The Evolution of Quality Assurance & Quality Control in Highway Construction

Steven DeWitt, PE
Chief Engineer
North Carolina Turnpike Authority
AGENDA

• Historical Perspective
• Definitions -- Qa versus Qc
• Current Direction
• The Future?
Definitions

**Quality Assurance**

Owner responsibility

Assure ourselves...
Definitions

Quality Control

Contractor responsibility

Assure themselves & us…
Current “State of Practice”

Differing Philosophies?

- “You Cannot Inspect Quality Into a Project”

Or...

- “You Should Expect What You Inspect”
Quality Control

There is a **Huge** Gap in the **Qc** Process

- Qc Plan?
- Qc Process?
- Certifications
  - Asphalt
  - Concrete
  - Pavement Markings
  - Erosion Control
  - Flagging
  - Other?

Where is that DOT guy to tell me I am doing this right?

- Stopping Work?
- Checking Behind Subs?
Qc by the Contractor

Example: Quality Management System (QMS) for Asphalt

Implemented - 1993

Is Our Asphalt Better? Yes!
Is The Process Perfect? No!
We Learn, Improve, and Learn Some More…
Qc by the Contractor

- Contractor Qc Team
- Certifications
- "Project-Wide" QMS
- Independent of Production Manager
- Reporting/Documentation
- "Trust but Verify"
  - Accountability
  - If You Don’t, Then...
Qc by the Contractor

Can We Transition:

Means & Methods

Performance Specifications

Warranties
A Changing World

- Inflation – “out of control”
- Revenues – declining
- Congestion – increasing
- Gas Tax – Has its time come?

Where will this take us?
Why The Change?

- Public, Legislative, Etc. Pressures
- The “new reality” of the cost of infrastructure improvements
- Design-Build?
- Litigation?

A Changing Transportation World...

20th Century Organizational Concepts

Trying to Adapt to 21st Century Issues.
A Slow Wave of Change?

- Privatization
- Public Private Partnerships
- Design-Build-Operate-Maintain
- Long Term Warranties
2004 International Scan on Construction Management

Scan Objective

- International CM Procedures
- Focus Toward Ensuring Project Delivery
- Contract Compliance
- Quality Assurance
Quality is Still About...

Construction

- Contract Administration
- Quality Assurance
- Quality Control
- Contract Provisions
- Training
- Experience
- Communication
- Etc...
No Matter …

• How Much Things Change
• What Technology Brings
• How We Procure Contracts
• Who Has Responsibility
• What the Workload is
• Who the Contractor is
• What the Public Demands
• What “Wacky” Stuff the Central Office Dreams up…
We Can't Lose Sight That

- Construction is Still Construction
- Communication is Still Communication
- Bridges, Pavements, and Drainage Systems Still Have to Be Built Correctly, Perform Appropriately, and Last a Long Time
- Quality Assurance is Critical
- Quality Control is Critical
- Laying a Pipe Is Still Laying a Pipe...
There May be a Change of Who or How...

However, Density is Still Density, it is Still Critical, and We Must Understand it, Assure it, and Hold Contractors Accountable.
Construction Quality

Planning & Design
- Safety
- Staffing
- MOT
- Changes
- Training
- Etc...

Payments
- Quality
- Schedule
- Materials
- Etc...

Maintenance & Operations

Project Scoping

Process Improvement

Project Bidding

Project Post-Construction Analysis

Project Complete
Questions?