What is Quality Assurance???
Excellence
Improve
Common Sense
Purpose
Constructability
Quality
Enhancing
of Life
Fiscal Constraint
Accountability
balanced these values:
maintaining
transportation
Purpose
need, reflecting the
public’s needs and interests, preserving
the environment, ensuring
Enhancing
Constructability
and improving the Quality
for Kentucky communities.
Quality Assurance Branch
Division of Highway Design

- Improving Processes
- Improving Designs
- Delivering Quality Transportation to Kentucky Citizens
Value Engineering Studies
Brent Sweger

Lessons Learned Database
Nathan Wilkinson

Constructability Reviews
Rodney Little
Gary Raymer

Post-Construction Reviews
Mary Wade

Quality Assurance Branch Boday Borres, TEBM
VALUE ENGINEERING
Value Engineering

• Goals of
  – improving design & adding value
  – affirm design objectives
  – removing unnecessary costs
• For projects >$25M and on the NHS
• Fresh look using new eyes
• Best time: at end of Phase I
• Can be used for any project

“There’s a way to do better....find it.” Thomas A. Edison
What is a VE project?
CONSTRUCTABILITY REVIEWS
Constructability Reviews

- Reviewing design plans
  - MOT
  - Road/bridge alignment
  - Reducing errors
- Improving communication & coordination
- Best time: during final joint inspection
Major Issues Found During 2010 Constructability Reviews

• Overuse of part-width construction

• Drainage not addressed on MOT plans

• Insufficient quantities
  • Stone (temporary wedging, temporary widening, entrances, etc.)
  • Temporary pavement markings

• MOT plans are too general
QUALITY ASSURANCE BRANCH
CONSTRUCTABILITY REVIEWERS

GARY RAYMER
KYTC Districts 1-6
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CHARLES “RODNEY” LITTLE
KYTC Districts 7-12
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AVAILABLE TO ASSIST YOU WITH:

• Plan Reviews
• Project Team Meetings
• Constructability Meetings
• Maintenance Of Traffic Meetings
• Other Concerns Or Questions
Post-Construction Reviews

• On projects with construction costs >$1M and open to public for at least a year
• Goal of 4 projects from each District per fiscal year
• Moving towards reviewing more projects that are smaller
Post-Construction Review Cycle

1. Solicit projects from District TEBMs (July-August)
2. Scheduling meetings (August-April)
3. Meet with districts, consultants, contractors, and FHWA
4. Create Fact Sheets
5. Input data into Lessons Learned Geodatabase
### General Information

<table>
<thead>
<tr>
<th>Project County:</th>
<th>Pike</th>
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<tbody>
<tr>
<td>Item Number:</td>
<td>030749</td>
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<tr>
<td>Bridge Type and Length:</td>
<td>Bending, Grade, Drain &amp; Asphalt Surface, 2.994 miles</td>
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<td>Project Description:</td>
<td>Bridge Replacement</td>
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<tr>
<td>Project Designer:</td>
<td>Palmer Engineering</td>
</tr>
<tr>
<td>Resident Engineer’s Name:</td>
<td>Paxton Weddington</td>
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### Notes:

**Category:** Design  **Sub-Topic:** Omission

Silted conditions were necessary for the project and were written in the geotechnical report but not in the Plans.

**Solution:**
Review plans for constructability

**Category:** Geotechnical  **Sub-Topic:** Top of Rock

Structure at Pier 1 (SB) had loose rock when excavated to the suggested elevation. Had to use mass concrete to remedy the situation.

**Solution:**
A thorough investigation for geotechnical data for areas where structures are involved. More borings are suggested possibly when substructure is designed and footer dimensions are known.
Reoccurring Post-Construction Review Issues

• Utilities
  – Relocation
    • Communication
    • Timely relocation
    • Documentation
    • Above Bridge Sites
  – Lighting Plans
    • Location of light poles

• Pavement
  – Pavement Depth
    • Where MOT uses shoulders
    • On Interstate median crossovers
    • Where heavy truck/bus traffic exists
Reoccurring Post-Construction Review Issues

• Structures
  – Guardrail tie-ins
  – Roadway-structure alignment
  – Accuracy of elevations
    • More coring needed?
  – Settlement platforms
  – Masonry Coating
    • Specifications/designers?

• Geotechnical
  – Open cut
    • Landslides
      – Materials?
      – Plan note?
  – Use of existing material
    • Class IV channel lining
Reoccurring Post-Construction Review Issues

- Design
  - CAPs
  - Railroad flagmen
    - Estimating hours
    - Wages/rates
  - MOTs
- Turning radius for truck/bus movements
- Review & update plans from shelf
LESSONS LEARNED DATABASE
Lessons Learned Database

- Information from all 3 programs
- GIS mapping to track and analyze patterns
- Have solutions readily available
- Review annually to uncover historical trends
Linking Facts Sheets to GIS Data
Average Change Order Percent Cost Increase Per PCR Project

Legend
- Post-Construction Review Projects
- Average Percent Cost Increase Per Project Due to Change Orders
  - 1%
  - 5%
  - 10%

Map of Kentucky showing changes in cost due to change orders.
The Future of Lessons Learned Database

- Mapping historical Post-Construction Reports
- Creating new datasets:
  - Value Engineering
  - VECPs
  - Constructability Reviews
- Launching website for sharing Lessons Learned GIS data
In Conclusion…

• Value Engineering
  – We need your help identifying projects
  – Keep your eyes open for new Design Memo
  – VE training in the fall

• Constructability Reviews
  – We have staff available to help assist you

• Post-Construction Reviews
  – Call for 2011 submittals

Thank You!
Quality Assurance Branch
Division of Highway Design

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~ It’s Time To Get Serious About Quality Assurance ~