Agenda

1. Major Project Spotlight
   • Project Management on Major Projects
     – Wisconsin DOT
   • 3D/4D Modeling in Major Project Construction
     – Connecticut DOT
   • Pennsylvania Rapid Bridge Replacement Project
     – Pennsylvania DOT

2. Major Project Information
   • Financial Plan Guidance Update
   • Major Project Statistics
   • Upcoming Major Project Webinars

3. Comments/Questions
Major Project Spotlight: DOT/FHWA Peer Exchange

Peer Exchange Featuring:

Project Management on Major Projects – Wisconsin DOT
3D/4D Modeling in Major Project Construction – Connecticut DOT
Pennsylvania Rapid Bridge Replacement Project – Pennsylvania DOT
Project Management on Major Projects

Ryan Luck
Bob Gutierrez
*Wisconsin DOT*

Andrew Brinkerhoff
*FHWA – WI Division*
Wisconsin DOT’s Major Projects

May 5, 2015

Andy Brinkerhoff – Project Oversight Manager

(Photos and graphics provided by WisDOT)
Wisconsin Major Projects

- 12 Federal Major Projects
  - 7 in Final Design and/or Construction Phase ★
  - 5 in Environmental Phase ★

![Map of Wisconsin Regions with marked projects]
I-94 North - South

• 35 Mile Reconstruction and Capacity Expansion (Milwaukee to Illinois State Line)
• Milwaukee, Kenosha and Racine Counties
• $1.65 Billion
• Construction 2009 – 2021 (55 % Complete)
• http://projects.511wi.gov/i94northsouth/
Zoo Interchange

- Major Urban Interchange Reconstruction and Capacity Expansion
- City of Milwaukee
- $1.72 Billion
- Construction 2012 – 2018 (25 % Complete)
- [http://projects.511wi.gov/zoo-interchange-project/](http://projects.511wi.gov/zoo-interchange-project/)
US 41

• 31 Mile Reconstruction and Capacity Expansion of US 41 (now I-41)
• Brown and Winnebago Counties (Green Bay and Oshkosh areas)
• $1.52 Billion
• Construction 2009 – 2017 (83 % Complete)
• [http://us41wisconsin.gov/overview/about-the-project](http://us41wisconsin.gov/overview/about-the-project)
Wis 441/US 10 (Tri-County Freeway)

- 6 Mile Reconstruction and Capacity Expansion of Wis 441/US 10
- Includes reconfiguration of the I-41/Wis 441/US 10 system interchange and construction of a new structure over Little Lake Butte Des Morts (expanding crossing from 4 to 8 lanes)
- Outagamie, Winnebago and Calumet Counties (Appleton area)
- $545 Million
- Construction 2014 – 2018 (5% Complete)
- http://us41wisconsin.gov/wis441/overview/
I-39/90

- 45 Mile Reconstruction and Capacity Expansion (Madison to Illinois State Line)
- Dane and Rock Counties
- $1.26 Billion (Phase 1)
- $1.6 Billion (Phases 1 through 3)
- Construction 2014 – 2020 (2 % Complete)
St. Croix River Crossing

- Construction of New 4-Lane Structure over the St. Croix River (Minnesota Lead), Including New Roadway Approaches and Interchanges on both Minnesota and Wisconsin Sides
- Includes Joint-Funded Construction of Extradosed Structure
- St. Croix River Designated as a National Wild and Scenic River
- Wisconsin Portion Includes Relocation of Wis 35, Including Construction of New Interchange and Bike/Ped Trail
- Existing Lift Bridge to Be Converted to Bike/Ped Facility
- $677 Million
- Construction 2013 – 2017 (50 % Complete)
- [http://www.dot.state.mn.us/stcroixcrossing/index.html](http://www.dot.state.mn.us/stcroixcrossing/index.html)
I-43 North-South

- 14 Mile Reconstruction and Capacity Expansion (Glendale to Grafton)
- Milwaukee and Ozaukee Counties
- $560 Million
- Currently in Final Design
- Construction 2018 – 2021
Major Projects in NEPA Phase

- I-94 East-West; Milwaukee
  - 3.5 Mile Expansion from 16th St – 68/70th St
- US 51 Stoughton Road; Madison (Beltline to I-Wis 19)
  - 11 Mile Urban Reconstruction and Potential Expansion
- I-39/90/94 (Madison – Portage)
  - 35 Mile Reconstruction and Potential Expansion
- I-90/94 (Portage – Wisconsin Dells)
  - 25 Mile Reconstruction and Potential Expansion
- US 12/18; Madison Beltline
  - 19 Mile Urban Reconstruction and Potential Expansion
WisDOT Key Management Practices

- Design & Construction
- Earlier Internal & External Communication
- Best Practices
- Design Construction Interface Engineer
- Best Practices
- CIM Interface Engineer
- Quality
- Cost
- Schedule
Design & Construction Organizational Overview
WisDOT Mega Projects Function Identification and Staffing Guidelines

SECRETARY OF TRANSPORTATION
- DEPUTY SECRETARY
- DTSD ADMINISTRATORS

REGIONAL DIRECTOR & DEPUTY DIRECTOR
- FEDERAL MAJOR PROJECT CHIEF
  - Chief, Program Management
  - DOT Engineering Chief

PROJECT CONTROLS AND FINANCE MANAGEMENT TEAM
- Program Controls/Finance
  - Director, Finance
  - Director, Operations
- Program Management
  - Chief, Program Management
- Contract Management
  - Director, Contract Management

DESIGN AND CONSTRUCTION TEAM
- OVERALL PROJECT
  - Design
    - Supervisor
    - Manager
- Construction
  - Supervisor
  - Manager
- Traffic Operations
  - Supervisor
  - Manager
- Project Manager
  - CE Team
  - Chief, Traffic Engineering

Technical Support Team
- Technical Services
  - Director
  - Manager
- Hazard Analysis
  - Manager
- Environmental
  - Manager
- Permitting
  - Manager
- Construction
  - Manager
- Maintenance
  - Manager
- Product Development
  - Manager
- Safety
  - Manager
- Construction Hubs
  - Manager
- Project Control
  - Manager

EXTERNAL REGION RELATIONSHIPS

BUREAU DIRECTORS
- COMPLIANCE & COORDINATION
  - Manager, Compliance Coordination
  - Manager, Code Coordination
- NON-LITIGATION
  - Manager, Litigation
  - Manager, Legal

MAJOR PROJECTS COMMITTEE
- ADVISORY
  - Manager, Advisory
  - Manager, Planning

DTM DIRECTORS
- DT&M ADMINISTRATORS
- DT&M STATE HIGH PROGRAMS

PUBLIC RELATIONS, OIE, AND SAFETY TEAM
- Public Information
  - Officer
- Public Information
  - Consultant
- OIE, Communications
  - Director
- OIE, Communications
  - Consultant

WEB: publications.org/dot/issuemes/lsps-temp-stds-12/12/2012
<table>
<thead>
<tr>
<th>Any Regional Program</th>
<th>Definition</th>
<th>Project Evaluation Standards</th>
<th>Image (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Economic Opportunities</td>
<td>Improves transportation networks through strategic investments, increasing economic opportunities and enhancing regional economic development.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Transportation Infrastructure</td>
<td>Develops transportation infrastructure projects to support economic growth and job creation in underserved communities.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Intergovernmental Relations</td>
<td>Enhances collaboration and coordination among levels of government to improve transportation services and infrastructure.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Accessibility/Disability Management</td>
<td>Improves transportation accessibility and mobility for people with disabilities.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Corridor/Route and Regional Street Plans</td>
<td>Develops plans and strategies to improve regional transportation networks and support economic growth.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>CTCIMM (Capital Transportation Investment Management Methodology)</td>
<td>Provides a standardized approach for evaluating transportation projects across the state, ensuring efficient allocation of resources.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Design Lock/Environmental</td>
<td>Focuses on mitigating environmental impacts and ensuring compliance with environmental regulations during project development.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Infrastructure improvements</td>
<td>Enhances infrastructure by addressing maintenance and replacement needs to ensure durability and functionality.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Reuse and Recycling</td>
<td>Promotes the reuse and recycling of materials to reduce environmental impact and conserve resources.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Climate Resilience/Adaptation</td>
<td>Ensures projects are resilient to climate change and designed to adapt to future environmental conditions.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Enhancing Economic Opportunities</td>
<td>Improves transportation networks through strategic investments, increasing economic opportunities and enhancing regional economic development.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Transportation Infrastructure</td>
<td>Develops transportation infrastructure projects to support economic growth and job creation in underserved communities.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Intergovernmental Relations</td>
<td>Enhances collaboration and coordination among levels of government to improve transportation services and infrastructure.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Accessibility/Disability Management</td>
<td>Improves transportation accessibility and mobility for people with disabilities.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Corridor/Route and Regional Street Plans</td>
<td>Develops plans and strategies to improve regional transportation networks and support economic growth.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>CTCIMM (Capital Transportation Investment Management Methodology)</td>
<td>Provides a standardized approach for evaluating transportation projects across the state, ensuring efficient allocation of resources.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Design Lock/Environmental</td>
<td>Focuses on mitigating environmental impacts and ensuring compliance with environmental regulations during project development.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Infrastructure improvements</td>
<td>Enhances infrastructure by addressing maintenance and replacement needs to ensure durability and functionality.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Reuse and Recycling</td>
<td>Promotes the reuse and recycling of materials to reduce environmental impact and conserve resources.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
<tr>
<td>Climate Resilience/Adaptation</td>
<td>Ensures projects are resilient to climate change and designed to adapt to future environmental conditions.</td>
<td>No, Poor, Good, Excellent</td>
<td></td>
</tr>
</tbody>
</table>

**Project Types:**

- **Regional Projects:** Those that are large in scale and involve significant improvements to transportation infrastructure and economic development opportunities in multiple regions.
- **Local Projects:** Smaller scale projects focused on local transportation needs and economic enhancements in specific areas.
- **Public-Private Partnerships:** Projects where public and private sectors collaborate to provide transportation services or infrastructure improvements.
- **Environmental Projects:** Projects that focus on preserving and enhancing natural resources and environmental quality.
- **Innovation Projects:** Projects that incorporate new technologies or innovative solutions to improve transportation services.

**Evaluation Criteria:**

- **Economic Impact:** Measured by job creation, increased business activity, and enhanced economic opportunities.
- **Transportation Network:** Assessing the quality and accessibility of transportation infrastructure.
- **Environmental Sustainability:** Evaluating the project’s impact on the environment and adherence to environmental standards.
- **Public Engagement:** Measuring stakeholder participation and community support.
- **Technical Feasibility:** Ensuring that the project is technically feasible and meets regulatory requirements.

**Additional Considerations:**

- **Community Benefits:** Assessing the project’s contribution to community development and quality of life.
- **Resource Efficiency:** Evaluating the project’s efficiency in utilizing resources such as land, materials, and energy.
- **Operational Efficiency:** Measuring the project’s performance and efficiency in operations.

**Image (if available):**

- A map showing the project locations and impact areas.
- Visualizations of project progress and outcomes.
- Graphs illustrating key performance indicators.
projects, higher profile projects and Mega projects. This matrix is designed to help manage a number of significant and high profile projects.

<table>
<thead>
<tr>
<th>Key Program Processes</th>
<th>Design</th>
<th>Construction</th>
<th>Financial</th>
<th>Doc Controls</th>
<th>Change Mgmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balancing Contract Modifications</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Used to account for the cost of midway through a contract project.</td>
</tr>
<tr>
<td>Benchmark Performance Indicators</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Comparison to linear project performance, whether the project is ahead</td>
</tr>
<tr>
<td>Change Management</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Define and adopt strategies that can impact the project's scope.</td>
</tr>
<tr>
<td>Construction Planning and Submittal Workshops</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Preconstruction workshops with department staff to discuss.</td>
</tr>
<tr>
<td>Contracted Project Expertise</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mega Projects may need. Typical hourly rates and the value.</td>
</tr>
</tbody>
</table>
These items differ between Standard or typical improvement as it considers the best approach to manage a growing organization.

<table>
<thead>
<tr>
<th>Project Types*</th>
<th>Standard</th>
<th>High Profile (typically $100-$500M)</th>
<th>Mega (&gt;$500M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustments to the</td>
<td>No</td>
<td>Possible</td>
<td>Yes</td>
</tr>
<tr>
<td>approximate impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of how they are</td>
<td>Possible</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>used</td>
<td>Standard</td>
<td>Intermediate</td>
<td>High</td>
</tr>
<tr>
<td>guidance.</td>
<td>No</td>
<td>Possible</td>
<td>Yes</td>
</tr>
<tr>
<td>reduces risk &amp;</td>
<td>Yes (Minor Projects)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>complexity.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Design & Construction Organizational Overview
Earlier External & Internal Communication

**External Communication**
- Earlier Contractor outreach
- Bid-ability
- Risk Management
- Contractor Feedback on design and constructability
- 3D Model & AMG Surfaces for estimating

**Internal Communication**
- Design|Construction Plan Review at
  - 30% Design
  - 60% Design
  - 90% Design
- Leveraging Technology to Track Constructability Reviews
  - BIM Field 360
External Communication

Earlier Contractor outreach
- Bid-ability
- Risk Management
- Contractor Feedback on design and constructability
- 3D Model & AMG Surfaces for estimating
External Communication

Earlier Contractor outreach
- Bid-ability
- Risk Management
- Contractor Feedback on design and constructability
- 3D Model & AMG Surfaces for estimating
Earlier External & Internal Communication

**External Communication**
- Earlier Contractor outreach
- Bid-ability
- Risk Management
- Contractor Feedback on design and constructability
- 3D Model & AMG Surfaces for estimating

**Internal Communication**
- Design|Construction Plan Review at
  - 30% Design
  - 60% Design
  - 90% Design
- Leveraging Technology to Track Constructability Reviews
  - BIM Field 360
Internal Communication

Design|Construction Plan Review at
- 30% Design
- 60% Design
- 90% Design

Leveraging Technology to Track Constructability Reviews
- BIM Field 360
Issue Tracker

Issue Tracker - Total v. Closed

Total, now: 1,476 issues

Root Cause
Root Cause

- Constructability 13%
- Plan/Detail Deficiency 30%
- Clarification of Intent 18%
- Overall Picture 18%
- Best Practice 20%
Can we reduce the 12 ft lanes on EB to 11', push EB traffic partially onto an overlaid EB shoulder, push WB traffic to Stage 2 as note identify and build the EWG without an EB lane drop? Is EWG fall or spring work? Do we intend to allow contractor access from IH 94 EB to outside embankment in this stage? IF we have

**Issue type**

QA/QC : 18- Stage Construction

**Company**

DEC- Bohen, Jeff

**Status**

Open

**Date created**

Tue 03/03/2015

**Author**

kurt.flierl@dot.wi.gov

**Root cause**

Quality : Constructability

**Location**

Zoo IC Phase 2 - PS&E Review
Earlier External & Internal Communication

**External Communication**
- Earlier Contractor outreach
- Bid-ability
- Risk Management
- Contractor Feedback on design and constructability
- 3D Model & AMG Surfaces for estimating

**Internal Communication**
- Design/Construction Plan Review at:
  - 30% Design
  - 60% Design
  - 90% Design
- Leveraging Technology to Track Constructability Reviews
  - BIM Field 360
Design & Construction
ORGANIZATIONAL OVERVIEW

Best Practices
Earlier Internal & External Communication

Best Practices
Design | Construction Interface Engineer

Best Practices
CIM Interface Engineer

Quality

Cost

Schedule
Design | Construction: Interface Engineer

**Construction Feed Back to Design**
- Documents & Archives all field construction Lessons Learned and communicating feedback to Design.
- Currently 70 FBTDs.
- Southeast Freeways Design Manual 56 FBTDs.
- Statewide Facilities Development Manual 3 FBTDs.

**Statewide Technical Involvement**
- Observes and provides summary of potential statewide specification changes and impacts to current Mag/ Major Design Projects.
- Bureau of Structures.
- Statewide Traffic Operations.
- Systems.
- Maintenance.
- Geotechnical.
- Materials.
- Roadway.
- Environmental.

**Constructability Review Involvement**
- Managing consistency of specifications between active construction projects and future bidding projects.
- Review and incorporation of FBTDs into future bidding projects (incorporating the Lessons Learned).
Construction Feed Back to Design

Documents & Archives all field construction Lessons Learned and communicating feedback to Design

- Currently 70 FBTDS
- Southeast Freeways Design Manual 50 FBTDS
- Statewide Facilities Development Manual 3 FBTDS
Statewide Technical Involvement

Observes and provides summary of potential Statewide specification changes and impacts to current Mega / Major Design Projects

- Bureau of Structures
- Statewide Traffic Operations
- Systems
- Maintenance
- Geotechnical
- Materials
- Roadway
- Environmental
Constructability Review Involvement

- Managing consistency of specifications between active construction projects and future bidding projects
- Review and incorporation of FBTDs into future bidding projects (incorporating the Lessons Learned)
CIM Interface Engineer

- Leveraging the 3D Design & Information in the Construction Phase
- Traffic Impact Visualization Implementation Tool (TIVIT)
- CIM to Field Office
  - Proven Field Experience
  - 3D & 4D Visualization
  - Problem Solving
  - Enhanced Decision Making
- CIM to Field Office
- Reliability
- Interchangeable Software
- e-Interchange

- Wisconsin Department of Transportation
- ZOO Interchange
- Department of Transportation United States of America
Leveraging the 3D Design & Information in the Construction Phase
CIM to Field Office

Phased Model Sequence
3D / 4D Coordination

- Problem Solving
- Enhanced Decision Making
e-AsBuilts

Bluebeam Revu Software
Traffic Impact Visualization Implementation Tool (TIVIT)
CIM Interface Engineer
Wisconsin Department of Transportation
MEGA / MAJOR PROJECTS
PROGRAM DELIVERY BEST PRACTICES
In partnership with
Federal Highway Administration
Contact Information

Ryan Luck
SE Freeways Construction Chief
Wisconsin DOT
Ryan.Luck@dot.wi.gov

Bob Gutierrez
SE Freeways Design Chief
Wisconsin DOT
roberto.Gutierrez@dot.wi.gov
Contact Information

Andy Brinkerhoff
Field Operations Engineer
FHWA - Wisconsin Division
Andrew.brinkerhoff@dot.gov
Questions & Input

Submit a question using the chat box

Or

Dial *1 to call in your question by phone
Major Project Spotlight: 3D/4D Modeling in Major Project Construction

Mark D. Rolfe
John S. Dunham
Connecticut DOT
3D/4D MODELING
ON THE I-95 NEW HAVEN HARBOR CROSSING
CORRIDOR IMPROVEMENT PROGRAM
Today’s Presentation

• Overview of 3D Modeling at CTDOT on the Q-Bridge Program
• Uses and Benefits
  • Lessons Learned/Best practices

Mark Rolfe, P.E.
District Engineer
Connecticut Department of Transportation

John S. Dunham, P.E.
Assistant District Engineer
Connecticut Department of Transportation
3D/4D Digital Modeling

- Innovative / expedited project delivery
- Enhanced collaboration / cooperation
- Communication with stakeholders
- Provides a common view
- Increases safety
- Increases efficiency
- Reduces risk and costs
- CTDOT standard practice
Program Collaboration

Owner
- Project Development / Planning
- Stakeholder Coordination
- Public Info / Outreach
- Design / Construction Reviews

Designer
- Prepare Model
- Clash Detection
- Constructability Reviews
- Working Drawing Reviews

Contractor
- Project Understanding
- Bidding
- Staging / Sequencing
- Means and Methods
Building the Model

- Digital Model initiated in 2009
- Risk Reduction
  - Validate design / planning schedule and identify physical conflicts in Contract E prior to Advertise
  - Interdependencies with Contract B
- Collaboration - Owner, Program Manager, Designer
- Digital Model provided to Contract E Bidders
Building the Model - 3D Geometry

- DTM Surface & 2D Plans
- Ground surface - USGS Data and Satellite Imagery
- Context buildings – footprints and images from Google Maps
Building the Model - Time

P6 Construction Planning Schedule

Navisworks

www.i95newhaven.com
Building the Model - Tools

Combines 3D Geometry with Time

AUTODESK NAVISWORKS

3D Digital Design Model
- Microstation
- AutoCad Civil 3D

Point Cloud Modeling
- Descartes/Pointools

Raw Laser Scan Data
- Bentley
- MicroStation V8i
- Leica Geosystems

CPM Scheduling
- P6, MS Project, MS Excel
- Calendar Day Charts
- Construction Schedules
- Contractors Schedules
- Custom Schedules

www.i95newhaven.com
Building the Model – Adding Detail

Install Rebar → Place Forms → Pour → Strip & Cure → Completed Pier

Pier as 1 object → Pier as 7 objects

Build the model like you would build the project
Building the Model – Virtual Simulation

August 01, '15
Erect Steel
Formwork
Reinforce/Install Rebar
Concrete Pour/Gen. Construction
Strip/Cure
Pave HMA/LMC
Demolition

www.i95newhaven.com

@QBridgeProgram
Planning / Design
Planning / Design / Construction

- Validates schedule logic
- Illustrates progress
- ‘Means and methods’
- Evaluates/validates constructability
- Clash detection

- Planning of site access and logistics
- Coordination of material/equipment
- Coordination of multiple projects
- Timely identification of critical issues
Planning/Design/Construction Benefits

• Provides common view
• Increases the level of understanding
• ‘Levels the playing field’
• Reduces risk
Construction Planning Schedule- Constructability/Sequencing Check

I-95 New Haven Harbor Crossing Corridor Improvement Program
Steel girders were shown completed well before the construction of the pier or abutment which supported them
A large section of steel girders of Bridge 172 was shown completed well before the construction of the pier or abutment which supported them.
Construction
Identify Scheduling Conflicts

- Pile driving concurrent with steel erection
- Out-of-sequence steel erection
- New pier construction prior to bridge demolition
Contractor Means & Methods

Temporary shoring towers placed on the trestle prior to construction.

Temporary shoring towers installed prior to demolition of existing bridge.
Cranes moved to positions C1/C2

Workers on boom lifts, girder delivered in median

Girder lifted from delivery vehicle

Crane rigging detached
Right lanes opened to traffic
Construction Safety Planning

• Typical Plan
• Laser Scan
• Hot Work Limits
Demolition Sequencing
Visualization
Visualization – Traffic Safety

March 2014

SB I-95 to NB I-91 Traffic After Shift

August 2014

I-95 SB to I-91 NB After Traffic Shift

October 2014

(actual field condition)
Visualization – Final Conditions
Public Information / Outreach
Public and Stakeholder Outreach

- Traffic shift alerts, detours, and access routes
- Visuals in advance of construction completion
- Illustrates alternatives and design solutions
- Informs about roadway conditions
Public and Stakeholder Outreach

- Weekly Construction News
- Construction Updates for Traffic Shifts
- Detour / Alternate Routes
- Before and After Visualizations
- Traffic Shift Videos
- Website Interactive Map
- Media Content
Traffic Shift Video
“Design, build and simulate projects virtually before executing them in reality.”
Contact Information

Mark D. Rolfe
District Engineer
Connecticut DOT
Mark.Rolfe@ct.gov

John S. Dunham
Assistant District Engineer
Connecticut DOT
John.S.Dunham@ct.gov
Questions & Input

Submit a question using the chat box

Or

Dial *1 to call in your question by phone
Major Project Spotlight: Pennsylvania Rapid Bridge Replacement Project

Bryan Kendro
Gary Kleist
Dean El-Baz

Pennsylvania DOT
Joint DOT/FHWA Major Project Webinar: May 2015 Project Quarterly Webinar

Pennsylvania Rapid Bridge Replacement Project

www.P3forPA.pa.gov
• Act 88 of 2012 authorizes public private transportation projects in Pennsylvania.

• Pennsylvania Structurally Deficient Bridges
  – 6363 SD
    • 4126 state owned,
    • 2237 locally-owned
  – Approximately 300 bridges become SD each year
  – Bridge work increasing proportionate to Act 89

• September 2013  - P3 Board approved The Rapid Bridge Replacement Project.
  – at least 500 geographically disbursed structurally deficient bridges
  – Commonwealth wide distribution
RBR Project: PennDOT Expectations

- Design/Build/Finance/Operate/Maintain
  - Term will be 25 years
- Economies of Scale in Design and Construction
  - Construction of structures between 2015-2018
  - Similar type, size, scope, fabrication, and construction
- Anticipate local designer and contractor support to be incorporated
- PennDOT keeps Routine Maintenance (snow removal, etc.)
  - Development Entity responsible for preventative and corrective measures that affect durability of the bridges.
- Reasonable Handback Elements and Expectations
- High Quality expected to meet Handback Requirements

www.P3forPA.pa.gov
• **Early Completion Bridges**
  - Construction start expected in 2015
  - Similar to Design/Build, we provide TS&L, H&H, NEPA, ROW, Utility Clearance, and Permits
  - Development Entity performs final design

• **Remaining Eligible Bridges**
  - PennDOT provides: Scoping documents, Min Bridge width, detour or staged, and 2 borings per bridge
  - Development entity performs: NEPA, TS&L, H&H, survey, ROW Plan, Permits, and Final Design
RBR Project: Statewide Map of Bridges
RBR Project: PennDOT Responsibilities

- Single Point of Contact for Development Entity Submissions
- Bridge Substitution Determination
- Approve Management Plans; Schedule
- Environmental Compliance (SEP-15)
- Programmatic Risk-Based Auditing
- Independent Assurance
  - Random visits, sampling & testing
  - Hold point oversight
  - Coordination with CQAF
- Enforce Contractual Compliance
  - PPA, Technical Provisions, DE PMPs
- FHWA Coordination

www.P3forPA.pa.gov
RBR Project: Development Entity’s Responsibilities

• Follow Contractual commitments including adherence to Department’s Manuals and normal policies and procedures

• Develop a Project Management Plan – 19 different plans
  – Comprehensive Environmental Protection Plan
  – Context Sensitive Design and Aesthetics Master Plan
  – Quality Management Plan
    • Design Quality Management Plan
    • Construction Quality Management Plan
    • Maintenance Management Plan

• Employ a Environmental Compliance Manager during the D&C phase of the project

• NBIS inspections
• Construction Quality
  – Quality Control – DE
    • (as is typically the contractor’s responsibility)
  – Quality Assurance – DE
    • to ensure that their Quality Processes are followed (which must include Department requirements)
  – Quality Acceptance – Independent Construction Quality Acceptance Firm (CQAF)
    • Reports to PennDOT and the DE
    • Certifies to both that requirements were met
    • Reports and data entry – our systems
    • PennDOT acceptance based on these outputs, and:
  – Independent Assurance – Department
    • Random visits, sampling, testing, auditing, analysis, QA the CQAF, etc.
  – Additional FHWA and Finance Team roles
RBR Project: Noncompliance System

- Noncompliance point system created to incentivize Development Entity Compliance with Contractual Documents
  - Noncompliance points for each occurrence
    - Cure Period
    - Interval of Recurrence
  - Financial impact, and point accrual
    - Deduction of funds per point
    - Points can lead to default
  - Liquidated Damages
    - Unavailability Events – financial deductions
      - Calendar, Detour, Lane Closure

www.P3forPA.pa.gov
RBR Project: Handback Requirements

- **Punchlist at “Final Acceptance”**
  - Department takes over maintenance of signs, delineators, line painting, vegetation, etc.

- **Early Handback**
  - seeding after growth established 1 year
  - Flexible pavements handed back in 5 years
  - Must meet our 5 year warranty conditions

- **Handback at end of Term**
  - Condition rating of 7 throughout the Term
  - Condition 7 for 98% at end / at least 6 for remainder
RBR Project: FHWA Coordination

- FHWA/USDOT approvals
  - **Private Activity Bonds (PABs)** - FHWA allocated **up to $1.2B** of PAB Authority to the Pennsylvania Economic Development Financing Authority on June 27, 2014.
  - **Special Experimental Project No. 15 (SEP-15)** - PennDOT’s SEP–15 application was approved on 7/31/14. This allowed the Development Entity (DE) to create and submit for approval the NEPA document for each of the bridges. DE will also be responsible for Public Outreach.
  - **RFP Contract documents approved** – FHWA approved the Public-Private Partnership Agreement (PPA), Instruction to Proposers (ITP) and Technical Provisions (TP)

www.P3forPA.pa.gov
RBR Project: Schedule Updates

- **RFQ Statements of Qualifications Due:** 02/07/2014
- **Proposer Submittals Received:** 4 shortlisted teams - 9/29/2014
- **Development Entity Selected** – Plenary Walsh Keystone Partners (PWKP) - 10/24/2014
- **Commercial Close Date** – January 9, 2015
- **NTP 1** – January 30, 2015
- **Financial Close Date** – March 18, 2015

www.P3forPA.pa.gov
RBR Project: Timeline

Completing Construction Early
- Cooperation and Coordination
- Quality is Key to Durability

Early Handback
- 12 months vegetation growth
- 5 year flexible pavement (warranty)

Handback
- NBIS and Condition Assessment
- Routine Maintenance and Renewal Work

Useful Life
- 25 year term
- Into future

www.P3forPA.pa.gov
RBR Project: PWKP TEAM

- **Development Entity** – Plenary Walsh Keystone Partners
- **Lead Engineering Firm** – HDR
- **Lead Contractor** – Walsh/Granite JV
- **Lead Maintenance Firm** – Walsh Infrastructure Management (WIM)
- **Construction Quality Acceptance Firm** – TRC

www.P3forPA.pa.gov
RBR Project: Approach

• What’s different?
  – Best Value Selection
  – One-on-One meetings
  – Alternative Technical Concepts (ATC’s)
  – Design Reviews
  – Construction Involvement
  – Maintenance Responsibilities
    • Handback
    • Useful Life
  – Noncompliance Regime
  – Payment
• Goal is 30+ Bridges Released For Construction (RFC) per Month Beginning May 2015
  – Over 200 Designers anticipated at peak (including numerous sub-consultants)
  – 300+ Integral Abutment Bridges
  – 100+ Box Culverts
  – 100+ Cantilever Abutment Bridges
  – Bridges are Primarily Spread Box Beam Superstructure
  – Roadway Work is Limited to Bridge to Roadway Transition

• Design and Program Standardization will be Coordinated with Construction Joint Venture through weekly or bi-weekly Technical Working Groups (TWG)
• 11 Standard Designs will be used (FHWA Approval Required):
  – SM Rail Standard
  – Abutment Standard
  – Vertical Battier Standard
  – Bridge Approach Slab Standard
  – Bridge Bearing Standard
  – Precast Box Culvert Standard
  – Foundation Design Parameters and Model Assumptions Standards
  – Roadway Special Details Standard
  – Spread Box Beam Standard
  – Flume Detail Standard
RBR Project: PWKP Approach – Construction

- Material Management
  - Major Materials will be sourced by CJV in lieu of individual subs
  - Design Input
  - Economies of Scale
  - Less Administration
  - More Efficient Quality Control
• Public Information
  – Website ➔ parapidbridges.com
  – NEPA Public Meetings / other Public Meetings
  – Public Officials Meetings
  – Bridge Signs

www.P3forPA.pa.gov
parapidbridges.com
Contact Information

Bryan Kendro
Director of the Public-Private Partnership Office
Pennsylvania DOT
brkendro@pa.gov

Gary Kleist
Project Manager - P3 Rapid Bridge Replacement
Pennsylvania DOT
gkleist@pa.gov
Contact Information

Dean El-Baz
Consultant Program Manager
Pennsylvania DOT
c-delbaz@pa.gov
Questions & Input

Submit a question using the chat box

Or

Dial *1 to call in your question by phone
Major Project Announcements

Project Delivery Team
Office of Innovative Program Delivery
Current Active Major Projects

114 Number of Active Major Projects

As of 4/13/2015

NH=1
DC=1 3
MD=1
DE= 1
NJ=1

2
6
1
18
4
19
2
4
6
3
3
2
2
1
1
3
2
2
10

As of 4/13/2015
As of 4/13/2015

Number of Potential Future Major Projects in States that have Active Major Projects
121

Number of Potential Future Major Projects in States that do not have Active Major Projects
23

TOTAL
144
Updated Financial Plan Guidance

- Guidance issued in December 2014
- Addresses changes from MAP-21
- Resources – guidance, recorded webinar, examples, Federal Register Notice
  
  http://www.fhwa.dot.gov/ipd/project_delivery/resources/financial_plans/
Questions & Input

Submit a question using the chat box

Or

Dial *1 to call in your question by phone
Upcoming Webinars

Joint DOT/FHWA Major Project Webinar

Tuesday, October 27th
1:30 to 3:30pm ET

Quarterly Major Project Webinar (FHWA ONLY)

Tuesday, August 4th
1:30 to 3:30pm ET

Contact LaToya at latoya.johnson@dot.gov or 202-366-0479 if you have topic ideas for upcoming webinars
Contact Information

LaToya Johnson, P.E., PMP
Major Project Highway Engineer
Office of Innovative Program Delivery
Federal Highway Administration
(202) 366-0479
Latoya.johnson@dot.gov
Jim Sinnette, P.E., PMP
Project Delivery Team Leader
Office of Innovative Program Delivery
Federal Highway Administration
(202) 366-1561
James.Sinnette@dot.gov