

TIM Strategies for Intracoastal Waterway Drawbridges

*Coastal ITS Projects
Georgia ITS 2017 Annual Meeting
Savannah, Georgia*



Summary

- § Overview
- § ICM
- § Crossing Safety
- § ITS Integration
- § Recommendations
- § Future ITS



The purpose of presentation is to discuss integration options for drawbridge/railroad crossings for notifications to transportation management centers, 911 public service access points and related emergency service dispatch centers

Overview

- § Traffic incident management is a vital part of inter-agency coordination and cooperation
- § Waterway bridge crossings can adversely affect incident response
- § Drawbridge road closure notifications can be integrated into the ITS network to improve and incident response times
- § The ITS integration can also include railroad crossing arterial route closures



Florida Drawbridges



- § Fort Lauderdale/Miami: two metro regions with large amount of drawbridges
- § Wikipedia: There are 73 draw/bascule bridges on Florida's Atlantic coast intra-coastal waterways

Florida Drawbridges

§ During hurricanes, often bridges have extended openings prior to storms for vessel traffic, causing traffic delays and need for diversions



Hurricane Irma

- § September 10-11, 2017
- § 45-75 MPH wind gusts
- § Coastal evacuations
- § Drawbridges were locked down 2 days prior to storm arrival



A Titanic Moment...sort of

“Rockstar” Yacht vs “Iceberg” Drawbridge



Broad Causeway
Bal Harbour, Florida
December 2, 2014

Integrated Corridor Management

Broward County I-95 ICM Project Components

- § TSM&O Arterial Management
- § Freeway/TMC Integration
- § Data Fusion/dissemination/decision support systems
- § Signal priority systems
- § Rail passenger/freight coordination
- § Prediction Engine Component signal timing plans
- § Incident Management
- § Special Events

Issues

- § Drawbridges are often not in ITS plans
- § Each bridge opens on demand and/or regular schedule
- § Many bridges are not networked
- § In some cases, no fiber communication is available near bridges



Issues

- § PSAP* 911 coordination is not in place
- § Police/fire response plans
 - § Fort Lauderdale police district boundaries are defined within rail and waterway corridors to minimize crossing and reduce response times
- § Coastal evacuation routes are often drawbridges!
- § Waterway navigation maritime laws favor boat traffic and priority shipping vessels
- § Bridge opening schedules are published in some areas

*Public Service Access Point


Railroad Crossings Safety Study

SE Florida – Fort Lauderdale to Vero Beach 2012-2014

- § **256** crashes occurred at or near railroad crossings
- § **97** crashes occurred in the vicinity of drawbridges
- § **6** resulted in fatalities



Legend

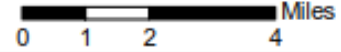
 Railroad Crash Location

Label = Number of Crashes

**Florida Department of Transportation
District 4
Railroad Crash Locations 2012 to 2014
Broward County**

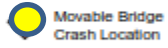
Prepared by:

AECOM



Fort Lauderdale

Legend



Label = Number of Crashes

**Florida Department of Transportation
District 4
Movable Bridge Crash Locations 2012 to 2014
Palm Beach County - East**

Prepared by:

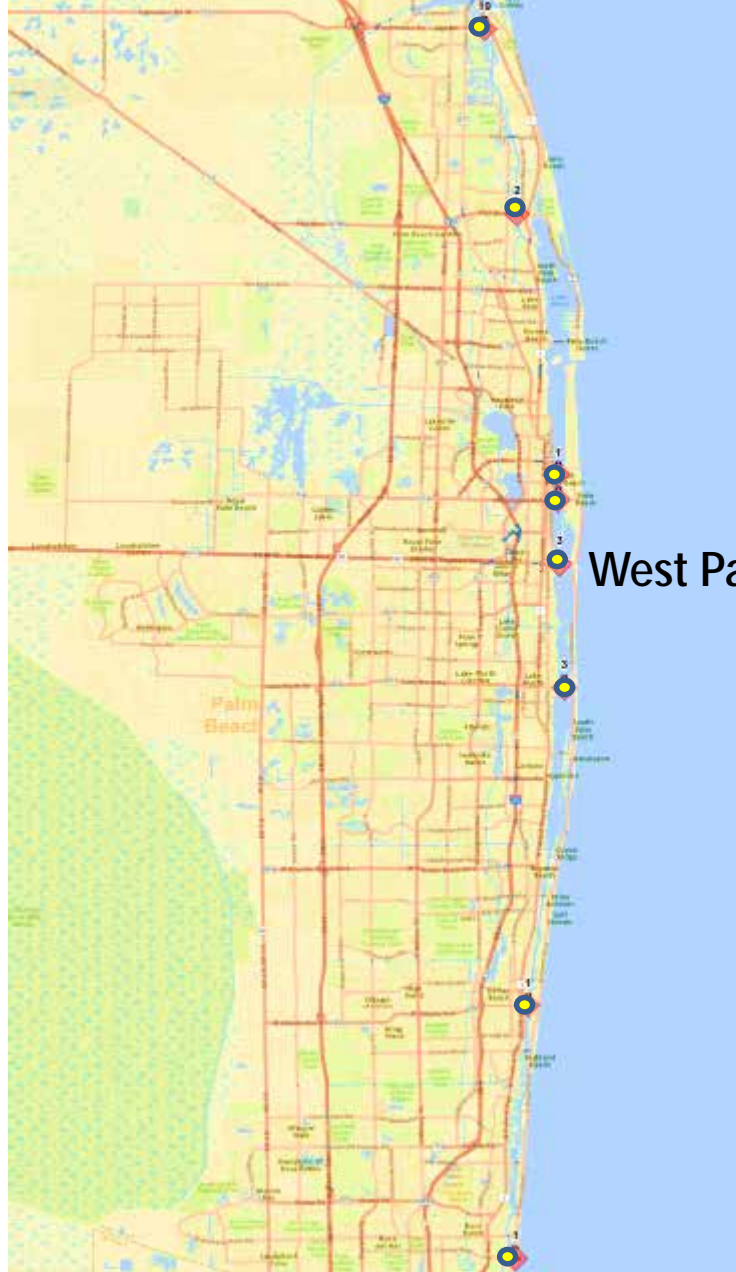


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Miles

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West Palm Beach

Railroad Crossing Safety Study

- § Incidents impact nearby freeways along with arterial routes
- § Further coordination needed with FDOT and rail operators
- § Increased train activity over next five years expected



Railroad Crossing Safety Study

- § Fire rescue or police dispatch centers often just receive phone notifications of *extended* railroad crossings/ drawbridges road closures
- § First responders have to make their routing decisions based on a visual assessment



Railroad Crossing Safety Study

- § Railroad crossing real-time data is often not reliable or available
- § Rail stations proximity to roadway impact traffic with extended roadway closures



Railroad Crossing Issues

- § Scenario: *Two trains approaching crossing from opposite directions.*
Often motorists don't expect a second train.
- § There is need for advisory signing to eliminate drivers going around gates
- § Ramp metering planned for I-95 in Florida will need to consider impact on nearby Tri-Rail corridor



Drawbridge ITS Recommendations

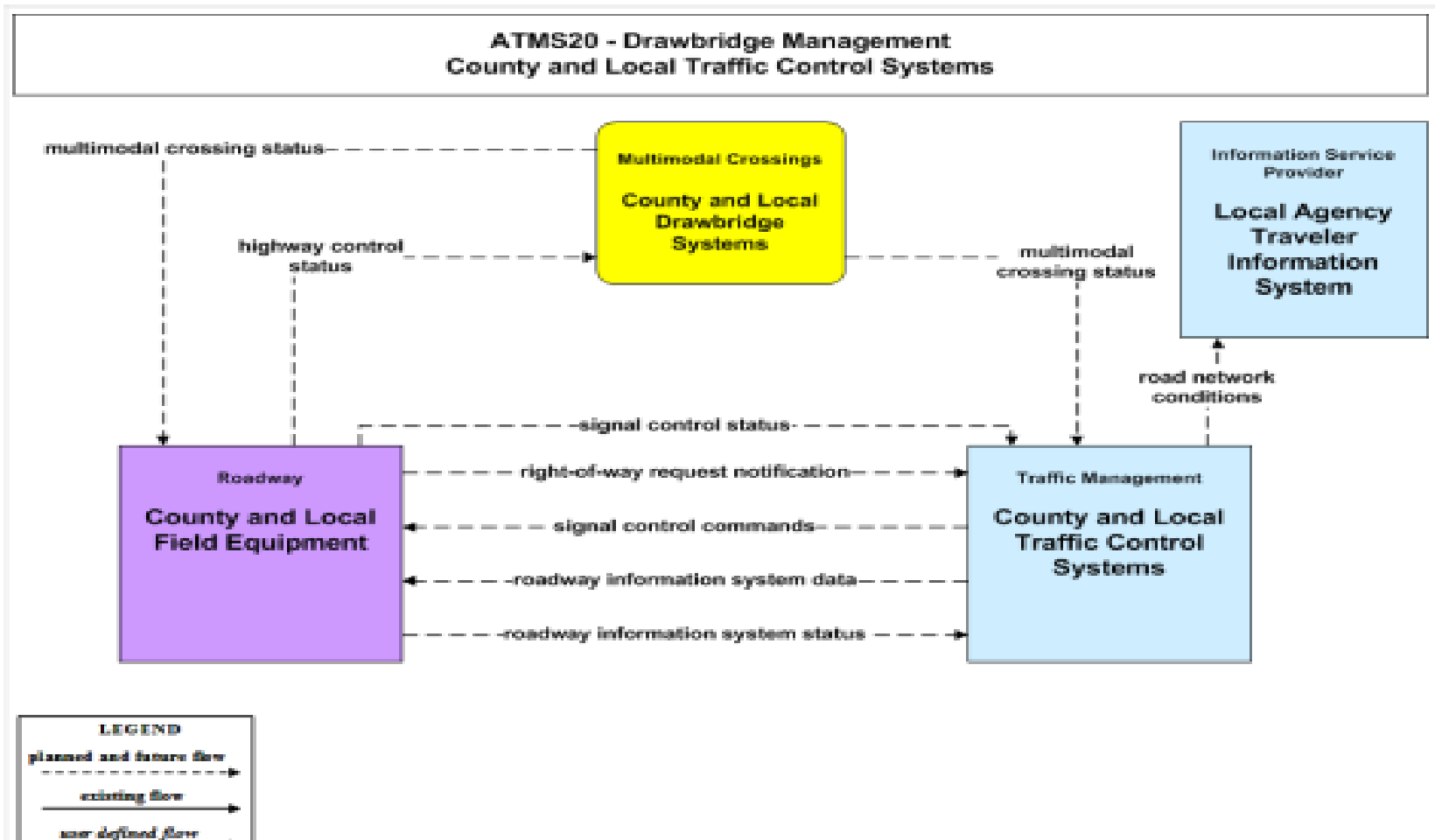
- § Consider installing ITS devices (arterial DMS, LED signing) to advise motorists and first responders of excessive delays
- § Provide monitoring of key crossings during coastal evacuations
- § Identify and prioritize potential locations for the deployment of ITS infrastructure enhancements

Drawbridge ITS Recommendations

- § Connected Vehicle applications can enhance real-time data for first responders
- § Use of 3rd party data/apps (WAZE, Bluetoad, etc.) can be used to supplement detection and advisories
- § Central point monitoring (EOC, TMC, PSAP) can be beneficial for regional coordination and evacuation

Drawbridge ITS Recommendations

Florida Dept. of Transportation District 5 ITS Architecture County & Local Drawbridge Systems



Future Drawbridge ITS

- § Integrate live map of bridges and railroad crossing status onto existing ITS
- § Expand data for DOT bridge maintenance to provide additional performance data (health, malfunctions, automated bridge tender logs)
- § Take advantage of existing ITS infrastructure
- § Identify issues/needs with bridges not on state roads

Future Drawbridge ITS

- § Improve bridge operations communication to TMCs and PSAPs
- § Smart phone apps/511 posting openings/advisories
- § Determine funding mechanisms (ICM, safety projects, national security grants; research projects)



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Questions/ Discussion



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