

US 278 Corridor Improvements

Town of Hilton Head Island

August 18, 2020





Project Management



Purpose & Need

The purpose of this project is to address structural deficiencies at the existing eastbound Mackay Creek bridge and reduce congestion along US 278 from Moss Creek Drive to Spanish Wells Road.



Congestion



---Public Engagement---



The NEPA Process

Start the Environmental Assessment

Public Information Meeting **1**

Perform Technical Studies **2**

Develop Alternatives **3**

Analyze Alternatives **4**

Second Public Information Meeting **5**

Develop Preferred Alternative **6**

Prepare Environmental Assessment **7**

Public Hearing: Early 2021
*Pending Coordination
with USFWS*

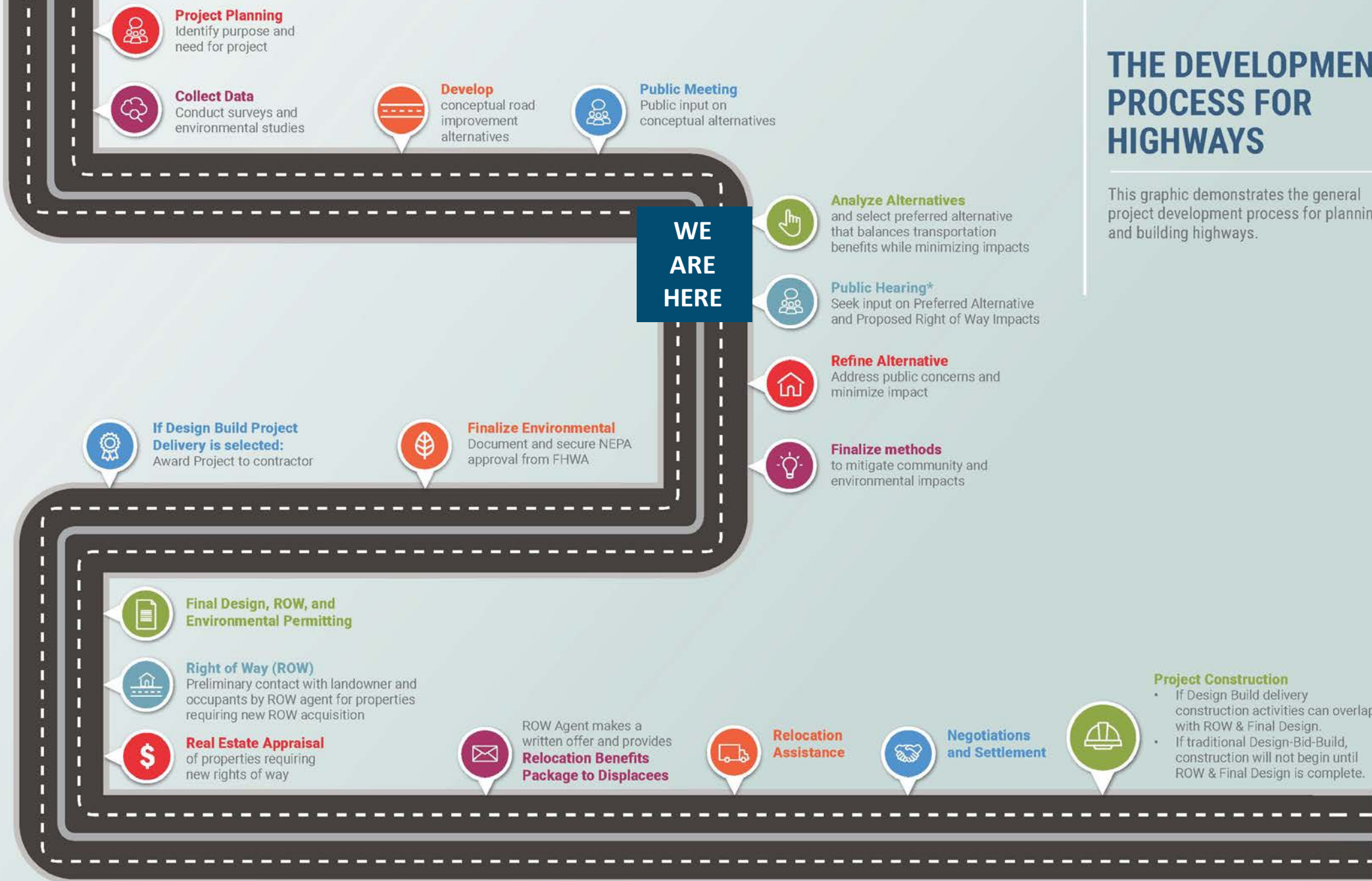
Public Hearing **8**

Revise Alternative **9**

FHWA Decision **10**

THE DEVELOPMENT PROCESS FOR HIGHWAYS

This graphic demonstrates the general project development process for planning and building highways.



*Process depicted on this graphic is for projects being developed under an Environmental Assessment or Environmental Impact Statement; smaller projects developed under a Categorical Exclusion do not require a Public Hearing.

THE DEVELOPMENT PROCESS FOR HIGHWAYS

This graphic demonstrates the general project development process for planning and building highways.

Refine Alternatives...
address public concerns and minimize impact

WE ARE HERE

Project Planning
Identify purpose and need for project

Collect Data
Conduct surveys and environmental studies

Develop
conceptual road improvement alternatives

Public Meeting
Public input on conceptual alternatives

Analyze Alternatives
and select preferred alternative that balances transportation benefits while minimizing impacts

Public Hearing*
Seek input on Preferred Alternative and Proposed Right of Way Impacts

Refine Alternative
Address public concerns and minimize impact

Finalize methods
to mitigate community and environmental impacts

If Design Build Project Delivery is selected:
Award Project to contractor

Finalize Environmental
Document and secure NEPA approval from FHWA

Final Design, ROW, and Environmental Permitting

Right of Way (ROW)
Preliminary contact with landowner and occupants by ROW agent for properties requiring new ROW acquisition

Real Estate Appraisal
of properties requiring new rights of way

ROW Agent makes a written offer and provides **Relocation Benefits Package to Displacees**

Relocation Assistance

Negotiations and Settlement

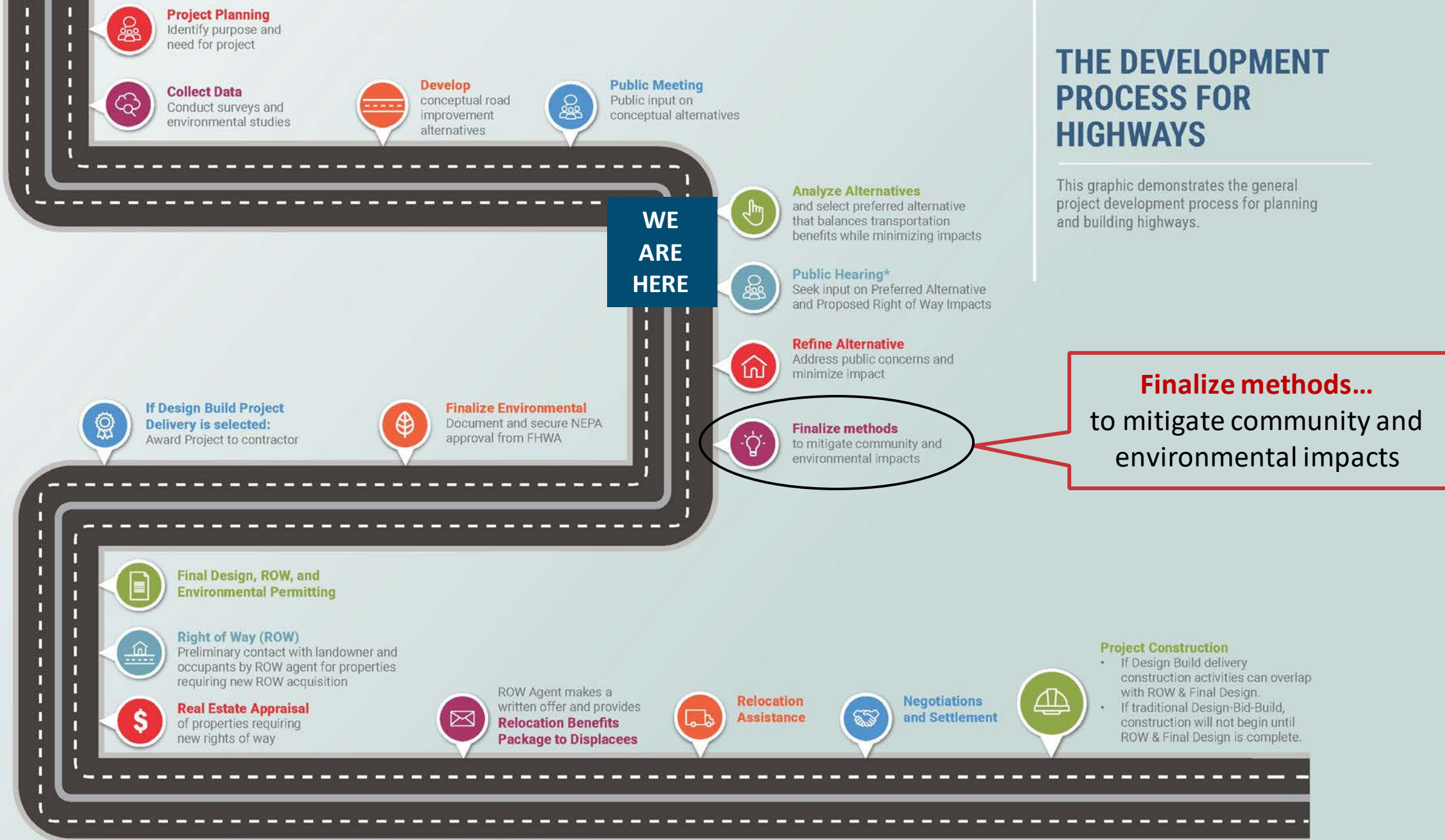
Project Construction

- If Design Build delivery construction activities can overlap with ROW & Final Design.
- If traditional Design-Bid-Build, construction will not begin until ROW & Final Design is complete.

*Process depicted on this graphic is for projects being developed under an Environmental Assessment or Environmental Impact Statement; smaller projects developed under a Categorical Exclusion do not require a Public Hearing.

THE DEVELOPMENT PROCESS FOR HIGHWAYS

This graphic demonstrates the general project development process for planning and building highways.



*Process depicted on this graphic is for projects being developed under an Environmental Assessment or Environmental Impact Statement; smaller projects developed under a Categorical Exclusion do not require a Public Hearing.

US 278 CORRIDOR IMPROVEMENTS

ALTERNATIVES DEVELOPMENT FLOWCHART

Public Meeting
September 27, 2018

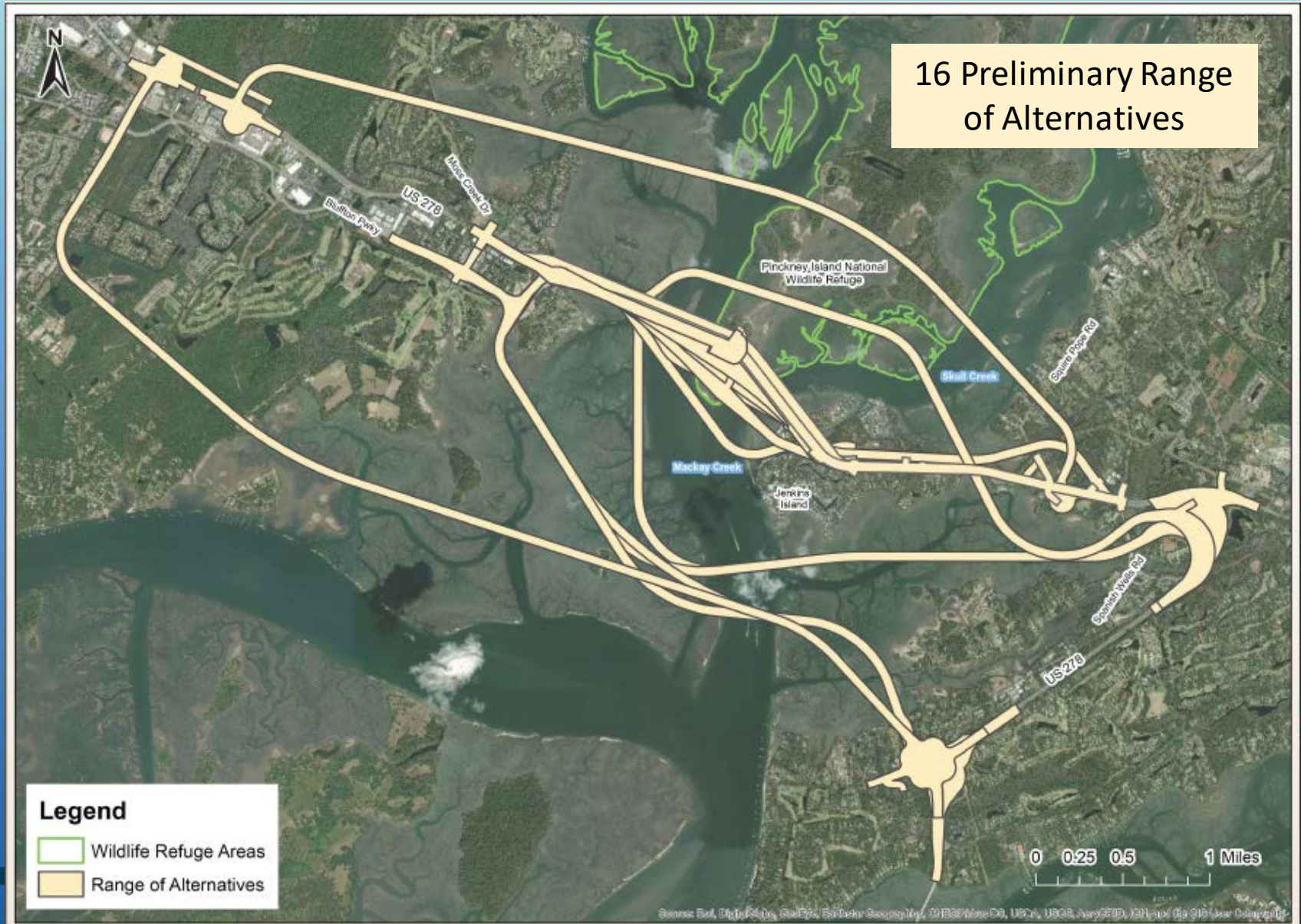
Preliminary Range of Alternatives

- No Build
- Widen Existing US 278
- New Alignment
- Travel Demand Management*
- Transportation System Management*
- Mass Transit*

Evaluation Criteria

- Purpose & Need (Structural Deficiency)
- GIS Wetlands (Acres)
- Protected Lands (Acres)
- Right-of-Way Impacts
- Consistent with Pinckney Island Wildlife Refuge Purposes
- Neighborhoods Impacts

Alternatives Eliminated
Based on Criteria



US 278 CORRIDOR IMPROVEMENTS ALTERNATIVES DEVELOPMENT FLOWCHART

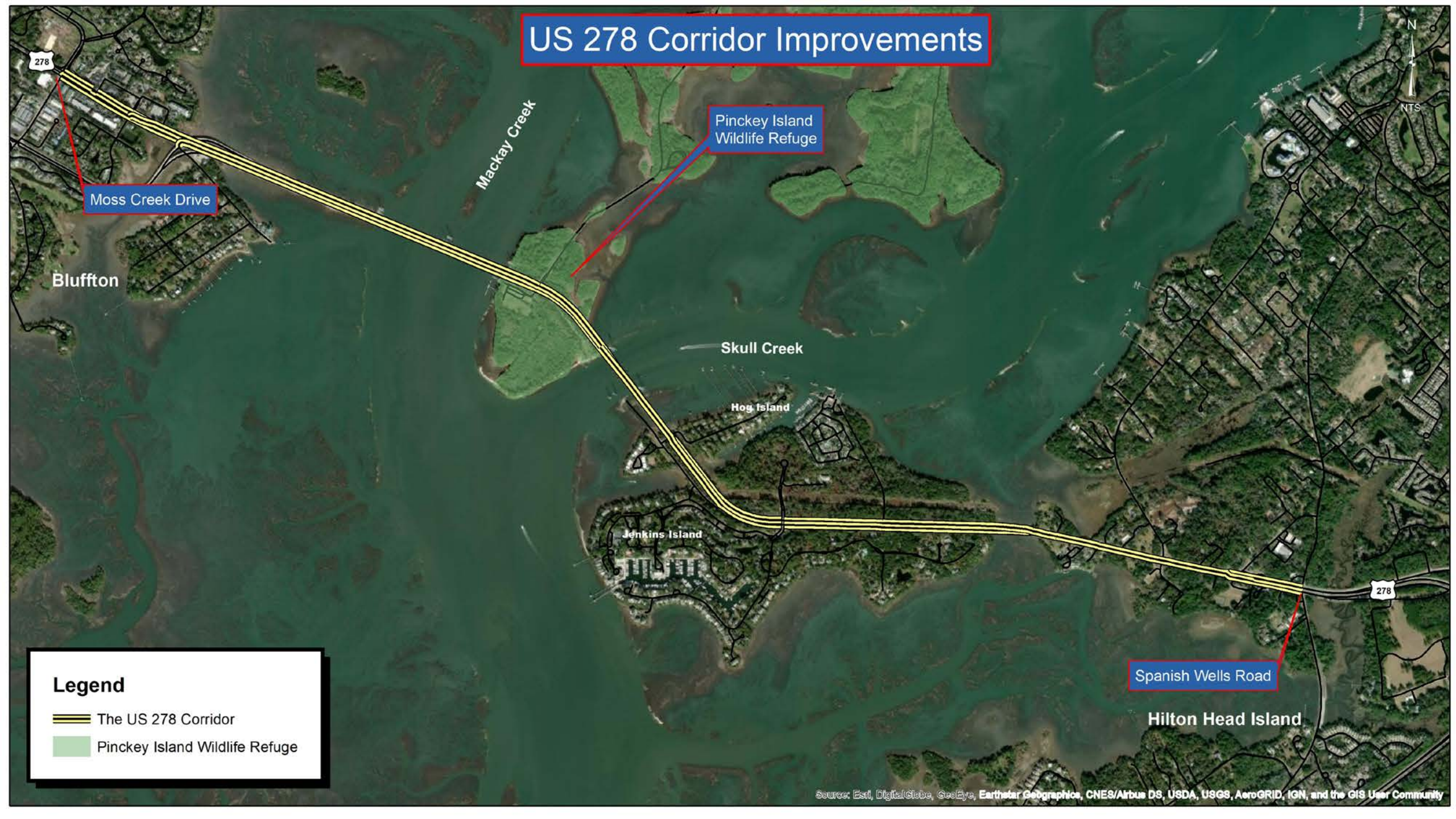






Alternatives Update



US 278 Corridor Improvements



Legend

-  The US 278 Corridor
-  Pinckney Island Wildlife Refuge

Reasonable Alternatives

RA-1

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton



Legend

-  Pinckey Island Wildlife Refuge
-  Reasonable Alternative 1

Reasonable Alternatives

RA-2

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton

278

278



Legend

-  Pinckey Island Wildlife Refuge
-  Reasonable Alternative 2

Reasonable Alternatives

RA-3

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton



Legend

- Pinckey Island Wildlife Refuge
- Reasonable Alternative 3

Reasonable Alternatives

RA-4

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton

278

278



Legend

-  Pinckey Island Wildlife Refuge
-  Reasonable Alternative 4

Reasonable Alternatives

RA-4a

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton



Legend

-  Pinckey Island Wildlife Refuge
-  Reasonable Alternative 4a

Reasonable Alternatives

RA-5

Mackay Creek

Bluffton

Skull Creek



Hog Island

Jenkins Island

Hilton Head Island



Legend

-  Pinckey Island Wildlife Refuge
-  Reasonable Alternative 5

Reasonable Alternatives

RA-5a

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton

278

278



Legend

- Pinckey Island Wildlife Refuge
- Reasonable Alternative 5a

Reasonable Alternatives

RA-6

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton

278

278



Legend

- Pinckey Island Wildlife Refuge
- Reasonable Alternative 6

Reasonable Alternatives

RA-6a

Mackay Creek

Skull Creek

Hog Island

Jenkins Island

Hilton Head Island

Bluffton



Legend

-  Pinckey Island Wildlife Refuge
-  Reasonable Alternative 6a

Reasonable Alternatives

ALL

- Legend**
- Pinkey Island Wildlife Refuge
 - Reasonable Alternative 1
 - Reasonable Alternative 2
 - Reasonable Alternative 3
 - Reasonable Alternative 4
 - Reasonable Alternative 4a
 - Reasonable Alternative 5
 - Reasonable Alternative 5a
 - Reasonable Alternative 6
 - Reasonable Alternative 6a



US 278

Reasonable Alternatives

All reasonable alternatives meet the purpose & need of the project and result in impacts on Pickney Island National Wildlife Refuge, Floodplains, Threatened & Endangered Species, Essential Fish Habitat, Shellfish Harvesting Waters, Environmental Justice communities, and Cultural Resources.



	Delineated Wetlands	New Right-of-Way to be Purchased	Relocations	Meets Current Seismic Design Standards	Construction Duration
	TOTAL Acres	Acres	TOTAL #	# of Structures	Years
RA 1	19.28	28.1	10	1 of 4 (eastbound Mackay Creek)	5
RA 2	18.4	27.2	10	1 of 4 (westbound Mackay Creek)	5
RA 3	19.3	31.5	10	2 of 4 (eastbound Mackay Creek and eastbound Skull Creek)	5
RA 4	18.9	35.2	11	4 of 4 (both Mackay Creek and both Skull Creek)	3
RA 4A	18	36.8	11	4 of 4 (both Mackay Creek and both Skull Creek)	3
RA 5	30.5	63.9	17	2 of 4 (eastbound Mackay Creek and eastbound Skull Creek)	5.5
RA 5A	26.9	63.3	20	2 of 4 (eastbound Mackay Creek and eastbound Skull Creek)	5.5
RA 6	29.8	71.7	18	4 of 4 (both Mackay Creek and both Skull Creek)	3.5
RA 6A	25.3	72.3	21	4 of 4 (both Mackay Creek and both Skull Creek)	3.5

Estimated construction costs range from \$218 to \$356 million





US 278 Intersection Concepts

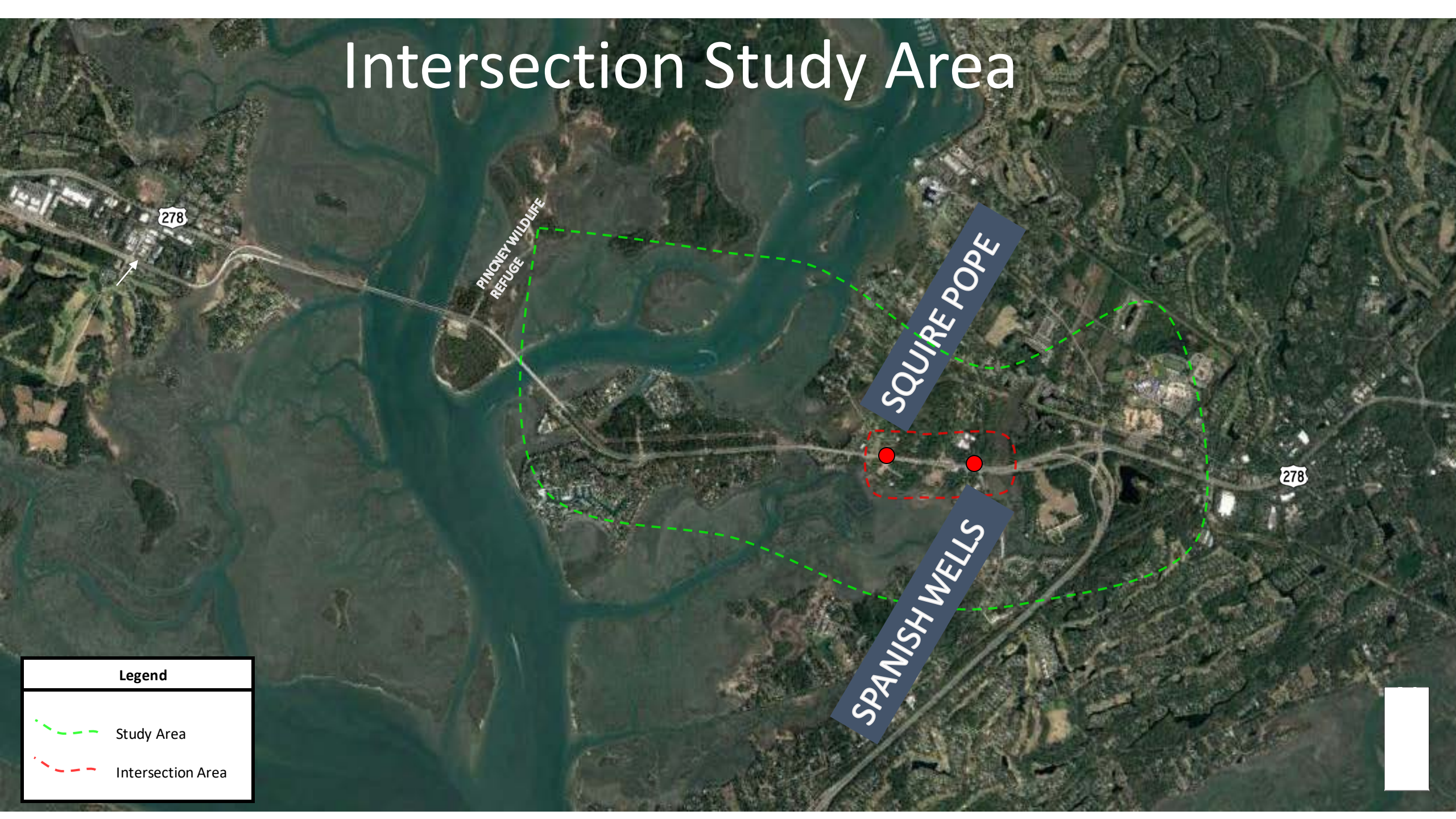






Squire Pope Road/Spanish Wells Road Intersection Concepts



Intersection Study Area

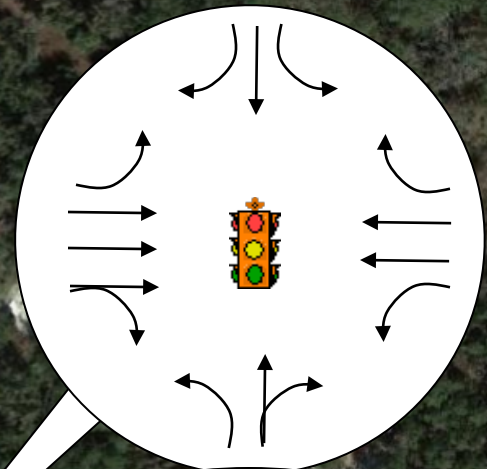


Legend	
	Study Area
	Intersection Area

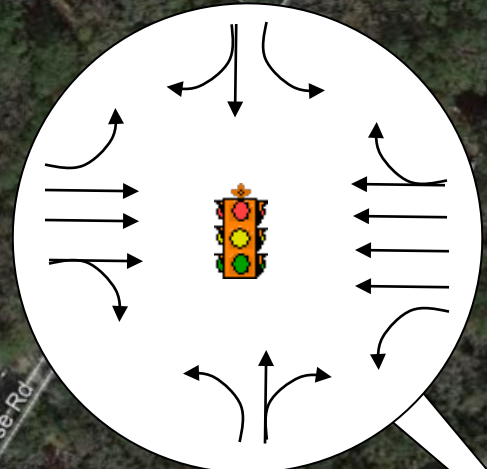


Existing Intersection Layout (2018)

SQUIRE POPE



A (F) LOS
6.7 (87.9) Delay



B (D) LOS
14.3 (46.8)

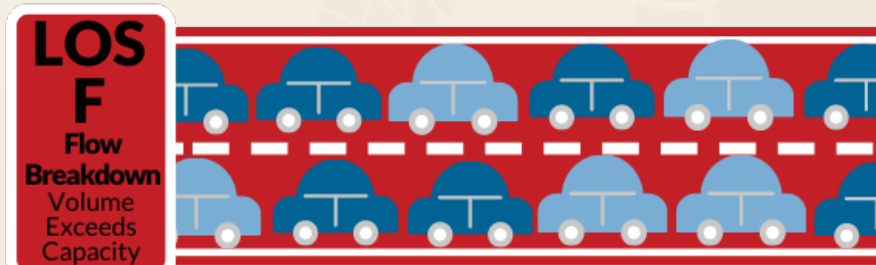
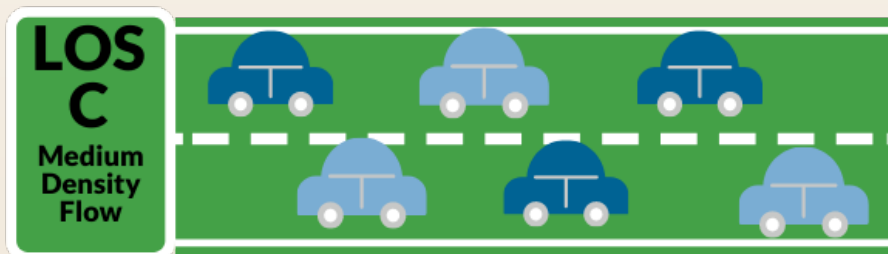
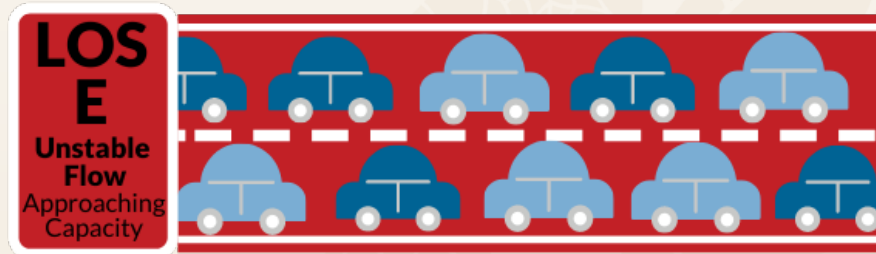
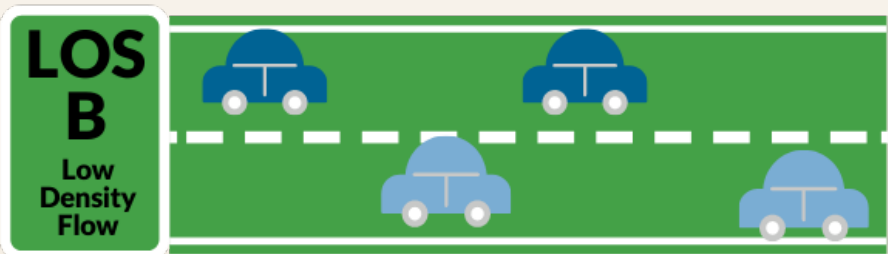
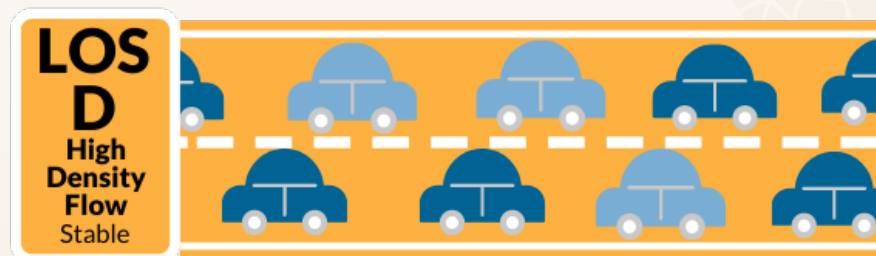
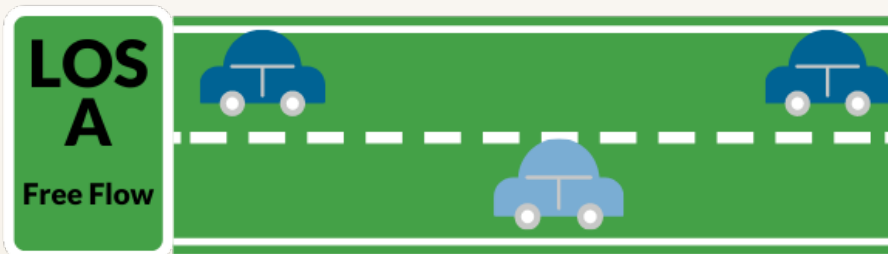
US 278

SPANISH WELLS RD

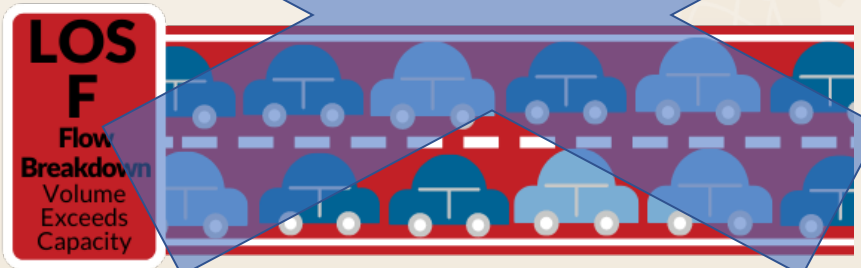
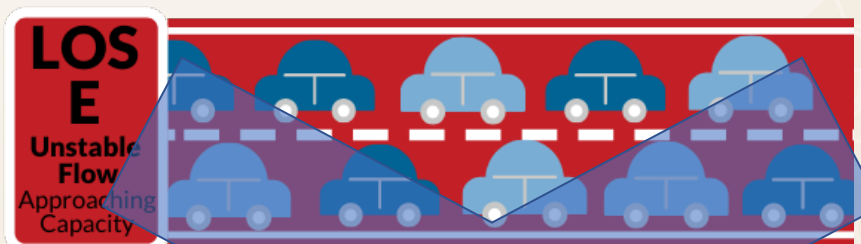
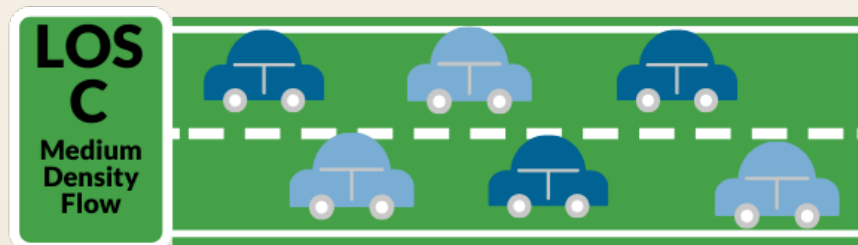
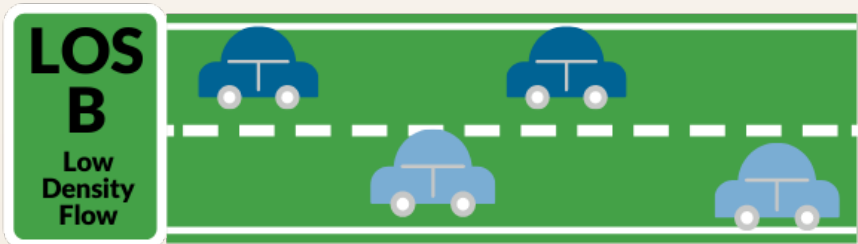
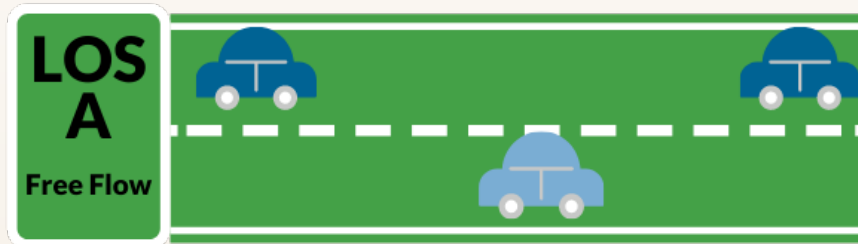
Legend	
→	Existing Lane

Levels of Service	
AM (PM)	Intersection LOS
AM (PM)	Int. Delay

Mainline Level of Service



Mainline Level of Service



- Level of Service D has historically been regarded as a desirable design in urban areas to accommodate the anticipated 25-year traffic volumes
- Level of Service D meets the Town of Hilton Head's existing minimums for intersection designs

Intersection Analysis

What do we measure?

- Directional Delay (seconds)
- Level of Service (LOS)
- Volume/Capacity Ratio
- Queue Lengths

LOS	Delay (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	> 80

Intersection Analysis

What do we measure?

- Directional Delay (seconds)
- Level of Service (LOS)
- Volume/Capacity Ratio
- Queue Lengths

LOS	Delay (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	> 80



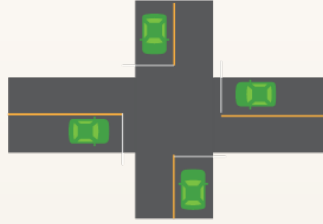
- Level of Service D meets the Town of Hilton Head's existing minimums for intersection designs

Traffic Signal Level of Service

Define Level of Service (Intersection)

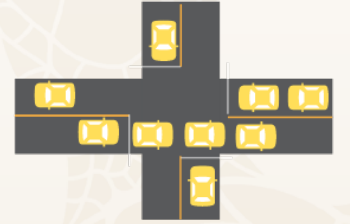
A

- Highly stable, free-flow condition with little or no congestion
- No vehicle waits longer than one signal indication
- Delay: <10 seconds/vehicle



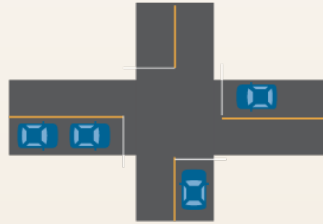
D

- Approaching unstable condition with increasing congestion but without excessive backups
- LOS D has historically been regarded as desirable design in urban areas
- Delay: 35-55 seconds/vehicle



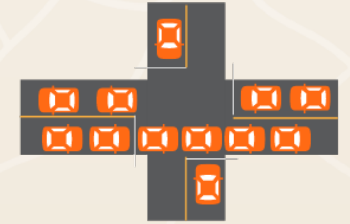
B

- Stable, free-flow condition with little congestion
- On rare occasions vehicles wait through more than one signal indication
- Delay: 10-20 seconds/vehicle



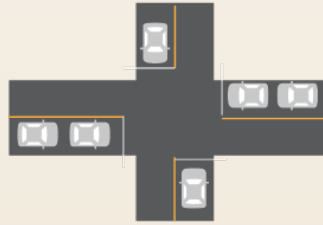
E

- Unstable, congested condition
- Very long queues may create lengthy delays
- Delay: 55-80 seconds/vehicle



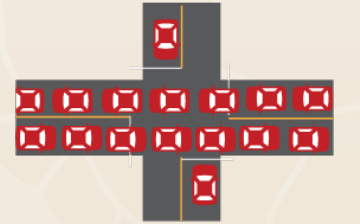
C

- Free-flow conditions with moderate congestion
- Intermittently vehicles wait through more than one signal indication and occasional backups may develop
- Delay: 20-35 seconds/vehicle



F

- Stop and go
- Backups from locations downstream restrict or prevent movement of vehicles out of approach creating "gridlock" condition
- Delay: >80 seconds/vehicle

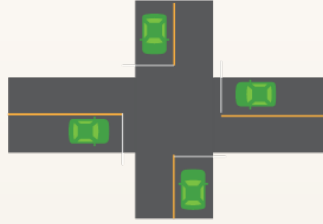


Traffic Signal Level of Service

Define Level of Service (Intersection)

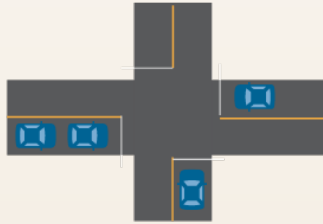
A

- Highly stable, free-flow condition with little or no congestion
- No vehicle waits longer than one signal indication
- Delay: <10 seconds/vehicle



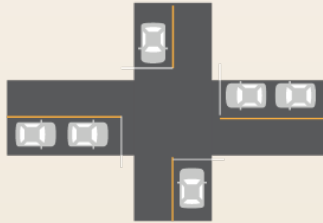
B

- Stable, free-flow condition with little congestion
- On rare occasions vehicles wait through more than one signal indication
- Delay: 10-20 seconds/vehicle



C

- Free-flow conditions with moderate congestion
- Intermittently vehicles wait through more than one signal indication and occasional backups may develop
- Delay: 20-35 seconds/vehicle



D

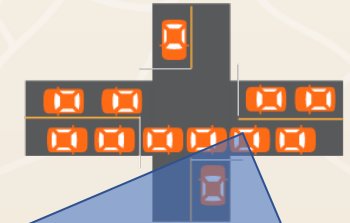


- Approaching unstable condition with increasing congestion but without excessive backups
- LOS D has historically been regarded as desirable design in urban areas
- Delay: 35-55 seconds/vehicle



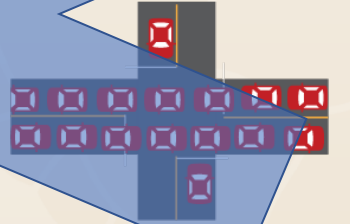
E

- Unstable, congested condition
- Very long queues may create lengthy delays
- Delay: 55-80 seconds/vehicle



F

- Stop and go
- Backups from locations downstream restrict or prevent movement of vehicles out of approach creating "gridlock" condition
- Delay: >80 seconds/vehicle



DRAFT May 23, 2019



Explored Intersection Concepts

Squire Pope

1. Jughandle
2. Displaced Left
3. Continuous Green T
4. Flyover

Spanish Wells

5. Detour Northbound Left
6. Half Diamond Interchange
7. Flyover
8. Displaced Left

Multiple Intersections

9. Optimize Lanes
10. Remove Lefts from Squire Pope & Spanish Wells – Signalize Old Wild Horse
11. Two T-Intersections at Old Wild Horse & Spanish Wells
12. Roundabouts with Underpass at Spanish Wells
13. Roundabouts for Left Turn Movements
14. Viaduct



Intersection Concepts Summary

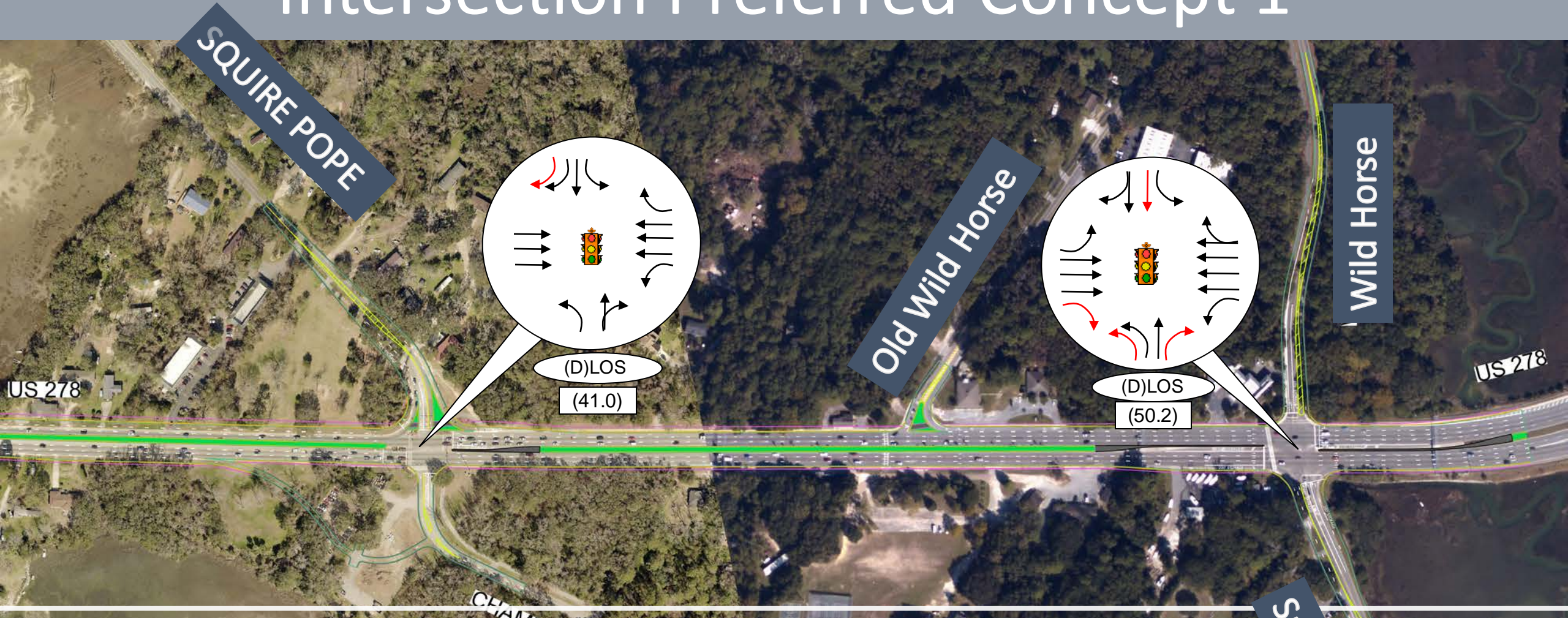
Alternative		Level of Service			New Travel Pattern	ROW Acquisition	Cost	View Obstructions	Advanced?
		Squire Pope	Old Wild Horse	Spanish Wells					
Squire Pope	1 – Jughandle (Preferred Concept 1)	D	-	D					Yes
	2 – Displaced Left	F/D	-	D					No
	3 – Continuous Green T	D	-	D					No
	4 – Flyover (Preferred Concept 2)	C	-	D					Yes
Spanish Wells	5 – Restricted NB Lefts	D	-	-					No
	6 – Half Diamond Interchange	D	-	C/A					No
	7 – Flyover	D	-	C					No
	8 – Displaced Left	D	-	E/E					No
Multiple Intersections	9 – Optimize Lanes (Preferred Concept 3)	D	-	D					Yes
	10 – Signal at Old Wild Horse (Preferred Concept 4)	B	C	C					Yes
	11 – Two T-Intersections	C	C	B					No
	12 – Roundabouts and Overpass	D	-	C					No
	13 – Roundabouts for Left Turn Movements	D	-	B					No
	14 - Viaduct	D	-	D					No



Preferred Intersection Concepts



Intersection Preferred Concept 1

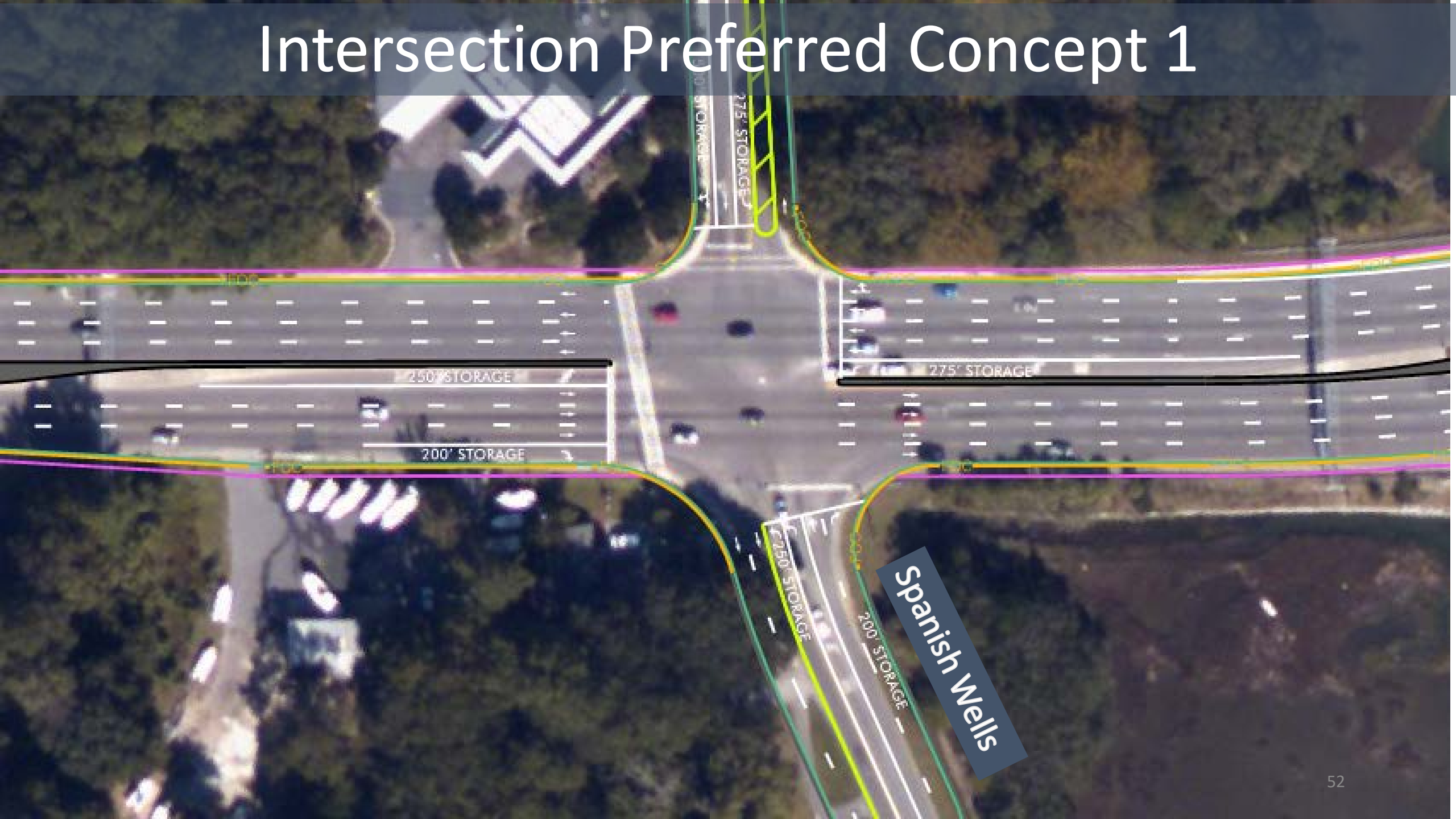


Jughandle at Squire Pope (CONCEPT)

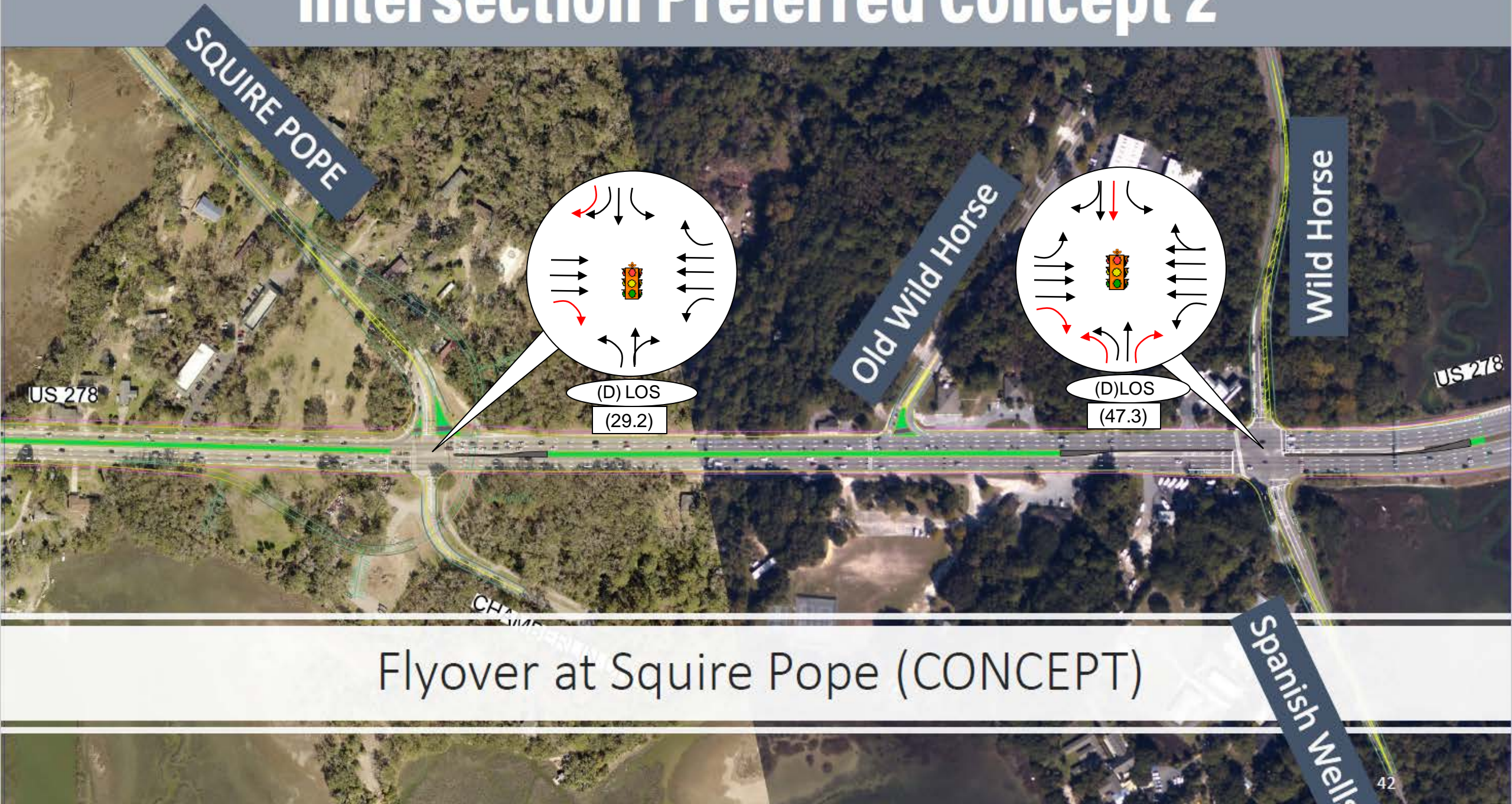
Intersection Preferred Concept 1



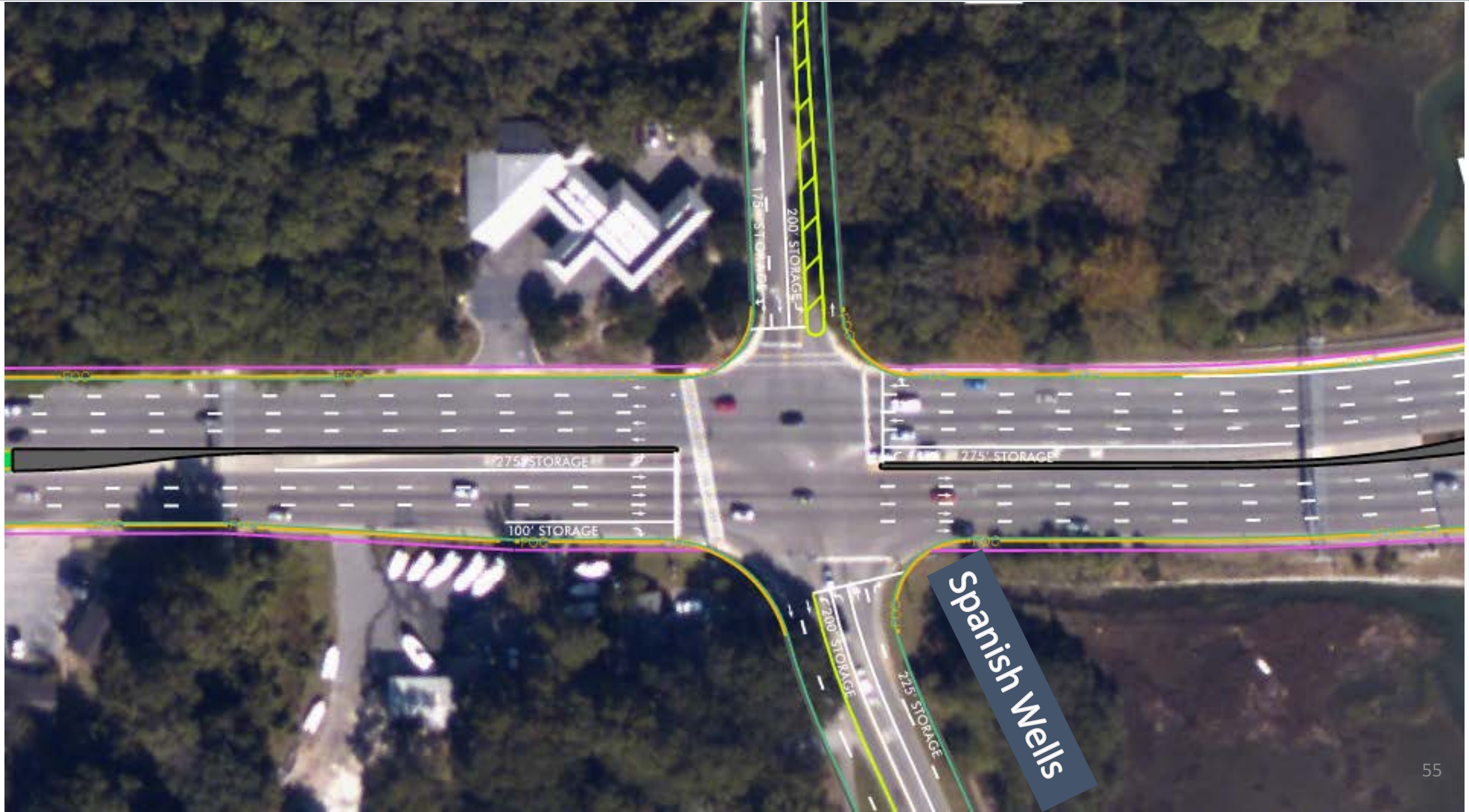
Intersection Preferred Concept 1



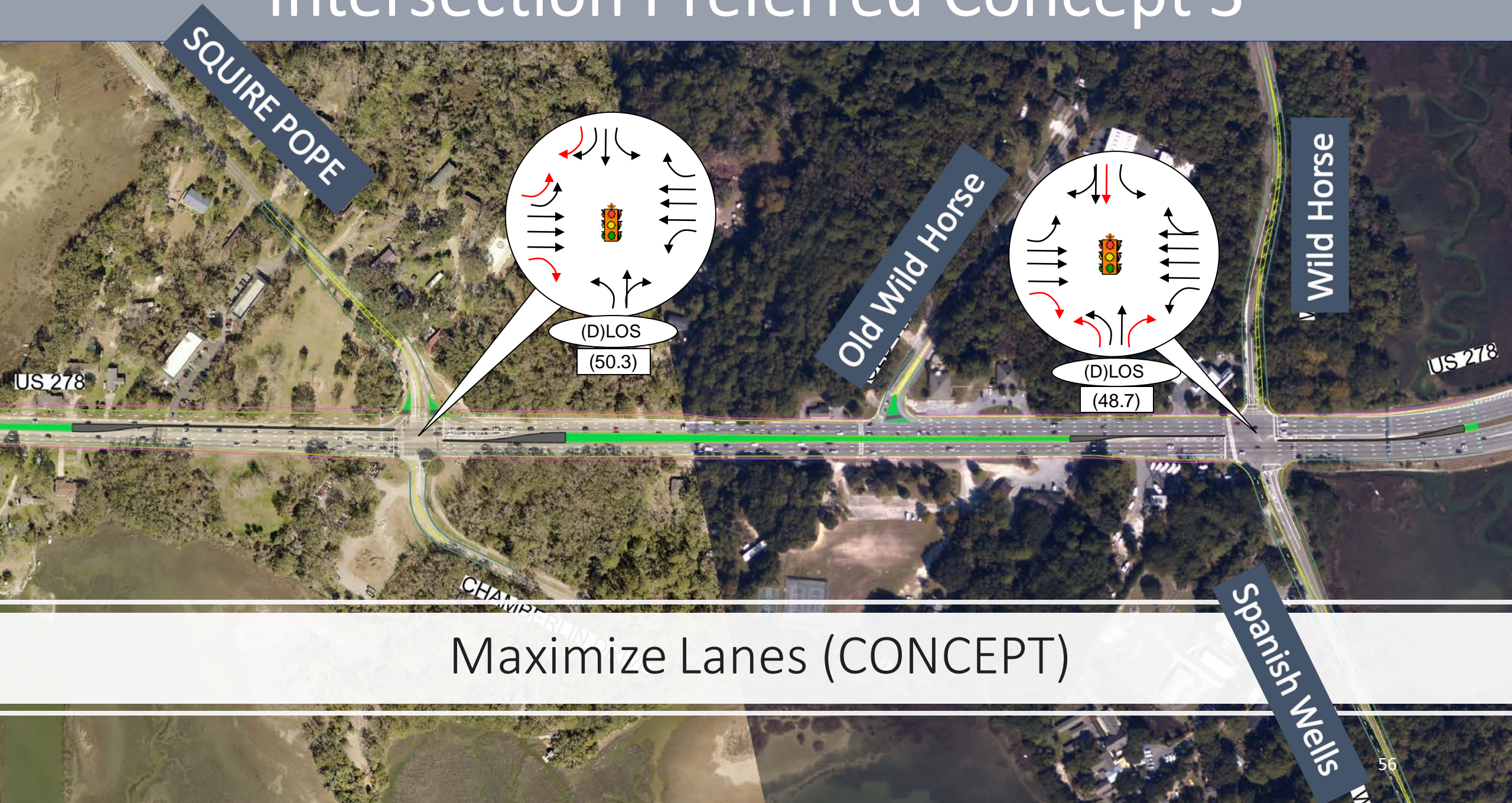
Intersection Preferred Concept 2



Intersection Preferred Concept 2



Intersection Preferred Concept 3



SQUIRE POPE

Old Wild Horse

Wild Horse

Spanish Wells

US 278

US 278

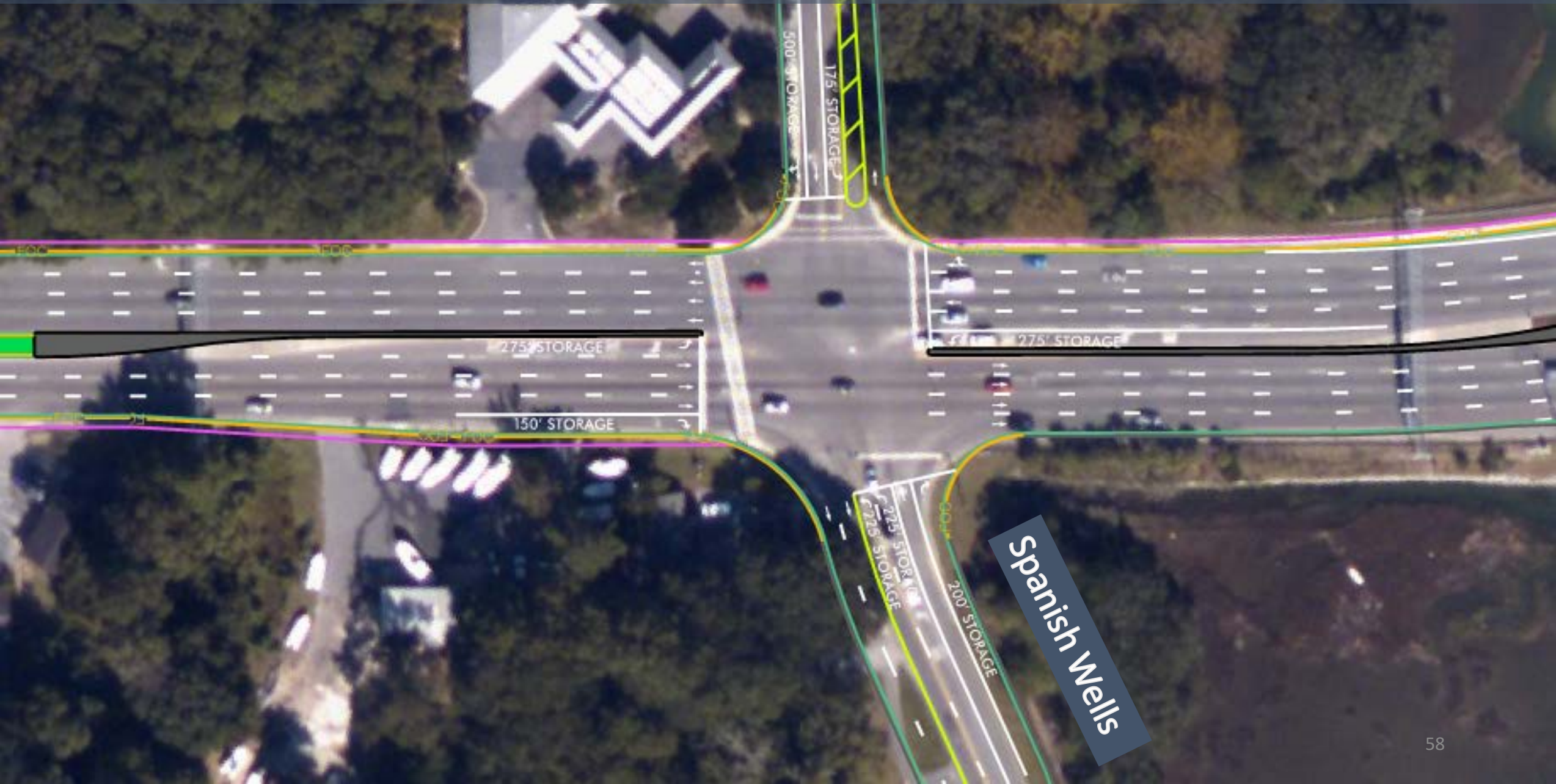
CHAMBERLIN

Maximize Lanes (CONCEPT)

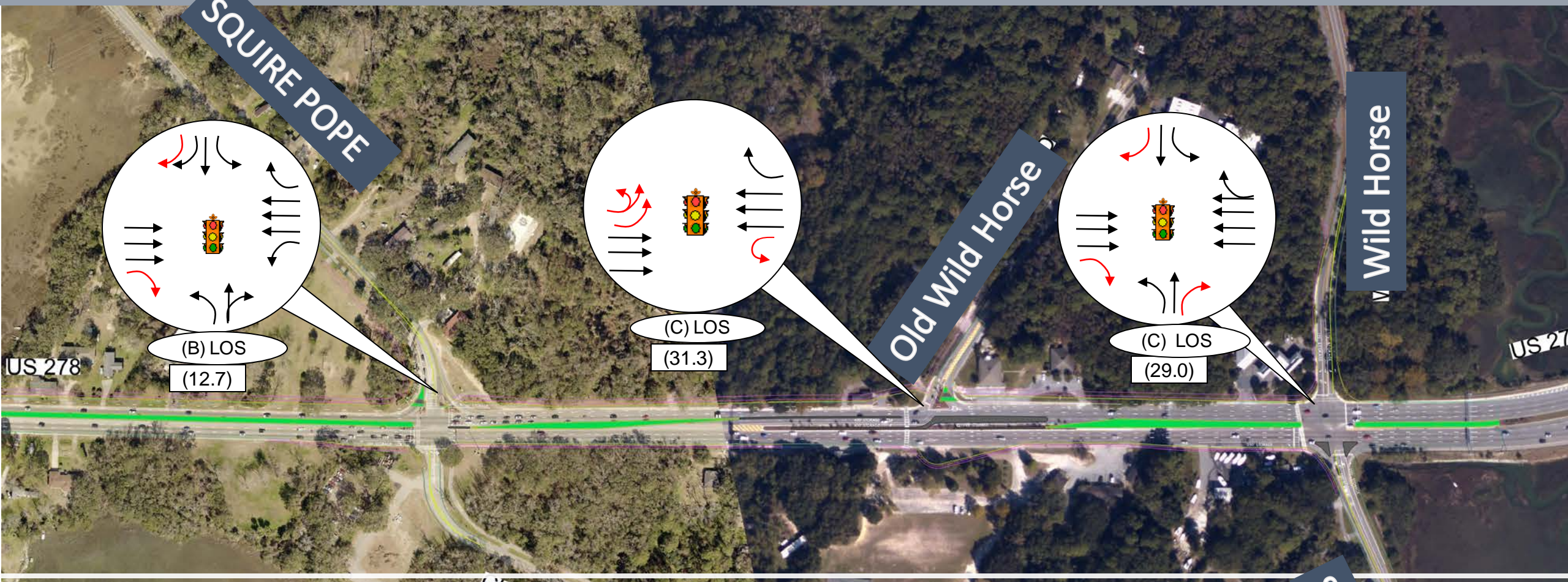
Intersection Preferred Concept 3



Intersection Preferred Concept 3



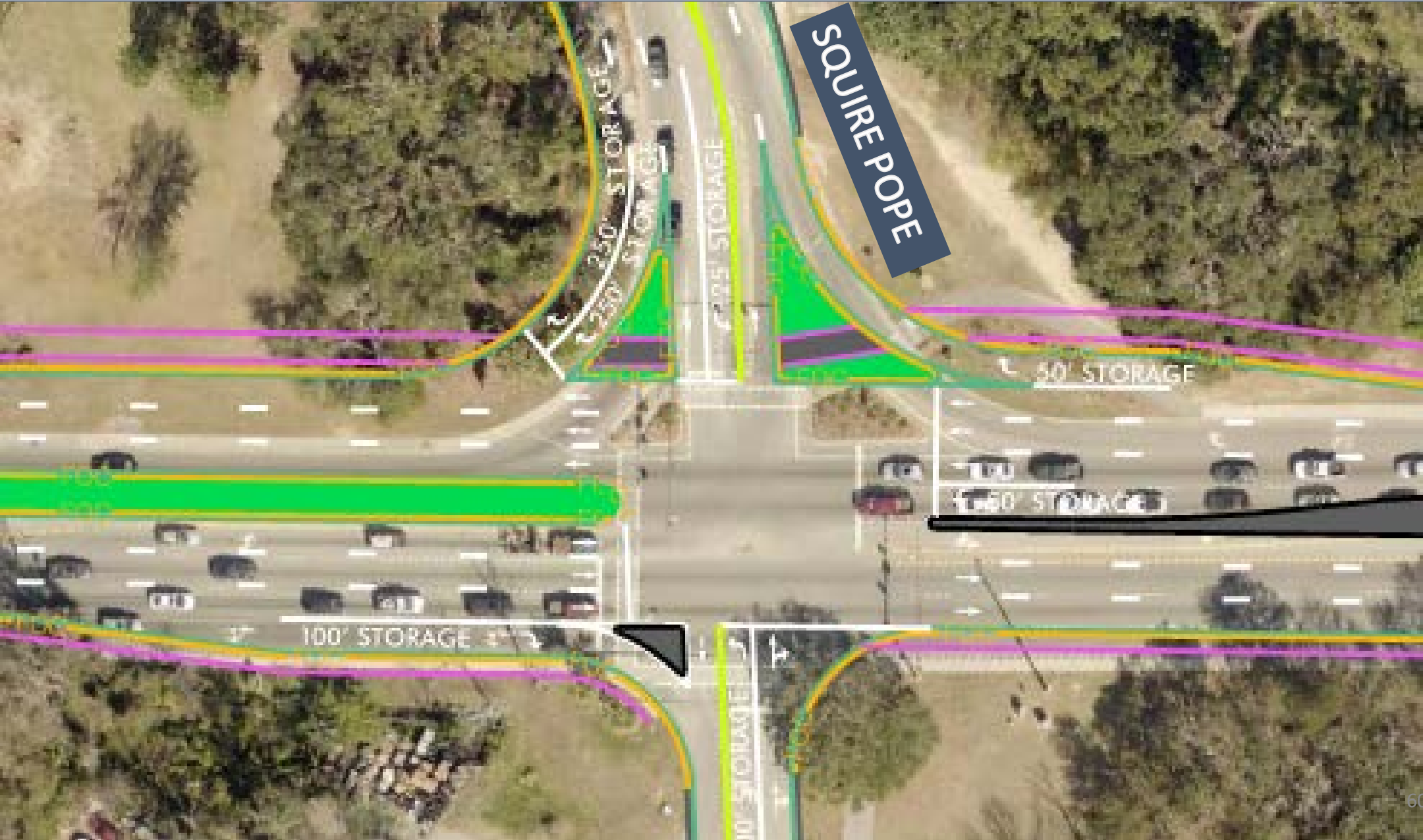
Intersection Preferred Concept 4



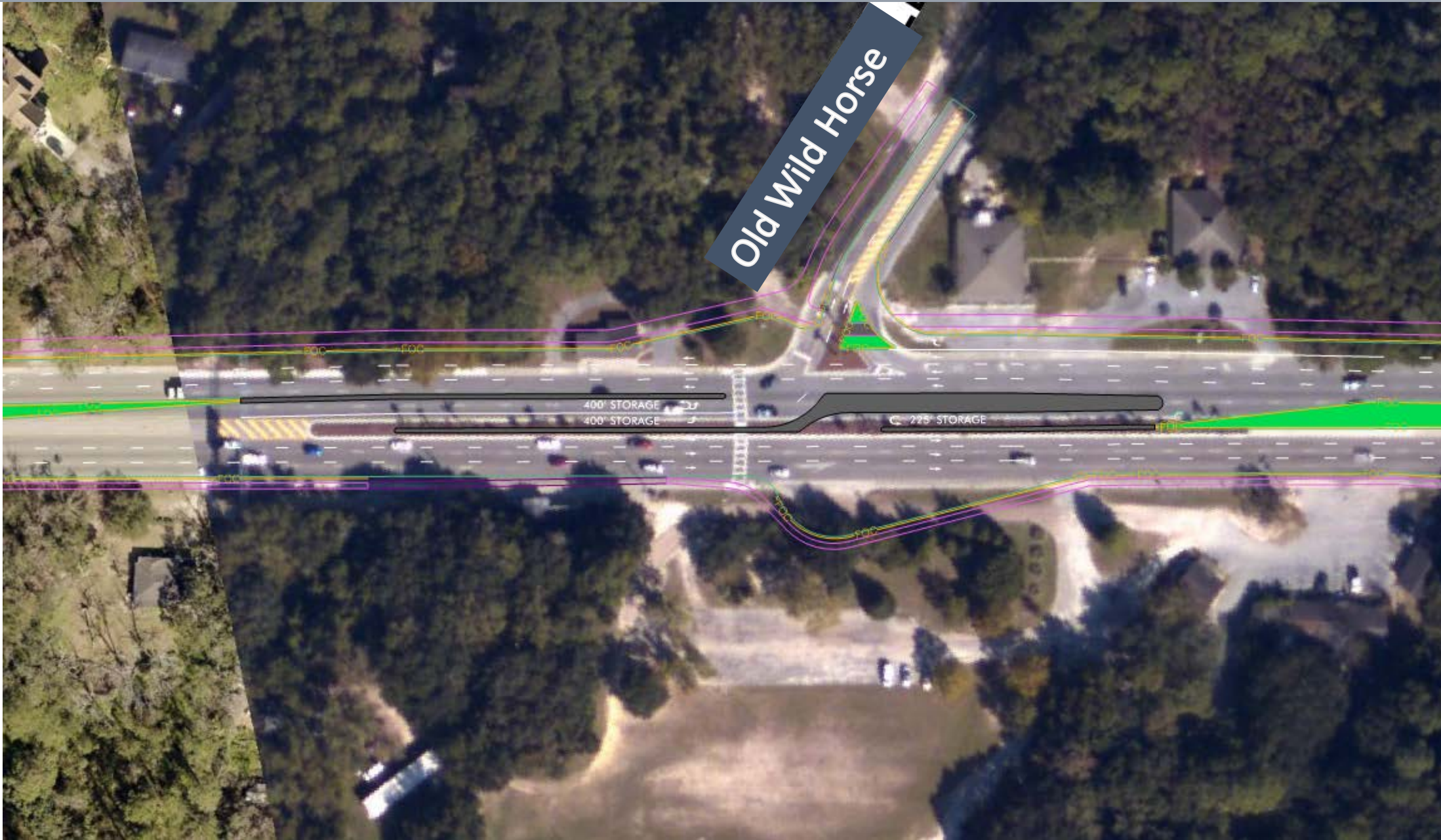
Signalize Old Wild Horse (CONCEPT)

Spanish Wells

Intersection Preferred Concept 4



Intersection Preferred Concept 4



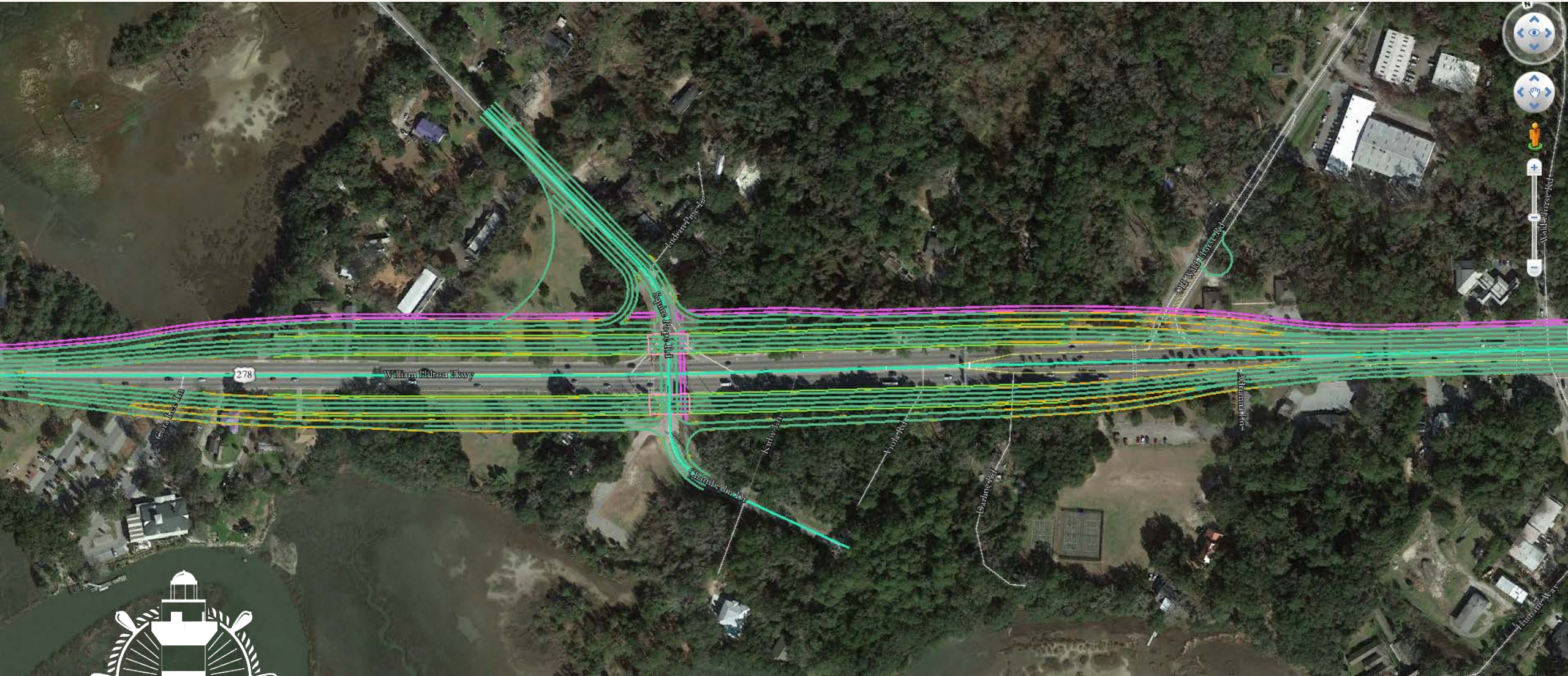
Intersection Preferred Concept 4



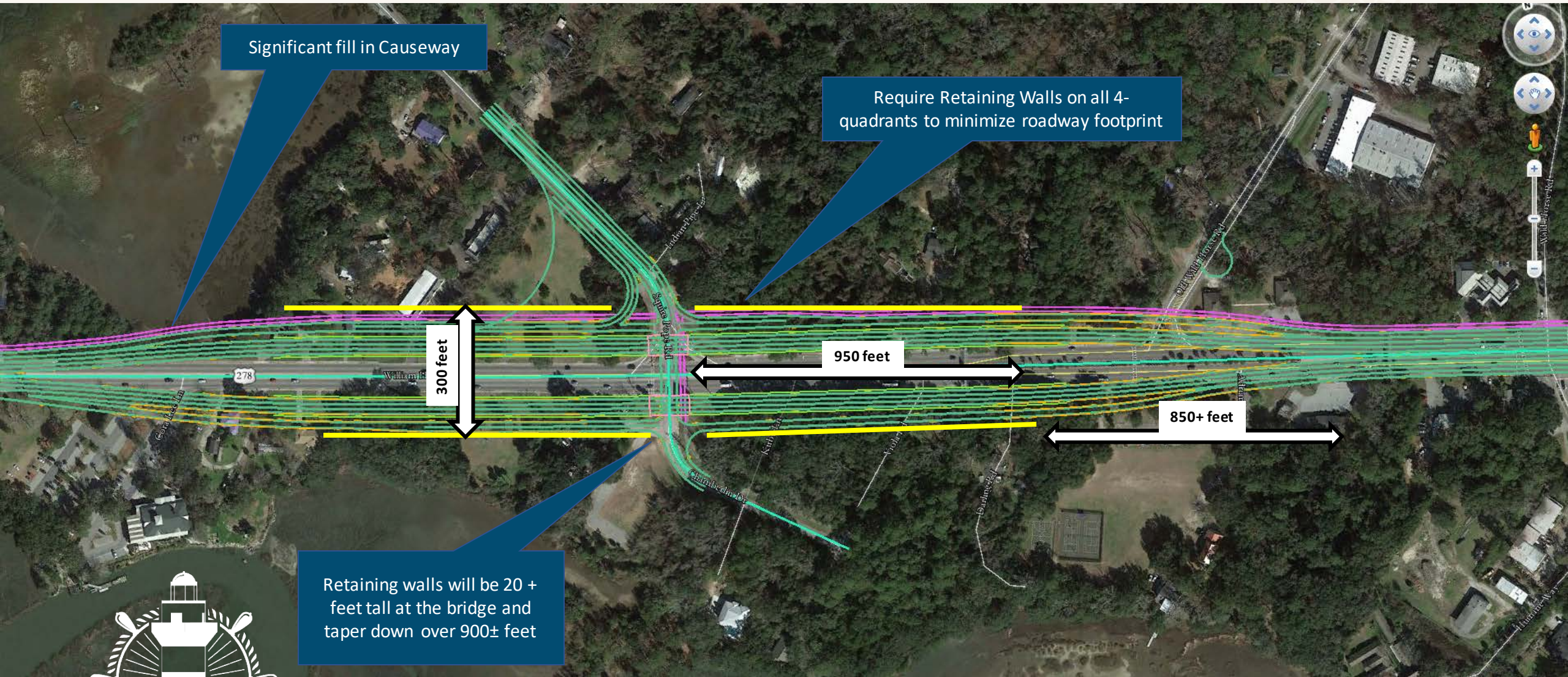
US 278

Spanish Wells

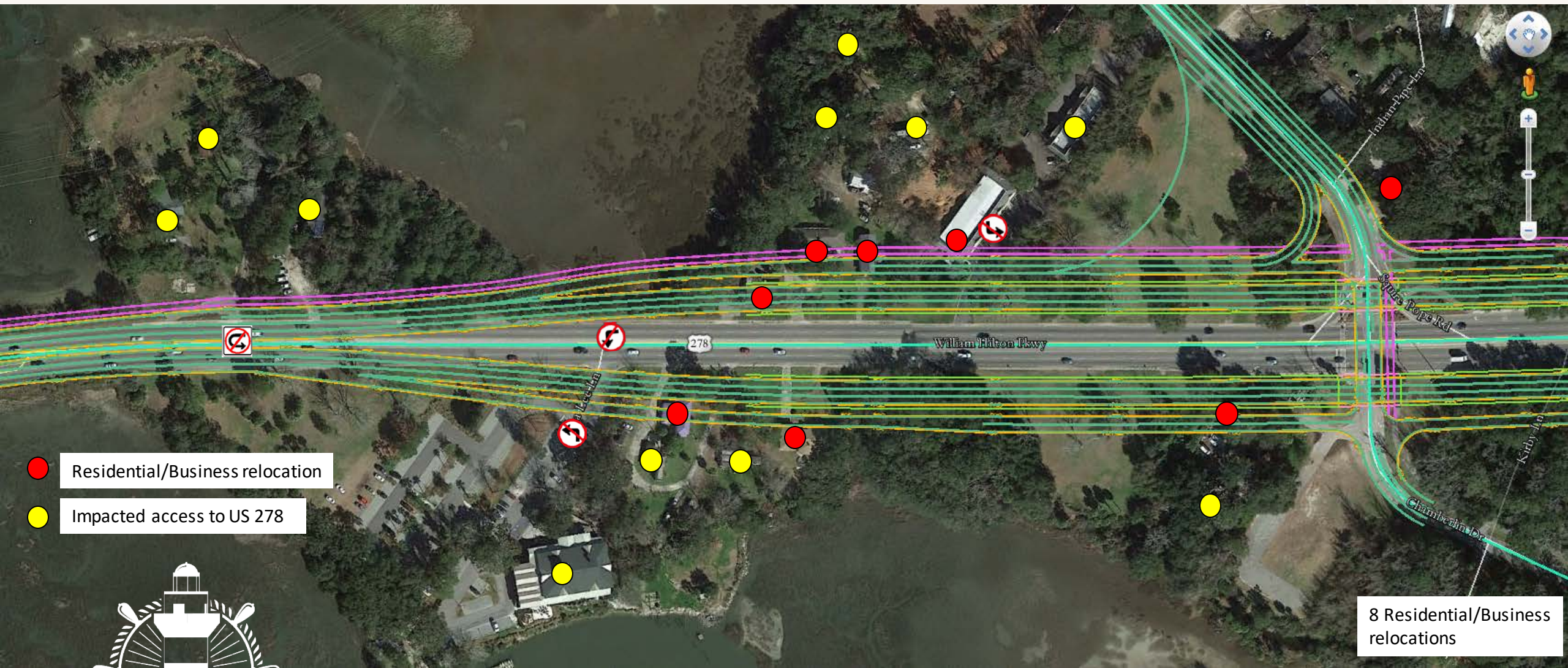
US 278 Bridging over Squire Pope Road



US 278 Bridging over Squire Pope Road



US 278 Bridging over Squire Pope Road

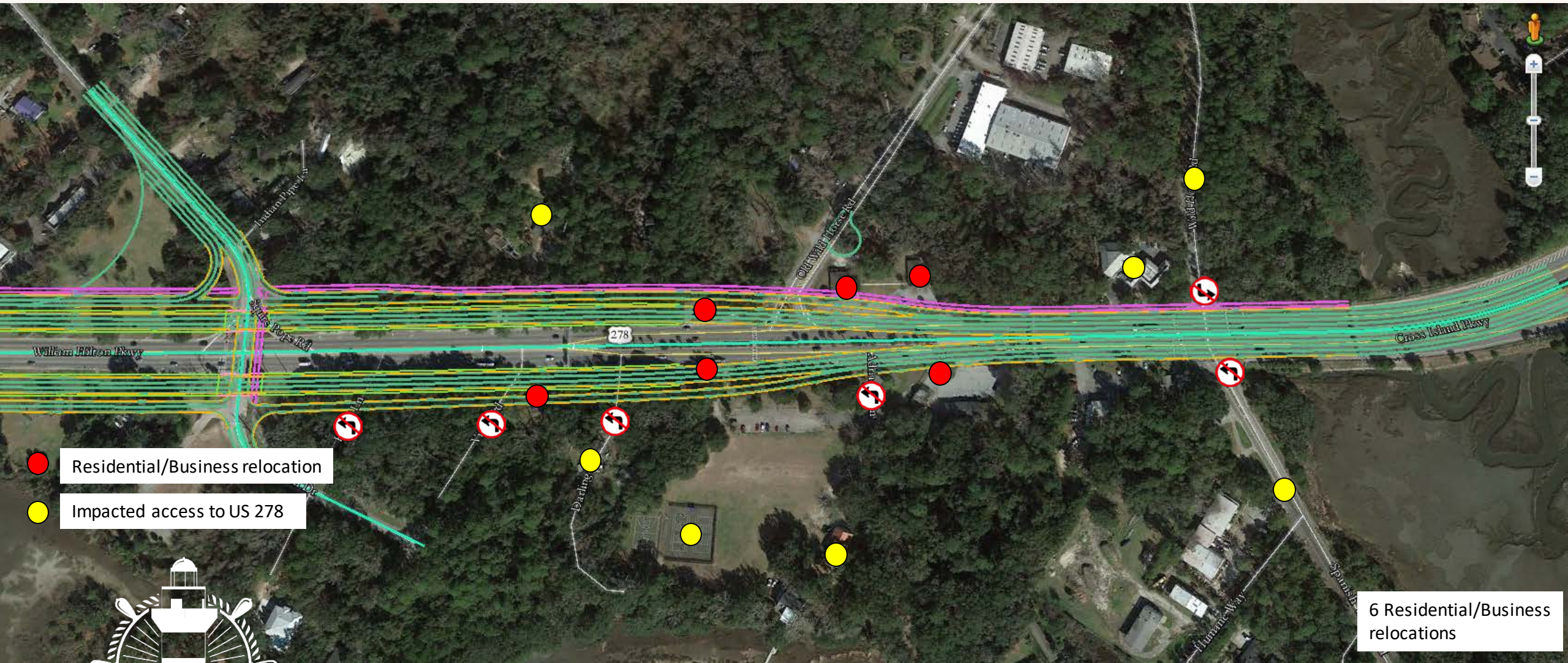


- Residential/Business relocation
- Impacted access to US 278

8 Residential/Business relocations



US 278 Bridging over Squire Pope Road



- Residential/Business relocation
- Impacted access to US 278

6 Residential/Business relocations



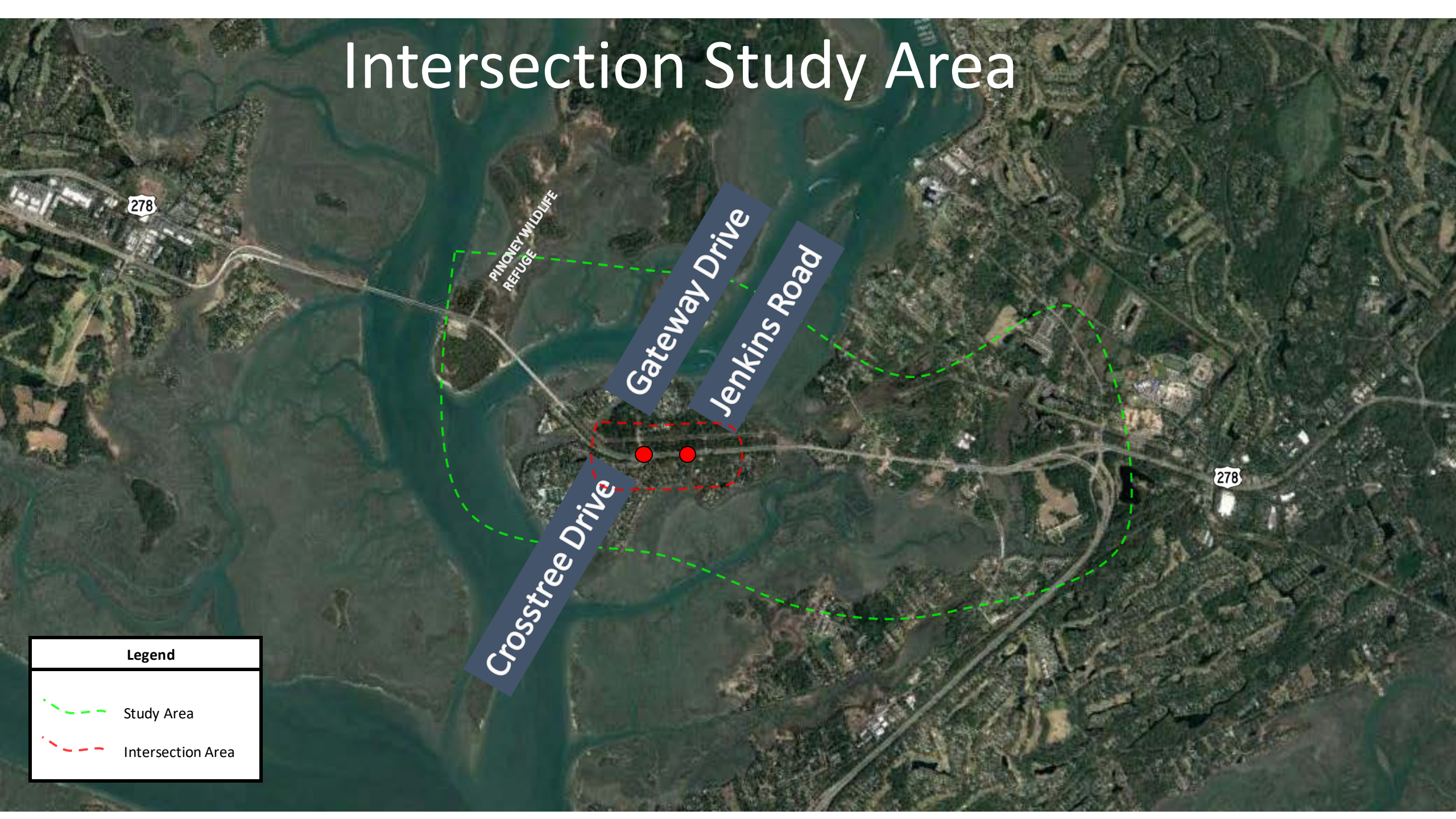


Jenkins Island Intersection Concepts



Setting a Light on the Community's Transportation Future

Intersection Study Area



278

PINEKEY WILDLIFE
REFUGE



Gateway Drive

Jenkins Road

Crosstree Drive

278

Legend

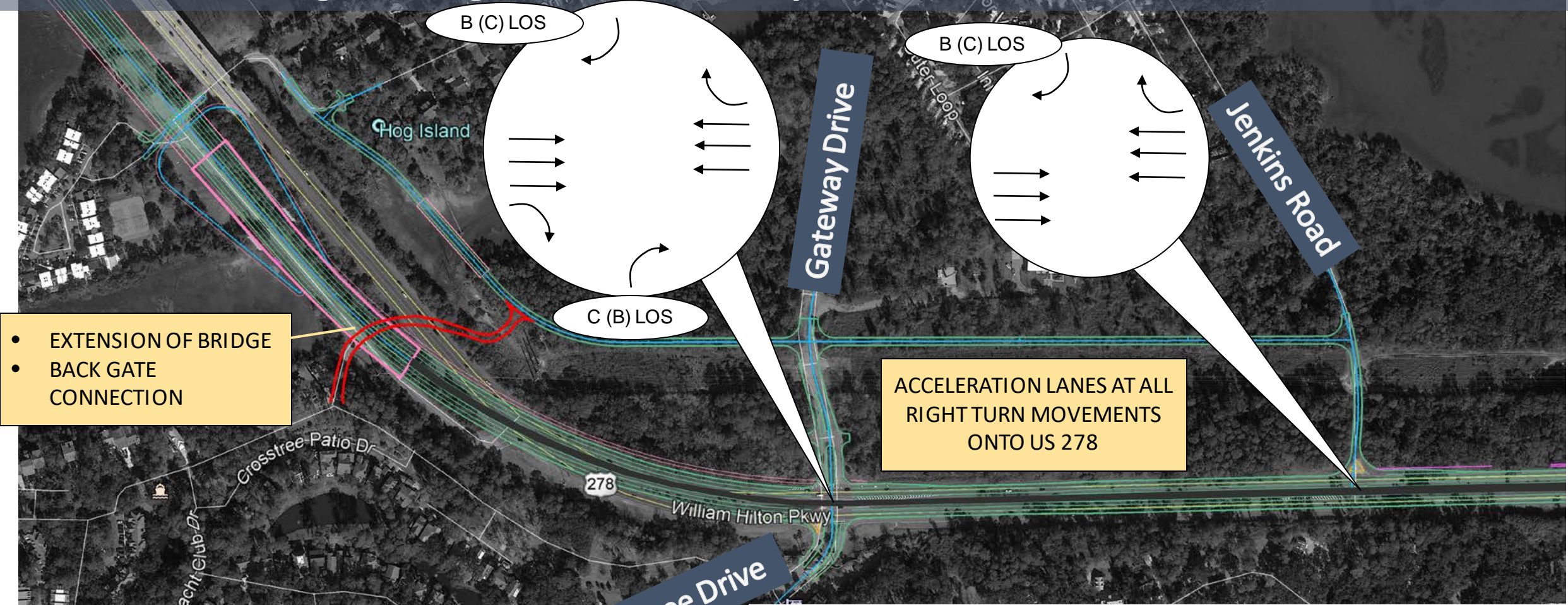
-  Study Area
-  Intersection Area

Jenkins Island Explored Intersection Concepts

1. Right In/Right Out at Gateway/Crosstree and Jenkins Road
2. Right In/Right Out at Gateway/Crosstree and Left In at Jenkins Road
3. Right In/Right Out with Left In at Gateway/Crosstree and Jenkins Road
(No Left Out)
4. SuperStreet
5. Optimize Number of Lanes
6. Optimize Number of Lanes and Right-In Only at Jenkins Road



Proposed Concept 1: Right In/Right Out at Gateway/Crosstree and Jenkins Road



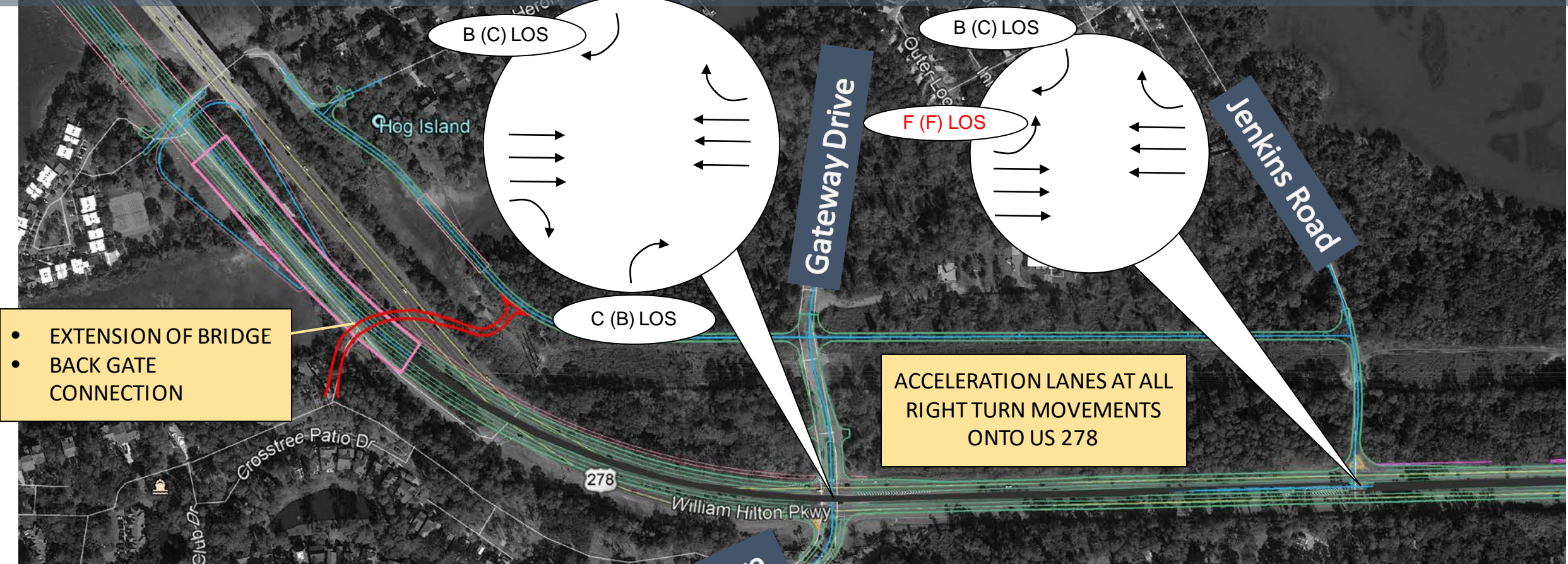
- EXTENSION OF BRIDGE
- BACK GATE CONNECTION

ACCELERATION LANES AT ALL
RIGHT TURN MOVEMENTS
ONTO US 278

Levels of Service	
(AM) (PM)	Movement/Int. LOS

Advantages	Disadvantages
<ul style="list-style-type: none"> • Acceleration lanes provide LOS C or better • No left turns onto or from US 278 • No signals 	<ul style="list-style-type: none"> • Increased cost of extending bridge • Acceleration lanes add to US 278 footprint • Eliminates gated access to Windmill Harbor • All intersections must accommodate RVs

Proposed Concept 2: Right In/Right Out at Gateway/Crosstree and Left In at Jenkins Road



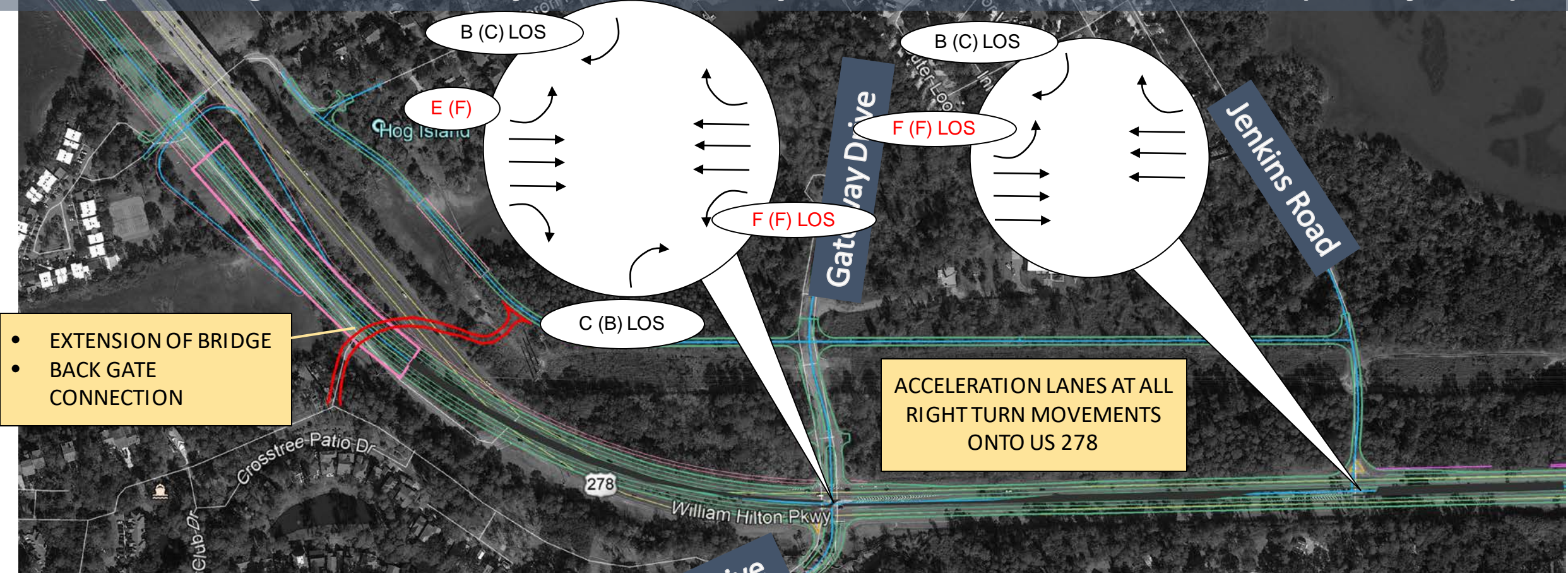
- EXTENSION OF BRIDGE
- BACK GATE CONNECTION

ACCELERATION LANES AT ALL RIGHT TURN MOVEMENTS ONTO US 278

Levels of Service	
(AM) (PM)	Movement/Int. LOS

Advantages	Disadvantages
<ul style="list-style-type: none"> • Acceleration lanes provide LOS C or better • No left turns onto US 278 from side roads • No signals 	<ul style="list-style-type: none"> • Increased cost of extending bridge • Eastbound Jenkins left turns - LOS F • Acceleration lanes add to US 278 footprint • Eliminates gated access to Windmill Harbor • All intersections must accommodate RVs

Proposed Concept 3: Right In/Right Out with Left In at Gateway/Crosstree and Jenkins Road (No Left Out)



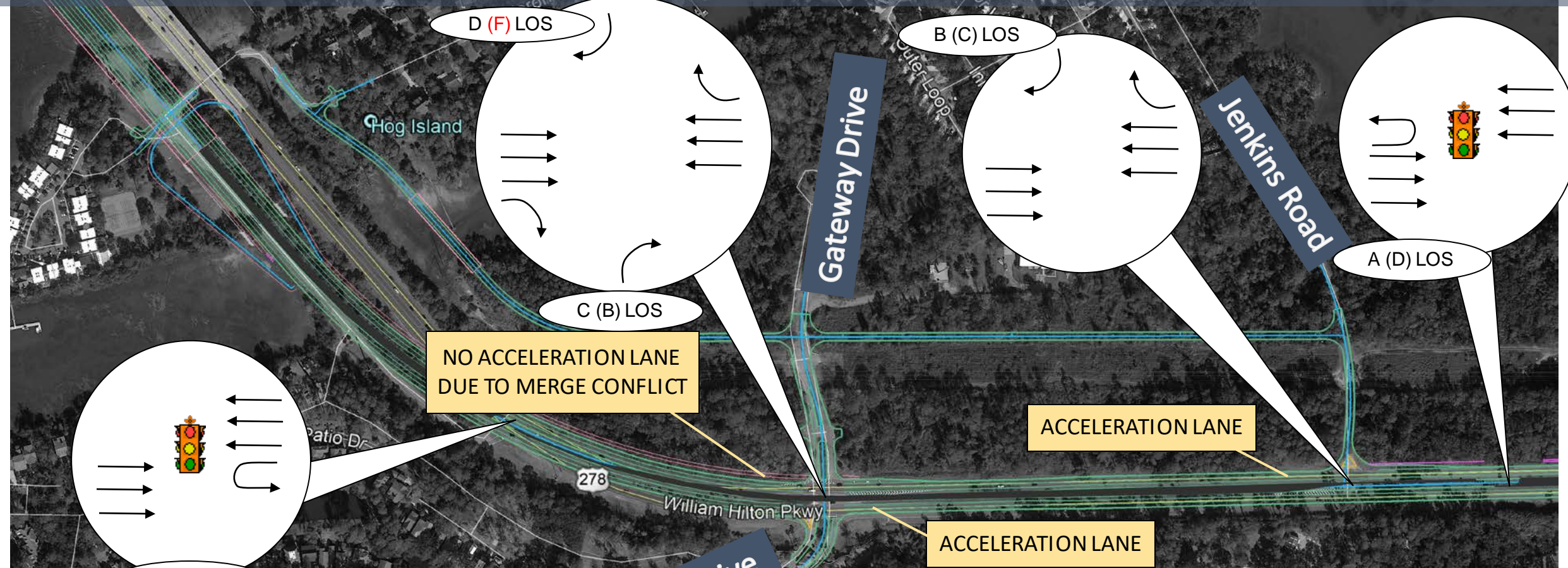
- EXTENSION OF BRIDGE
- BACK GATE CONNECTION

ACCELERATION LANES AT ALL
RIGHT TURN MOVEMENTS
ONTO US 278

Levels of Service	
AM (PM)	Movement/Int. LOS

Advantages	Disadvantages
<ul style="list-style-type: none"> • Acceleration lanes provide LOS C or better • No left turns onto US 278 from side roads • No signals 	<ul style="list-style-type: none"> • Increased cost of extending bridge • Left turns from US 278 result in LOS F • Acceleration lanes add to US 278 footprint • Eliminates gated access to Windmill Harbor • All intersections must accommodate RVs

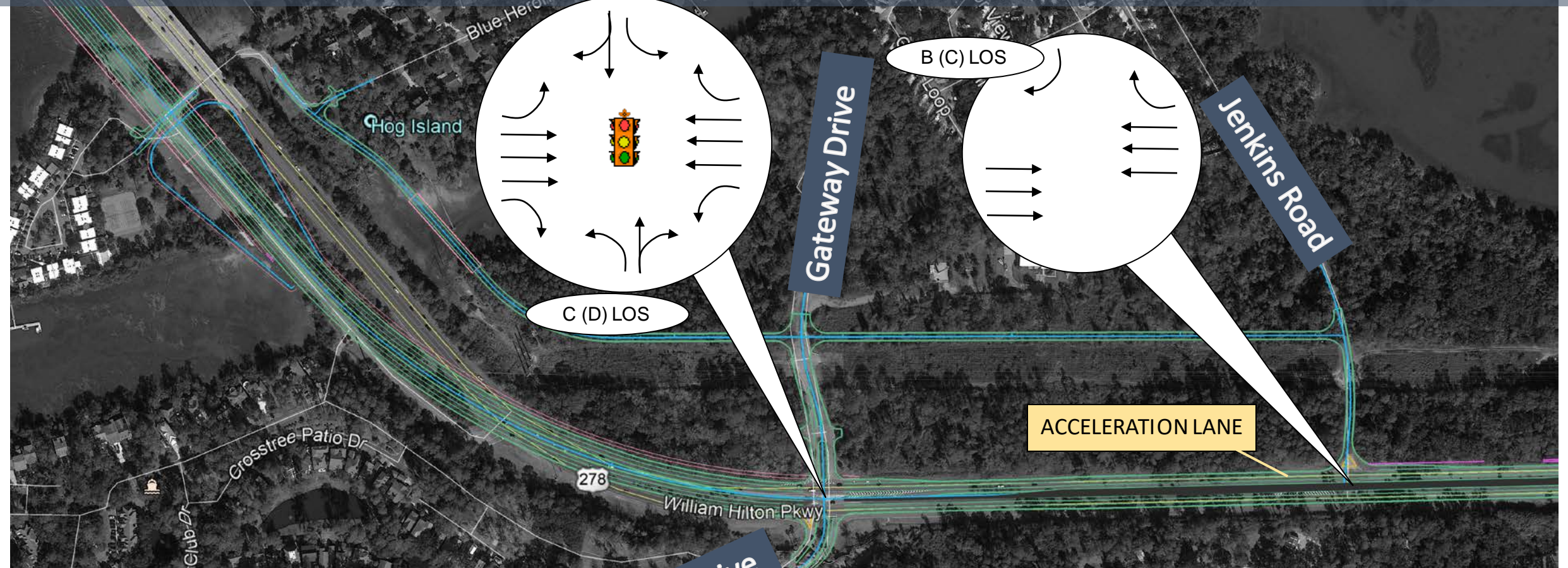
Proposed Concept 4: SuperStreet



Levels of Service	
AM (PM)	Movement/Int. LOS

Advantages	Disadvantages
<ul style="list-style-type: none"> • U-turn signals provide LOS D or better • Acceleration lanes provide LOS C or better • No left turns onto or from US 278 • Windmill Harbor maintains gated access 	<ul style="list-style-type: none"> • Acceleration lanes add to US 278 footprint • Difficult merge from Gateway Drive to U-turn • Adds 2 signals

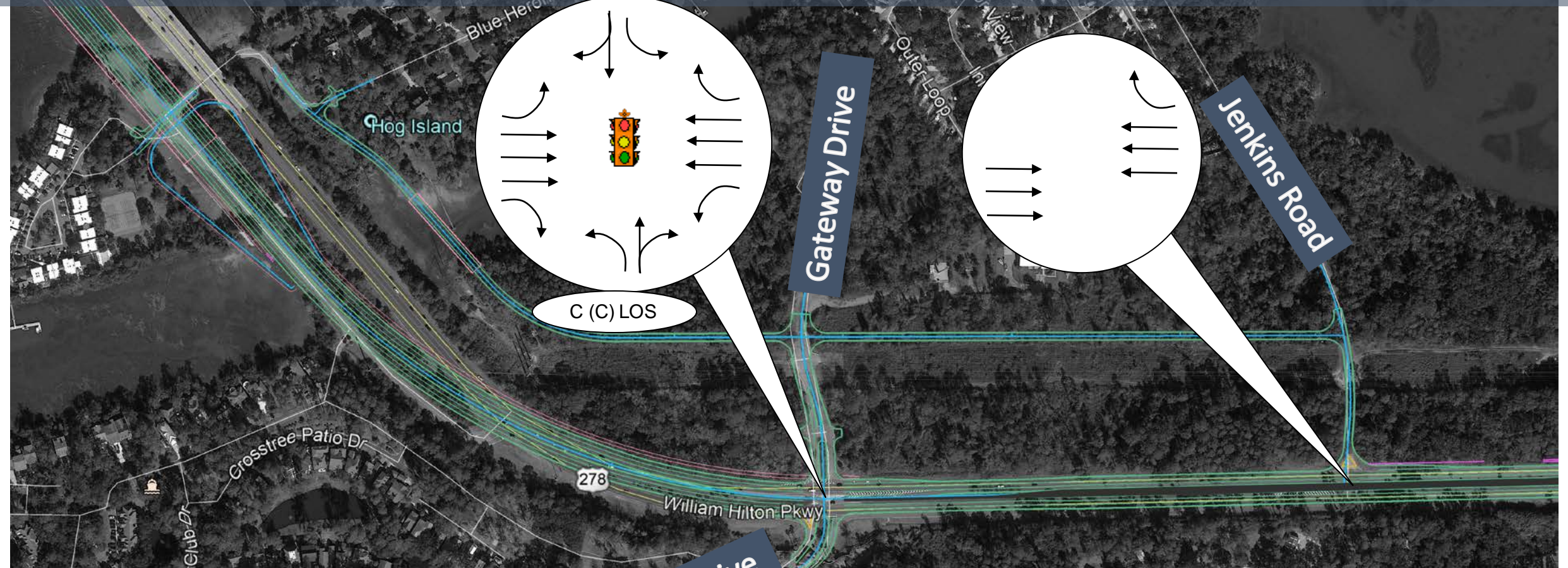
Proposed Concept 5: Optimize Number of Lanes



Levels of Service	
AM (PM)	Movement/Int. LOS

Advantages	Disadvantages
<ul style="list-style-type: none"> • Signal provides LOS D or better • Acceleration lanes provide LOS C or better • Windmill Harbor maintains gated access • Smaller footprint at Crosstree/Gateway 	<ul style="list-style-type: none"> • Volumes as-is do not meet signal warrant • Acceleration lanes add to US 278 footprint

Proposed Concept 6: Optimize Number of Lanes and Right-In Only at Jenkins Road



Advantages

- Signal provides LOS C
- Windmill Harbor maintains gated access
- Smaller footprint at Crosstree/Gateway
- Adding SBR turn volumes from Jenkins Road to Gateway meet signal warrant
- No ineffective acceleration lanes

Disadvantages

- Adds signal to US 278
- Jenkins Road outbound traffic diverted to Gateway Drive

Levels of Service

AM (PM) Movement/Int. LOS

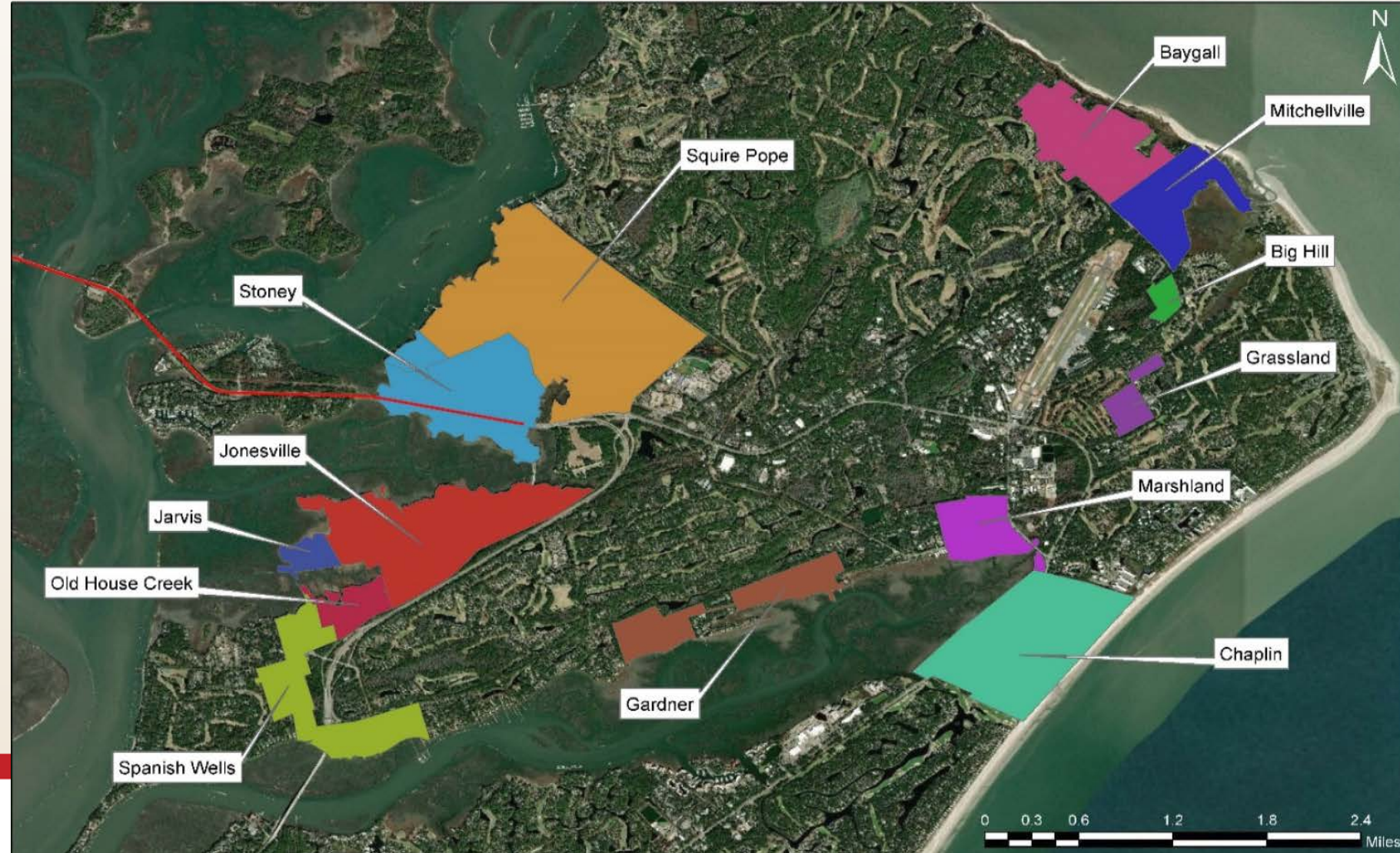


Community Impacts & Mitigation



Potential Community Impacts & Mitigation

- 0 Residential Displacements
- 2 Commercial Displacements
- Impacts anticipated to the Stoney Community
- Individual property owner meetings
- Options will be developed once coordination with the community has been completed



Potential Wetland & Stream Mitigation

- Multiple mitigation banks are available to provide mitigation services
 - Salt Marsh: Clydesdale Mitigation Bank or Murray Hill Mitigation Bank
 - Freshwater Wetlands: Sweetleaf Swamp Mitigation Bank
- If mitigation credits are not available for purchase Permittee Responsible Mitigation (PRM) is an option
 - SCDOT will investigate on-site & off-site PRM within the project watershed

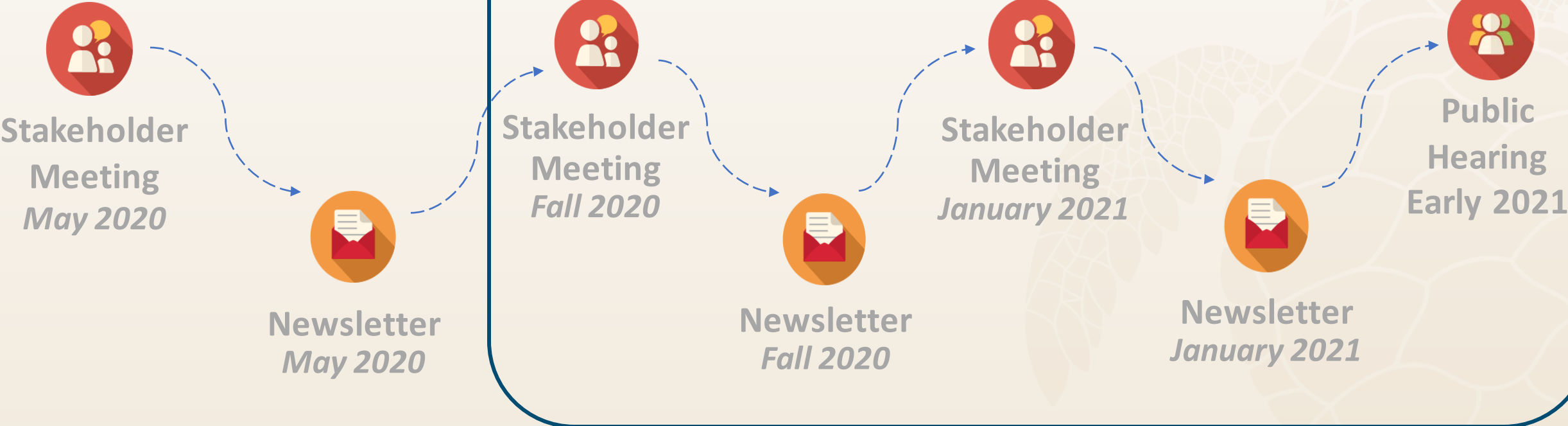




Next Steps



Upcoming Ways to Engage



Contact



www.SCDOT278Corridor.com



info@SCDOT278Corridor.com



Facebook.com/SCDOT278Corridor



[@SCDOT278Corridor](https://twitter.com/SCDOT278Corridor)



Craig Winn, PE, CFM
Project Manager
SCDOT





Questions?

