shall be recorded in the table given in the reporting format. The NQM shall make observation about the suitability of the soil by visual classification of soil as prescribed in Annex 5.1 of Operations Manual and clear observations regarding the suitability should be made in reference to Specifications clause 301. In case of completed works or completed item of work the observations shall be based on test pit.

If soil is suitable “S” grade would be awarded otherwise “U” grade would be awarded.

(ii) For making observations about adequacy of compaction, the NQM shall carry actual field test for field density of the sub-grade/embankment. The field density shall be taken either by core cutter method or by sand replacement method, for ascertaining the OMC & MDD the NQM shall examine the QC Registers and record the value in reporting format.

In case of on-going works at-least one test per Km for field density shall be done. If the compaction work is on-going, one test for Field Moisture Content of the soil shall also be done to understand whether the compaction is being done at OMC or not.

The findings shall be recorded in the report in the prescribed table. The observation sheet shall be enclosed with the report.

If degree of compaction is found to be adequate “S” grade would be awarded otherwise “U” grade would be awarded.

(iii) The visual observation about the side slopes and profile shall be made and recorded for *completed work only*.

If proper side slopes with proper profile exist “S” grade would be awarded otherwise “U” grade would be awarded.

(b) Earthwork and Sub-grade in Cutting:

The visual observations about stability and workmanship of cut slopes and adequacy of slope protection shall be made by the NQM. If cut slopes with adequate stability exist, “S” grade would be awarded, if the defects can be rectified by some improvement, ‘RI’ grade would be awarded and otherwise, “U” grade would be awarded.

5.10 Observation of Granular Sub-base: The construction of Granular Sub-base is required to be done as per clause 401 of specifications, as such; the NQM is required to make observations about quality of material as well as workmanship for ongoing as well as completed works.

(a) Quality of Material: At-least one test of gradation shall be carried out by the NQM for every kilometer of road. The observation sheet for the gradation test

result shall be enclosed with the report. For the assessment of plasticity of the material, it may not be possible to carry out the tests for liquid limit and plasticity index; however, the NQM can carry out hand feel tests of making ball by mixing small quantity of water in the material and try to make balls. If, well defined ball can be made by hands, the material would generally be plastic enough to be ranked as suitable and if ball cannot be made by hands the material is treated non-plastic to the desired extent. If the material is of suitable gradation and plasticity “S” grade would be awarded otherwise “U” grade would be awarded.

- (b) Workmanship and Compaction:** Generally the field density test by sand replacement method shall be carried out but if it is not possible to carry out detailed test about the compaction of GSB material, the adequacy of compaction may be judged by making visual observations about the density of compacted layer. In case of on-going works or in case of completed item, the observations about the denseness of GSB layer can be made at time of application of pick axe or crow bar while digging the test pit. If degree of compaction is found to be adequate “S” grade would be awarded otherwise “U” grade would be awarded.

5.11 Observations of Base Course: In rural roads, generally the base-course is being constructed with WBM. The construction of WBM base course is required to be done as per the provisions contained in clause 405 of Specifications for Rural Roads. The observations about WBM shall be made for completed as well as ongoing work by NQM in the following manner:

- (a) Quality of Material:** At-least one test for gradation of aggregate of every layer of WBM shall be done for each kilometer in case of on-going works as well as completed works. The observation sheet for the gradation test result shall be enclosed with the report. For the assessment of plasticity of the crushable aggregate used as fillers or screenings, it may not be possible to carry out the tests for liquid limit and plasticity index, however, the NQM can carry out hand feel tests of making ball by mixing water into the material and make observations as to whether the material is non-plastic to the desired extent or is plastic enough to be ranked as suitable.

If grading of course aggregate/ fine aggregate and plasticity of crushable aggregate/ filler is suitable “S” grade would be awarded otherwise “U” grade would be awarded.

- (b) Compaction:** The exact assessment of compaction in a WBM is quite difficult, however; it is quite simple to make fair assessment about the fact that whether the compaction has been adequately done or not. For assessing the adequacy of compaction, the NQM is supposed to carry out the volumetric analysis. After digging the pit course and fine aggregates can be separated by sewing or by manual measures and comparative quantity of fillers and course aggregate can fairly be judged, the course aggregate can be refilled in the same pit and it should be observed that how much bulging has taken place above the level of compacted surface. This process will give a fair idea as to whether the proper compaction has been done. The NQM shall make all the observations about the compaction only after carrying out the above hand feel test. It may however be noted by NQMs that by even the visual observations during the process of application of pick axe or crow bar also the compactness of WBM layer can be fairly assessed.

If compaction is found to be adequate “S” grade would be awarded otherwise “U” grade would be awarded.

5.12 Observations on Bituminous Construction: In Rural Roads, generally the BT surfacing is being done over prime coat, tack coat. BT work generally consists of 20mm premix carpet with seal coat. In few cases, surface dressing is constructed, whereas, in some other cases, modified penetration macadam is also constructed. It is rare to have BM or other types of BT surfacing under PMGSY. The observations about BT surface shall be made by NQM in the following manner:

(a) Quality of BT surface in case of completed work: At the selected location the observation on a pit shall be tabulated in which thickness of layer shall be assessed. The observations in a pit shall reveal the fact that whether the BT surface has been constructed after proper cleaning of the granular surface or not, this observation should be assessed and recorded. Quality of workmanship shall be assessed in light of surface evenness, surface colour and texture, camber etc.

In case of ongoing works/item of works, based on the stage of construction, the observations about cleaning of granular surface receiving BT, Prime coat, Tack coat etc. shall be made. The observations about gradation of aggregate by gradation test and verification of grade of bitumen by examination of original test report of the manufacturer shall be done. The observations will include the quality of aggregate, quality and quantity of binder, temperature at mixing point and laying temperature, rolling and other aspects.

If material and workmanship is found satisfactory, ‘S’ grade shall be awarded otherwise ‘U’ grade shall be awarded.

5.13 Observations on Shoulders: The NQM should make observations about the classification of soil and if suitable soil is used for shoulders “S” grade would be awarded otherwise “U” grade would be awarded. The NQM should make visual observation about the shoulders and ascertain whether the shoulder has been constructed simultaneously with GSB and record observation carefully. If compaction is found to be adequate “S” grade would be awarded otherwise “U” grade would be awarded.

5.14 Observations on Cross Drainage Works: The NQM shall inspect at least 50% of CDs situated on roads. In Rural Roads generally flushed causeways and vented causeways with hume pipes are built. Box culverts and Slab culverts are also common. The NQM shall give details about the span and type of CDs with their numbers. Detailed observations about every inspected CD work with reference to Material and Workmanship shall be made by NQMs. In the reporting format the observations about Causeways of all the spans and Culverts upto 6 m. span shall be recorded, however, for Culverts/ bridges beyond 6 m. span separate observation sheet shall be enclosed in which detailed observations about quality of material and workmanship shall be made by NQM, at present detailed format is not being prescribed. The effect of quality grading of CD beyond 6 m. span shall be decided by NRRDA on case to case basis.

General observation about quality of material used in CD works shall be made and recorded by the NQM. If proper CD work is found “S” grade would be awarded, if CD work requires improvement ‘RI’ grade would be awarded, if work is not upto the standards “U” grade would be awarded.

General observation about workmanship of CD works shall be made and recorded. If workmanship in CD work is found satisfactory “S” grade would be

awarded, if it requires improvement 'RI' grade would be awarded, if work is not upto the standards "U" grade would be awarded.

5.15 Observations on Side Drains and Catch Water Drains: In Rural Roads situated in plain areas Kuchha Side Drains are required and these drains are required to be integrated with Cross Drains. In hilly and rolling terrain Catch Water Drains are constructed. Detailed observations should be made about these drains.

If proper drainage work is found "S" grade would be awarded, if CD work requires improvement 'RI' grade would be awarded, if work is not upto the standards "U" grade would be awarded.

5.16 Observations on Cement Concrete Pavements and Associated Drains: The observations about CC Pavements or other type of rigid or semi-rigid pavements and Associated Side Drains should be made in respect of Material and Workmanship. If quality and workmanship is found acceptable, "S" grade would be awarded otherwise "U" grade would be awarded.

5.17 Observations on Road Furniture and Markings: Main Informatory Board, Citizen Information Board and Logo Board is required to be fixed during the construction of work, however, other signage are fixed after the work is completed. It is prescribed that all the information in the boards should be displayed in local language and it is essential that information should be provided in such a way that it is well understood by the local people. The observations about signage fixing, language used and quality of signage should be made by NQM. If furniture are found properly fixed with information in understandable language and the quality and workmanship is acceptable in case of ongoing and completed works (as specified), "S" grade would be awarded otherwise "U" grade would be awarded.

5.18 General Observations of NQMs: The NQM is expected to interact with the PIU staff and Engineers of Contractors or Consultants. The work of NQM is guidance rather than fault finding, as such, the interaction with the personal should be oriented towards guidance. The NQM is expected to make observations about progress of work with reference to works programme and the action taken by PIU for liquidated damages etc. In case of ongoing works, the NQM should find out whether the work has been completed within sanctioned cost or not. The NQM should specifically focus his general observations about the action taken by PIU on observation made by senior officers/SQMs and other NQMs and make clear remarks about the efficacy of action taken. In addition, the NQM is free to make other observations but it is clarified here that the NQMs should not make such observations which are in contravention to guidelines of PMGSY or provisions of specifications. **It should be clearly understood by NQM that his observations should not amount to direct or indirect un-due advantage to either contractor, consultants or other personal involved in the work.**

5.19 Sub-item/Item wise Grading and Overall Grading of Work: The sub-item wise grading of every item of work would be entered in the table at para 15 of reporting format and the item grading would be the lowest of the grading of sub-items within that item. The overall Item Grading would be entered in the table at Para 16 (table also given below) of the reporting format and the overall grading of work shall be calculated in the following manner **(In case of online entry of the grading, the NQM would enter only**

the sub-item grading and the system would be able to generate item grading and the Overall grading of work).

#	Item	Awarded Grade
1	Quality Control Arrangements	
2	Attention to Quality	
3	Geometrics	
4	Earthwork and Sub-grade in Embankment/Cutting	
5	Granular Sub-base	
6	Base Course Non-Bituminous and shoulders	
7	Bituminous Surfacing	
8	Shoulders	
9	CD Works	
10	Side Drains and Catch Water Drains	
11	CC/Semi-Rigid Pavement and Associated Pukka Drains	
12	Road Furniture and Markings	
	Overall Grading	

If, any of the items in item no. 4, 5, 6 and 7 are graded as 'U', overall grading of the work shall be 'U' i.e. **U**nsatisfactory'.

If, all the items given in above four items are 'S' but grading in any of other items is 'U' or 'RI', the overall grading of work shall be 'S-RI' i.e. **S**atisfactory but **R**equiring **I**mprovement.

If grading of all items is 'S', the overall grading of work shall be 'S' i.e. **S**atisfactory'.

6. Reporting, Entry in Website and Performance Evaluation of NQMs

The observations of the NQM shall be recorded by NQM in his own handwriting and in no case, the staff of PIU shall be engaged for the recording of observations. The reporting format shall be prepared in 4 copies, one copy shall be handed over by NQM to the PIU immediately after the inspection is over and in all cases before the NQM leaves the district where the works have been inspected. One set each of the observations should be sent to State Quality Coordinator of the concerned State and Chief Quality Coordinator of NRRDA soon after the inspection is over in that State. The reports should be sent to officers by name.

The NQMs are aware that for online monitoring and management of the programme, a website www.pmgsonline.nic.in is operational. The module for data entry is being developed and the access of the relevant module of this website would be provided to the NQM. In future, the NQM would be able to upload online the grading of work as specified in para 15 of reporting format, i.e. **Part-II of Format 1**.

The performance of NQMs shall be evaluated in NRRDA on the basis of observations recorded in reporting formats. A Performance Evaluation Committee would evaluate the reporting formats selected on random basis for a sample of about 5%, as per the guidelines of NRRDA prescribed from time to time. Generally, the performance of NQM would be evaluated on the following points:

- a. Whether the NQM has carried out inspection as per the guidelines,
- b. Is there lack of application of mind by NQM in recording observations,
- c. Is there a tendency to avoid desirable technical observations,
- d. Whether the NQM has left inspection format incomplete without any reasons.

The report of performance evaluation would be produced to the Independent Selection Committee constituted by NRRDA for empanelment and performance review of NQMs. The continuation of NQMs would depend on the performance not only related to the quality of field inspections and reporting but also on the observance of Code of Conduct.

Requirement of Man power, Equipments and Implements for making the Observations by National Quality Monitor

The following Man power, Equipments and Implements are required for making the Observations by National Quality Monitor during the inspection of a roadwork under PMGSY.

1. One or two unskilled laborers are required to dig the pit and take the samples of the material depending upon the work involved.
2. In addition, the following equipments and implements will also be required:

#	Observation	Method of Observation	Equipments/ Implements Required
1	2	4	6
Item - Geometrics			
1	Widths	Actual Measurements	Measuring tapes of 20m, thread, spirit level and straight edge.
2	Camber		
3	Horizontal Curve, Super elevation and Extra widening		
4	Longitudinal Gradient		
Item - Earth Work and Sub-grade in Embankment			
1	Quality of Material	Visual Classification of Soils	Visual Observation
2	Compaction	Field Density Test by sand replacement/ Core Cutter method.	Rapid Moisture Meter, Sand Replacement Test/ Core Cutter Apparatus.
Item - Sub-Base			
1	Quality of Material		
	a. Grain Size	Gradation Test	Standard Sieves.
	b. Plasticity	Hand-feel test.	
2	Compaction	Field Density Test by sand replacement/ Core Cutter method.	Rapid Moisture Meter, Sand Replacement Test/ Core Cutter Apparatus.
3	Total Thickness of Layer	Measurement	Measuring Tape and Steel Scale of 30cm.

Item - Base Course – Water Bound Macadam			
1	Quality of Material		
	a. Grain Size of Course Aggregate	Gradation Test	Standard Sieves.
	b. Suitability of Course Aggregate in respect degree of hardness.	Hand-feel test .	
	c. Plasticity of Crushable Aggregate used as fillers	Hand-feel test.	
2	Adequacy of Compaction through volumetric analysis.	Hand-feel test.	Pick axe, crow bars and steel Scale of 30 cm.
3	Thickness of every layer of WBM.	Measurement.	Steel Scale of 30cm.
Item - Bituminous Layer – Premix Carpet (PMC)/ Surface Dressing (SD)			
1	Gradation of Aggregate	Gradation Test.	Standard Sieves.
3	Mixing Temperature of Mix.	Measurement.	Thermometers.
4	Laying Temperature of Mix.	Measurement.	Thermometers.
5	Thickness of layer	Measurement.	Steel Scale of 30cm.
Item - CC/ Semi Rigid Pavements and Associated Pukka Drains			
3	Thickness of Layer	Measurements	Steel Scale of 30cm.

National Rural Roads Development Agency
Fax/Mail Back Form 1 (Fax to 011/41000475 or mail to pkkatare@nic.in)

Response Sheet of National Quality Monitors

With reference to your D.O. letter No. P-14013/2/2002-NRRDA Dated / /
(Please tick the relevant box)

1. I am able to undertake the visit for the month of Probable Dates
2. I am sorry; I am unable to under take visits proposed for the month.
3. In case of 2 above the reasons are as follows;

(Please fill up the following if any change in address, telephone/ fax no. and e-mail Id)

My correct addresses:
.....
.....

My Telephone Number: 1. STD code Number

 2. STD code Number

My Fax Number: STD code Number

My e-mail Id.

(Signature)
(Name of NQM)

To,
The Director (P-III),
National Rural Roads Development Agency,
5th Floor, 15-NBCC Tower, Bhikaji Cama Place,
New Delhi – 110 066.

Procedure to use PMGSY website for obtaining list of works

1. Open website <http://pmgsyonline.nic.in>
2. On left side go to “Quality Monitoring”

Pradhan Mantri Gram Sadak Yojana - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://pmgsyonline.nic.in/government/security/login/dologin.asp?q=se#>

PRADHAN MANTRI
GRAM SADAK YOJANA

PMGSY NRRDA Quality Agencies Circulars Tenders News Feedback More... Search

The Pradhan Mantri Gram Sadak Yojana (PMGSY), was launched by the Govt. of India to provide connectivity to unconnected rural Habitations as part of a poverty reduction strategy. Government of India is endeavoring to set high and uniform technical and management standards and facilitating policy development and planning at State level in order to ensure sustainable management of the rural roads network. In the first phase, habitations (hamlets) of population of 1000 (500 in the case of Hill States, tribal and Desert areas) and above will be covered. In the second phase habitations of population of 500(250 in the case of Hill States, tribal and Desert areas) will be covered. About 368,000 km of new road construction and 370,000 km of upgradation/renewal is expected to be done at a cost of about \$26 billion.

Works: 29524, Road Works in Progress: 23116, Total Length: 170167.56 Km

Quality Monitoring

[Search Your Habitation](#)

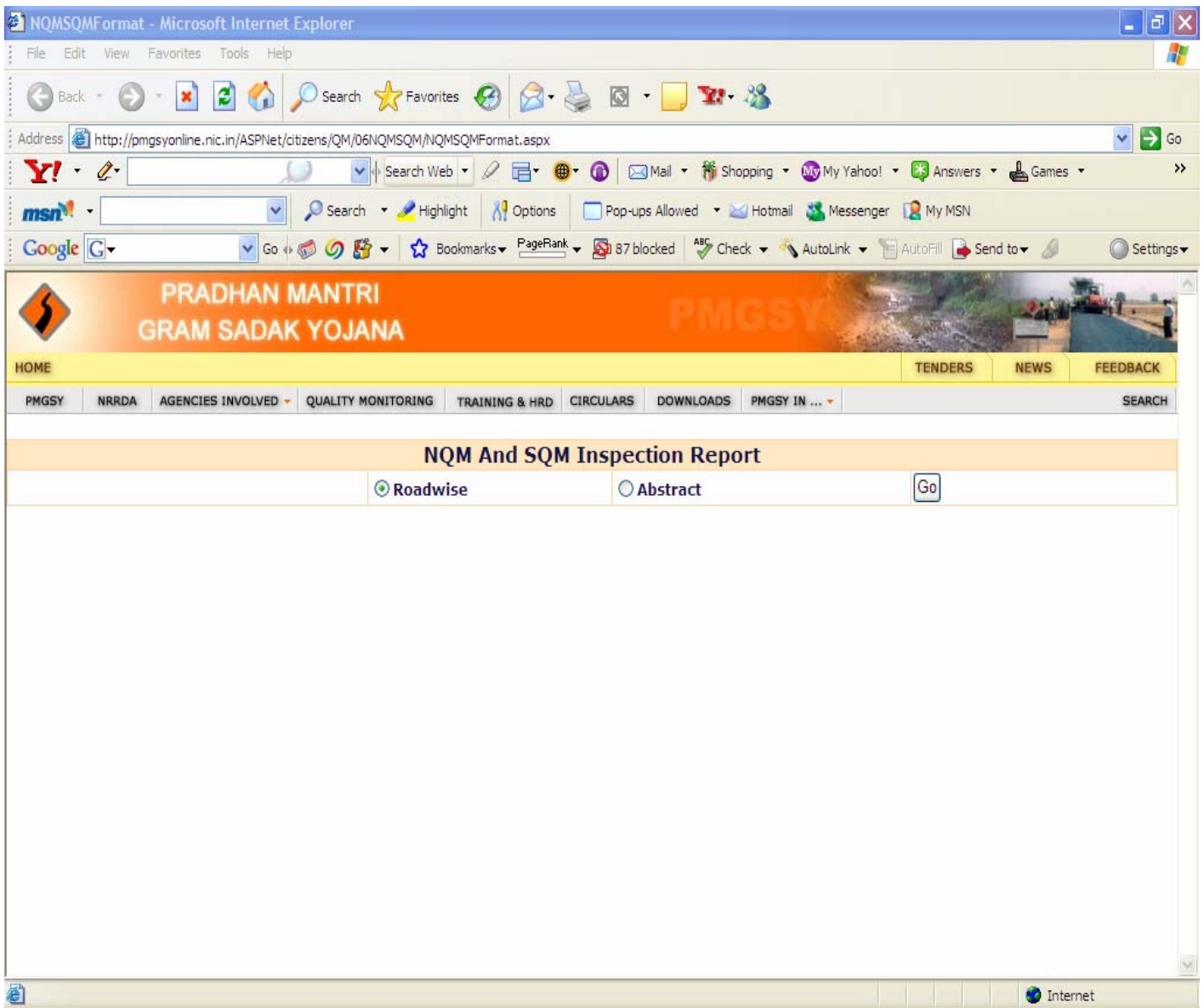
- National Quality Monitors
- NQM Reports (Abstract/Roadwise/Monitorwise)
- SQM Reports
- Schedule Of Inspections
- State Quality Monitors
- NQM And SQM Inspection Report
- INSP: Inspection Details
- INSPFPI: Work Information

**Best Packaged Application
2002, Runner Up**

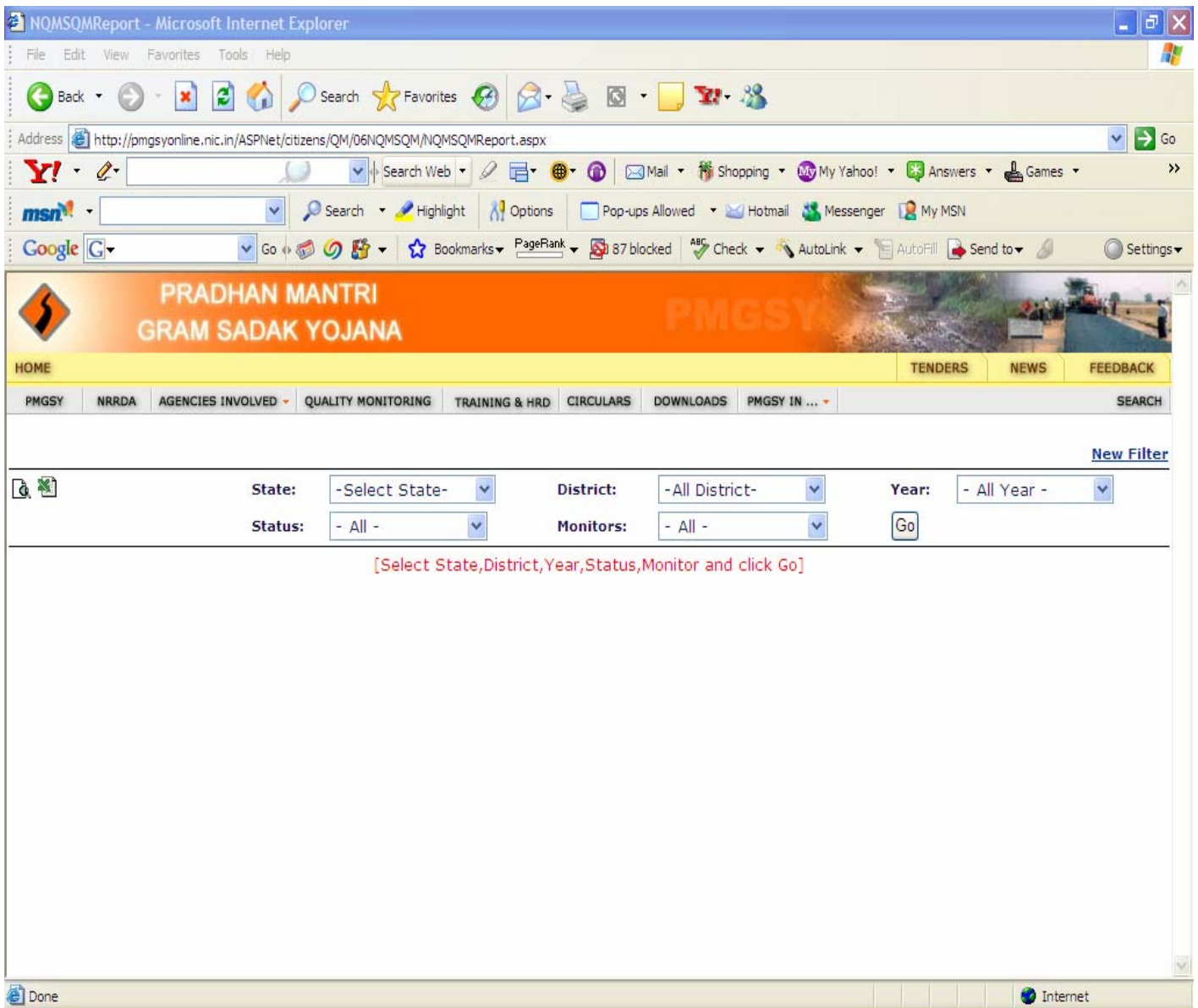
Visitor No 3855244

Best viewed in 800 x 600 pixels - I.E. 4.x.
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3. Click on “NQM and SQM Inspection Report”. The below screen will appear and then select Road wise report.



4. After selecting Road wise report option, following screen will appear and then select State and District, select year, status, and monitors and click GO button. You will get the list of Roads Inspected by SQM and NQM for the selected State and district.



Annexure 3

Statement showing item-wise observations, their method, frequency and awardable quality grading

#	Sub item for observation	In case of work	Method of Observation	Frequency	Grades
1	2	3	4	5	6
Item 1 - Quality Arrangements					
	Quality Arrangements	On-going	Verification of field laboratory and availability of equipments.	General observation	S/RI/U
Item Grade					S/RI/U
Item 2 - Attention to Quality					
a	Maintenance of QC Registers	On-going	Verification of QC Register I and II	General observation	S/RI/U
b	Verification of test results	On-going/ Complete	Verification of test results on the basis of field tests.	Not Specified	S/U
Item Grade					S/RI/U
Item 3 – Geometrics					
a	Road way width	Ongoing or complete	Actual Measurements	2 per Km	S/U
b	Carriageway width		Actual Measurements	2 per Km	S/U
c	Camber		Measurement	2 per Km	S/U
d	Superelevation & Extra Widening at Curves		Measurement	2 per Km	S/U
e	Longitudinal Gradient in case of road in hilly/rolling terrain.	Ongoing/ complete	Visual Observation/ Measurements	2 critical stretches in a Km	S/U
Item Grade					S/U
Item 4 - Earth Work and Sub-grade in Embankment/ Cutting					
a	Quality of Material for Embankment/ Sub-grade	Ongoing or complete	Visual Classification of Soils	1 per Km	S/U
b	Compaction		Field Density Test by sand replacement/core-cutter method.	1 per Km	S/U
c	Side Slopes and Profile	Complete	Measurement	4 Observations per Km	S/U
d	Stability and Workmanship of Cut Slopes (in case of hilly/ rolling terrain)	Ongoing or complete	Visual Observation	4 per Km	S/U
e	Adequacy of Slope Protection (in case of high embankments/hilly/ rolling terrain)		Visual Observation	4 per Km	S/U
Item Grade					S/U

Item 5 - Sub-Base					
	Quality of Material				
a	Grain Size	Ongoing or complete	Gradation Test	1 per Km	S/U
b	Plasticity		Hand-feel test of ball making with moisture content	1 per Km	S/U
c	Compaction	Ongoing or complete	Field Density Test by sand replacement/ core cutter method.	1 per Km	S/U
d	Total Thickness of Layer	Ongoing or complete	Measurement by taking pit for full layer thickness	1 per Km	S/U
Item Grade					S/U
Item 6 - Base Course – Water Bound Macadam					
	Quality of Material				
a	Grain Size of Course Aggregate	Ongoing or complete	Gradation Test	1 per Km	S/U
b	Plasticity of Crushable Aggregate used as fillers		Hand-feel test of ball making with moisture content	1 per Km	S/U
c	Adequacy of Compaction through volumetric analysis.		Hand-feel test by digging pit and volumetric analysis.	1 per Km	S/U
d	Thickness of every layer of WBM.		Actual Measurement by taking pit	1 per Km	S/U
Item Grade					S/U
Item 7 - Bituminous Layer – Premix Carpet (PMC)/ Surface Dressing (SD)					
a	Gradation of Aggregate	Ongoing	Grain Size Analysis (Gradation Test).	1 at hot-mix plant/ 1 per Km	S/U
b	Mixing Temperature of Mix.	Ongoing	Measurement of temperature by thermometer.	1 at hot-mix plant	S/U
c	Laying Temperature of Mix.	Ongoing	Measurement of temperature by thermometer.	1 where laying is in progress.	S/U
d	Thickness of layer	Ongoing or complete	Measurement by taking pit	2 per Km	S/U
e	Surface Evenness	Ongoing or complete	By straight edge	2 per Km	S/U
Item Grade					S/U
Item 8 - Shoulders					
a	Quality of material for shoulders	Complete	Visual classification of soil	1 test per Km	S/RI/U
b	Degree of compaction	Complete	Field Density Test by sand replacement/core-cutter method.	1 test per Km	S/RI/U
c	Camber.	Complete	Measurements	1 test per Km	S/RI/U
Item Grade					S/RI/U

Item 9 - Cross Drainage Works – Causeways of all spans and Culverts upto 6 m. span.					
a	Quality of Material – Concrete, Stone/ brick masonry, Hume pipes including size etc.	Ongoing or complete	Visual observation (for CC verify cube test results from records)	General observation	S/RI/U
b	Quality of Workmanship such as positioning of pipes, wing walls, cushion over H Pipes etc.		Visual observation	General observation	S/RI/U
Item Grade					S/RI/U
Item 10 - Side Drain and Catch Water Drain					
	General quality of Side Drains/ Catch Water Drains and their integration with CDs.	Ongoing or complete	Visual observation	General observation	S/RI/U
Item Grade					S/RI/U
Item 11 - CC/ Semi Rigid Pavements and Associated Pukka Drains					
a	Quality of Material – Concrete, Stone/ Concrete Block Pavement etc.	Ongoing or complete	Visual Observation	1 per 100 m. Length of Pavement	S/U
b	Strength of CC in Concrete Pavement/ Concrete Block Pavement		Strength using appropriate rebound hammers/ verification of cube test results from test records.	1 per 100 m. Length of Pavement	S/U
c	Quality of Workmanship – Wearing surface texture, Adequacy of setting of concrete, Joints, Edges etc.		Visual observation	General observation	S/U
d	Thickness of Layer		Measurements	1 per 100 m. Length of Pavement	S/U
Item Grade					S/U
Item 12 - Road Furniture and Markings					
a	Citizen Information Board, Main Informatory Board, Quality and whether fixed during construction.	Ongoing	Visual observation	General observation	S/U
b	Logo boards, 200 m stones and Km stones, quality and whether fixed after completion.	Complete	Visual observation	General observation	S/U
C	Whether the information in boards is given in local language.	Complete/ Ongoing	Visual observation	General observation	S/U
Item Grade					S/U

**Format for information to NQM for Inspection of Ongoing/Completed Work
PART I– Work Information (To be filled-up by PIU)**

Work is Ongoing Completed

GENERAL:

- 1.1. Date of Inspection: _____
- 1.2. Name of National Quality Monitor: _____
- 1.3. State: _____ District: _____ Block: _____
- 1.4. Name of Road: From _____ to _____
- 1.5. Package No.: _____
- 1.6. Length:Km Flexible Pavement,Km. CC/other Pavement = Total
.....Km.
- 1.7. Estimated Cost (As cleared by GOI): Rs. _____ Lakh
- 1.8. Technical Sanction Cost: Rs. _____ Lakh
- 1.9. The Work is a Case of: New connectivity Up gradation
- 1.10. Terrain Plain Rolling Hilly
- 1.11. Date of Start of the Work: _____
- 1.12. Stipulated Date of Completion: _____
- 1.13. Actual Date of Completion (if work completed): _____
- 2. PHYSICAL PROGRESS: (In case of On going works only) Construction Programme and Physical Progress:**

Item	Completed percentage of Item	Dates for completion	Start Date	Completion Date	Delay in Months
Preparatory Work		Due			
		Actual			
Earth Work		Due			
		Actual			
CD Works		Due			
		Actual			
Sub base i/c Shoulders		Due			
		Actual			
Base Course (Non Bitu.)		Due			
		Actual			
Base /Wearing Course(Bitu.)		Due			
		Actual			
CC Pavement		Due			
		Actual			
Signage etc		Due			
		Actual			

3. QUALITY CONTROL:

3.1. Location of Field Laboratory:

3.2. Quality Control Register Part-I is maintained by:

3.3. Quality Control Register Part-II is maintained by:

4. INSPECTIONS BY NQM, SQM or SENIOR OFFICERS AND ACTION TAKEN:

Inspection by NQMs, SQMs and senior (i.e. SE or CE) departmental officers and action taken statement:

Date of Visit	Inspected By	Observations	Action Taken by PIU with Date

Name and Signature of the Head of PIU, Date:.....

Report of National Quality Monitor (NQM)
PART II– Observations of NQM for Ongoing/Completed Work

(To be filled-up by NQM, use additional sheets, if required.)

1. QUALITY ARRANGEMENTS-OBSERVATIONS (In Case of ongoing works only):

Observations:

#	Whether laboratory (Y/N)	Field Established	Whether Equipments (Y/N)	necessary available	Whether Equipments have been used (Y/N)

Grading: Grade: S RI U If this item is graded RI/U, write clear reasons and suggestions for improvement:

2. ATTENTION TO QUALITY: (In Case of ongoing works only):

Observations – Item 2a: Maintenance of QC Registers:

#	Based on executed quantities whether all mandatory tests conducted. <input type="checkbox"/> Yes <input type="checkbox"/> Partly <input type="checkbox"/> No	Whether QC Register Part I maintained as per provisions. <input type="checkbox"/> Yes <input type="checkbox"/> Partly <input type="checkbox"/> No	Whether QC Register Part II maintained and test results monitored as per provisions. <input type="checkbox"/> Yes <input type="checkbox"/> Partly <input type="checkbox"/> No

Observations – Item 2b: Verification of Test Results (P – conforms, F – does not conform):

#	Name of Test	Results of the test conducted by NQM at a defined location.(P/F)	Test result as per QC Register at the same location. (Mention the Page No. of QC Register also)(P/F)	Whether the test results recorded in QC register found correct? (Y/N)

Grade:	S	RI	U	If this item is graded RI/U, write clear reasons and suggestions for improvement:

3. GEOMETRICS: The NQM should take at-least two measurements in 1 Km length and if it is found that the roadway and carriageway is inadequate NQM may take more observations:

Observations – Item 3 a, b and c: Road way width, Carriage way and Camber.

Ref. RD	Roadway Width (m)	Carriageway Width (m)	Ref. RD	Roadway Width (m)	Carriageway Width (m)

Observations – Item 3 d: Superelevation and Extra Widening at curves.

Ref. RD	Super Elevation	Extra Widening provided (Y/N)	Ref. RD	Super Elevation	Extra Widening provided (Y/N)

Observations – Item 3 e: Longitudinal Gradient in case of road in hilly/rolling terrain:

Ref. Between RD...& RD...	Longitudinal Gradient	S/U	Ref. Between RD...& RD...	Longitudinal Gradient	S/U

Grade:	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

OBSERVATIONS REGARDING THE QUALITY OF ITEMS OF WORK:

4 Earthwork:

Observations – Item 4 a Quality of Material for Embankment/ Sub-grade:

#	Location (RD)	On Visual Classification identify the Group Symbol and write	Quality of material is acceptable. (Y/N)

Grade:	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

Observation – Item No. 4 b: Workmanship for Embankment and Sub-grade Construction:

#	Location (RD)	MDD kN/m ³ (As per record)	Field Moisture Content	Degree of Compaction		
				Field Density kN/m ³	Dry Density kN/m ³	Compaction adequate. (Y/N)

Grade:	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

Observation – Item No. 4 c, Side slopes and profile:

#	Location (RD)	Whether Side Slopes Satisfactory (Y/N)	Whether profile is Satisfactory (Y/N)

Observations- Item No. 4 d and e, Earth work in Hilly/Rolling terrain or high Embankments:

#	Location (RD)	Cut Slopes & Profile, whether appears to be stable. (Y/N)	Adequate slope protection works executed. (Y/N)	Formation is properly dressed and traffic worthy. (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

5. Sub-Base:

Observations- Item No. 5 a, b, c and d, Quality of Material and Workmanship:

#	Location (RD)	Confirms to Grading. (Y/N)	Suitable from plasticity angle. (Y/N)	Whether compaction is adequate. (Y/N)	Observed Thickness of Layer (in mm)	Prescribed Thickness provided (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

6. Base Course:

Observations- Item No. 6 a, b, c and d, Quality of Material and Workmanship of WBM:

#	Location (RD)	Thickness of each layer of WBM (mm)	Thickness is adequate. (Y/N)	Aggregate confirms to Grading (Y/N)	Filler material is non-plastic to desired extent. (Y/N)	Volume of filler material percent of course aggregate	Whether adequate compaction is done. (Y/N)

Grade:	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

7. Bituminous Course: Premix Carpet/Surface Dressing/ BM/ MPM etc including Seal Coat: Observations- Item No. 7 a, b, and c, Quality of Material and Workmanship of BT Layer (in case of ongoing works):

#	Location (RD)	Whether Course Aggregate confirms to grading. (Y/N)	Whether the binder is of approved grade. (Y/N)	Write Mixing Temperature and whether it is in permissible limits. (Y/N)	Write Laying Temperature and whether it is in permissible limits. (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

Observations- Item No. 7 d and e, Workmanship of BT layer (in case of completed works):

#	Location (RD)	Thickness		Whether surface evenness is within acceptable limits. (Y/N)
		Thickness in mm	Whether thickness is adequate. (Y/N)	

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

8. Observations- Item No. 8 a and b, Quality of Shoulders (in case of completed works):

#	RD of observation	Whether general quality of the material is acceptable. (Y/N)	Whether general quality of workmanship is acceptable. (Y/N)	Whether Camber in Shoulders is adequate (Y/N)

9. Cross Drainage Works: Observations Item No. 9 a and b, Quality of CDs:

#	RD at which CD is located	Type of CD	Whether general quality of the material is acceptable. (Y/N)	Whether general quality of workmanship is acceptable. (Y/N)

Grade: S RI U If this item is graded RI/U, write clear reasons and suggestions for improvement:

10. Side Drains and Catch water Drains: Observations:

#	Reference of RDs where side drain constructed.	RD at which observation made.	Whether general quality of the side drains/ catch-water drains is acceptable. (Y/N)	Whether side drains are integrated to cross drains. (Y/N)

Grade: S RI U If this item is graded RI/U, write clear reasons and suggestions for improvement:

11. CC/ Semi-Rigid (SR) Pavements and Associated Pucca Side Drains: Item No. 11 a, b, c and d:

#	Reference of RDs, CC/SR Pavements provided.	RD at which observation made.	Thickness		General quality of material is acceptable. (Y/N)	General quality of workmanship acceptable(Y/N)
			Thickness in mm	Acceptable (Y/N)		

Grade:

S	U
---	---

 If this item is graded U, write clear reasons and suggestions for improvement:

12. Road Furniture and Markings

Observations - Item No. 12 a: Quality Road Furniture and Markings (in case of ongoing/completed works):

Main Informatory Board Fixed:

Yes	No
-----	----

Citizen Information Board Fixed:

Yes	No
-----	----

Grade:

S	U
---	---

 If this item is graded U, write clear reasons and suggestions for improvement:

Observations - Item No. 12 b: Quality Road Furniture and Markings (in case of completed works):

i. Logo Boards Fixed:

Yes	No
-----	----

ii. 200m. Stones fixed:

Yes	No
-----	----

iii. 1 Km. Stone fixed:

Yes	No
-----	----

iv. Guard Stones fixed on Curves:

Yes	No
-----	----

v. Mandatory and Cautionary Signage

Yes	No
-----	----

Grade:

S	U
---	---

 If this item is graded U, write clear reasons and suggestions for improvement:

13. General Observations of NQM, (including the observations made during the interaction with PIU staff and Contractor/ Consultant Engineers):

a. Observations about deficiency in project preparation (Give detailed observations about deficiencies in general and items which have been left but are required as per site conditions):

b. Whether the work has been completed/is in progress as per work programme or the delay has occurred. If delay has occurred, whether the liquidated damages have been withhold or recovered:

15. Quality Grading of items and sub-items of work: The grading of every sub-item and item of work is given below.

#	Sub item for observation	In case of work	Awardable Grades	Awarded Grade
1	2	3	4	5
Item 1 - Quality Arrangements				
	Quality Arrangements	On-going	S/RI/U	
	Item Grading		S/RI/U	
Item 2 - Attention to Quality				
a	Maintenance of QC Registers	On-going	S/RI/U	
b	Verification of test results	On-going/ Complete	S/U	
	Item Grading		S/RI/U	
Item 3 – Geometrics				
a	Road way width	Ongoing or complete	S/U	
b	Carriageway width		S/U	
c	Camber		S/U	
d	Superelevation & Extra Widening at Curves		S/U	
e	Longitudinal Gradient in case of road in hilly/ rolling terrain.	Ongoing/ complete	S/U	
	Item Grading		S/U	
Item 4 - Earth Work and Sub-grade in Embankment/ Cutting				
a	Quality of Material for Embankment/ Sub-grade	Ongoing or complete	S/U	
b	Compaction		S/U	
c	Side Slopes and Profile	Complete	S/U	
d	Stability and Workmanship of Cut Slopes (in case of hilly/ rolling terrain)	Ongoing or complete	S/U	
e	Adequacy of Slope Protection (in case of high embankments/hilly/ rolling terrain)		S/U	
	Item Grading		S/U	
Item 5 - Sub-Base				
a	Grain Size	Ongoing or complete	S/U	
b	Plasticity		S/U	
c	Compaction	Ongoing or complete	S/U	
d	Total Thickness of Layer	Ongoing or complete	S/U	
	Item Grading		S/U	

Item 6 - Base Course – Water Bound Macadam				
a	Grain Size of Course Aggregate	Ongoing or complete	S/U	
b	Plasticity of Crushable Aggregate used as fillers		S/U	
c	Adequacy of Compaction through volumetric analysis.		S/U	
d	Thickness of every layer of WBM.		S/U	
Item Grading			S/U	
Item 7 - Bituminous Layer – Premix Carpet (PMC)/ Surface Dressing (SD)				
a	Gradation of Aggregate	Ongoing	S/U	
b	Mixing Temperature of Mix.	Ongoing	S/U	
c	Laying Temperature of Mix.	Ongoing	S/U	
d	Thickness of layer	Ongoing or complete	S/U	
e	Surface Evenness	Ongoing or complete	S/U	
Item Grading			S/U	
Item 8 – Shoulders				
a	Quality of material for shoulders	Complete	S/RI/U	
b	Degree of compaction	Complete	S/RI/U	
c	Camber.	Complete	S/RI/U	
Item Grading			S/RI/U	
Item 9 - Cross Drainage Works				
a	Quality of Material – Concrete, Stone/ brick masonry, Hume pipes including size etc.	Ongoing or complete	S/RI/U	
b	Quality of Workmanship such as positioning of pipes, wing walls, cushion over H Pipes etc.		S/RI/U	
Item Grading			S/RI/U	
Item 10 - Side Drain and Catch Water Drain				
	General quality of Side Drains/ Catch Water Drains and their integration with CDs.	Ongoing or complete	S/RI/U	
Item Grading			S/RI/U	
Item 11 - CC/ Semi Rigid Pavements and Associated Pukka Drains				
a	Quality of Material – Concrete, Stone/ Concrete Block Pavement etc.	Ongoing or complete	S/U	
b	Strength of CC in Concrete Pavement/ Concrete Block Pavement		S/U	

c	Quality of Workmanship – Wearing surface texture, Adequacy of setting of concrete, Joints, Edges etc.		S/U	
d	Thickness of Layer		S/U	
	Item Grading		S/U	
Item 12 - Road Furniture and Markings				
a	Citizen Information Board, Main Informatory Board, Quality and whether fixed during construction.	Ongoing	S/U	
b	Logo boards, 200 m stones and Km stones, quality and whether fixed after completion.	Complete	S/U	
c	Whether the information in boards is given in local language.	Complete/ Ongoing	S/U	
	Item Grading		S/U	

16. Overall Grading of Work: The overall grading calculated on the basis of item and sub-item wise grading is given below:

#	Item	Awarded Grade
1	Quality Control Arrangements	
2	Attention to Quality	
3	Geometrics	
4	Earthwork and Sub-grade in Embankment/Cutting	
5	Granular Sub-base	
6	Base Course Non-Bituminous and shoulders	
7	Bituminous Surfacing	
8	Shoulders	
9	CD Works	
10	Side Drains and Catch Water Drains	
11	CC/Semi-Rigid Pavement and Associated Pukka Drains	
12	Road Furniture and Markings	
	Overall Grading	

Signature:

Name:

Date: