Building Highways with a Qualified Workforce:

*Florida’s Online Training for Construction Engineering Inspectors*

*August 7, 2008*

Brian Blanchard
FDOT Chief Engineer
Congestion in 2005

SIS Highways Not Meeting Level of Service Standards in 2005

Legend
- Highways Not Meeting Standards as of Year 2005*

Other Facilities:
- Existing SIS/ESIS Facilities
- Planned SIS/ESIS Facilities

Notes:
* SIS Highways not meeting standards are defined as those facilities operating below FDOT’s statewide Minimum Level of Service standards as specified in “Rule Chapter No. 14-04.”
Congestion in 2025

SIS Highways Not Meeting Level of Service Standards in 2025*

LEGEND

Highways Not Meeting Standards as of Year 2025**

Other Facilities:
- Existing SIS/ESIS Facilities
- Planned SIS/ESIS Facilities

NOTES

Includes lanes added as a result of constructing the Ten-Year Plan through 2015 with Growth Management funds and the FHCS Cost Feasible Plan through 2025.

** SIS Highways not meeting standards are defined as those facilities operating below FDOT’s statewide minimum level of service standards as specified in "Rule Chapter No. 14-94."
The Challenge

- Construction Engineering Inspection (CEI) Outsourced to Industry
- Training is outsourced to 3rd Party Entities
- Demand Outstripping Population of Qualified CEIs
- Qualification Training/Re-training classes are location/time sensitive
The Challenge

• CEI Qualification Training Program is Self-Funded
• Re-Qualification Training up to 3 days for some Qualifications
• Private Firms Pay $10K-$15k to Qualify an inspector
• Qualification Exams are proctored
Why Computer Based Training?

• “There is no other workplace issue where so much money is spent with as little accountability as training.”

• Brandon Hall, Ph.D. & e-learning Consultant
Why Computer Based Training?

- A major advantage of computer based training is the ability to provide reports, statistics and controls on student and instructor activities:

  - **Enrollment and Completion Activity**
  - **Exam Scoring Analysis**
    - (Student, Class, Instructor Performance, Question integrity)
  - **Proctored Exams**
    - (Role Based Security, Timers, Separate
      - Student / Proctor / Instructor Interfaces)
  - **Consistent Data**
    - (Common Measurements, Real Time Extraction of Qualification Data)
The Solution

• Partnership with RedVector.com (www.redvector.com)
  – Construction Training Qualification Program (CTQP) Administrator
  – Expert in e-learning content creation & learning management

• Conversion of 10 days of live training classes into 80 hours of online, self paced, CBTs

• Learning Management Portal (LMP)
  – Provides tracking, scoring, skills gap analysis
  – Data exportable into LIMS, TRESS, CTQP databases
  – Accessed by Contractors, Consultants, FDOT employees via internet
  – Scrambled Exams, Virtual Proctoring Capabilities
Online Learning Modules

Course and Section title cards
Online Learning Modules

Informative Text and Images
Online Learning Modules

Animations
Online Learning Modules

Charts and Graphics
Checkpoints to ensure learning progress. Feedback
Online Learning Modules

Interactive Flash Activities, Video and Audio!
Online Learning Modules

Interactive Flash Activities
Potential Annual Savings: CEI Qualification

### Live Training Qualifications

<table>
<thead>
<tr>
<th>Average Qualification Training Cost</th>
<th>Billable Time Lost/Qualification</th>
<th>Qualifications in 2007</th>
<th>Estimated Cost to Industry for CEI Qualification in 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>$750</td>
<td>$1,200</td>
<td>5587</td>
<td>$10,894,650</td>
</tr>
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</table>

### Computer Based Training Qualifications

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<thead>
<tr>
<th>Average Qualification Training Cost</th>
<th>Billable Time Lost/Qualification</th>
<th>Qualifications in 2007</th>
<th>Estimated Cost to Industry for Online CEI Qualification in 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>$200</td>
<td>$600</td>
<td>5587</td>
<td>$4,469,600</td>
</tr>
</tbody>
</table>
# Program Return on Investment (ROI)

<table>
<thead>
<tr>
<th>Conversion Cost/hour (FDOT)</th>
<th># Live Instruction Hours to be Converted</th>
<th>Total Conversion Costs</th>
<th>Estimated Annual Hosting &amp; Maintenance Costs</th>
<th>Total 3 year Cost (FDOT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3,662.59</td>
<td>160</td>
<td>$586,014</td>
<td>$50,000</td>
<td>$736,014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry CBT Qualification Savings per Qualification</th>
<th># of Qualifications per year (Avg. 2006-2007 data)</th>
<th>Potential Annual Savings for Qualifying Online</th>
<th>Total Savings to Industry over 3 years</th>
<th>Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,150</td>
<td>4,954</td>
<td>$5,697,100</td>
<td>$17,091,300</td>
<td>2,222%</td>
</tr>
</tbody>
</table>
• Florida DOT has the goals of increasing the efficiency of the training/qualification process while maintaining a high level of assurance that QC personnel are indeed qualified. We envision:
  
a. Greater use of CBTs

b. A shift towards the use of online qualification examinations
The primary challenge as it relates to this long-term vision is to ensure the integrity of the online examinations. While we are moving forward with CBT offerings, we must find the technology and/or techniques to assure that online examinations will:

a. Be administered only to those persons registered as the trainee (ID Assurance)

b. Be completed without unauthorized assistance
Summary

• $5,697,100 potential annual savings to industry
• All Parties Have “Skin in the Game”
• No waiting for Qualification classes
• Increased Training Accessibility
• Consistent Messaging
• Measurable Results!
Questions & Contact Information

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