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WRONG WAY DRIVING
EFFORTS

WILLY SORENSON, P.E.

TRAFFIC & SAFETY

IOWA DOT

ACED
CONF.

9-29-22

CYCLONE
TRACK

10-7

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Agenda

- Background
- Statewide WWD Signing & Pavement Markings
- Statewide WWD Cameras
- Unique Locations that need Unique Treatments
- A few happy people

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A friend asked me... what I do at the DOT

- I said I talk to drunks, elderly and just confused and get them to not drive the Wrong Way

How do you do that?

Sign Language!!

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Started at Ames MDST Meeting in 2010+/-

- Commander Huff said, "... it just feels like are too many 911 WWD calls for our community. DOT – what can you do?"





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Collection of WWD Data

- 2010 - 2017 focused US 30 Boone to Nevada
- 2017 & 2018 added in Cedar Rapids area
- 2019 & 2020 Going Statewide!

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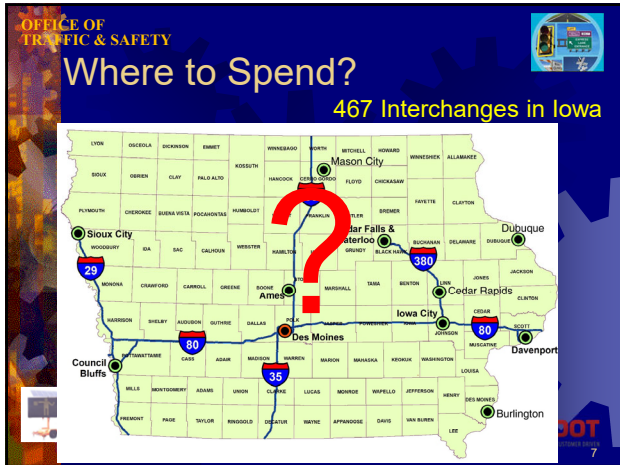
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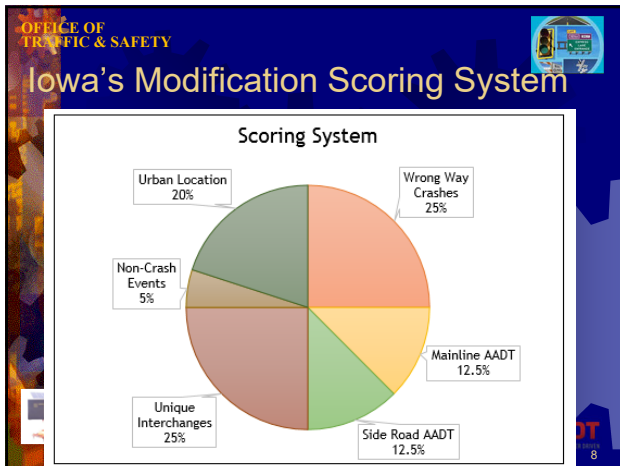
After collection WWD Data for 10 years with \$0 budget...

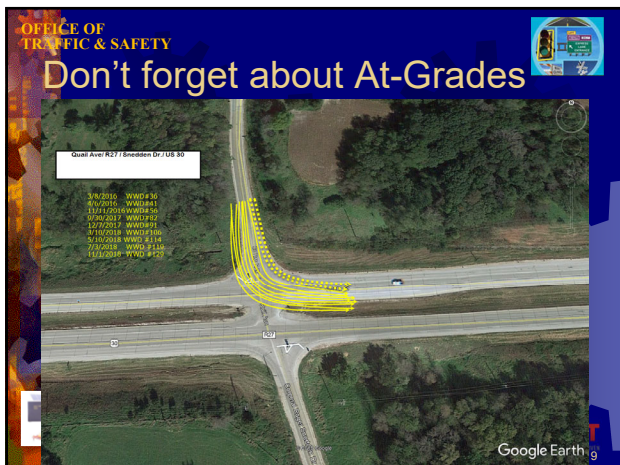
We got \$1.5 Million of Safety funding for enhanced signing and pavement markings.

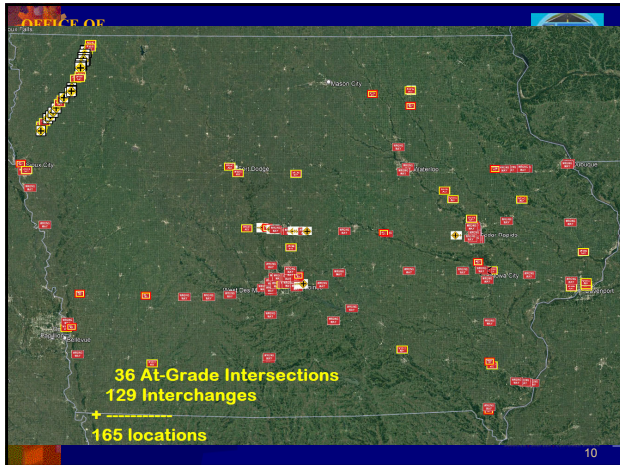



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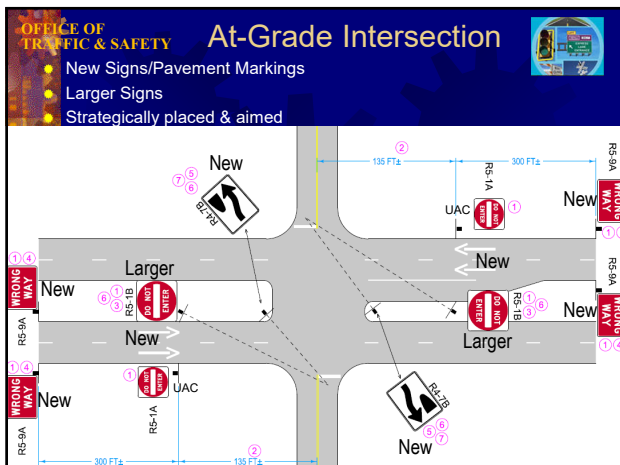
















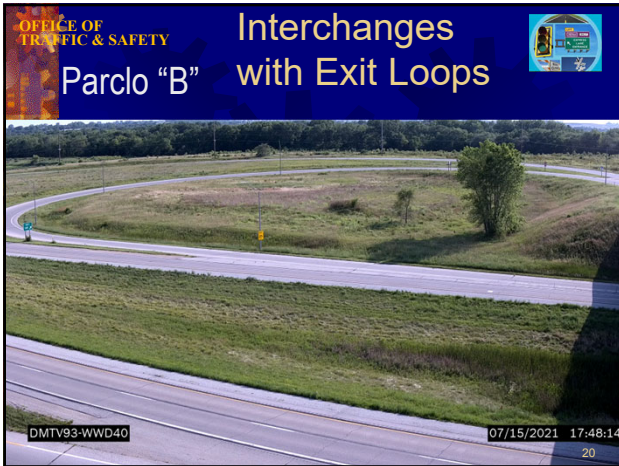


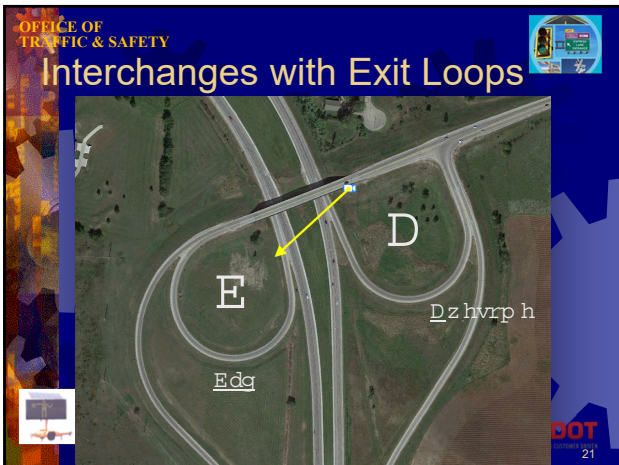


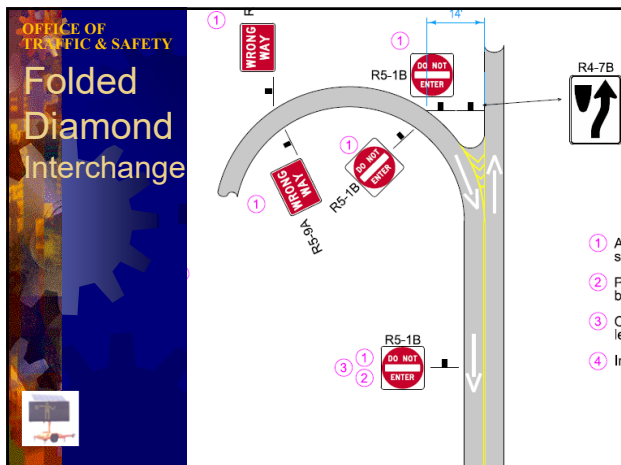








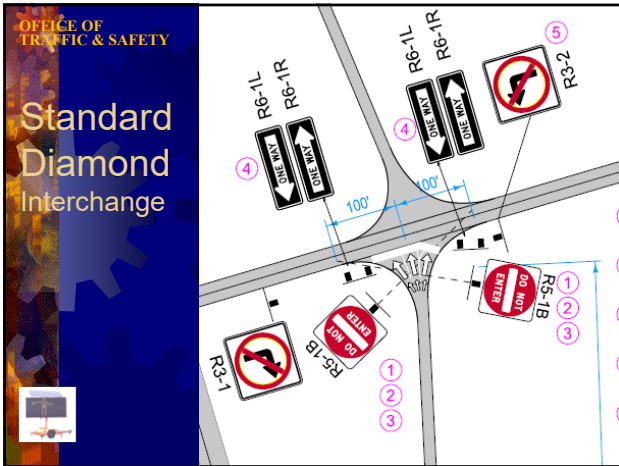














Zac's Sign



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So, How is it working?

A photograph of a calculator with several brown beans placed on its keypad. The calculator screen shows some numbers and mathematical symbols.

Contractor Started July 2021

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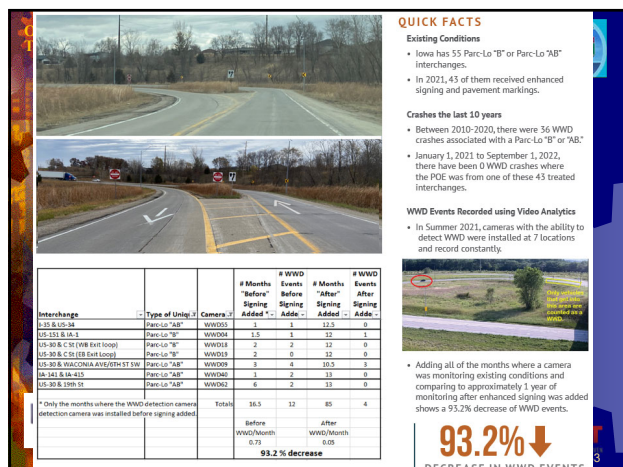
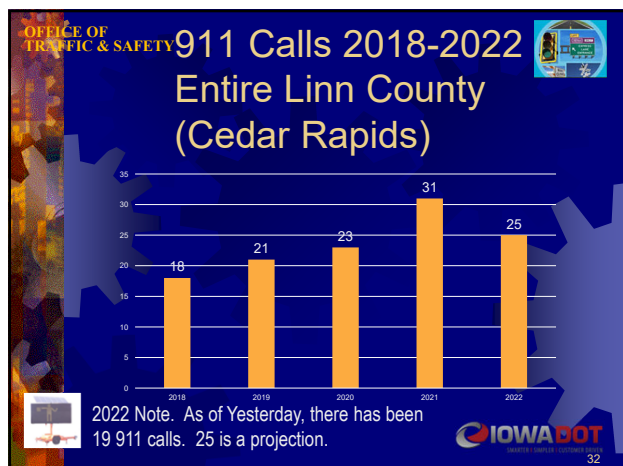
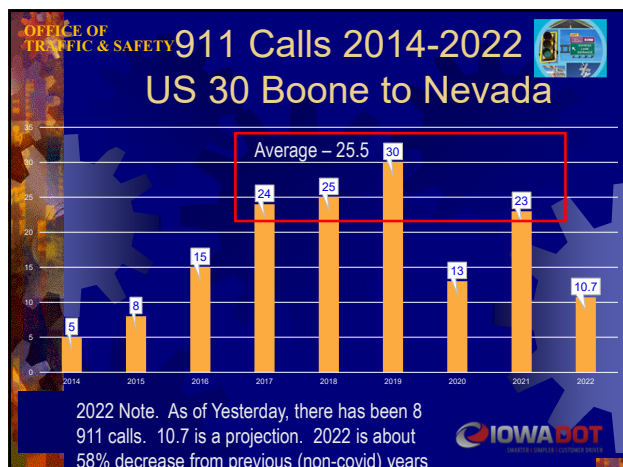
US 30 – Boone to Nevada

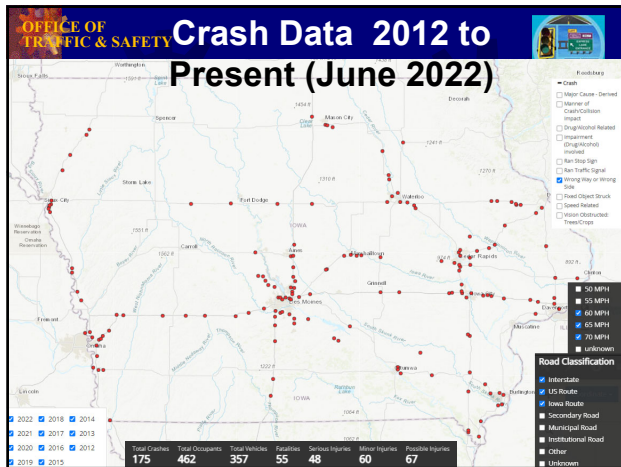
17 locations

A map showing the route of US 30 from Boone to Nevada. The route is highlighted in yellow and passes through several towns including Boone, Leno, and Nevada. The map is overlaid on a satellite image of the region.

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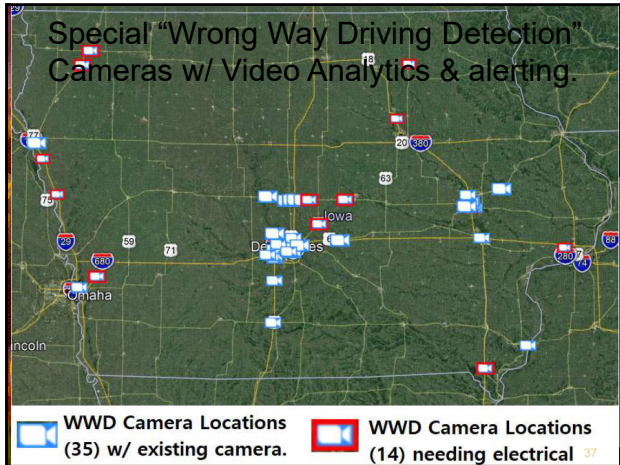
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62 Cameras + Installation for \$300,000

- 42 cameras at 35 sites with existing camera
- 18 cameras at 14 completely new sites

WWD Camera Detection Project:


- 60 have been installed
- Roughly 85 to 90% self correct, so the remainder did not.
- Thousands of other events (false calls)...

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- Confirmation
- Multiple areas
- Did they self-correct?


Why Video Analytics?



- Multiple install locations/ Viewing Angles
- What were they doing before WWD



- Type of Vehicle
- How far did they go?



WWD62-Dyersville

04/14/2022 13:04:59

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Flexibility for Install Locations

SPUI
04/13/2022 03:18:38
WVD-6446-0200


Interchange
04/13/2022 03:18:38
WVD-6446-0200

Roundabout
04/13/2022 03:18:38
WVD-6446-0200





Folded Diamond
04/13/2022 03:18:38
WVD-6446-0200

At-Grade Intersection
04/13/2022 03:18:38
WVD-6446-0200

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Each WWD “trips” an e-mail alarm

 WWD Detected at US 30 EB Exit & University (H)	464 KB	BoschHWD01_V1@iowadot.us	Sun 2/13/2022 1:47 PM
 WWD Detected at US 30 EB Exit & University (H)	466 KB	BoschHWD01_V1@iowadot.us	Sun 2/13/2022 1:41 PM
 WWD Detected at US 30 EB Exit & University (H)	467 KB	BoschHWD01_V1@iowadot.us	Sun 2/13/2022 1:41 PM
 WWD Detected at US 30 EB Exit & University (H)	469 KB	BoschHWD01_V1@iowadot.us	Sun 2/13/2022 1:41 PM


WWD Detected at US 30 EB Exit & University (H)

B

BoschHWD01_V1@iowadot.us

To : Sorenson, Willy

2/20/2021, 134018_image.jpg
429 KB



2/19/2022

Alarm Mail from [BoschHWD01_V1@iowadot.us](#)

Unit name: WWD01-AMTV16

Local Unit time: 02/13/2022 13:40:16

Condition of the alarm inputs (logical states):

Local Input 01 'Input 1' : idle


Local Input 02 'Input 2' : idle

VCA alarm cam 1 : idle

Virtual alarm input 1 : idle

Virtual alarm input 2 : idle

Virtual alarm input 3 : idle






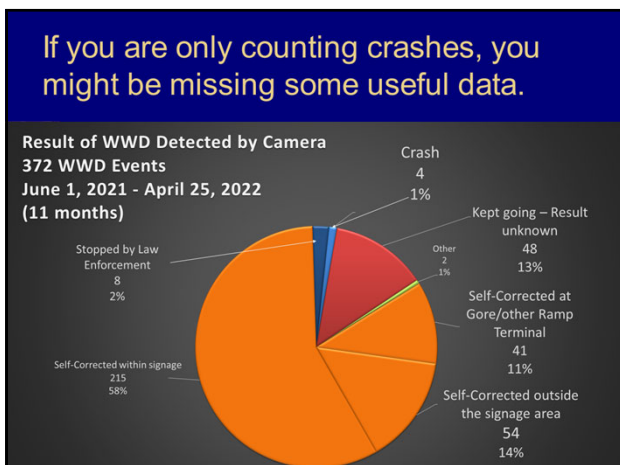
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After 1 ¼ year of Cameras

- Detected 801 WWD Events
- Found 15 “Hot Spots” where our enhanced signing is not enough.
- Accounted for 83%.
- Will be addressing those next with change order.



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Enhanced Signing Everywhere

The goal....

Determine Points of Entry

(fix the problem/eliminate the headache)

Option A (Treatment)

Option B (Solve it)

Specific / Targeted Signing for that location

What your headache is telling you...

Drink water that fast

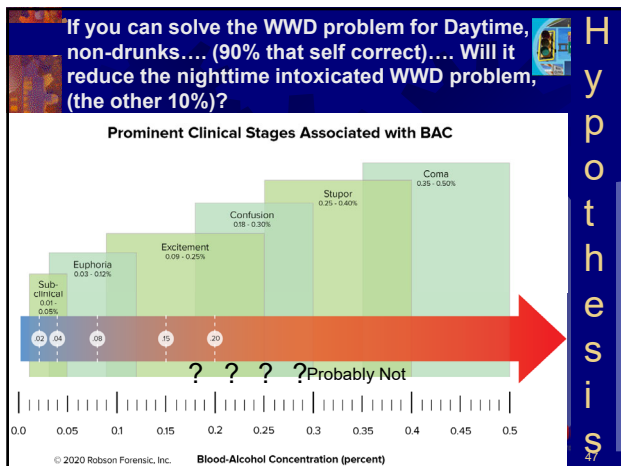
More sleep

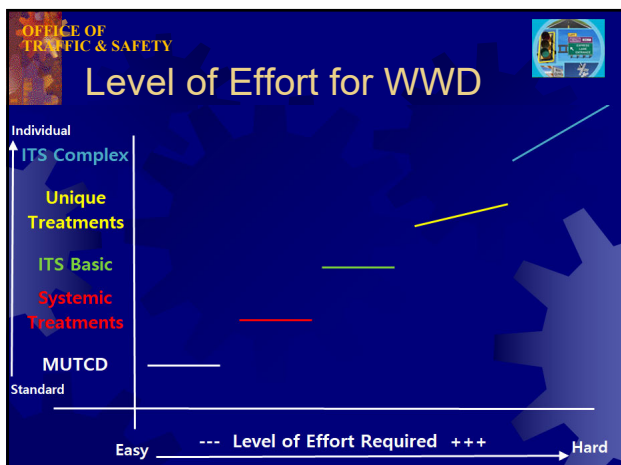
Reduced intensity of stress

Solve with signing, painting & lighting

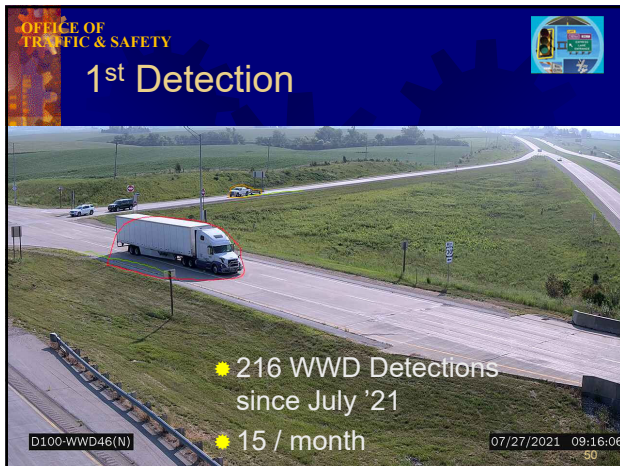
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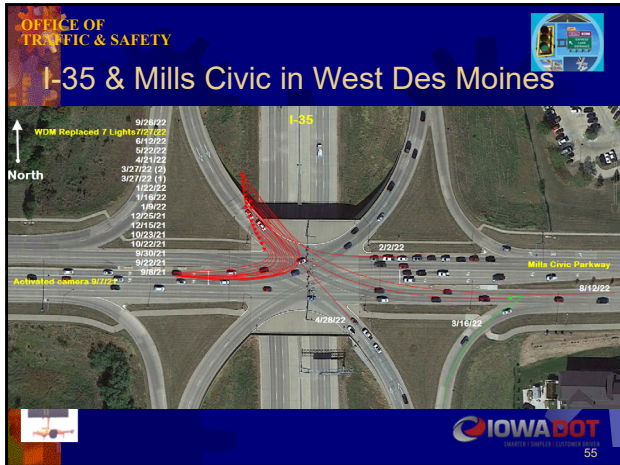




















Score:

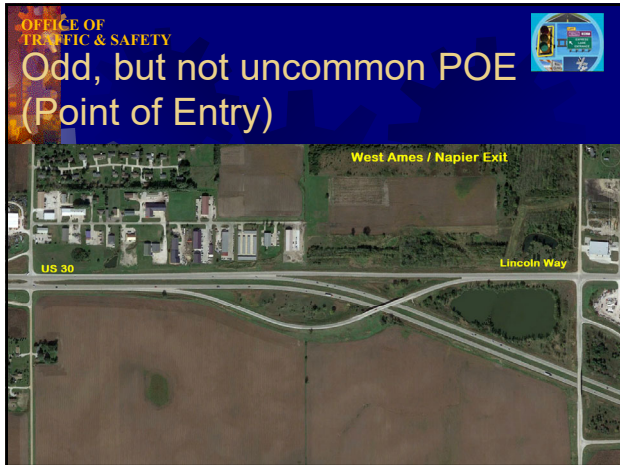
- 19 WWD Events since camera was installed
 - 1.5 WWD events/month
 - (10 ½ months of data)
- 2 WWD Events since lighting was fixed
 - 1.0 WWD events/month
 - (2 months of data)
 - 33% decrease
 - Good direction, but too early conclude and still not good enough.

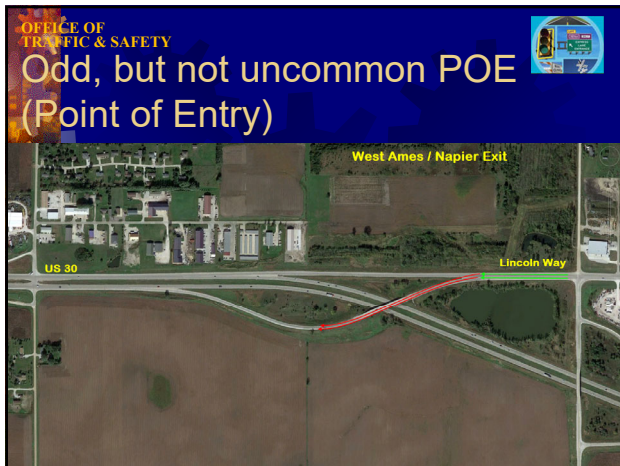
IOWABOT

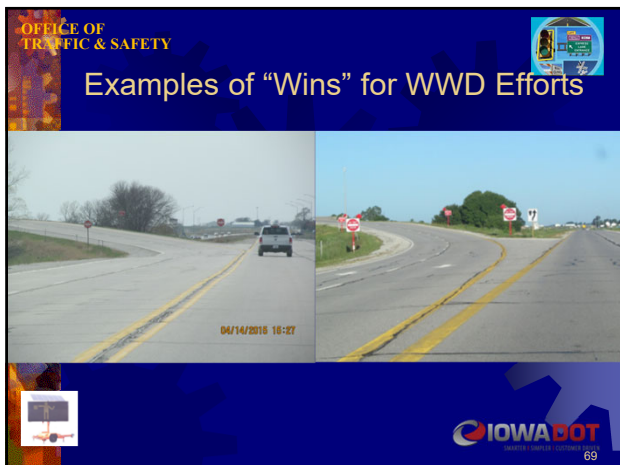


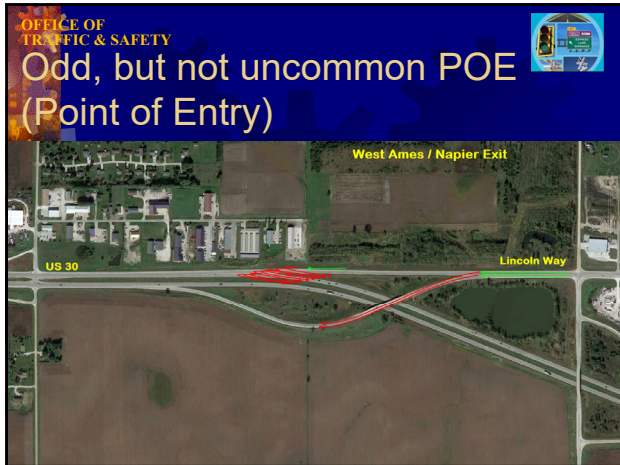


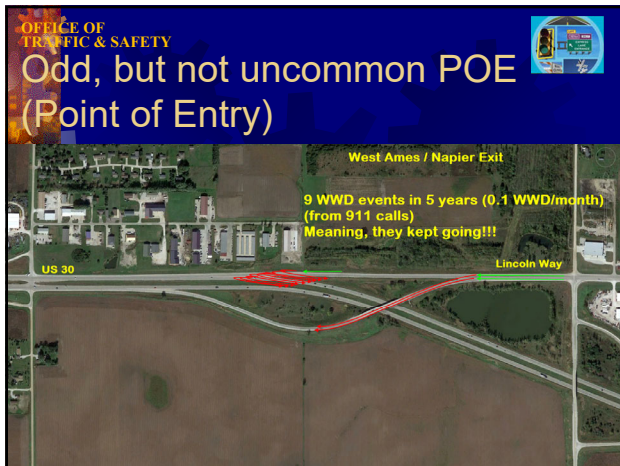


















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Score:





9 WWD Events Since 1st we found out

- 0.13 WWD events/month
- (5 years of 911 or sensor data) (No detection camera)

1 WWD Event since Enhanced Signing/Pavement Markings

- 0.07 WWD events/month
- (14 months of data)
- 54% decrease
- Good direction, but too early conclude anything





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Odd, but not
uncommon
POE
(Point of Entry)

U-Turns

The image is a collage illustrating a Point of Entry (POE) for a U-turn. It features a satellite map of a road intersection with a red car, a close-up of a road sign, and a photograph of a road with a red car. The text "POE was U-Turn just south of AMTV08" is overlaid on the map. The collage also includes a small inset image of a road sign and a small inset image of a road with a red car.

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I-35 just north of US 30

North 1-35 @ US30 (AMTV22) 04/07/2022 19:33:35

This aerial view shows a multi-lane highway with traffic moving in both directions. A significant spill is visible on the right shoulder of the highway, partially encroaching on the travel lanes. The spill appears to be a dark, viscous substance. The surrounding area is grassy with some trees and a few buildings visible in the distance. The image is overlaid with a blue header containing the text 'OFFICE OF TRAFFIC & SAFETY' and 'I-35 just north of US 30'. A timestamp 'North 1-35 @ US30 (AMTV22) 04/07/2022 19:33:35' is also present.



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WWD may be a function of:

- Distance between Ramp and Access
- Familiar with the area (Local vs Visitor)
- How focused are you to get there?
- Your personal feelings towards government

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Case Study

ALARM:

Dyersville WWD

11/18/2020 11:03:19

Wrong Way Driving
Dyersville, Iowa

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After installing a camera, we were averaging 1 WWD every 2 ½ days

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Treatment #9

- Over the course of a year, we tried 8 different treatments.
- Finally..... #9
- Installed 7/19/21
- 1 WWD every 27.5 days
- 91% reduction

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Other Uses for Cameras

WWD25-DMTV07 2ndAveAttenuator 09/21/2022 13:56:42

Crash Attenuator Monitoring

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Monitor Unique Operations

- Reduced Conflict Intersection
- East of Fort Dodge
- Installed (hung) yesterday..... No video.

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WWD Detection on a Trailer

- Finished one yesterday
- Working on the 2nd trailer

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Cedar Rapids & Iowa City

- Overhead DMS use
- About 20 activations in the 1st 6 months of implementing

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Applied for TSIP Funding in '24

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InTrans WWD Detection Software

Current Research Project

- Will use in locations where existing PTZ camera is already looking where a WWD may be entering the Highway
- Server based and Edge based (focus on cameras already on fiber)

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Wrong-Way Driving Applications

Considerations:

"False positives"- alerts to drivers who are not driving the wrong direction

- Provide drivers with ability to override the warning?

What would the system or app communicate with this alert?

- E.g. "Turn around immediately?"

Construction Zones


Once "override" Shuts off for 15 min.

If "connected" it updates the map for everyone


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Concept for the 'near future', until everyone
is driving a "Connected Vehicle"



- Similar to the Work Zone Data Exchange Initiative by Federal Highway Administration – Whereas work zone information from State DOT's can be "broadcast" using XML to tell 3rd party apps, and/or a (connected) car directly information about a work zone they are approaching.
- After a 911 center receives a call about a Wrong Way Driver is reported, why can't we start the process to enable the "broadcast" that information to 3rd party apps and/or a (connected) cars in the vicinity of the Wrong Way Driver?



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Near miss on US 30





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11/25/2021 20:04:13




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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



OT
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Best False Call Ever!!!!




WW061-NVT05 10/08/2021 08:06:26 92

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END
ROAD WORK

Questions?





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Any WWD Information?

- ☀ Willy Sorenson, P.E.
- ☀ Willy.Sorenson@iowadot.us
- ☀ (515)-669-4628 Cell (99% of getting me)
 - Traffic & Safety Engineer
 - Traffic & Safety Bureau, Iowa DOT
 - 800 Lincoln Way, North Annex
 - Ames, Iowa 50010
- ☀ (515)-239-1212 Office (1% chance I'll answer)



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