Road Condition Reporting - Developments, and Challenges

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Discussion Outline

- Timeline
- Tools
  - Travel Info Flow
  - Road Condition Entry
  - Dissemination Media
  - Environmental Sensor Stations
- Challenges
- Improvement Plans
- Lessons Learned
SD Travel Info Timeline

1990’s RWIS

1996 #SAFE

2001 Interstate DMS
2002

2005 More DMS
2006 SafeTravelUSA website
2007 Video Cameras

2010 ClearPath511
2011 ESS w/cameras
2013 Mobile Apps
2014 WRTMI
Travel Info Flow (simplified)

- Construction & Maintenance
- Road Conditions
- Incidents
- Weather (NWS, Radar, Satellite, Models, Forecast, etc.)
- IRIS: Integrated Road Information System
- RWIS
- Data Base
- Cameras
- 511 Travel Info
- I-90 CLOSED WEST OF CHAMBERLAIN USE OTHER ROUTES
- 511 Travel Info App
- DOT
- ITERIS
Road Condition Entry

- Road conditions by SDDOT maintenance
- Construction by SDDOT engineering
- Feeds all 511, STUSA, etc.
- Computer tool
- >150 users
SafeTravelUSA.com/sd

- All state highways
- 4 zoom levels
- Camera Images

- Road Conditions
- Weather
- Construction

- Incidents
- Events
- Amber Alerts
511 Mobile App

- Android™ now
- iPhone Fall 2013
Other Products

- **511 Traveler Info**
  - Since 2002
  - Landmark references
  - Detailed Conditions

- **Twitter**
  - Road closures
  - Statewide notices

- **ClearPath 511**
  - Free subscription
  - E-mail or text messages
  - Road closures, no travel advised, flooding
  - Selectable routes
  - Selectable days, times
Environmental Sensor Stations

- Precipitation
- Wind Speed
- Direction
- PTZ Camera, IR Illuminator
- Traffic Volume
- & Speed
Roadside Cameras/Illuminators

- 720p/1080p
- pan/tilt/zoom
- At ESS, DMS
- Infrared illuminators for nighttime images
Challenges

- 24x7 observations
  - Not possible w/SDDOT staffing
- Reporting frequency
- Geographic coverage
- Non-SD highways
  - National Parks
  - BIA and Tribal roads
- Integrating ESS and mobile data sources into travel information
Plans for Improvement

- iPhone App
- Weather Responsive Traffic Management Implementation Project
  - Use Maintenance Decision Support System road condition forecasting
  - Use mobile data sources
  - Use DMS more effectively
  - Provide NWS alerts
  - Development October 2013—June 2014
  - Deployment and Evaluation July 2014—Sept 2015
- Add non-SDDOT Routes
Maintenance Decision Support

- Predict weather and road conditions
- Track applied maintenance
- Consider available resources
- Recommend treatment type, rate, timing

- Save material, fuel, labor costs
- Provide equal or better levels of service
- Provide management tools
MDSS Pooled Fund Study

Concept

03/11/2006 08:00 CST

Driving

03/11/2006 08:00 CST

Passing

Pavement Temp: 32.5 F
Percent Ice: 44%
L/I/I/S Depths: 0.019 / 0.000 / 0.000 / 0.15"
No Materials Present

Pavement Temp: 32.0 F
Percent Ice: 45%
L/I/I/S Depths: 0.020 / 0.000 / 0.000 / 0.17"
No Materials Present
Mobile Data Collectors

- ~100 instrumented snowplows
- Observe
  - Weather
  - Road Conditions
- Measure
  - Air Temperature
  - Surface Temperature
  - Plowing
  - Treatment Type
  - Application Rate
Lessons Learned

- Road Weather is a “big deal”
  - Perceived as #1 threat to travel safety
- Public values information highly
- Agency operation necessary in rural environment
- A picture is worth a 100 KB
  - to SDDOT maintenance staff
  - to public
- Single, integrated database essential
- Reliability & quality paramount
- Media will use & promote
- There is no “going back”
Questions?

1. Please contact:

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2. Thank you!