Application Quick Reference Guide
The Work Zone Performance Monitoring Application

Preface

The Work Zone Performance Monitoring Application is a real-time performance monitoring tool for work zones, using vehicle probe data and active work zone information.

The WZPMA offers a simple, effective and systematic approach to assessing and managing work zone impacts of roadway projects. In particular, using the tool to monitor and assess work zone performance helps facilitate efficient management and evaluation of work zone impacts throughout project development, implementation and after action, resulting in improved overall processes and procedures.

Using this Guide

This guide is divided into two sections:

> Work Zone Dashboard
> Individual Work Zone Profile

Each section starts with an overview of the main screens – layout > general functionality > basic controls – then breaks down each of the elements (or widgets) on those screens simply, clearly and completely. Screenshots of the application are used for easy reference, rapidly building understanding and familiarity with the tool’s features and functionality.

Using the guide, along with the tool active on your computer, provides a quick and easy tutorial so that in no time, any user can begin to leverage the power and benefits of the WZPMA.

Benefits of the Work Zone Performance Monitoring Application

For Project Engineers & Managers
✓ Real-time performance monitoring
✓ Alerts when thresholds exceeded
✓ Actionable, multi-layered data

For Planners & Decision-makers
✓ Work zone / closure delay & cost summaries
✓ Performance assessment (to improve processes & procedures, data & information resources and training programs)

For Public Relations
✓ Easily compare real-time and historical performance
✓ Fast response to inquiries & complaints

Cover images source: http://www.workzonesafety.org/fhwa_wz_grant/atssa/atssa_pcms_wz
Getting Access

1. Login to your RITIS account:

   Welcome to RITIS. Please login to view traffic status.

   E-mail: joilen05@umn.edu
   Password: ***************
   Connect

   Forget your Password? • Request an Account

2. On the landing page, click on the WZPMA link:

   ![Screen shot of RITIS interface with incident list and WZPMA link highlighted]
The Work Zone Dashboard

- There are four interactive widgets that make up the Work Zone Dashboard...

1. **Current Work Zones (Overview List)**
   Here’s where you’ll find a summary of all the currently active work zones in the state – grouped by county – with number of nearby incidents, indications of increasing or decreasing queue lengths and the weekly user delay cost of each work zone.

2. **Top Critical Work Zones**
   Major and Critical events will appear here as they develop, with indications of lane status, associated queue lengths and user delay cost.

3. **Work Zone Locations (Map)**
   Use this scalable map to locate and zoom in on work zones, DMS and probe data; clickable icons give you access to more information.

4. **User Delay Cost by Corridor and Day of Week**
   See the last full week’s worth of delay and cost-related summaries for a select number of corridors in the state.
How to use the **Current Work Zones List**...

**Region/Event** displays the currently active work zones for the State and each county, by a route identifier and a location (or limits). Next to the state and each county’s name in parentheses are the total number of currently active events. Each grouping of events can be expanded or collapsed by simply clicking on the arrow next to the state/county name, or just the name.

Click on a tool tip to provide more information on the **# of Nearby Incidents**, **Queue Length** and **User Delay Cost** shown in the work zone list:

1. This is the number of incidents that have occurred within one mile upstream and downstream of the work zone area during the work zone’s lifetime.
2. This image shows the current queue length and whether or not the queue has increased or decreased in the past 15 minutes. The number at the end of the line is the maximum queue length recorded during the lifetime of this work zone.
3. Cumulative user delay cost for the last week* of each work zone.

Hover your mouse pointer over the red and green numbers in the queue length indicator to show queue length status:

- Click on any event icon in the list to open a **Work Zone Locations** map for that location (see page 8).
- Click on any event name in the list to open an **Individual Work Zone Profile** for that location (see page 12).

- Road maintenance operations
- Emergency roadwork

(* - will be updated to "lifetime of each work zone" in a future deploy.)
How to use the **Top Critical Work Zones** Widget...

- Click on an event name in the list to open an **Individual Work Zone Profile** for that location (see page 12).
- Click on an event icon in the list to center that event in the **Work Zones Locations** map (see page 8).
- Click on the gear icon to open the **Top Critical Range** scale, where you can set severity thresholds for Major and Critical events by simply dragging the sliders.
- Roll your mouse pointer over the thumbnail graphic to show queue lengths (indicated by orange and green dots on the line graph) in 15 minute intervals over the last three hours.
- The cumulative user delay cost for the last week is shown for each work zone, as well as a total for each severity category (Major/Critical).
- This image shows the queue length over the past 3 hours in 15 minute intervals. The orange spots represent the start and end points of the queue as well as its minimum and maximum lengths. The number at the end of the chart is the current queue length.
How to use the Work Zone Locations widget...

Click on any work zone icon in the Current Work Zones list (see previous page) to show that location in the Work Zone Locations map (you can also use the map independently to see other work zones by zooming in and out using the mouse wheel, and by moving the map by clicking and dragging).

Click on any work zone icon on the map to generate a Road Maintenance Operations pop-up:

The header contains location information about the work zone.

Other information includes when the work zone was started, the last update, and a lane configuration schematic.

Information can be posted inside the Description Box.

Click on the traffic cone icon to load an Individual Work Zone Profile (see page 12); click on the Timeline icon to load an Event Timeline (see page 9).

Click on Add File/Link to open a box where you can upload a file or submit a link.

Click on any DMS icon to see the message being displayed.

Multiple incidents show a green plus sign - click to see the incidents.

Double-click any roadway link to get probe speed data.
This one-screen overview tool provides visualizations of detailed real-time and historic traffic management center incident data.
**User Delay Cost by Corridor and Day of Week**

- This widget summarizes delay and cost-related information for a number of select corridors.

### Total User Delay Cost

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Thu 9/7</th>
<th>Fri 9/8</th>
<th>Sat 9/9</th>
<th>Sun 9/10</th>
<th>Mon 9/11</th>
<th>Tue 9/12</th>
<th>Wed 9/13</th>
<th>Thu 9/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-95 (VA)</td>
<td>$756.7k</td>
<td>$9.3k</td>
<td>$428.5k</td>
<td>$512.3k</td>
<td>$9.7k</td>
<td>$245.7k</td>
<td>$542.0k</td>
<td>$960.9k</td>
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<td>I-95 (MD)</td>
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<tr>
<td>I-64 (VA)</td>
<td>$1.1M</td>
<td>$2.4k</td>
<td>$540.7k</td>
<td>$406.4k</td>
<td>$5.3k</td>
<td>$278.9k</td>
<td>$526.4k</td>
<td>$976.9k</td>
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<td>I-66 (MD)</td>
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<td>I-105 (VA)</td>
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<td>US-50 (AD)</td>
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<tr>
<td>I-270 (Daily Totals)</td>
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</tbody>
</table>

### Corridor Totals

- **Grand Total**: $21.4M

- **Weekend**: $4.9M
- **Lowest**: $33.9k
- **Highest**: $2.7M
- **No Data**: $2.9M
- **Per Vehicle Miles Traveled**: 1.228 miles

**Hover over any cell to get a daily summary of the Total User Delay Cost for a select corridor.**

**Click on the dropdown menu to access other summary tables.**

**Hover over a Corridor Totals cell to get a weekly summary of the Total User Delay Cost for a select corridor.**

**Click on the gear icon to open the Select Corridors box and choose and manage your corridors of interest.**

**Click on the gear icon to open the Select Corridors box and choose and manage your corridors of interest.**

**Hover over a Daily Totals cell to get a summary of the Total User Delay Cost across all corridors.**
The Individual Work Zone Profile
There are five interactive widgets that make up the Individual Work Zone Profile:

1. **Settings**
   - Here’s where you’ll set the speed data type, choose associated data layers, set your current conditions boundaries, and create an personal alert for the work zone.

2. **Current Conditions**
   - Graphically displays work zone speeds, either measured or historic average, along your pre-defined boundaries. Events, queuing, and other data are also displayed as available.

3. **Traveling Through Work Zone**
   - Graphically display queue length, travel time or speed for the current day and the previous seven days for comparative purposes.

4. **Work Zone Location**
   - Use this scalable map to zoom in on your selected work zone. Clickable icons (such as work zone, DMS, roadway links) give you access to more information.

5. **User Delay Cost**
   - See the last full week’s worth of delay and cost-related summaries for your individual work zone, by day of week and grouped by 4-hour time bins.
This widget allows you to set a number of parameters for an individual work zone.

### How to use the Settings List...

#### Data Type...
Choose to view the current conditions measured speeds, or a comparison to the historical average:

- **Measured speeds** – average speeds shown along the TMCs of the predefined roadway segment (e.g.; 35 MPH)
- **Comparison to Historical Average** – comparison of the average speed to the historical average, with percent change (e.g.; -26 MPH (-65%))

#### Show...
Simply check the desired boxes to show a number of different data layers:

- **Work Zone Bounds**....draws an orange box around the work zone area
- **Posted Speeds**............shows speed limit signs along the predefined roadway segment
- **Associated DMS**.........shows DMS locations along the predefined roadway segment
- **Nearby Cameras**...........shows CCTV cameras along the predefined roadway segment
- **Nearby Incidents**...........shows the location and type of nearby incidents
- **Closed Lanes**..............indicates any lane closures along the predefined roadway segment
- **Bottlenecks**...............shows location, direction and length of any bottlenecks along the predefined roadway segment

Using the up/down arrows, indicate how far upstream and downstream from the work one you want to view (click on the lock icon to lock these limits in place, or again to unlock)

### Configure Alerts
Simply check the desired boxes, adjust any parameters and add your contact info to receive individual work zone alerts:

1. Alert me if...
   - an accident happens near this work zone.
   - there is a bottleneck that's head or queue includes this work zone.
   - speeds in the work zone fall below or exceed a certain range.

2. Alert me by...
   - send me an email
   - send me a text message

3. Alert me when...
   - Time zone
     - US/Eastern
     - Hours of day: 6:00 AM to 10:00 AM
   - Time period:
     - Hours of day: 4:00 PM to 7:00 PM
   - Select days of week
     - Hours of day: 12 AM to 12 AM
   - Select hours of day
     - 4:00 PM
     - 7:00 PM

Create alert.
This widget shows graphical results from the parameters selected under Settings.

- **Mile Marker Indicators** – Hover over the markers upstream and downstream from the work zone to see the distance.
- **Work Zone Bounds** – Shows the selected work zone area, inside the orange box.
- **Bottlenecks** – Indicates bottleneck head, direction and approximate length. Hover over the icon for more information.
- **Posted Speeds** – Speed limit sign locations are shown, when available.
- **Nearby Cameras** – CCTV camera locations are shown, when available. Hover over the icon to bring up the camera feed.
- **Nearby Incidents** – Other incidents will be shown as available. Hover over the icon for more information.
- **Measured Speed/Historic Average** – Posted for every TMC segment within your Current Conditions Bounds. Colors vary with speed, ranging from green (higher speeds) to red (lower speeds).
- **Lane Closure(s)** – The red hatched areas show which lanes are closed within the work zone.
- **Total Distance** – Shows the total distance from upstream or downstream of the work zone.
- **DMS** – Hover over a DMS icon to see the active message being displayed.
Traveling Through Work Zone

This widget shows directional variation for a chosen metric over the day, with corresponding changes that occurred over the last seven days.

- Roll over the line in the main chart to see an info tip on time and metric (time/travel time shown below). These charts are interactive; as you move along the line, the green dot will move in all charts, showing travel times during the corresponding times for the previous seven consecutive days.

- Adjust the parameters for metric (queue length, travel time or speed) and the direction of travel through the work zone (north & south/east & west; or for certain roads like beltways, clockwise and counterclockwise).

- For travel time, click Filter Results to choose additional filtering parameters.

- The widget shows directional variation for a chosen metric over the day, with corresponding changes that occurred over the last seven days.
How to use the **Work Zone Location** widget...

Opening up an Individual Work Zone Profile will show that location in the **Work Zone Location** map (you can also use the map independently to see other work zones by zooming in and out using the mouse wheel, and by moving the map by clicking and dragging).

- Click on any work zone icon on the map to generate a **Road Maintenance Operations** pop-up:
  - The header contains location information about the work zone (route, cross street, county, state)
  - Click on the traffic cone icon to load an **Individual Work Zone Profile** (see page 12; click on the **Timeline** icon to load an **Event Timeline** (see page 9).
  - Information can be posted inside the Description Box.

- Click on any DMS icon to see the message being displayed.
- Multiple incidents show a green plus sign - click to see the incidents.
- Double-click any roadway link to get probe speed data.

- Other information includes when the work zone was started, the last update, and a lane configuration schematic.

- Click on **Add File/Link** to open a box where you can upload a file or submit a link.
This widget summarizes delay and cost-related information in 4-hr time periods, for the previous seven consecutive days.

Hover over a cell to get a summary of VMT for a select date and time range.

Hover over an **Hourly Totals** cell to get a time range summary of VMT and other metrics.

Hover over a **Daily Totals** cell to get a summary of VMT for a particular day.

Click on the dropdown menu to access other delay and cost summary tables.
For technical support or to share feedback, please contact: support@ritis.org