Traffic Critical Projects

Mid-Continent Transportation Research Symposium
August 17, 2017

Tim Simodynes
Office of Traffic Operations

Skylar Knickerbocker
CTRE, Iowa State University
Focus on Traffic Operations

Address Sources of Congestion

- Recurring Congestion
- Incidents / Crashes
- Weather
- Special Events
- Construction
Transportation Systems Management & Operations (TSMO)

Maximize Traffic Operations & Safety

Incorporate TSMO strategies throughout planning, design, construction, maintenance and operations activities

“Work Zone Management” is one of nine TSMO service layer plans
Traffic Critical Projects Program

- Started in 2014
- Initial focus
  - Intelligent Work Zones (IWZ)
  - Traffic Incident Management (TIM) planning
Portable Cameras

Pan-tilt-zoom
Same as permanent Cameras
On 511ia.org
Portable Traffic Sensors

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

• ALL controlled by TMC since 2013
Queue Detection Systems
Southbound I-35

RED = Portable DMS
GREEN = Portable Sensor

Work Zone
TIM Planning on TCPs

• Reinforce Relationships among Engineering, Enforcement, Emergency Responders

• Share information and awareness

• Have contingency/diversion plans in place
Traffic Operations Mitigation Strategies

• Work Day Restrictions (Day of Week / Seasonal)
• Limited Working Hours / Night Work
• Innovative Contract Provisions (Lane Rental)
• Accelerated Scheduling
• Work Zone Length/Area Restrictions
• Public Information (PI) Plan
• Traffic Control Monitoring
• Quick Clearance
Safety Mitigation Strategies

- Traffic Incident Management Planning
- Traffic Control Monitoring
- Quick Clearance
- Intelligent Work Zones
  - Queue Detection & Warning
  - Increased Monitoring
- Extra Enforcement
2014 IWZ Locations

14 IWZ Projects
60 Sensors, 44 DMS, 6 Cameras
2015 IWZ Locations

27 Projects with IWZ devices
2016 IWZ Device Locations

34 Projects with IWZ Devices
2017
IWZ Device Map
Current Efforts

- Plan and budget mitigation strategies earlier in project development and design
- Develop tools that help designers select appropriate mitigation strategies
- Develop additional mitigation strategies
- Improved coordination among adjacent projects

*If our Goal is Improved Operations, we need Good Traffic Data*
2014 Sensor Data Tracking Spreadsheet
Traffic (BIG) Data Analysis
by
InTrans

**Needs**
Immediate Tracking, Quality Control & Observations

Quantifiable Long-term Analysis & Learning
REACTOR Web Site
https://reactor.ctre.iastate.edu/

Iowa DOT - Traffic Critical Work Zones

Project 1ac
Project 1j
Project 1q
Project 1u
Project 1v
Project 1y
Project 2e
Project 2g
Project 3b - I29
Project 4.1 - I29
Project 4.1 - I80
Weekly Performance
Daily Performance

[Graphs showing daily performance statistics for Northbound and Southbound directions, including daily volume, number of events, average queue length, and percentage of time below 45 mph speed, with data from April 18 to April 25.]
Hourly Volumes