



Innovative Program Delivery

Joint DOT/FHWA Major Project Webinar

May 5, 2015

***FHWA Office of Innovative Program Delivery
Project Delivery Team***



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



Innovative Program Delivery

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



Innovative Program Delivery

Project Management on Major Projects

Ryan Luck
Bob Gutierrez
Wisconsin DOT

Andrew Brinkerhoff
FHWA – WI Division

Wisconsin DOT's Major Projects

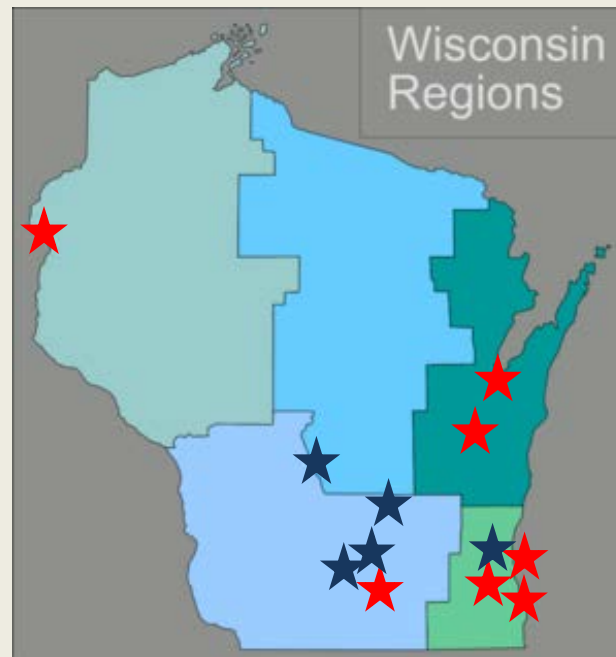
May 5, 2015

Andy Brinkerhoff – Project Oversight Manager

(Photos and graphics provided by WisDOT)

Wisconsin Major Projects

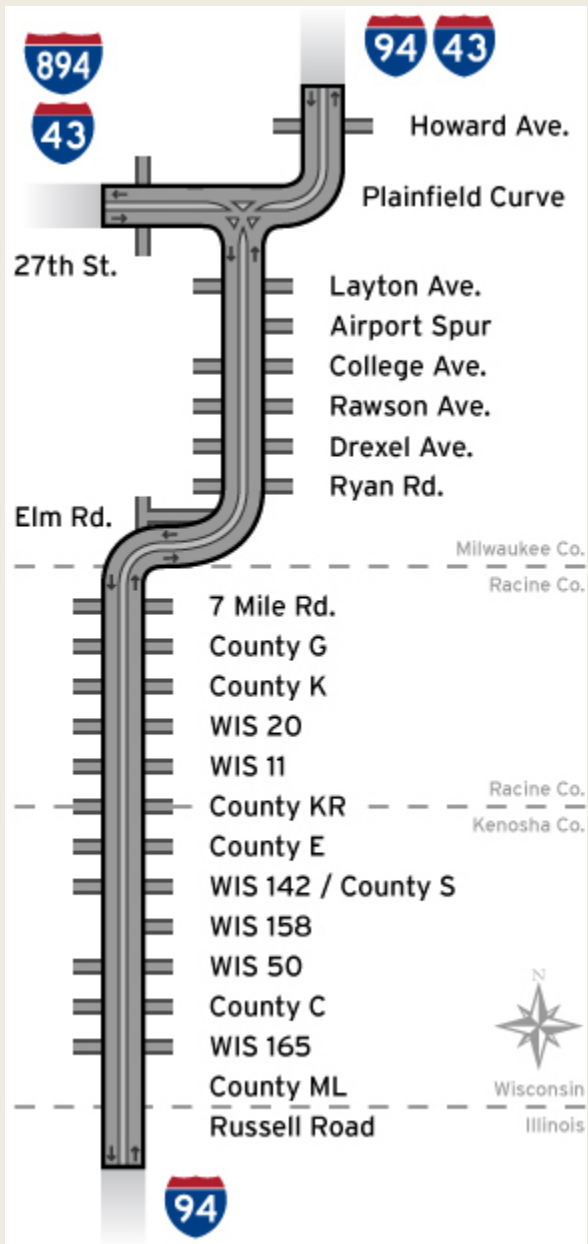
- 12 Federal Major Projects
 - 7 in Final Design and/or Construction Phase ★
 - 5 in Environmental Phase ★



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/>







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>



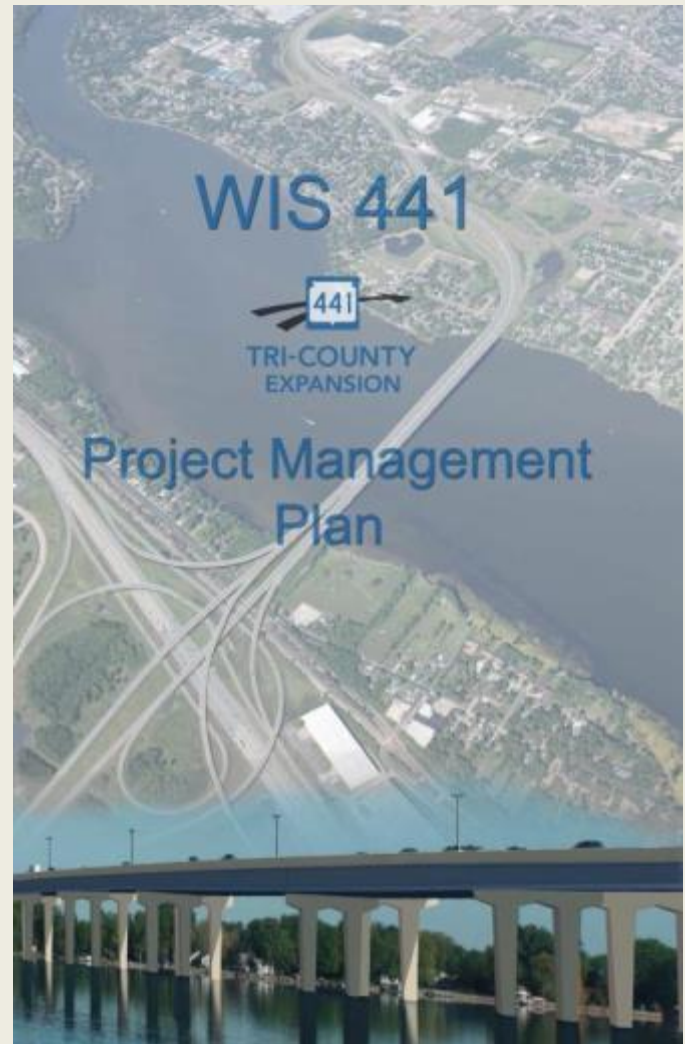




Wis 441/US 10 (Tri-County Freeway)

- 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/>







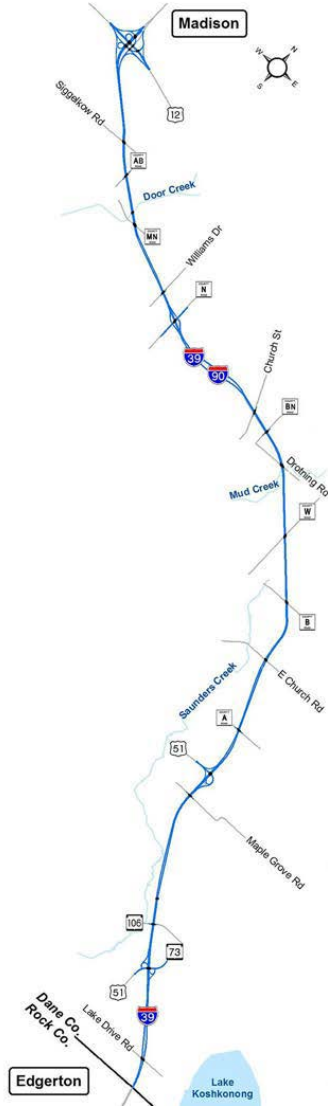
I-39/90

- 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)
- <http://projects.511wi.gov/i-39-90/>



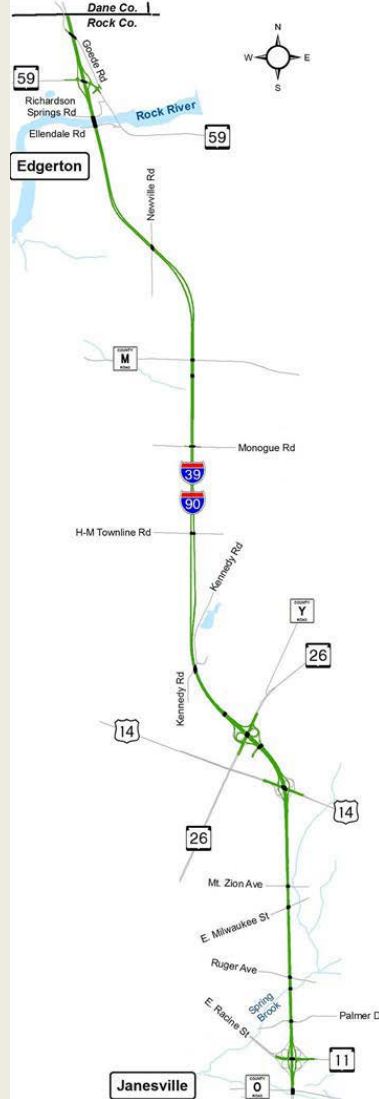
North Segment

Dane/Rock County Line
to US 12/18



Central Segment

County O to
Dane/Rock County Line



South Segment

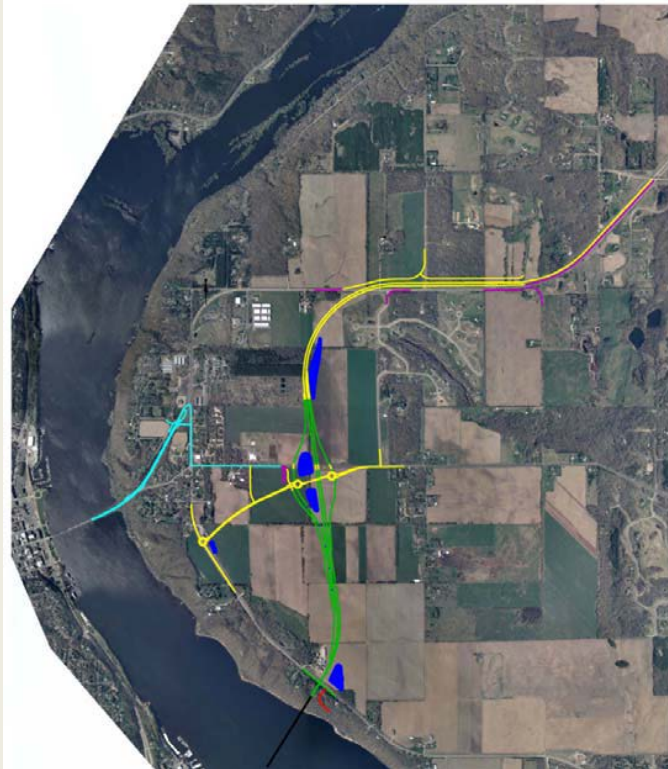
Illinois State Line
to County O



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>







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
- <http://www.dot.wisconsin.gov/projects/seregion/43/index.htm>



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*

Wisconsin Department of Transportation



MEGA / MAJOR
PROJECTS



PROGRAM DELIVERY BEST PRACTICES



*In partnership with
Federal Highway Administration*



Wisconsin Department of Transportation



MEGA / MAJOR
PROJECTS



PROGRAM DELIVERY BEST PRACTICES



*In partnership with
Federal Highway Administration*



Wisconsin Department of Transportation



MEGA / MAJOR PROJECTS

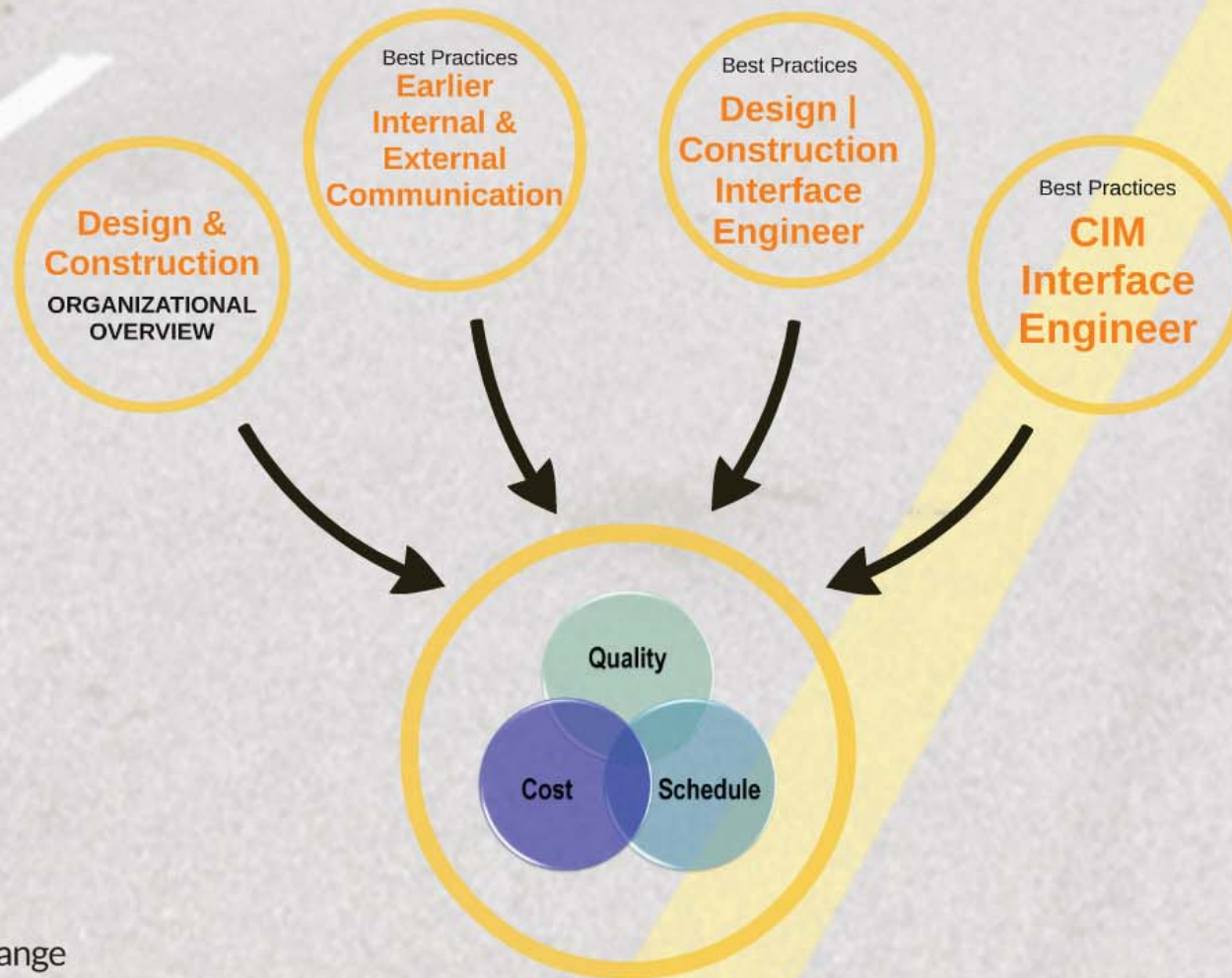


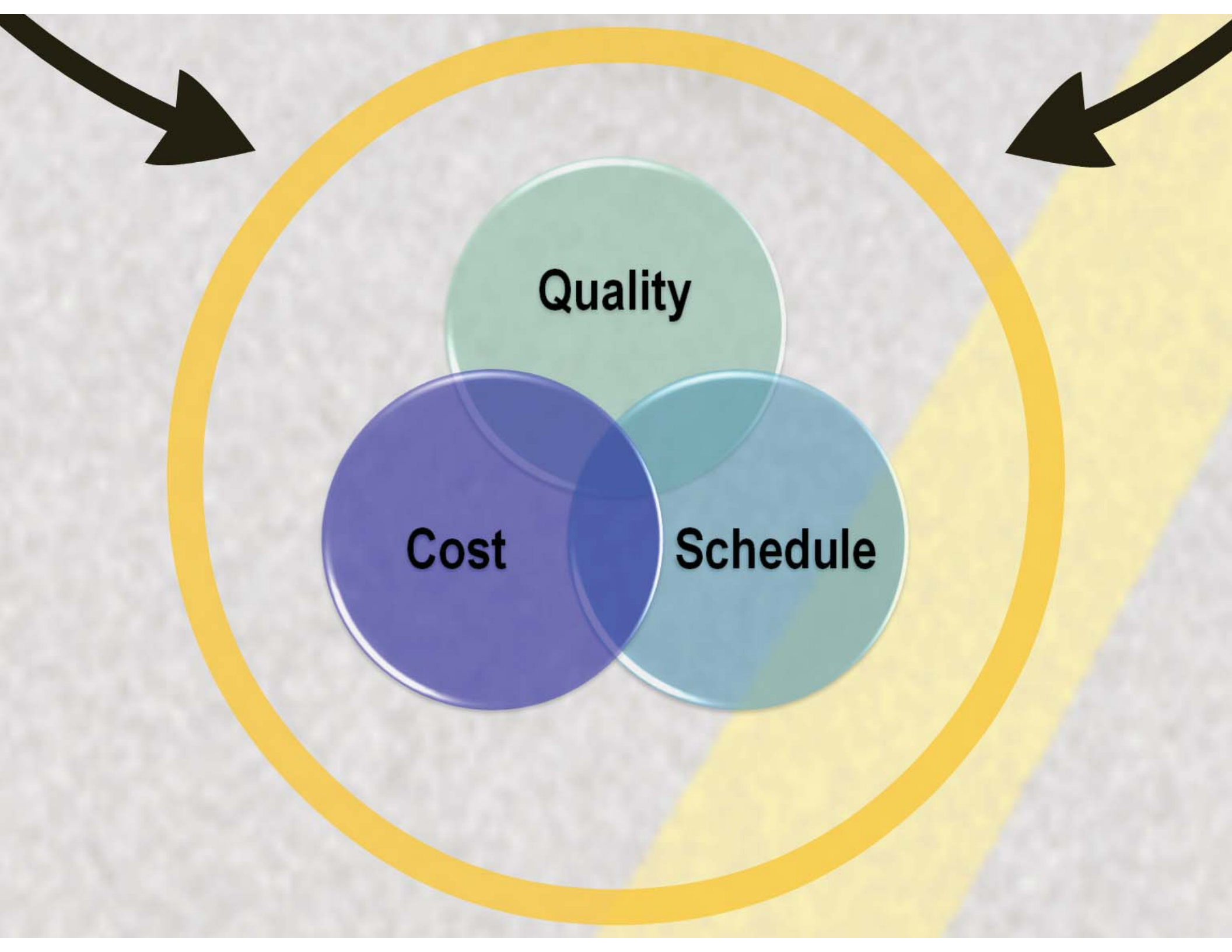
PROGRAM DELIVERY BEST PRACTICES

 **U.S. Department of Transportation
Federal Highway Administration**

*In partnership with
Federal Highway Administration*

WisDOT Key Management Practices



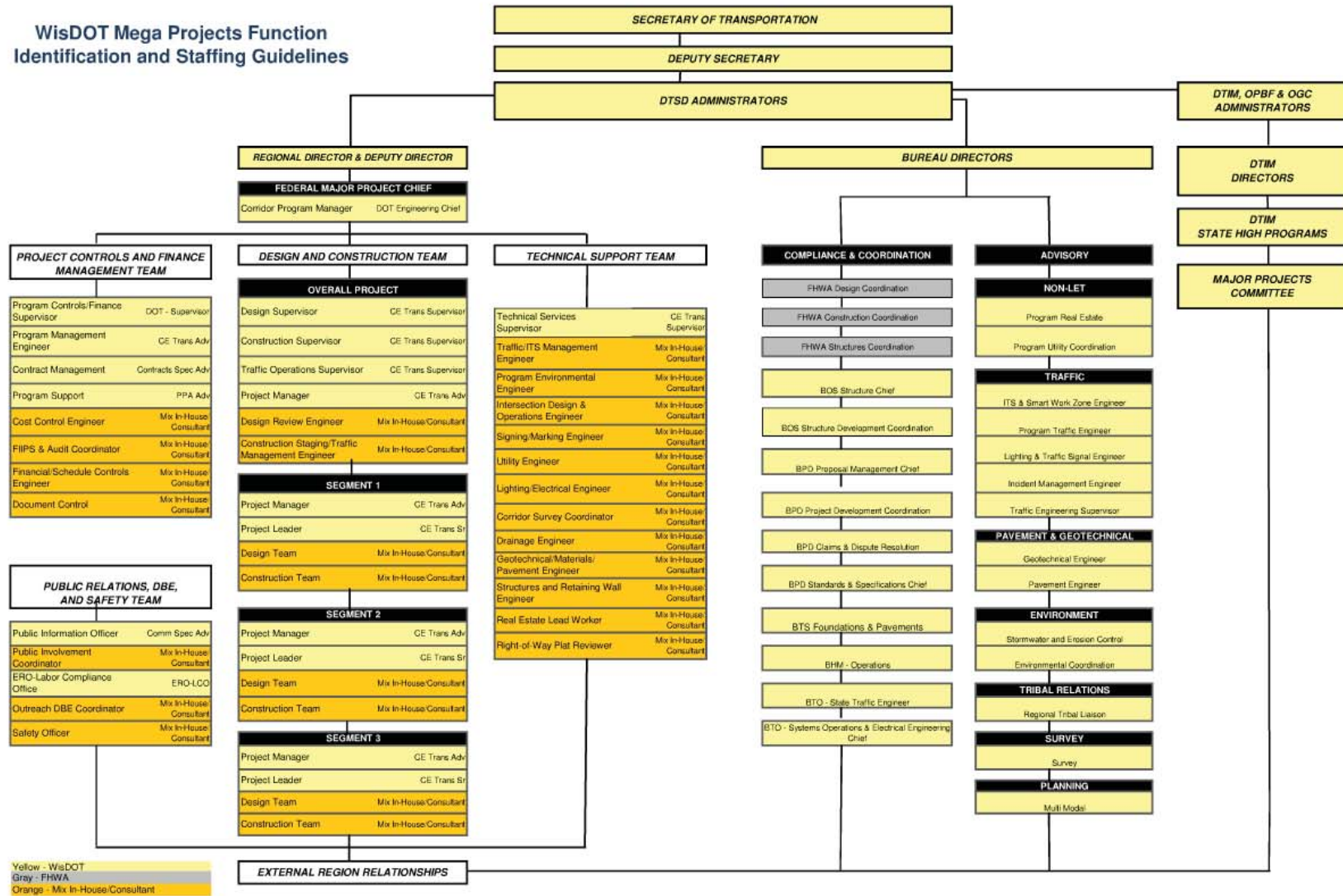


Quality

Cost

Schedule

WisDOT Mega Projects Function Identification and Staffing Guidelines



- Notes 1) This organizational structure depicts a generic structure at a starting point for any future Mega Projects.
 2) The size and number of boxes (staff) required for each functional area will be based upon the character (rural, urban, etc.) of that particular project.
 3) See other project team function and organization charts for reference.

REGIONAL DIRECTOR & DEPUTY DIRECTOR

FEDERAL MAJOR PROJECT CHIEF

Corridor Program Manager DOT Engineering Chief

PROJECT CONTROLS AND FINANCE MANAGEMENT TEAM

Program Controls/Finance Supervisor	DOT - Supervisor
Program Management Engineer	CE Trans Adv
Contract Management	Contracts Spec Adv
Program Support	PPA Adv
Cost Control Engineer	Mix In-House/Consultant
FIIPS & Audit Coordinator	Mix In-House/Consultant
Financial/Schedule Controls Engineer	Mix In-House/Consultant
Document Control	Mix In-House/Consultant

PUBLIC RELATIONS, DBE, AND SAFETY TEAM

Public Information Officer	Comm Spec Adv
Public Involvement Coordinator	Mix In-House/Consultant
ERO-Labor Compliance Office	ERO-LCO
Outreach DBE Coordinator	Mix In-House/Consultant
Safety Officer	Mix In-House/Consultant

DESIGN AND CONSTRUCTION TEAM

OVERALL PROJECT

Design Supervisor	CE Trans Supervisor
Construction Supervisor	CE Trans Supervisor
Traffic Operations Supervisor	CE Trans Supervisor
Project Manager	CE Trans Adv
Design Review Engineer	Mix In-House/Consultant
Construction Staging/Traffic Management Engineer	Mix In-House/Consultant

SEGMENT 1

Project Manager	CE Trans Adv
Project Leader	CE Trans Sr
Design Team	Mix In-House/Consultant
Construction Team	Mix In-House/Consultant

SEGMENT 2

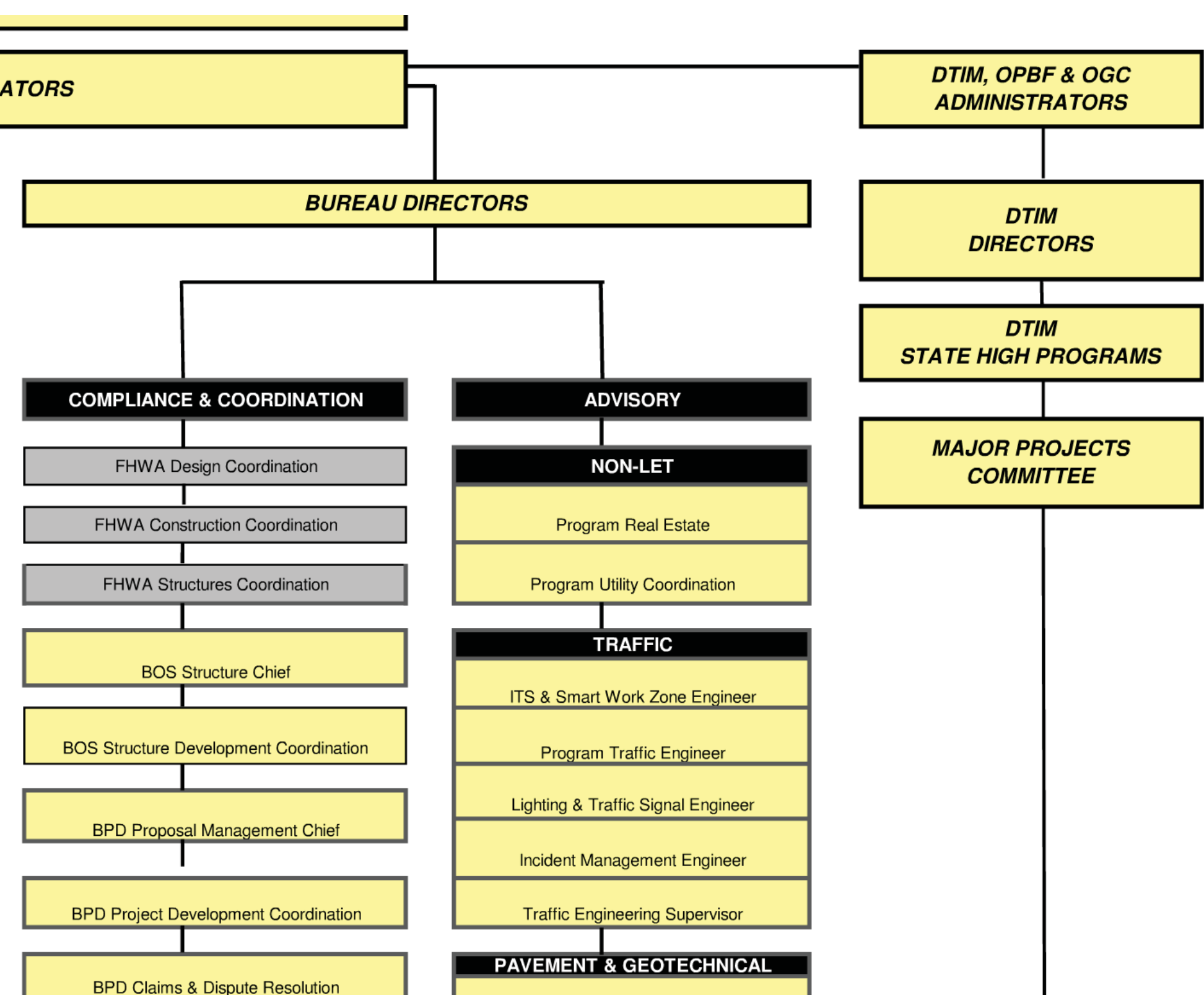
Project Manager	CE Trans Adv
Project Leader	CE Trans Sr
Design Team	Mix In-House/Consultant
Construction Team	Mix In-House/Consultant

SEGMENT 3

Project Manager CE Trans Adv

TECHNICAL SUPPORT TEAM

Technical Services Supervisor	CE Trans Supervisor
Traffic/ITS Management Engineer	Mix In-House/Consultant
Program Environmental Engineer	Mix In-House/Consultant
Intersection Design & Operations Engineer	Mix In-House/Consultant
Signing/Marking Engineer	Mix In-House/Consultant
Utility Engineer	Mix In-House/Consultant
Lighting/Electrical Engineer	Mix In-House/Consultant
Corridor Survey Coordinator	Mix In-House/Consultant
Drainage Engineer	Mix In-House/Consultant
Geotechnical/Materials/Pavement Engineer	Mix In-House/Consultant
Structures and Retaining Wall Engineer	Mix In-House/Consultant
Real Estate Lead Worker	Mix In-House/Consultant
Right-of-Way Plat Reviewer	Mix In-House/Consultant



Wisconsin Department of Transportation Guidance Matrix for Project Organization, Tools, Management, and Reporting

This matrix lists key management resources and strategies that are critical to the success of any project while highlighting how those items differ between standard or typical improvement projects, higher profile projects and Mega projects. This matrix is intended to guide the Department's decision-making process as it considers the best approach to manage a growing number of significant and high profile projects.

Key Program Processes	Mega Construction	Regional Construction	Standard Construction	Definition	Project Types*		
					Standard	High Profile (Typically \$100-\$500M)	Mega (> \$500M)
Balancing Contract Modifications	X			Used to account for the overrun/underrun of quantities during a multi-year project. Allows for financial adjustments midway through a contract on quantities that are expected to either overrun or underrun by the completion of the project.	No	Possible	Yes
Benchmark Performance Indicators	X	X		Conception to linear project percent complete based on both time and cost. Allows project managers to approve when the project is ahead or behind schedule.	Possible	Yes	Yes
Change Management	X	X	X	Define and select strategies, structures, procedures and technologies to deal with changes and determine how they impact the project's scope, schedule and cost.	Standard	Intermediate	High
Construction Planning and Submittal Workflows	X			Preconstruction workshops (after contract award) between the prime contractor, major subcontractors, and Department staff to discuss critical aspects and issues of the project.	No	Possible	Yes
Contracted Project Expertise	X	X	X	Mega Projects may need to supplement the Department's (in-house) expertise by hiring additional outside guidance. Typical hourly rates and travel expenses may be elevated beyond typical consultant contracts.	No	Possible	Unlikely
Cost Estimate Workshop	X			The development of a built out budget cost in year of expenditure values for a project or program. Includes risk & uncertainty identification. Conducted during NEPA phase and just prior to construction during final design.	Yes (Mega Projects)	Yes	Yes
Design Liaison Contract	X	X		Contract with the design consultant to oversee plan questions during construction and to provide design through construction continuity.	No	Possible	Yes
Disadvantaged Business & Worker Programs	X	X		Mentoring programs to assist DBE firms through the certification and bidding process as well as educational opportunities for minority and female workers for entry level work required for construction projects.	Standard	Intermediate	High
Dispute Review Board	X			Established after execution of the contract to render decisions on unresolved claims quickly and impartially during construction of the project. Typically 3 persons: 1 WisDOT, 1 Contractor, 1 owner appointed by WisDOT.	No	Possible	Yes
Dispute Resolution Process	X	X	X	A process used to resolve claims that cannot be resolved through the Real Time Claims Management Process in a manner that complies with the contract, is impartial, and still expedites the standard claims process.	Standard FDM and Specification process	Possible	Yes
Document Controls	X	X	X	A framework or system to provide collection, storage, and distribution of information for timely and effective decision-making.	Standard	Intermediate	High
Documenting Decisions	X	X	X	Database to record and track decisions made on a project in order to provide for consistency in decision making throughout the project.	No	Possible	Yes
Earned Value Analysis (EVA)	X			Project control technique for measuring progress and performance. Schedule Performance Index (SPI) and Cost Performance Index (CPI) are tracked to assess project performance.	At least at 25%, 50%, 75%, 100% completion	Monthly	Monthly
Escrow Bid Documents	X			Require the lowest responsible bidder to submit the documents they used to determine the costs shown in their bid into escrow. These remain sealed unless the bidder and the department mutually agree to release the documents to aide in dispute and claim resolution.	No	Possible	Yes
Federal Financial Plan	X			A comprehensive document that reflects the project's cost estimate and revenue structure and provides a reasonable assurance that there will be sufficient financial resources available to implement and complete the project as planned. Required to be updated annually.	No	Required Plan	Defaulted Plan Approved by FDMR
Issues, Risk & Complexity	X	X		Issues, risks and/or complex projects may require additional resources to mitigate future potential complexity/risks/complexity.	Low	Medium	High
IT Innovation	X	X		Innovative IT proposals are sometimes considered on a project. Other policy, procedure, specifications, administrative rules, and statutory considerations are involved. Decision making can involve areas outside the Department. IT innovations shall be vetted through the Division IT executive committee (ITEC).	Standard	Standard	Standard
Owner Controlled Insurance Program (OCIP)	X	X		An insurance policy held by WisDOT during construction, which is typically designed to cover virtually all liability and loss arising from the construction project unless specifically excluded. Includes safety management and oversight.	Contact Risk Manager	Contact Risk Manager	Contact Risk Manager
Partnering	X	X			No	Possible	Yes
Pay Plan Quantity	X			Designate items of work in the contract as Pay Plan Quantity (PPQ) that are not measured in the bid for payment, but rather paid as identified in the contract. Recommended to be used on quantities that can be estimated accurately, are not expected to vary and are measured (weight or by area).	Possible	Possible	Yes
Peer Review Committee	X	X	X	The evaluation of work by others to ensure that technical processes being applied or developed meet the agency's needs, meet the standards of professional practice, and/or meet federal, state or local planning requirements. Potential for a decision making board to side in policy and change management decisions as well as schedule changes across state fiscal years.	Standard	Elevated	High
Program Controls	X	X	X	Documentation, tracking and reporting related to the overall program's schedule, quality, scope, material, and cost issues. Program Controls are generally in house or a part of prime consultant's contract. Plan reviews should be completed by an independent entity.	Standard	Intermediate	High
Program Design Manual	X		X	The plan developed defining design roles, responsibilities, relationships and decision making processes required to complete the project/program.	No	Possible	Yes
Program Management	X	X	X	Person or persons responsible for monitoring and oversight of project controls, document controls, financial controls, schedule controls and contract management.	Region	Region + possible visits	Extra dedicated staff
Program/Project Management Plan	X	X	X	FHWA required plan which documents the procedures and processes that manage the scope, costs, schedules, quality, and applicable federal requirements as well as the role of the agency leadership and management teams in the delivery of the project. This plan details program design, construction as well as financial management.	No	Possible	Yes
Project Controls	X	X	X	Documentation, tracking and reporting related to specific project's schedule, quality, scope, material, and cost issues. Project Controls are generally in house or a part of a prime consultant's contract. Plan reviews should be completed by an independent entity.	Standard	Intermediate	High
Project Field Office	X	X		A project office need is dictated by the project's size, number of staff involved daily, potential for OCP, and convenience meeting room space.	Standard Full Office	May have elevated need	WisDOT facility with IT and office furniture/equip
Projecting Cost to Complete	X	X		Revised project cost to complete estimates taking into account budgeted cost of work performed, budgeted cost of work scheduled, over/underrun quantities, design fees, public outreach, approved contract modifications, and anticipated contract modifications.	Quarterly	Monthly	Monthly
Project Innovation	X	X		Innovative design, construction, and other function proposals are sometimes considered on a project. Other policy, procedure, specifications, administrative rules, and statutory considerations are involved. Consideration and decision making can involve areas outside the Department and follow a process and procedure.	Standard	Standard	Standard
Public Outreach	X	X		The use of multiple and varied strategies to communicate project information to stakeholders, including businesses, general public, and local officials, to obtain feedback and to provide information.	Standard	Elevated	High
Quality Assurance	X	X	X	Steps taken to validate quality control, documentation and verification of materials and placement methods.	Region	Region + possible visits	Extra dedicated staff
Reports	X	X	X	1. TIC (All Projects Financed within the Major Program) 2. Executive Summary 3. Detailed Monthly Report with Appendices	1. February & August 2. No 3. No	1. February & August 2. Monthly 3. Possible	1. February & August 2. Monthly 3. Monthly
Reserve Budgets	X	X	X	Project reserve (contingency) budget to cover costs for unanticipated project costs, changed field conditions, design modifications, and required scope changes.	Standard	Yes	Yes
Scheduling	X	X	X	A planning framework for tracking program delivery. Mega projects should require contractor to utilize Critical Path scheduling (CPM) software and submit a schedule that reflects the plan for their performance of the work within the contract completion deadlines, production rates, and the critical path of activities.	PPM	PPM or Critical Path Software (Primavera P6)	Lithical Path Software (Primavera P6)
Staffing	X	X	X	Project or program resource load increases beyond Region staff capacity and additional dedicated staff are needed.	Region and Bureau	Possible visits	Extra dedicated staff
Track Overrun/Underrun Quantities	X	X	X	Track and record overrun/underrun quantities for use in cost to complete estimating. Identifies areas of concern to discuss with contractor.	Possible	Yes	Yes
Traffic Mitigation Plan	X			A plan developed with input from business stakeholders, agencies, institutions and first responders to maximize the safe and efficient movement of traffic through construction zones. Documented as part of TMP.	Standard	Elevated	High
Websites	X	X		A project's web presence is dictated by its size. Smaller projects are profiled on the WisDOT website; mega projects typically have significant websites. Projects with vehicles utilize the BTL web system as a platform.	DOT Plans & Projects	S11	S11

*** Project Types:**

Standard: Routine improvement projects that follow normal staffing and management procedures. Individual project characteristics may be unique and at times justify additional resources, management tools and reporting.

High Profile: Projects that are high cost, unusually complex or have a high level of public or congressional interest. Individual project characteristics may justify additional specialized staff and management positions, as well as additional processes and reporting tools to be used. Examples of these types of projects could be significant urban freeway rehabilitation or high cost bridges.

Mega: Projects that meet the federal major project definition. These are typically a small number of the state's highest profile and highest risk projects. A Mega project requires a large investment of Department staff time, resources and reporting tools to ensure effective management and control of the project.

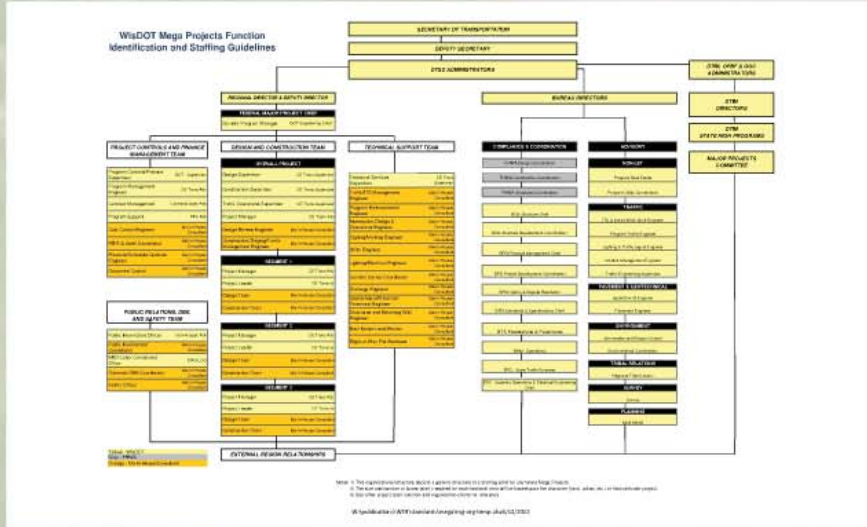
projects, higher profile projects and Mega projects. This matrix is number of significant and high profile projects.

Key Program Processes		Design	Construction	Financial	Doc Controls	Change Mgmt	
Balancing Contract Modifications		x					Used to account for the cost of contract modifications midway through a contract project.
Benchmark Performance Indicators		x	x				Comparison to linear projects to determine whether the project is ahead or behind schedule.
Change Management	x	x			x		Define and adopt strategies to manage changes that impact the project's scope, schedule, and cost.
Construction Planning and Submittal Workshops		x					Preconstruction workshops with design and department staff to discuss project requirements and submittal process.
Contracted Project Expertise	x	x	x	x			Mega Projects may need specialized expertise. Typical hourly rates and time requirements are high.

As it considers the best approach to manage a growing

	Project Types*		
	Standard	High Profile (typically \$100- \$500M)	Mega (> \$500M)
Adjustments of the	No	Possible	Yes
Approximate	Possible	Yes	Yes
How they	Standard	Intermediate	High
and	No	Possible	Yes
guidance.	No	Possible	Likely
es risk &	Yes (Minor Projects)	Yes	Yes

Design & Construction Organizational Overview



Wisconsin Department of Transportation Guidance Matrix for Project Organization, Tools, Management, and Reporting

The matrix below provides a high-level overview of the various roles and responsibilities associated with the various phases of a project. It is intended to be used as a reference tool for project management and reporting. The matrix is organized by project phase and project type. The matrix is organized by project phase and project type. The matrix is organized by project phase and project type.

Project Phase	Project Type	Role	Responsibilities	Frequency	Key Metrics	Reporting
Project Initiation	Major	Project Manager	Lead the project team, define project goals, and manage resources.	Weekly	Project Budget, Project Schedule, Project Quality	Weekly
		Project Sponsor	Provide financial support and oversight for the project.	Monthly	Project Budget, Project Schedule, Project Quality	Monthly
		Project Steering Committee	Provide strategic direction and oversight for the project.	Quarterly	Project Budget, Project Schedule, Project Quality	Quarterly
		Project Charter	Define the project's purpose, goals, and scope.	One-time	Project Budget, Project Schedule, Project Quality	One-time
		Project Plan	Develop a detailed plan for the project, including scope, schedule, and budget.	One-time	Project Budget, Project Schedule, Project Quality	One-time
		Project Risk Register	Identify and track project risks.	Weekly	Project Budget, Project Schedule, Project Quality	Weekly
		Project Communication Plan	Define how project information will be communicated.	One-time	Project Budget, Project Schedule, Project Quality	One-time
		Project Stakeholder Register	Identify and track project stakeholders.	Weekly	Project Budget, Project Schedule, Project Quality	Weekly
		Project Quality Management Plan	Define how project quality will be managed.	One-time	Project Budget, Project Schedule, Project Quality	One-time
		Project Resource Management Plan	Define how project resources will be managed.	One-time	Project Budget, Project Schedule, Project Quality	One-time
Project Execution	Major	Project Manager	Lead the project team, manage resources, and track progress.	Weekly	Project Budget, Project Schedule, Project Quality	Weekly
		Project Sponsor	Provide financial support and oversight for the project.	Monthly	Project Budget, Project Schedule, Project Quality	Monthly
		Project Steering Committee	Provide strategic direction and oversight for the project.	Quarterly	Project Budget, Project Schedule, Project Quality	Quarterly
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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

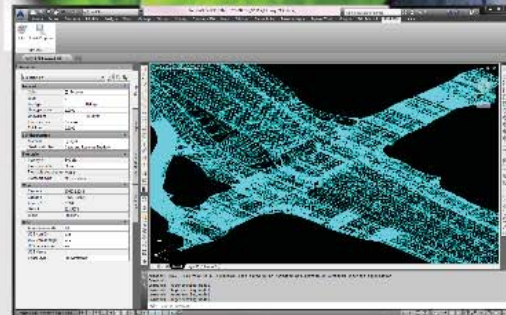
- BIM Field 360



External Communication

Earlier Contractor outreach

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

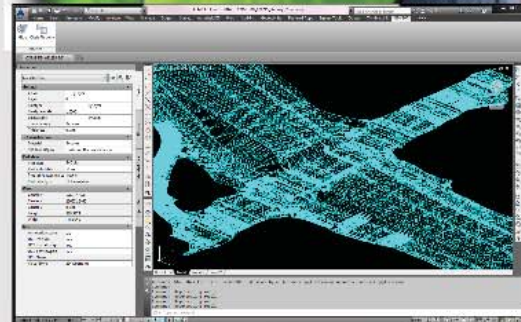




External Communication

Earlier Contractor outreach

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



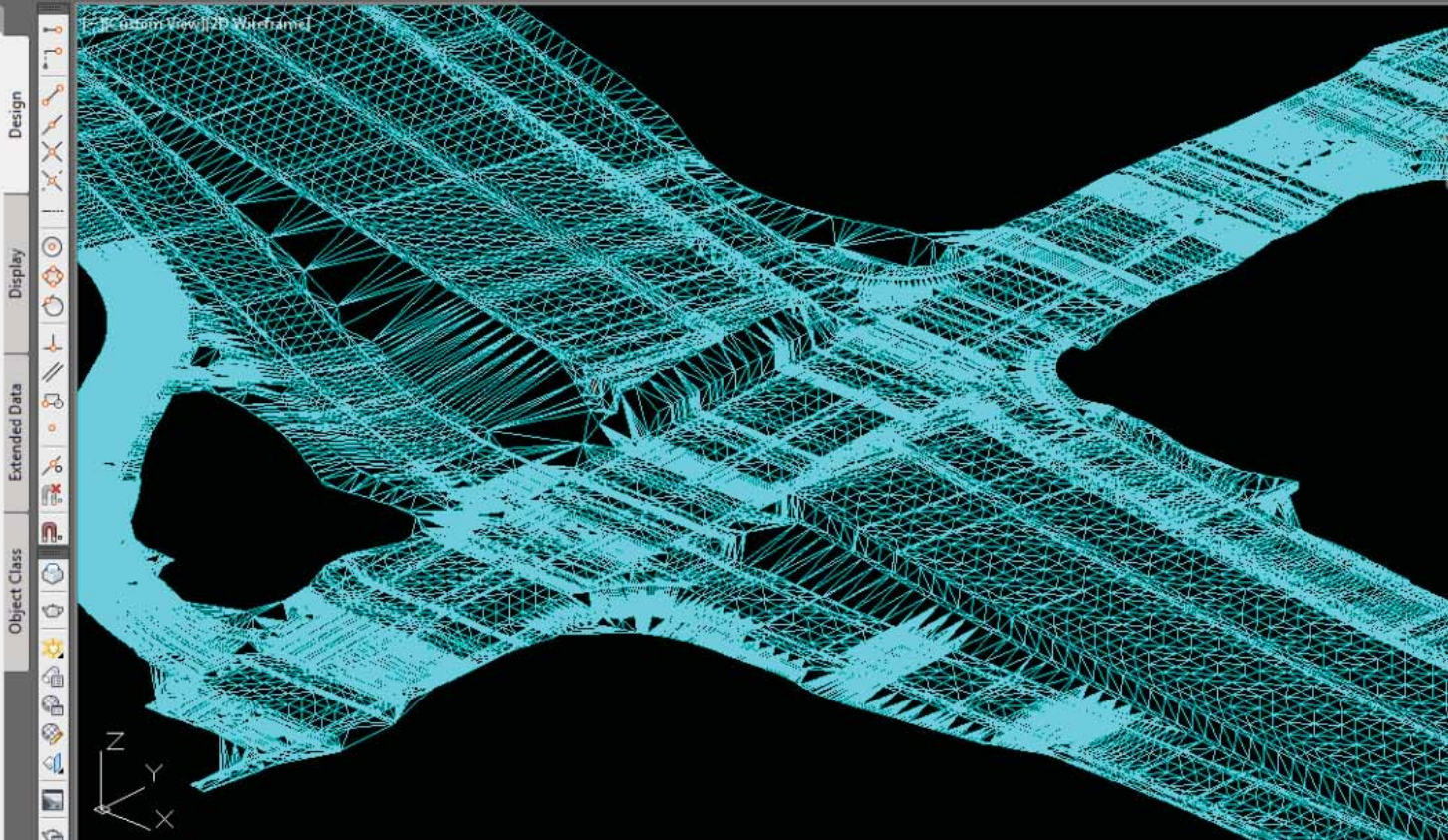
Glue Clash Pinpoint
BIM 360

COMB FIN_021215_R6*

Properties

No selection

General	
Color	<input type="checkbox"/> ByLayer
Layer	0
Linetype	ByLayer
Linetype scale	1.0000
Lineweight	ByLayer
Transparency	ByLayer
Thickness	0.0000
3D Visualization	
Material	ByLayer
Shadow display	Casts and Receives Shadows
Plot style	
Plot style	ByColor
Plot style table	None
Plot table attached to	Model
Plot table type	Not available
View	
Center X	576272.2245
Center Y	296571.6466
Center Z	0.0000
Height	528.5274
Width	-18.0955
Misc	
Annotation scale	1:1
UCS icon On	Yes
UCS icon at origin	Yes
UCS per viewport	Yes
UCS Name	
Visual Style	2D Wireframe



Model Layout1 Layout2

Autodesk DWG. This file is a TrustedDWG last saved by an Autodesk application or Autodesk licensed application.
Command: Regenerating model.
Command: Regenerating model.
Command: Regenerating model.
Command: Regenerating model.

Type a command

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

AUTODESK® BIM 360™ FIELD

By Location All Pins

Enter search text

<NEW> XXXX-XX-XX
3/12/14 (Updated) sam

Draft Open

New Issue

XXXX-XX-XX

3/12/14 (Updated) sample issue updated in tracking log
3/10/14 Sample issue opened in tracking log

Attachments (1)

Comments (3)

Issue type
Punch List : Issue

Company

Status
Open

Date created
Tue 03/18/2014

Author
listenz@nilbaneco.com

Not filtered. Sorted by Company asc

No Company Assigned

Autodesk BIM 360 Field

Home Sample Hospital - 02

View Issues

Issues Checklists Equipment Tasks Photos

Dashboard Locations Companies

Issue Tracker

Issue Tracker - Total Closed

Root Cause

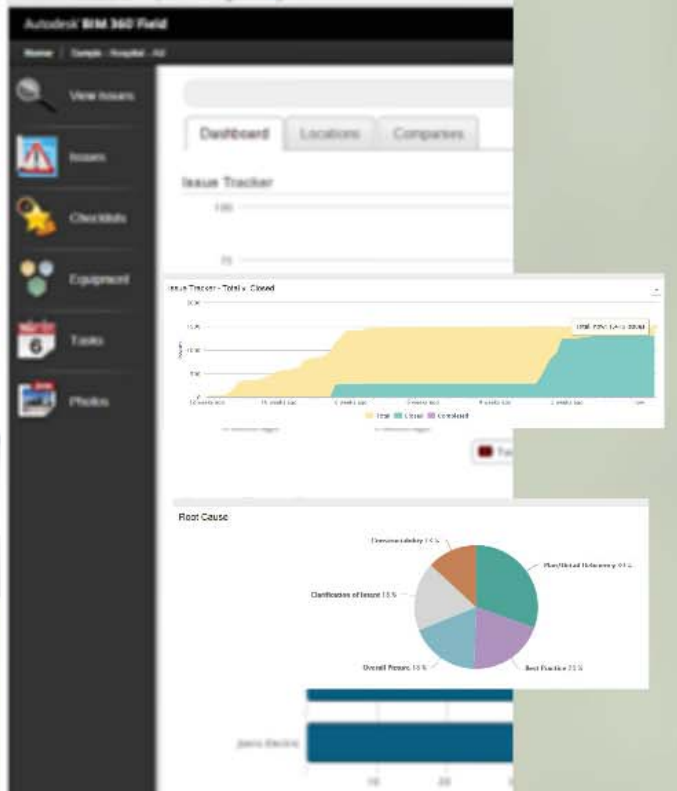
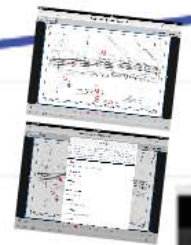
Demos/Setup 14%

Identified Inventory 11%

Defective of Issue 15%

Direct Issues 15%

Bad Practice 21%

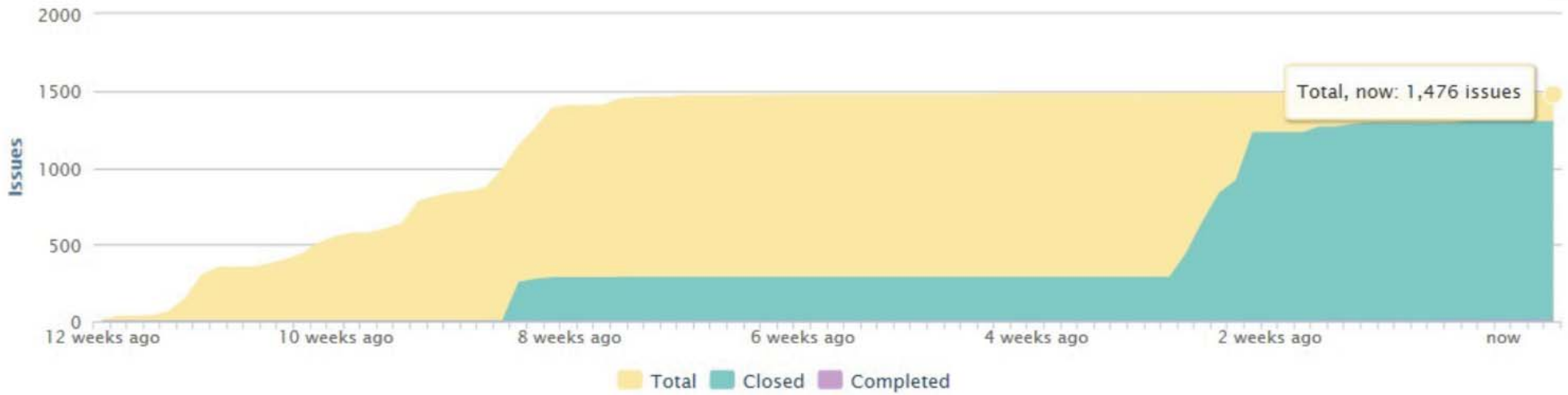


Issue Tracker

100

75

Issue Tracker - Total v. Closed

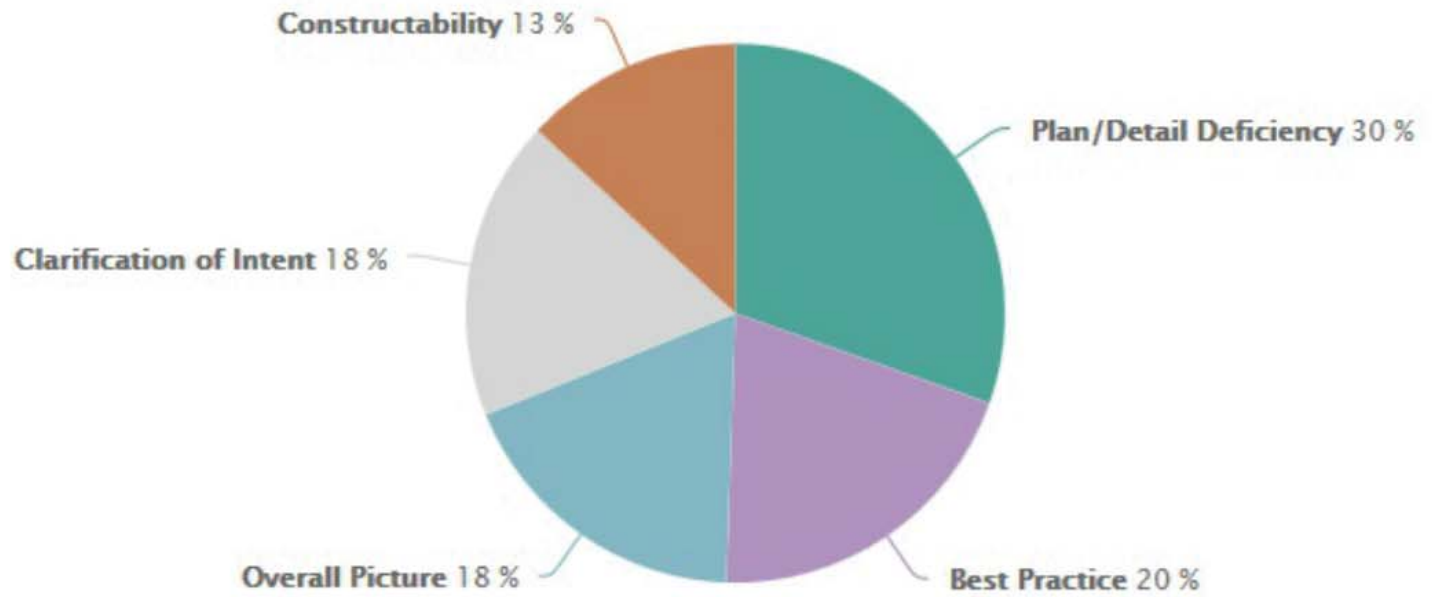


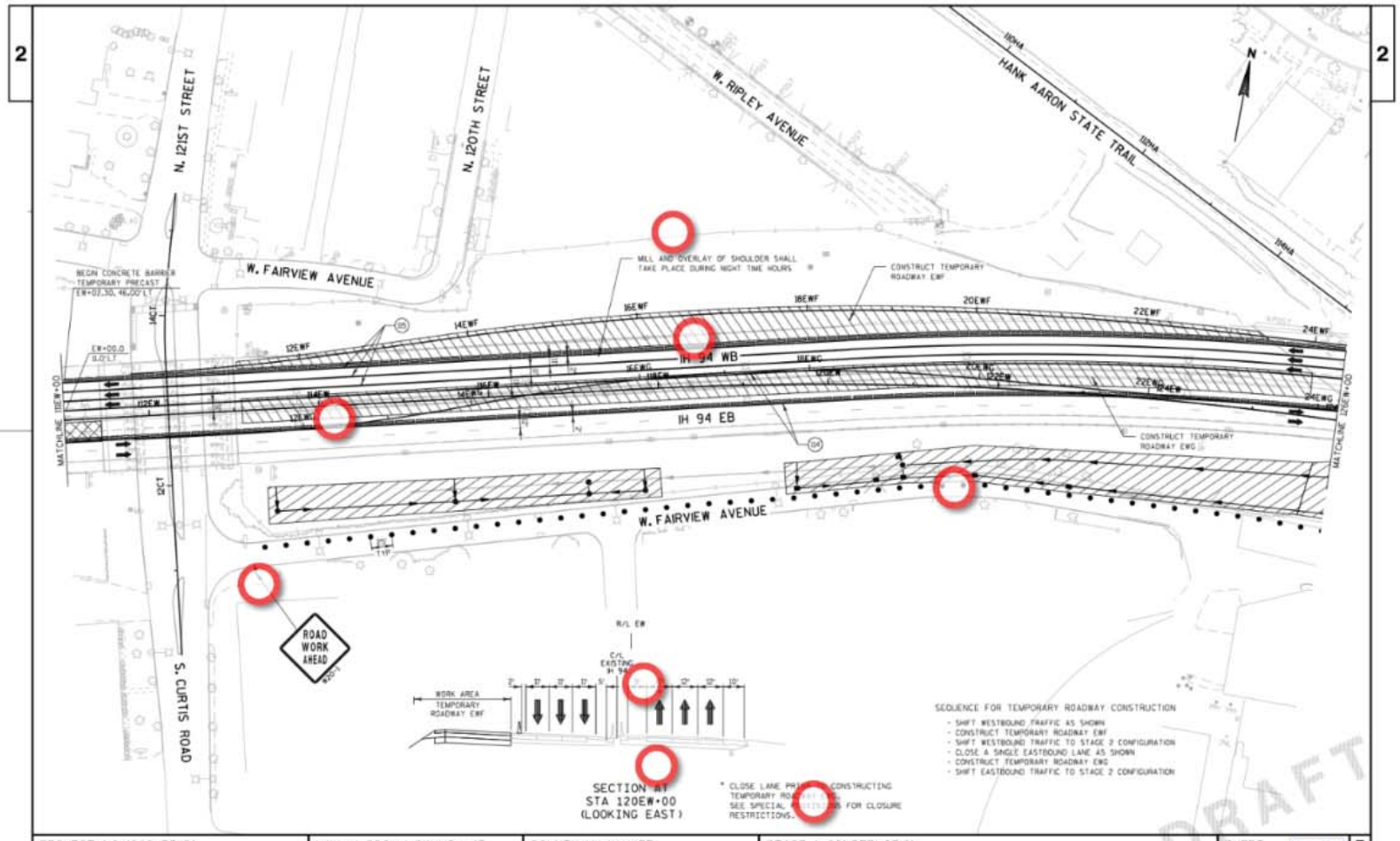
Total, now: 1,476 issues

Root Cause

Total Closed Completed

Root Cause





PROJECT NO: I060-33-B1 | HWY: IH 894/IH 94/USH 45 | COUNTY: MILWAUKEE | STAGE 1 CONSTRUCTION | SHEET PRE_1171 E

Core2_PRE_ (1171)

002675



appears on report

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 acces from IH 94 EB to outside embankment in this stage? IF we have

Issue type

QA/QC : 18- Stage Construction

Company

DEC- Bohem, Jeff

Status

Open

Date created

Tue 03/03/2015

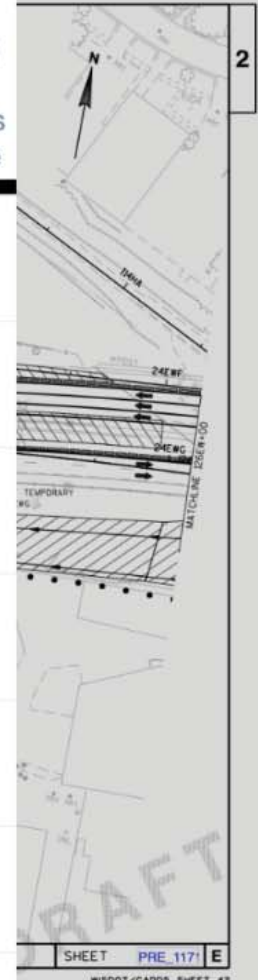
Author

kurt.flierl@dot.wi.gov

Root cause

Quality : Constructability

Location



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



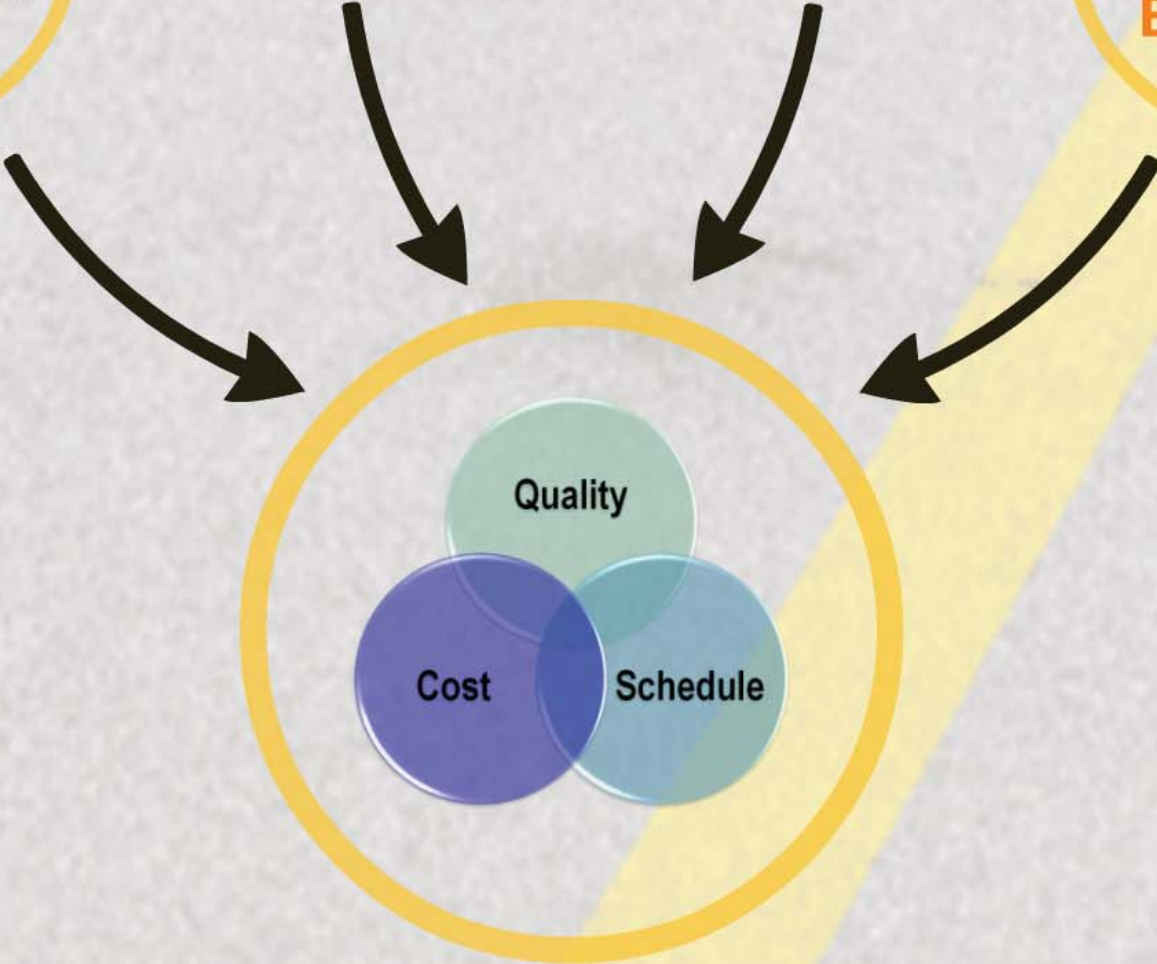
Design|Construction Plan Review at

- 30% Design
- 60% Design
- 90% Design

Leveraging Technology to Track Constructability Reviews

- BIM Field 360





Design | Construction: 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 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)



Construction Feed Back to Design

Region Tracking Form

Name of proposed/profiter SEP: []

Specification Detail: []

Source of proposal/unfilled SEP: []

Specification Detail: []

Recommended phase: Create a new SEP proposal Modify existing SEP proposal

Recommended range of Specification Detail: []

Provide justification for non-SEP wide procurement: []

Requirement: []

Region Tracking Form

Issue Title: []

Issue Number: []

Submitter Name: []

Submitter Date: []

Region: []

Region Code: []

Project ID: []

Design Phase: []

Design Stage: []

Design Super: []

Design Sub: []

Design Phase of Reference: []

Construction: []

Last Modified: []

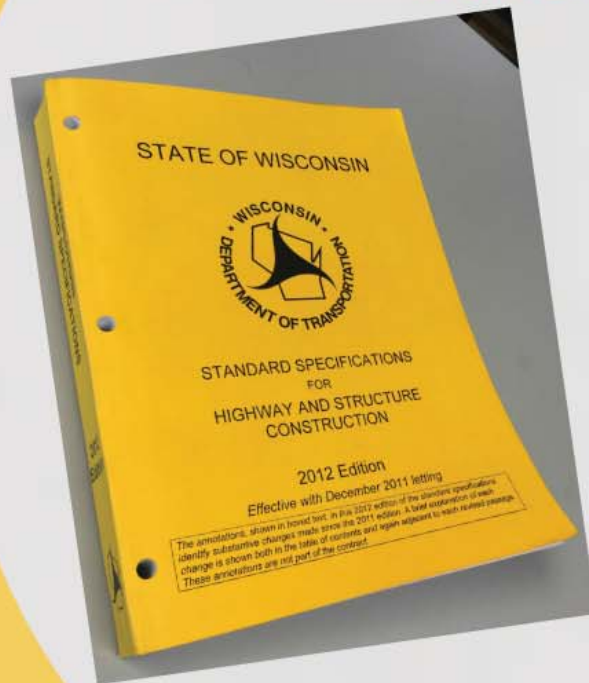
SEP Specification Detail Information

Last Modified: []

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

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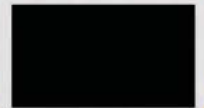
CIM Interface Engineer



Leveraging the 3D Design & Information in the Construction Phase



Traffic Impact Visualization Implementation Tool (TIVIT)



CIM to Field - Mobility

Trimble Tablets
BIM 360 Glue & Field Software



CIM to Field Office

Phased Model Sequence
3D / 4D Coordination

- Problem Solving
- Enhanced Decision Making

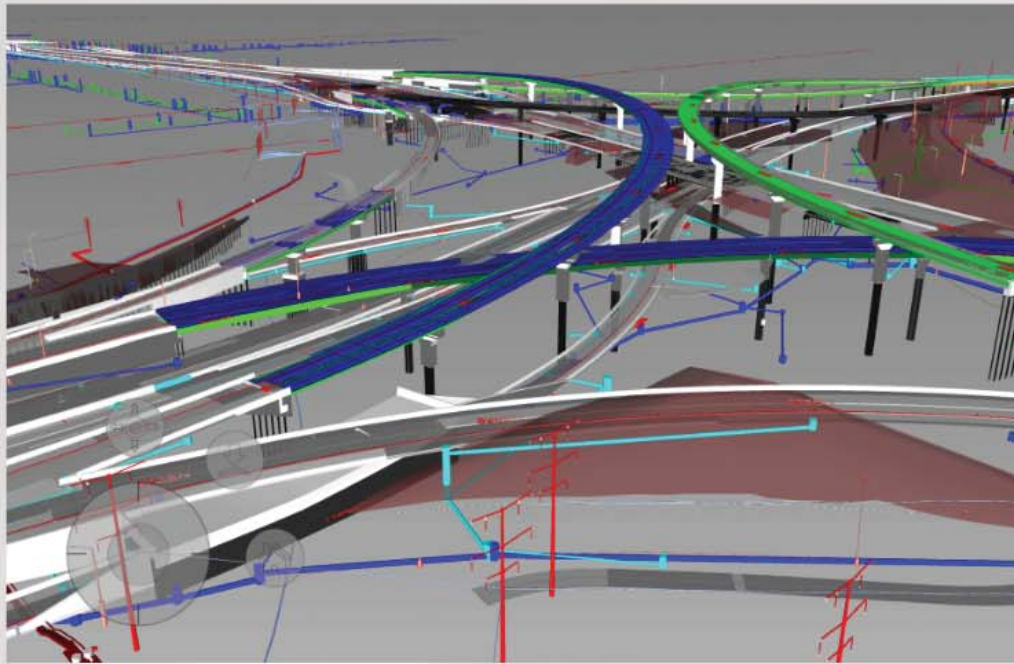


e-AsBuilds

Bluebeam Revu Software



Leveraging the 3D Design & Information in the Construction Phase



CIM to Field - Mobility

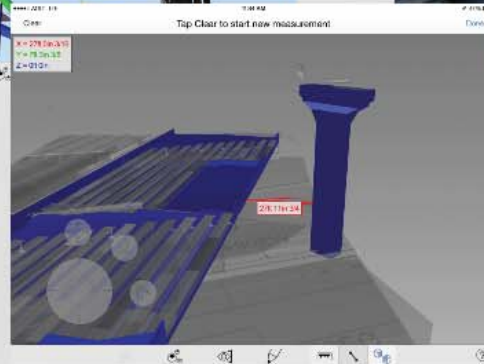
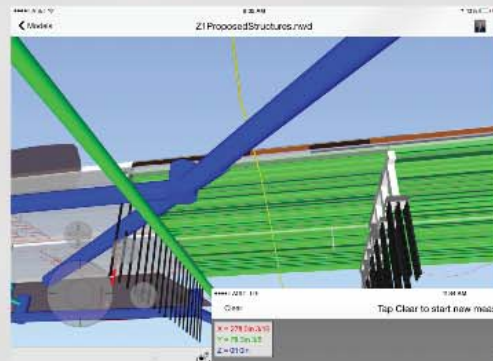
Trimble Tablets
BIM 360 Glue & Field Software

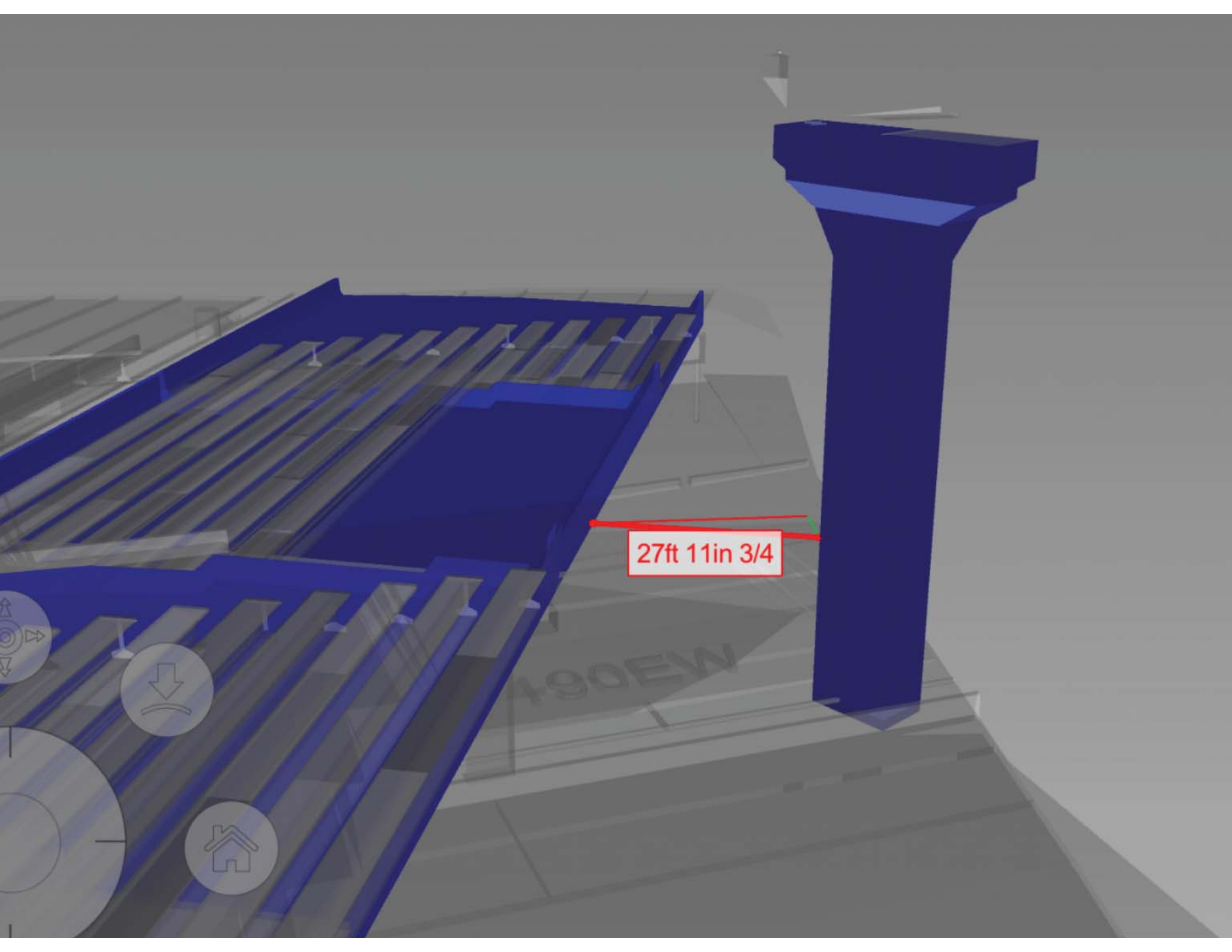


CIM to Field Office

Phased Model Sequence 3D / 4D Coordination

- Problem Solving
- Enhanced Decision Making





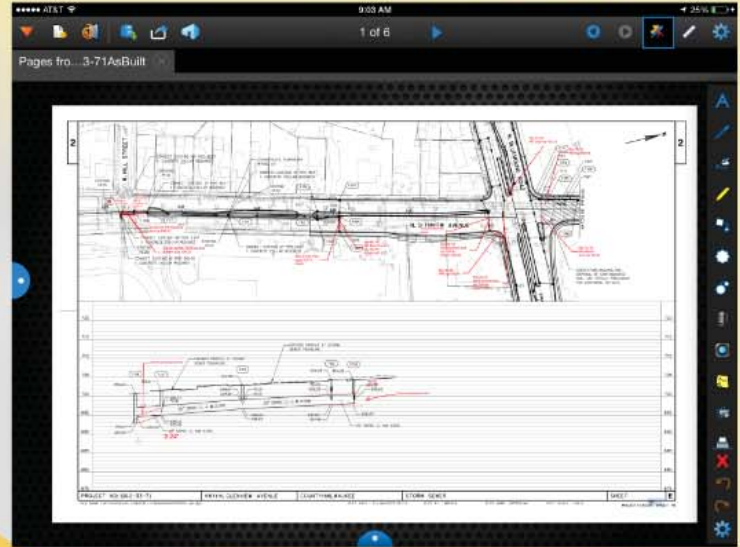
27ft 11in 3/4

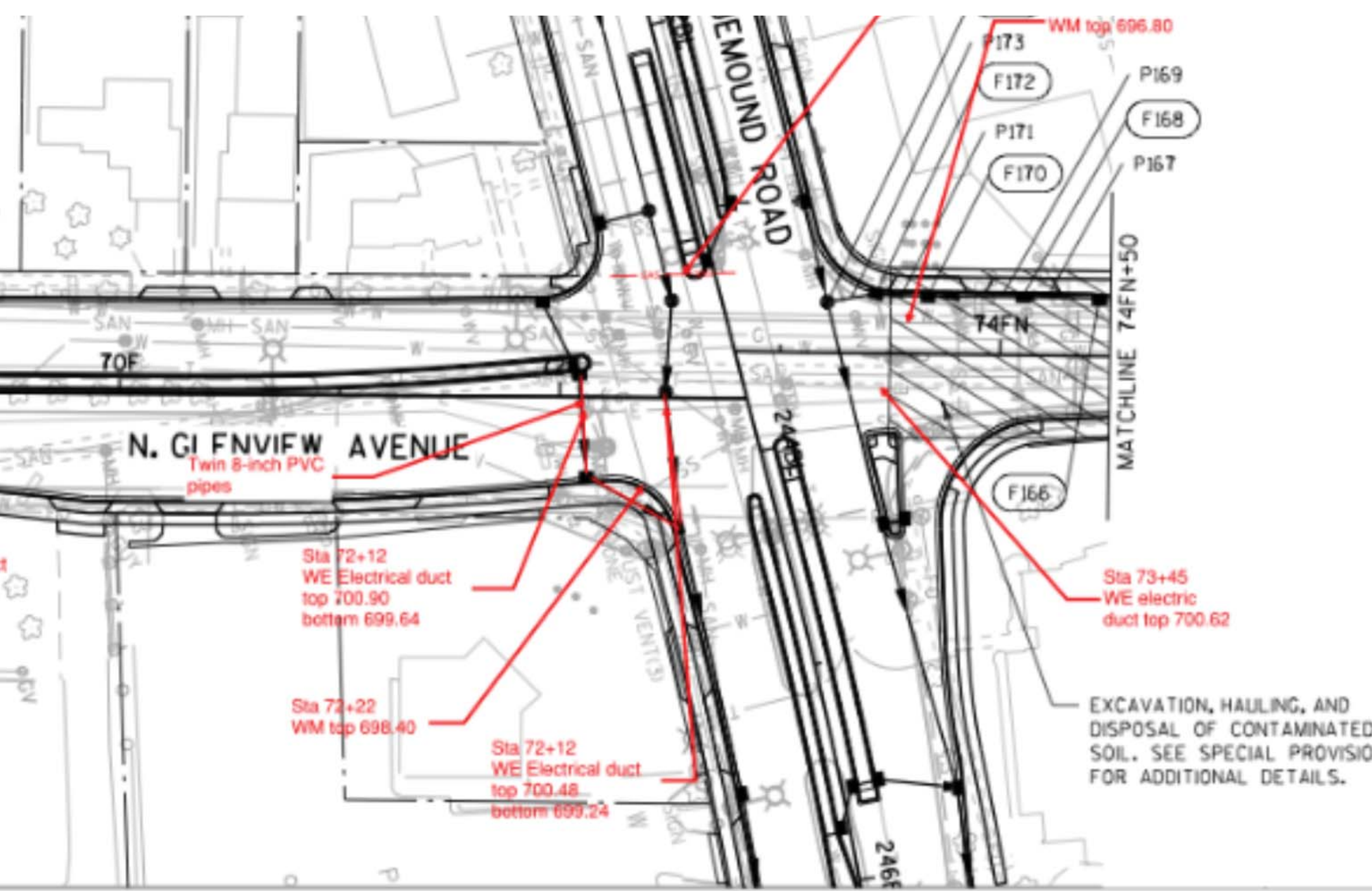
190EW



e-AsBuilts

Bluebeam Revu Software





WM top 696.80

F173
F172
P171
F170

P169
F168
P167

REMOUND ROAD

74FN

MATCHLINE 74FN+50

70F

N. GIFFENW AVENUE

Twin 8-inch PVC pipes

Sta 72+12
WE Electrical duct
top 700.90
bottom 699.64

Sta 72+22
WM top 698.40

Sta 72+12
WE Electrical duct
top 700.48
bottom 699.24

Sta 73+45
WE electric
duct top 700.62

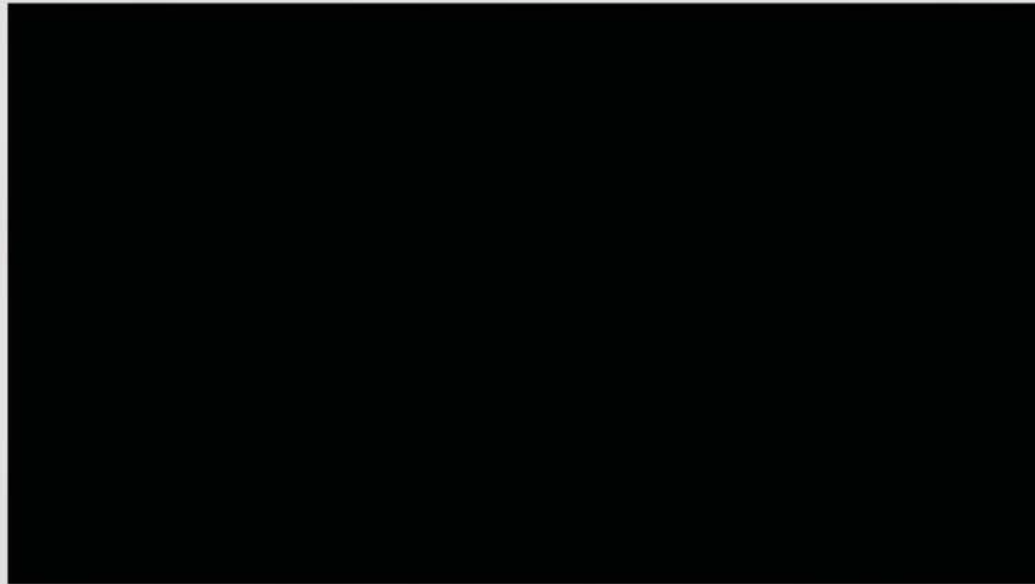
F166

EXCAVATION, HAULING, AND
DISPOSAL OF CONTAMINATED
SOIL. SEE SPECIAL PROVISIONS
FOR ADDITIONAL DETAILS.

JUST VENTIS

2465
2466

**Traffic Impact Visualization
Implementation Tool
(TIVIT)**



■
(TIVIT)

CIM Interface Engineer

Leveraging the 3D Design & Information in the Construction Phase



Traffic Impact Visualization Implementation Tool (TIVIT)



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CIM to Field Office

Phased Model Sequence
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e-AsBulls

Bluebeam Revu Software





Wisconsin Department of Transportation



MEGA / MAJOR PROJECTS



PROGRAM DELIVERY BEST PRACTICES

 **U.S. Department of Transportation
Federal Highway Administration**

*In partnership with
Federal Highway Administration*



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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



Innovative Program Delivery

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



**PARSONS
BRINCKERHOFF**



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





Existing Condition



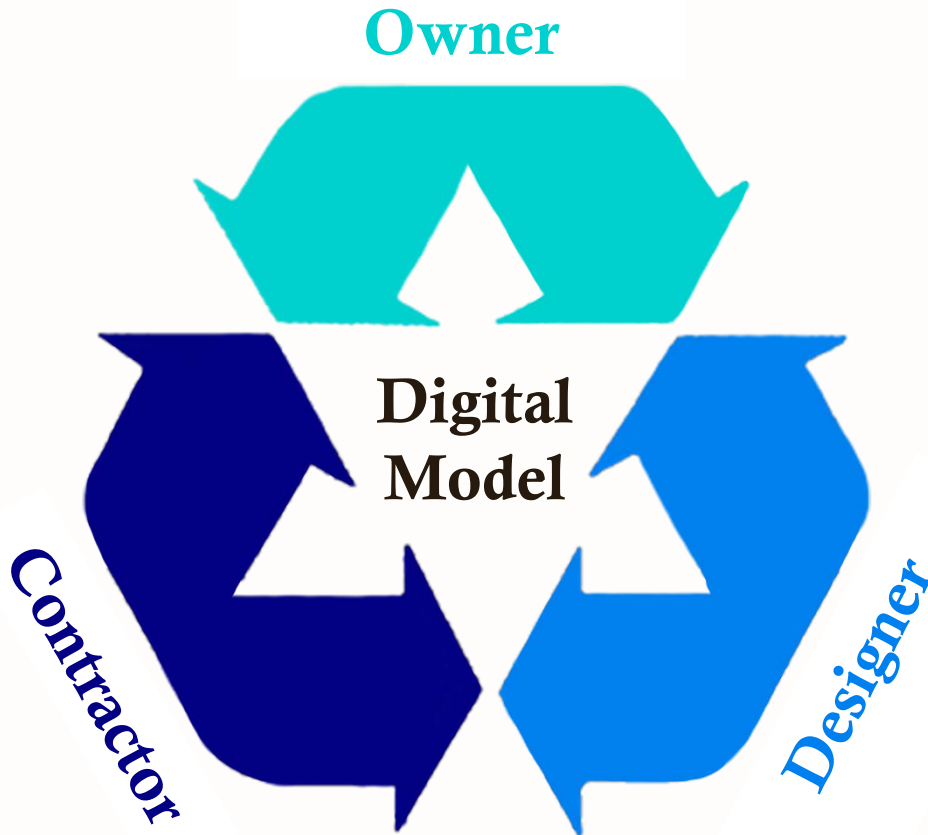
Final Condition

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

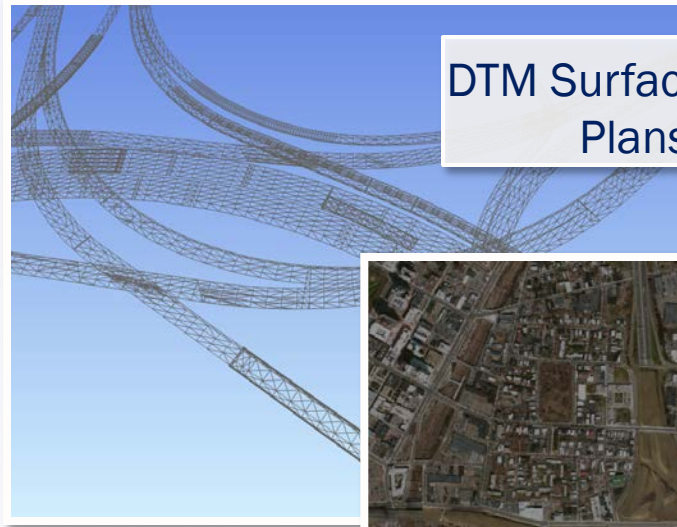
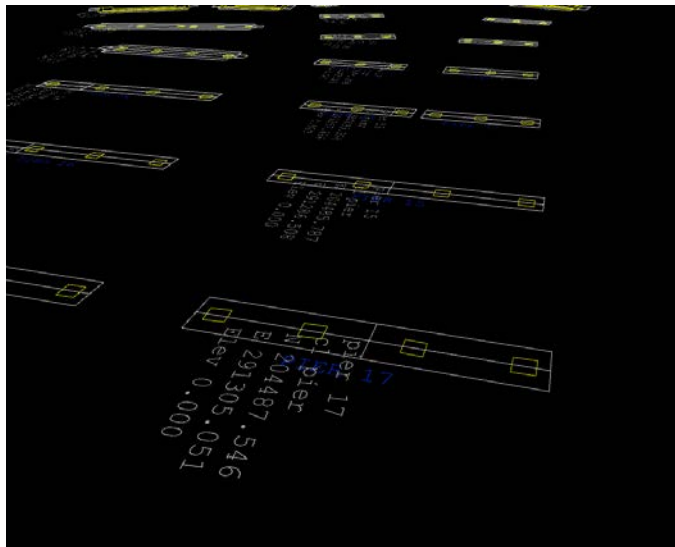
- Project Understanding
- Bidding
- Staging / Sequencing
- Means and Methods

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

Primavera P6 : E-195 NB-1, E-195-2, E-195 SB-1, E-191 NB-1, E-191 SB-1, E-195 NB-2, E-195 SB-2, E-191 NB-2, E-191 SB-2, E-ADMIN, E-195-1, ... (I-95NB Phase 1, I-95 Phase 2, I-95SB Phase 1, I-91NB Ph

File Edit View Project Enterprise Tools Admin Help

Layout: E - Longest Path to TS-15 Filter: All Activities

WBS	Activity ID	Activity Name
Bridge 03032 (Ramp F Over Ramps I & J)		
Bridge 03034 (Ramp F Over Water Street)		
Bridge 03035 (Ramps G & J Over Water Street & Ramps N & O)		
Not Applicable		
Demolition Tasks		
Abutment 1		
Abutment 2		
Pier 1		
Pier 2		
E-191 NB-2	E.3035P2.560	Drive Pier 2 Production Piles - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.555	Drive Pier 2 Test Piles - Bridge 03035 (Stage 4A)
E-ADMIN	E.SUBM.5925	Fabricate & Deliver Production Piles for Pier 2 - Bridge 03035 (Stage 4A)
E-ADMIN	E.SUBM.8360	Fabricate & Deliver Rebar for Cap & Pedestals Pier 2 - Bridge 03035 (Stage 4A)
E-ADMIN	E.SUBM.8290	Fabricate & Deliver Rebar for Footing, Columns & Capitals Pier 2 - Bridge 03035 (Stage 4A)
E-ADMIN	E.SUBM.6775	Fabricate & Deliver Test Piles for Pier 2 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.640	Fabricate & Install Rebar Pier 2 Pier Cap Rebar Cage w/ Post Tensioning Ducts - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.590	Form Pier 2 Column/Capital #1 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.605	Form Pier 2 Column/Capital #2 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.620	Form Pier 2 Column/Capital #3 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.575	Form Pier 2 Footing - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.685	Form Pier 2 Keeper Block (G5/G6) - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.655	Form Pier 2 Pedestals - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.675	Grout Pier 2 Post Tension Conduit Blockouts - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.635	Install Pier 2 Falsework & Form Pier Cap - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.680	Install Pier 2 Pot Bearings - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.570	Install Rebar Pier 2 Footing & Columns - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.670	Post Tension Pier 2 Pier Cap - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.595	Pour Pier 2 Column/Capital #1 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.610	Pour Pier 2 Column/Capital #2 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.625	Pour Pier 2 Column/Capital #3 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.580	Pour Pier 2 Footing - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.690	Pour Pier 2 Keeper Block (G5/G6) - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.660	Pour Pier 2 Pedestals - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.645	Pour Pier 2 Pier Cap - Bridge 03035 (Stage 4A)
E-ADMIN	E.SUBM.7935	Prepare & Submit Rebar Shop Drawings for Cap & Pedestals Pier 2 - Bridge 03035
E-ADMIN	E.SUBM.7860	Prepare & Submit Rebar Shop Drawings for Footing, Columns & Capitals Pier 2 - Bridge 03035
E-ADMIN	E.SUBM.2685	Prepare & Submit Test Pile Data for Pier 2 - Bridge 03035 (Stage 4A)
E-191 NB-2	E.3035P2.565	Regrade Pier 2 Footing - Bridge 03035 (Stage 4A)

General Status Relationships Codes Resources Predecessors Successors Steps Summary

Activity

Activity ID	Activity Name	Relatior	Lag	Activity Stat	Primary Resource	Driving	Cr
-------------	---------------	----------	-----	---------------	------------------	---------	----

Portfolio: All Projects User: admin Data Date: 01-Nov-13 Access Mode: Shared Baseline: Current Project

Bridge 3035

- A1 Abutment 1 (P2)
- A2 Abutment 2 (P2)
- DEMOM Demolition Tasks (P2)
- P1 Pier 1 (P2)
- P2 Pier 2 (P2)
 - Form
 - Form Pier 2 Column/Capital #2 - Bridge 03035 (Stage 4A)
 - Form Pier 2 Column/Capital #3 - Bridge 03035 (Stage 4A)
 - Form Pier 2 Footing - Bridge 03035 (Stage 4A)
 - Form Pier 2 Pedestals - Bridge 03035 (Stage 4A)
 - Install Pier 2 Falsework & Form Pier Cap - Bridge 03035 (Stage 4A)
 - Reinforce
 - Install Rebar Pier 2 Footing & Columns - Bridge 03035 (Stage 4A)
 - Pour
 - Pour Pier 2 Column/Capital #1 - Bridge 03035 (Stage 4A)
 - Pour Pier 2 Column/Capital #2 - Bridge 03035 (Stage 4A)
 - Pour Pier 2 Column/Capital #3 - Bridge 03035 (Stage 4A)
 - Pour Pier 2 Footing - Bridge 03035 (Stage 4A)
 - Pour Pier 2 Pedestals - Bridge 03035 (Stage 4A)
 - Pour Pier 2 Pier Cap - Bridge 03035 (Stage 4A)
 - Strip & Cure
 - Strip & Cure Pier 2 Column/Capital #1 - Bridge 03035 (Stage 4A)
 - Strip & Cure Pier 2 Column/Capital #2 - Bridge 03035 (Stage 4A)
 - Strip & Cure Pier 2 Column/Capital #3 - Bridge 03035 (Stage 4A)
 - Strip & Cure Pier 2 Pedestals - Bridge 03035 (Stage 4A)
 - Strip & Cure Pier 2 Pier Cap - Bridge 03035 (Stage 4A)
 - Strip Pier 2 Footing - Bridge 03035 (Stage 4A)

Building the Model - Tools

Combines 3D Geometry with Time



3D Digital Design Model



- Microstation
- AutoCad Civil 3D

Point Cloud Modeling Descartes/Pointools



Raw Laser Scan Data



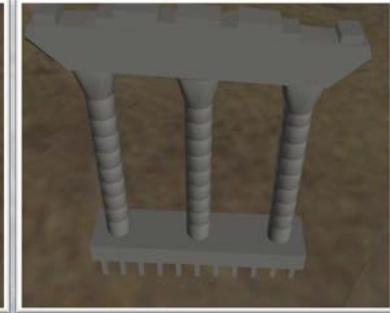
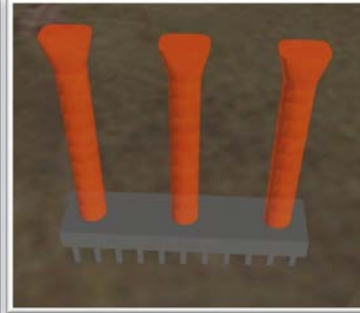
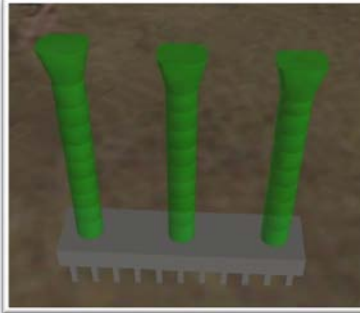
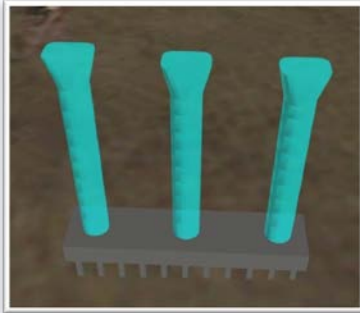
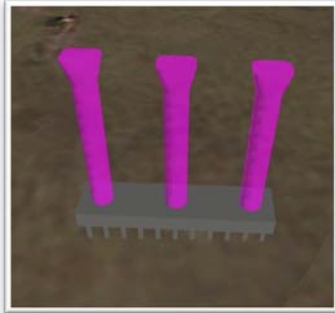
CPM Scheduling



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

Building the Model – Adding Detail

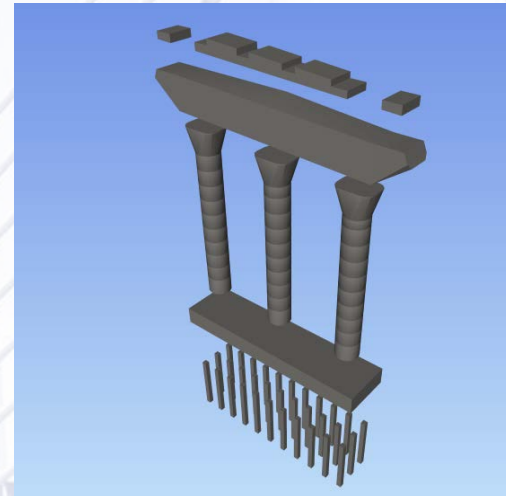
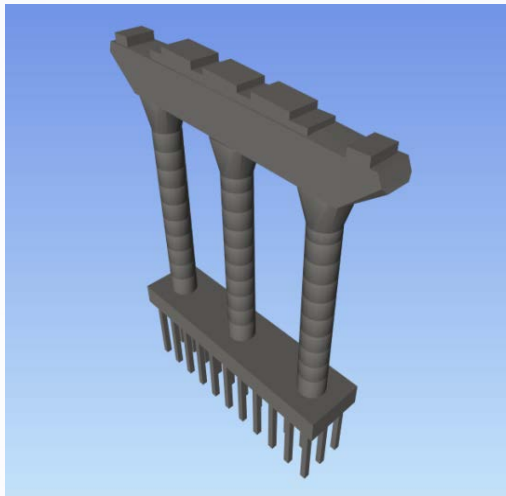
Install Rebar → Place Forms → Pour → Strip & Cure → Completed Pier



Pier as 1 object



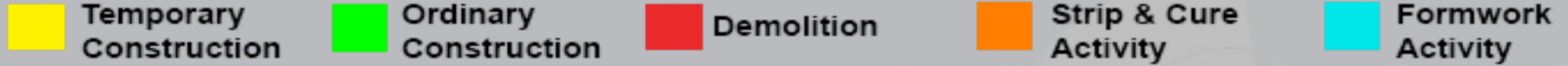
Pier as 7 objects



Build the model like you would build the project

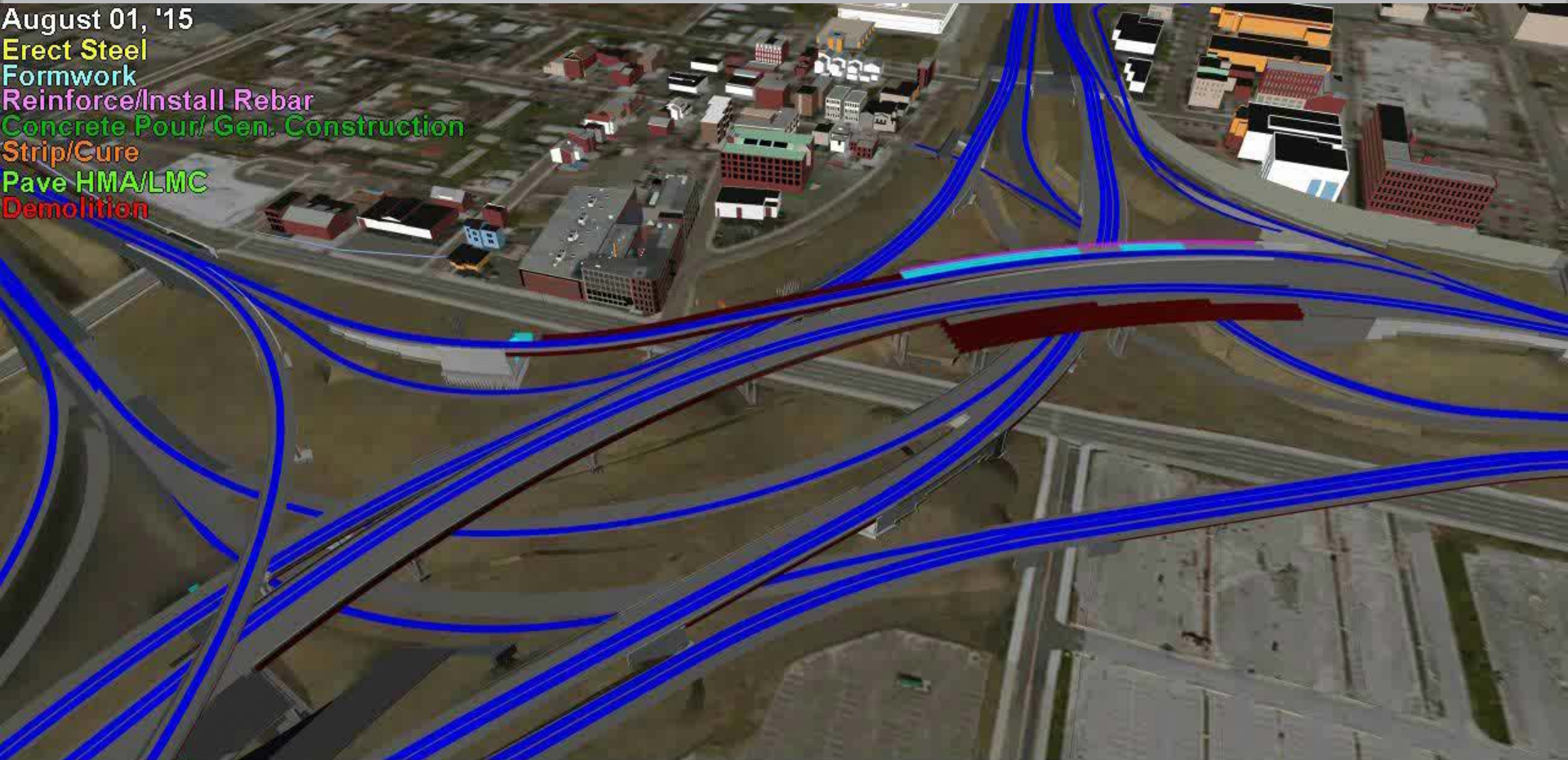


Building the Model – Virtual Simulation



August 01, '15

Erect Steel
Formwork
Reinforce/Install Rebar
Concrete Pour/ Gen. Construction
Strip/Cure
Pave HMA/LMC
Demolition



Planning / Design



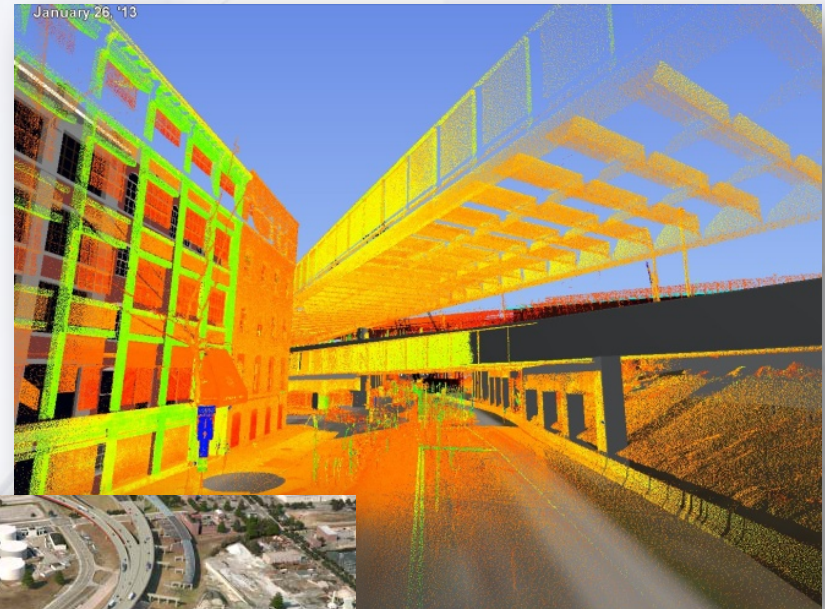
Planning / Design / Construction

- 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

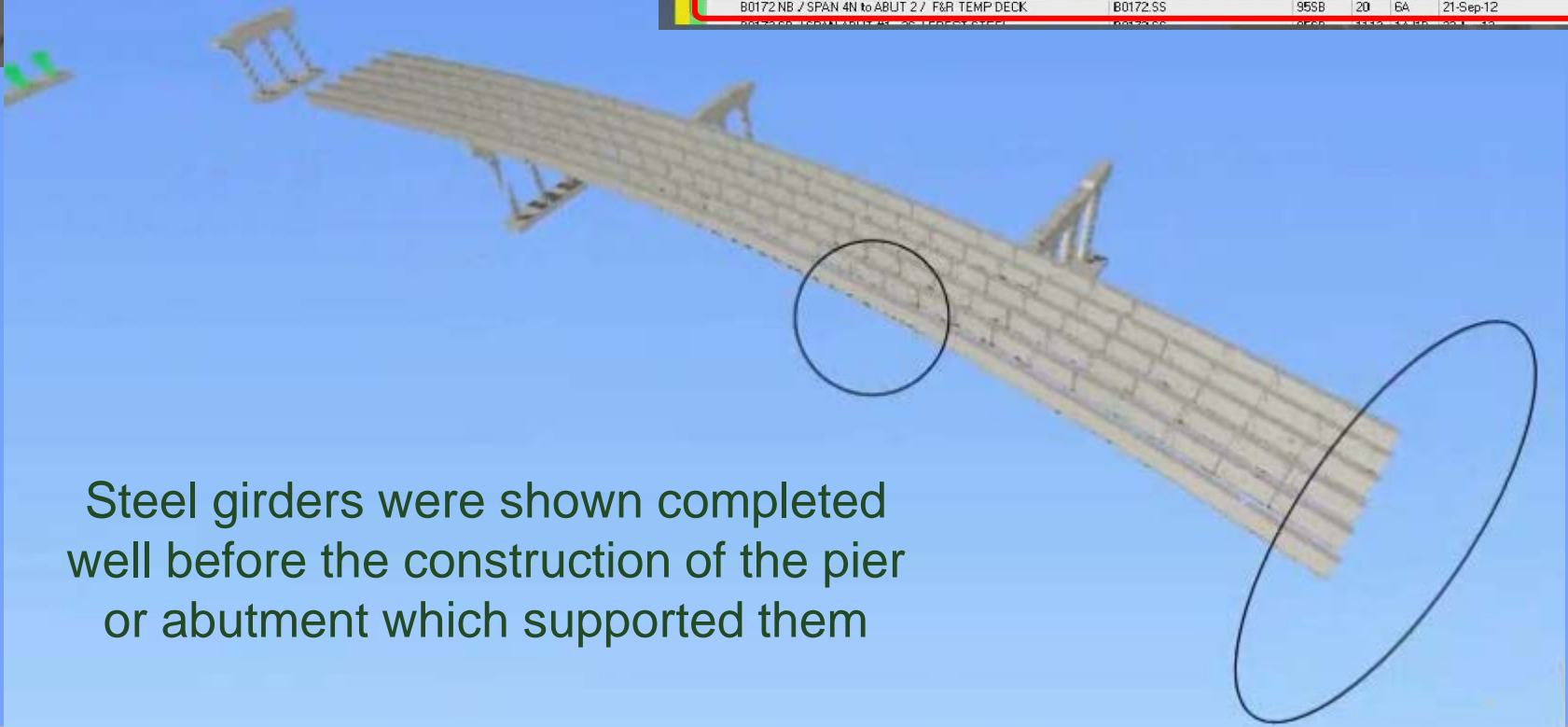


**I-95 New Haven
Harbor Crossing Corridor**
Improvement Program





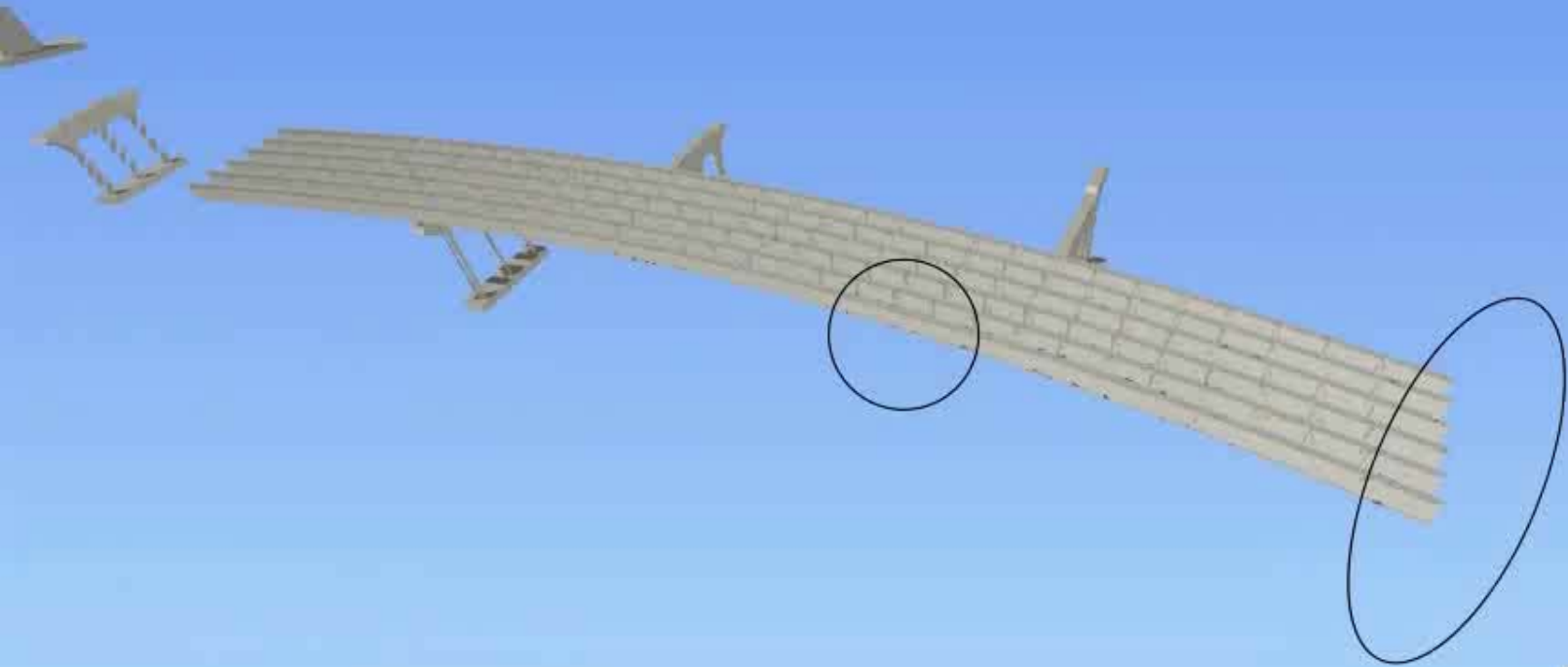
Bridge 0172 Abutment 2							23-Oct-12	22-Apr-13
B0172 / ABUTMENT #2 / FILLS	B0172.A2	95SB	14B	2A/2B	23-Oct-12	05-Nov-12		
B0172 / ABUTMENT #2 / EXCAV FTG	B0172.A2	95SB	14B	2A/2B	06-Nov-12	15-Nov-12		
B0172 / ABUTMENT #2 / PILING	B0172.A2	95SB	14B	2A/2B	16-Nov-12	16-Jan-13		
B0172 / ABUTMENT #2 / FRP FT G	B0172.A2	95SB	14B	2A/2B	18-Jan-13	20-Feb-13		
B0172 / ABUTMENT #2 / FRP STEMWALL, WINGWALLS, & PEDE	B0172.A2	95SB	14B	2A/2B	21-Feb-13	22-Apr-13		
Bridge 0172 Superstructure							02-Aug-12	12-Aug-16
B0172 NB / SPANS 4N - Abut 2 / ERECT STEEL	B0172.SS	95SB	14B	2A/2B	02-Aug-12	20-Sep-12		
B0172 NB / SPAN 4N to ABUT 2 / F&R TEMP DECK	B0172.SS	95SB	20	6A	21-Sep-12	01-Nov-12		
B0172 NB / PIER #5 / SOE SHEETING	B0172.P-5	95NB	14B	2A/2B	18-Oct-12	22-Oct-12		
B0172 NB / PIER #5N / EXCAV PIER	B0172.P-5	95NB	14B	2A/2B	18-Oct-12	24-Oct-12		
B0172 NB / PIER #5N / PILING	B0172.P-5	95NB	14B	2A/2B	30-Oct-12	19-Nov-12		
B0172 NB / PIER #5N / FRP FTGS	B0172.P-5	95NB	14B	2A/2B	20-Nov-12	17-Dec-12		
B0172 NB / PIER #5N / FRP COLS & CAPITOL	B0172.P-5	95NB	14B	2A/2B	18-Dec-12	17-Jan-13		
B0172 NB / PIER #5N / FRP PIER CAP	B0172.P-5	95NB	14B	2A/2B	18-Dec-12	23-Jan-13		
B0172 NB / PIER #5N / PT & GROUT PIER CAP	B0172.P-5	95NB	14B	2A/2B	14-Feb-13	19-Feb-13		
Bridge 0172 Pier 6							09-Jun-11	10-Aug-12
Bridge 0172 Abutment 2							23-Oct-12	22-Apr-13
Bridge 0172 Superstructure							02-Aug-12	12-Aug-16
B0172 NB / SPANS 4N - Abut 2 / ERECT STEEL	B0172.SS	95SB	14B	2A/2B	02-Aug-12	20-Sep-12		
B0172 NB / SPAN 4N to ABUT 2 / F&R TEMP DECK	B0172.SS	95SB	20	6A	21-Sep-12	01-Nov-12		



Steel girders were shown completed well before the construction of the pier or abutment which supported them

2011				2012				2013				2014				2015				2016															
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4												
J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D

Construction Planning Schedule- Constructability/Sequencing Check



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

FOR INFORMATION ONLY

January 03, '13

Pile driving concurrent with steel erection

Erect Steel
Demolition
Active Traffic Lane
Strip/Cure
Reinforce/Install Rebar



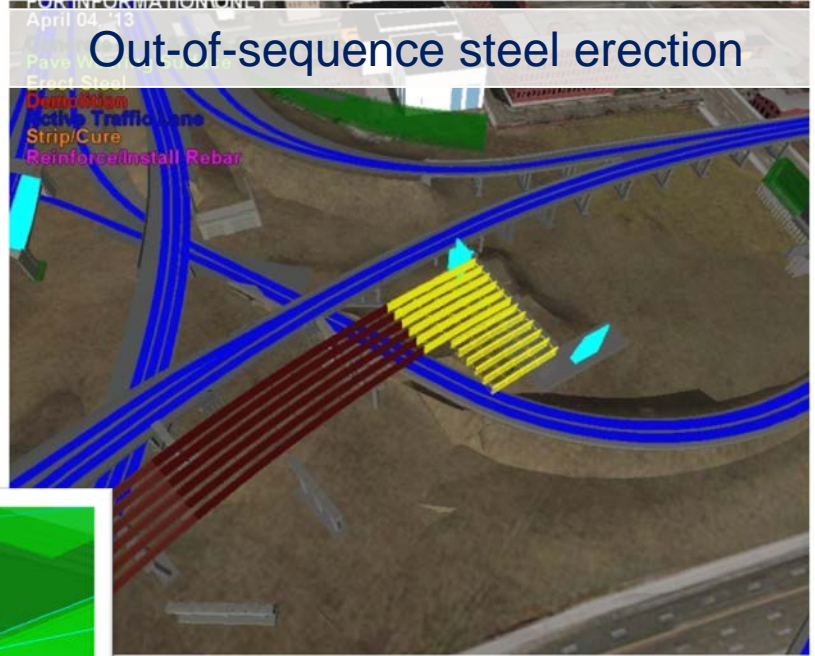
Item Name: BR-3035_Abutment_1_Piles

FOR INFORMATION ONLY

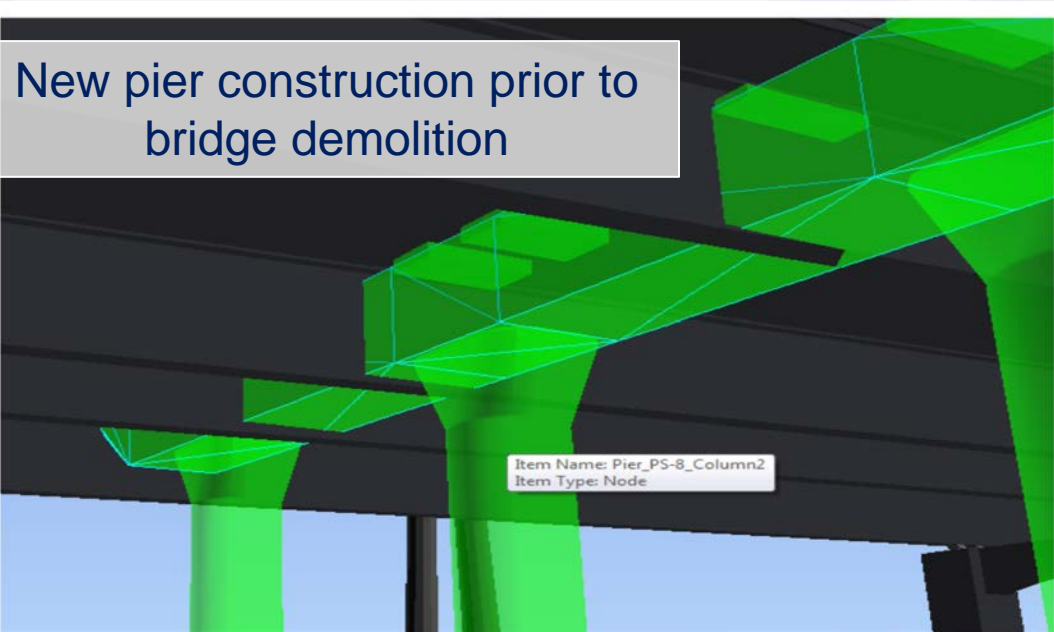
April 04, '13

Out-of-sequence steel erection

Pave V
Erect Steel
Demolition
Active Traffic Lane
Strip/Cure
Reinforce/Install Rebar



New pier construction prior to bridge demolition



Item Name: Pier_PS-8_Column2
Item Type: Node

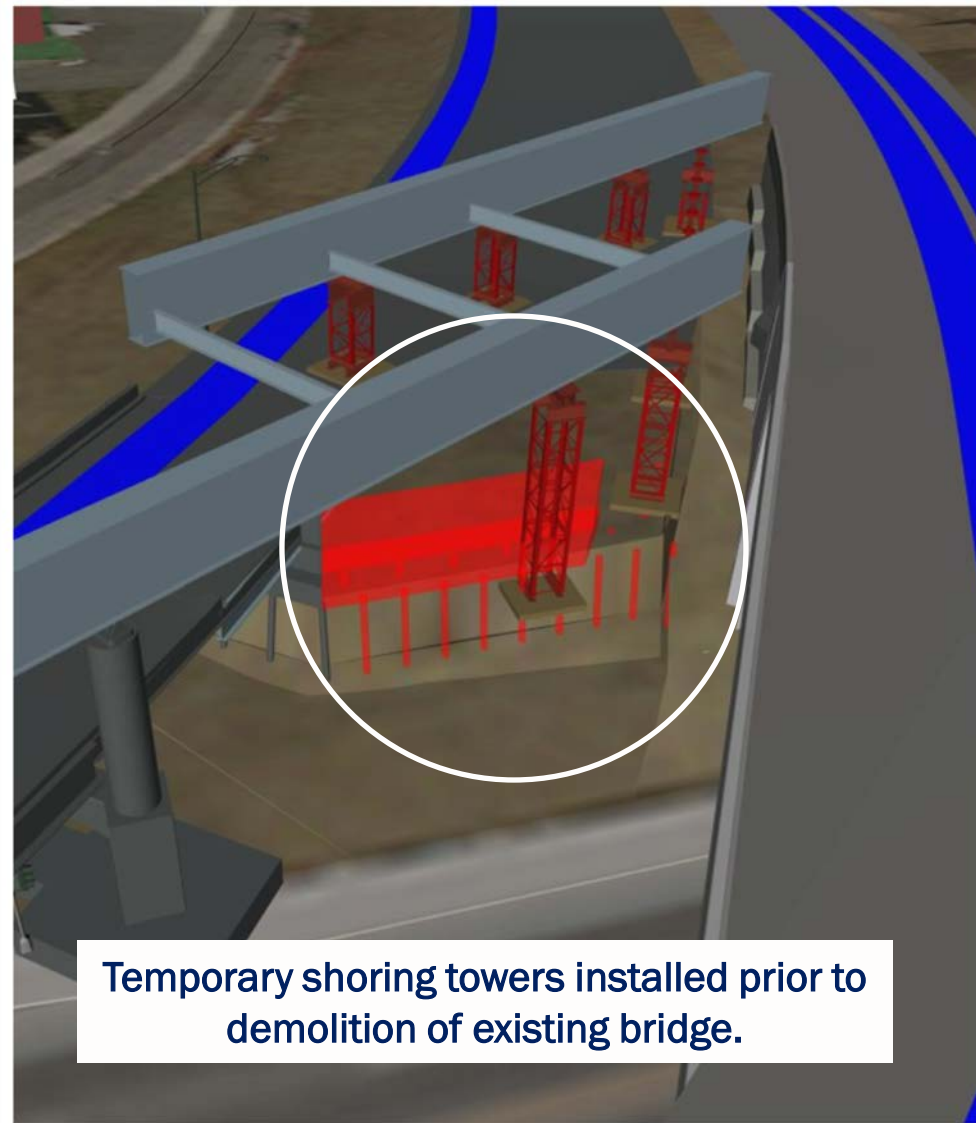


@QBridgeProgram

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



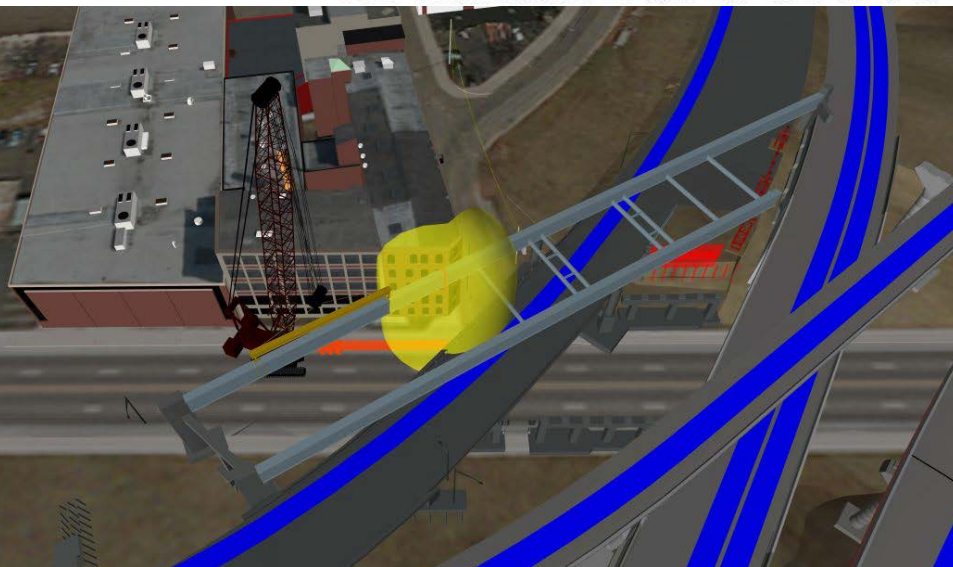
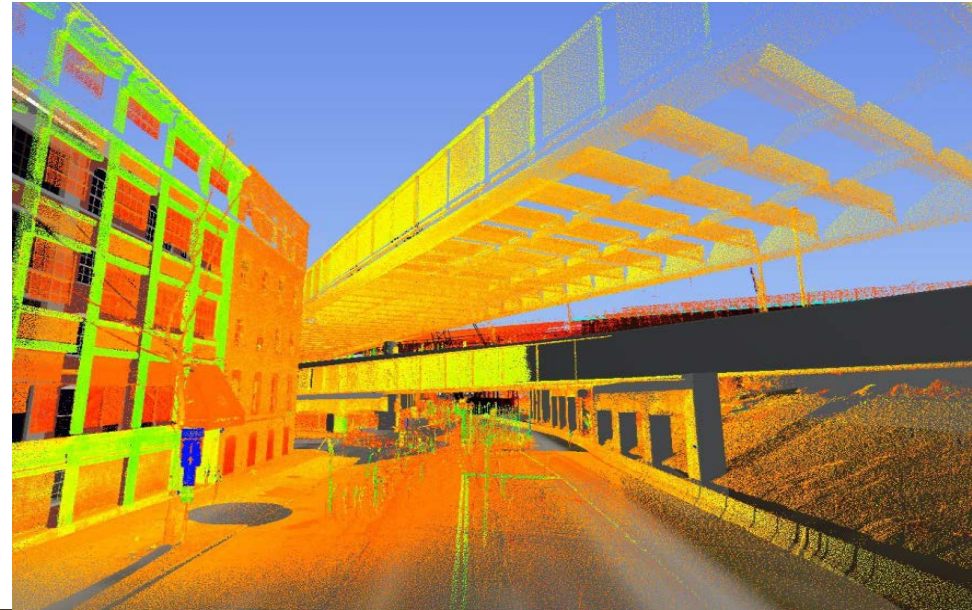
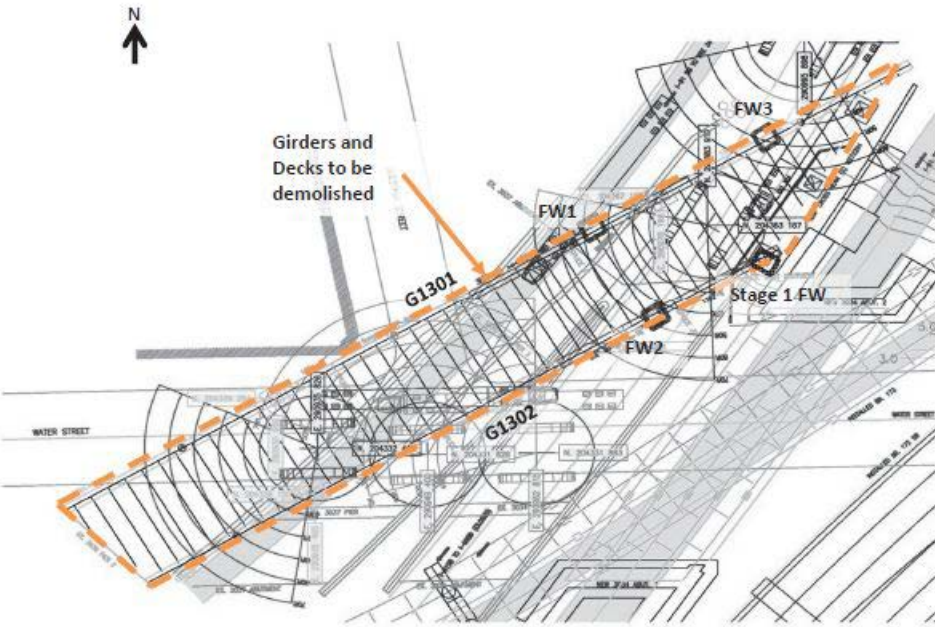
Girder lifted from delivery vehicle



**Crane rigging detached
Right lanes opened to traffic**

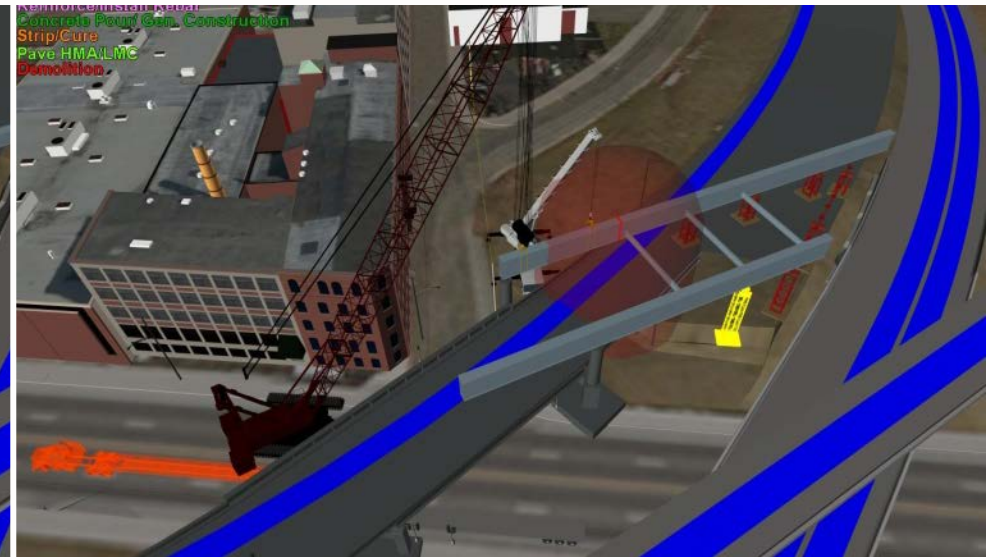
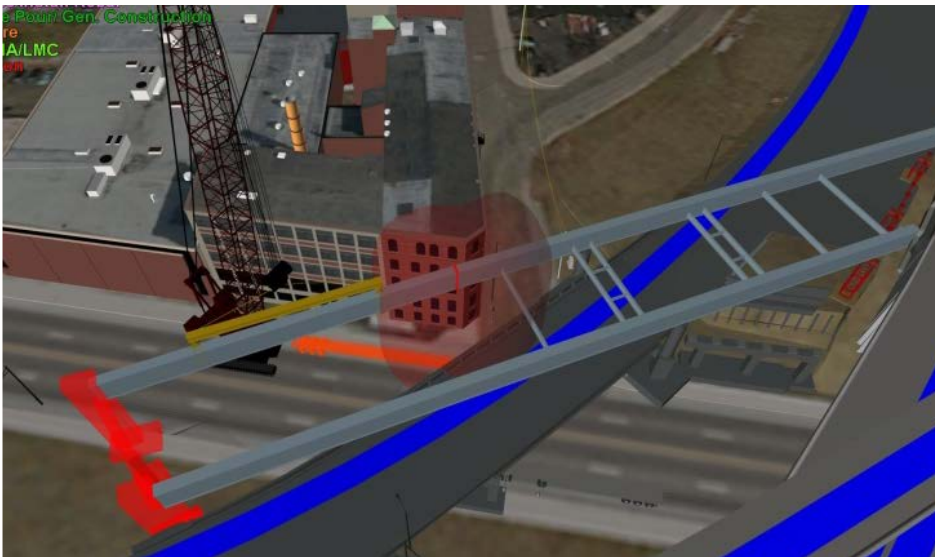


Construction Safety Planning

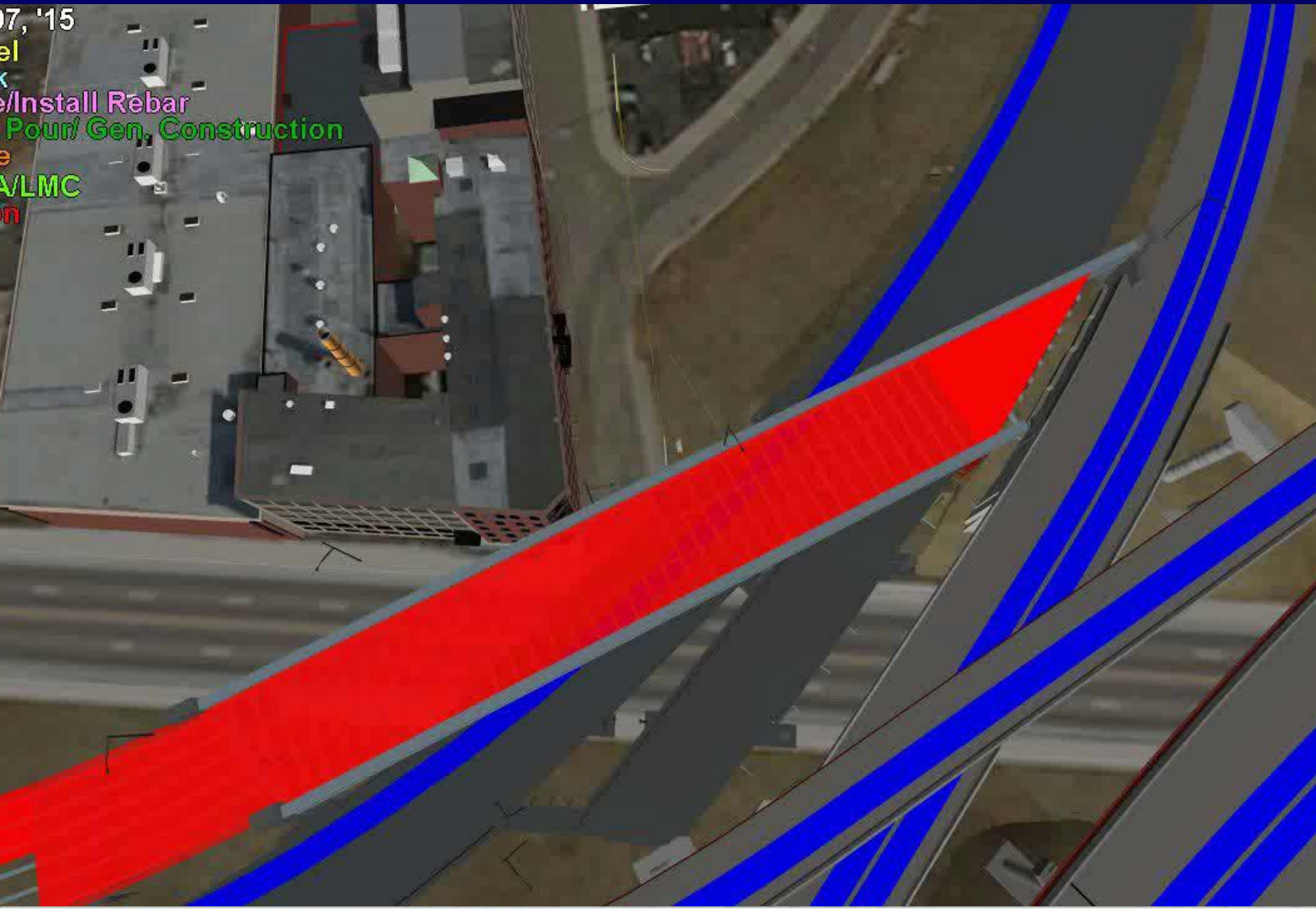


- Typical Plan
- Laser Scan
- Hot Work Limits

Demolition Sequencing



07, '15
el
<
e/Install Rebar
Pour/ Gen. Construction
e
VLMC
n



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



Visualization - Architectural Details

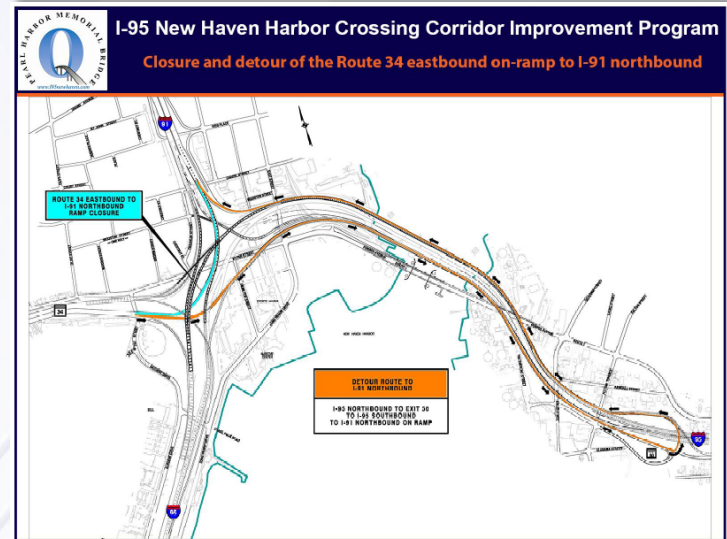


Public Information / Outreach



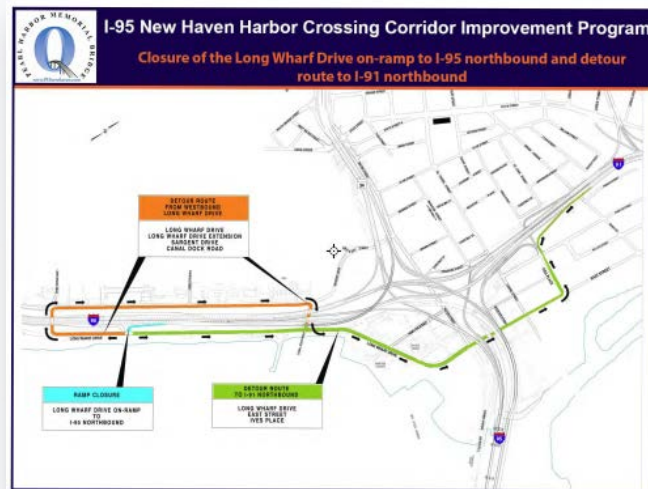
Public and Stakeholder Outreach

- 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.”**





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Questions & Input

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Or



Dial *1 to call in your question by phone



Innovative Program Delivery

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



RBR Project: Legislative Authorization

- 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



RBR Project: Bridge Construction Categories



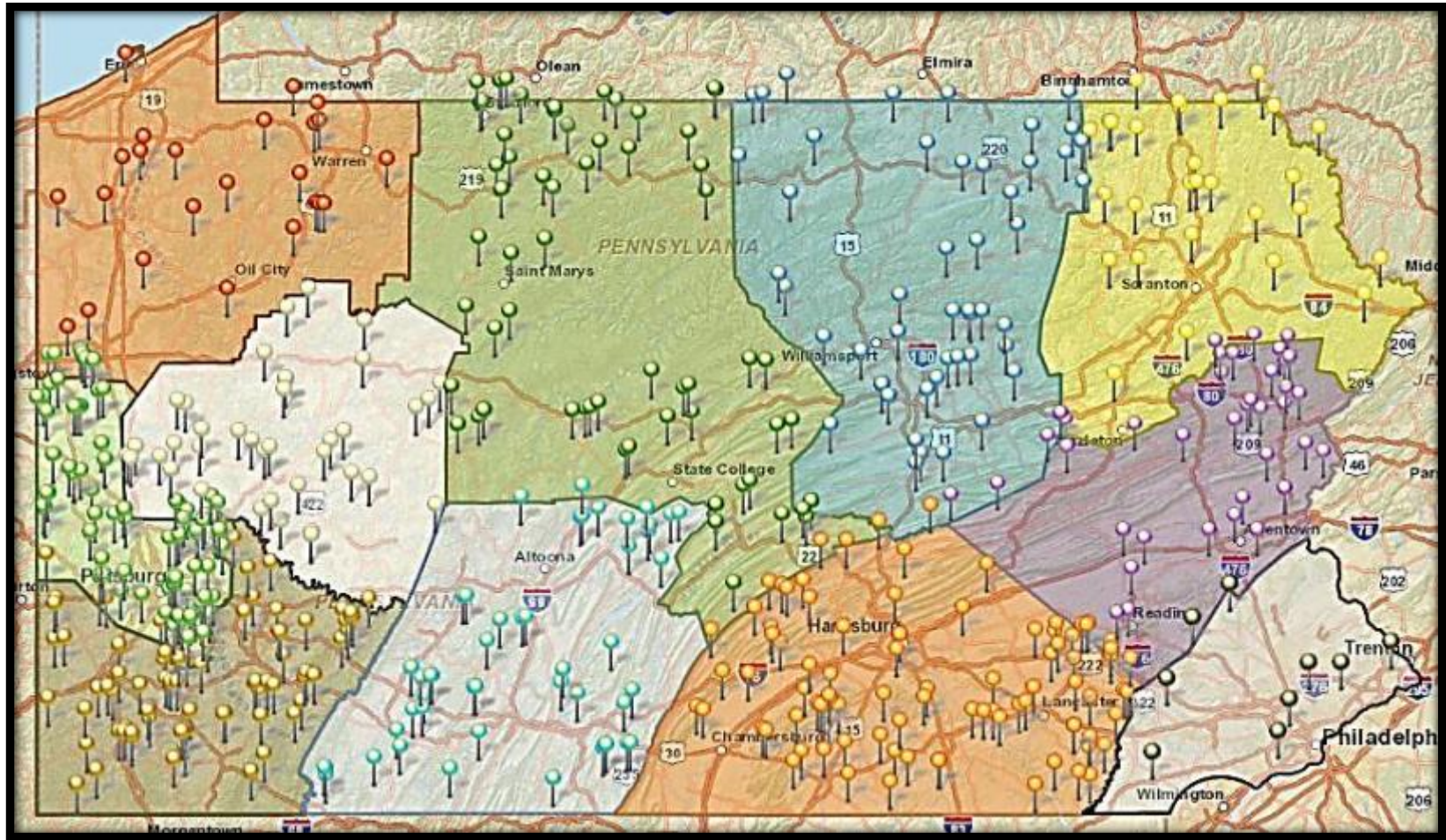
- **Early Completion Bridges**

- 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



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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



RBR Project: Development Entity's Responsibilities

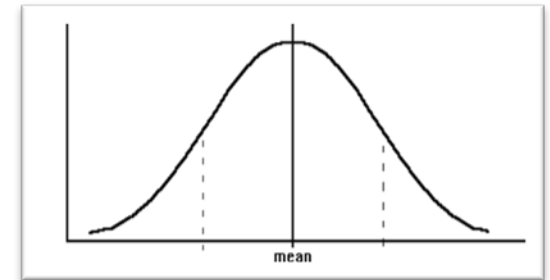
- Follow Contractual commitments including adherence to Department's Manuals and normal policies and procedures
- Develop a Project Management Plan – 19 different plans
 - Comprehensive Environmental Protection Plan
 - Context Sensitive Design and Aesthetics Master Plan
 - Quality Management Plan
 - 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



RBR Project: Development Entity's Responsibilities

- 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



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



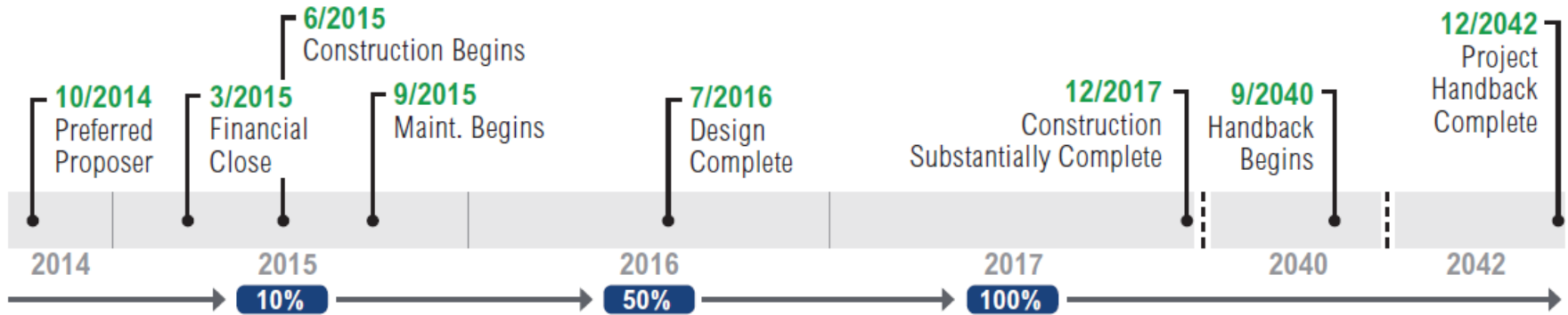
RBR Project: FHWA Coordination

- 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)

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

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

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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

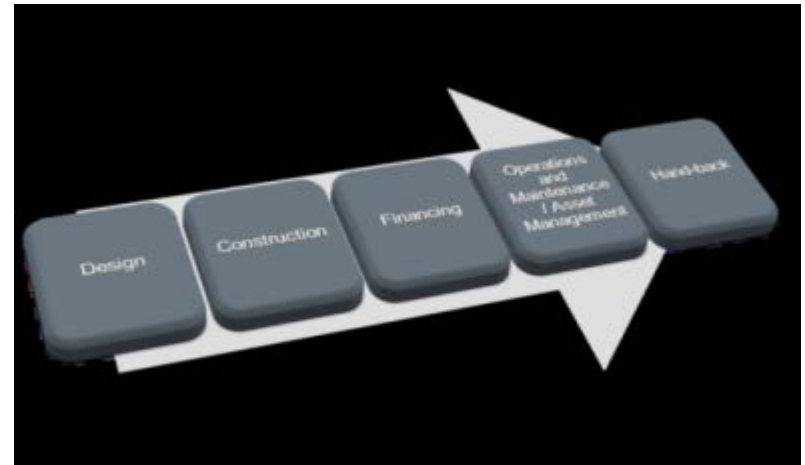


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RBR Project: Approach

- 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



RBR Project: PWKP Approach – Design/Permitting

- 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)

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RBR Project: PWKP Approach – Design/Permitting

- 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



RBR Project: PWKP Approach – Public Info



Who is Plenary Walsh Keystone Partners?

What Is The PRB Replacement Project?

How Do I Bid On The PRB Replacement Project?

View The PRBR Project Outreach Calendar

- Public Information

- Website → parapidbridges.com
- NEPA Public Meetings / other Public Meetings
- Public Officials Meetings
- Bridge Signs

www.P3forPA.pa.gov

parapidbridges.com





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Innovative Program Delivery

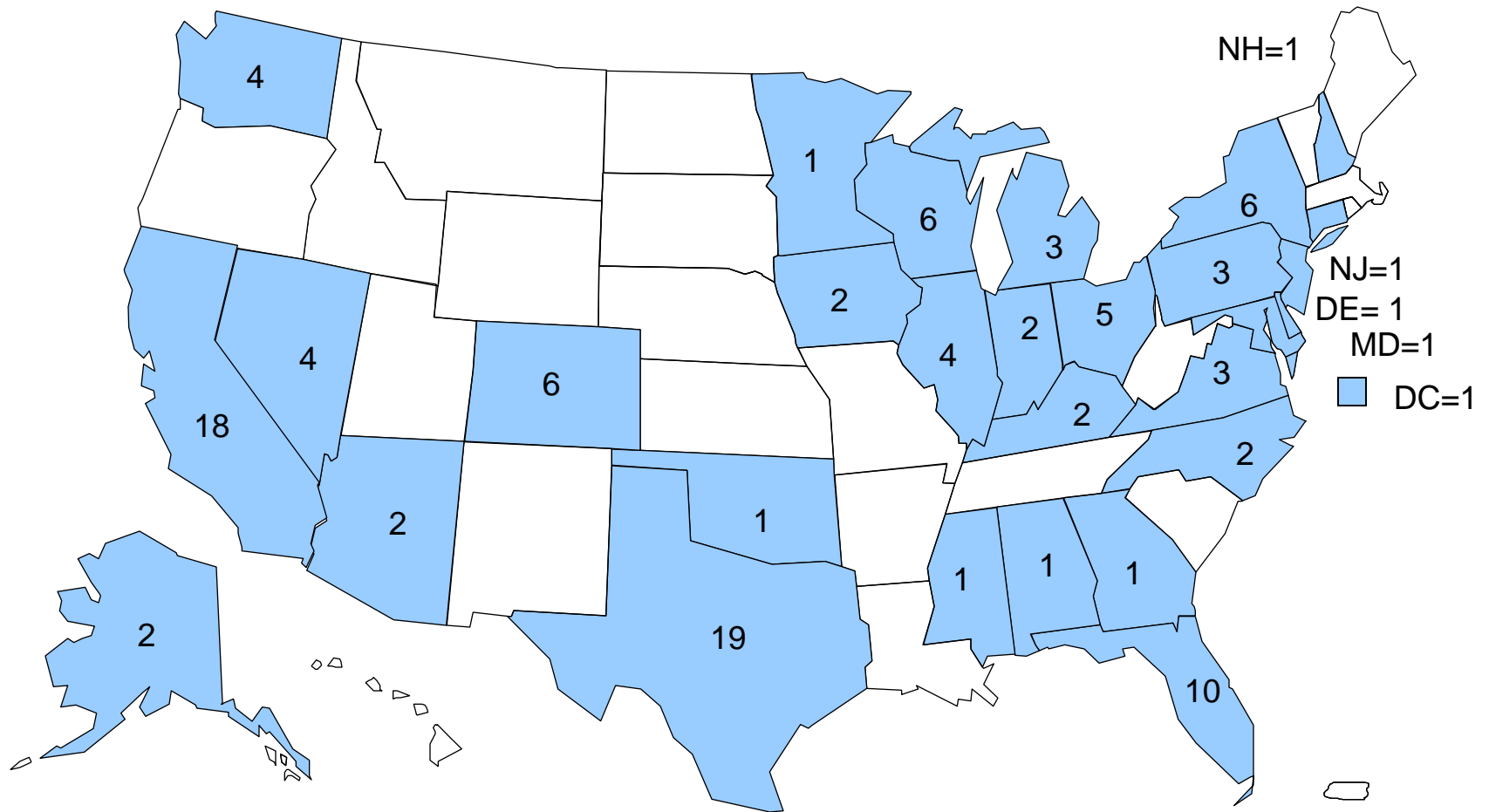
Major Project Announcements

***Project Delivery Team
Office of Innovative Program Delivery***



Current Active Major Projects

114  Number of Active Major Projects



As of 4/13/2015

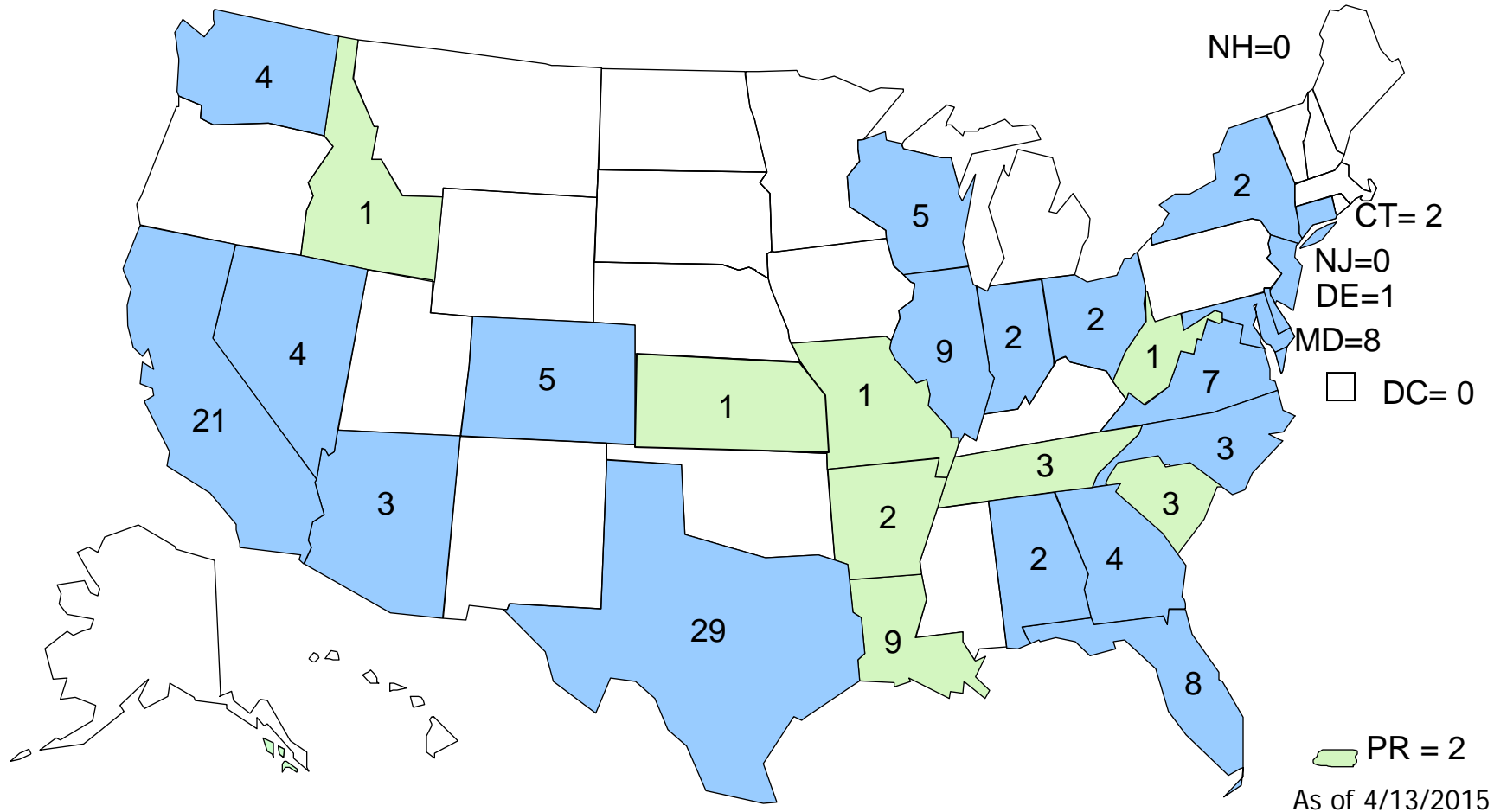


Future Major Projects

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

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

144 TOTAL



As of 4/13/2015



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/



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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



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