Quality Assurance for Capital Projects

Sam Rudge: Assistant Engineer
Contents:

• The appetite for change
• Quality Right: No Defects
• Pavement Quality of Construction Projects
• Quality Assurance on large Australian projects
The Appetite for Change

As an Agency that builds roads, we want to avoid headlines and comments like this....
Focus Area: Quality Right - No Defects for Pavements

Capital projects must be delivered to the right level at the best cost

The NZ Transport Agency noticed that there was a significant lapse in pavement performance on some large projects.

This forced the NZ Transport Agency to review the current environment for large capital projects.

Quality Right: No Defects is a project aiming to improve the standard of capital projects.
Focus Area: Quality Right - No Defects for Pavements

Capital projects must be delivered to the right level at the best cost

Objectives for this Quality Right, No Defects included:

• A review of the contract specifications for capital projects to:
  • Improved Principal requirements
  • More detailed requirements for the contractor’s Quality Assurance System.

• Clearer requirements for the MS and QA specification for the Principal’s Advisor’s compliance monitoring function and reporting requirements to enable NZTA to assess the effectiveness of the Contractor’s QA System.

• Improvement to the Pre-qualification System to require evidence of compliance with the upgraded Contract QA System requirements as an eligibility requirement for Level 1 and Level 2 Contractors.

• Greater involvement by the clients technical team in the pavement design assessment at an early stage.
Pavement Quality of Construction Projects

An overview of the research

A qualitative research approach
- 2 Contract Models
- 4 Projects
- 10 Interviews
- 19 People
- 58 Questions
- Over 1000 answers
Pavement Quality of Construction Projects

What were the areas of focus?

• Quality performance and outcomes

• Procurement and relationships

• Quality culture and systems

• Quality enhancements and innovation
Pavement Quality of Construction Projects

Key results from the research include

Quality Performance
There are large disparities between
• Achieving the Principals Requirements
• Meeting the parties definitions of quality
• Achieving a quality outcome based on premature failures
Pavement Quality of Construction Projects

Key results from the research include

Procurement and Relationships
• Relationships were rated highly in 3 of 4 contracts

• Project KPI’s for pavements varied with the most successful project only having one KPI related to pavements.
Pavement Quality of Construction Projects

Key results from the research include

Quality Culture and Systems

• Each organisation thought their quality assurance was good

• When the client had faith in the contractors quality assurance a better outcome was achieved
Pavement Quality of Construction Projects

Key results from the research include

Quality Enhancements and Innovation

• Contractors thought they had made good innovative submissions

• Actual innovation was not rated as highly

• NZTA’s process for approving changes perceived as a barrier to innovative solutions
Pavement Quality of Construction Projects

Key recommendations from the research include

• Adequate Principal Requirements are set through an appropriate contract model.

• There is alignment between the Agency and contractor around ongoing design expectations and the design quality management system.

• The specified pavement life expectations and funding objectives are clearly and transparently aligned before the award of tenders.
Pavement Quality of Construction Projects

Key recommendations from the research include

• There are clear contractual requirements and incentives/penalties around expected pavement life.

• That clear contractual communications and protocols and expected communication behaviours are developed for project teams and the Agency’s pavements team when interacting with contractual parties.

• The Agency develops an audit process in collaboration with the Contractor and Consultant.
So What can be Done Differently?

What solutions could be implemented to reduce the likelihood of failure?

NZTA held a workshop to review QA on capital projects, discussion options such as

- Increased defects liability period?
- Clearer Key Performance Indicators?
- More Key Performance Indicators?
- Reduced focus on cost?
- Increased timeframes?
- More involvement from the National Office technical teams?
- Less involvement from the National Office technical teams?
- More onsite monitoring?
- A new audit process?
A New Audit Process?

What changes have been implemented in Australia?

Australia has had some success in introducing an ‘Independent Reviewer’ into large projects.

So how does this process work?

• The Quality Assurance plan is prescribed by the client and implemented by the Contractor.

• The Contractor hires QA Verifiers who are to physically inspect the works and complete the relevant quality assurance documents before releasing the hold point.

• The independent reviewer is engaged by the client to ensure compliance with the contractors Quality Plan, including:
  • Observation to verify construction procedures are being followed
  • Witnessing hold points
  • Targeted audits to verify compliance with testing requirements
A New Audit Process

The Structure Diagram

NZTA

Principal’s Advisor

- Contract management
- Compliance monitoring
- Technical advice

D&C Contractor

- Policy and standards
- Project scope & requirements
- Procurement (Prequal System)
- Project management

- Design
- Construction
- Quality Assurance
A New Audit Process

How is this a different process?

- Introduction of standardised Inspection and Test Plans
  - This will allow best practice to be implemented
  - Client specified hold points and witness points for all works
- Responsibility for compliance clearly lies with the Contractor
  - Named QA verifiers who are not involved in construction are responsible for ensuring work complies with the ITP.
- Ties the QA records to the As-Built records to progress work
- Independent verifiers role can be risk targeted to ensure the appropriate outcome is achieved
Any Questions?