

Pine Ridge Road Corridor Congestion Study

Collier County Capital Project Planning, Impact
Fees & Program Management Division



March 10, 2017



Presentation Agenda

- 1 Project Overview**
- 2 Land Use and Traffic Data Collection**
- 3 Future Conditions Analyses**
- 4 Concept Alternatives**
- 5 Questions**

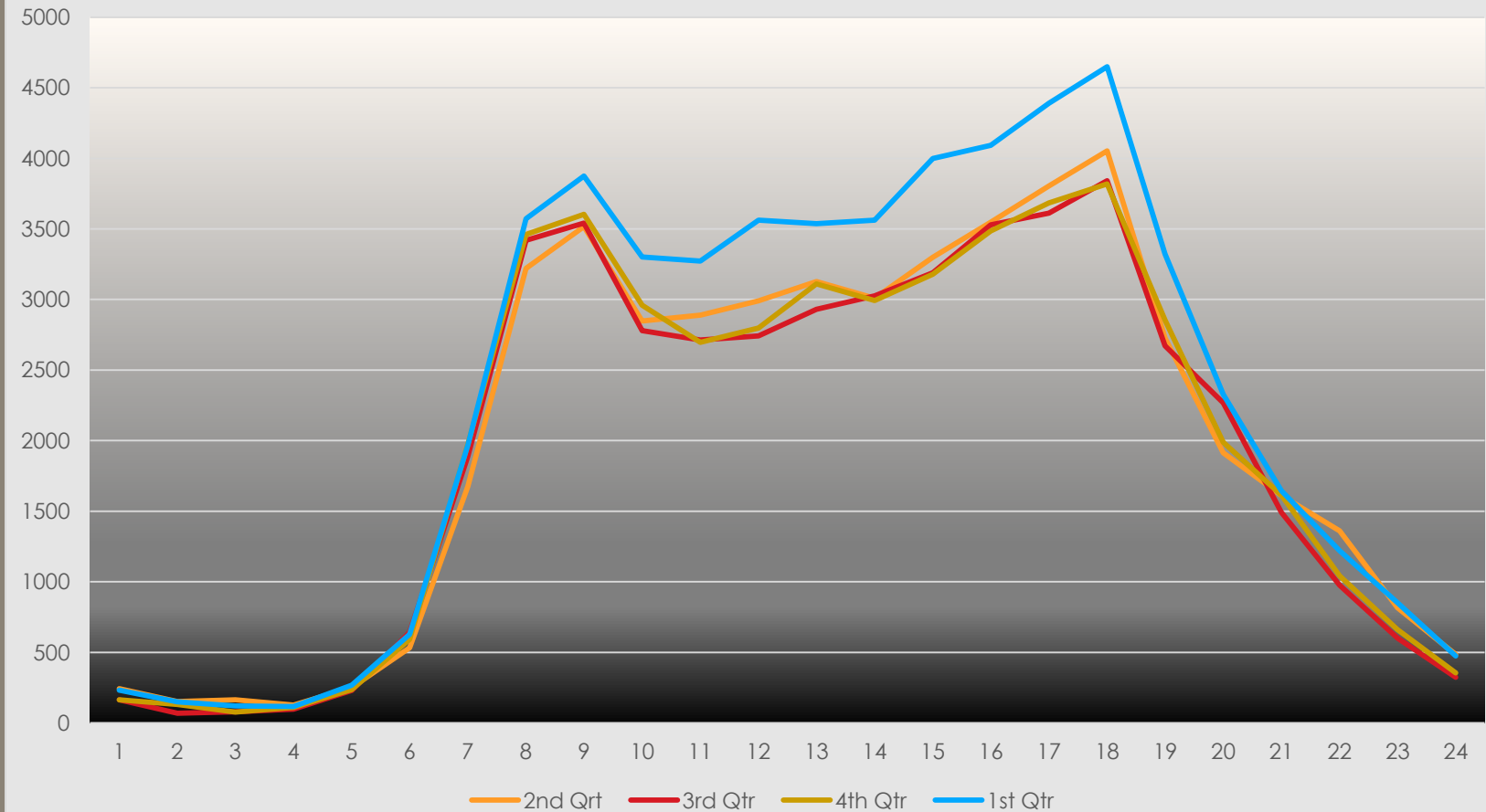
1 Project Overview

During the season, over 55,000 vehicles pass through the Pine Ridge Road corridor each day.

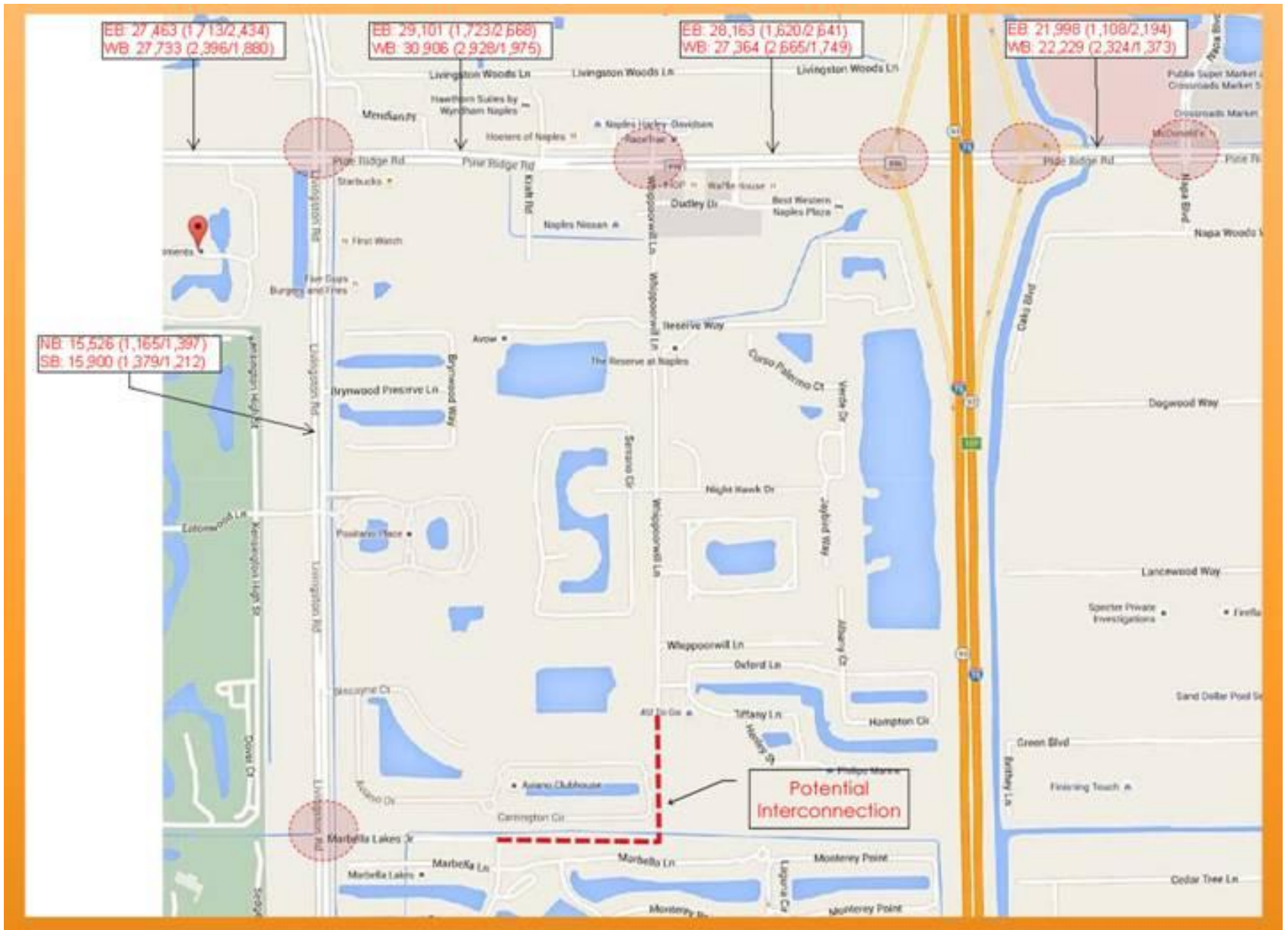
The segment between Livingston Road and I-75 is operating at LOS “F” (2016 AUIR)

Peak Hour Volumes

Pine Ridge Road – East of Livingston Road
Quarterly Peak Hour 2-Way Volumes



Study Area & Project Limits



Future 2040 Traffic Growth

Pine Ridge Road – Livingston Road to I-75

	2016	2040	% Change
24-hour	55,100	75,200	37%
PM 2-Way	4,650	5,813	25%
PM Peak Direction	2,815	3,436	22%

Future 2040 Traffic - Do Nothing Alternative

Intersection	Time Period	Overall Intersection LOS		Delay (sec/veh)	Max v/c Ratio	Approach LOS			
		Standard	Future			EB	WB	NB	SB
Pine Ridge Rd & Livingston Rd	AM Peak-Hour	E	F	94.8	1.32	D	E	F	F
	PM Peak-Hour	E	F	87.4	1.37	E	D	F	F
Pine Ridge Rd & Whippoorwill Ln	AM Peak-Hour	E	E	73.6	1.12	D	E	F	E
	PM Peak-Hour	E	F	107.0	2.22	F	D	F	F
Pine Ridge Rd & I-75 SB Ramp	AM Peak-Hour	E	E	55.9	1.31	C	C		F
	PM Peak-Hour	E	E	70.9	1.14	F	C		E
Pine Ridge Rd & I-75 NB Ramp	AM Peak-Hour	E	F	92.4	1.20	C	F	F	
	PM Peak-Hour	E	D	36.6	0.92	B	E	E	
Pine Ridge Rd & Napa Blvd	AM Peak-Hour	E	E	69.4	1.74	D	C	E	F
	PM Peak-Hour	E	C	34.7	0.98	C	C	E	E
Livingston Rd & Marbella Lakes Dr	AM Peak-Hour	E	n/a	50.5 ¹	0.61		F	-- ²	C ³
	PM Peak-Hour	E	n/a	236.3 ¹	1.35		F	-- ²	F ³

Conventional Improvements

Pine Ridge Road – East of Livingston Road thru the NB I-75 ramps

- Add 4th EB & WB Thru Lanes
 - Acquire additional right-of-way

Pine Ridge Road at Whippoorwill Lane

- Additional Turn Lane Improvements on All Legs
 - Acquire additional right-of-way

Livingston Road at Marbella Lakes Drive

- New Traffic Signal

Whippoorwill Lane - Marbella Lakes Drive

- New Local Road Interconnection

Future 2040 Traffic – Conventional Improvements

Intersection	Time Period	Overall Intersection LOS		Delay (sec/veh)	Max v/c Ratio	Approach LOS			
		Standard	Future			EB	WB	NB	SB
Pine Ridge Rd & Livingston Rd	AM Peak-Hour	E	E	60.0	0.99	E	D	E	E
	PM Peak-Hour	E	D	54.4	0.97	E	C	E	E
Pine Ridge Rd & Whippoorwill Ln	AM Peak-Hour	E	D	44.0	0.92	D	D	E	E
	PM Peak-Hour	E	D	45.0	0.98	D	C	F	E
Pine Ridge Rd & I-75 SB Ramp	AM Peak-Hour	E	D	37.6	0.99	B	D		E
	PM Peak-Hour	E	C	28.9	0.96	B	C		D
Pine Ridge Rd & I-75 NB Ramp	AM Peak-Hour	E	C	30.3	0.98	D	B	E	
	PM Peak-Hour	E	C	24.8	0.90	B	C	E	
Pine Ridge Rd & Napa Blvd	AM Peak-Hour	E	D	38.3	0.91	C	D	E	E
	PM Peak-Hour	E	C	25.2	0.82	B	C	F	D
Livingston Rd & Marbella Lakes Dr	AM Peak-Hour	E	A	6.1	0.53		B	A	A
	PM Peak-Hour	E	A	6.4	0.51		B	A	A

Innovative Intersection Improvements

Pine Ridge Road at Livingston Road

- Partial Continuous Flow Intersection (CFI)
 - a.k.a. Displaced Left-Turn (DLT)
- Jug-Handle Intersection
- Single Point Urban Interchange (SPUI)
 - Livingston Road over/under Pine Ridge Road

Pine Ridge Road at Whippoorwill Lane

- Restricted Crossing U-Turn (RCUT)
 - a.k.a. “*Superstreet*”

Innovative Intersection Improvements (continued)

Pine Ridge Road at I-75 SB and NB Ramps

- Diverging Diamond Interchange (DDI)

Pine Ridge Road at Napa Boulevard

- Signal Timing Improvements

Livingston Road at Marbella Lakes Drive

- New Traffic Signal

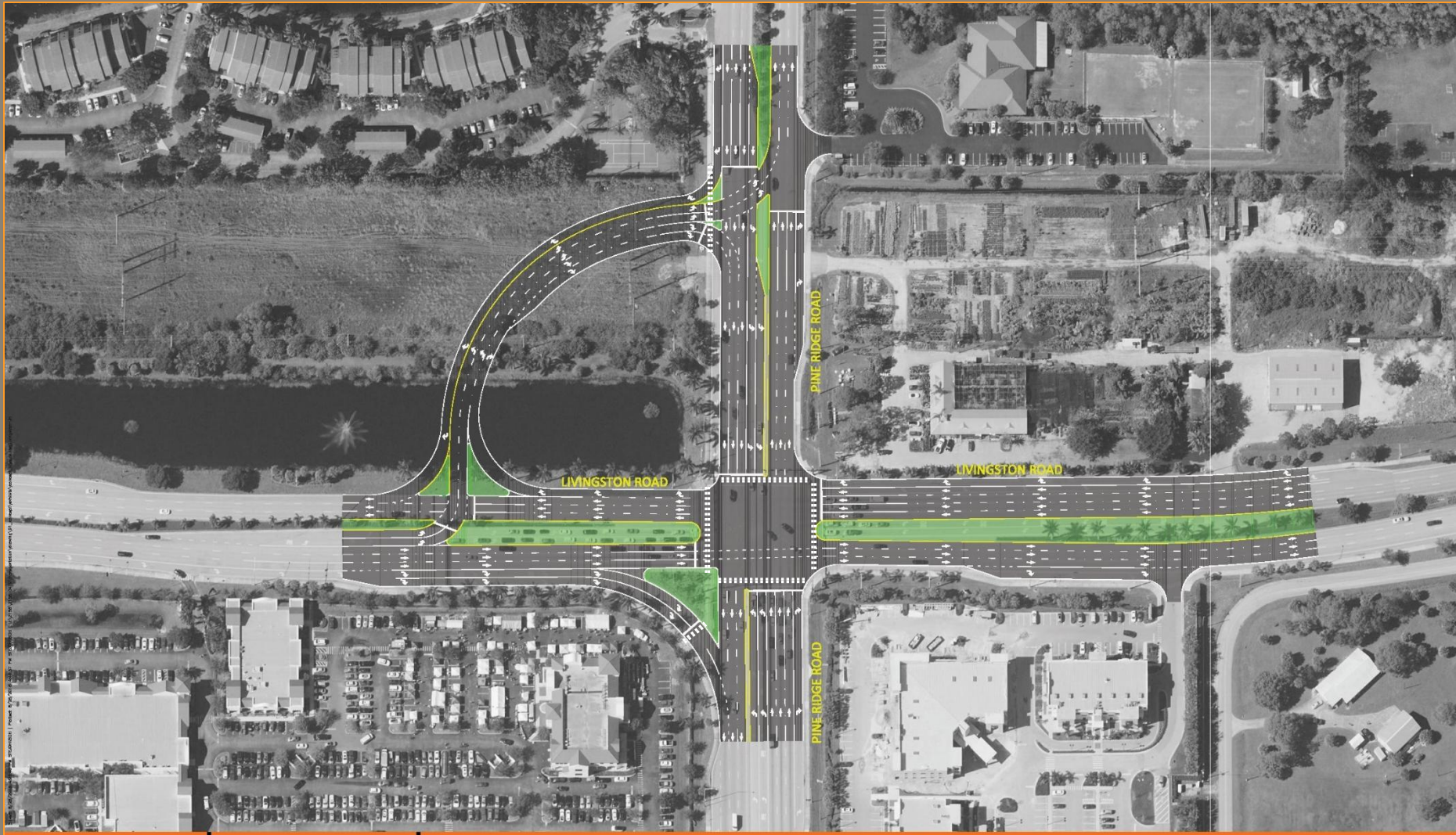
Whippoorwill Lane - Marbella Lakes Drive

- New Local Road Interconnection

Pine Ridge Road at Livingston Road Continuous Flow Intersection (CFI) or Displaced Left-Turn Intersection (DLT)



Pine Ridge Road at Livingston Road Jug-Handle Intersection

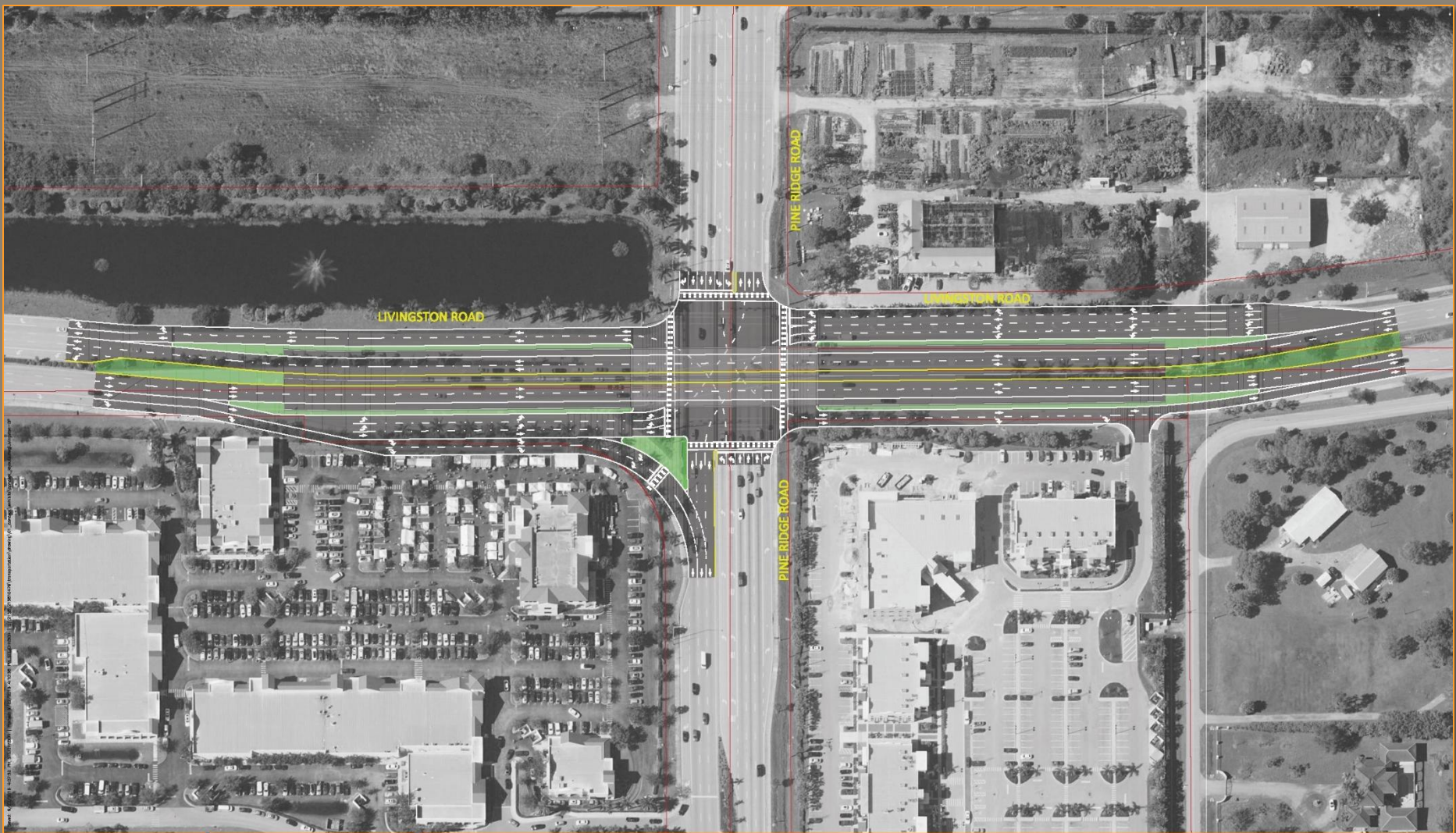


Continuous Flow Intersection (CFI)

(aka Displaced Left Turn Intersection)

- Concept Developed over 30 years ago
- AASHTO's 2002 National Award for Innovation
- Currently Constructed in
 - Colorado
 - Louisiana
 - Maryland
 - Mississippi
 - Missouri
 - Ohio
 - Texas
 - Utah
- Under Design for Construction
 - Florida
 - Georgia
 - North Carolina
 - Virginia

Pine Ridge Road at Livingston Road Single Point Urban Interchange (SPUI)



1"=120'

PINE RIDGE ROAD / LIVINGSTON ROAD INTERSECTION
OVERPASS CONCEPT PLAN

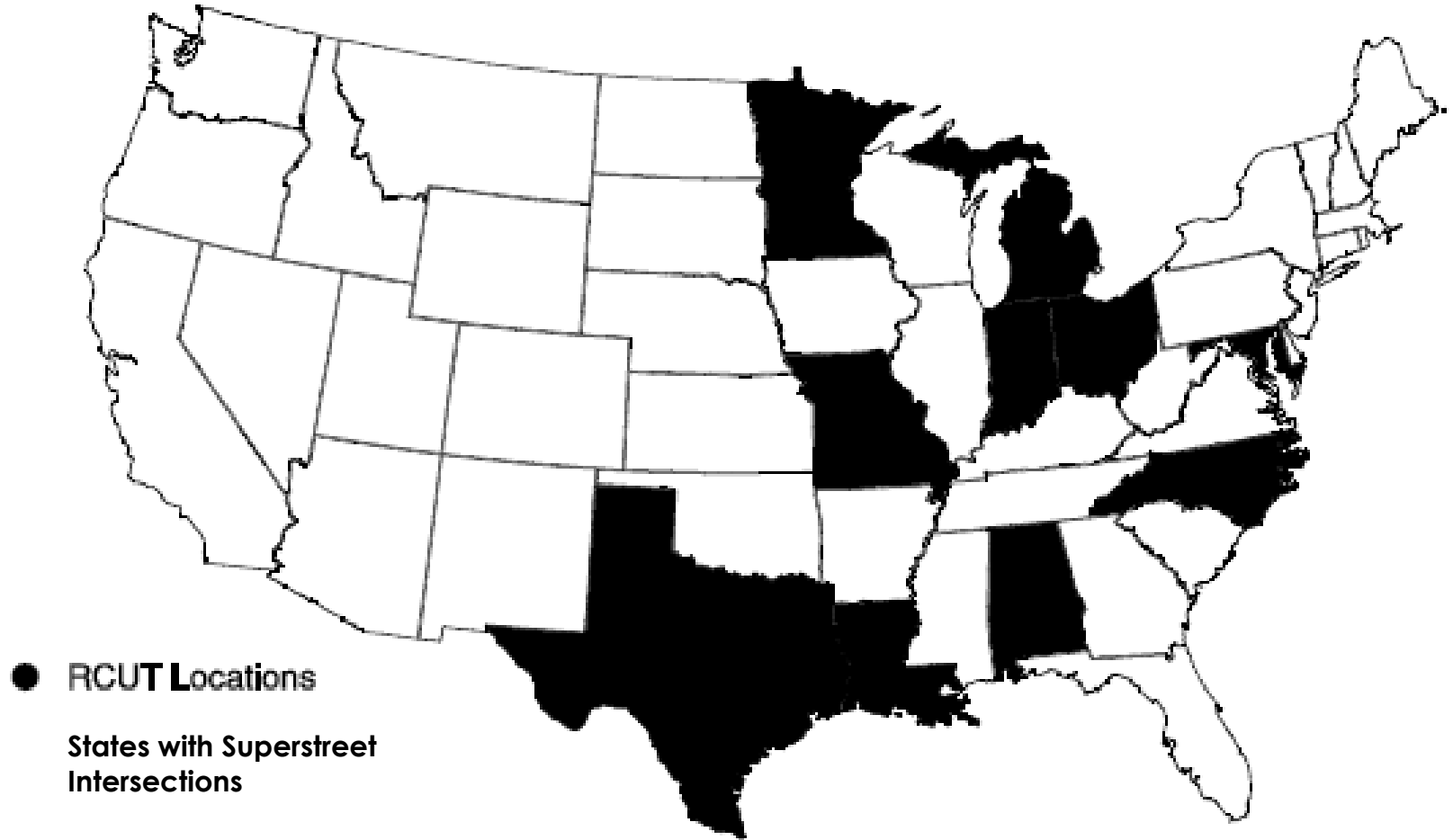


Pine Ridge Road at Whippoorwill Lane Restricted Crossing U-Turn (RCUT)



Superstreet Intersections (RCUT)

(aka Restricted Crossing U-Turn, J-Turn, Reduced Conflict Intersection)



Source: FHWA Restricted Crossing U-Turn Informational Guide

Pine Ridge Road at I-75 NB & SB Ramps

Diverging Diamond Interchange (DDI)



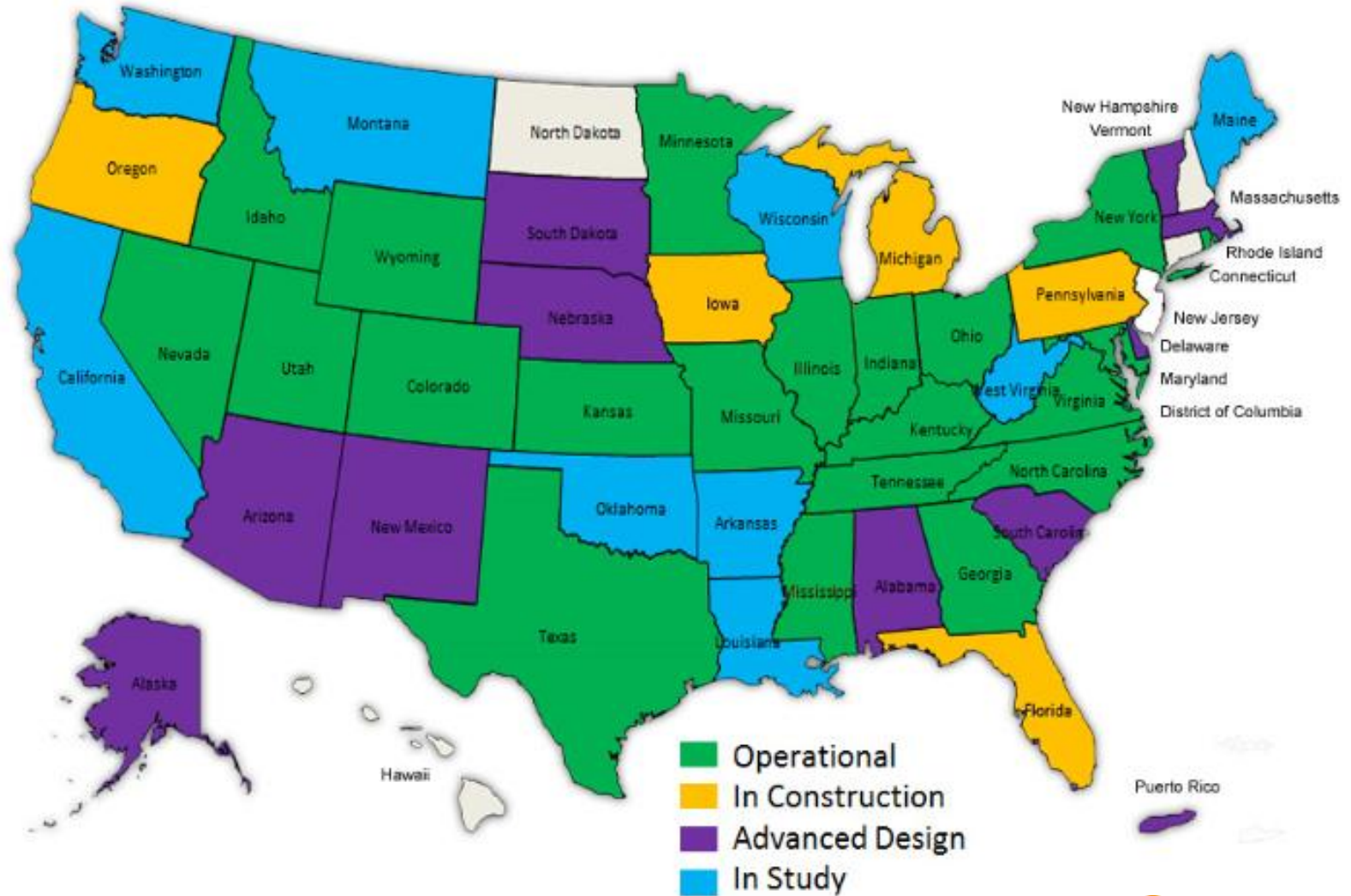
1"=200'

PINE RIDGE ROAD / I-75 INTERSECTION
DIVERGING DIAMOND CONCEPT PLAN



Diverging Diamond Interchange (DDI)

(aka Double Crossover Diamond)



Future 2040 Traffic – Innovative Improvements

Intersection	Time Period	Overall Intersection LOS		Delay (sec/veh)	Max v/c Ratio	Approach LOS			
		Standard	Future			EB	WB	NB	SB
Advance CFI Int. N. of Pine Ridge Rd	AM Peak-Hour	E	B	10.2	0.77		D	A	A
	PM Peak-Hour	E	B	11.6	0.78		D	A	B
Pine Ridge Rd & Livingston Rd	AM Peak-Hour	E	D	47.6	0.95	D	D	D	E
	PM Peak-Hour	E	D	46.6	0.94	D	D	E	D
Advance CFI Int. S. of Pine Ridge Rd	AM Peak-Hour	E	A	9.6	0.53	D		B	A
	PM Peak-Hour	E	B	10.5	0.82	D		A	A
Advance RCUT Int. W. of Whippoorwill Ln	AM Peak-Hour	E	A	2.0	0.77	A	E ¹		
	PM Peak-Hour	E	C	34.1	0.96	D	E ¹		
Pine Ridge Rd & Whippoorwill Ln	AM Peak-Hour	E	B	16.5	0.92	B	A	E	E
	PM Peak-Hour	E	D	46.2	0.99	E	B	E	E
Advance RCUT Int. E. of Whippoorwill Ln	AM Peak-Hour	E	C	24.5	1.00	F ¹	C		
	PM Peak-Hour	E	A	6.7	0.79	D ¹	A		
Pine Ridge Rd & I-75 SB Ramp	AM Peak-Hour	E	D	38.0	0.96	D	C		D
	PM Peak-Hour	E	C	29.0	0.89	C	B		C
Pine Ridge Rd & I-75 NB Ramp	AM Peak-Hour	E	C	14.6	0.84	C	B	D	
	PM Peak-Hour	E	D	44.2	0.90	B	D	C	
Pine Ridge Rd & Napa Blvd	AM Peak-Hour	E	D	43.3	0.98	C	D	E	E
	PM Peak-Hour	E	C	30.9	0.85	C	C	F	D

Innovative Intersection Improvements - Benefits

Improved Operational Efficiency

- Making Better Use of the Existing Infrastructure

Improved Safety

- Fewer Conflict Points Reduce Crashes

Cost

- “Footprints” require less R/W; Fewer Business Damages

Next Steps

- Public Outreach to Vet the Different Concepts
- Pursue an IMR with FDOT for the DDI & RCUT Portion of the Corridor
- Pursue Funding Options for Project Development and Design Phases for Pine Ridge Road at Livingston Road

Questions?