Are you getting what you specified?

REAAA NZ Chapter Inc
27 August – 2 September 2014
Presenter - Peter Balfe
Quality Assured Contracts

• Australia - early 1980s
• New Zealand – mid 1990s
• Must have a QA System to tender for work on State Highways
Freeway bridge approach embankment
Princes Highway embankment construction
Removal and replacement of pavement and capping layer
Removal of soft, saturated material
Repairs to reinforced concrete pipes
Partially completed soil nail wall
Various centrallisers used in soil nail trials
Exhumed trial soil nails
Lack of specified grout cover
Specially designed centralliser finally adopted
And the result
Exhumed nails showing defective grout
Encapsulated nail assemblies
Shotcrete face broken back exposing anchor plate
Pier columns exposed after freeway excavation
Effect of sand contamination in polymer drilling fluid
Pile constructed without temporary liner
Issues affecting QA performance

• Conflict between time, cost and quality
• Tendering eligibility criteria
• Management commitment to QA
• Understanding of the QA process
Requirements for effective QA

- WBS that enables progressive verification of compliance
- Simple, well documented construction procedures
- ITPs and checklists that cover all specified requirements
- Efficient management system for construction records
- Commitment to progressive verification and closure of work lots
- Effective control of Hold Point release
Work Breakdown structure

• Previously left to Contractor
• Principally concerned with schedule and cost control
• No direct link to the clients asset management system / asset inventory
ASSET INVENTORY
ASSET TYPES
- Roadside section
- Carriageway section
- Stormwater drainage
- Subsoil drainage
- Tunnel
- Bridge
- Culvert
- Noise Wall
- Retaining Wall
- Sign
- Delineation
- Lighting
- ITS / OMCS

ASSET INVENTORY
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## Asset Inventory

<table>
<thead>
<tr>
<th>ASSET TYPES</th>
<th>Component Type</th>
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<tbody>
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<td>Formation / Pavement / Shoulder</td>
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<td>Tunnel</td>
<td>Primary support system / lining / portal</td>
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<tr>
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<tr>
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<td>Bedding / base slab / culvert units / endwalls</td>
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<td>Sign support / sign face</td>
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<tr>
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<td>Linemarking / guide posts</td>
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<tr>
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**ASSET INVENTORY**

Design documentation should identify all assets/components in accordance with the Asset Inventory classification and numbering system.
**ASSET TYPES**

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**ASSET INVENTORY Becomes WORK BREAKDOWN STRUCTURE**
Construction Procedures and ITPs

- Fundamental supplement to Quality Plan
- Must cover all spec requirements
- Standard templates for lot registers and checklists
- Should reflect current best practice
- Must be submitted for review by the IR

- Why don’t Clients have a standard library of ITPs?
Progressive closure of As-Built Records

• Includes QA records and As-Built Drawings
• Must be collated into Asset Components
• Must be closed as soon as all test results available
• Should be closed before:
  – Work is covered up; or
  – Manufactured items (e.g. precast beams) are erected
  – Completion is certified
Requirements for effective QA

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PPP Project Delivery Model

State Agency

Concessionaire

O&M Contractor

D&C Contractor

Designers

Subcontractors
PPP Project Delivery Model

State Agency

Payment Certifier

Independent Reviewer

Concessionaire

O&M Contractor

D&C Contractor

Designers

Subcontractors

Quality Manager

Nominated Authorities

Nominated Authorities

Nominated Authorities
Roles and Responsibilities for QA

Nominated Authorities

– Employed by Contractor, but required to act as independent verifiers;
– Prescribed scope of authority based on knowledge and experience
– Not involved in day to day supervision of works
– The only people with authority to release HPs and close As-Built Records
– Required to physically inspect and verify compliance before releasing HP or authorising closure of As-Built Records
Roles and Responsibilities for QA

Independent Reviewer

– Employed by Client
– Reviews Construction Procedures and ITPs for compliance with specifications
– Undertakes systematic, targeted auditing of:
  • Compliance with Construction Procedures
  • Release of HPs
  • Performance of Nominated Authorities
  • Integrity of QA records
– Certifies Completion
In conclusion:

• The examples I have shown you are not important per se – it is what they represent
• Clients have a responsibility to specify clear requirements for QA, and to satisfy themselves that these are being met.
• QA is a real win-win. Defects and re-work mean lost time and money
• Why can’t we have better industry guidelines on QA?
THANK YOU