survey. The first priority will be for through routes which are presently W.B. roads. The second priority would be through routes or gravel roads. The last priority would be through routes which are at the end of their design life. Normally such roads would have PCI of 5 or less.

Where existing rural through routes are in very poor condition, upgradation or renewal of such roads may be taken up as an adjunct to new connectivity (Concept of Associated Through Routes). Procedure as detailed in O.M. is to be followed in the selection and project preparation.

Procurement:
Standard Bidding Document (SBD) was circulated to all the States along with a 36 point check list for adopting as State Specific Bidding Document. Many of the provisos and clauses were different from the State practices. As such, it is felt that detailed guidelines on important aspects are required to be elaborated in the O.P. Manual. The O.M. provisions highlight the area required in the preparation of the bidding document. Generally, a request for advertisement and bidding document from OMMAS and the preparations required to be taken at the time of opening of bids and evaluation of technical and financial bids. The evaluation criteria has been explained in detail with reference to each of the parameters such as B qualification, availability of equipment and personnel, past experience of the works, as well as the sub contracting component of the works. Clarification has also been provided on steps required to be considered if the works are to be re-estimated. The OMMAS input forms for certification of tender notice, and generating garbage wise documents had been added so that the PIU can generate the complete bid document without committing any errors.

Project Implementation and Contract Management:
This again is flowing out of the Standard Bidding Document (SBD). However, important provisions in the agreement along with relevant clauses are dealt in detail in the chapter to that effect. After the work is awarded, PIUs are guided towards steps required to be taken by them. The broad categories are time control, cost control and quality control. This chapter also deals with timely release of payment to the contractor during execution of the work as well as after completion. The process required for financing the accounts and release of performance security and deposits has also been indicated.

Quality Management:
Detailed guidelines and the reporting formats were formulated and circulated to all concerned. In this chapter steps have been explained in detail and suitable performance added to facilitate monitoring and reporting. The responsibilities of the Second Tier State Quality Coordinator (SQ C) have been detailed out. In addition to the reporting responsibility he is also made responsible for preparing the annual report for analyzing the general deficiencies occurring within the State and also to suggest remedial measures.

Monitoring:
Monitoring formats were circulated from time to time as part of guideline. In this chapter stress has been laid on Online Monitoring. Accordingly, the action required and responsibilities have been clearly spelt out. The responsibility at DPUs level and SBDIA level and NRRDA level have also been defined. The monitoring at the State level includes the proposal stage, survey, DPR, preparation and clearance, procurement, preparation and progress of work. In addition, the responsibility of monitoring of contracts relating to time, quality and payments have been defined and monthly and quarterly report prescribed. The Regional Review format relating to institutional and capacity issues have also been indicated. A new monthly return on unspent balances of PMGSY funds with a State has been prescribed. This report is required to be furnished by the Empowered Officers as well as by the bank.

Finance and Accounting System:
The PMGSY accounting system is primarily based on Public Works Accounting System with minor modifications. The basic difference is a system of flow of funds which comes to designated bank account of the SBDIA and also preparation of balance sheet. Separate set of accounts are required for PMGSY programme funds, administrative expenses and, maintenance. Steps required for regulation of the funds have been brought out into the O.M. Charts of accounts along with explanatory notes for easy understanding have been provided. Procedures for release of programme funds and administrative expense funds along with the audit requirements have also been detailed out. Up to date data entry on OMMAS has been made mandatory.

Maintenance:
Maintenance aspect is one of the most neglected subjects with the States. A five years maintenance, to be paid by the States, is an integral part of the Programme. The provisions in the Rural Roads Manual have been explained detailing out procedures for remedying defects during the 5 years contract period. Stress has been laid on laying planning through pavement condition survey and laying of maintenance funds on availability of funds. The Periodicity of Routine Maintenance Activities has been defined clearly with reference to the clauses in the Book of Specifications. Norms for Rural Maintenance have been laid and prescribed so that an estimate could be made at the project preparation stage and monitored at execution stage.

It is expected that guidelines and detailing contained in the Operations Manual would facilitate systematic implementation of the Programme. Though the draft of the Manual has been extensively circulated and discussed, there is always scope for improvement. As such, O.M. is intended to be a dynamic document. Based on experience gained during further implementations as well as comments, feedback received, the provisions may be modified accordingly.

PMGSY Roads will last not only because they are well constructed but also because they will maintained.

In earlier issues the Dos and Don’ts in quality of PMGSY roads were discussed for Setting out, Site Clearance, Embankment, Earth Work and Granular Sub-base construction. In this issue, Dos and Don’ts in the Construction of WATER BOND MACADAM (WBM) as Base/ Sub-base course are covered.

Water Bound Macadam (wbm) Base/ Sub-base Course

Steps:
- Select the quality for course aggregate by performing the prescribed tests. Give clear guidance to the supplier regarding requirement of grading.
- Plan for stacking of Course Aggregate (CA) and Fine Aggregate (FA) strictly on the basis of requirements in a given stretch of the road (Normally 200m).
- Allow the stacking of only approved CA and FA, as per the stacking plan. Carry out required balance tests after stacking and if sub-standard material is stacked, it must be removed before the work of laying of aggregate is started.
- The surface to receive WBM course should be prepared to the lines and cross fall (camber or super elevation) make good irregularities, if any, by profile correction.
- Spread the CA uniformly on prepared base to proper profile by using templates placed across at 6 m. interval. Also spread the material for shoulders. The loose quantity of the aggregate should be sufficient to get required compacted thickness.
- Roll the surface till aggregates are partially compacted and sufficient void space is left for application of screenings/FA. Rolling of shoulders and aggregate should be done simultaneously.
- The surface evenness should be maintained at this stage. Check the lateral variation by profile gauge to maintain evenness. Carry out required corrections by loosening the surface and adding or removing material and then rolling. Do not allow the entire surface preparation stage and monitor/inspection stage.
- Apply dry screenings to completely fill up the interstices in three or more applications.
- The screenings should not be dumped, the application should be slow and at a uniform rate accompanied by brooming and rolling in dry condition. This dry rolling should be continued till no more screening can be forced into the voids.
- Once the dry rolling is complete, the surface should be copiously sprinkled with water, swept and rolled. Sprinkling, sweeping and rolling should continue till aggregates are thoroughly keyed, well bounded and firmly set in its full depth and a grout of screenings has been formed.
- If binding material is meant to be applied, it will be done successively in two or more thin layers at a slow and uniform rate. After each application, the surface shall be copiously sprinkled with water, the resulting slurry swiped in with hand brooms to fill up the voids properly and then rolled. This operation should be continued till the resulting slurry, after filling the voids, forms a wave ahead of the rolling roller.
- The compacted surface should be allowed to completely dry and set before opening for traffic or construction of successive layers.
- The black topping of the WBM surface should be done within a reasonable time, if the stone screenings are used without binding material. If BT is delayed, the revaling can be avoided by spreading a thin layer of suitable soil.

Myths:
- I W.B. is grading I base course? No, it is an equivalent sub-base course.
- Should binding material be used in WBM? Not always necessary.
- Spread metal and screening then water the entire mass and roll. If binding material is meant to be applied, it will be done successively in two or more thin layers at a slow and uniform rate. After each application, the surface shall be copiously sprinkled with water, the resulting slurry swiped in with hand brooms to fill up the voids properly and then rolled. This operation should be

Examples of Poor Roads Construction

Prabha Kant Katare, J. Director (Project-III), N.M., NRRDA.

In earlier issues, the Dos and Don'ts in quality of PMGSY roads were discussed for Setting out, Site Clearance, Embankment, Earth Work and Granular Sub-base construction. In this issue, Dos and Don'ts in the Construction of WATER BOND MACADAM (WBM) as Base/ Sub-base course are covered.
The compacted WBM should be allowed to dry and set. After dry rolling, the water should be copiously distributed to make good to full thickness of the layer and re-rolled simultaneously. Spread the course aggregate as well as shoulder material simultaneously.

Don’t apply screenings unless the course aggregate has been adequately dry rolled.

The surface receiving WBM should be prepared so the lines and cross fall either per or super elevation. The irregularity should be evened off before application of screenings.

The speed of the roller should not exceed 5 km/hr.

Don’t add water unless dry rolling is complete.

Don’t allow the material to be stacked at site without prior approval after necessary testing.

Don’t allow earth and soft moorum as binding material. The slurry of binding material should be adequately dry rolled.

Don’t leave the rolling at the mercy of the roller driver. Rolling should be a controlled activity. Ensure that the surface receiving WBM is swept and smoothed before spreading the shoulder material.

Don’t stop wet rolling unless the slurry of binding material is retained on 4.75 mm sieve shall have at least two fractured faces.

Don’t allow fully rounded pebbles or river bed material. If crushed gravel/shingle is used, not less than 90% pieces retained on 4.75 mm sieve shall have at least two fractured faces.

Don’t dump the screening. Screenings should not be damp. Spread the shoulder material.

Don’t proceed towards the upper edge at super-elevation. After dry rolling, the water should be copiously distributed to make good to full thickness of the layer and re-rolled simultaneously.

Stack the material for shoulders and WBM in such a way that excess or less material is not collected in the given length of road.

The compacted WBM should be allowed to dry and set.

Do’s and Don’ts

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<tr>
<th>Do’s</th>
<th>Don’ts</th>
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<td>Don’t allow the material to be stacked at site without prior approval after necessary testing.</td>
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<td>Indicate the grading requirements to the supplier and also make it clear that the material of required gradation will be allowed at site.</td>
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<td>Don’t start laying of WBM and shoulder unless the CA, FA and shoulder material is collected in appropriate proportions in a given length of road.</td>
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Do’s and Don’ts

Let’s Do Quality

H.K. Srivastava (Director Projects), IRNDRDA

The term ‘quality’ has been defined as the totality of features and characteristics of a product or services that bear on its ability to satisfy stated or implied needs. The contractual environment needs/requirements are specified, whereas in other environments implied needs or requirements need to be identified and defined. However, the term quality needs to be viewed in a wider perspective to include the process, be it decision making, communication, implementation, feedback or the product. Even a letter, a note sheet, a cup of tea is a product at a particular level of the organization and is defined through a process. The following is arrived at by observing through a few articles / theories put forth by peers in the field who could well be considered part of the global think tank (if there is any). Let us go to what extent it applies to our day to day activities and to what extent it will affect.

There is much talk about the need to improve Quality and Productivity. More often, everyone knows exactly how to go about it! In the eyes of top management, the biggest trouble is that a lot of employees in the operation and management are careless and neglect the job. One writer has a solution hold all employees accountable for job behavior as well as for the results expected of them. The fact is that performance appraisal, management by numbers, management by operations and work standards have already devastated western industry. More of the same could hardly be a solution. We are experimenting with the same. Other writers see information as the solution. Anyone can improve his work if he has enough information. The fact is that a figure by itself provides no information, has no meaning, no interpretation in the absence of a theory. Briefly put, there is no substitute for knowledge and a figure by itself is not knowledge. Knowledge endures longer than information.

Other people put their faith in gadgets, computers, new technology etc. to solve problems. They don’t seem to ask why they don’t answer, nor does it result in improvement of operations. These are not the transformations required to achieve desired standing of excellence. Likewise, the concept of zero defects are highways down the tube. The bitter truth is that all parts of the machinery may meet the specification, and yet the machinery may be unsatisfactory or may even be a total failure. Similar analogy applies to hierarchical levels in the organization. As such it is necessary to move continuously towards better and better performance of the finished product or the output as concentrating on components alone is insufficient.

There are seven components to a complete quality process. These are top management commitment; Leadership; Employee commitment; Communication; Training; Measurement and; Recognition, gratitude and celebration. Efforts to leave out one or more of these components or to give undue emphasis to one at the expense of others may achieve some improvements, but they will always fall short of the potential of the organization.

Top Management Commitment: To achieve quality top management commitment is a must. Commitment needed is commitment of self that management must commit their own egos, their own time and their own resources. The commitment must be active, obvious and informed. Active commitment means that they must improve what they themselves do. They must ensure that others know about their efforts to make it obvious. They must also be able to discuss the theory and practice of quality to make the processes informed. As part of their commitment the top management must trust their subordinates to act. Here empowerment means authority equal to responsibility. No more. But no less. It does not mean that every person is allowed to do whatever they wish.

Leadership: Leadership is about humans interacting with humans. Among the lessons available from the military, is the one that leadership can be taught, it can be learned and it is important to have trained leaders at every level of the organization. It is necessary that once the trained leaders are put in place at every level of the organization, the decision-making process is allowed to migrate to frontline expertise rather than to the top pre-established hierarchies. In other words, it will be management commitments on the front line who have first hand information, awareness of strength and weakness of the organization.

Employee Commitment with a Structure: Quality by proclamation is not enough. Simply announcing ‘we are now a quality organization and all of you people need to get better’ gains nothing. Required set of procedures and output need to be put in place first. If the rules are required to be changed, employees of all levels need to know the new rules. Two areas, in general, need focusing. One is ‘doing right things’ and second ‘doing the things right’. The first calls for evaluation of the process followed by addressing the question ‘are we even built correctly to do what we want to do? ’ In case the organization is not built correctly to carry out the tasks required to be done, appropriate changes in the organizational structure may be required to be made. This kind of restructuring is powerful and necessary tool but only when done in the required context. Restructuring by itself tends to yield moderately short term gains.

It is, after all, quite possible to do the right things badly. Just as it is possible to do the wrong things very well. In many organizations people work long and hard to do the best they can with a tool they are stuck with. It is in this determination and subsequent implementation ‘how to do things right’ that everybody in the organization gets involved and it becomes the responsibility of the organization to make conditions possible for everyone to take an active role in defining and performing their job.

[To be concluded]