Smarter Work Zones Webinar Series

Webinar #5: Smarter Work Zones – Program-Based Project Coordination

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November 2, 2015
1:00-2:30pm EST

Efficiency through technology and collaboration
Today’s Speakers

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Smarter Work Zones Webinar Series

• This is the fifth in a series of bi-weekly SWZ webinars.
• Topics based on what matters most to you!
• Webinars include:
  – Previously Recorded:
    • Webinar #1: A Comprehensive Overview of the SWZ Initiative (9/9/2015)
      – https://www.workzonesafety.org/swz/project_coordination/training
    • Webinar #2: Implementing Technology Application Solutions (9/29/2015)
      – https://www.workzonesafety.org/swz/technology_application/training
    • Webinar #3: SWZ Corridor-Based Project Coordination (10/15/15)
      – https://www.workzonesafety.org/swz/project_coordination/training
    • Webinar #4: SWZ Technology Showcase – Queue Warning Systems (10/26/15)
      – https://www.workzonesafety.org/swz/technology_application/training
  – Coming Up:

| November   | 11/12    | Webinar #6: TA Case Studies: Variable Speed Limit and Dynamic Merge |
| December   | 12/2     | Webinar #7: Work Zone Project Coordination Guide and Examples      |
|           | 12/15    | Webinar #8: TA/PC Showcase: Corridor Traffic Management            |

For additional information go to: https://www.workzonesafety.org/SWZ/main
Purpose of Today’s Webinar

*Provide a comprehensive overview of program-based project coordination and discuss real-world examples of successful program-based SWZ project coordination strategies.*

Topics include:

1. SWZ Project Coordination Initiative
   - Show how the SWZ Project Coordination initiative can be used by agencies to enhance their current work zone management practices

2. Program-Based Project Coordination Examples
   - Provide real-world examples of successful program-based SWZ project coordination strategies which resulted in:
     - Minimized travel delays
     - Enhanced safety for all road users and workers
     - Maintenance of business and resident access
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PROJECT COORDINATION INITIATIVE
What are Smarter Work Zones (SWZ)?

*Innovative strategies designed to optimize work zone safety and mobility*

- Policies and practices used to incrementally and continuously improve WZ operations
- Tools to reduce WZ crashes and delays
- Tools to enhance WZ management strategies
Two Identified SWZ Initiatives:

**Project Coordination**
Coordination within a single project and/or among multiple projects within a corridor, network, or region, and possibly across agency jurisdictions

*Today’s Focus of Discussion*

**Technology Application**
Deployment of Intelligent Transportation Systems (ITS) for dynamic management of work zone traffic impacts, such as queue and speed management
Project Coordination – What is it?

Coordination within a single project and/or among multiple projects within a corridor, network, or region, and possibly across agency jurisdictions to minimize work zone traffic impacts.

Benefits:

- **For transportation agencies include:**
  - Ability to reduce and manage traffic disruptions from road work
  - Earlier identification of project impacts
  - Dynamic adjustments to schedule
  - Improved communications within and cross agencies
  - Cost savings

- **From the driver’s perspective:**
  - Fewer numbers of work zones and street cuts
  - Better quality road surfaces
  - Increased customer satisfaction

Source: FHWA
SWZ Project Coordination Goals:

Goal 1

By December 2016, 25 State DOTs have incorporated work zone project coordination strategies into agency documentation and business processes.

What does this mean?

• Review of:
  o Existing PC-related policies/practices to identify strengths and weaknesses
  o Other agencies’ PC-related best practices
• Identify and implement of SWZ PC strategies
• Develop agency documentation and business processes
SWZ Project Coordination Goals:

Goal 2

By December 2016, 5 State DOTs have volunteered to pilot the Work Zone Implementation Strategies Estimator (WISE) software.

What does this mean?

• Use WISE tool to optimize project schedules and analyze mitigation strategies to minimize work zone traffic impacts
• Pilot, evaluate, suggest enhancements, and demonstrate WISE’s value for work zone management
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PROGRAM-BASED PROJECT COORDINATION EXAMPLES

1. DDOT’s District-wide Project Coordination Tool
2. WSDOT’s Regional Project Coordination
Example #1: District-wide Project Coordination Tool

- Complex transportation network
- Multiple projects along New York Avenue, the Nationals Park area, and the convention center were causing impacts for travelers
- Coordination efforts to determine cumulative traffic impacts of these activities and identification of conflicts
- A tool could help streamline and enhance the project coordination process by integrating resources into a single system
- Led to the development of the Work Zone Project Management System (WZPMS)
Work Zone Project Management System (WZPMS) (1 of 2)

- Made up of the following components:
  - Work Zone Tracking tool
  - Traffic Analysis tool
  - Cumulative Transportation Management Planning (TMP) reporting
  - Implementation and Monitoring program
  - Database for roadway, developer, and utility construction projects
- Iterative process is used to identify conflicts
Work Zone Project Management System (WZPMS) (2 of 2)

**INPUTS**
- Project Information (DDOT, Developer, Utility, etc.)
- Detailed work zone information (user input)
- Road network information
- Roadway and traffic signal data
- Traffic volumes
- Traffic analysis scenario framework
- National best practice research
- TMP Team input and lessons learned
- Community “hot spots”
- Field Observations
- Data Capturing
- Performance measure objectives
- Lessons Learned

**OUTPUTS**
- Configurable work zone reports
- Interactive work zone map
- Revised work zone schedules
- XML data feed to CapTop
- Analysis summary reports
- Weekday peak period scenario results
- Regional congestion “hot spot” map
- TMP / MOT alternatives
- 5-years worth of work zone mitigation strategies
- Customized region TDM plans
- Mitigation strategy budget estimate
- Reduced congestion in work zones
- Reduced work zone crashes
- Improved public perception

**GOALS**
- Avoid work zone location conflicts
- Identify and minimize cumulative work zone impacts
- Identify corridor/area work zone mitigation strategies
- Improve safety and mobility in work zones

Source: DDOT
Work Zone Tracking Tool (1 of 2)

- All DDOT road construction projects within public right-of-way are entered
- Scheduled to begin within 3 months and 5 years in the future
- Special events are also entered (i.e., annual marathons or presidential inaugurations)
- Input analyzed as soon as entered to identify conflicts
- Can email project engineers to alert to potential conflicts between projects

Source: DDOT
Work Zone Tracking Tool (2 of 2)

- All utility and developer construction projects are permitted, which are placed in the DDOT Transportation Online Permitting System (TOPS) which are drawn into the database

Source: DDOT
Traffic Analysis Tool (1 of 2)

- Conflicts identified in Work Zone Tracking Tool are examined to quantify traffic impacts related to closures and trip diversions
- Cumulative traffic impacts are analyzed daily to generate outputs, including a series of level of service maps
- Can generate maps to look at any day and time period within the next 5 years
  - Weekdays or weekends
  - Average delay for an individual work zone
  - Hot spot areas where multiple work zones severely increase delay and congestion levels

Source: DDOT
Maps are used to help identify mitigation strategies
After conflicts are identified, DDOT meets with project engineers to find an appropriate solution
Solutions can include:
– Schedule adjustments
– Maintenance of traffic changes

Source: DDOT
Example – Anticipated Hotspots and Impacts

- Examine hotspot maps to determine what makes it a hotspot
  - Result of cumulative impacts of 5 projects or a single, major project
- Modify inputs to WSPMS to apply alternate mitigation strategies and see if impacts are reduced from these modifications

Source: DDOT
Citywide Transportation Management Plan

- Based on tools used to track and analyze cumulative impacts of all construction projects
- Examines appropriate work zone mitigation strategies for the next 5 years
- Informs an estimated budget for work zone mitigation strategies
- Mitigation strategies include:
  - Launching a Citywide Work Zone Project Management website
  - Considering schedule changes for overlapping projects
  - Implementing transit incentive programs
  - And more

Source: DDOT
Institutionalizing Project Coordination

• WZPMS continues to evolve since its development:
  – Expansion from impacts on arterials only to include collector roads with planned efforts to incorporate local roadways
  – Inclusion of special events and other activities
  – Ability to generate outputs relevant to Metro transit, as needed
  – Planned efforts to incorporate automated examination of alternate routes for roadway closures, including truck alternate routes
  – And more
WZPMS Development Challenges (1 of 2)

• Originally envisioned as an open system for all stakeholders to view all planned and ongoing construction activities and conflicts
  – Public
  – DC agencies like fire and police departments
• Concern that outputs or purpose may be misunderstood by some stakeholders
• Only used in-house
WZPMS Development Challenges (2 of 2)

• What traffic control plans should be entered into the system and by whom?
  – Initially, have individual project engineers perform this task
  – Structure of DDOT and workload did not allow for this to be the most efficient method
  – Settled on DDOT Project Development & Environment Division
    • Other division databases also incorporated
      – Permitting information
Lessons Learned

• Leadership support was helpful for securing funding to develop the WZPMS
• Understanding your area and stakeholders is important
• Using existing databases to automatically populate the WZPMS made it more robust and efficient
• Challenging to keep up with latest information as tool include more inputs
• Conflicts are recognized and proactively addressed instead of not knowing until receiving complaints
• Mitigation strategies and future budgetary needs are known in advanced by understanding the cumulative, citywide impacts for 5 years into the future
For more information:

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Example #2: WSDOT’s Regional Project Coordination

- Puget Sound region of Washington encompasses Seattle, Tacoma, Olympia, and Everett
- Northwest and Olympic WSDOT regions
- Many regional and local projects taking place

Source: WSDOT
WSDOT Regional Project Coordination

- Legislature approves funding and defines when it will be available for individual projects
- Many factors are considered when prioritizing project
- Traffic impacts may not be known or considered
- Difficult to prevent conflicting lane or road closures on parallel routes
- Need for better coordination of planned construction activities
Support from Leadership

- Agency leadership recognized the need to better coordinate planned construction activities
- Support and funding to internally develop a software program to coordinate projects was received
- Important because it includes a culture shift
- Help encourage internal and external stakeholders to participate
Project Goals

• Include transit stakeholders and establish relationship with transit agencies

• Collaboration between regions and jurisdictions to provide a neutral assessment of projects with cross-regional or cross-jurisdictional impacts
  – Internal marketing helped garner and maintain support
Construction Impact Analysis (CIA) Tool

- Two components
  - Mapping tool
  - Database
- Identify conflicts between projects
- Helped to formalize and facilitate mid- to long-term activities
- Also helps coordinate maintenance or utilities activities or special events
- WSDOT developed tool
CIA Inputs

• Updated on a quarterly basis
• Inputs are solicited via an email to project teams in 8 counties within Olympic and Northwest regions and local jurisdictions
• Longer-term projects are planned for up to 2 years into the future
• Maintenance and utility projects
• Example Input:
  – **Location:** I-5 from NE 117th St to SR 104 (Milepost 173.14 to 177.75) – Pavement Repair
  – **Date:** 8/1/2014 – 10/5/2014
  – **Impacts:** Planned partial closure, nighttime, Sun-Thu; Possible partial closure daytime Sun.
CIA Outputs (1 of 2)

- Distributed on a quarterly basis to approximately 400 stakeholders
- Outputs include detailed maps of scheduled projects and Gantt charts detailing the specifics of upcoming projects

Source: WSDOT
CIA Outputs (2 of 2)

• Hot spot and watch list areas are identified prior to the summer construction season
  – Based on number of projects in close proximity and other types of impacts that could cause traffic impacts
• Example: Redmond Hotspot
  – Multiple projects affecting every major roadway into city
  – Only 1 WSDOT project, but many local projects
  – Minimize impacts to local community

Source: WSDOT

WSDOT Hotspot Website: [http://www.wsdot.wa.gov/Construction/planning/2015.htm](http://www.wsdot.wa.gov/Construction/planning/2015.htm)
Coordination Meetings

• Annual meetings are held to discuss upcoming projects for next couple of construction seasons
  – Attendees include WSDOT, local road and transit agencies, private freight representatives and port representatives
• More frequent meetings are held for local agencies
  – Impacted agencies for downtown Seattle hotspot meet every 2 months
  – Weekly meetings are conducted to coordinate maintenance activities like cleaning out storm drains or inspecting bridges
Institutionalizing Project Coordination

- Stakeholders see the value of using the CIA tool
- No requirements to submit project inputs, but understand the benefits of coordinating projects to minimize congestion impacts on local jurisdictions
- CIA outputs are routinely used for a variety of purposes:
  - Approval of state road closures by WSDOT regions
  - Revision of bus routes and schedules by transit agencies
  - Development of schedules by project teams
- Many special provisions in contracts lists projects that must be coordinated with from the CIA tool.
Lessons Learned

• Multi-agency communications and culture change to collaboratively shift the focus from individual projects to network performance is important
• Internal marketing helps demonstrate the value of project coordination and encourages stakeholder involvement
• Buy-in from management to support the potential need for additional staff and resources is important
• Project coordination can help plan future work zone impacts with all affected regions
For more information:

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FHWA RESOURCES
SWZ Interactive Toolkit Available!

https://www.workzonesafety.org/SWZ/main
# Other Resources

## Project Coordination Resources

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<thead>
<tr>
<th>Source</th>
<th>Resources</th>
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Thanks for joining us!

- **Upcoming Events**
  - **Webinar #6:** Technology Application Case Studies: Variable Speed Limit and Dynamic Lane Merge
    - Thursday, November 12, 2015, 1:00-2:30pm EST
  - **Webinar #7:** Work Zone Project Coordination Guide and Examples
    - Wednesday, December 2, 2015, 2:00-3:30pm EST
  - **Regional Peer Exchanges**

<table>
<thead>
<tr>
<th>FHWA DFS Region</th>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-America</td>
<td>Des Moines, Iowa</td>
<td>October 22-23</td>
</tr>
<tr>
<td>North</td>
<td>Springfield, Massachusetts</td>
<td>October 28-29</td>
</tr>
<tr>
<td>South</td>
<td>Raleigh, North Carolina</td>
<td>November 5-6</td>
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<tr>
<td>West</td>
<td>Denver, Colorado</td>
<td>November 17-18</td>
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- Check The National Work Zone Safety Information Clearinghouse website for updates [https://www.workzonesafety.org/SWZ/main](https://www.workzonesafety.org/SWZ/main)

- **Questions or Comments?**
  - Jawad Paracha (FHWA Operations, WZ Team) [Jawad.Paracha@dot.gov](mailto:Jawad.Paracha@dot.gov)