

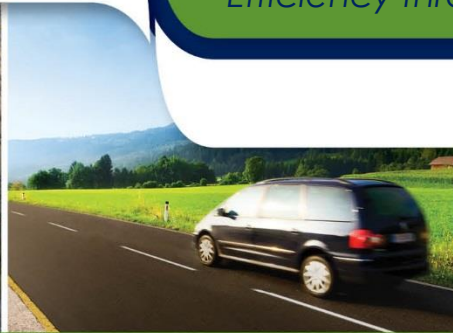
Smarter Work Zones Webinar Series

Webinar #8: Integrating Project Coordination & Technology Applications: Iowa DOT

Martha Kapitanov, Todd Peterson, Mike Jackson, and Tara Kramer

December 15, 2015 1:00-2:30pm EST

Efficiency through technology and collaboration



U.S. Department of Transportation
Federal Highway Administration

Smarter Work Zones

INTRODUCTION AND TODAY'S SPEAKERS



Today's Speakers



Martha C. Kapitanov
Transportation Specialist
FHWA Office of Operations



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Transportation Specialist
FHWA Office of Operations



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State Traffic Operations Engineer
Iowa DOT



Tara Kramer, P.E., PTOE
Traffic Manager
HDR



Smarter Work Zones (SWZ) Webinar Series

- This is the eighth in a series of bi-weekly SWZ webinars
- Topics based on **what matters most to you!**
- Previous Webinars include:
 - Webinar #1: A Comprehensive Overview of the SWZ Initiative (9/9/2015)
 - Webinar #2: Implementing Technology Application Solutions (9/29/2015)
 - Webinar #3: SWZ Corridor-Based Project Coordination (10/15/15)
 - Webinar #4: SWZ Technology Showcase – Queue Warning Systems (10/26/15)
 - Webinar #5: SWZ Program-Based Project Coordination (11/2/15)
 - Webinar #6: Technology Application Case Studies: Variable Speed Limit and Dynamic Lane Merge (11/12/15)
 - Webinar #7: Work Zone Project Coordination Guide and Examples (12/2/15)
- Recordings and materials for previous webinars are available on The National Work Zone Safety Information Clearinghouse website:
<https://www.workzonesafety.org/swz/webinars>
- Coming Up:

January 2016	1/21	Webinar #9: Technology Application Strategies: Performance Measurement and System Health Monitoring
February 2016	2/18	Webinar #10: Designing ITS Systems Based on Identified Needs



Purpose of Today's Webinar

Provide a comprehensive overview of Iowa DOT's statewide Traffic Critical Project Program and discuss real-world examples of successful SWZ project coordination and technology application strategies in Iowa.

Topics include:

1. SWZ Project Coordination and Technology Application Initiatives
 - Show how the SWZ Project Coordination and Technology Application initiatives can be used by agencies to enhance their current work zone management practices
2. Iowa DOT Statewide Traffic Critical Project Program
 - Provide an overview of Iowa DOT's Intelligent Work Zone efforts
 - Discuss how Technology Application Strategies have helped with Project Coordination
3. Iowa DOT Council Bluffs Interstate System Improvement project
 - Provide an overview of Iowa DOT's Council Bluffs Interstate System Improvement
 - Discuss how the Project Coordination and Technology Application Initiatives have helped
 - Minimize conflicts
 - Optimize project schedules
 - Improve overall work zone safety and mobility in Iowa



Smarter Work Zones

SWZ INITIATIVES



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

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:
 - Existing PC-related policies/practices to identify strengths and weaknesses
 - 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



Technology Application – What is it?

Deployment of ITS for dynamic management of work zone traffic impacts, such as queue and speed management to **provide actionable information** to drivers and traffic managers.

Capabilities include:

- Improving driver awareness
- Providing dynamic and actionable guidance to drivers
- Enhancing tools for on-site traffic management



Source: FHWA



SWZ Technology Application Goals:

Goal 1A

By December 2016, 35 State DOTs have implemented [business processes](#) for [work zone ITS technologies](#) as identified in the [Work Zone ITS Implementation Guide](#)

- **What does this mean?**
 - Well-documented agency policies and processes to streamline consideration and use of work zone ITS technologies to minimize traffic impacts



SWZ Technology Application Goals:

Goal 1B

By December 2016, 35 State DOTs have utilized at least **one work zone ITS technology application** for **dynamic management** of work zone impacts

- **What does this mean?**
 - Consideration of the six step process explained in the WZ ITS implementation guide to plan and implement ITS strategies
 - Identify and use ITS strategies such as speed and/or queue management on at least one project for dynamic management of work zone impacts



Smarter Work Zones

IOWA DOT'S INTELLIGENT WORK ZONES ON TRAFFIC
CRITICAL PROJECTS



CTRE Traffic Operations Laboratory



Mike Jackson
State Traffic Operations Engineer, Iowa DOT

Neal Hawkins, CTRE Director



Traffic Critical Projects (TCP)

- Projects that can be repeatedly or quickly lead to significant travel delays
- Multi-lane highways (interstates, freeways, expressways over 17,000 vehicles/day)
- Border Bridges
- District Inputs



TCP Program Objectives

- Focused on:
 - Improving traffic safety in work zones
 - Maintaining traffic mobility
 - Providing high quality traveler information
- TCP “Features”
 - Incorporation of traffic mitigation elements into project design
 - **Intelligent Work Zones (IWZ)**
 - Traffic Incident Management planning



IWZ Resources

- Statewide Traffic Operations Center (TOC)
- Existing Intelligent Transportation Systems (ITS) Devices
 - Cameras, sensors, dynamic message signs (DMS)
- ATMS Software (TransSuite)
 - “Queue Detection”
- ITS Communication Networks
- Integration of Rental (Portable ITS) Devices



Source: Iowa DOT

2014 ITS/IWZ Solutions

- Expanded monitoring
 - Portable cameras & traffic sensors
- Driver information
 - Portable DMS
- Queue detection & warning



Portable Cameras

- Axis pan-tilt-zoom
- Great within reach of ITS communications network
 - Same as permanent cameras
 - On 511ia.org
- Less useful on cellular modems
 - New cellular options



Source: Iowa DOT

Portable Traffic Sensors



Source: Iowa DOT



Source: Iowa DOT

- Wavetronix, side-fire radar
- Same as our permanent sensors
- Traffic counts & speeds every 20 seconds



Portable DMS



Source: Iowa DOT

- Statewide TOC has controlled rentals since 2013
- Temporarily mapped using GPS in modems

Intelligent Work Zone Coordination

- Statewide TOC
 - 24/7 operation
 - Camera, sensor, and DMS management



Source: Iowa DOT



Source: Iowa DOT

IWZ Team

- **SRF Consultants:** Writing contract and managing projects
- **Street Smart Rentals:** Statewide qualifications and cost-based IWZ device services contract
- **TransCore:** ATMS & Integration support
- **Schneider/Telvent:** Traffic Operations Center
- **InTrans:** Evaluation and analysis



Source: SRF Consultants



Source: Street Smart Rentals



Source: TransCore



Source: Schneider/Telvent



Source: Iowa State University

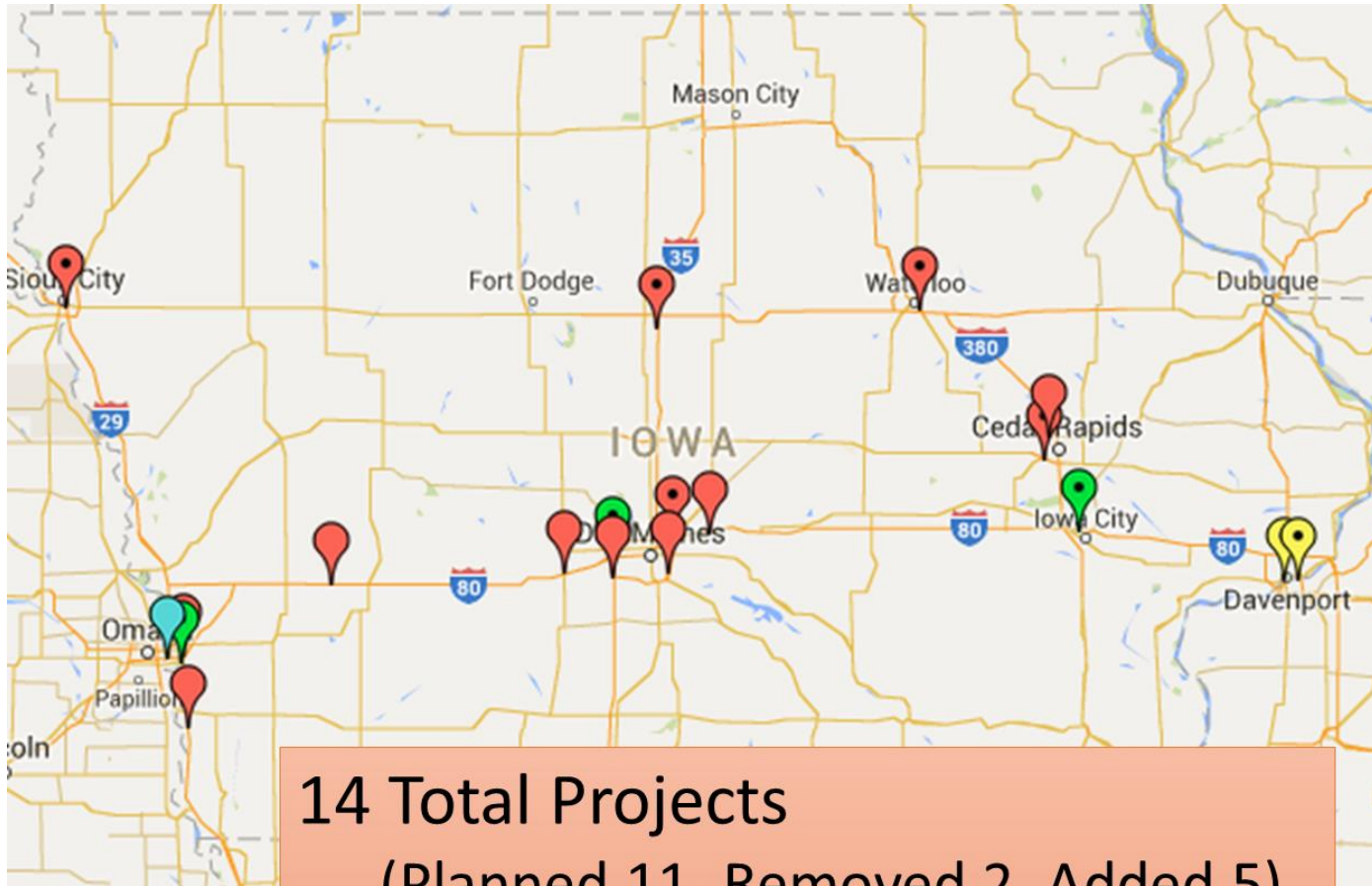


Queue Detection Systems- Southbound I-35



Source: Google

2014 IWZ Locations

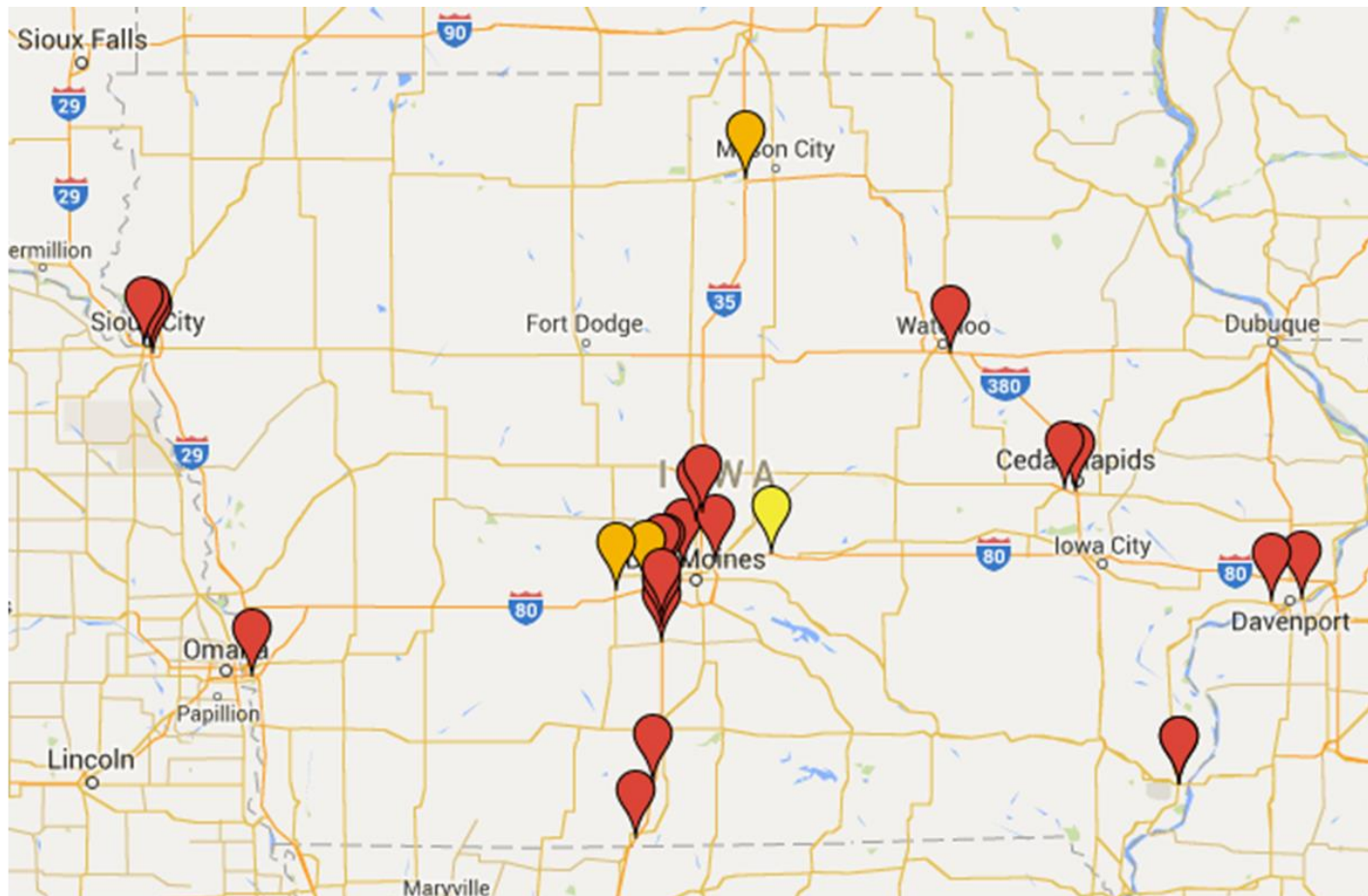


Source: Google

14 Total Projects
(Planned 11, Removed 2, Added 5)
60 Sensors, 44 DMS, 6 Cameras



2015 Traffic Critical Projects



Source: Google

Red = IWZ & TIM **Orange = IWZ** **Yellow = TIM**



CTRE 2015 Evaluation (1 of 2)

- Used performance measures developed from the 2014 evaluation
- Need for real-time monitoring
- Creating online portal to see/monitor work zone

Traveler Delay

Because sensors were only placed on the approaches to the work zone, the delay was calculated before the vehicle entered the work zone. Because of this, some performance measures are very low and would be higher if the delay was calculated over the entire work zone.

	Northbound	Southbound
Total Delay (Vehicle Hours)	58,473	55,917
Average Delay (Minutes/Vehicle)	0.38	0.39
Maximum Delay (Minutes)	15.3	14.7
Total Delay – when a queue is present (Vehicle Hours)	34,068	45,064
Average Delay – when a queue is present (Minutes/Vehicle)	3.1	3
% of vehicles experiencing delay > 10 minutes	0.2%	0.2%
% of vehicles with delay > 10 minutes in queue	3.4%	1.8%

Travel Time Reliability

Similar to delay, no sensor data was collected through the work zone so the travel time reliability was not able to be calculated for the entire work zone.

Safety

Crash data was not available when contacting the project engineer. In 2015, a weekly summary of crash and location would be needed to determine the safety performance measures.



CTRE 2015 Evaluation – Traffic Queueing (2 of 2)

Events

Work Zone Project	I-35 and Iowa 5		I-35 Hamilton County		US 65 Des Moines River	I-80 near DeSoto
Direction	I-35 NB	Iowa 5 WB	I-35 NB	I-35 SB	US 65 EB	I-80 EB
Event Threshold	40		40		40	40
Number of Events – Total	16		209		1	16
Number of Events – By Direction	11	5	100	109	1	16
Number of Days with Events	5	4	46	42	1	8
Average Duration of each event (minutes)	14.1	23	28.6	33.4	10	49.4
Median Duration of each event (minutes)	10	20	5	10	10	12.5

Length

Work Zone Project	I-35 and Iowa 5		I-35 Hamilton County		US 65 Des Moines River	I-80 near DeSoto
Direction	I-35 NB	Iowa 5 WB	I-35 NB	I-35 SB	US 65 EB	I-80 EB
Overall Average Queue Length (miles)	0.9	0.8	1.5	1.1	0.25	1.2
Average Max Queue Length of each event (miles)	1.0	1.0	0.8	0.2	0.3	1.0
Median Max Queue Length of each event (miles)	1	0.7	0.4	0	0.3	0.8
Overall Max Queue Length of each event (miles)	2.2	2.5	5.5	3.2	0.3	0.8
Number of Times Queue Exceeded Furthest sensor (miles)	1	0	2	2	0	1
Percentage of queue >1 mile	41.9%	26.1%	77.9%	74.3%	0.0%	33.5%

Vehicles

Work Zone Project	I-35 and Iowa 5		I-35 Hamilton County		US 65 Des Moines River	I-80 near DeSoto
Direction	I-35 NB	Iowa 5 WB	I-35 NB	I-35 SB	US 65 EB	I-80 EB
Total Vehicles	345,152	330,612	261,577	209,013	860,000	297,987
Amount of Traffic encountering a queue	3,417	1,620	55,062	74,710	86	21,873
Percentage of traffic encountering a queue	0.99%	0.49%	7.2%	10.54%	0.01%	7.34%
Percentage of Time when queue present	0.38%	0.29%	3.10%	3.95%	0.01%	2.61%



Traffic Critical Work Zone Performance Reporting



Source: Iowa DOT

OTO Support



Source: Iowa DOT

Statewide Performance

Work Zone Performance

Quality Assurance



FY16 OTO Support



Source: Iowa DOT

Work Zone Performance

- ☐ **Work Zone Locations**
- ☐ **Performance Summary**
- ☐ **Exposure Performance**
- ☐ **Queuing Performance**
- ☐ **Delay Performance**
- ☐ **Heat Maps**
- ☐ **Data Completeness**



Performance Measures Categories

- ☐ Exposure
- ☐ Traffic queuing
- ☐ Traveler delay





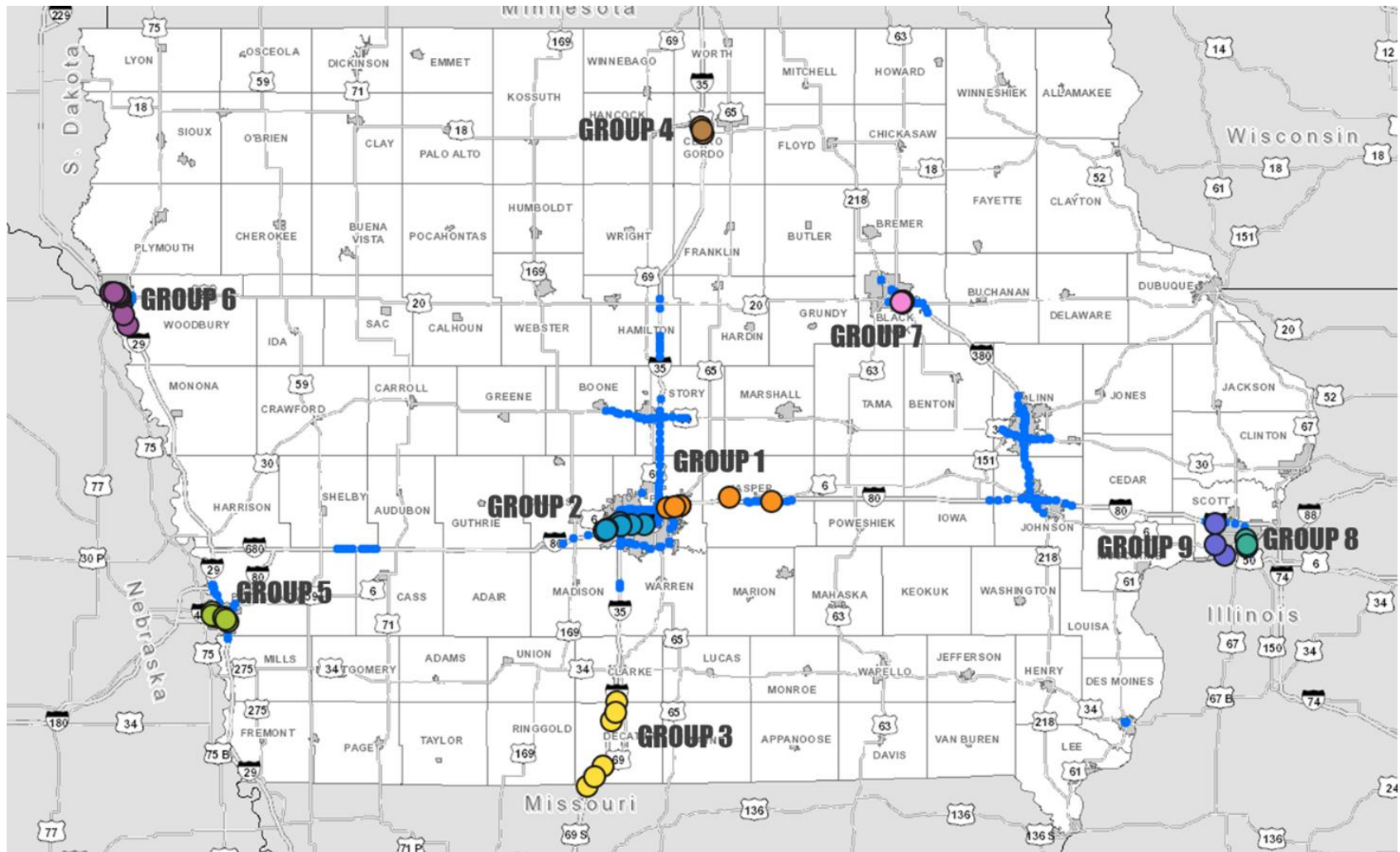
Source: Iowa DOT

Work Zones and Related Routes (1 of 2)

Work Zones					
Group	IWZ	Roadway and Location Reference	Begin Date	Estimated End Date	Roadways
1	1.3	I-80 from Des Moines to Newton	4/13/2015	5/26/2016	I80
	1.4	I-80/US-65 in Des Moines	3/30/2015	11/25/2015	
2	1.2	I-235 in Des Moines	7/20/2015	10/30/2015	I-80 and I-235, I-35
	1.5	West mix-master in Des Moines	6/12/2015	10/2/2015	
	4.2	I-80 at Alice's Road near DSM	3/16/2015	11/20/2015	
3	5.1	I-35 at MO Border	6/22/2015	11/15/2015	I-35
4	2.2	I-35 near Mason City	4/1/2015	11/6/2015	I-35
5	4.1	I-80/29 in Council Bluffs	3/30/2015	11/25/2015	I-29, I-80
6	3.1	I-29 in Sioux City	3/23/2015	11/1/2015	I-29, US 20
	3.2	I-29 in Sioux City	3/11/2015	11/1/2015	
	3.3	I-29 in Sioux City	4/15/2015	11/1/2015	
7	2.1	I-380 in Waterloo	5/18/2015	9/15/2015	US 20 and I-380
8	6.2	I-74 in the Quad Cities	4/13/2015	11/1/2015	I-74
9	6.3	I-280 in the Quad Cities	3/30/2015	11/1/2015	I-280



Work Zones and Related Routes (2 of 2)



Source: Iowa DOT



IWZ Performance Summary

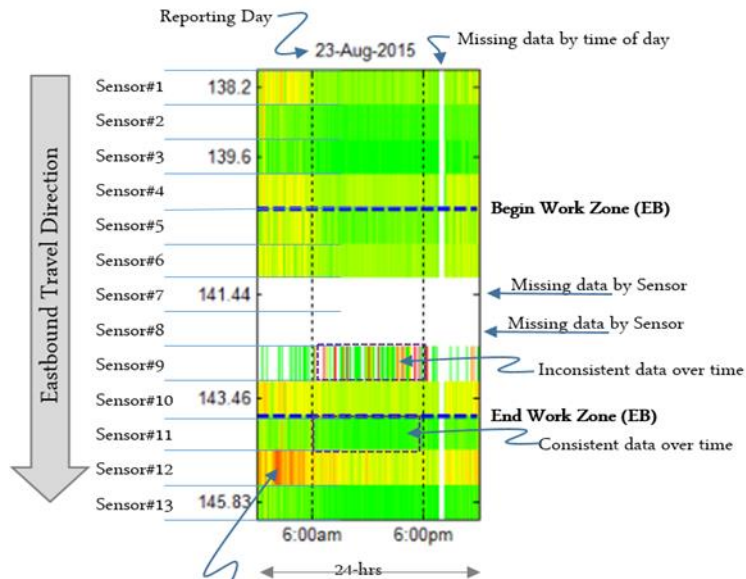
IWZ Group and Related Roadways	Direction	Exposure	Event			Traffic Queue		Delay
		ADT (1000 veh)	Number of Events	Max Duration (min)	Avg Duration (min)	Max Length (mi)	Avg. Length (mi)	Avg. Delay (min/veh/10mi)
Group 1 - 1.3 - I80	EB	202.05	90	295	21.39	7.80	1.21	0.17
Group 1 - 1.3 - I80	WB	201.76	178	395	21.29	12.40	1.34	0.40
Group 1 - 1.4 - I80	EB	391.78	165	405	25.76	6.90	1.20	0.50
Group 1 - 1.4 - I80	WB	371.57	92	440	21.47	6.90	0.98	0.37
Group 2 - 1.2 1.5 4.2 - I80/I235	EB	523.60	307	450	32.07	13.80	0.80	0.75
Group 2 - 1.2 1.5 4.2 - I80/I235	WB	627.48	184	430	15.71	13.80	0.97	0.60
Group 2 - 1.5 - I35	NB	385.43	21	245	27.14	3.80	1.02	0.08
Group 2 - 1.5 - I35	SB	389.70	62	295	18.23	3.80	0.81	0.24
Group 3 - 5.1 - I35	NB	104.60	41	20	5.49	7.10	1.58	0.23
Group 3 - 5.1 - I35	SB	113.85	81	15	6.17	11.70	2.12	0.55
Group 4 - 2.2 - I35	NB	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Group 4 - 2.2 - I35	SB	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Group 5 - 4.1 - I29	NB	217.98	209	105	12.15	4.90	0.60	0.86
Group 5 - 4.1 - I29	SB	236.09	392	275	33.44	3.10	0.65	0.88
Group 5 - 4.1 - I80	EB	301.33	55	85	12.00	1.40	0.44	0.35
Group 5 - 4.1 - I80	WB	314.22	100	60	9.30	2.10	0.37	0.35
Group 6 - 3.1 3.2 3.3 - I29	NB	234.80	381	660	22.35	10.70	0.88	1.80
Group 6 - 3.1 3.2 3.3 - I29	SB	212.21	679	670	25.00	10.70	0.64	1.54
Group 6 - 3.1 3.2 3.3 - US20	EB	123.29	51	555	50.29	3.60	0.68	0.30
Group 6 - 3.1 3.2 3.3 - US20	WB	128.43	25	550	58.40	2.90	1.02	0.22
Group 7 - 2.1 - us20/I380	WB	163.32	84	455	20.89	9.60	0.77	0.18
Group 7 - 2.1 - us20/I380	EB	170.59	130	455	29.92	9.60	0.85	0.24
Group 8 - 6.2 - I74	SB	317.23	306	580	20.26	6.80	0.41	0.52
Group 8 - 6.2 - I74	NB	273.91	602	1440	28.56	6.70	0.27	0.72
Group 9 - 6.3 - I280	SB	132.75	68	425	16.18	7.40	2.00	0.79
Group 9 - 6.3 - I280	NB	126.53	258	465	9.75	7.40	1.61	1.43

* All calculations are made assuming the provided sensor data is correct.

An event is defined as the occurrence of speed lower than 45mph on any of the segments in the work zone.



Bi-weekly Reports



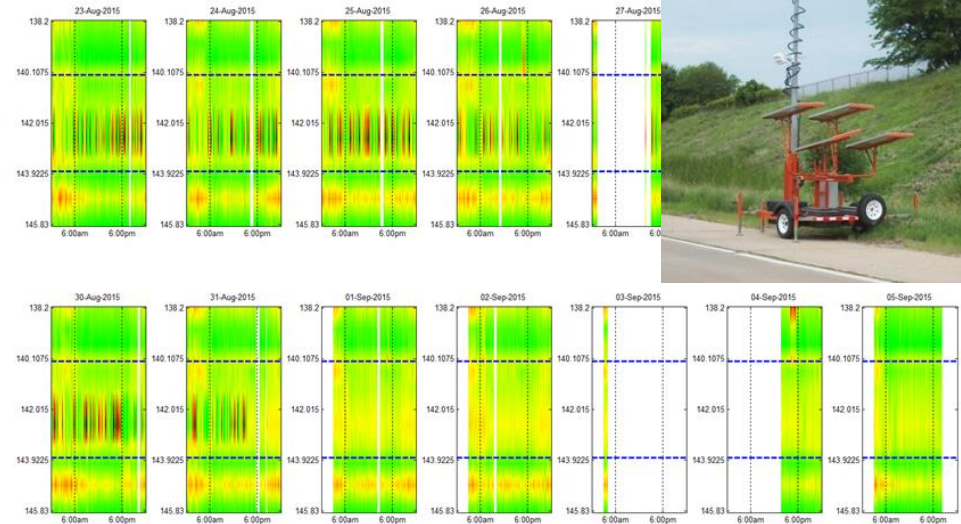
Low Speeds "Red"

High Speeds "Green"

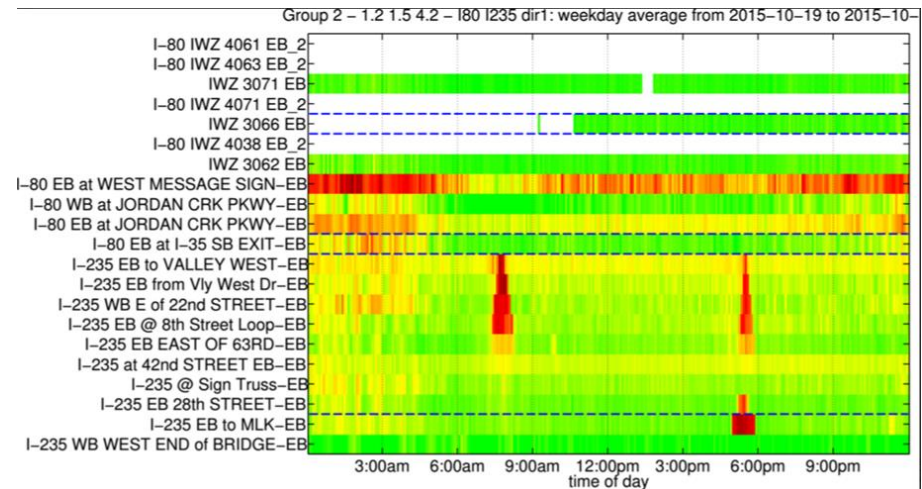
Missing Data "White"



Daily Tracking



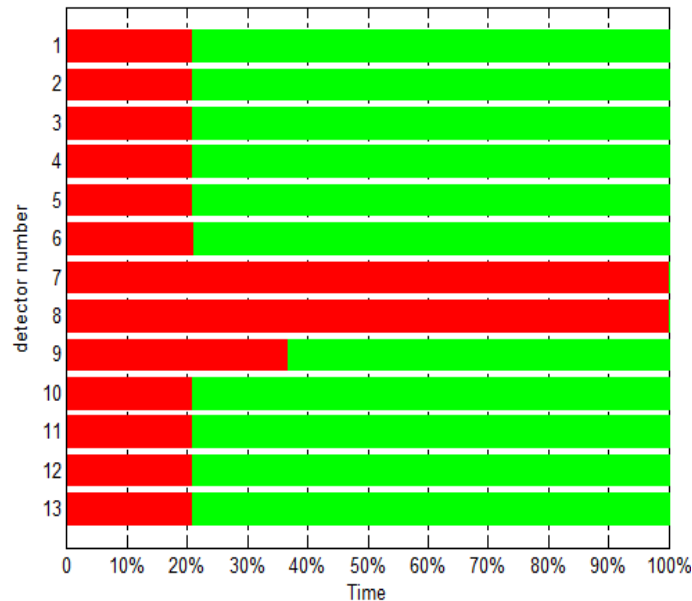
Source: Iowa DOT



Daily Reports

Data Completeness

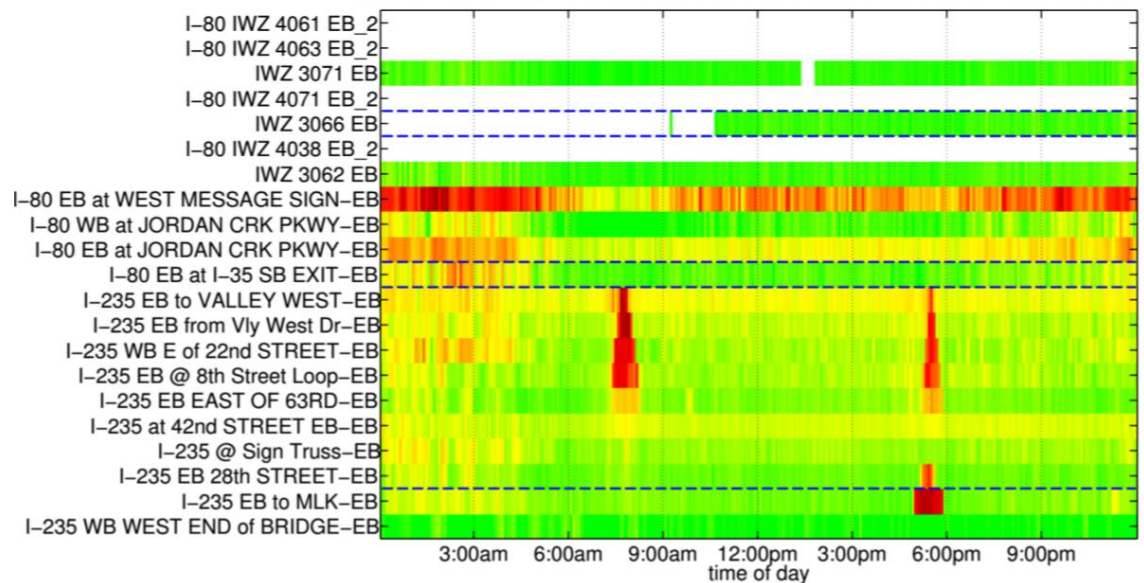
Missing data summary (red)



Source: Iowa DOT

Daily Heat Map

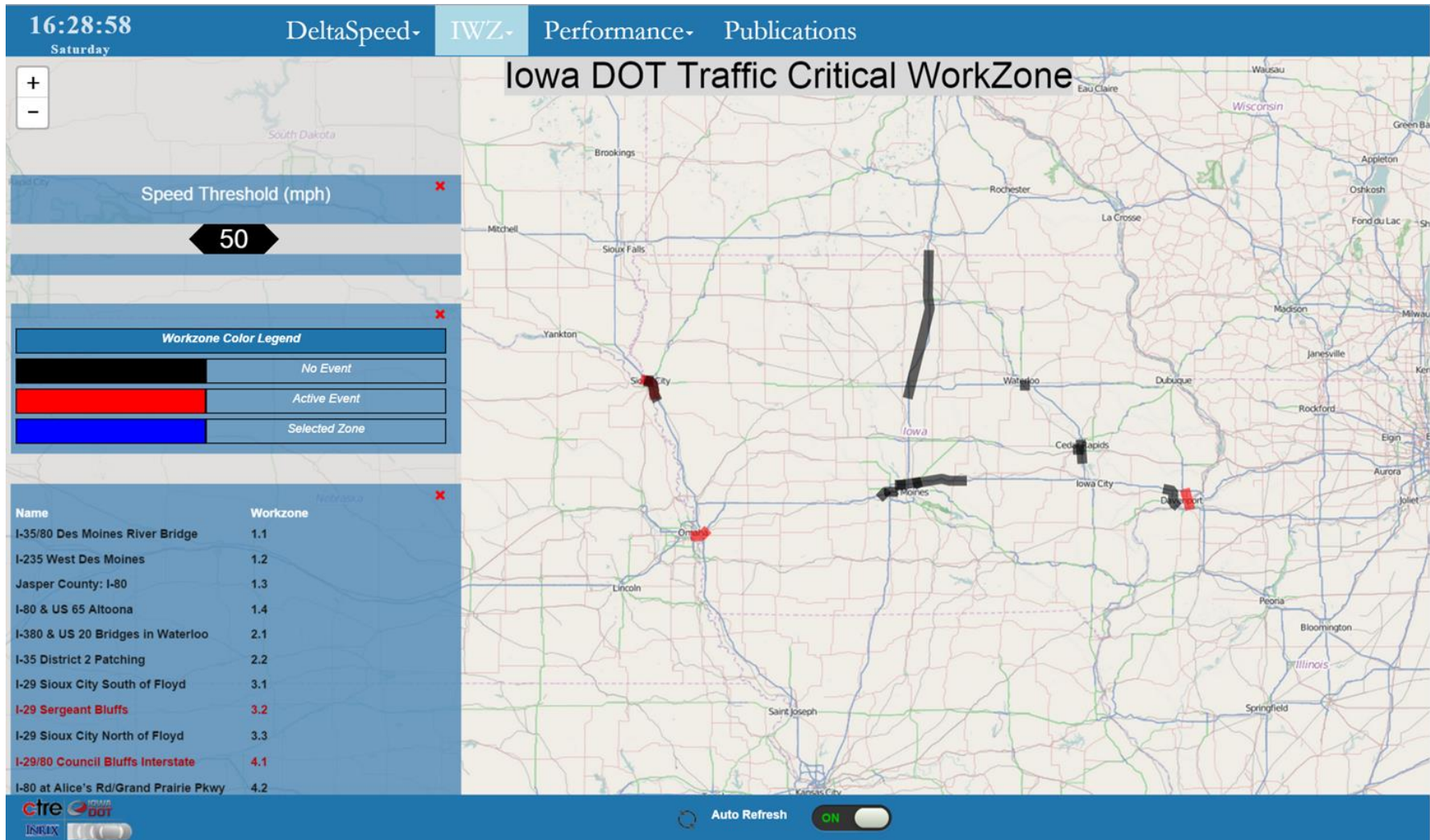
Group 2 - 1.2 1.5 4.2 - I80 I235 dir1: weekday average from 2015-10-19 to 2015-10-



Source: Iowa DOT



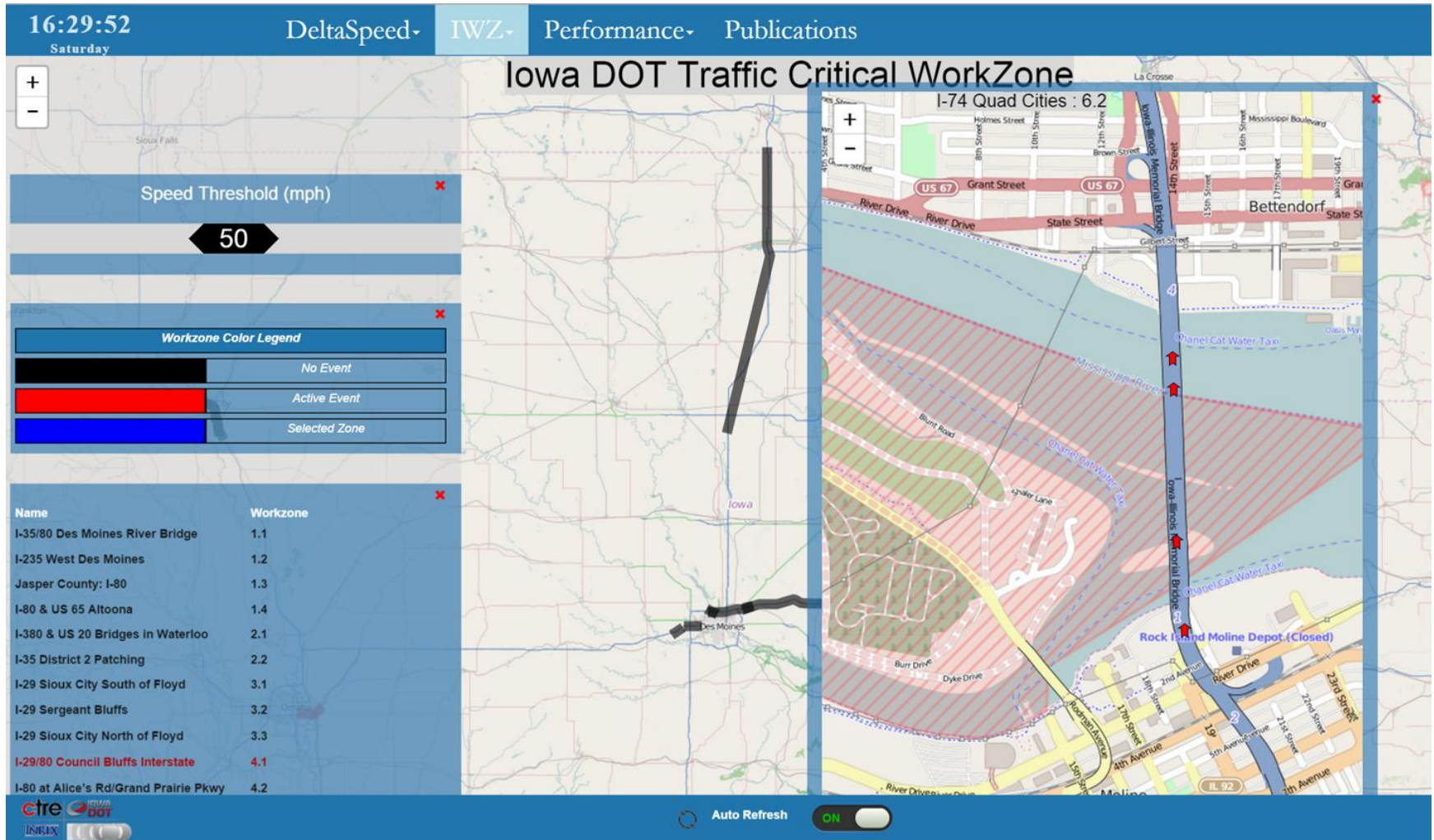
Real-time Monitoring



Source: Iowa DOT/INRIX



Locating Queues



Source: Iowa DOT/INRIX

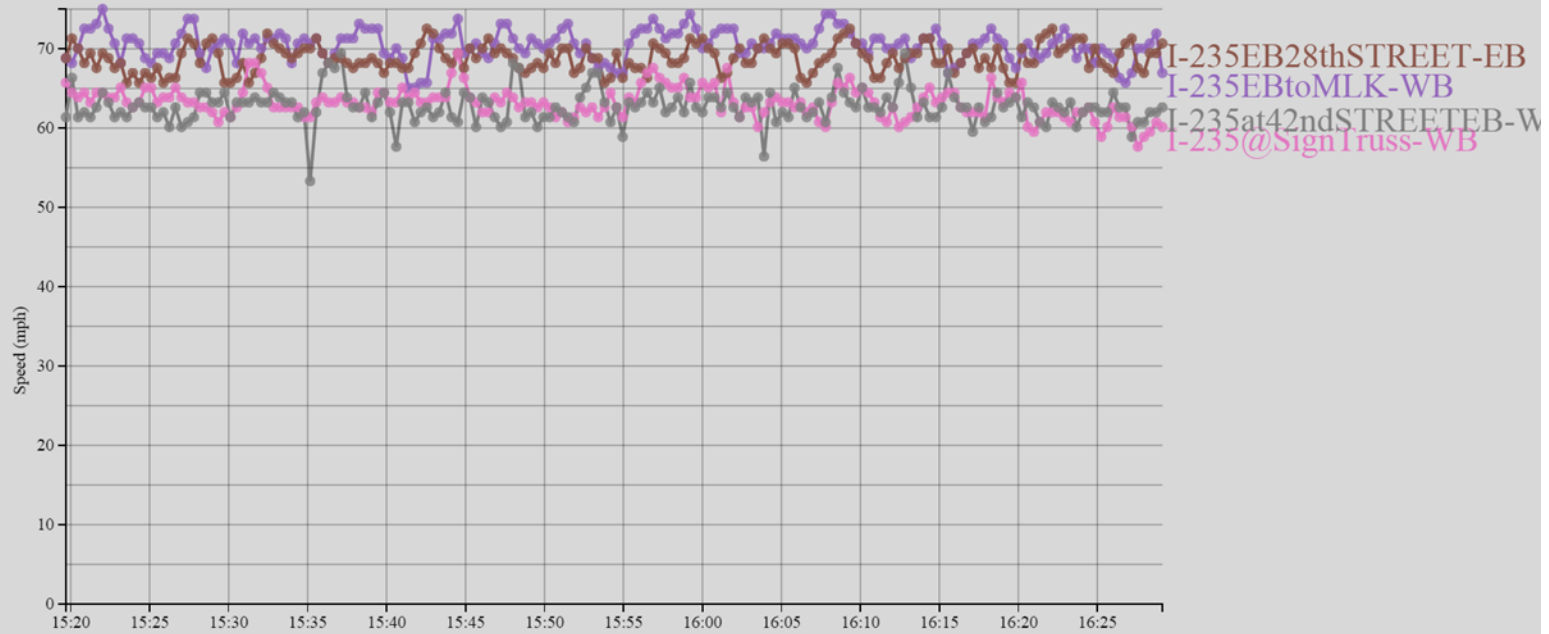


Monitoring Alerts

Alert Viewer

DM 1.2

4



Source: Iowa DOT/INRIX



Future of TCP in Iowa

- Evaluate effectiveness of each strategy
- Expand to other forms of IWZ
- Provide information by project type



For more information:

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Smarter Work Zones

COUNCIL BLUFFS INTERSTATE SYSTEM

RECONSTRUCTION: KEEPING TRAFFIC MOVING



Program Overview

is the single largest endeavor in Iowa DOT's five-year Transportation Improvement Program.



BRIDGES

TOTAL
PLANNED

32

COMPLETED
TO-DATE

7



INTERCHANGES

15

1



INTERSTATE
(miles)

18

3



HIGHWAY
(lane miles)

135

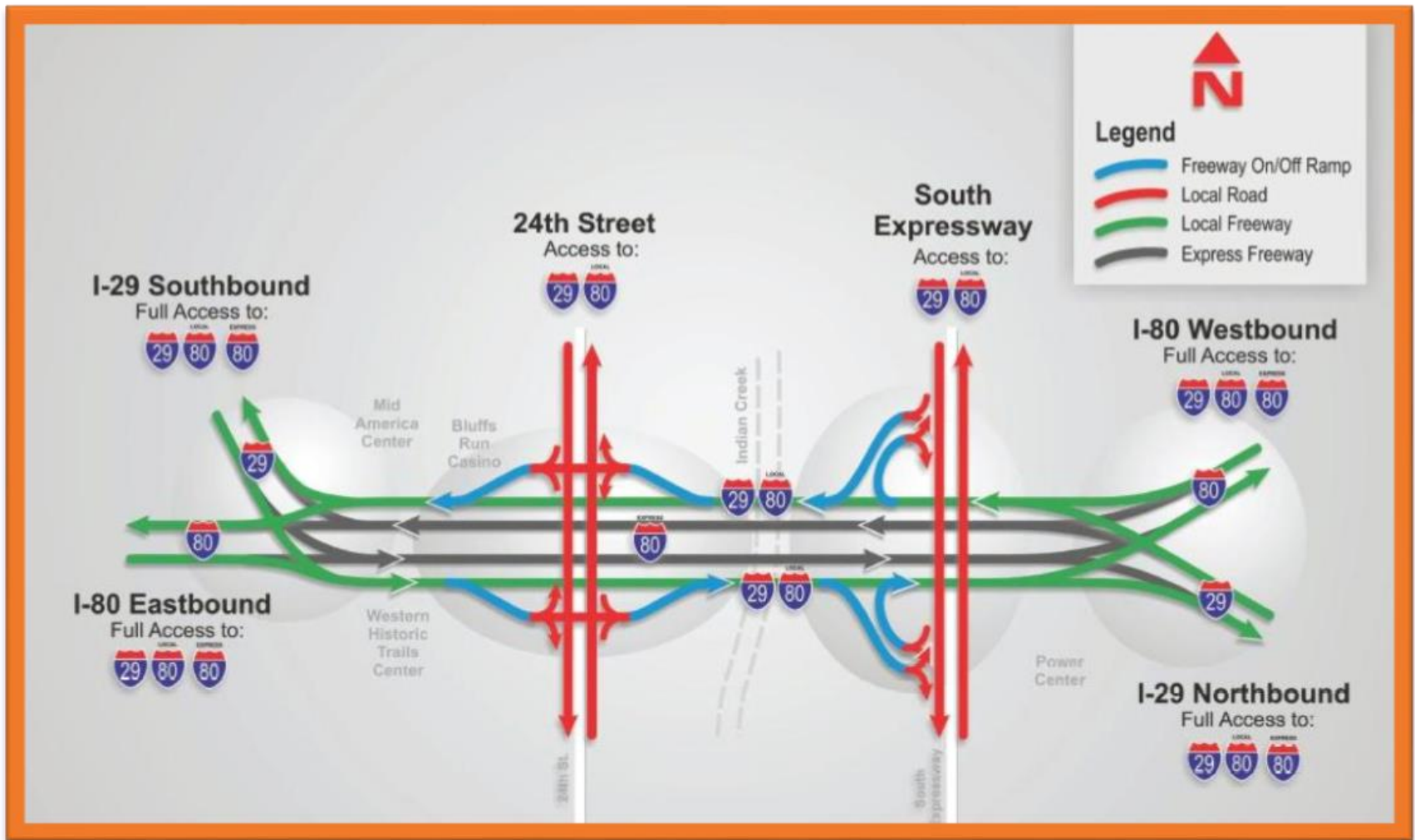
36



Source: Iowa DOT



Plan View - Dual Divided System



Source: Iowa DOT



Dual Divided System Cross-Section



Source: Iowa DOT

Current and Future Projects



Source: Iowa DOT



Federal Register: Work Zone Safety and Mobility (23 CFR PART 630)

- Each State shall implement a policy for the systematic consideration and management of work zone impacts on all Federal-aid highway projects
 - Significant projects require a Transportation Management Plan



Transportation Management Plan

- Why you see what you see in the Traffic Control Plans and Contract Documents
 - Goals and Objectives
 - Traffic Control Plan
 - Traffic Operations Plan
 - Intelligent Work Zones
 - Traffic Incident Management
 - Public Information Plan



Source: Iowa DOT



Goals and Objectives

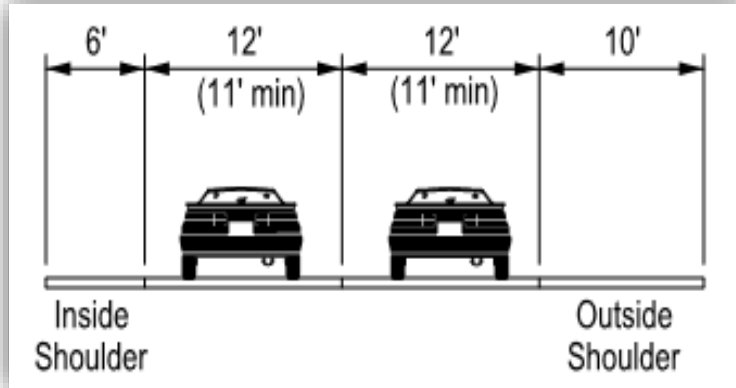
- Safety of the traveling public and construction workers
- Efficient traffic flow along the interstate
- Minimize impacts to local access within the project area



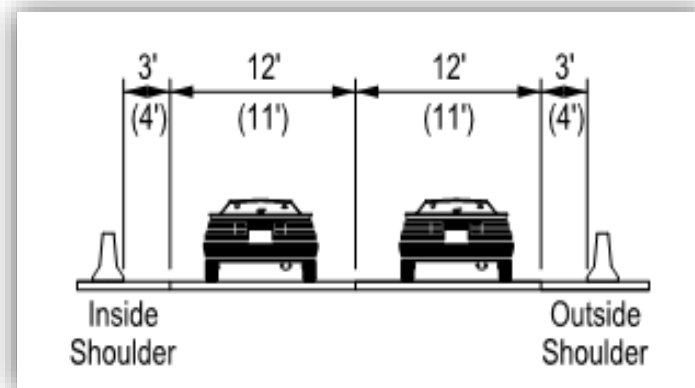
Source: Iowa DOT



Traffic Control Plan



Source: Iowa DOT

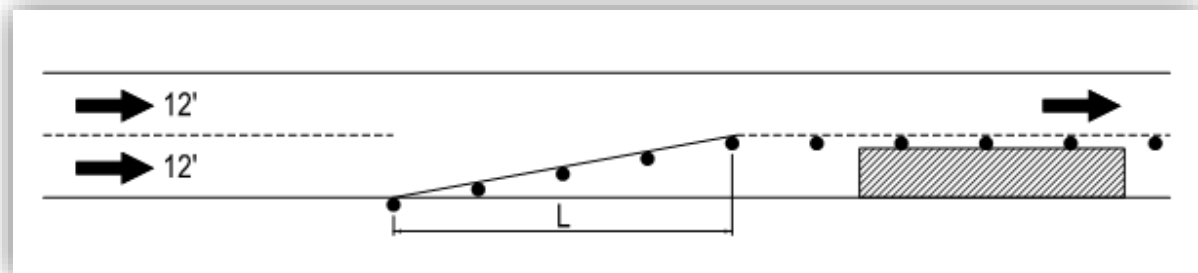


Source: Iowa DOT

Chute
Design

Lane Widths

2 Lanes of Traffic



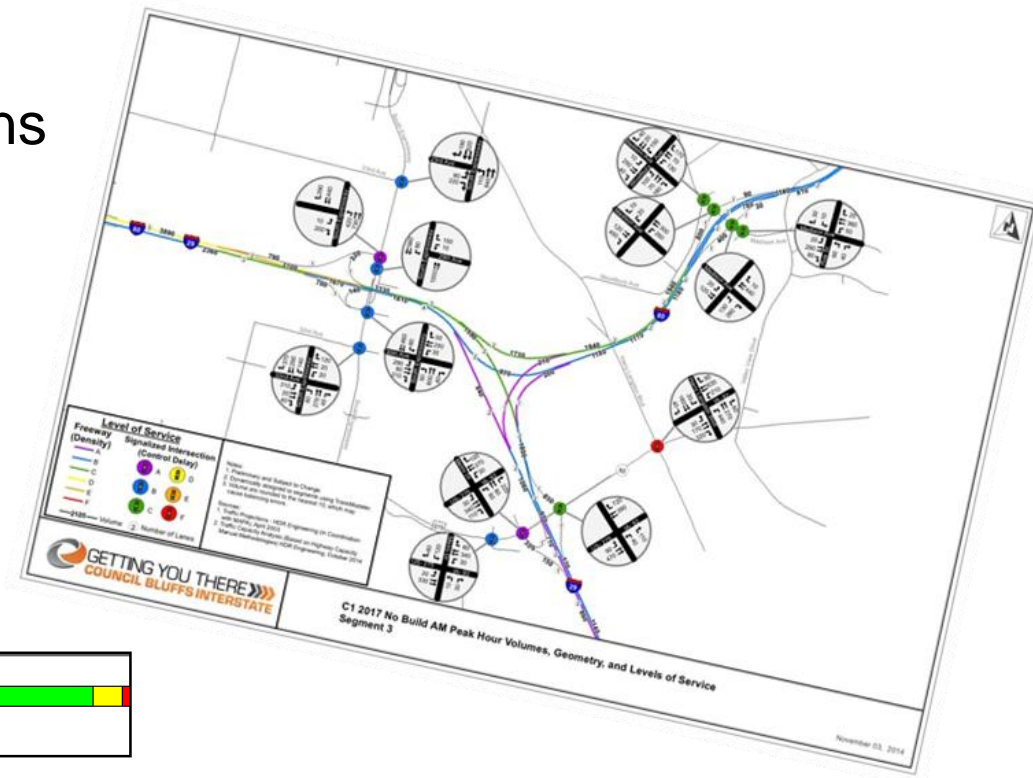
Taper Rates

Source: Iowa DOT



Traffic Operations Plan

- Operational Analysis (TransModeler)
 - Incentives / Disincentives
 - Iterative Design Process
 - Identifying IWZ Needs
- Signal Timing Modifications
 - Closures
 - Construction Planning

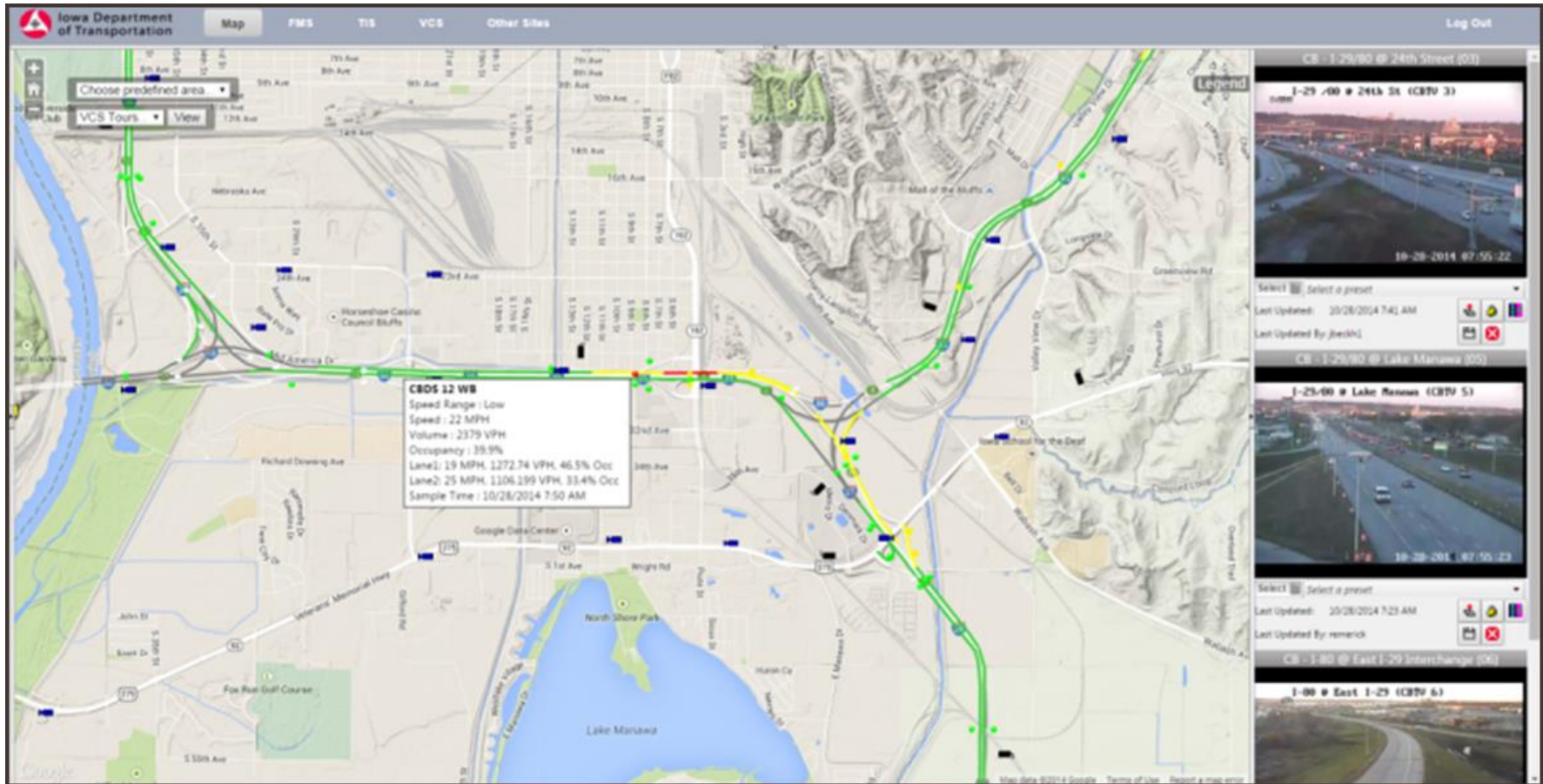


	02 (R)		04
60 s		30 s	
	05		06 (R)
8 s		52 s	

Source: Iowa DOT



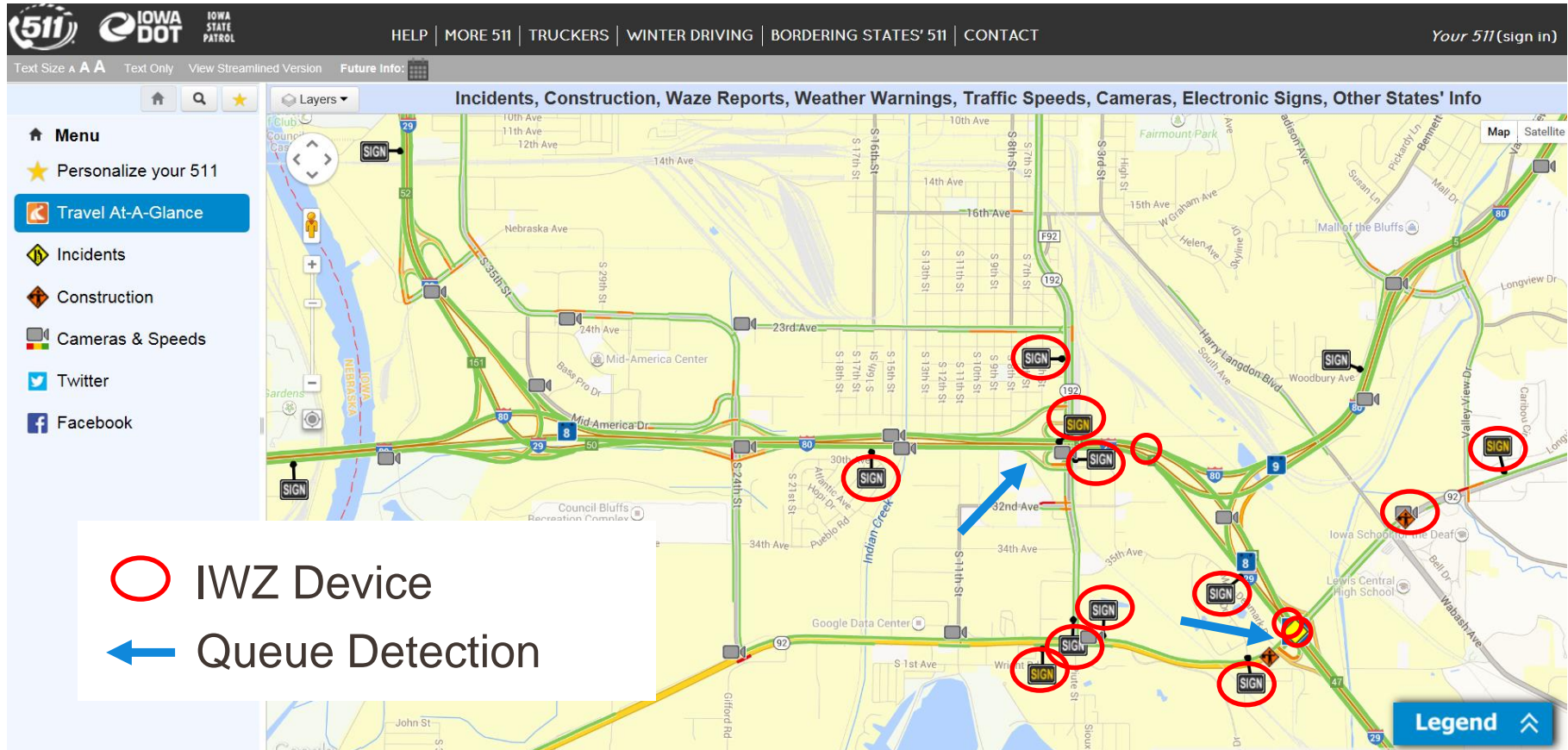
Intelligent Transportation System



Source: Iowa DOT



Portable ITS Devices/Intelligent Work Zones

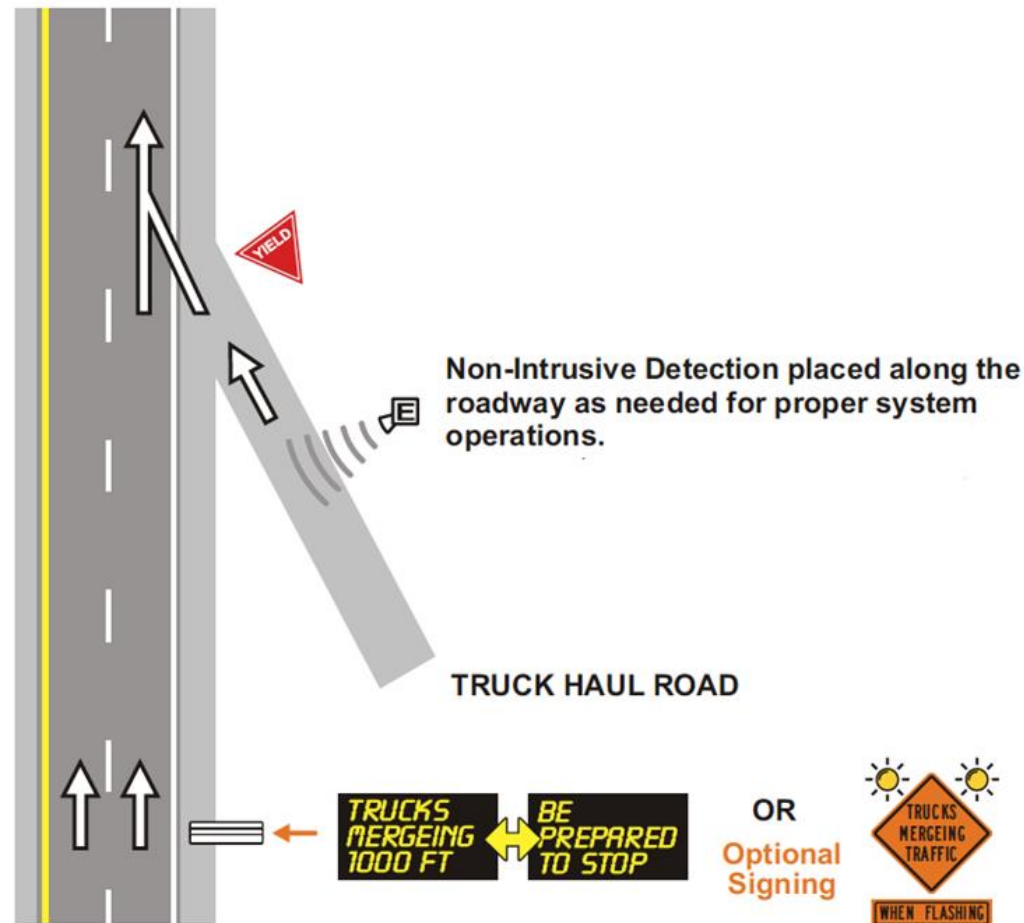


Source: Iowa DOT



Future IWZ Applications

- Trucks entering freeway



Source: Iowa DOT

- Work Restrictions (based on sensor data)

[illegible]

Source: Iowa DOT

Work Restrictions – Traffic Control Plan

I-80 / I-29 Westbound

Lane Closure Time Restrictions

	Sun	Mon - Thurs	Fri	Sat
12 AM				
		5:00	5:00	
				6:30
6 AM	8:00			
12 PM				
6 PM				
	10:30	10:30	11:00	11:30

I-80 Westbound

Lane Closure Time Restrictions, June - October

	Sun	Mon - Thurs	Fri	Sat
12 AM				
		5:30		
			6:00	
6 AM				8:00
	9:30			
12 PM				
6 PM		7:00	7:00	7:00
			8:00	

Lane Closure Time Restrictions, November - May

	Sun	Mon - Thurs	Fri	Sat
12 AM				
		5:30		
			6:00	
6 AM				8:00
	9:30			
12 PM				
		2:00		
6 PM		7:00	7:00	7:00
			8:00	

- Short duration full interstate closures allowed daily from 12am-4am for bridge demolition and beam placement.

- Short duration closures of Harry Langdon Boulevard will be allowed daily from 10pm-6am for bridge beam placement.

- Ramp closures allowed daily from 10pm-6am or in accordance with the plans.

- Shoulder closures allowed from 6pm-6am and 9am-3pm.

South Expressway

Madison Ave

I-80 / I-29 Eastbound

Lane Closure Time Restrictions

	Sun	Mon - Thurs	Fri	Sat
12 AM				

I-29 Southbound

	Sun	Mon - Thurs	Fri	Sat
12 AM				

I-29 Northbound

	Sun	Mon - Thurs	Fri	Sat
12 AM				

I-80 Eastbound

Lane Closure Time Restrictions

	Sun	Mon - Thurs	Fri	Sat
12 AM				



Source: Iowa DOT

Traffic Management – Lane Closure Coordination



Source: Iowa DOT/Google



Traffic Monitoring and Performance: Salander

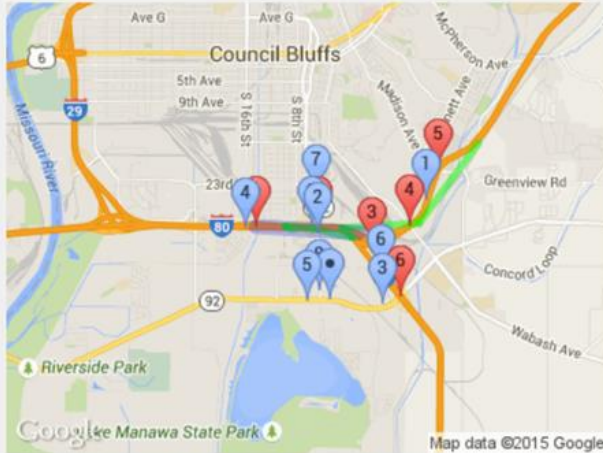
DELAY ON IACB-I29-I80-WB


I-80 WB from mile 3.7 to 2.3
Sep 1, 2015 7:44 - 8:06 am

Description:

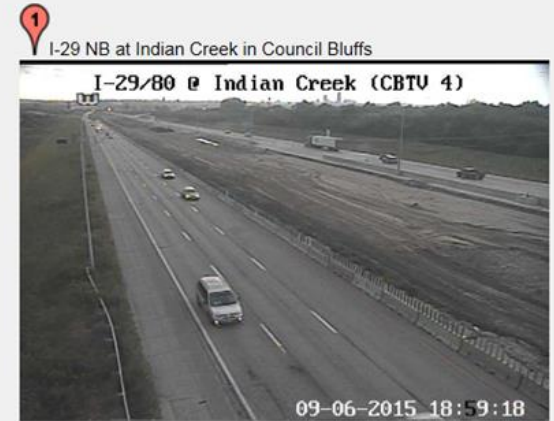
For Iowa 511 info click [here](#)

IA-CB 



 US 275 SB mile
53.7

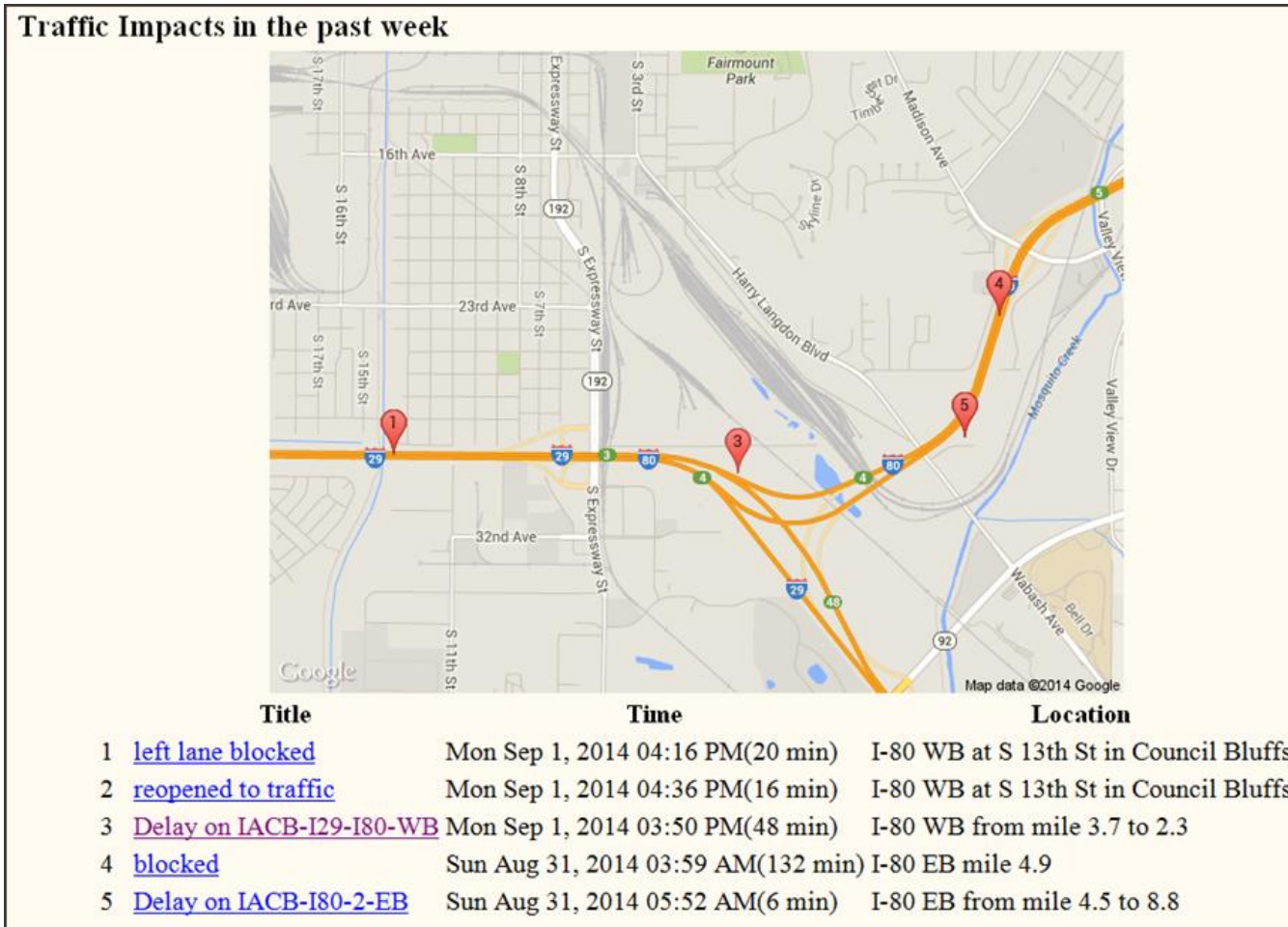
**NEW
LANE
SHIFT**



Source: Iowa DOT/Salander



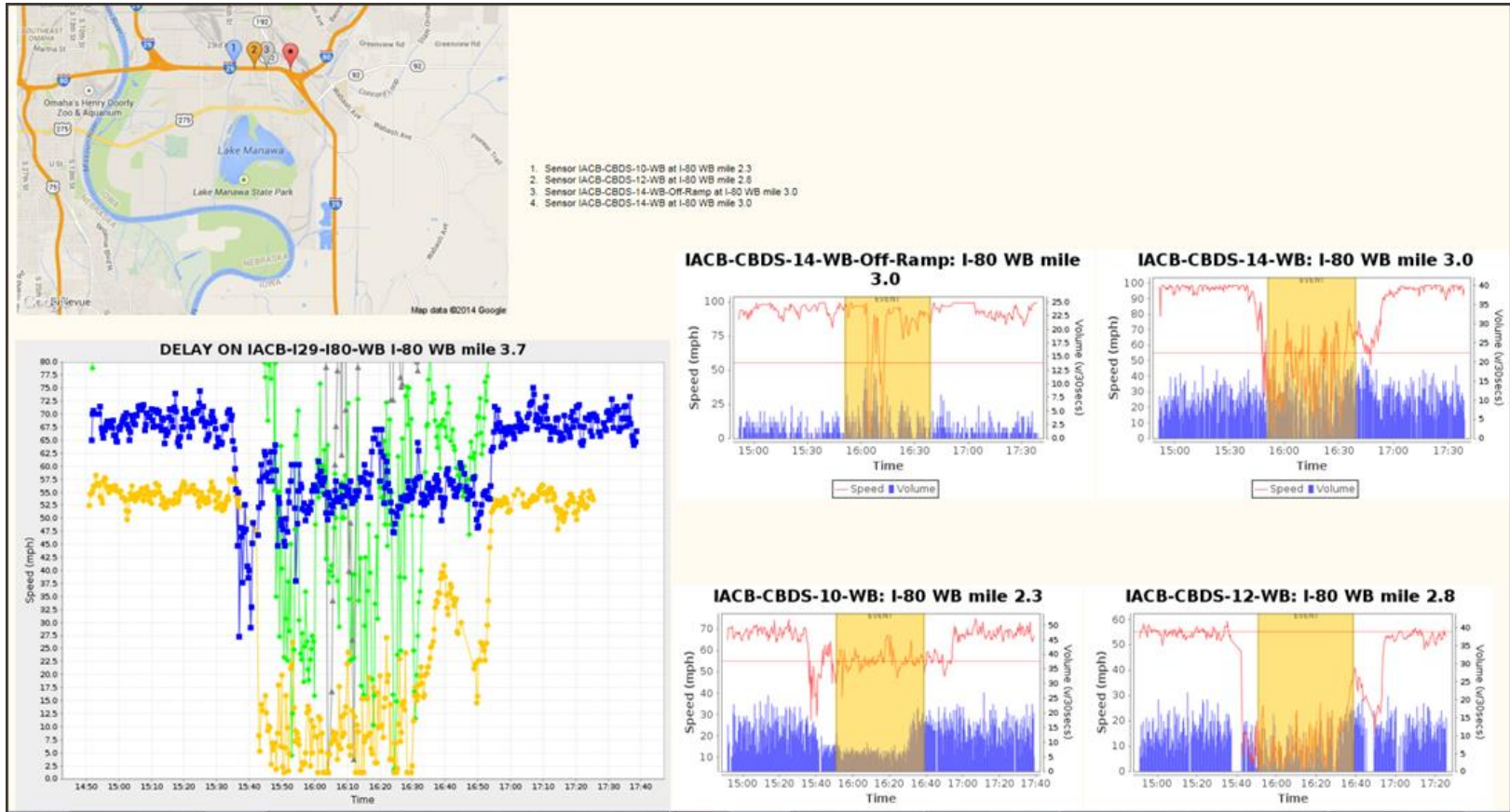
Traffic Monitoring: Salander (1 of 3)



Source: Iowa DOT/Salander



Traffic Monitoring: Salander (2 of 2)

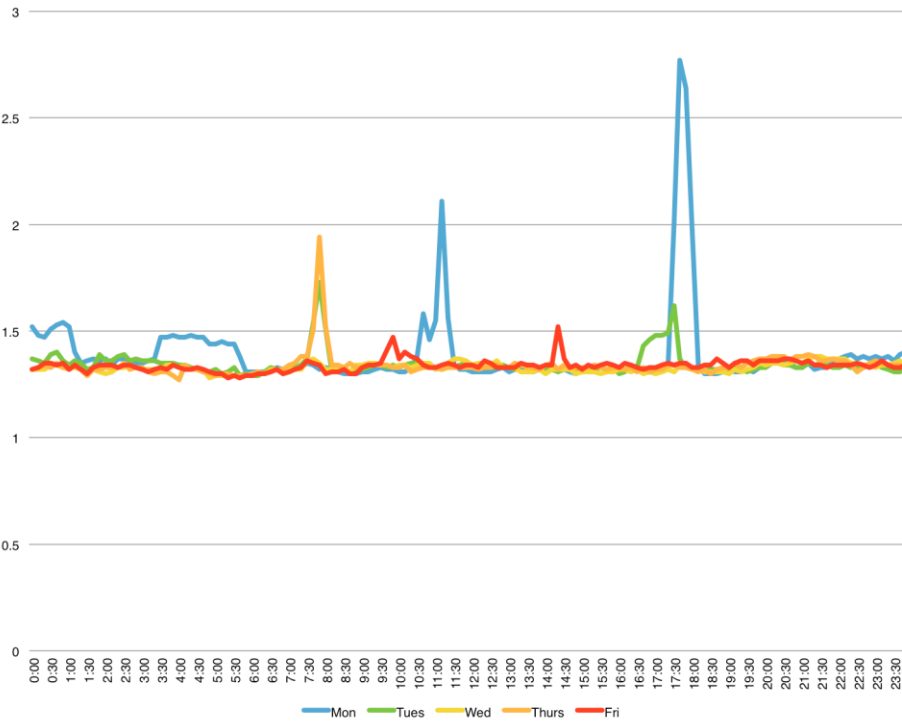


Source: Iowa DOT/Salander

Traffic Monitoring: Performance

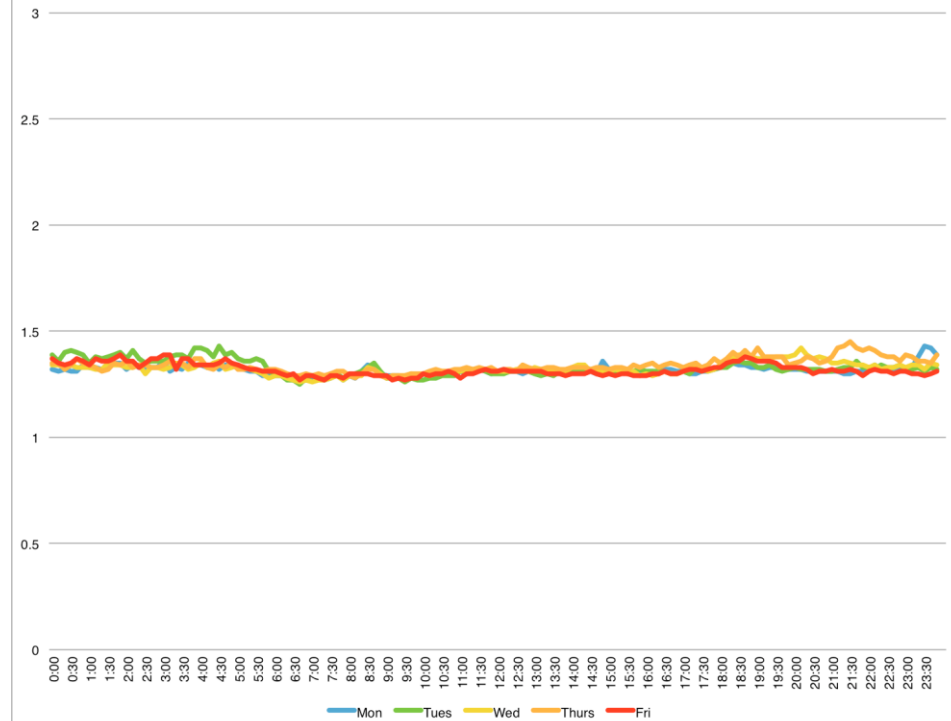
- Daily Travel Time: I-29 NB / I-80 WB

I-29/I-80 WB Council Bluffs September Travel Time



Source: Iowa DOT

I-29/I-80 WB Council Bluffs November Average Travel Time

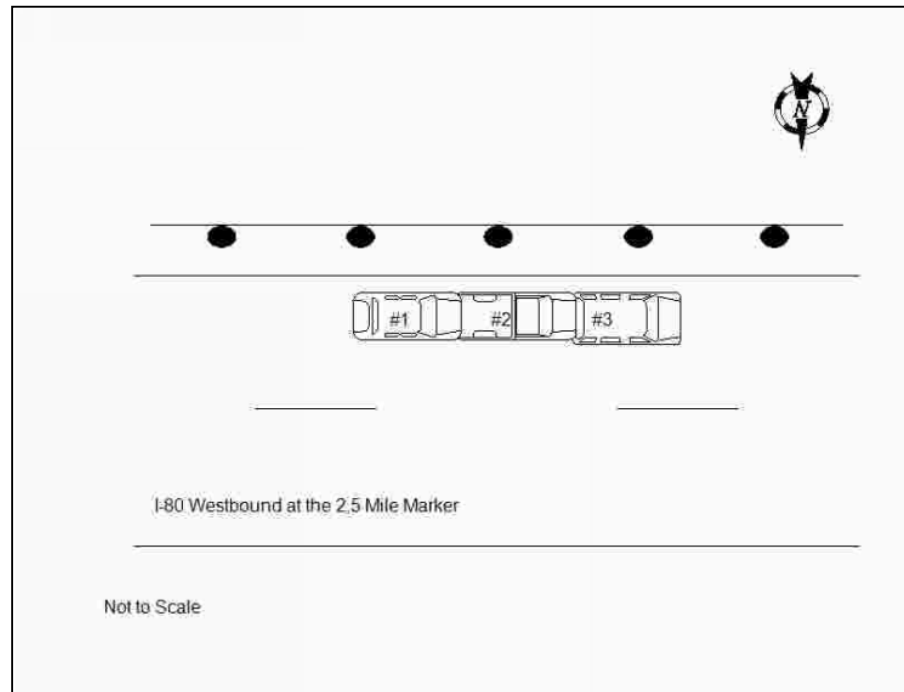


Source: Iowa DOT



Traffic Monitoring: Performance

- Crash information
 - Weekly reports from Council Bluffs Police Department
 - Iowa State Patrol Reports Online



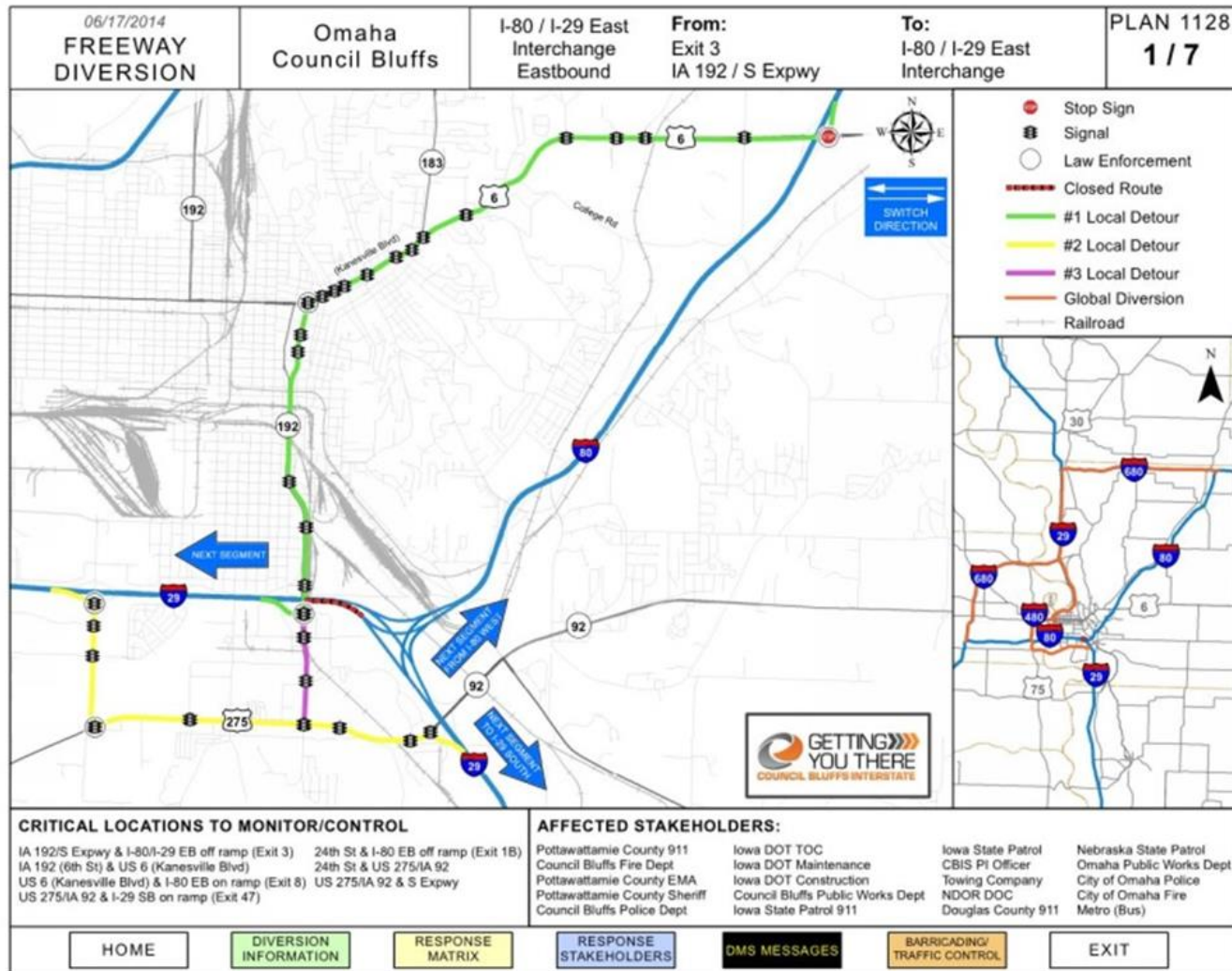
Source: Iowa DOT

Traffic Incident Management (TIM; 1 of 2)

- Revise TIM diversion plans for construction
- DMS message sets established for diversion routes
- Monthly stakeholder meetings
- Incident debrief – Inrix data, ITS data, Salander summaries and cameras



Traffic Incident Management (TIM; 2 of 2)



Source: Iowa DOT



For More Information

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Smarter Work Zones


FHWA RESOURCES




SWZ Interactive Toolkit Available!

<https://www.workzonesafety.org/SWZ/main>

The National Work Zone Safety Information Clearinghouse
THE WORLD'S LARGEST INTERNET RESOURCE






Crash Data	Expert Contacts	Laws & Regulations	News & Events	Public Awareness	Research	Safety Products	Standards & Practices	Training	Links
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SMARTER WORK ZONES

- › Main Page
- › Webinars
- › Project Coordination
 - Peer Exchanges and Workshops
 - Training Resources (webinars, web-based training modules)
 - Outreach Materials (fact sheets, case studies, presentations, guidance documents)
 - Tools (WISE software)
 - Field Demonstrations
 - Lead State Information
- › Technology Applications
 - Types of Applications
 - Peer Exchanges and Workshops
 - Training Resources (webinars, web-based training modules)
 - Outreach Materials (fact sheets, case studies, presentations, implementation guide, guidance documents)
 - Field Demonstrations
 - Deployment Plans and Bid Specs
 - Lead State Information
- › FAQs
- › Funding Opportunities

[Home](#)

Smarter Work Zones



Smarter Work Zones (SWZ) are among a few select initiatives being promoted by the FHWA Every Day Counts Program. SWZ are work zones that utilize innovative strategies to minimize work zone safety and mobility impacts. In EDC3, focus is on coordination of construction projects and use of technology applications to dynamically manage work zone impacts. These strategies include coordination of roadway construction projects to reduce work zone impacts and using technology applications to dynamically manage traffic in the work zone environment.

Project Coordination	Technology Applications
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	Deployment of Intelligent Transportation Systems (ITS) for dynamic management of work zone traffic impacts, such as queue and speed management.

FHWA Every Day Counts (EDC-3) Smarter Work Zones	FHWA Work Zone Mobility and Safety Program	FHWA Work Zone Mobility and Safety Program: Project Coordination	FHWA Work Zone Mobility and Safety Program: Technology Applications
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Source: FHWA



Other Resources – Project Coordination

FHWA	<ul style="list-style-type: none">• FHWA Work Zone Mobility and Safety Program – Project Coordination http://www.ops.fhwa.dot.gov/wz/construction/crp/index.htm• FHWA Work Zone Mobility and Safety Program – Peer-to-Peer Program http://www.ops.fhwa.dot.gov/wz/p2p/index.htm
TRB SHRP2	<ul style="list-style-type: none">• WISE Software Users Guide http://onlinepubs.trb.org/onlinepubs/shrp2/SHRP2_S2-R11-RW-2.pdf
NCHRP	<ul style="list-style-type: none">• NCHRP Synthesis 413: Techniques for Effective Highway Construction Projects in Congested Urban Areas http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_41.pdf
Others	<ul style="list-style-type: none">• Highway Construction Coordination to Minimize Traffic Impacts http://planning.transportation.org/Documents/8-36/NCHRP8-36(56)FinalReport.pdf
WSDOT Example Documents	<ul style="list-style-type: none">• Data Sharing Agreement between Washington State DOT and Seattle DOT https://www.workzonesafety.org/files/documents/SWZ/WSDOT-SDOT_data_sharing_agreement.pdf• Washington State DOT Memorandum of Understanding – Construction Traffic Coordination and Mitigation https://www.workzonesafety.org/files/documents/SWZ/MOU_10-25-09.pdf



Other Resources – Technology Application

FHWA

- FHWA Work Zone Mobility and Safety Program – ITS and Technology
<http://www.ops.fhwa.dot.gov/wz/its/index.htm>
- FHWA Work Zone Mobility and Safety Program – Peer-to-Peer Program
<http://www.ops.fhwa.dot.gov/wz/p2p/index.htm>
- Work Zone ITS Implementation Guide
<http://www.ops.fhwa.dot.gov/publications/fhwahop14008/fhwahop14008.pdf>
- Work Zone ITS Case Studies
<http://www.ops.fhwa.dot.gov/publications/fhwahop14007/>
- Work Zone ITS Overview Webinar
<http://www.ops.fhwa.dot.gov/wz/webinars/itsoverview013014/ullman/index.htm>



Thanks for joining us!

- **Upcoming Events**

- Webinar #9: Technology Application Strategies: Performance Measures and System Health Monitoring
 - Thursday, January 21, 2016, 1:00-2:30pm EST
- Webinar #10: Designing ITS Systems Based on Identified Needs
 - Thursday, February 18, 2016, 1:00-2:30pm EST
- Check The National Work Zone Safety Information Clearinghouse website for updates <https://www.workzonesafety.org/SWZ/main>

- **Questions or Comments?**

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