

Traffic Critical Projects Program



*Tim Simodynes, PE
ITS Engineer
Office of Traffic Operations*

NRITS
October 3, 2016
Chattanooga, Tennessee



Four Main Causes of Delay

- Recurring Congestion
- Weather
- Traffic Incidents
- Construction



Traffic Critical Projects (TCP) Program Goals and Objectives

- Improve traffic safety in work zones
- Maintain mobility through work zones
- Provide high-quality traveler information



TCP Program

Candidate Projects

- *Originally:* Multi-lane highways over 17,000 vehicles/day
 - *Moving toward:* All Multi-lane highways 55mph or higher
- Projects that can repeatedly or quickly lead to significant travel delays
- Design and District Input



Traffic Critical Project Strategies

- Intelligent Work Zone deployments
- Traffic Incident Management planning (T.I.M.)
- Work Time Restrictions
- Design and Staging Changes
- Extra Enforcement
- Demand Management



Varying Levels of Public Information

Intelligent Work Zone Goals

- Expanded Monitoring
 - Traffic Sensors, Portable Cameras
- Warn Drivers
 - Portable DMS, 511ia.org
- Automation
 - Queue Detection, Trucks Entering, Speed Warning

Statewide Integration



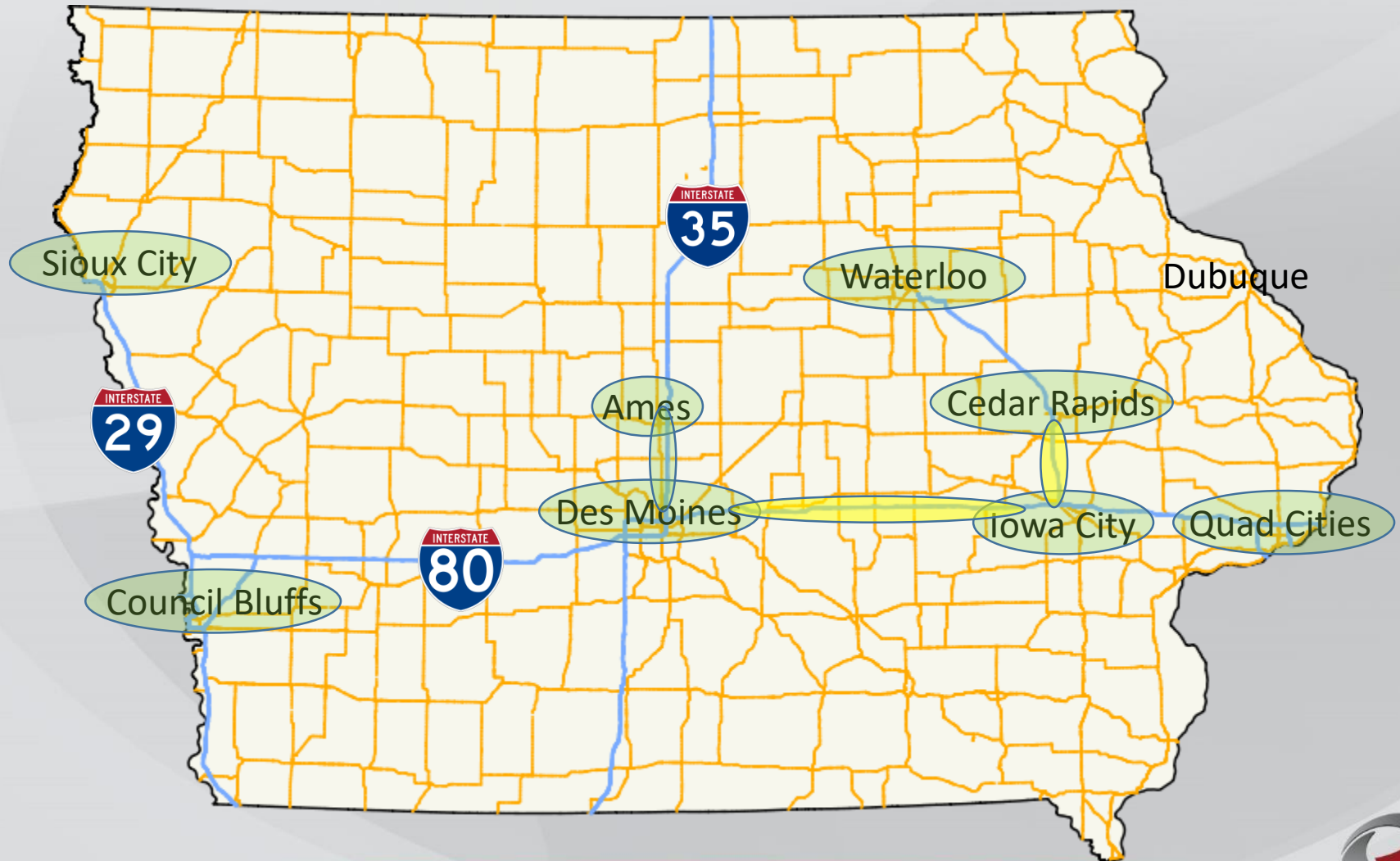
Intelligent Work Zone Resources

- Statewide TMC
- Existing ITS Devices:
 - Cameras, Sensors, DMS
- TransSuite Software
 - “Queue Detection”
- ITS Communication Network
- Integration of Rental Devices



Iowa Inventory

9 “Metro” Areas (over 50,000)



Portable Cameras



- Axis pan-tilt-zoom
- Great within reach of ITS Communications Network
 - Same as permanent Cameras
 - On 511ia.org
- Now integrating on Cell Modems with Qvision

Portable Traffic Sensors



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

Portable DMS



- TMC has controlled Contractor-owned PDMS since 2013

Statewide Traffic Management Center (TMC)



- Near Des Moines; 24/7 operation
- Camera, Sensor and DMS Management
- TransSuite Management Software

Intelligent WZ Team

- SRF Consultants: Writing contract and managing projects
- Street Smart Rentals: Statewide Qualifications and Cost-based IWZ Device Services contract
- TransCore: ATMS Integration Support & ITS Maint.
- Kapsch (formerly Schneider/Telvent): Traffic Management Center
- CTRE (Iowa State Univ.): Eval. & Analysis

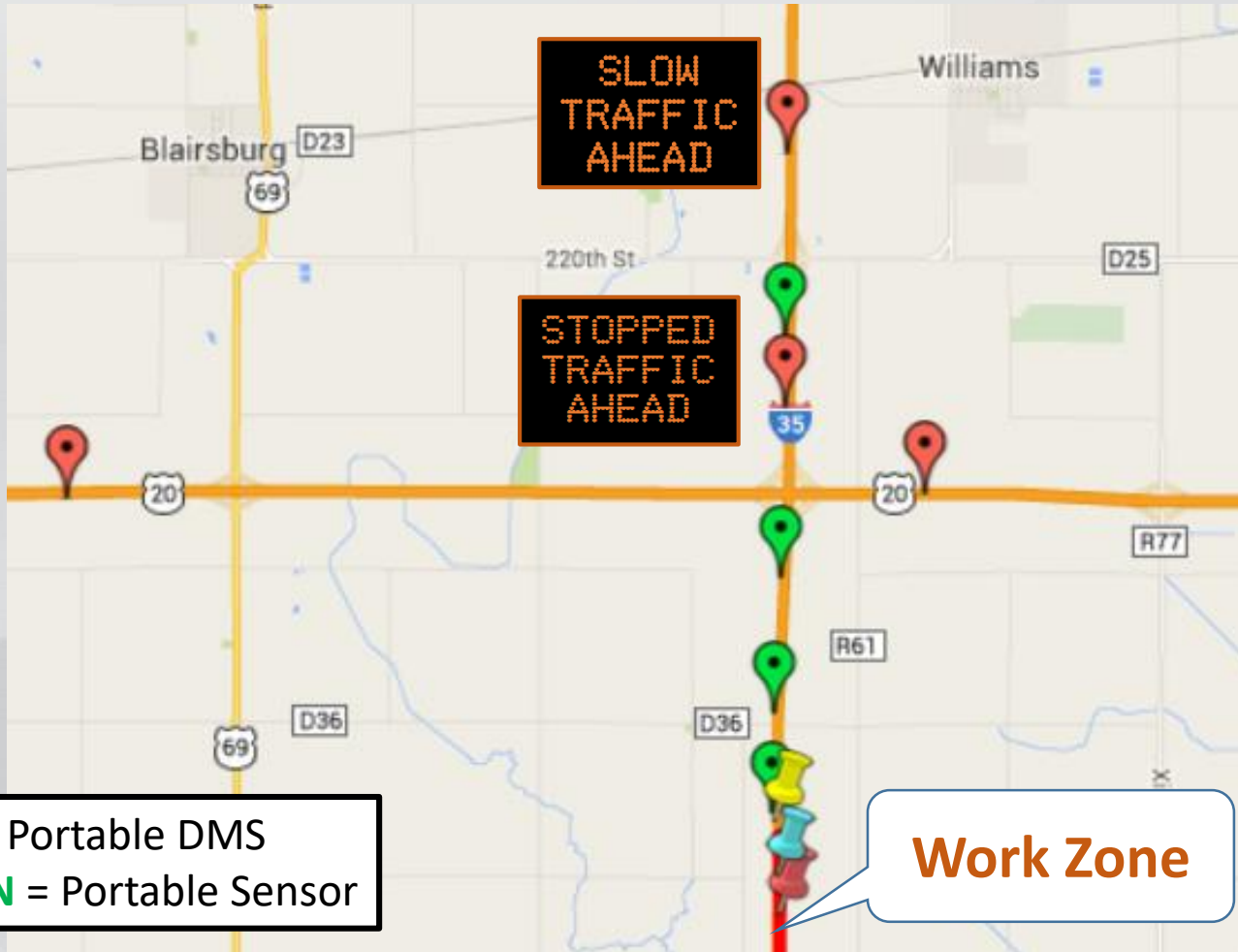


Center for Transportation
Research and Education



Queue Detection Systems

Southbound I-35



Exit Ramp Detection



Council Bluffs



Additional IWZ Devices

- Portable DMS with Radar Detection



- Speed Feedback Trailers



“Truck Entering” Warning



“Truck Entering” Warning

I-29 Council Bluffs

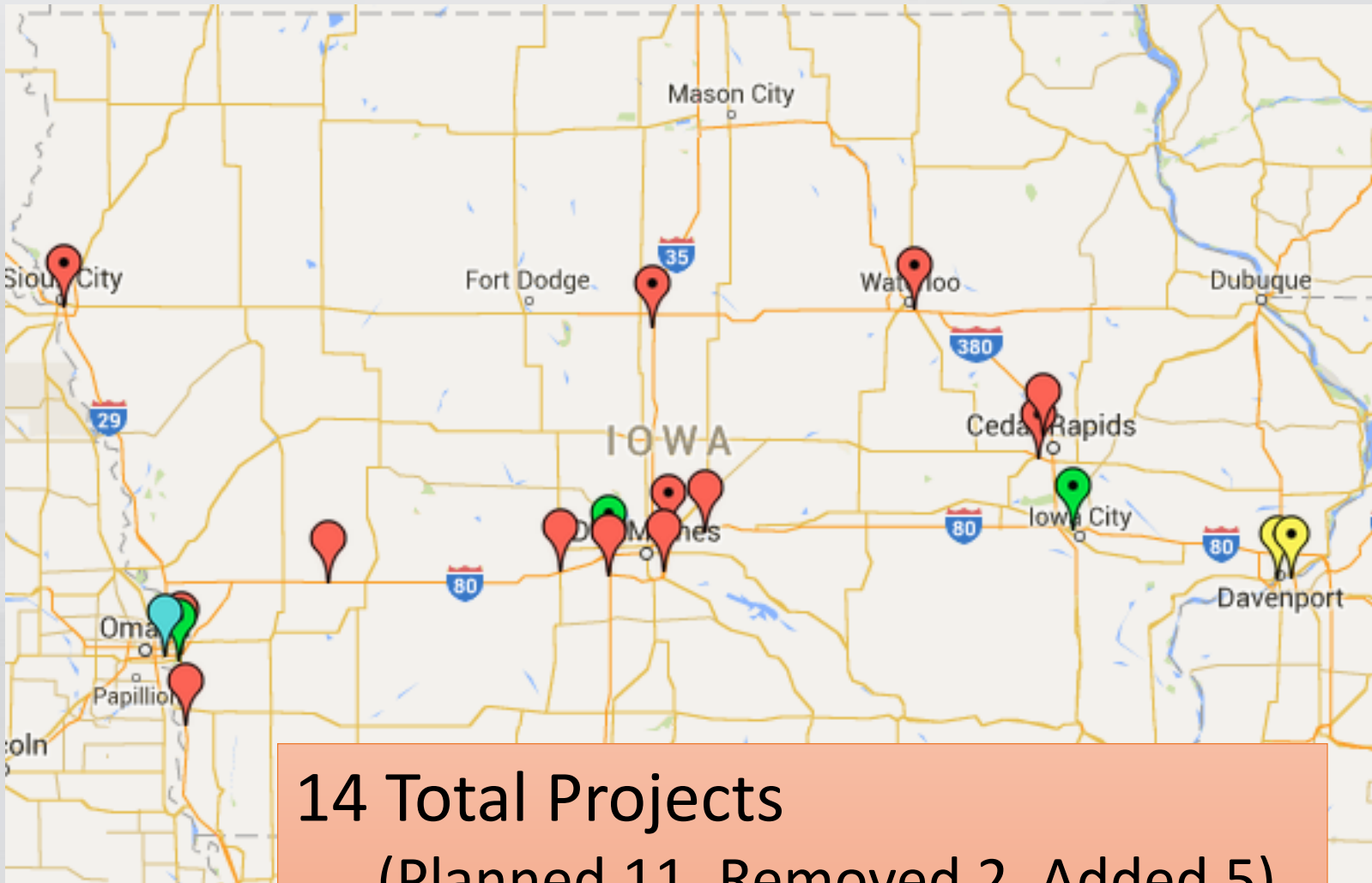


Looking South





2014 IWZ Locations

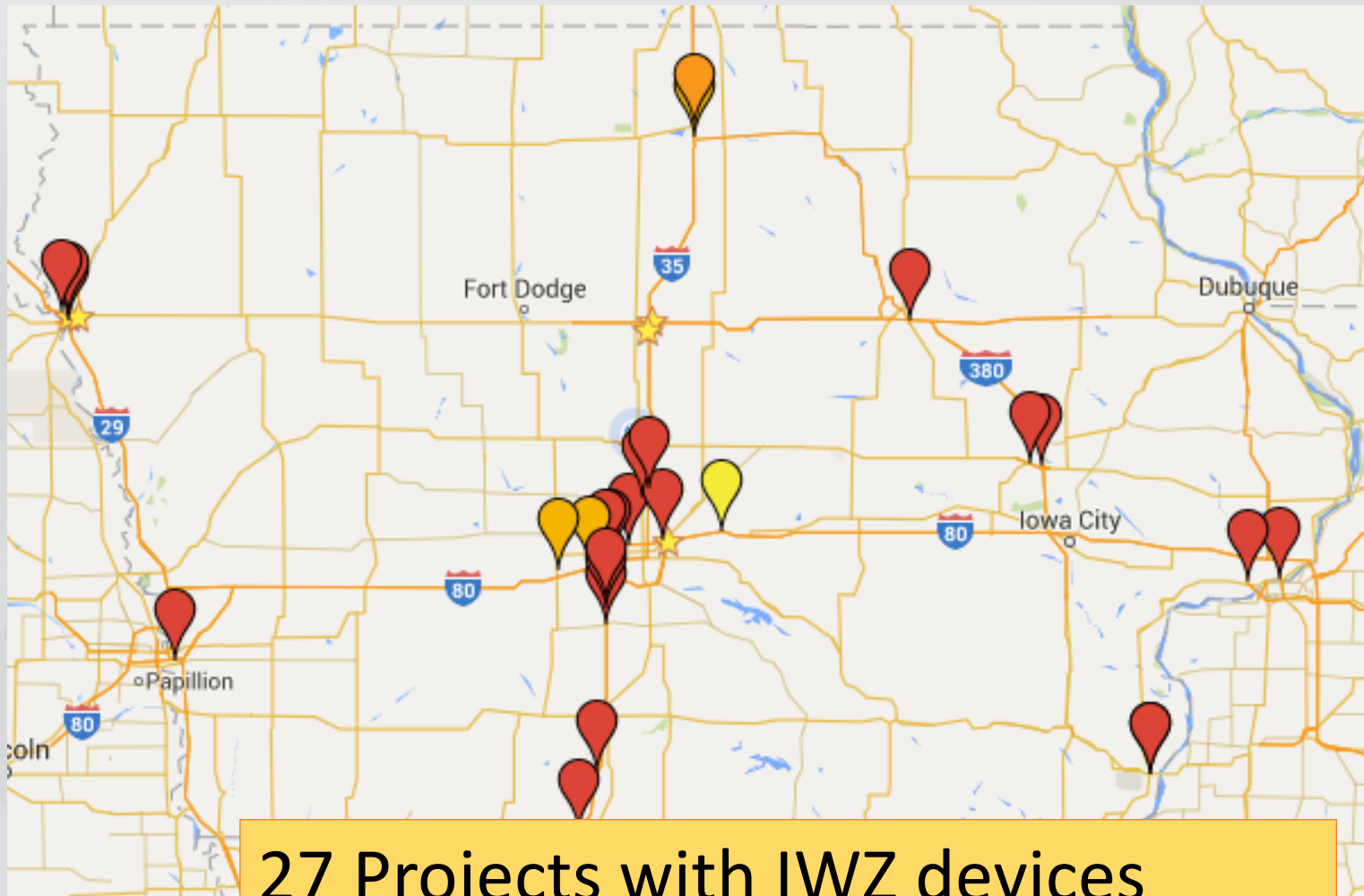


14 Total Projects

(Planned 11, Removed 2, Added 5)

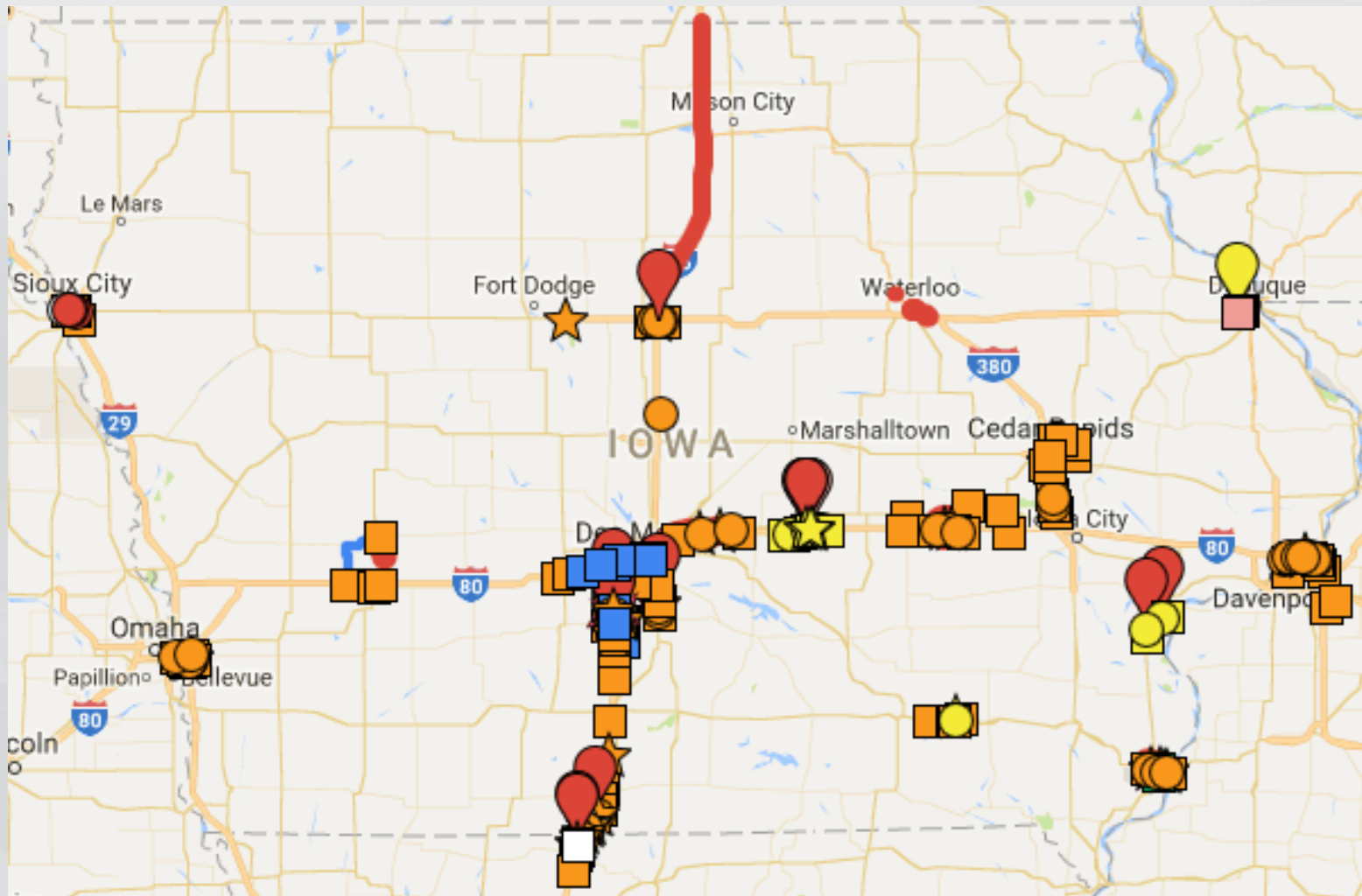
60 Sensors, 44 DMS, 6 Cameras

2015 IWZ Locations



27 Projects with IWZ devices
Average \$40,000 per project

2016 IWZ *Device* Locations



IWZ Devices on over 20 Projects



Drawbacks to Statewide IWZ Approach

- Change from “Traditional” habits
- Requires extra Communication and Coordination among more parties
 - Contractor devices vs. IWZ devices
 - Device relocations
 - Troubleshooting and fixing problems



IWZ Successes

- TMC Monitoring
- Reliable and Flexible Statewide IWZ Contract
- Integration
 - Permanent vs. Portable; Owned vs. Rental
 - Cameras & DMS on 511ia.org
- Extensive Coordination



TCP – Internal Tracking Web Page

<https://sites.google.com/site/iowatcp/>



TRAFFIC CRITICAL PROJECTS OFFICE OF TRAFFIC OPERATIONS

[HOME](#)[2016 PROJECTS](#)[FUTURE PROJECTS](#)[CONTACTS](#)[RESOURCES](#)

The Traffic Critical Projects (TCP) program identifies key construction projects that may cause significant safety or mobility issues to the traveling public. Using various tools, the program aims to anticipate and mitigate any potential safety or mobility issues.

Email Distribution List:
DOT-IWZ@dot.iowa.gov

2016
Projects

Program
Contacts

2017
& Beyond

2015 TCP Final Report

Definitions of Terms & Acronyms

Intelligent Work Zone Strategies

Intelligent Work Zone Equipment Map

Program
Overview

**Fatal crash
Southbound I-35
South of Des Moines
Thursday
June 23, 2016
5:57 PM**





Minimal Crash Report:

Case Number:	2016016216	Type:	Fatality	County:	91
Crash Date:	06232016	Time:	1815		
Location:	I35 58MM				
Vehicle 1 Year:	2005	Make:	CHEV	Type:	MALIBU
Towed By:	BUSSANMUS				
Driver Name:	VIDALES,BENJAMIN A			Age:	27
City & State of Residence:	OSCEOLA,IA				
Vehicle 2 Year:	2012	Make:	FORD	Type:	FUSION
Towed By:	BUSSANMUS				
Driver Name:	BALLARD,SHAWN DAVID			Age:	51
City & State of Residence:	SAINT CHARLES,IA				
Vehicle 3 Year:	2012	Make:	VOLV	Type:	SEMI TRACTOR
Towed By:	BUSSANMUS				
Driver Name:	YAKUB,SALAT ADEN			Age:	26
City & State of Residence:	MACHANICSBURG,PA				
Injury 1 Type:	Fatality				
Name:	BALLARD,SHAWN DAVID			Age:	51
City & State of Residence:	SAINT CHARLES,IA				
Seatbelt Use:	Yes		Life saved by Seatbelt:	No	
Transported To:	FUNERAL HOME		Transported By:	SAINT MARYS AMBULANC	
Summary:					
THE COLLISION OCCURRED IN A CONSTRUCTION ZONE THAT HAD ONLY ONE USABLE NB LANE AND ONE SB LANE, THE COLLISION INVOLVED TWO SOUTHBOUND PASSENGER CARS AND ONE NORTHBOUND SEMI-TRUCK, BOTH PASSENGER CARS CROSSED INTO THE NORTHBOUND LANE, AT WHICH TIME THE NORTHBOUND SEMI-TRUCK COLLIDED HEAD-ON WITH ONE OF THE PASSENGER CARS, THE DRIVER OF THIS VEHICLE WAS PRONOUNCED DEAD AT THE SCENE, THE DRIVER OF THE OTHER PASSENGER CAR WAS TREATED FOR					
Officer Name:	THORUP, J THOMAS			Post:	2



Intelligent Work Zone

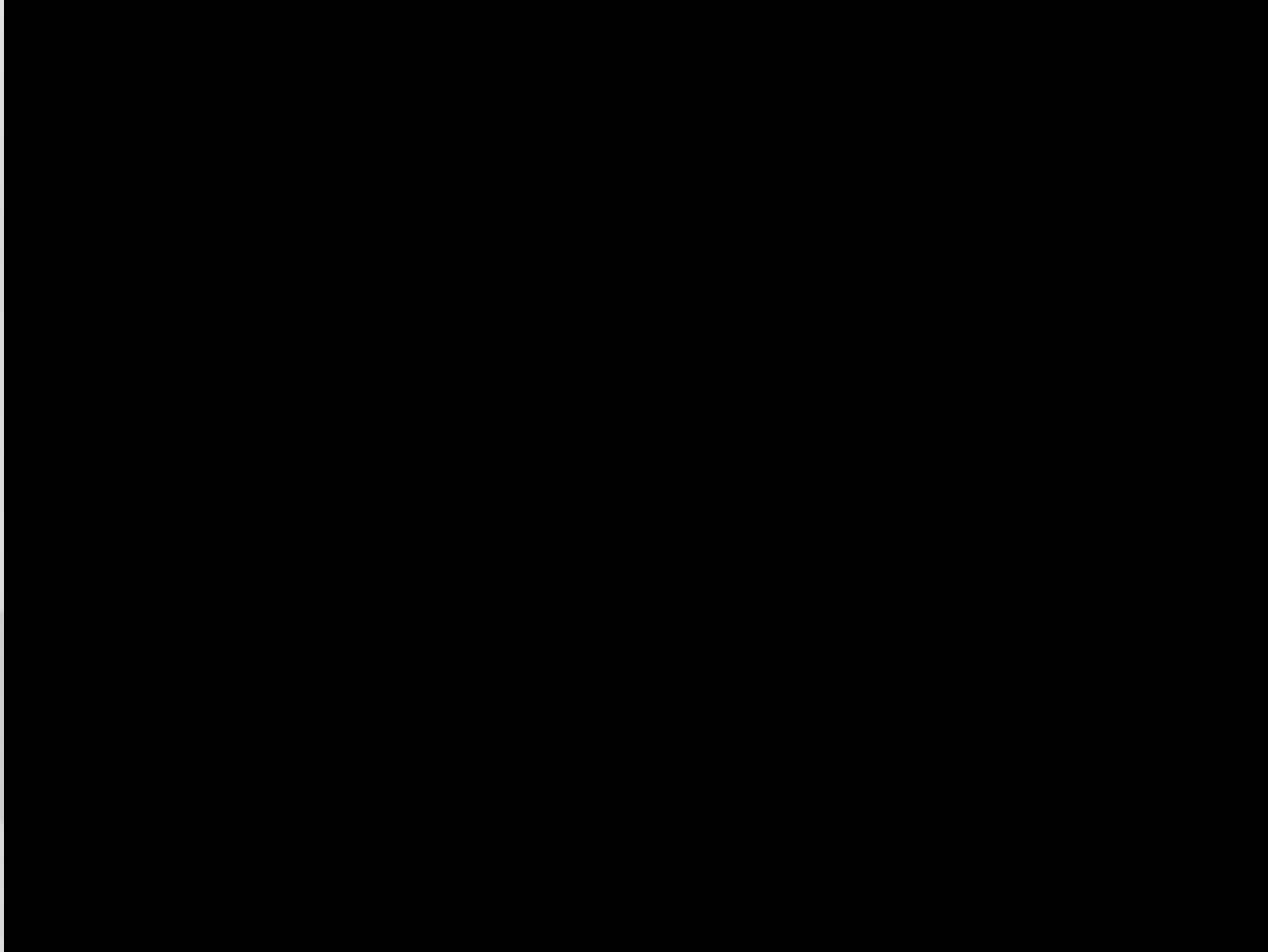
DMS

Southbound Crash Site

N IWZ3152 2016-06-23 17:57:36



7 Minutes Prior to Crash



I-35 Crash Lessons

- Width Restriction Failure
 - Increased collaboration
- Rural Cameras with Recording
 - Incorrect Presets
- Queue Detection activated
 - Failed to sufficiently warn all drivers
- Sensors within work zone
 - Less than optimal device locations
 - *Dash Cam Videos ??*



I-35 Crash Lessons (continued)

- Positive separation of opposing traffic
- Traffic Incident Management Plan
 - Diversion Route Signing
- Traffic Operations Analysis
 - Iowa State University

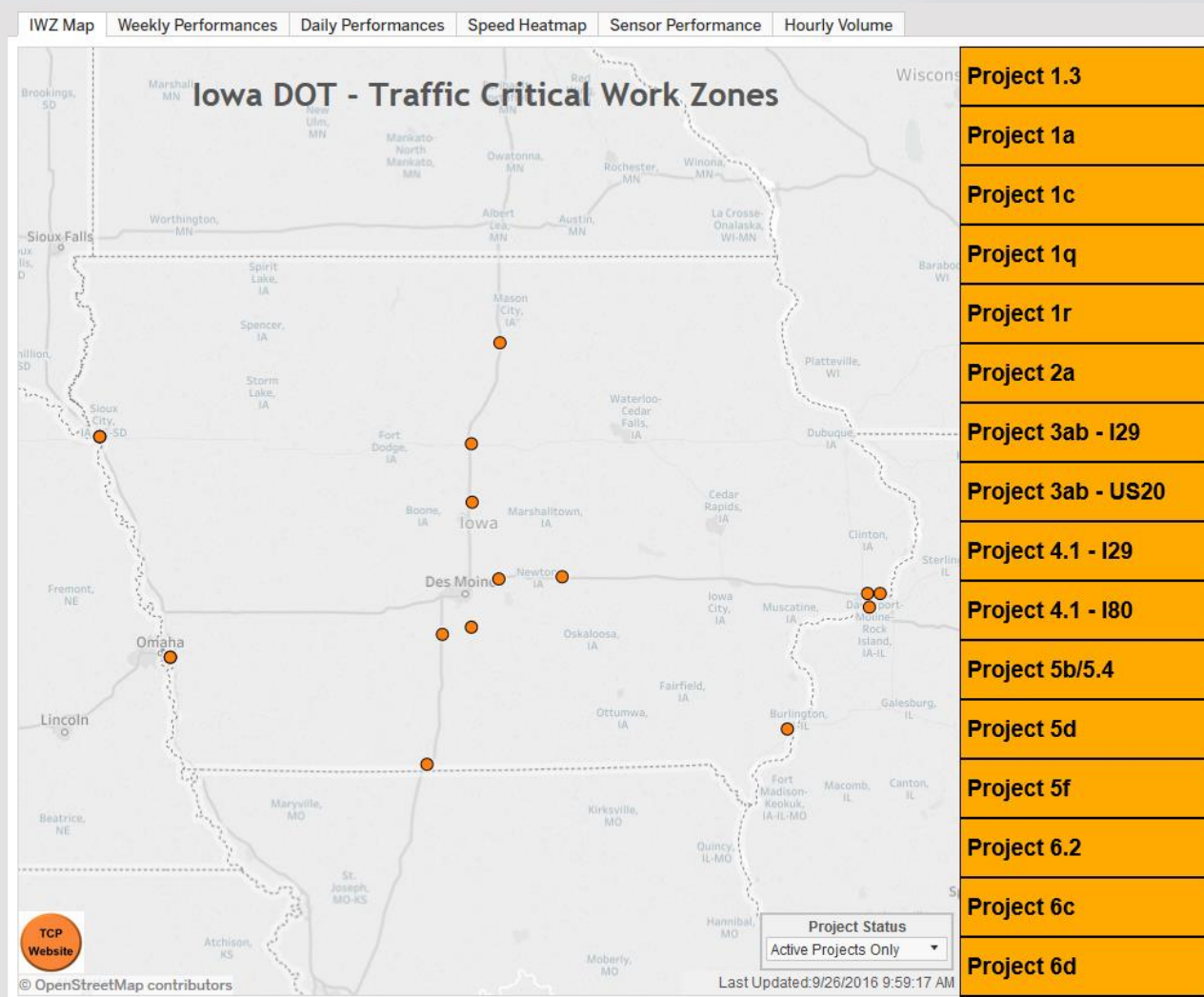


Traffic Operations Monitoring



Work Zone Traffic Analysis

Iowa State University



Work Zone Traffic Analysis

Group 5b and 5.4

Iowa State University

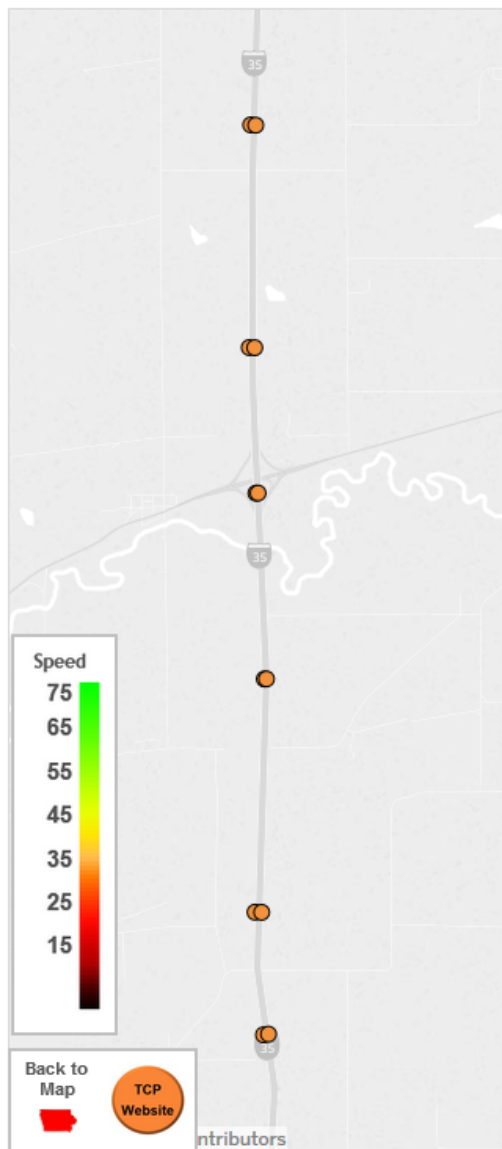
Last Updated: 9/26/2016 9:59:17 AM



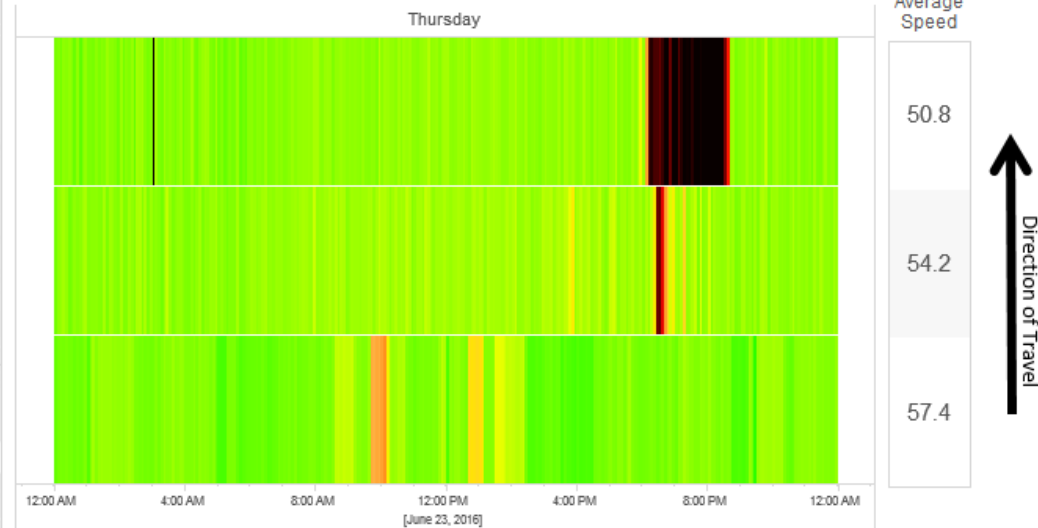
Work Zone Traffic Analysis

[IWZ Map](#) [Weekly Performances](#) [Daily Performances](#) [Speed Heatmap](#) [Sensor Performance](#) [Hourly Volume](#)

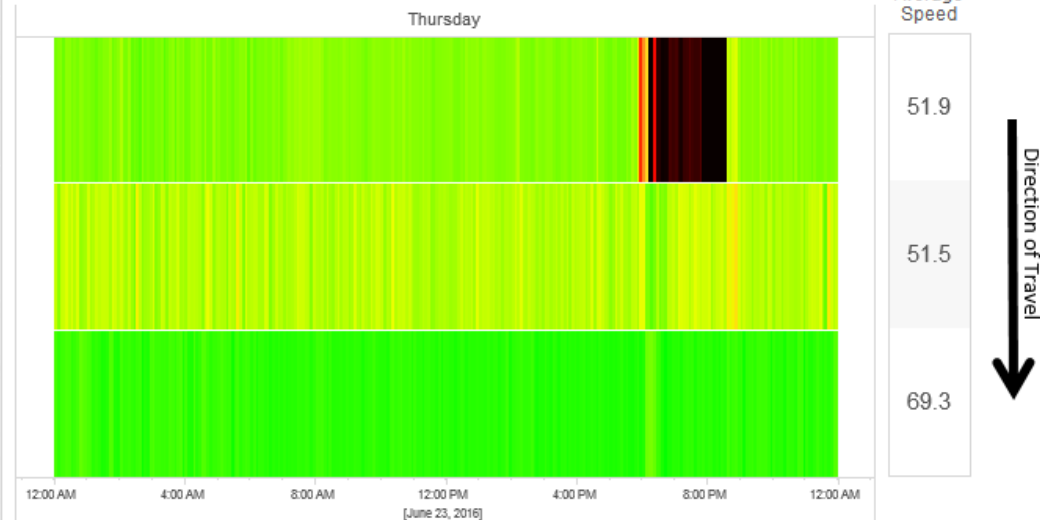
Group 5b and 5.4 Range: 6/23/2016 6/23/2016 Last Updated: 9/26/2016 9:59:17 AM



Northbound



Southbound



Traffic Incident Management (TIM) Planning



2014 Haz Mat Crash on I-35



TIM Planning on TCPs

- Reinforce Relationships among Engineering, Enforcement, Emergency Responders
- Share information and awareness
- Establish contingency and diversion plans

Flexible Level of Effort



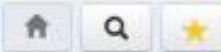

Public Information



511ia.org

[HELP](#) |
 [MORE 511](#) |
 [TRUCKERS](#) |
 [WINTER DRIVING](#) |
 [BORDERING STATES' 511](#) |
 [CONTACT](#)

Your 511 (sign in)

Text Size **A A A** Text Only View Streamlined Version Future Info: 

Layers ▼

Traffic Speeds, Cameras, Electronic Signs



Map data ©2016 Google 2 km  Terms of Use Report a map error

 **Menu**

★ Personalize your 511

 Travel At-A-Glance

Incidents

Construction

Winter Driving & Incidents

Cameras & Speeds

Twitter

Facebook

Legend

511ia.org “My Reports”

The screenshot displays the 511ia.org website interface. The main navigation bar includes links for HELP, MORE 511, TRUCKERS, WINTER DRIVING, and BORD. Below this, there are options for Text Size, Text Only, View Streamlined Version, and Future Info. The page is divided into two main sections: 'My Reports' and 'Joe's Routes'.

My Reports Section:

- Work to Home:** A bell icon indicates alerts are turned on. The user wants traffic reports for this route on the following days: Mon, Tue, Wed, Thu, Fri. The period is set from 05:00 PM to 06:00 PM. The user can receive alerts up to 5 minutes early. Alerts are sent to joe@gmail.com and 515-555-1234. There are buttons for 'Cancel', 'Save', 'Edit your route', and 'Need Help?'.

Joe's Routes Section:

- Ames - Des Moines:** A bell icon indicates alerts are turned off. There is a button for 'Edit | Delete'.
- Des Moines - Council Bluffs:** A bell icon indicates alerts are turned on. There is a button for 'Edit | Delete'.
- Work to Home:** A bell icon indicates alerts are turned on. There is a button for 'Edit | Delete'.
- Home to Work:** A bell icon indicates alerts are turned on. There is a button for 'Edit | Delete'.

Below the routes, there are links for 'Add another route', 'Change my password or account settings', and 'Need Help?'.

Map Section:

- A map of Iowa is shown with various traffic signs and route markers. A 'Legend' button is visible in the bottom right corner of the map area.

“Major Projects” Public Page

www.iowadot.gov/roadconstruction/MajorProjects/

The information on this website is updated weekly.
To start browsing the map, click on a numbered icon.



For the most current travel impacts, visit 511ia.org.



Project started



Project not started



Project completed



Project rescheduled

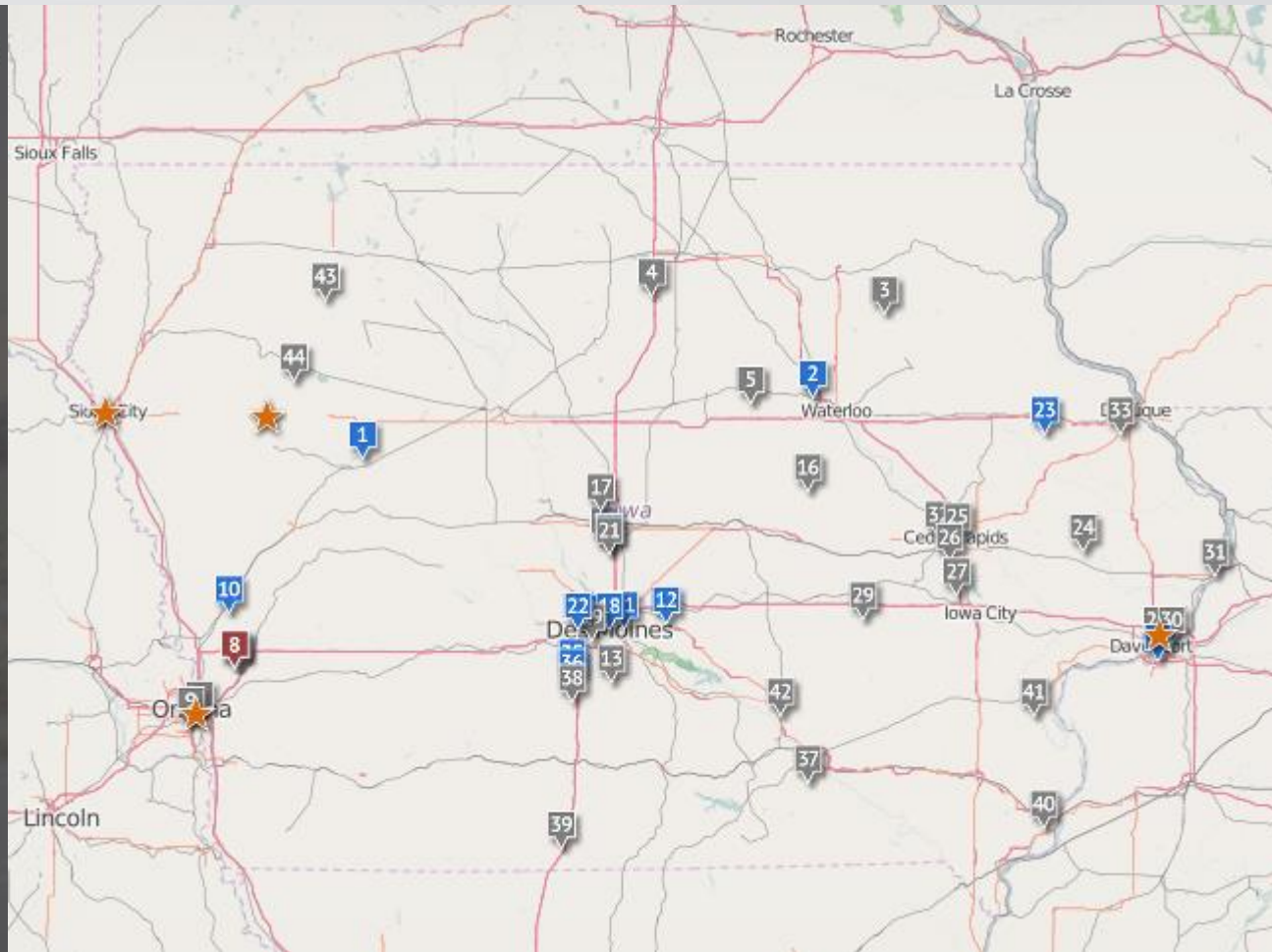


Multiyear project website



For the most current travel impacts, visit 511ia.org.

PROJECT AREA



Project-Specific Pages

[HOME](#) | [ONLINE SERVICES](#) | [TRAVEL](#) | [DRIVERS / VEHICLES](#) | [BUSINESS](#) | [FORMS](#) | [ABOUT](#)

[HOME](#)
[ABOUT THE PROJECT](#)
[PROGRESS REPORT](#)
[PUBLIC MEETINGS](#)
[PHOTOS](#)
[CONTACT US](#)

U.S. 20 CONSTRUCTION

Construction of two additional lanes of U.S. 20 between Early and Moville began in 2014. This final 40 miles of the U.S. 20 expansion is scheduled for completion in fall 2018. Once completed, a four-lane U.S. 20 will span Iowa.

CONSTRUCTION SCHEDULE OVERVIEW

Click on the colored lines on the map for more information.

U.S. 20 Construction

2014-2018	2015	2016-2018	2016-2018	2017-2018	Detour routes

CONSTRUCTION UPDATES

Traffic Critical Projects Program Growth

- Program integration with:
 - Project planning
 - Project concept development
 - Letting options such as Lane Rental and Enhanced Incident Response
- Developing tools to guide planners, designers and program managers



Traffic Critical Projects Program Growth (cont.)

- TCP Program Continual Evaluation
 - Performance Measurements
 - Safety
 - Mobility
 - Benefit/Cost Calculations – Return on Investment



Traffic Critical Projects Program Questions?



*Tim Simodynes, PE
ITS Engineer
Office of Traffic Operations*

NRITS
October 3, 2016
Chattanooga, Tennessee

