



# **TRANSIT NEW ZEALAND QUALITY STANDARD TQS2: 2005**

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**Quality System for  
Road Construction, Road Maintenance and  
Structures Physical Works Contracts having a  
Normal QA Level**

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**Second Edition - June 2005**

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Transit New Zealand Quality Standard TQS2: 2005, Second Edition

## FOREWORD

Through policy making and distribution of funds, Transit New Zealand (Transit) aims to achieve a safe and efficient state highway network for the country's road users. This is important business — lives and livelihoods are at stake. To do its job well, Transit believes a commitment to quality is the key ingredient in the way its business is done.

While Transit as an organisation can improve the way it administers the country's state highways, building and maintaining them is a team effort — a partnership of funding and suppliers. Unless the quality principles Transit applies to funding can be carried through to the actual work on the road, real benefits are unlikely to result. This is why quality assurance needs to be a part of any work carried out on state highways.

Any supplier wishing to tender for physical works on state highways must have implemented an acceptable quality assurance system to be eligible under Transit's Competitive Pricing Procedures. This requirement came into effect from 1<sup>st</sup> July 96.

This revised standard provides a framework for a quality management system, and was originally developed for Transit by the combined working party representing road construction, road maintenance and structures. It has subsequently been reviewed and reissued as TQS2: 2005. This review was undertaken by Transit, with input from the Roding Industry and Certification Agencies involved in TQS Auditing & Certification.

The purpose of this review was two-fold. Firstly, to bring the standard up to date and align it with current legislation, TNZ standards and the requirements contained in Transit proforma contract specifications. Secondly, to reflect that, although the term 'Contract Quality Plan' is still the most commonly used in the industry, other contract management requirements (e.g. Health & Safety and Environmental Management) have progressively contractually required to be incorporated. The CQP has become, in effect, a 'Contract Management Plan', ensuring that all management issues relevant to the contract are effectively defined, managed, communicated and assist with ensuring that all key outcomes are achieved.

A line against the respective paragraph highlights the changes from the previous edition. These changes will apply to contacts let subsequent to the issue of this standard, unless otherwise required by the Client and negotiated with the Supplier for pre-existing contracts. Suppliers are advised to make themselves aware of the changes that come into effect with this revision, and progressively implement the necessary changes to their quality systems.

We would welcome feedback on this standard. Any submissions should be directed to Mr Lynn Sleath c/- Network Operations Division, National Office, Transit New Zealand.



Rick van Barneveld  
Chief Executive

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## INTRODUCTION

Transit New Zealand (Transit) requires that quality assurance is mandatory for all physical works on state highways. The quality system adopted by the contractor to meet this requirement must be based on (but in some cases may not fully comply with) NZS ISO 9000. Transit has adopted a two level concept that relates the quality assurance requirement applying to a contract to the quality assurance level that is assigned to that contract. The following table shows how this works:

Contract QA Level	Minimum QA Requirement
High	Compliance with Standard TQS1 together with a Contract Quality Plan
Normal	Compliance with Standard TQS2 together with a Contract Quality Plan

In addition to the above, Land Transport New Zealand (Land Transport NZ) requires tendering authorities, when undertaking roading physical works that qualify for financial assistance, to engage contractors who comply with its own quality assurance requirements. These may be found in Land Transport NZ's *Programme and Funding Manual PFM1 Second Edition November 2004*.

The Standards TQS1 and TQS2 are explained briefly as follows:

### Transit New Zealand Quality Standard TQS1

This standard requires the contractor to maintain a quality system that incorporates most of the elements of NZS ISO 9000 but with less comprehensive and stringent requirements. It requires third party certification by an approved certification body. This is explained in more detail in section 3 of these notes.

The Standard TQS1 also requires a Contract Quality Plan to be prepared for each contract undertaken.

### Transit New Zealand Quality Standard TQS2

This standard requires the contractor to develop and work to a contract quality plan for each contract. The contractor is also required to operate a simple quality system during the contract period, which provides the supporting structure for the contract quality plan.

There is no certification requirement for compliance with Standard TQS2. However, the Engineer will carry out surveillance during the contract, which may include checks of the contractor's system and records.

## APPLICATION OF STANDARD TQS2

When a state highway physical works contract is issued for tender, it will be assessed to determine the quality assurance level. Transit will select the level for the contract using a formula designed to determine the relative complexity of the contract. The criteria used in this formula include:

- technical requirements of the work;
- contract value and duration;
- level of assessed level of risk of aspects of the project;
- project management requirements of the work;
- public impact and level of stakeholder liaison required;
- safety aspects, and traffic control of the work; and
- environmental management requirements.

For contracts assessed as having a normal quality assurance level, compliance with Standard TQS2 is the minimum requirement. The Combined Working Party on Road Construction, Road Maintenance and Structures originally developed this standard for Transit. It has been designed specifically for use on state highway physical works contracts involving road construction, road maintenance, and structures activities. The terms, and their definitions, used in this standard are consistent with those of NZS ISO 8402:1994 and NZS 3910:1998.

Contractors operating quality assurance systems to NZS ISO 9000 will meet the quality assurance requirements provided they prepare a Contract Quality Plan that meets the requirements of Element 2 Clause 4 of this Standard. Any specific requirements contained or referenced in the specifications contained within the contract must also be addressed. These requirements need to be considered during the preparation of the Tender, to assess capability to meet these requirements, and again prior to the commencement of any work

## FORMAT OF STANDARD

This section of the standard describes the elements that must be included in a quality system if it is to comply with the requirements of Transit's Quality Standard TQS2: 2005. They are based on the elements of NZS ISO 9000 but modified to better suit, and be more specific to, the needs of contractors operating in the roading industry. The extent to which each element is applicable to the individual contractor will vary depending on the nature and scale of the work being undertaken and the size and complexity of the contractor's business.

Each of the system elements or sub-elements includes the following two parts:

### **Prescriptive**

Defines the mandatory minimum requirements that will be audited against by the third-party auditor and/or Certification Agency referred to in the Notes.

*The prescription is presented in italic type and contained within a lined border as per this paragraph.*

The words 'must' or 'shall' are further indicative of a mandatory requirement. Where the words 'should' or 'may' are used, the implementation requirement should be evaluated and implemented, where appropriate.

### **Commentary**

Further text in each element of the standard explains the meaning of the element in relation to management principles. These are designed to assist the reader to understand its relevance and application to the business.

This must be assessed by the contractor when establishing the system and prior to the commencement of any project work to ensure that it matches the specific needs and applications of the company's operation and the requirements of the contract. However no elements should be ignored or omitted, as all are considered relevant to the activities of a roading contractor if quality requirements and outcomes are to be consistently achieved.

## 1.0 QUALITY SYSTEM ELEMENTS

### Element 1 MANAGEMENT RESPONSIBILITY

#### **1.1 Quality Policy**

*The contractor shall define and document its policy and objectives for, and commitment to, quality and shall ensure that these are understood, implemented and maintained by all personnel employed on the contract.*

This clause requires you to document and communicate your policy and commitment in writing. It is best written and signed by the 'boss' to clearly demonstrate commitment. All employees must be made aware of the policy, its meaning and importance and their role in implementing it. Guidelines to preparing a policy statement are contained in Appendix A.

#### **1.2 Organisation**

*The responsibility, authority and interrelationship of the key personnel involved in achieving management objectives shall be clearly defined in the Contract Quality Plan.*

*The Contract Plan must also, where applicable, define or otherwise reference a document which clearly states the responsibilities for the management and implementation of Health & Safety and Environmental Management programmes, in accordance with relevant legislative requirements (as prescribed in Element 7).*

Successful management teams rely on good communication and clear definition of responsibility and authority. As the business grows so does the importance of this.

The organisation chart that may be used in the CQP (refer example Appendix B) to illustrate the management and reporting structure for the contract need only show the key positions or functions relating to the contract. In many companies, particularly the smaller ones, an individual can hold more than one position or be responsible for more than one function.

The contract documents may require that one person be nominated as a 'quality representative' or 'quality manager'. Where this position is required to be assigned, it is essential that the quality representative has a sound knowledge of both the company's business and the construction industry generally, and has sufficient seniority to successfully implement and maintain the system. It is also strongly recommended that they have had training in internal audit procedures. In their role as Quality Representative, this person should report directly to the 'boss'.

The Quality Representative can hold other positions but it is strongly recommended (where practicable) that they do not have direct responsibility for the day to day management of construction activity. It is recognised however that this may not always be practicable for smaller firms, however where practicable the functions should be clearly separated, at least in respect to the function of the 'Contract Manager'.



## Element 2 THE CONTRACT QUALITY SYSTEM

*The Contractor shall provide a quality system for the contract that shall contain as a minimum the following components:*

1. **Quality Policy** — *as described in Element 1.1.*
2. **Work Instructions (Methodologies)** — *These are required in written form for all activities where their absence could create a risk to the quality or safety of the work being undertaken. They must describe how individual work activities are to be planned, controlled and inspected for compliance with the specification requirements. Refer Element 4.*
3. **Inspection Checklists** — *list the features of the work that require inspection and/or test to ensure compliance with the specification requirements. Shall include quantifiable acceptance criteria based on specification requirements wherever possible and provision for recording inspection and test results. Refer Element 4.*
4. **Contract Quality Plans** — *are required within the time frame and to the extent specified in the contract. Where specified as a deliverable in the contract, they shall be subject to review and acceptance by the Client or Client's representative. They shall describe how the contractor will:*
  - *Identify and address the contract management, administration and legislative requirements specific to the contract;*
  - *plan the work to satisfy those requirements;*
  - *control (manage) the work, including those undertaken by sub-contractors, to comply with requirements;*
  - *manage communications with;*
  - *inspect/test the materials and work to ensure compliance with the quality requirements;*
  - *address communication and reporting requirements;*
  - *manage, review and update management plans to ensure they remain relevant to the requirements of the contract and work being undertaken; and*
  - *record contract activities and maintain records as evidence of compliance.*

*These are required within the timeframe and to the extent specified in the contract documents.*

**WORK INSTRUCTIONS (METHODOLOGIES)** These are standard procedures that define how key management, administration or work tasks are to be undertaken; who is responsible; and where and when they are to be done.

To be effective these need to be written in precise and easily understandable language. Work Instructions (alternatively called methodologies) relate to more specific and detailed work activities or tasks, e.g. survey and set out; placement of unbound granular pavement courses; stormwater pipework; concrete construction etc. An example is included in Appendix C.

**INSPECTION CHECKLISTS** are useful for construction work in that they provide a breakdown of the checks that should be performed and then when completed serve as a record. They should be developed for each key work activity and should contain the key quality requirements as reminders and prompt a check to verify that it complies with the requirements, and records the fact that it either does or does not comply. An example of a typical Inspection Checklist is included in Appendix C.

A **CONTRACT QUALITY PLAN** is a document specific to a contract that describes how the contractor intends to manage and administer the contract / project in compliance with the requirements of the contract. Sometimes called a Contract Management Plan in Transit contract documents, it identifies how quality, safety, environmental and general management requirements are to be addressed by a Contractor and any major Sub-Contractors.

The Contract Quality Plan is therefore an important working document on construction sites. An example of a simple proforma Contract Quality Plan is provided in Appendix B.

It may contain, or otherwise reference, the Procedures, Work Instructions, Inspection Checklists and Methodologies necessary to effectively manage the contract. This may be achieved by either:

- adopting standard company work practices; or
- adopting or adapting documents developed for the same or similar activity on previous jobs; or
- by preparing new documents for those activities that are new or substantially different from anything undertaken previously.

These will provide detail of how all the identified contract management requirements will be planned, controlled (managed), inspected for compliance, and the results recorded.

As noted in the requirements, policies and procedures for the management of sub-contractors must be stipulated in the Contract Quality Plan. This is especially important where Sub-Contractors perform a large component of the works (e.g. Earthworks), Sub-Contractors may elect to operate within the framework of the Main Contractors CQP, or choose to operate within their own CQP. However this agreement, along with the procedures for monitoring that will be undertaken, must be stipulated in the Main Contractor's plan. A Sub-Contractor's CQP / management plan may be included in the Main Contractor's Plan or submitted separately to the Principal's representative (i.e. generally the Consultant) for review and acceptance.

The following is a guideline of the information that should be included, or otherwise referenced, within the **CONTRACT QUALITY PLAN**:

- provision for document control, including review and approval of the CQP
- a statement of policy in respect to the timing and frequency of internal reviews and/or audits of the CQP during the contract
- responsibilities and authority of personnel involved in managing the contract and/or implementation of the CQP
- a list of contract personnel and their contact details
- an outline or schedule of meeting, reporting & deliverable requirements (per contract requirements)
- a list of subcontractors, indicating whether sub-contractors operate under this or their own Contract Quality Plans
- procedures for ensuring monitoring of sub-contractor compliance to the CQP
- procedures regarding the management of the construction programme, and (if appropriate) include a copy of the current programme
- a schedule of inspection and/or testing of materials and/or completed works, clearly indicating 'hold' or 'witness' points
- included, or otherwise reference made to, documented Work Instructions and Checklists relating to key construction activities
- included, or otherwise reference made to, Non-Conformance & Corrective Action Procedures
- included or otherwise referenced, provisions for Health & Safety, Traffic Management and Environmental Management, including (where required by the contract and/or Supplier's management policies) site-specific management plans
- schedule of the contractual quality records to be kept

It should be noted that the above, and the proforma contained in Appendix B, are only intended to be a guideline. In addition to the prescriptive requirements in this standard, any contractual requirements, which are generally contained in the operational requirements section of TNZ Request For Tender (RFT) (or equivalent) documents, must also be addressed. These may include requirements (for example) such as a Risk Management Plan and a Stakeholder Consultation & Liaison Strategy.

## Element 3      PURCHASING AND SUBCONTRACTING

### **3.1    *Purchasing Instructions***

*Responsibility for the purchasing of materials and services that relate to achieving quality requirements shall be formally authorised in each Contract Quality Plan.*

It is essential that purchasing instructions are precise otherwise there is a significant risk of not getting what is needed. However, it is not necessary in every case to fully describe the requirements, e.g. when there is a record that the supplier has previously been supplied full details or a copy of the specification and that the detail is current, it is sufficient to order them by reference to those previously supplied details.

### **3.2    *Incoming Materials***

*All materials purchased by the contractor or alternatively supplied by the Principal shall be checked for compliance with the specified requirements prior to incorporation in the works (preferably on receipt) and verification shall be noted on the relevant “Inspection Checklist”. Refer Element 4.3.*

The ‘verification’ referred to in the prescription can quite simply be recorded when completing the relevant “Inspection Checklist” (refer to the example given in Appendix C). Any supporting documentation such as delivery dockets that provide evidence of the type, grade, and class etc of material used should be attached to the “Inspection Checklist”.

### 3.3 Subcontractor Quality Control

*The contractor shall be responsible for the quality of materials supplied and work performed by its subcontractors, and shall plan for appropriate quality assurance procedures in the Contract Quality Plan to control and monitor sub-contractor compliance with the appropriate provisions of the contract and/or specific requirements in the Contract Quality Plan. This plan shall be subject to review and acceptance by the Engineer to Contract. Where the sub-contractor elects to operate within the provisions of their own Contract Quality Plan, this shall be clearly indicated in the main CQP, internal procedures shall be established for evaluation of the plan, and a copy of this CQP shall also be provided to the Engineer for review and acceptance.*

Where subcontractors are engaged to undertake a significant amount of the work (e.g. bulk earthworks) they are likely to want to develop and operate within the provisions of their own Contract Quality Plan. Whilst this is completely acceptable, it is important that the Sub-Contractor has an appropriate plan in place. This does not relinquish the responsibility of the main contractor, and they must ensure that the sub-contractor is aware of specific technical and management requirements in the contract, and that these are incorporated in their CQP. The main contractor must also be confident that the sub-contractor has appropriate controls in place for the management of any specific construction risks, and implement appropriate procedures for monitoring of sub-contractor activity.

### **3.4 Product Identification and Traceability**

*Procedures for identifying and providing traceability of materials shall be established when, and to the extent, detailed in specific contracts and/or referenced standards. Where there is a specified design-life established in construction and/or maintenance contracts, provisions shall be in place to ensure that appropriate records are retained for the full design life of the work.*

In relation to construction materials, this can usually be achieved quite simply by, for example:

- having job number or name identification on purchase orders so as to be able to identify and trace the material source;
- having material, which has been tested and approved prior to delivery to the site, clearly identified to ensure that it is supplied to the site, e.g. basecourse, sealing chip etc;
- retaining delivery dockets and matching them with their related “Inspection Checklist”, e.g. concrete dockets, pipe bedding etc.

This should follow through into the completed works, where a design life is specified e.g. digout repairs on pavement / design & build of structures. There must be an appropriate level of traceability in respect to the incorporation of materials into the completed construction. This is especially important for structural materials (e.g. culverts, reinforcing steel etc). The level of traceability should be clearly defined in the quality system and (where appropriate) any specific provisions for traceability should be discussed and agreed with the Principal and incorporated into the Contract Quality Plan.

## Element 4      **CONTROL AND INSPECTION OF THE WORK**

### **4.1    General**

*The contractor shall undertake the work in a planned and controlled manner to ensure that the quality requirements are achieved. The contractor must be able to demonstrate that the following has been undertaken on all contracts:*

- (a)      **Identify** the Principal's quality requirements;
- (b)      **Plan** how these will be achieved;
- (c)      **Control** the work in compliance with the plan;
- (d)      **Inspect** the work and verify that it conforms to the specified requirements; and
- (e)      **Record** the results as documentary evidence.

This element relates to the site work and requires that all the processes involved be properly managed.

### **4.2    Identify and Plan**

*The contractor shall systematically identify the principal specific quality requirements of the contract for each work section or trade. This shall be used as a basis for developing the Contract Quality Plan. These must be developed to the extent necessary to ensure that those performing the work fully understand what is required, and cover all activities or tasks that are critical to achieving the specification and key outcomes defined in the contract. The documented “Work Instructions” and/or “Inspection Checklists” relating to a specific contract must be included or otherwise referenced in the Contract Quality Plan. These shall describe how the activity or task is to be performed; define key responsibilities; indicate the sequence; specify the resources to be used; indicate the inspections and/or checks to be undertaken and identify the records to be kept.*

Each construction contract is unique in that it has technical requirements which may vary in part or full from other contracts; will have a different scope of work from other contracts which is also likely to alter during the course of the contract; will be in a different location and therefore will have different external influences and interfaces from other contracts; will utilise different resources including subcontractors; will have its own programme etc. Consequently each must be planned and managed to suit its unique set of characteristics. For those elements of the contract that are more or less standard, “Work Instructions” or “Methodology” can be adopted or adapted from previous contracts and these can be held in a ‘library’ for this purpose.

The “Work Instruction” (WI) or “Methodology” should follow a standard company format and be ‘user friendly’. Contractors may develop a format that suits their particular needs, but it is recommended that they should contain as a minimum the information outlined in the model in Appendix C.

### **4.3 Inspection and Recording**

*All the key quality requirements identified in 4.2 shall be inspected and/or tested by the contractor to verify compliance, both during construction and on final completion. The method, specification reference, frequency, timing, and responsibilities for inspection and testing shall be specified in the Contract Quality Plan. Compliance should, wherever possible, be measured against quantified acceptance criteria based on the specification requirements. The results shall be documented and retained as part of the quality records.*

*The CQP shall clearly indicate any ‘hold’ or ‘witness points’, where the contract and/or specification requires an inspection and/or approval to proceed from the Quality Representative and/or Engineer at specified points during construction activity (e.g. pre-sealing inspection). Systems shall be established to record the findings of the inspection, any remedial action initiated, and the final approval to proceed with construction.*

*Where there is a contractual requirement to use third party accredited inspecting or testing agencies, details of how the contractor intends to comply will be included in the Contract Quality Plan.*

The documentation requirements associated with Inspection and Recording need not be complex. The two functions can be combined on a single sheet which provides a checklist of the items to be inspected; includes the acceptance criteria; identifies the person or company responsible for doing the inspection; contains space for recording that compliance of the individual items has been verified; and at the bottom of the sheet provides for ‘signing-off’ after a fully complying ‘final inspection’. An example of a typical “Inspection Checklist” form is included in Appendix C.



## Element 5      NON-CONFORMANCE & QUALITY IMPROVEMENT

### 5.1 Control of Non-conforming Work

*The contractor shall have a procedure to ensure that work which does not conform to the specified requirements is either:*

- (a) reworked to meet the specified requirements; or*
- (b) accepted with or without repair by concession from the Principal; or*
- (c) regraded for alternative use; or*
- (d) rejected and replaced.*

*The identification of all non-conforming work shall be recorded on the relevant construction records and/or the relevant "Inspection Checklist".*

*If the non-conformance is significant in that it either:*

- (i) results in the need for formal concession as per b) above; or*
- (ii) results in delay or interference to the work or to other parties; or*
- (iii) indicates that the fault has occurred due to the use of incorrect work practices and/or failure of materials and could have been prevented; or*
- (iv) occurs sufficiently frequently as to indicate a problem in training or the work procedures,*

***Then** more formal documentation is required and a Non-Conformance Report (NCR) shall be raised using the form enclosed in Appendix D or an equivalent. The NCR and/or supporting investigation report must clearly indicate the action to be taken to rectify the fault (i.e. corrective action), the timeframe, and responsibilities, and be authorised by the appropriate management personnel.*

*Any non-conforming work that is subject to follow-on work by other parties shall be clearly denoted as such to alert the other parties to its non-conforming status.*

*Actions proposed to be taken to rectify the non-conforming work must be provided, approved in writing by the contractor's contract manager, and the Principal in cases involving concessions, prior to implementing the rectification work.*

It is inevitable that, even with excellent practices and controls, some degree of defective material or workmanship will occur. When it does it is important that it is properly handled to ensure that whatever is defective is rectified in the appropriate way. A non-conformance should be considered as an 'opportunity for improvement' rather than to apportion blame. By adopting this philosophy, identifying it as a non-conformance provides an opportunity to learn from the mistake and (more importantly) prevent it happening again (see element 5.2).

It needs to be noted that there is a clear differentiation between what should be considered to be a 'routine construction issue' as opposed to being a Non-Conformance, and this needs to be understood by the contract manager and communicated to all site supervisors. A construction issue such as soft sub-soils is often identified (and reasonably expected) during a construction project and does not therefore necessitate the raising of a Non-Conformance Report (NCR), unless procedures for compaction have not been followed. A non-conformance exists, and therefore an NCR should be raised, in all instances where a defect in the completed works occurs post-construction (e.g. pavement failure) or an inspection or quality control check during construction indicates that the required standard prescribed in the Contract Quality and/or Inspection & Test Plan has not been achieved e.g. failure to achieve compaction results, pre-seal inspection.

For this process to be successful it must be handled in a positive and constructive manner without unnecessary recrimination.

## **5.2 Quality Improvement**

*The cause (as opposed to the symptom) of NCR-recorded non-conforming work shall be investigated by the contractor's contract manager and/or quality representative. The findings shall be noted on the NCR and/or any supporting investigation report along with proposals for improving the Quality System (the corrective action) to prevent recurrence of the non-conformance.*

The objective is to reduce if not eliminate the root causes of the inefficiencies and 'foul-ups' which have or can cause non-conforming work, i.e. to find a permanent cure to prevent the problem recurring, not just a 'quick-fix'. This system element provides a formal and disciplined procedure for identifying, investigating, and correcting inefficiencies and shortcomings in the company's work practices. There can be significant benefits to the contractor from the positive application of this quality system element by reducing the incidence of non-conforming work and improving efficiency that as a consequence will reduce costs, including those of rework.

Common causes of non-conforming work that can be addressed in quality improvement actions are:

- lack of training;
- lack of resources;
- poor communication / incomplete instructions;
- inadequately defined work practices;
- inadequate supervision; and
- inadequate planning.

Often these issues can be addressed by implementing changes to your management or administration systems.

This use of the quality system as a tool for improvement can result in real and ongoing improvement in business efficiency, which is one of the fundamental principles and benefits of having a quality management programme in place.

## Element 6     TRAINING

### 6.1 Training

*The contractor shall ensure that employees receive training as necessary to achieve the contract quality, safety and environmental objectives.*

*The contractor shall maintain a documented procedure for checking that prospective employees have sufficient skills and appropriate training and/or licences to perform the intended tasks to the quality standards required.*

Research shows that lack of or inadequate training is one of the principal causes of 'mistakes' (non-conforming work) and inefficiencies. The construction industry relies to a large extent on supervisory staff and a workforce who have had minimal if any formal education or training in the specific aspects of their jobs. Consequently they have to learn 'on-the-job' and responsibility for this rests 'fairly and squarely' with the employer. Training is often best achieved through a programme of short but regular 'on-the-job' exercises or meetings run by the site supervisor or person (preferably from within the company) with expert knowledge of the subject. Active and open participation of all employees in discussing the company's work practices, work programmes and recent 'foul-ups' will usually result in constructive outcomes and ongoing improvement of the quality management systems. Health and Safety issues should be regular topics at such training sessions — refer Element 7.

The employment of 'casual workers' is common in the roading industry and the same pre-recruitment checks should be undertaken.

An induction session for new employees which explains the company's business and management structure; Health and Safety programme; quality system; employees role; and the company's expectations of the new employee, is a very important first step of any training programme — especially for the young employee and for those new to the industry.

## **Element 7      SAFETY AND ENVIRONMENTAL MANAGEMENT**

### **7.1    *Health & Safety***

*The contractor shall operate a formal Health and Safety programme which complies with the statutory requirements of the Health and Safety in Employment Act 1992 and any subsequent revisions and associated Regulations. An outline and reference to these requirements are contained in the TNZ Health & Safety Compliance Notice (Appendix E). To the extent practical and permissible by law, health & safety policies and procedures should be integrated into the contractor's quality system.*

*The Contract Quality Plan shall include or otherwise reference a Health & Safety Plan(s), which shall specifically address issues and the management of risks on a specific project and/or site. The Health & Safety Plan(s) must consider the Health & Safety Compliance Notice and incorporate the following:*

- (a) hazard identification and management;*
- (b) informing and training of staff and sub-contractors (refer element 6);*
- (c) accident recording, reporting and investigation systems; and*
- (d) internal monitoring of the procedures to ensure their compliance and effectiveness of the programme.*

*In the event of a Non-Compliance and/or incident this shall be reported to the Principal and appropriate Non-Conformance / Corrective action procedures shall be implemented (refer element 5).*

## Element 7 SAFETY AND ENVIRONMENTAL MANAGEMENT (CONT.)

### 7.2 Environmental Management

*The contractor shall operate a formal Environmental Management Programme that complies with the statutory requirements of the Resource Management Act 1991 and any subsequent revisions and associated Regulations. An outline and reference to these are contained in the TNZ Environmental Compliance Notice (Appendix F). To the extent practical and permissible by law, it should be integrated into the contractor's quality system.*

*The Contract Quality Plan for each contract shall identify all issues relating to ensuring compliance with the Resource Management Act 1991, including provisions for complying and monitoring of compliance with any specific conditions contained with the project related resource consents.*

Safety & Environmental management are an integral part of construction management and therefore will be most efficiently operated within the framework of one overall system.

A contractor's quality system must be designed in full compliance with Health and Safety in Employment and the Resource Management Act. Activities of specific application to the construction industry that may require resource management consents include –

- management of stockpile material
- management of disposal areas
- controlling the drift of chemical sprays and fertiliser
- prevention of erosion and, where required, reinstate all eroded areas
- reduction of noise and dust nuisance
- prevention of fuel and oil spills including the actions taken if an oil spill occurs
- liaison with affected residents, organisations (e.g. Regional Authorities), property owners etc
- control of silt and stormwater runoff
- controlling the alteration of or taking water from waterways

This is by no means an exhaustive list, and consideration should be given (if otherwise not required contractually) to developing a form Environmental Effects Register, in accordance with TNZ Standard Z/3 or its equivalent.

## 2.0 APPENDICES

- A Quality Policy Statement Guidelines
- B Contract Quality Plan
- C Work Instruction and Inspection Checklist
- D Non-Conformance Report and Corrective Action Report
- E Health & Safety Compliance Notice (contractor to complete)
- F Environmental Management Compliance Notice (contractor to complete)

## Appendix A: QUALITY POLICY STATEMENT GUIDELINES

A Quality Policy Statement is important as a means of conveying and reinforcing to both employees and clients the company's commitment to achieving quality and providing quality assurance. Therefore, it is important that it clearly reflects the company's own objectives, policies and intentions with regard to its own unique business activities and operation — i.e. not just copied from someone else. It should be brief and crisp and written in clear, precise language so that it is easily read, understood and retained. It warrants spending some time to develop and debate amongst the senior people in the company so that it truly reflects their quality philosophy. It is best written and signed by the chief executive/company owner so that it conveys a commitment from the very top.

The policy should contain brief statements on the following issues:

- the company's commitment to quality;
- the company's objective for adopting a formal quality management system, e.g. to improve performance and efficiency; to provide a product or service which meets client's specific quality requirements; maintain or enhance reputation or position in the market; be more cost competitive through improvement in efficiency; offer clients value for money; raise competency and performance of employees etc;
- how the objectives are to be achieved in broad terms, e.g. *development and implementation of a formalised quality system; ongoing staff education and training; documentation of standard company procedures and good work practices, etc;*

It makes a better impression if it is written on a company letterhead and is well laid out and presented, as it will be displayed on office, 'smoko' room and site shed walls and included in presentations to clients.



**Appendix B: CONTRACT QUALITY PLAN**

An example of a simple pro forma CQP is attached which sets out the minimum requirements of the Transit Quality Standard TQS2. It is an example only and contractors may develop their own format to suit their specific needs.

**Nº 1 CONSTRUCTION COMPANY**  
**CONTRACT QUALITY PLAN (CQP1)**  
*for*

(contract name)

---

(contract number)

---

Copy No:..... of.....

Version: .....

Date of Issue: .....

**CONTENTS:**

- 1.0 Contract Personnel
- 2.0 CQP Introduction
- 3.0 Contract Outline
- 4.0 Contract Management
- 5.0 Suppliers & Sub-Contractors
- 6.0 Meetings & Reporting
- 7.0 Quality Control & Inspection
- 8.0 Site Safety & Environmental
- 9.0 Non-Conformance
- 10.0 Records
- 11.0 Approvals

**ATTACHMENTS** <attach these – as applicable>

- 1 Construction Programme <contractor to develop / attach>
- 2 Quality Control (Inspection & Test) Plan <see proforma- attached>
- 3 Site Safety Plan <contractor to develop / attach>
- 4 Traffic Management Plan(s) <contractor to develop / attach>
- 5 Environmental Management Plan / Effects Register <refer TNZ Standard Z/3 or equivalent>
- 6 Sub-Contractor Quality /Safety Plans <as applicable / specify name(s) of subcontractor(s)>
- 7 Non-Conformance Report – Example <see proforma- attached>

## 1.0 Contract Personnel

1.1 Contractor Contract Manager: .....  
 Address: .....  
 .....  
 Contact Ph (Mobile): .....  
 Telephone: ..... Fax: .....  
 Contact Ph (A/H): .....

1.2 Client Name:.....  
Address: .....  
.....  
Project Manager:.....  
Contact Ph (Mobile): .....  
Telephone: ..... Fax: .....

1.3 Consultant Name:.....  
Address: .....  
.....  
Telephone: ..... Fax: .....  
Engineer:.....  
Contact Ph (Mobile): .....  
Engineers Rep:.....  
Contact Ph (Mobile): .....  
Contact Ph (A/H):.....

## 2.0 CQP Introduction

2.1 This CQP describes the company's quality system in relation to this contract and has been prepared in compliance with the Contract Request for Tender (RFT) Specification and Transit's Quality Standard TQS2.

2.2 This CQP has a controlled distribution as follows:

Copy No	Issued To	Date	Version No
1	<Contract Manager>		
2	<Site Supervisor>		
3	<All Sub-Contractors>		
4	<Other>		
5	<Engineer (for review and acceptance)>		

This CQP will be subject to periodic review and updating during the course of the contract. All holders of controlled copies listed above will be issued with updates to this document as/when they occur.

### Confidentiality

Information and documentation relating to the Contractor's quality system and work practices and procedures is commercially sensitive and confidential between the Contractor and the Principal. It is only to be used in relation to this contract and is not to be divulged to third parties without the express written approval of (title) of N<sup>o</sup> 1 Construction Company.

### 3.0 Contract Outline

#### 3.1 Construction Period:

Start Date:.....

Est. Completion Date: .....

#### 3.2 Brief Description of Work:

.....  
 .....  
 .....  
 .....

#### 3.3 Programming of Works:

A preliminary construction programme has been prepared – Refer Attachment 1 in accordance with RFT requirements. A copy of the current programme will be submitted to the Engineer with the Monthly Claim & Report. Where significant changes occur during the course of the construction period, the programme will be reviewed and updated.

#### 3.4 List of Construction Drawings:

<indicate name and revision No.> .....  
 .....  
 .....  
 .....  
 .....  
 .....  
 .....

## 4.0 Contract Management

### 4.1 Personnel

The following personnel have been assigned to this contract:

Name	Title

<or insert your organisation chart here>

### 4.2 Responsibilities

*Key responsibilities and authorities are as follows:*

- (a) Overall responsibility for the management of the contract and principal contact with the Principal's or the Engineer's representative:

.....  
(Title)

- (b) Authority to address, resolve and commit the contractor on contractual and commercial matters:

.....  
(Title)

- (c) Authorised to address and resolve issues of dispute relating to compliance with the quality requirements of the contract and this quality plan and rectification of non-conforming work:

.....  
(Title)

- (d) Responsible for the day to day on site supervision, control and inspection of the works and communicate on such matters with the Principal's or Engineer's site representative, and authorised to receive on behalf of the contractor any instructions from the Principal or Engineer (refer NZS 3910:1998 Clause 5.2.1):

.....  
(Title)

## 4.2 Responsibilities (Cont.)

- (e) Responsible for on-site Traffic Control activities:

.....  
(Title)

- (f) Responsible for compliance with the requirements of the Health and Safety in Employment Act:

.....  
(Title)

- (g) Responsible for compliance with the requirements of the Resource Management Act (Environmental Management):

.....  
(Title)

- (h) Responsible for:

managing the contractor's overall quality system:

.....  
(Title)

preparation and amendment of this quality plan:

.....  
(Title)

approval of this quality plan:

.....  
(Title)

## 5.0 Suppliers & Subcontractors

### 5.1 Suppliers

All suppliers of goods and materials to be incorporated in the works are to be approved prior to use. The following is the list of main suppliers of materials to this contract:

Name of Supplier	Item / Material(s)
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

Materials are to be checked upon receipt, and where applicable (refer Attachment 2 – Quality Control Plan) samples will be taken / test results will be obtained.

### 5.2 Sub-Contractors

The following work activities are to be undertaken by subcontractors (subject to the Principal's approval):

Activity	Name of Subcontractor
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

Sub-Contractors will be selected in accordance with company policies and procedures, and will be provided with copies of the relevant specification requirements and/or drawings prior to commencement of the work. Sub-Contractors will be subject to monitoring.

All <except the following – if applicable> Sub-Contractors will be issued with / and are required to operate in accordance with this Contract Quality Plan, and relevant requirements in the contract specification.



## 5.2 Sub-Contractors (Cont.)

The following Sub-Contractors have elected to operate in accordance with their own CQP and/or Site Safety Plan: -

Sub-Contractor	Plan Description
.....	.....
.....	.....
.....	.....

This has been reviewed and accepted as complying with the provisions of this contract. A copy of each of the above plans is attached / have been separately submitted <delete as applicable> for review and acceptance by the Engineer – refer Section 4.0 <note – delete if not applicable>

## 6.0 Meetings & Reporting

The following is a summary of the requirements of the contract (RFT) specification: -

### 6.1 Formal Meetings

The following meetings and/or joint inspections are to occur during the course of the contract <include contract meetings / liaison meetings / joint inspections / client inspections etc>: -

Activity	Timing / Frequency
.....	.....
.....	.....
.....	.....
.....	.....

### 6.2 Financial Reports

The claim is to be submitted..... Updated financial projections are required to be submitted..... and updated.....

### 6.3 Management Reports

A formal Management Report is required to be submitted..... In accordance with the contract specification and/or through agreement with the Engineer, the Management Report will include the following information: -

.....

.....

.....

.....

.....

.....

.....

## 7.0 Quality Control and Inspection

- 7.1 Work Instructions (WI) and/or Inspection Checklists (IC) will be used to control the work and verify compliance with the quality requirements. The following will be adopted for this contract or will be prepared in advance and be made available on site: -

WI / IC N°	Title
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

These will be made available for the Engineers review, if requested.

- 7.2 Documents associated with the work will be subject to issue and amendment controls in accordance with the Standard Procedures in the Quality Manual (i.e SP 5).
- 7.3 A Quality Control Plan is contained as Attachment 2. This indicates the frequency, timing, type of both inspection and/or tests required to performed on the materials and at certain stages of construction. This plan will be signed off as QC activities are completed, and once completed will then serve as a Quality Record (refer Section 10.0).
- 7.4 In the addition to 7.3, the following are identified as key ‘Hold’ and ‘Witness’ points, requiring inspection and approval to proceed with further construction i.e either by the Quality Representative and/or the Engineer: -

Hold or Witness Point	Inspection / Approval Required By
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

<note – include such items as pre-pour insitu concrete / pre-seal inspections etc>

## 8.0 Site Safety & Environmental

### 8.1 Health & Safety

The project shall be managed in accordance with the company's policies & procedures, which are documented in the Health & Safety Manual. This includes provisions for (but not limited to) management, staff & sub-contractors, monitoring, reporting and incident and accident investigation.

In addition, controls relating to this particular contract and/or the work being undertaken are specified in the Site Safety Plan – refer Attachment 3.

### 8.2 Environmental Control

The following Resource Consents, relevant to the works undertaken and/or materials used in this contract, have been obtained:-

.....  
 .....  
 .....

Copies of the relevant resource consents are held by..... These have been reviewed and appropriate controls have been put in place to manage and/or mitigate the risk.

In accordance with contract requirements, <if applicable> environmental controls relating to this particular contract and/or the work being undertaken are outlined in the Environmental Management Plan and/or Environmental Effects Register <delete as applicable>– refer Attachment 5.

The compliance and effectiveness of management controls will be subject to periodic review and monitoring.

## 9.0 Non-Conformance

If during the process of inspection, work is identified that does not conform to the specified site requirements a NON CONFORMANCE REPORT will be prepared by the contract manager/supervisor. The rectification proposed will be discussed and agreed with the person identified in item 4.2(c) of this CQP and will be stated on the NCR. If the contractor seeks a concession to the specified quality standards, details will be submitted to the Principal's/Engineer's representative for approval prior to execution.

A proforma NON CONFORMANCE REPORT is attached. See Attachment 7.

## 10.0 Records

The following records will be produced for this contract:

*(e.g. Site Meeting Minutes, Work Instructions, Inspection Checklists, Construction Programmes)*

.....  
 .....  
 .....  
 .....  
 .....  
 .....

## 11.0 Approvals

This Contract Quality Plan has been:

Prepared by:

\_\_\_\_\_  
 (Name/Sign/Date)

Approved by:

*Contract Manager*

\_\_\_\_\_  
 (Name/Sign/Date)

Approved by:

*Engineer / Engineers Representative*

\_\_\_\_\_  
 (Name/Sign/Date)

## **Attachment 1 Construction Programme**

Contractor to develop / attach.

## Attachment 2      Quality Control (Inspection & Test) Plan

		Testing		Inspection			Verification	
Material / Construction Step	Certificate Required (Materials) Y/N	Test(s) Required	Specification Reference / Limits	Internal (QRep) Y/N	Engineer Y/N	Hold Point? Y/N	Records	Signed / Completed / Date

### **Attachment 3    Site Safety Plan**

Contractor to develop / attach.



## **Attachment 4    Traffic Management Plan(s)**

Contractor to develop / attach.

## **Attachment 5   Environmental Management Plan / Effects Register**

Refer TNZ Standard Z/3 or its equivalent.

## **Attachment 6 Sub-Contractor Quality / Safety Plans**

As applicable / specify name(s) of sub-contractor(s).

## **Attachment 7    Non-Conformance Report**

Contractor to develop / attach.

## **Appendix C: EXAMPLE OF A “WORK INSTRUCTION” AND AN “INSPECTION CHECKLIST”**

A simple example is attached for guidance only. The hand-drafted content demonstrates the input required by the contractor both prior to doing the work (by identifying the specific job requirements and standards and noting these in the Acceptance Criteria column) and during the course of undertaking the work (by completing the second column).

**Nº 1 CONSTRUCTION COMPANY  
QUALITY SYSTEM WORK INSTRUCTION — WI No 1  
CONTROL & INSPECTION OF PIPE SUBSOIL DRAIN  
CONSTRUCTION**

---

**1. Scope of this WI**

Subsoil drain construction other than perforated corrugated plastic pipe.

Subsoil drains are critical to achieving proper control of groundwater and are a critical factor in road design, land development.

**2. Responsibility & Actions**

The contract manager shall review both the contract drawings and specifications to identify the specific requirements of the client. These shall be noted on the inspection checklist.

The site supervisor shall be responsible for progressively inspecting the work to ensure it complies with the requirements.

The results of the inspection shall be recorded on the checklist for defined sections of drain but an inspection checklist must not cover more than a day's work.

Special attention will be paid to ensure:

- (a) Correct pipe type and diameter.
- (b) Correct bedding and filter material grading and uncontaminated.
- (c) Correct joint details, clean and smooth.
- (d) Specified grade and always positive.
- (e) Trench narrow with vertical sides.
- (f) Backfilled to provide uniform support to pipe (no hard or soft spots).
- (g) No stormwater enters drain that can cause clogging.
- (h) Outlets (temporary or permanent) don't cause any backup, allow unimpeded discharge, and don't cause erosion or subsidence.

**INSPECTION CHECKLIST — IC No 1**  
**ACTIVITY — PIPE SUBSOIL DRAIN CONSTRUCTION**

CONTRACT/JOB: ..... DATE:.....  
 DRAIN LOCATION: .....

Task	Special Requirement	Task/Completion Signature/Comment
1. Drawings and specifications checked for specific requirements	Note on this form	
2. Pipe details <ul style="list-style-type: none"> <li>• type class</li> <li>• diameter</li> <li>• joints</li> </ul>		
3. Filter material <ul style="list-style-type: none"> <li>• specification</li> <li>• grading/MSA</li> </ul>		
4. Trench <ul style="list-style-type: none"> <li>• alignment check</li> <li>• grade (normal min 1:100)</li> </ul>		
5. Bedding <ul style="list-style-type: none"> <li>• min depth 75mm</li> <li>• sockets not bearing</li> </ul>	Yes/No	
6. Pipe laying <ul style="list-style-type: none"> <li>• sockets uphill</li> <li>• joints clean, invert flush</li> <li>• joints as detailed</li> <li>• rings required</li> <li>• no stormwater</li> </ul>		
7. Backfill <ul style="list-style-type: none"> <li>• layer depth</li> <li>• uniform support to pipe</li> <li>• compaction</li> <li>• no contamination</li> </ul>		
8. Outlets <ul style="list-style-type: none"> <li>• as per drawing</li> <li>• correct discharge/no erosion etc</li> </ul>		

**ACTIVITY COMPLETION SIGN-OFF**

All tasks defined above have been satisfactorily completed to the standards required:

Contractor Supervisor:

\_\_\_\_\_  
 (Sign/Date)

Client's Representative:

\_\_\_\_\_  
 (Sign/Date)

## **Appendix D: EXAMPLE OF A “NON-CONFORMANCE REPORT” AND A “CORRECTIVE ACTION REPORT”**

The attached forms are examples of a “Non-Conformance Report” and a “Corrective Action Report” suitable for use by contractors to comply with Element 5 of this standard.



**Nº 1 CONSTRUCTION COMPANY  
NON-CONFORMANCE REPORT (F10)**

---

Contract Name/No: \_\_\_\_\_ Report No NCR: \_\_\_\_\_

---

**1.0 NON-CONFORMING WORK DETAILS:**

(provide precise location reference, detailed description and sketches as appropriate)

Company responsible for NC

Contract Manager

\_\_\_\_\_  
(sign/date)

**2.0 RECTIFICATION PROPOSAL:**

(provide details with sketches)

Company responsible for NC

Contract Manager

\_\_\_\_\_  
(sign/date)

**3.0 APPROVALS:**

3.1 The rectification proposal is accepted/ not accepted/ subject to attached conditions.

Client Representative

\_\_\_\_\_  
(sign/date)

3.2 The rectification work has been completed.

Subcontractor Representative

\_\_\_\_\_  
(sign/date)

Contract Manager

\_\_\_\_\_  
(sign/date)

Client Representative

\_\_\_\_\_  
(sign/date)

**Nº 1 CONSTRUCTION COMPANY  
CORRECTIVE ACTION REPORT**

---

Contract Name/No: \_\_\_\_\_  
CAR No: \_\_\_\_\_

---

**1.0 DESCRIPTION OF PROBLEM AND ITS CAUSE**  
(by Contract Manager/Foreman)

Contract Manager/Foreman (Sign/Date) \_\_\_\_\_  
Agreement of: Construction Manager (Sign/Date) \_\_\_\_\_  
Agreement of: Quality Manager (Sign/Date) \_\_\_\_\_

---

## 2.0 PROPOSED CORRECTIVE ACTION

Contract Manager/Foreman	(Sign/Date)	_____
Agreement of: Construction Manager	(Sign/Date)	_____
Agreement of: Quality Manager	(Sign/Date)	_____

---

## 3.0 CORRECTIVE ACTION COMPLETED

Date Completed: \_\_\_\_\_

### APPROVALS:

Originator	(Sign/Date)	_____
Construction Manager	(Sign/Date)	_____
Quality Manager	(Sign/Date)	_____

## **Appendix E: HEALTH AND SAFETY COMPLIANCE NOTICE**

Refer to appropriate pro forma contract documents e.g. Transit New Zealand Manual SM031, SM032 or equivalent.

## **Appendix F: ENVIRONMENTAL MANAGEMENT COMPLIANCE NOTICE**

Refer to appropriate pro forma contract documents e.g. Transit New Zealand Manual SM031, SM032 or equivalent.