



Advanced Traffic Management System Phase II
Traffic Signal Retiming Project

Manatee County Diversion and Evacuation Routes Definition and Signal Timing Development

Project Background

- Project History
 - Incidents on Interstate 75 requiring closure
 - Interstate 75 Freeway Management System in Manatee and Sarasota Counties
 - Implementation of Manatee County Advanced Traffic Management System
 - Past history of incidents on Manatee River bridges (US 41/301, Bus US 41)
 - Hurricane Evacuation Planning



Photo Source:
Tampa Bay Times

Project Background

- Objectives

- Strategic plan for maximizing the throughput of diversion or evacuation route through traffic engineering practices
 - Traffic signal timing patterns
 - Traffic operational improvements
 - Law enforcement deployment strategies
 - Decision matrix and operations guide development
- Ease of implementation

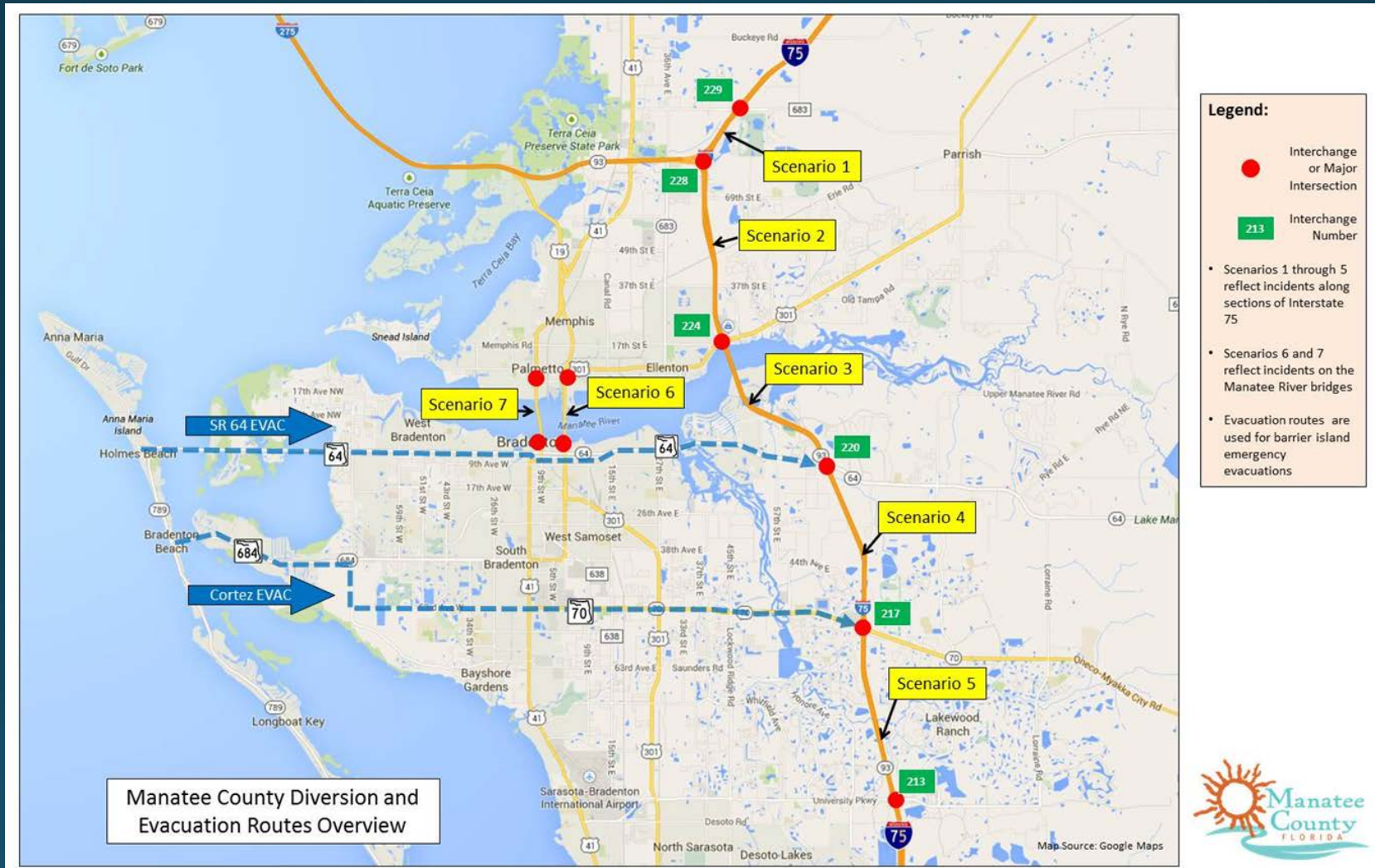


Where will the traffic go?

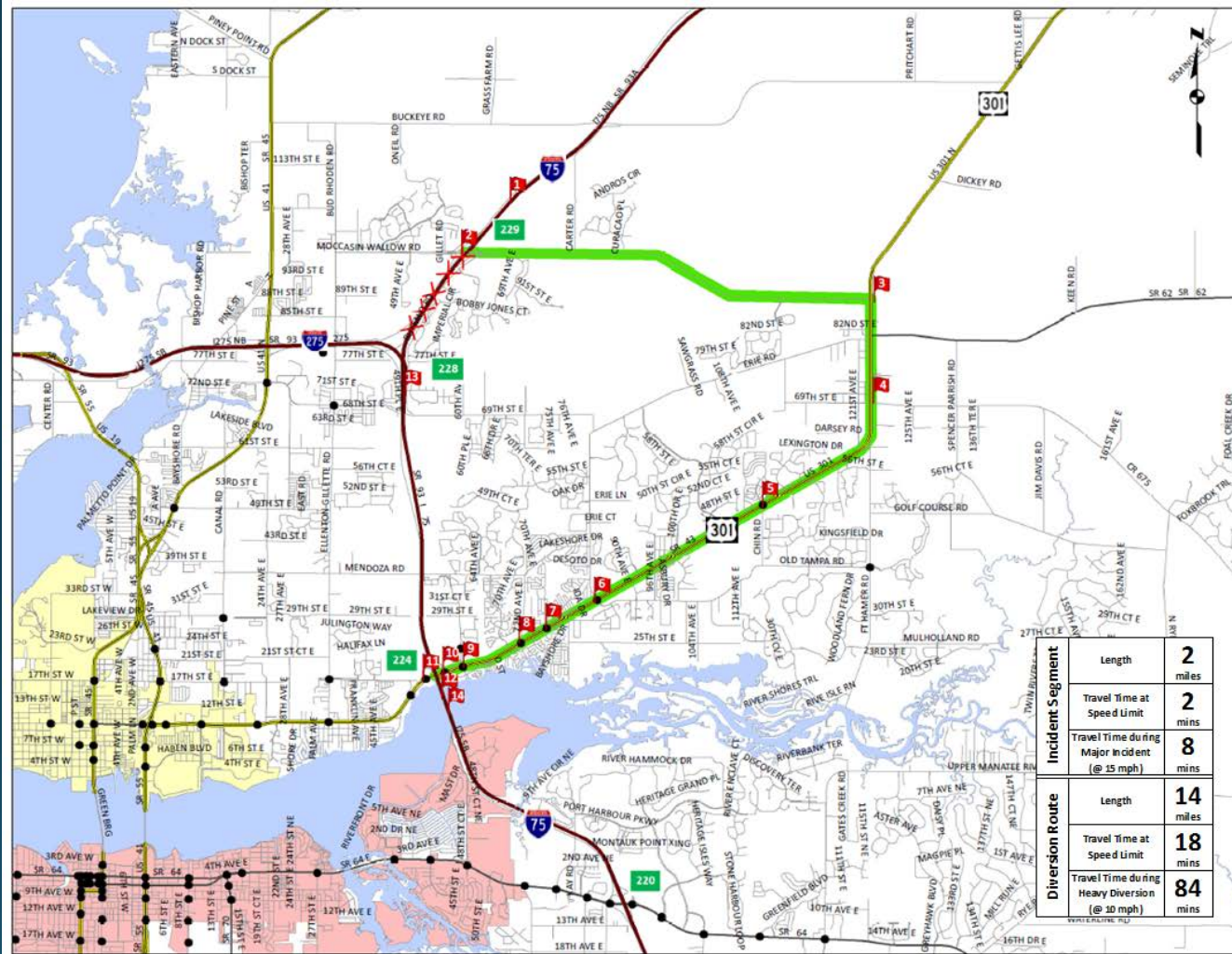
- Interstate 75 carries $\approx 100,000$ vehicles per day
 - Peak hour about 10% or 10,000 vehicles per hour
- Capacity of a signalized arterial $\approx 1,900$ vehicles per lane per hour of green
 - Example: 3 lanes in one direction, 60% green $\approx 3,420$ vehicles per hour
- Most arterials already crowded during peaks
- **No arterial roadway has capacity to carry full diversion during the heavier hours**



Scenarios



Scenario 1



LEGEND

- Diversion Route
- Closed Section
- Flag Location
- Traffic Signal

Revised June 5, 2015



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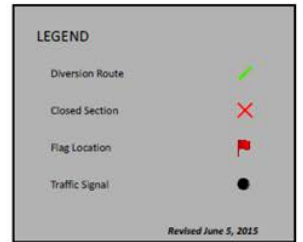
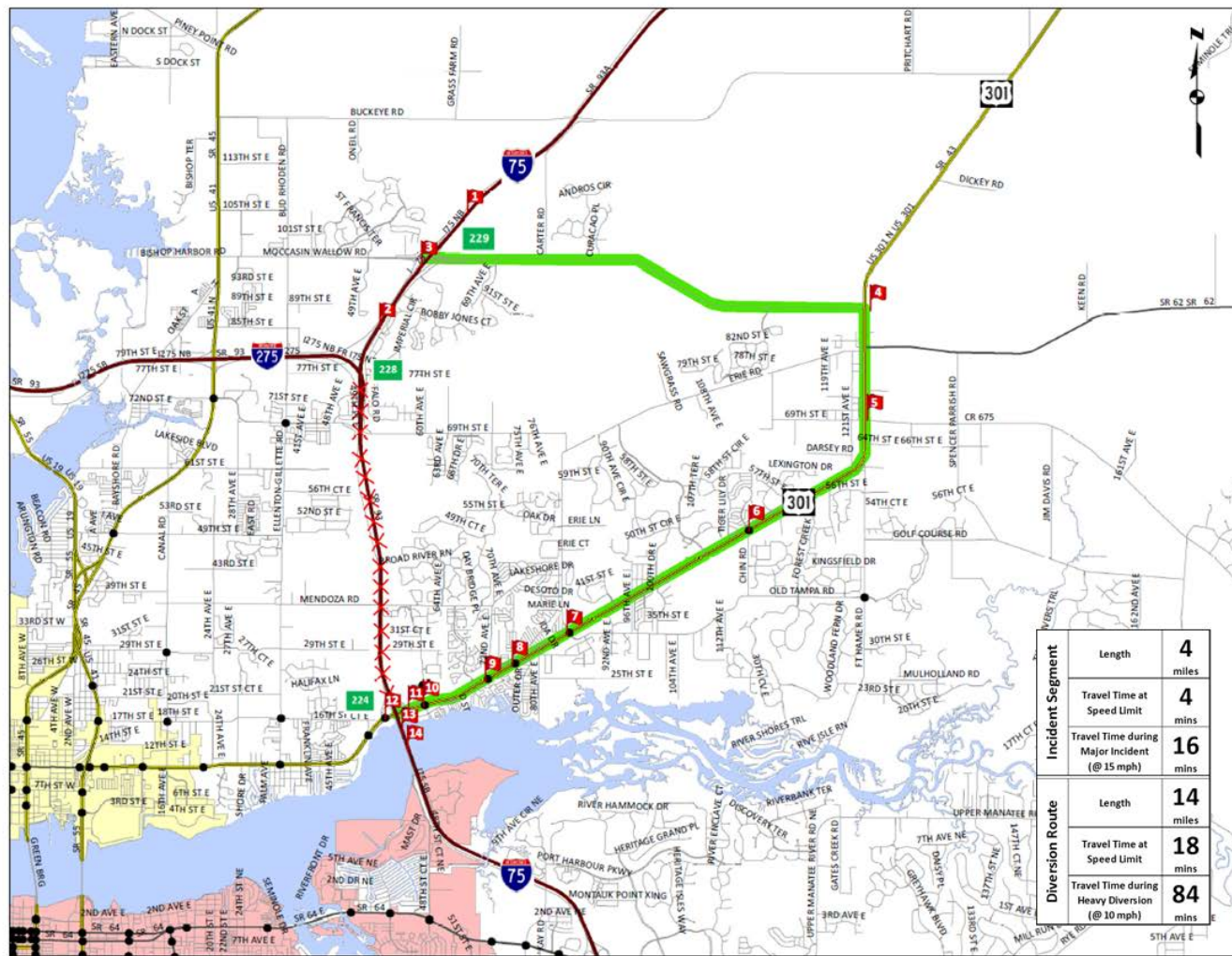
Incident Segment	Length	2 miles
	Travel Time at Speed Limit	2 mins
	Travel Time during Major Incident (@ 15 mph)	8 mins
Diversion Route	Length	14 miles
	Travel Time at Speed Limit	18 mins
	Travel Time during Heavy Diversion (@ 10 mph)	84 mins

**Manatee County
Diversion Routes
Scenarios 1S and 1N**



Diversion and Evacuation Routes

Scenario 2



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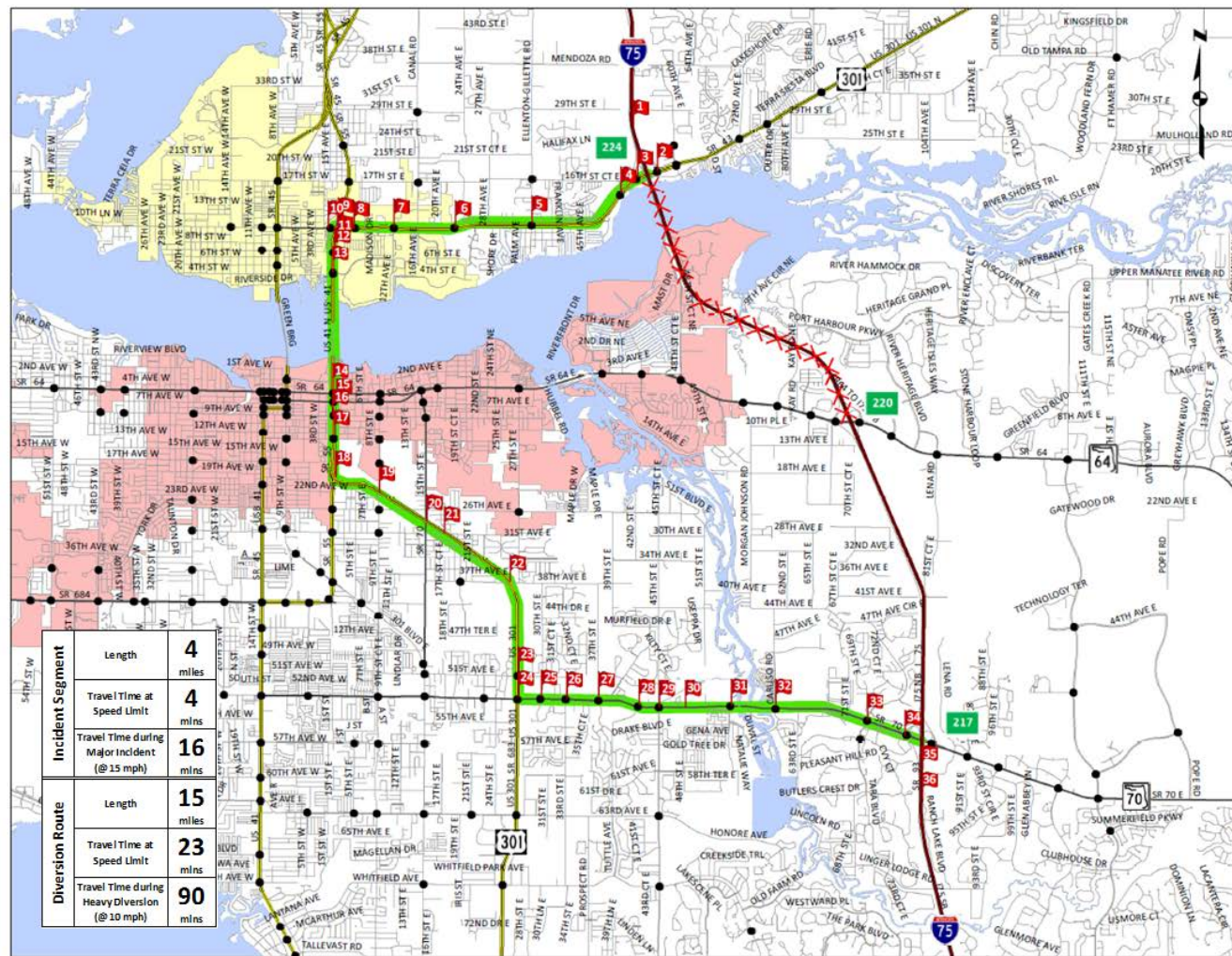
Incident Segment	Length	4 miles
	Travel Time at Speed Limit	4 mins
	Travel Time during Major Incident (@ 15 mph)	16 mins
Diversion Route	Length	14 miles
	Travel Time at Speed Limit	18 mins
	Travel Time during Heavy Diversion (@ 10 mph)	84 mins

**Manatee County
Diversion Routes
Scenarios 2S and 2N**



Diversion and Evacuation Routes

Scenario 3



LEGEND

- Diversion Route
- Closed Section
- Flag Location
- Traffic Signal

Revised June 5, 2015

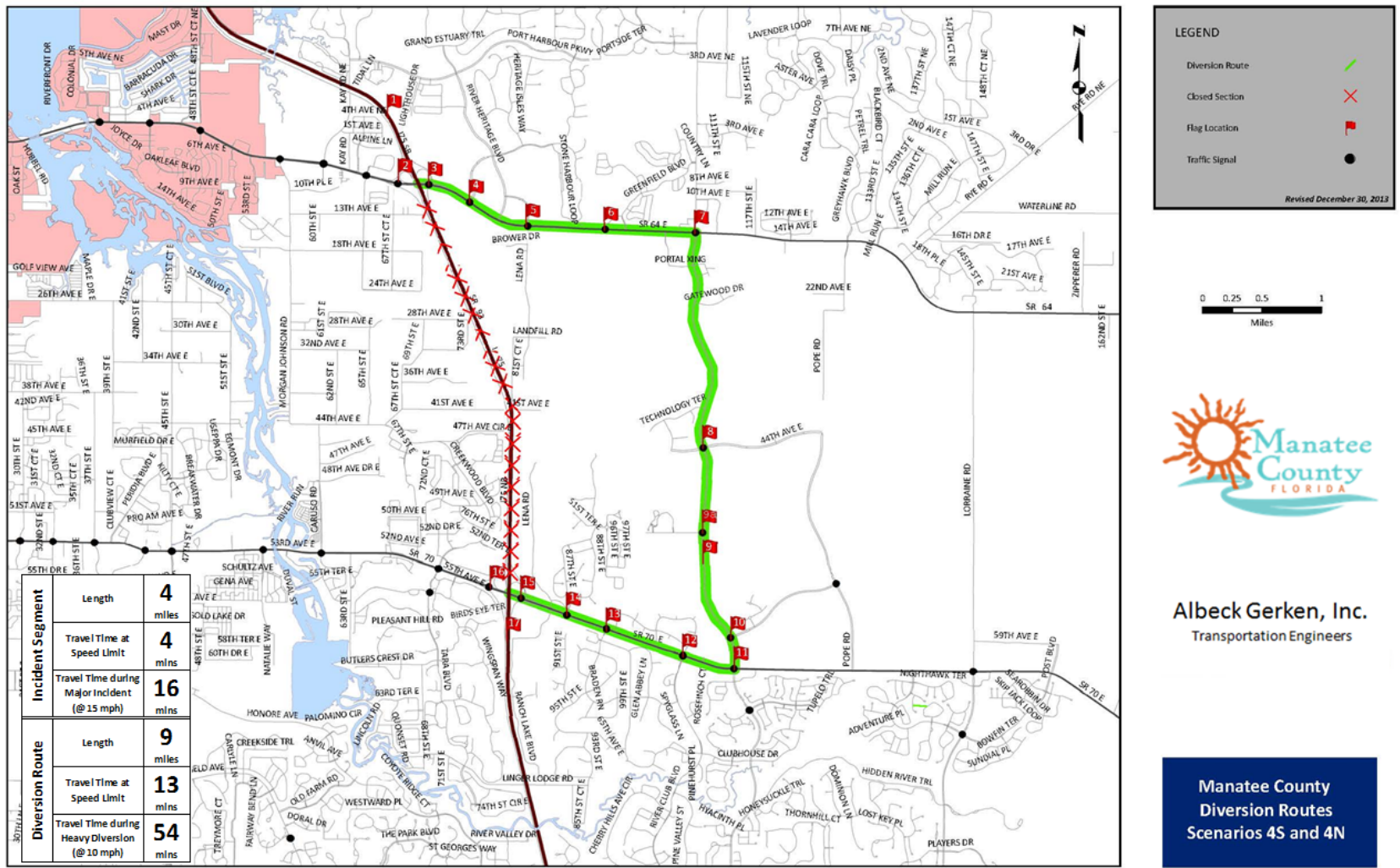


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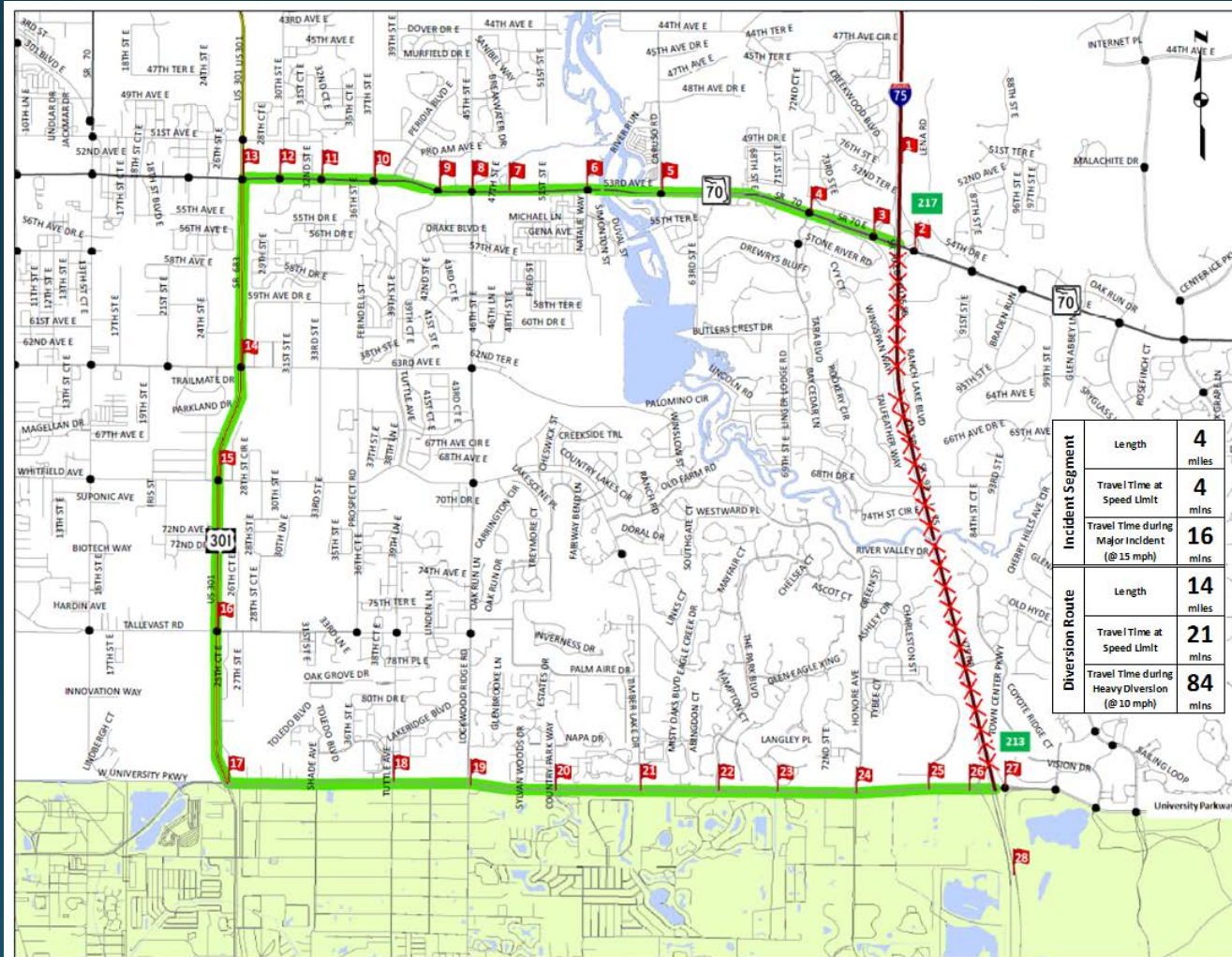
**Manatee County
Diversion Routes
Scenarios 3S and 3N**



Scenario 4



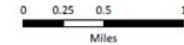
Scenario 5



LEGEND

- Diversion Route
- Closed Section
- Flag Location
- Traffic Signal

Revised June 5, 2015



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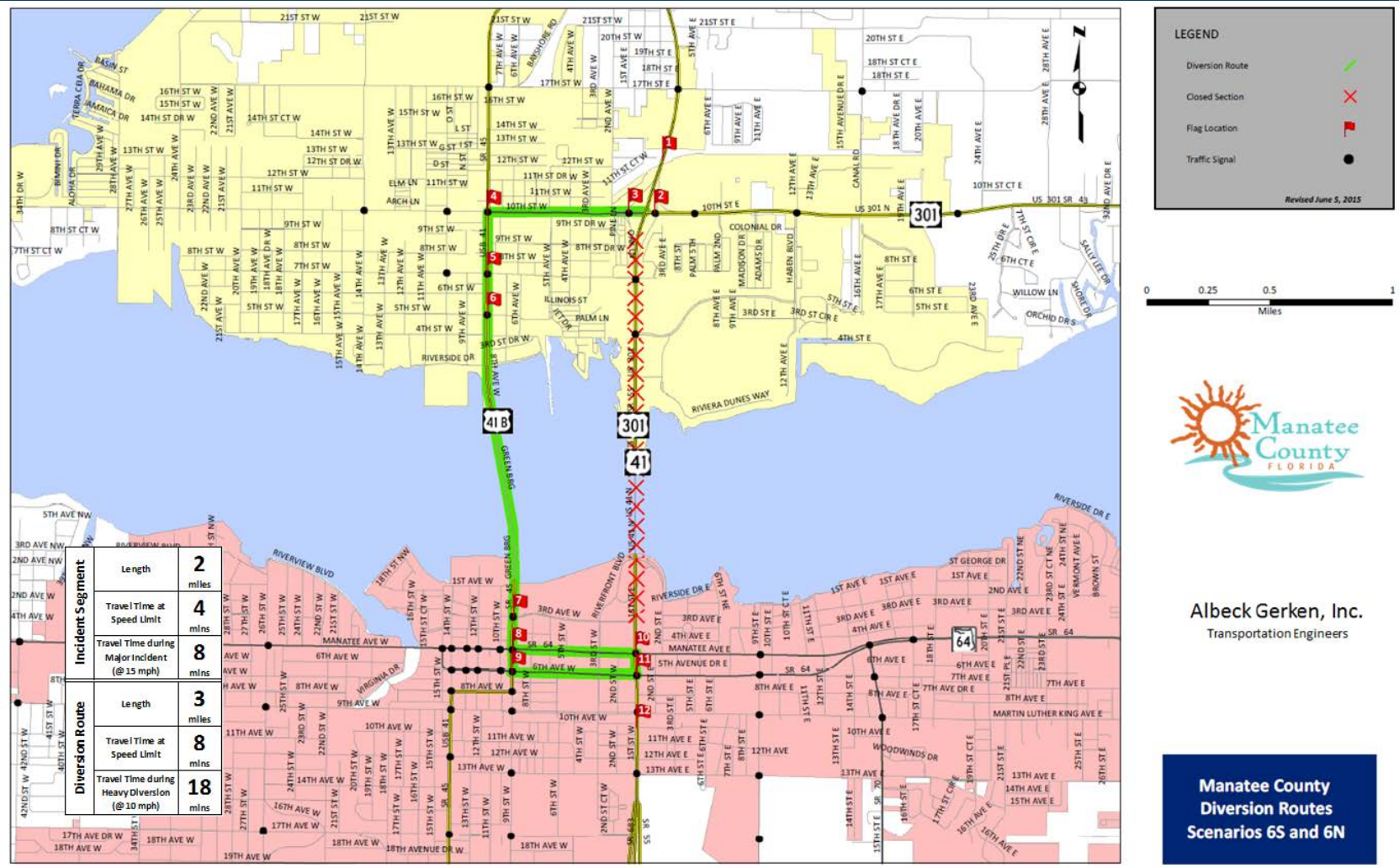
Incident Segment	Length	4 miles
	Travel Time at Speed Limit	4 mins
	Travel Time during Major Incident (@ 15 mph)	16 mins
Diversion Route	Length	14 miles
	Travel Time at Speed Limit	21 mins
	Travel Time during Heavy Diversion (@ 10 mph)	84 mins

**Manatee County
Diversion Routes
Scenarios 5S and 5N**



Diversion and Evacuation Routes

Scenario 6



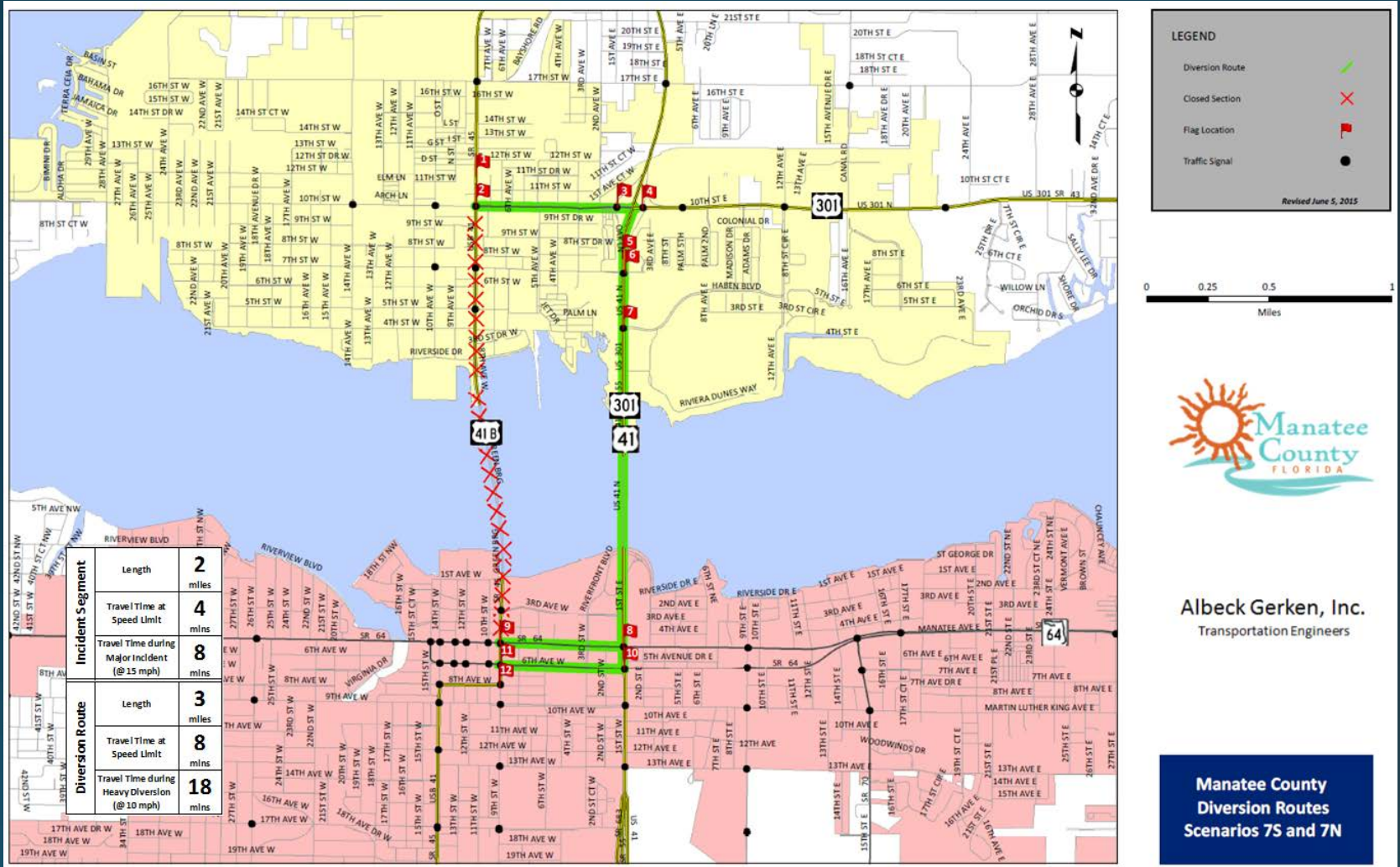
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Manatee County
Diversion Routes
Scenarios 6S and 6N



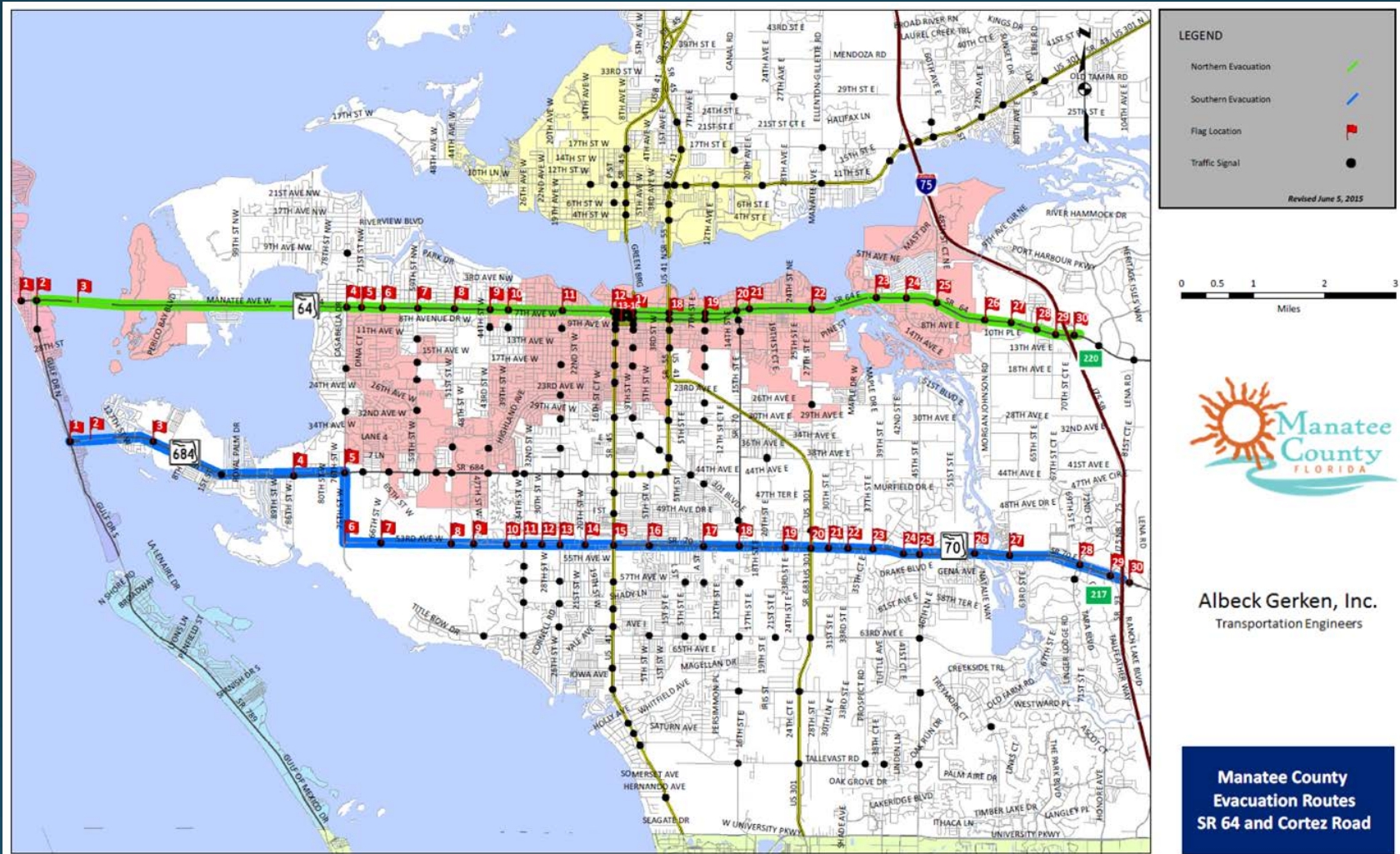
Diversion and Evacuation Routes

Scenario 7



Diversion and Evacuation Routes

Evacuation



Timing Patterns

- For Each Diversion Scenario, 3 Timing Patterns Developed
 - Northbound
 - Southbound
 - Balanced
- For Each Evacuation Route, 2 Timing Patterns Developed
 - Minor Evacuation
 - Major Evacuation

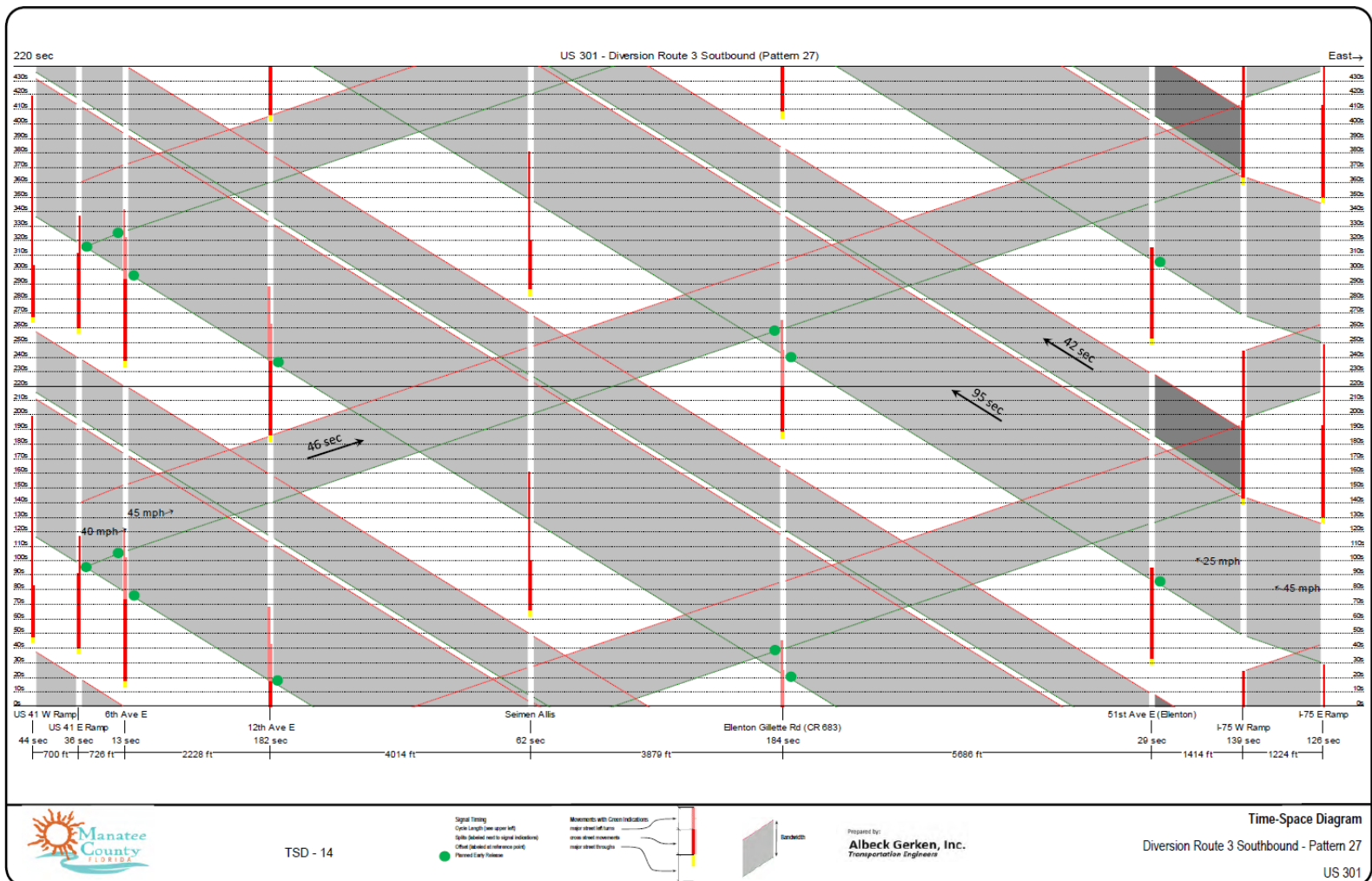
Timing Patterns - Diversion

- Base Model (Synchro)
- Modify in TruTraffic for Diversion Conditions
 - Primary movements: add ~60 seconds of green time
 - Secondary movements: add ~30 seconds of green time
 - Progress Diversion traffic at 25 mph
- Define Patterns and FlexGroups on ATMS.now
- Field Check during Late Night
- Ready for Manatee County staff to implement when needed


Timing Patterns - Evacuation

- Base Model (Synchro)
- Modify in TruTraffic for Evacuation Conditions
 - Minor Evacuation – Typical Time of Day Cycle Length with One-Way Progression at Speed Limit
 - Major Evacuation – Increased Cycle Length with One-Way Progression at Speed Limit
- Define Patterns and FlexGroups on ATMS.now
- Field Check during Late Night
- Ready for Manatee County staff to implement if needed

Timing Pattern Development



Route Details

3S	Flag # (see map)	 ATMS.now ID	Location	Traffic Signal Control to be Implemented			Notes	3NS	Bi-Directional Diversion (South Direction)		
				Pattern	Cycle	Split			Pattern	Cycle	Split
Scenario 3 Southbound	Interstate 75	1	-	In advance of Exit 224 southbound	-	-	-	Diversion starts on southbound Interstate at Exit 224 (US 301). Advance incident signing using freeway DMS. Additional information using HAR and 511 system. If closure, FHP / FDOT to implement closure with guidance to ramp.	-	-	-
		3	3206	On Southbound ramp at US 301	27	220	27	Diversion route turns to right. For long term closures, add directional signing at ramp - I-75 detour to right. Favor southbound traffic coming from ramp.	28	250	28
	US 301/10th St E	4	3207	51st Ave E/19th St E	27	220	21	Favor Westbound traffic.	28	250	22
		5	3209	Ellenton Gillette Road/Leffingwell Ave	27	220	21	Favor Westbound traffic.	28	250	22
		6	3210	Harlee Packing, Inc Co. Driveway	27	220	21	Favor Westbound traffic.	28	250	22
		7	5213	12th Ave E/Haben Blvd	27	220	21	Favor Westbound traffic.	28	250	22
		8	5214	6th Ave E/Shopping Center	27	220	21	Favor Westbound traffic.	28	250	22
		9	5215	US 41 (Tamiami Trail) northbound ramp	27	220	21	Favor Westbound traffic.	28	250	22
		10	5218	US 41/US 301 (Tamiami Trail) southbound ramp	27	220	21	Diversion route turns to left. Favor Westbound left turn traffic.	28	250	22
	1/US 301 (Tamiami Trail)	11	-	US 41/US 301 (Tamiami Trail) southbound	-	-	-	Normal merge onto mainline southbound. No action needed.	-	-	-
		12	-	7th St	-	-	-	Flashing beacon at intersection - yellow toward diversion route traffic. No action needed.	-	-	-
		13	5220	Haben Blvd	27	220	21	Favor Southbound traffic.	28	250	22
		14	4113	SR 64/Manatee Ave	27	220	21	Favor Southbound traffic.	28	250	22
		15	4017	SR 64/6th Ave	27	220	21	Favor Southbound traffic.	28	250	22
		16	4112	9th Ave E/Martin Luther King Jr Ave	27	220	21	Favor Southbound traffic.	28	250	22

Implementation Guide

Diversion and Evacuation Routes
Timing Pattern Implementation Guide



Department of Public Works / Traffic Management

September 2015

Questions?

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