I-16 at Little Neck Road/ Jimmy DeLoach Parkway Interchange Study

Final Alternatives and Evaluation

October 2019

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COASTAL REGION MPO

Project Summary To-Date

- Existing Conditions Review
- Regional Growth Validation
- Develop Future Traffic Volumes
- Safety Analysis
- Evaluation of Alternatives
- Recommended Alternatives
- Interchange Modification Report

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Project Justification

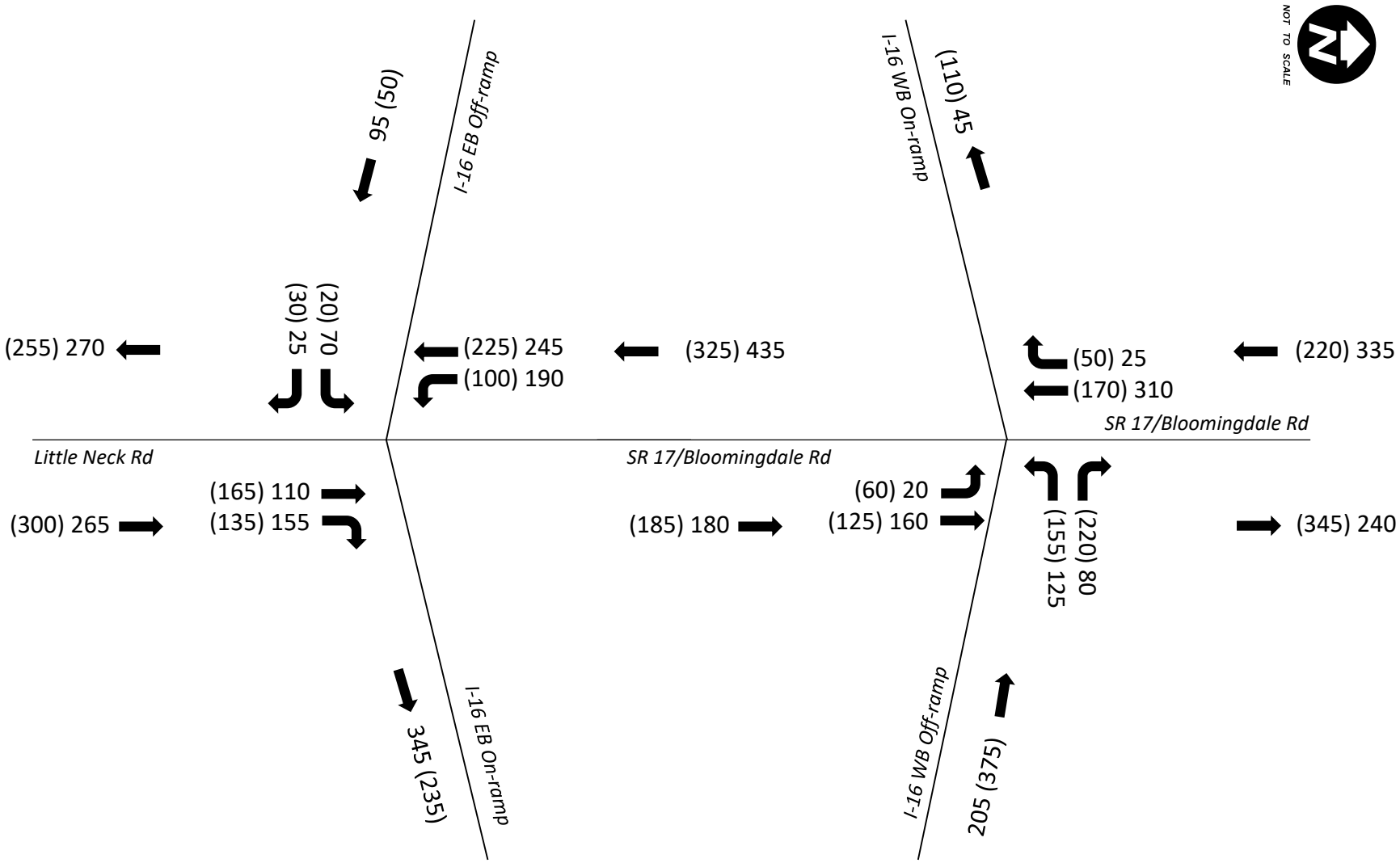
- Jimmy DeLoach Parkway Extension terminus
- Significant truck volumes
- Improved Safety

FHWA Policy Points

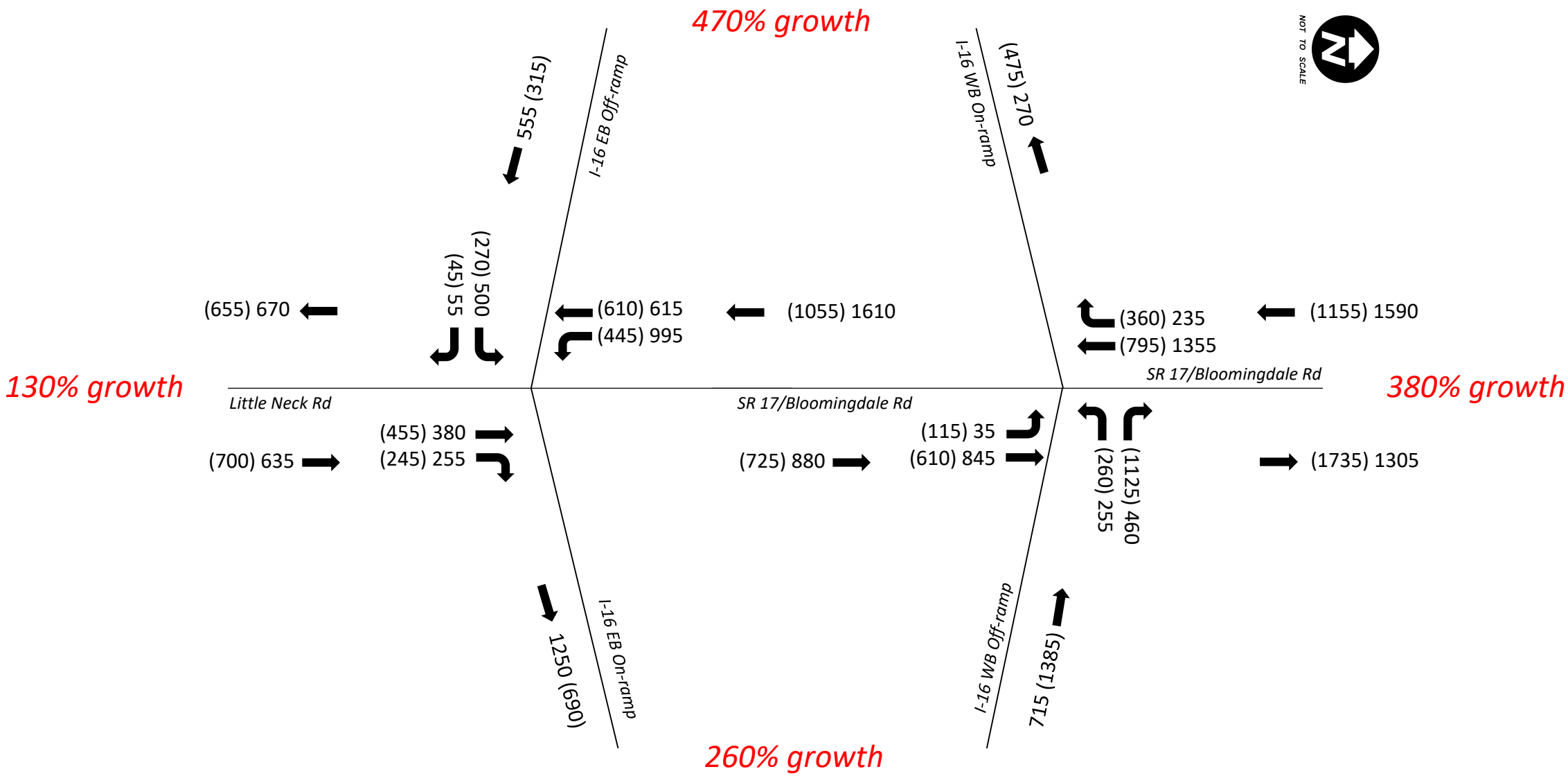
- **Policy Point 1** - *An operational and safety analysis has concluded that the proposed change in access **does not have a significant adverse impact on the safety and operation** of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, and ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections.*
- **Policy Point 2** - *The proposed access connects to a public road only and **will provide for all traffic movements**. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit or high occupancy vehicle and high occupancy toll lanes) or park and ride lots.*

Crash Data, 2013-2017 (Study Area)

Existing (2018) DHV Volume - AM/(PM)

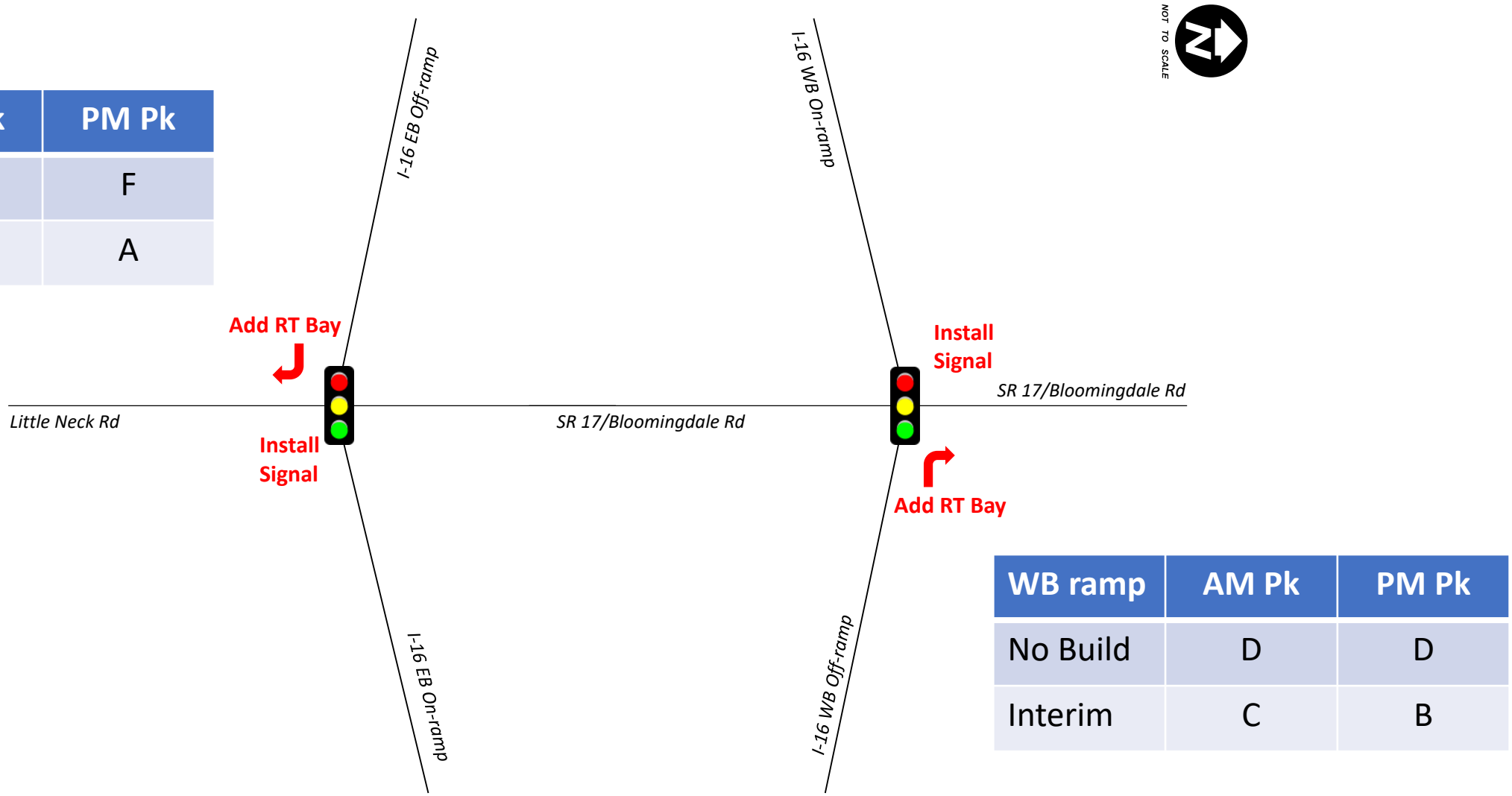


Design Year (2050) DHV Volume - AM/(PM)



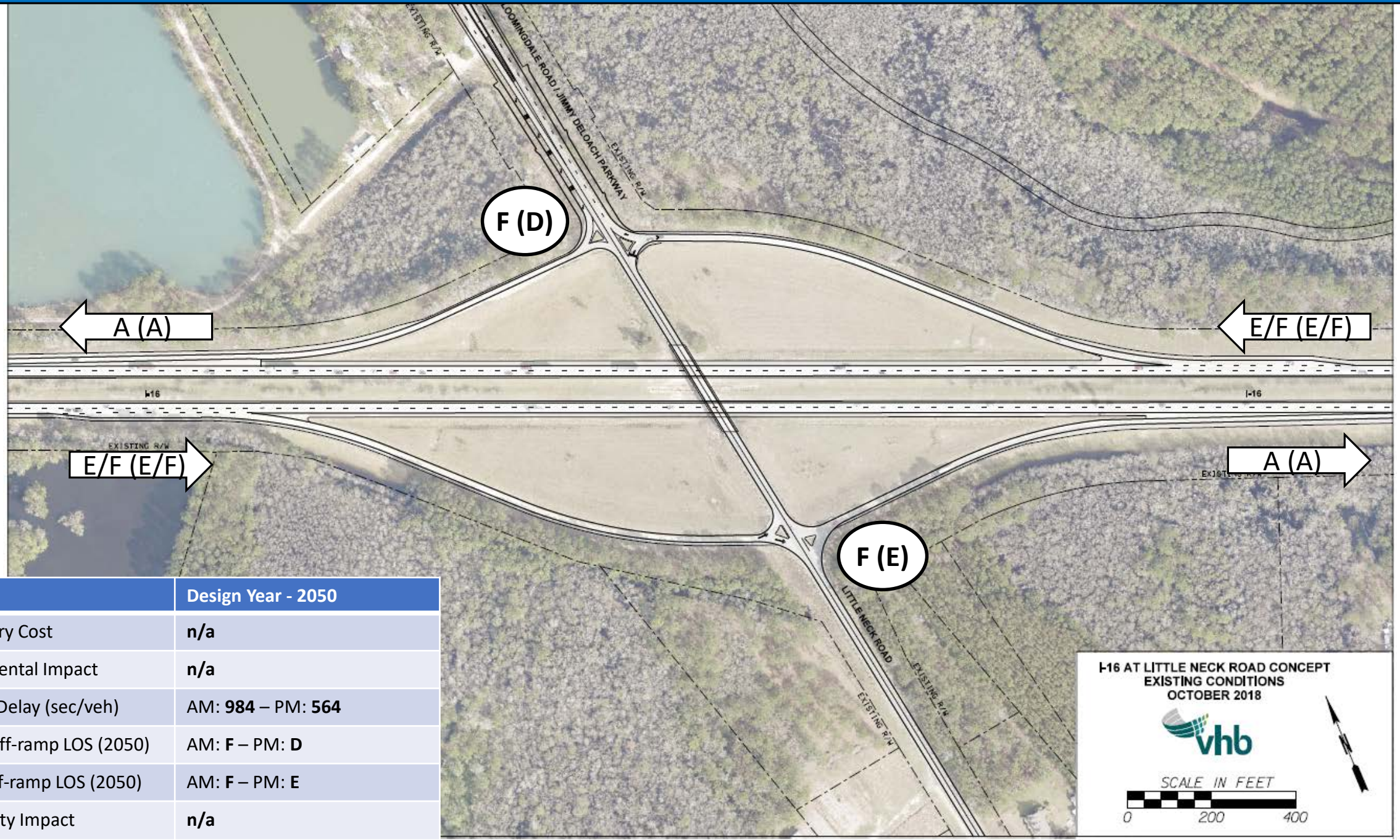
Interim Improvements (Open Year of Jimmy DeLoach Pkwy - 2021)

EB ramp	AM Pk	PM Pk
No Build	F	F
Interim	C	A



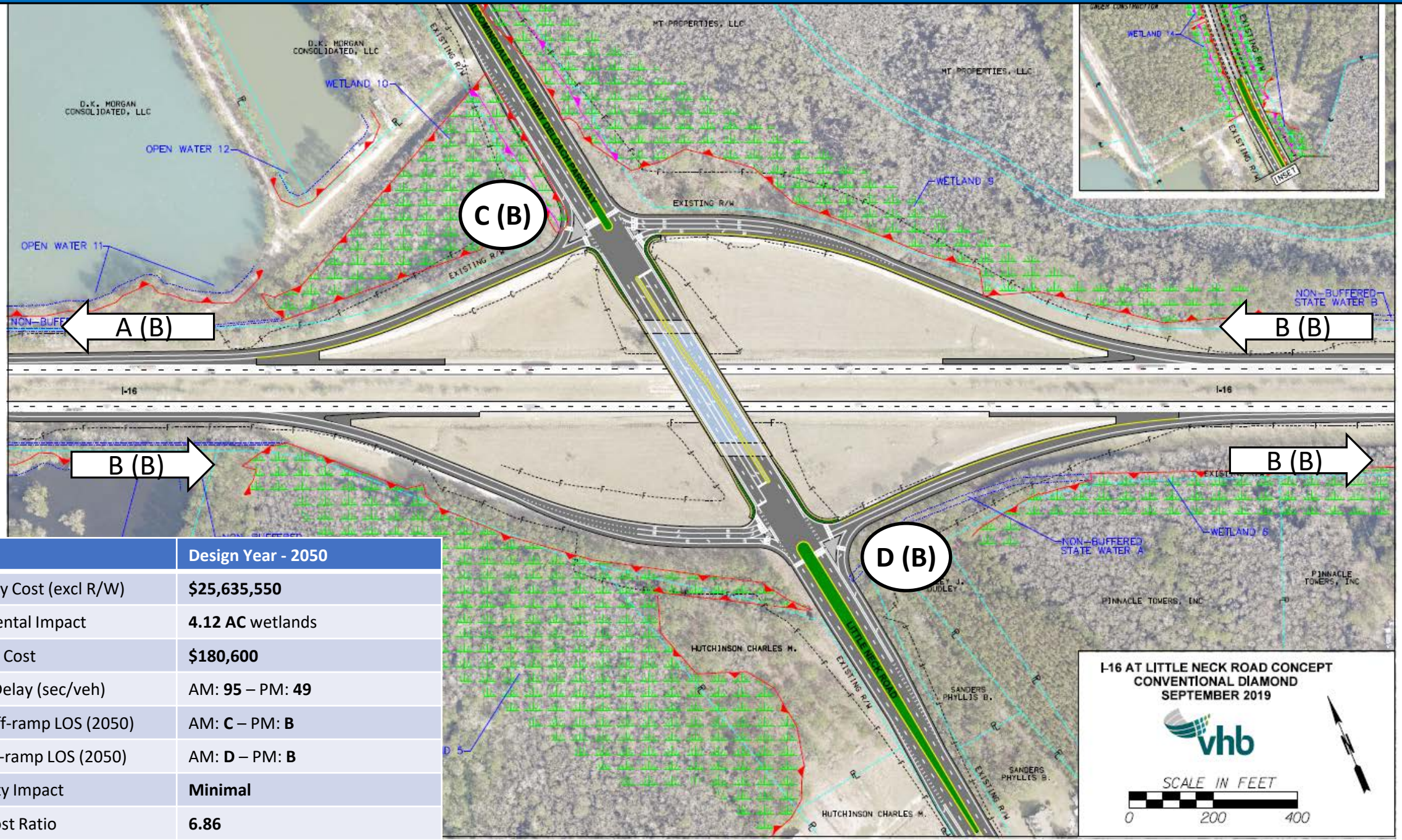
WB ramp	AM Pk	PM Pk
No Build	D	D
Interim	C	B

No Build



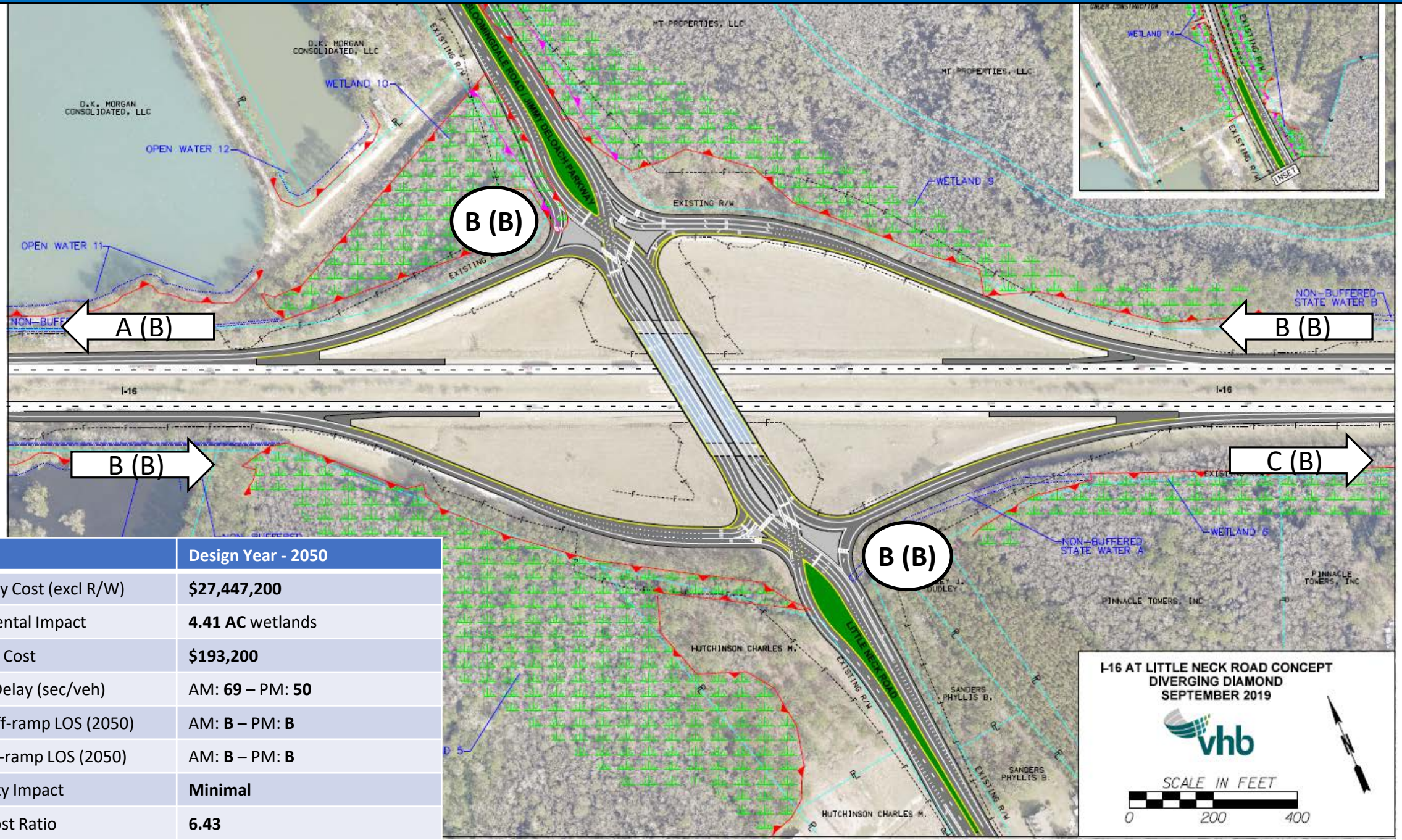
Criteria	Design Year - 2050
Preliminary Cost	**n/a**
Environmental Impact	**n/a**
Network Delay (sec/veh)	AM: **984** – PM: **564**
WB on-/off-ramp LOS (2050)	AM: **F** – PM: **D**
EB on-/off-ramp LOS (2050)	AM: **F** – PM: **E**
Community Impact	**n/a**

Alternative 1: Conventional Diamond Interchange



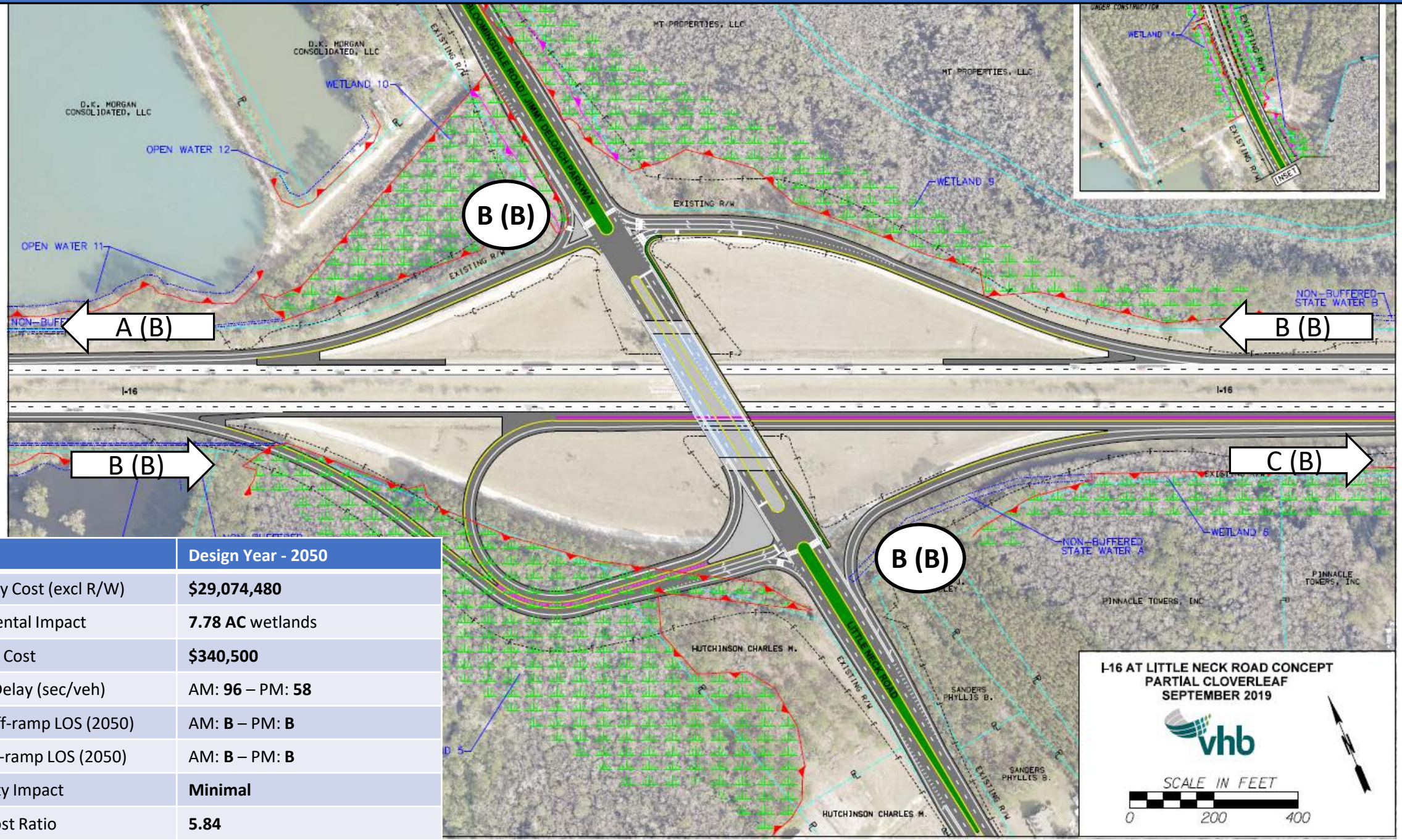
Criteria	Design Year - 2050
Preliminary Cost (excl R/W)	**$25,635,550**
Environmental Impact	**4.12 AC** wetlands
Mitigation Cost	**$180,600**
Network Delay (sec/veh)	AM: **95** – PM: **49**
WB on-/off-ramp LOS (2050)	AM: **C** – PM: **B**
EB on-/off-ramp LOS (2050)	AM: **D** – PM: **B**
Community Impact	**Minimal**
Benefit-Cost Ratio	**6.86**

Alternative 2: Diverging Diamond Interchange



Criteria	Design Year - 2050
Preliminary Cost (excl R/W)	**$27,447,200**
Environmental Impact	**4.41 AC** wetlands
Mitigation Cost	**$193,200**
Network Delay (sec/veh)	AM: **69** – PM: **50**
WB on-/off-ramp LOS (2050)	AM: **B** – PM: **B**
EB on-/off-ramp LOS (2050)	AM: **B** – PM: **B**
Community Impact	**Minimal**
Benefit-Cost Ratio	**6.43**

Alternative 3: Partial Cloverleaf Interchange



Criteria	Design Year - 2050
Preliminary Cost (excl R/W)	**$29,074,480**
Environmental Impact	**7.78 AC** wetlands
Mitigation Cost	**$340,500**
Network Delay (sec/veh)	AM: **96** – PM: **58**
WB on-/off-ramp LOS (2050)	AM: **B** – PM: **B**
EB on-/off-ramp LOS (2050)	AM: **B** – PM: **B**
Community Impact	**Minimal**
Benefit-Cost Ratio	**5.84**

Safety Analysis

Alternative	Level	Predicted (per yr)	Total Cost (per yr)	Total Project Life Cost	Benefit (compared to NB)
No-Build	Fatalities	0.22	$2,002,000	$282,133,356	N/A
	Injuries	11.48	$10,963,400		
	PDO	17.25	$470,925		
Conventional Diamond	Fatalities	0.12	$1,092,000	$205,788,573	$76,344,783
	Injuries	8.54	$8,155,700		
	PDO	19.5	$532,350		
Diverging Diamond	Fatalities	0.05	$455,000	$90,544,214	$191,589,142
	Injuries	3.71	$3,543,050		
	PDO	10.51	$286,923		
Partial Cloverleaf	Fatalities	0.17	$1,547,000	$263,685,038	$18,448,318
	Injuries	10.88	$10,390,400		
	PDO	21.46	$585,858		

- Conversion of stop-controlled to signals increases property damage only (PDO) crashes, but reduces injuries and fatalities
- Reduction in conflict points at Diverging Diamond Interchange (DDI) has significant safety benefits
  - 33% reduction in total crashes
  - 41% reduction in injuries and fatalities

Evaluation Matrix

- Quantitative measures scored relative to value differences
- Qualitative measures scored on hi/med/lo
- Highest score is best
- Overall Scores:
  - Conventional Diamond = 37.04
  - **Diverging Diamond Interchange = 41.42**
  - Partial Cloverleaf = 35.74

		Ranking		
Evaluation Criteria	**Evaluation Sub Criteria**			
Type of Improvement	**Improvement Description**	**Conventional Diamond**	**DDI**	**Partial Cloverleaf**
Addresses Project Need and Purpose		3.00	3.00	3.00
Preliminary Cost		3.00	2.80	2.65
Overall Benefit / Cost		3.00	2.81	2.55
Traffic Operations	**Sufficient Interchange Spacing**	3.00	3.00	3.00
	Level of Service	2.00	3.00	3.00
	Vehicle Delay Savings	2.46	3.00	2.31
Operational Safety	**Reduced crashes Based on predicted crash costs**	0.96	3.00	1.03
	Reduced conflict points	1.62	3.00	1.62
Improved Access	**Increased Freight Access**	3.00	3.00	3.00
	Increased Regional Access	3.00	3.00	3.00
Consistency with Programmed/Planned Projects	**Yes/No**	3.00	3.00	3.00
Impacts	**Community**	3.00	3.00	3.00
	Environmental	3.00	2.80	1.59
Public Support	**Yes/No**	**3.00**	**3.00**	**3.00**
Overall Rating		**37.04**	**41.42**	**35.74**

Next Steps

- Present to CORE MPO Board on October 30
- Public Meeting on December 3
- Submit Final Report to GDOT by mid December

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