CHAPTER 16. QUALITY CONTROL SYSTEMS

All Consulting Engineering firms undertaking routine road maintenance work for SANRAL should have their own ISO 9001 (or equivalent) quality procedures in place and these must be adhered together with the requirements of SANRAL’s Site Management System.

16.1 SITE MANAGEMENT PROCEDURES

SITE MANAGEMENT SYSTEM
SANRAL’s “Site Management System for Routine Road Maintenance Contracts” explains the requirements for site management procedures. These relate to activities such as the issuing of Site Instructions, processing payment certificates, maintaining site diaries, communications and road safety. Also included are other activities described in this Manual such as Statutory Control and the Incident Management System.

SITE AUDITS
SANRAL also requires that audits of Construction and Routine Road Maintenance Supervision projects are carried out on a regular basis, both internally by the Consulting Engineer and externally by SANRAL or an Agent of SANRAL. Internal audits should be carried out every six months by the Consulting Engineer to ensure that correct procedures are in place and to be ready for an external audit which could take place unannounced. The Routine Road Maintenance Audit forms are found in Appendix K and an electronic copy can be sourced from SANRAL's web site.

16.2 ROAD SAFETY

ON SITE
One of the most important quality control aspects is road safety which is discussed in Chapter 4.

A Traffic Safety Officer (TSO) is appointed at the start of the contract and the Route Manager must ensure that the TSO is trained to carry out the required duties diligently. Regular checks must be made on traffic accommodation procedures, record keeping and reporting on incidents, as well as to ensure that workers in the road reserve comply with the specified clothing and protection requirements.

All workers and supervisors on site should attend a road safety and awareness course at the start of the contract, regardless of having attended similar courses in the past. This is to emphasise the importance of road safety. All new workers taken on during the contract need to undergo this training.

Workers with high visibility overalls and bibs
ROAD SAFETY ASSESSMENT

One of the standard duties of the Consulting Engineer is to conduct a road safety assessment over the length of the contract and produce a Road Safety Report in which potentially hazardous locations are identified. Although the initial assessment should be comprehensive, all subsequent audits need only report on hazardous locations which are still present and new hazards which have materialised.

The South African Road Safety Manual produced by COLTO provides full details of Road Safety Audit requirements which are comprehensive and sufficient for the Road Safety Assessment. At the start of the project the Consulting Engineer must confirm the content of the Road Safety Report with SANRAL.

16.3 MATERIAL CONTROL

INTRODUCTION

Routine road maintenance work, unlike road construction, is generally piecemeal with small items of work requiring small quantities of materials. The Contractor’s obligations are also different in that a Defects Liability Period is not applicable for maintenance contracts. As a result, the perception may be created that materials quality control is of less importance.

To the contrary it is required that materials quality control is carried out on maintenance contracts. The Contractor is responsible for the quality of work and control testing will assist in ensuring that acceptable work standards are achieved. Results of all testing need to be kept on site as per the Site Management System and reported on at the monthly Site Meetings.

PROBLEM IDENTIFICATION AND ELIMINATION

The cause of a particular problem that necessitates repair work must be established and attended to. Spending time and money on repair work and ensuring that materials and construction standards are met mean very little when the problem remains. Frequent problems include subsurface water, poor material in lower pavement layer, management of stormwater, and hazardous road alignment.

This Manual contains information on identifying and attending to problems. Often the cause of a failure is self-evident. Whenever a failure occurs which requires maintenance actions, the questions should be asked “Why has this failure occurred and what needs to be done to eliminate the cause of the failure before repair work commences?”

AT COMMENCEMENT OF CONTRACT

All materials used in maintenance actions must meet the specified criteria. At the commencement of the contract, materials which are likely to be used must be sampled and tested. The status of the source in terms of...
of DME approvals must also be ascertained. Pavement repair work is usually an urgent necessity and cannot wait until materials have been sampled, sent to a laboratory for testing and the results received. The following materials should be tested:

- Likely subgrade and subbase materials
- Base materials
- Surfacing stone
- Concrete aggregates (followed by design mixes for strengths likely to be required)
- Asphalt for pavement repairs.

Confirmation testing may be required later when the materials are used.

Processes for road pavement repairs, temporary pothole repairs and cracksealing should also be discussed and agreed ahead of time so that material supplies (bituminous and sealants) can be identified and supplies stored on site.

At the commencement of a contract, it must be agreed which laboratory is to be utilised for the testing of materials and how the results are to be reported.

**DURING CONSTRUCTION**

It is essential that the Route Manager is present initially whenever an activity is carried out to monitor the work and to establish whether acceptable standards are being achieved. Erection of road sign, fencing, guardrails, erosion protection and pavement repairs all require attendances at the start and control testing should be arranged.

For road pavement repairs, the material quality should have been established beforehand. Layer thickness and density testing should be carried out on the repairs at random to monitor the quality of the work. A nuclear gauge can be utilised on site for initial control testing followed by DCP testing to establish norms. If significant pavement repairs are to be done, the testing equipment might remain on site for the duration of the contract.

All test results and decisions must be recorded on TMH10 report sheets and kept with the site records in the Site Management System.

For strength concrete work where control of strengths and quality is necessary, test cubes should be made and tested.