Systemic Approach to Wrong Way Driver Detection and Deterrence
Zoom Meeting Platform
User Information

- Participants are currently muted
- Question and Answer Session will follow presentations
- Use Chat function to ask questions
- The meeting is being recorded and will be shared on the AII website
Agenda

1. Overview of All Program
2. Speaker Introductions
3. Introduction and Overview to a Systemic Approach to Wrong Way Driver Detection and Deterrence
4. Florida Department of Transportation
5. California Department of Transportation
6. Iowa Department of Transportation
7. Michigan Department of Transportation
8. Question and Answer Session
AASHTO Innovation Initiative (A.I.I.)

AASHTO Re:source

AASHTOWare

National Transportation Product Evaluation Program (NTPEP)

Development AASHTO Materials Specifications (DAMS)
All about All — The AASHTO Innovation Initiative

• Established in 1999 & Operating since 2000
• Previously called the Technology Implementation Group (TIG)
• Facilitate the implementation of high-payoff, ready-to-use, innovative technologies
  • Focus Technologies
  • Additionally Selected Technologies

Support the implementation of 100+ technologies since 2001
AII’s Role in the Technology Lifecycle

1. Research
2. Lead States
3. Pursue Practical Applications
4. Tech Transfer
5. Industry Practice
Current Active Focus Technologies

- Saw Cut Vertical Curb
- Freight Operations eXchange
- Hydrogen Fuel Cell Technology
- Electrically Conductive Concrete Heated Pavement System
- Steel Press Brake Formed Tub Girder
- Improved Project Delivery Using GIS
- Wrong Way Driving Systemic Approach
- Laser Ablation Coating Remove
- Beam End Repair with Ultra High Performance Concrete
AASHTO Innovation Initiative (AII)

What is AII?
Formerly the AASHTO Technology Implementation Group, AII advances innovation from the grassroots up: by agencies, for agencies, peer-to-peer. More >>

Active Focus Technologies
Nominate a Technology

Submit Your Nomination Today!

Active Lead States Teams Focus Technologies
- Saw Cut Vertical Curb
- Steel Press-Brake-Formed Tub Girder
- Beam End Repair Using Ultra-High Performance Concrete
- Improved Project Delivery with GIS & Surveying
- Laser Ablation Coating Removal
- Systemic Approach to Wrong Way Driver Safety
- Electrically Conductive Concrete (ECON) Heated Pavement System (HPS)

Resources
- Florida Wrong Way Driver Presentation (pdf)
- Caltrans Wrong Way Driver Presentation (pdf)
- Michigan Wrong Way Driver Presentation (pdf)
- Iowa Wrong Way Driver Presentation (pdf)
- Florida DOT Wrong Way Driving Webpage includes the following:
  - Statewide Wrong Way Crash Study (website)
  - A Data-Driven Approach to Implementing Wrong-way Driving
  - Strategies to Mitigate Wrong-way Driving Incidents on Arterials
  - Section 230.4 of the Florida Design Manual (Wrong Way Sign)
  - Traffic Control Devices and Measures for Deterring Wrong-Way
- Caltrans Wrong Way Pilot Projects Website (website)
- AASHTO Innovation Initiative Wrong Way Driver Detection Systems
Expert Panel

Reno Giordano, WSP
Director, Advisory Services
Wrong Way Driver Webinar Facilitator

Raj Ponnaluri  John Slonaker  Willy Sorenson  Mark Bott
Participant Poll #1
Introduction and Overview to a Systemic Approach to Wrong Way Driver Detection and Deterrence
### Wrong-Way Driving Taxonomy and Implementation Considerations

**Technical Brief**

<table>
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<td>Vehicle Identification</td>
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<td>Ability to alert for self-correction</td>
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<td>TMU/Law Enforcement Trigger</td>
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<td>Method of tracking path; trigger of other Traffic Control Devices (TCDD/ITS devices along path)</td>
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<td>Method of information to correct-way drivers</td>
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<td>Enforcement/Control</td>
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<td>Use of methods to control potential upstream traffic</td>
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The Problem

- 432 deaths annually on controlled-access highways (2010-2018)
- 20% increase over previously reported data (2004-2009)
- Though infrequent, resulting serious injuries and fatalities exact a high cost
What Do We Know?

- Tools and practices vary around the country
- Often can be expensive
- Typically, corridor focused (spot treatments)
- Risk factors not limited to high-volume corridors
- Occurrences not limited to divided highways/freeways
The Systemic Approach

- Considers an agency’s entire roadway system
- Holistically applies proven methods, physical improvements, and technologies
- Integrates with agency safety programs
- Implements a variety of low-cost countermeasures
Effective Practices Briefs
https://aii.transportation.org/Pages/Systemic-Approach-to-Wrong-Way- Driver-Safety.aspx

Systemic Approach to Wrong Way Driving Safety: Effective Practices Briefs

**CALTRANS**

Wrong way driving crashes occur randomly and less frequently than other crash types, however, they often involve multiple vehicles and result in multiple fatalities and/or serious injuries.

Many transportation agencies currently implement wrong way driver detection and deterrence tools and practices, but the variety of potential tools and practices vary, are often expensive, and are, in some cases, adapted to "post treatment" typically at the median barrier. The wide variety of tools and price factors are significant barriers to adoption, and disseminated implementation has a high potential for limited results.

Recent research has found that risk factors for wrong way driving do not limit themselves to high-volume corridors. A 94% Foundation for Traffic Safety's analysis of national highway Traffic Safety Administration Fatal Analysis Reporting System (FARS) data for.divided highways found that the following risk factors were associated: a greater degree with wrong way drivers than their right way driver counterparts.

- Impaired Blood Alcohol Content (BAC) – risk increases with BAC
- License status – risk increases for drivers with suspended or revoked licenses
- Driver’s age – risk increases for those ages 70 and over
- Vehicle type based on model year – risk increases with the age of the vehicle

Further, wrong way highways or freeways prioritize arterial access more frequently due to lower speed.

**FLORIDA DOT**

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**IOWA DOT**

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**THE SYSTEMS**

A systemic approach to wrong way driving does not limit itself to high-volume corridors. A 94% Foundation for Traffic Safety's analysis of national highway Traffic Safety Administration Fatal Analysis Reporting System (FARS) data for divided highways found that the following risk factors were associated: a greater degree with wrong way drivers than their right way driver counterparts.

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**THE SYSTEMATIC APPROACH**

A systematic approach to wrong way driving considers an agency’s entire roadway system. The approach holistically applies proven methods, practices, improvements, and technologies to mitigate wrong way driving. These countermeasures can integrate into existing approaches and programs for safety and help achieve agency safety objectives.

Recent agency experience among states:

- California, Florida, Iowa, and Michigan highlights a range of proven and emerging countermeasures that respond to different roadway characteristics (i.e., interchange type as well as demographic and land use factors). Many of these treatments are low-cost countermeasures, and readily implemented without substantial investment in technology.
FDOT’s WWD Timeline & Initiatives

**SEPTEMBER 2014**
D3 Red Internally Illuminated Raised Pavement Markings

**OCTOBER 2014**
D7 Red Rectangular Rapid Flashing Beacon (RRFB)

**APRIL 2015**
Signing and Pavement Marking at Ramp Intersections

**MARCH 2016**
Florida Turnpike Red- RRFB

**JULY 2019**
Implement Light-Emitting Diode (LED) highlighted WRONG WAY signs at exit ramps

**March 2019**
Countermeasure Implementation Plan

**November 2021**
2022 FDM Published with Traffic Design Ch. 230 S&PM Updated

**JUNE 2021**
Countermeasures for Arterials and Collectors

**6/22/2023**
Crashes and Research

- 280 Statewide freeway wrong-way crashes (2009-2013)
  - 30% Property Damage Only (PDO)
  - 52% Injury
  - 18% Fatality

- Crash severity type trend has held over decade

- Research Studies
  - Statewide Wrong Way Driving Crash Study
  - Driving Simulator Studies on Human Factors
  - Comparing Seven Countermeasures
  - Testing and Evaluating Video Detection Systems for Freeway Mainlines
  - Data-Driven Approach for Identifying Hotspots
  - Strategies to Mitigate Wrong-Way Driving Incidents on Arterials
Research and Implementation

Hotspot Research Analysis for advanced countermeasures

• Identified exit ramps in Florida

• Demographic and land-use factors including:
  ▪ Impaired Driving
  ▪ Drivers > 65 years old
  ▪ Tourist
  ▪ Density of alcohol establishments
  ▪ Density of Health care facilities
Signing and Pavement Marking (S&PM) Countermeasures Deployments – FDM 230.4

**TYPICAL LAYOUT FOR PARTIAL CLOVERLEAF/TRUMPET EXIT RAMP INTERSECTION**

**LEGEND**
- Wrong Way Arrows
- Wireless Arrows
- Lane Assignment Arrows

**Installation Details**
- On median, orient WRONG WAY sign(s) at 45° facing toward the ramp if intended to regulate.
- Distance varies.
- **Include if connecting road is undivided or has traversable median.**
- Coordinate with the District Traffic Operations Engineer on the use of either Static or LED Highlighted signs.
Wrong-Way Vehicle Detection System (WWVDS)

How Wrong-Way Vehicle Detection System Works

1. Detects Vehicle
2. Triggers Lights
3. Notifies Officials
4. RTMC Alerts Other Drivers
Wrong Way Vehicle Detection Systems fall in two specification sections and must meet all relevant subsections within SECTION 660 VEHICLE DETECTION SYSTEM and SECTION 995 TRAFFIC CONTROL SIGNAL AND DEVICE MATERIALS including supplemental requirement, SR-995-2.7.2-01.

- Section 995-2.11: Wrong Way Vehicle (WWVDS) Detection System Performance Requirements:
  “To verify conformance with the accuracy requirements in this Section and as a precondition for listing on the APL, the wrong way detection system will be evaluated at the FDOT Traffic Engineering Research Lab (TERL). Under controlled conditions at the TERL facility, the wrong way detection system must be capable of meeting the detection accuracy of 100% and zero false positive readings, using a sample size of 200 vehicles.”

- 660-4.4 Wrong Way Vehicle (WWVDS) Detection System:
  “Submit a test plan for the field acceptance test (FAT) to the Engineer for approval. The test plan must include a detection accuracy test and false positive test for each location in the project. The Engineer reserves the right to witness all FATs.”
Wrong Way Vehicle Detection System (WWVDS) Testing Resources

- **WWVDS Standard Specifications**
  - 2023 *Standard Specification for Road and Bridge Construction*
  - 660 Vehicle Detection System
    - 660-2.2.1.4 Wrong Way Vehicle Detection Systems
    - 660-3.7 Wrong Way Vehicle Detection Systems (WWVDS) Installation
    - 660-4.4 Wrong Way Vehicle (WWVDS) Detection System
  - 995 Traffic Control Signal and Device Materials
    - 995-2.7 Wrong Way Vehicle Detection Systems (WWVDS)
    - 995-2.7.1 Configuration and Management
    - 995-2.7.2 Communications
    - 995-2.7.3 Electrical Specifications

- **WWVDS Product Compliance Matrix:** [CM-995-1.1-09 Rev 5.0](#)

- **Protocols to send WWD info to the SunGuide:** Supplemental Requirements [SR-995-2.1-01 Rev 2.0](#)
Common Features of WWVDS APL Products

- APL WWVDS has five (5) vendors and five (5) products as of 6/1/23
- Suppliers' product features:
  - AC or Solar Power
  - Thermal or Radar Detectors
  - Cameras for Verification
  - Alert System

Resource link:
https://fdotwp1.dot.state.fl.us/ApprovedProductList/ProductTypes/Index/317
Countermeasures

Arterials
Summary of major changes to:

FDOT Design Manual (FDM) 230 Signing and Pavement Marking

- FDM 230.4: Converted to **Wrong-Way Signs and Pavement Markings**

230.4.3 Divided Arterials and Collectors

230.4.4 One-Way Pairs and Divided Arterials/Collectors with One-Way Egress

230.4.5 Undivided One-Way Streets

230.4.6 Two-Way Signalized Intersections

Link: [https://www.fdot.gov/roadway/fdm/default.shtm](https://www.fdot.gov/roadway/fdm/default.shtm)
Countermeasures
Success Story
Success Story

Wrong-Way Driver Stopped by Florida Highway Patrol (FHP)

Road Ranger Reported
TMC Located on CCTV
FHP Dispatch
Intercept

No incident or crashes due to interception!

RR and TMC Detected WWD Vehicle
FHP Stopped Vehicle
Wrong-way Direction
Thank You!
Developing Engineering Countermeasures for Wrong Way Driving
Bidirectional pavement markings

1. Bi-angular profile produces unidirectional messaging
2. Pigmented coating provides high contrast visibility for messaging
3. Base color coated with glass beads for high visibility
Bidirectional pavement markings
Directional rumble strips
Directional rumble strips

Pattern E.1

Pattern C

Pattern D3
TraffiCalm systems on San Diego exit ramps

TAPCO systems on Sacramento exit ramps
UC Davis systems and their views of the San Diego exit ramps

Solar Panel
Camera
Equipment Enclosure
UC Davis machine vision ramp monitoring system
Two-Way Retro-Reflective Pavement Markers

Right-Way Driver View

Wrong-Way Driver View
Additional retroreflective raised pavement markings on exit ramps
Additional retroreflective raised pavement markings on exit ramps

44% REDUCTION IN CHP REPORTED WWD OVER 30-MONTH PERIOD (15 months Before and After Installation)

Before - Jan. 2015 thru March 2016
After - May 2016 thru July 2017
Additional retroreflective raised pavement markings on exit ramps

NOTES:
1. May be a limit line or crosswalk.
2. Place Type R one-way red retroreflective markers on outermost limit line or crosswalk line with red facing the intersection.
3. If there is a crosswalk at the end of the exit ramp, place Type R markers in front of the first line for wrong way vehicle that travels up the ramp with the red reflective side facing the intersection.
4. The distances and marker spacings may be adjusted based on site specific conditions or exit ramp geometry.
5. The layout shown is a typical detail of an exit ramp, see Figure 3B-24 of the CA MUTCD for exit ramp configuration and arrow placement and spacing.
6. See Figure 3B-24 for Type V arrow detail with Type R one-way red retroreflective markers.

Figure 3B-24 (CA) - Examples of Standard Arrows for Pavement Markings (Sheet 2 of 8)
Additional retroreflective raised pavement markings on exit ramps
LED-illuminated flashing border WRONG WAY signs

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<th>AFTER</th>
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**CATEGORY 1**

60% REDUCTION IN REPORTED WRONG WAY EVENTS LED ILLUMINATED SIGNS
Caltrans-sponsored Wrong Way Driving study at Auburn University
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Caltrans-sponsored Wrong Way Driving study at Auburn University

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Non-alcohol Condition  Alcohol Condition
Caltrans-sponsored Wrong Way Driving study at Auburn University
Caltrans-sponsored Wrong Way Driving study at Auburn University

First Scenario

- DO NOT ENTER/WW Sign
- WW Sign with flashing LED Border
- WW Sign
- RRPMs
- Directional Rumble Strips
- Bidirectional Pavement Markings
Caltrans-sponsored Wrong Way Driving study at Auburn University

Second Scenario

MUTCD Required

CAMUTCD Required

Driver Stop Point

Driver Start Point
Caltrans-sponsored Wrong Way Driving study at Auburn University

Third Scenario
Caltrans-sponsored Wrong Way Driving study at Auburn University

MUTCD requirements

CAMUTCD requirements

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Caltrans-sponsored Wrong Way Driving study at Auburn University

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<td>DNE/WW sign</td>
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<td>LaneAlert2X</td>
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<td>WW+RRPM</td>
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Bosch’s software integrates into a third-party provider’s existing mobile device app and uses the devices’ GPS data to detect wrong way movements and send out a warning to the driver, proximate vehicles and interested government agencies.
Bosch reversed the permitted directions of travel in its database for these test ramps in Sacramento and Davis so researchers could receive and log “wrong way” alerts when traversing the ramps in the correct direction.
Thanks for Listening
Curbing Wrong Way Movements onto Michigan Freeways

Mark Bott, PE (MDOT)
Engineer of Traffic and Safety
Why the Interest?

Five Killed in Wrong-Way Car Accident Near Detroit

Published October 23, 2011 | NewsCenter

Five people died Sunday in a fiery accident when a car driving on the wrong side of a suburban Detroit freeway collided, Michigan State Police said.

GAIETUS: Wrong-way driver who police say was under the influence of prescription medicine or narcotics was jailed Wednesday.

Five Killed in Wrong-Way Crash on Michigan

A driver from Nebraska was traveling the wrong direction down I-96.

3 Dead, 3 Critical In Wrong-Way Head-On Crash

GAIETUS: Wrong-way driver who police say was under the influence of prescription medicine or narcotics was jailed Wednesday.

Wrong-way driver jailed after crash

09/11/2009 Kalamazoo Gazette

GAETUS: Wrong-way driver who police say was under the influence of prescription medicine or narcotics was jailed Wednesday.

Police: Wrong-way teen causes crash

A driver was under the influence.

Police: Wrong-way head-on crash

Wrong-way driver who police say was under the influence of prescription medicine or narcotics was jailed Wednesday.
Study Details

Only included crashes caused by WRONG WAY ENTRY onto the freeway.

Not included:
- Crashes involving vehicle loss of control
- Vehicles that crossed the median

110 Crashes
Wrong Way Crash Severity

32% of crashes resulted in K or A  
(35 of 110)  
Comparison: 2% of all freeway crashes result in K or A

The 35 K/A crashes severely affected 66 people:  
30 Fatalities  
36 Serious Injuries
Crash Location

Exit ramp - 6% of crashes resulted in a K/A
Freeway mainline - 42% of crashes resulted in a K/A

Crash occurred on:
- exit ramp - 31
- mainline - 71
  - entry ramp unknown - 67
  - entry ramp known - 4
- freeway-to-freeway ramp - 6
- entrance ramp - 2

35 Known Entry Points
Interchange Types

791 Interchanges

- Diamond – 340
- Partial Cloverleaf – 163
- Directional – 206
- Full Cloverleaf – 20
- Trumpet – 23
- Other – 39

35 Known Wrong Way Entries

- 60% / 21%
- 11% / 3%
- 6
- 21
- 2
- 4
- 1
- 1
By Time of Day

11 pm – 6 am: 57% of all wrong way crashes

11 pm – 6 am: 16% of all freeway crashes
The Culprit - PARCLOS
What to do?

Low-Cost Safety Improvements
Was in the works

From 8° angle between ramps to 11° angle

From 30 ft setback to 20 ft setback for the corrugated island
Pick List

- Lower DO NOT ENTER/WRONG WAY sign height (4-foot bottom height) **Standard**
- Reflective sheeting on signposts **Standard**
- Stop bars placement at exit ramp
- Wrong way pavement markings (off ramp wrong way arrow) **Standard**
- Pavement marking extensions through intersection (turning guidelines)
- Painted islands between exit and entrance ramps
- Wrong way delineation on exit ramp (red reflectors) **Standard - post mounted**
Gratiot Ave at I-94 (Detroit)
Gratiot Ave at I-94 Improvements

- Qwick Kurb
- Lower Signs
- Pavement Markings
- Delineation
Looking Toward the Future
I-94 at Sargent Road

- Location 1 & 2: 36” Wrong Way Sign w/red flasher ring
- Locations 3, 5, 6: 48” Wrong Way Sign w/red flasher ring
- Location 4: 48” Wrong Way Sign w/red flasher ring and controller
Wrong Way Driving Methodology Assessment

- Evaluate the influence of each countermeasure
- Initial and life cycle costs
- Compatibility with MDOT Operations Centers
- Benefit Cost Analysis Tool
- Guidance Selection Matrix
Agenda

- Network Screening
- Systemic Treatments
- $1.5 Million for 2021 Deployment of Enhanced Signing, Pavement Markings & Cameras
- Initial results after 1 year
Level of Effort for WWD
After collection WWD Data for 10 years with $0 budget…

I got $1.5 Million of HSIP funding for enhanced signing and pavement markings.
Where to Spend?

467 Interchanges in Iowa
Network Screening

By Dr. Huaguoz Zhou
Md Atiquzzaman of Auburn University

https://journals.sagepub.com/doi/pdf/10.1177/0361198118
Iowa’s Modification Scoring System
Started with 472 interchanges and then Multiplied by 100 “points”
Distribution of Points

- Crashes (25%) - 11,800 points
- Volume (25%) – 11,800 points
  - Mainline (12.5%)
  - Sideroad (12.5%)
- Geometry (25%) – 11,800 Points
- Urban/Rural (20%) – 9,440 Points
- Non-Crash WWD Events (5%) – 2,360 Points
Don’t forget about At-Grades

- Not part of the network screening
36 At-Grade Intersections
129 Interchanges
165 locations
Common Philosophy for Signs

- Larger signs
  - 36” x 36” → 48” x 48” (78% increase)

- Strategically Placed
  - Install sign where a potential WWD is looking
  - Stop placing signs where it is convenient
    - (like on the back of Stop sign)

- Aim (angle) the sign for intended audience
  - Think about who (why) you are doing this.

- Left and Right sides
  - 2 is better than 1
At-Grade Intersection

- New Signs/Pavement Markings
- Larger Signs
- Strategically placed & aimed
Before (MUTCD)

Good (w/ Systemic Treatments)
Had a few WWD, but this one...
1 mile further down the road…

- Was stopped by Police
- Blood Alcohol Concentration (BAC) = 0.206
Good (w/ Systemic Treatments)

Red Conspicuity sheeting on Do Not Enter Legs
also

Better (I think)... w/ Text Version of Keep Right

Added 6/1/23
Standard Diamond Interchange
Be Careful with
Do Not Enter & Stop Signs

Do Not Enter Was Blocking the STOP Sign.

We fixed by moving DNE out further.
“Gateway” for Folded Diamonds
- Between 2010-2020, there were 36 WWD crashes associated with a Parclo "B" or "AB."
- January 1, 2021 to October 1, 2022, there have been 0 WWD crashes where the POE was from one of these 43 treated interchanges.

**WWD Events Recorded using Video Analytics**

- In Summer 2021, cameras with the ability to detect WWD were installed at 7 locations and record constantly.

- Adding all of the months where a camera was monitoring existing conditions and comparing to approximately 18 months of monitoring after enhanced signing was added shows a 93.9% decrease of WWD events.

<table>
<thead>
<tr>
<th>Interchange</th>
<th>Type of Uniq.</th>
<th>Camera</th>
<th># Months &quot;Before&quot; Signing Added</th>
<th># WWD Events Before Signing Added</th>
<th># Months &quot;After&quot; Signing Added</th>
<th># WWD Events After Signing Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-35 &amp; US-34</td>
<td>Parclo &quot;AB&quot;</td>
<td>WWDS5</td>
<td>1</td>
<td>1</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>US-151 &amp; IA-1</td>
<td>Parclo &quot;B&quot;</td>
<td>WWDO4</td>
<td>1</td>
<td>1</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>US-30 &amp; C St (WB Exit loop)</td>
<td>Parclo &quot;B&quot;</td>
<td>WWD18</td>
<td>2</td>
<td>2</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>US-30 &amp; C St (EB Exit Loop)</td>
<td>Parclo &quot;B&quot;</td>
<td>WWDO9</td>
<td>2</td>
<td>0</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>US-30 &amp; WACONIA AVE/6TH ST SW</td>
<td>Parclo &quot;AB&quot;</td>
<td>WWDO1</td>
<td>3</td>
<td>4</td>
<td>18</td>
<td>4</td>
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<tr>
<td>IA-141 &amp; IA-415</td>
<td>Parclo &quot;AB&quot;</td>
<td>WWDO40</td>
<td>1</td>
<td>2</td>
<td>19</td>
<td>0</td>
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<tr>
<td>US-30 &amp; 19th St</td>
<td>Parclo &quot;AB&quot;</td>
<td>WWDE2</td>
<td>6</td>
<td>2</td>
<td>23</td>
<td>0</td>
</tr>
</tbody>
</table>

* Only the months where the WWD detection camera was installed before signing added.

**Totals**

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWD/Month</td>
<td>WWD/Month</td>
</tr>
<tr>
<td>0.76</td>
<td>0.05</td>
</tr>
</tbody>
</table>

**94% Decrease**

Updated 1/17/2023
Zac’s Sign
Hypothesis....

If you can solve the WWD problem for Daytime, non-drunks.... (85% that self correct).... Will it reduce the nighttime intoxicated WWD problem, (the other 15%)?

Preliminary Results

(Interstates, Freeways & Expressways speed limit of 60, 65 or 70 MPH Currently too hard to review 55 MPH highways)

- **2023 (as of 6/20)** 10 crashes
  - Only 1 might have been at a location that had systemic countermeasures
  - BAC unknown
  - 4 with BAC (Average was 0.194)

- **2022** 19 crashes
  - Only 4 may have been from a location with systemic countermeasures
  - Only 1 (of the 4) recorded a BAC. It was 0.144
  - 6 with a BAC (Average was 0.176)

- **2021** 8 Crashes
  - None from a location with Systemic Countermeasures
  - 4 w/ a BAC (Average was 0.147)
To wrap things up, there is 1 more thing that I’d like you to know and share with your family, friends and co-workers.

*USE RIGHT LANE AT NIGHT TO AVOID WRONG WAY DRIVERS*
Question and Answer Session
Thank you!

aii.transportation.org