Traffic Critical Projects Program

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NRITS
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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)

- Des Moines
- Ames
- Cedar Rapids
- Quad Cities
- Waterloo
- Sioux City
- Council Bluffs
- Iowa City
- Dubuque
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
Queue Detection Systems
Southbound I-35

RED = Portable DMS
GREEN = Portable Sensor

Work Zone
Exit Ramp Detection

Council Bluffs
Additional IWZ Devices

• Portable DMS with Radar Detection

• Speed Feedback Trailers
“Truck Entering” Warning

TRUCK ENTERING ON LEFT

I-29 Council Bluffs
“Truck Entering” Warning

I-29 Council Bluffs

Looking South
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/

Email Distribution List:
DOT-IWZ@dot.iowa.gov
Fatal crash
Southbound I-35
South of Des Moines
Thursday
June 23, 2016
5:57 PM
# Minimal Crash Report:

<table>
<thead>
<tr>
<th>Case Number:</th>
<th>2016016216</th>
<th>Type: Fatality</th>
<th>County: 91</th>
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<tbody>
<tr>
<td>Crash Date:</td>
<td>06232016</td>
<td>Time: 1815</td>
<td></td>
</tr>
<tr>
<td>Location:</td>
<td>I-35 58MM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Vehicle 1**
- Year: 2005
- Make: CHEV
- Type: MALIBU
- Towed By: BUSSANMUS
- Driver Name: VIDALES, BENJMIN 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

<table>
<thead>
<tr>
<th>Injury 1 Type:</th>
<th>Fatality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>BALLARD, SHAWN DAVID</td>
</tr>
<tr>
<td>Age:</td>
<td>51</td>
</tr>
<tr>
<td>City &amp; State of Residence:</td>
<td>SAINT CHARLES, IA</td>
</tr>
</tbody>
</table>

**Seatbelt Use:** Yes
**Life saved by Seatbelt:** No
**Transported To:** FUNERAL HOME
**Transported By:** SAINT MARYS AMBULANC

**Summary:**


**Officer Name:** THORUP, J THOMAS
**Post:** 2
Intelligent Work Zone

Southbound Crash Site

DMS
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

Iowa DOT - Traffic Critical Work Zones

Project 1.3
Project 1a
Project 1c
Project 1q
Project 1r
Project 2a
Project 3ab - I29
Project 3ab - US20
Project 4.1 - I29
Project 4.1 - I80
Project 5b/5.4
Project 5d
Project 5f
Project 6.2
Project 6c
Project 6d
Work Zone Traffic Analysis
Iowa State University

Average Delay per Vehicle in Minutes
Average Queue Length in Miles

Maximum Delay in Minutes
Maximum Queue Length in Miles

Percentage of Traffic Encountering Queue
Number of Traffic Slowdowns

Performance Range:
2016-06-20 to 2016-06-26
Work Zone Traffic Analysis

Group 5b and 5.4

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
511ia.org “My Reports”
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
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.

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

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