

Main Roads Technical Standard

MRTS50

Specific Quality System Requirements

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Specific Quality System Requirements

1 INTRODUCTION

This Technical Standard describes the requirements for the application of a Quality System for the management of all aspects of the Contractor's obligations for construction of road infrastructure projects.

This Technical Standard shall be read in conjunction with MRTS01 *Introduction to Technical Standards* and other Technical Standards as appropriate.

This Technical Standard forms part of the Main Roads Specifications and Technical Standards Manual.

2 DEFINITION OF TERMS

The terms used in this Technical Standard shall be as specified in Clause 2 of MRTS01 *Introduction to Technical Standards*.

3 REFERENCED DOCUMENTS

Table 3 lists documents referenced in this Technical Standard.

Table 3 – Referenced Documents

Reference	Title
AS/NZS ISO 9001	Quality management systems - Requirements

4 QUALITY SYSTEM REQUIREMENTS

The Contractor shall establish, implement and maintain a Quality System that complies with the Contract.

Construction activities shall be carried out in accordance with the provisions of the Contractor's Quality System which shall comply with the requirements of AS/NZS ISO 9001.

The quality planning for the project shall be documented in a project specific Quality Plan.

5 QUALITY PLAN

The Quality Plan shall define at least the following –

- a) a commitment to achieve the quality objectives contained in the Contract and a statement of the quality objectives the Contractor intends to deliver;
- b) the specific allocation of responsibilities and authorities and the management procedures to apply for the delivery of the Contract, including those for selection, engagement and control of Subcontractors and Suppliers; and
- c) the name, qualifications and experience of the following Contractor's supervisory personnel –
 - i) Project Manager;
 - ii) Project Engineer(s);
 - iii) Contractor's Quality Representative;
 - iv) Safety Officer;
 - v) Environmental Representative;
 - vi) Landscape Representative;
 - vii) Surveyor(s); and
 - viii) Works Supervisor(s);
- d) the communication processes to be implemented in management of the activities of the Contract;
- e) the controls to be applied for management of amendments to the Contract Plan documents as work under the Contract proceeds;

- f) the quality records to be maintained by the Contractor and its subcontractors and those to be submitted to the Administrator; and
- g) schedules of construction procedures and Inspection and Test Plans giving the dates by which these are to be prepared.

The following information shall be added to the Quality Plan in accordance with the requirements of the Contract –

- h) at least those construction procedures nominated in the Contract;
- i) lot numbering and lot identification systems;
- j) Inspection and Test Plans including a copy of the NATA terms of registration for the Contractor's compliance testing laboratories;
- k) other specific requirements as set out in the Contract; and
- l) the interconnections between the documents included in the Contract Plan.

6 CONSTRUCTION PROCEDURES

The Contractor shall prepare written procedures for all construction processes, including statement of equipment to be utilised for work processes as warranted and all controls to be exercised to ensure satisfactory achievement of Contract requirements, where the absence of such procedures could adversely affect quality of the work. Where appropriate, such procedures may be included in the Inspection and Test Plans or other documentation.

The Contractor shall submit to the Administrator all construction procedures nominated in the Contract and any construction procedures requested by the Administrator during the execution of the Contract.

Construction procedures shall be submitted to the Administrator at least 14 days before construction of the relevant work commences unless alternative times are specified elsewhere in the Contract.

Construction procedures shall contain the purpose and scope of the activity, what is to be done and by whom; when, where and how it is to be done; what materials, equipment and documents are to be used; and how the activity is to be controlled and recorded.

7 IDENTIFICATION AND TRACEABILITY

7.1 Lots

The Contractor shall divide the Works into lots for the purpose of –

- a) positive identification and traceability of all work activities, measurements and tests;
- b) monitoring the quality of product;
- c) submission of work to the Administrator under cover of a conformance report;
- d) rejection of work;
- e) application of concession provisions for below standard work; and
- f) application of bonus provisions for above standard work.

Lots shall be chosen by the Contractor taking into account any restrictions included in the Contract.

7.2 Lot Registration

The Contractor shall define a system of lot registration which is practical for the Works and which shall include –

- a) a lot number;
- b) a description of the lot;
- c) the location, including, where necessary three dimensional surveyed position of the lot;
- d) a method which ensures traceability of all test results relevant to the lot;

- e) the means for recording and/or cross referencing records of compliance or nonconformance related to the lot; and
- f) a suitable method of identification for lots which replace nonconforming lots.

The Contractor's system of lot numbering shall be logical, shall suit the specific application and shall be consistent with any specified computerised system. Bridgeworks and similar activities may be identified by plain English titles as used on the Drawings (Pier 1, Span 2, etc).

Each lot shall be recorded in the lot registration system.

Reworked or subdivided lots shall be renumbered and shall be cross referenced to the original lot number.

7.3 Lot Identification

The physical bounds of each lot and its lot number shall be clearly identified by a system of lot identification. All work and/or activities shall be able to be readily identified with the relevant lot.

Work on a lot shall not commence until the lot identification has been established and is understood by all relevant staff.

7.4 Lot Notification and Status

The Contractor shall submit to the Administrator early each working day a list of all lots on which work commenced on the preceding working day, including sufficient information of the relevant lot numbers and lot identification system to ensure timely assessment of completed works for compliance with the requirements of the Contract.

The Contractor shall also notify the Administrator of all lots which were physically completed on the preceding working day.

7.5 Traceability

The lot identification system, site records and sample numbering system shall allow test results to be positively identified with the lot they represent.

8 INSPECTION AND TESTING

8.1 General

Compliance assessment shall apply only within a lot which remains homogeneous.

Where a lot is not homogeneous, it may be divided into separate sublots. Inspection and testing of each subplot shall be undertaken in accordance with the requirements for a separate lot.

8.2 List of Items to be Included in Inspection and Test Plan

Inspection and test procedures shall be included in an Inspection and Test Plan and shall include –

- a) the work process and associated inspection and test points;
- b) the allocation of responsibilities for carrying out the inspections and testing;
- c) the required frequency of the inspections and testing;
- d) the methods to be used for measurements and tests;
- e) the criteria for acceptance;
- f) measurements or tests which involve use of calibrated equipment; and
- g) all witness and hold points.

8.3 Hold Points, Witness Points and Milestones

8.3.1 General

Where a hold point, witness point or milestone applies in a Technical Standard, the text is highlighted at the appropriate point and a summary of all such points is included in the Quality Clause of the relevant Technical Standard.

A Hold Point is indicated in the text as **Hold Point**. A Witness Point is identified in the text as **Witness Point**. A Milestone is identified in the text as **Milestone**.

8.3.2 Hold Point

Hold point means an identified point in a process beyond which the Contractor shall not proceed without written authorisation from the Administrator authorising release of the hold point.

Hold points shall apply as follows –

- a) as specified in the Contract or as otherwise nominated by the Administrator;
- b) on issue of a nonconformance report; or
- c) on issue of a corrective action request by the Administrator.

To obtain the Administrator's authorisation to proceed past a specified hold point, the Contractor shall provide evidence to the Administrator that all applicable work has been completed and tested and inspected by the Contractor in accordance with the Contract. Following provision of all specified information, the Contractor shall allow at least one working day for a response from the Administrator.

To obtain the Administrator's authorisation to proceed past a hold point associated with a nonconformance or corrective action request, the Contractor shall demonstrate amendments to its Quality System to prevent recurrence of the nonconformance and propose disposition of the nonconforming product, where applicable.

Hold points specified in the Contract are those required by the Principal. The Contractor may designate additional hold points in its Quality System and nominate a person responsible for authorisation of continuation past those points.

8.3.3 Witness Point

Witness point means an identified point in a process where the Contractor is required to give the Administrator prior notice with the option to observe an activity.

Unless specified otherwise, the Contractor shall give the Administrator notice of at least one working day of an approaching witness point but may proceed with the activity when the period of notice has expired whether or not the Administrator elects to witness the activity.

8.3.4 Milestone

Milestone means a point in time within a project which marks the start or completion of an activity.

Milestones nominated in the Technical Standards shall be shown on the Contractor's construction program prepared in accordance with the Supplementary Conditions of Contract.

8.4 Compliance Inspection and Testing

Compliance inspections and tests shall be carried out by the Contractor to ensure compliance with the Contract requirements and shall include at least all inspections and tests which are specified in the Contract.

All compliance testing shall be carried out by laboratories registered with NATA and certified for the appropriate tests.

All compliance assessment, inspections and tests shall be based on lots. Compliance testing shall be performed on a lot at the time when the lot has been processed in accordance with the Contractor's construction procedure to comply with the requirements of the Contract.

Assessment of compliance shall be completed by a responsible person at least one removed from the person performing the work.

The Contractor shall advise the Administrator of the location of each compliance test, as well as the lot number, prior to the commencement of testing of the lot. Once compliance testing of the lot has commenced, the compliance test procedures shall be completed and a result reported even if a failure occurs.

If the results indicate nonconformance, no further testing shall be permitted until a nonconformance report has been submitted and corrective action has been approved by the Administrator.

The Contractor shall provide the Administrator with preliminary results of all compliance tests carried out on a lot within 24 hours of tests being completed. Corresponding NATA certified results shall be submitted with the conformance report.

8.5 Frequency of Testing

The frequency of testing for compliance shall not be less than the minimum requirements nominated in the Contract. Minimum testing frequencies and minimum number of tests are stated in the relevant Technical Standards. Where a minimum testing frequency or minimum number of tests is not given, it shall be nominated by the Contractor and submitted to the Administrator at least 14 days prior to the commencement of testing.

Specified testing frequencies represent a minimum testing requirement. The Contractor remains responsible for performing sufficient tests and inspections to ensure that a lot complies with all requirements of the Contract, including testing during the performance of the work to ensure that processes remain in control.

8.6 Level of Compliance Testing

Testing for compliance shall be carried out at the Normal Testing Level stated in the relevant Technical Standard subject to the requirements of this clause.

The Contractor may adopt any Reduced Testing Level stated in the relevant Technical Standard after no nonconformances have occurred in four consecutive lots and it has been demonstrated that the Contractor's processes are under control and consistent.

Where a Contractor is operating at the Reduced Testing Level and a nonconformance occurs for any requirement for a lot, the Contractor shall immediately revert to the Normal Testing Level for all standards and requirements.

For an off-site continuing process (e.g. pavement material production) approval may be given by the Administrator to move to a Reduced Testing Level based on testing undertaken outside the Contract in accordance with the supplier's Quality System.

8.7 Sampling

Selection of sampling and test locations shall comply with Standard Test Method Q050 Selection of Sampling and Test Locations which requires Random Stratified Sampling procedures unless an alternative procedure is specified.

8.8 Reinstatement

The Contractor shall be responsible for and reinstate all core holes, test holes, excavations and any other disturbance resulting from control and/or compliance testing. The reinstatement shall be to a standard which is at least equal to the specified requirements for the particular work.

9 AUDITING

9.1 General

The Administrator and/or Principal may conduct system and performance audits at any stage.

The Contractor shall supply information, documentation, access and assistance necessary for the completion of audits. The results of any audits conducted by the Principal separately from the Contract shall be made available to the Administrator.

9.2 Audit Testing

Audit testing of completed lots may take one or both of the following forms –

- a) Tests carried out by the Administrator and paid for by the Principal; or
- b) Tests ordered by the Administrator and carried out by the Contractor. Where the result of testing indicates compliance, the testing will be paid for by the Principal; otherwise the cost shall be borne by the Contractor.

The Administrator may inspect any process or procedure at any time to gain assurance that the Contractor's system, including subcontractor systems, is in compliance with the Quality System and the Contract. Visual inspections may reduce the need for audit testing.

Excavations caused by audit testing carried out in accordance with this Clause shall be repaired at the Principal's cost if the test result indicates compliance. Otherwise the Contractor shall repair such excavations at its own expense.

10 CONFORMANCE AND NONCONFORMANCE

10.1 Conformance

10.1.1 Conformance Reports

A Conformance Report shall be prepared for each lot and shall be accompanied by the following –

- a) inspection and test records;
- b) analysis of the results to demonstrate compliance with the relevant Technical Standard;
- c) an RPEQ certified 'Issue for construction' drawings where there has been an engineering variation during the construction process; and
- d) as-constructed surveys.

Where the 'Issue for construction' drawings are not required to be amended during the construction process, the administrator shall sign a statement stating that 'the Works were constructed within the specified tolerance and as per the drawings issued for construction'. Where revisions have occurred to the engineering design it should reflect on the as-constructed drawings and shall be certified by the relevant RPEQ engineer/s.

10.1.2 Indicative Conformance

Where a lot is subject to any of the following requirements –

- a) Surface evenness (Road Roughness);
- b) Moisture content (Degree of Saturation);
- c) Moisture content (General Earthworks); and
- d) Testing of concrete on the basis of strength;

The Administrator may approve the use of Indicative Conformance procedures for testing and/or analysis. An Indicative Conformance report for the construction lot may be submitted before the above listed testing and/or analysis is carried out.

The purpose of Indicative Conformance is to allow work to progress prior to the minimum time-frames required for testing and/or analysis to demonstrate conformance.

Where the Contractor is seeking Indicative Conformance, a separate Indicative Conformance report shall be prepared for each lot. Each report shall contain –

- a) A statement acknowledging that test results are not yet available for confirmation of conformance; and
- b) A statement accepting risk of rework upon conformance reporting.

The conformance report shall be processed as soon as possible after the test results become available.

Notwithstanding Indicative Conformance being achieved, the lot shall still be subject to rework should it subsequently fail to comply with the specified requirements.

However, the conforming construction lots shall still be subject to rework should the special lots subsequently fail to comply with the specified requirements.

10.2 Nonconformance

For every nonconformance which occurs, the Contractor shall promptly initiate the nonconformance and corrective action procedures defined in the Contractor's Quality System.

The Contractor shall notify the Administrator of each nonconformance within one working day of its detection where –

- a) there is potential for progress of the work to be seriously affected;
- b) the proposed action to correct the nonconformance will result in work not complying with the requirements of the Contract;
- c) the Contractor has failed to comply with the time requirements of the Contract;
- d) the nonconformance may cause a health and safety hazard;

- e) the nonconformance has resulted from a deficiency in the Drawings or Technical Standard;
- f) client supplied product is involved;
- g) the Administrator has directed that specific types of nonconformances be notified;
- h) material or serious environmental harm has occurred;
- i) items of cultural heritage significance are discovered; or
- j) contaminated land or contaminated materials delivered to the Site are identified.

Each such notification by the Contractor shall include details of the action proposed for correction of the nonconformance or the arrangements made for its disposition and the amendments to its quality system to mitigate recurrence of the nonconformance.

The Contractor shall not proceed to cover up or otherwise incorporate the nonconforming work or materials before the Administrator has approved of the proposed action in writing.

If the Administrator observes a nonconformance and the Contractor, when informed of such, does not take appropriate action, the Administrator will issue a corrective action request. Within one working day of receipt of the corrective action request, the Contractor shall issue a nonconformance report.

Where the proposed action to correct the nonconformance will result in work not complying with the requirements of the Contract, the identification of a nonconformance and the subsequent issue of a nonconformance report and/or corrective action request shall constitute a hold point in accordance with Clause 8.3.2.

Throughout the Technical Standards, requirements in the event of a nonconformance which may occur are identified in the text as **Nonconformance**. Areas where the Administrator may have cause to raise a corrective action request are identified as **Corrective Action Request**.

11 QUALITY RECORDS

11.1 General

The Contractor shall, from the commencement of the Contract until the Date of Practical Completion, establish, file and maintain at its Site office, or other location approved by the Administrator, for inspection by the Administrator and the Principal up-to-date records which demonstrate implementation of the Contractor's Quality System including the Contract Plan documents.

Prior to the issue of the Final Certificate, the Contractor shall hand over to the Administrator the following records, or certified copies thereof–

- a) the lot register;
- b) test results, analyses, reports, measurements and observations as defined in the contract or as nominated by the Administrator;
- c) all conformance and non-conformance reports; and
- d) as-constructed drawings and surveys for Work under the Contract.

As-constructed drawings shall be provided to the Administrator four weeks after Practical Completion in hard copy and electronic formats. The drawings shall be free of red clouds and all red line work and the text shall be modified to black.

Quality Records retained by the Contractor pursuant to the requirements of the Contractor's Quality System and the Contract shall be available for evaluation by the Administrator up to and including the time of issue of the Final Certificate.

11.2 Retention of Records

The Contractor shall retain all records from the Contract in accordance with the Contractor's statutory requirements and company policy.

If not otherwise required, records shall be kept for at least one year after the date of the Final Certificate.