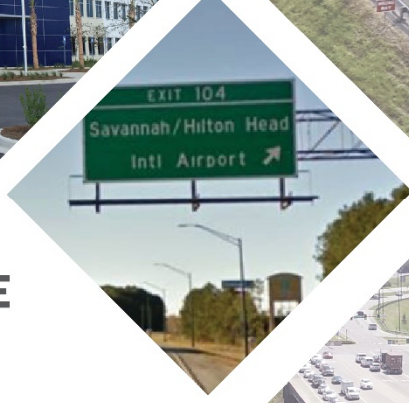


POND



# I-95 AT AIRWAYS AVENUE/POOLER PARKWAY INTERCHANGE STUDY

Prepared For:



January 2020



## Table of Contents

<b>EXECUTIVE SUMMARY.....</b>	<b>1</b>
<b>1. INTRODUCTION AND PLANNING BACKGROUND.....</b>	<b>3</b>
1.1 STUDY AREA.....	3
1.2 PLANNING BACKGROUND/PREVIOUS STUDIES .....	3
1.3 PROJECT NEED AND PURPOSE .....	6
1.4 LAND USE.....	9
1.5 PLANNED TRANSPORTATION IMPROVEMENTS .....	12
<b>2. EXISTING CONDITIONS.....</b>	<b>13</b>
2.1 CRASH ANALYSIS .....	13
2.2 EXISTING CONDITIONS CAPACITY ANALYSIS.....	15
2.2.1 Basic Freeway Analysis .....	15
2.2.2 Ramp Merge/Diverge Analysis.....	15
2.2.3 Intersection Analysis .....	16
<b>3. ALTERNATIVES CONSIDERED.....</b>	<b>18</b>
3.1 NO-BUILD ALTERNATIVES.....	18
3.2 INTERCHANGE ALTERNATIVE 1: WIDEN EXISTING BRIDGE & RAMPS.....	19
3.3 INTERCHANGE ALTERNATIVE 2: DIVERGING DIAMOND INTERCHANGE (DDI) .....	22
3.4 INTERCHANGE ALTERNATIVE 3: SINGLE POINT URBAN INTERCHANGE (SPUI).....	24
3.5 INTERCHANGE ALTERNATIVE 4: FLYOVERS FROM NORTH AND TO SOUTH	26
<b>4. FUTURE CONDITIONS.....</b>	<b>28</b>
4.1 FORECAST OF FUTURE TRAFFIC .....	28
4.2 FUTURE CONDITIONS CAPACITY ANALYSIS.....	29
4.2.1 2026 No-Build and Build Conditions .....	29
4.2.2 2046 No-Build & Build Conditions .....	33
4.3 PUBLIC AND STAKEHOLDER INPUT .....	37
4.4 MICROSIMULATION ANALYSIS AND EVALUATION OF ALTERNATIVES.....	37
4.4.1 Evaluation of Alternatives.....	38
4.4.2 Evaluation Results.....	40
4.5 COST OF STUDY ALTERNATIVES .....	42
<b>5. ENVIRONMENTAL SCREENING .....</b>	<b>42</b>
Jurisdictional Waters .....	43
<b>6. CONCLUSIONS .....</b>	<b>45</b>

**TABLE OF FIGURES**

Figure 1.1: IJR Study Area Map ..... 4

Figure 1.2: Study Area Development ..... 7

Figure 1.3: Future Land Use Map for City of Pooler Portion of Study Area..... 11

Figure 1.4: Future Land Use Map for City of Savannah Portion of Study Area ..... 11

Figure 3.1: Interchange Alternative 1: Widen Existing Bridge & Ramps .....21

Figure 3.2: Interchange Alternative 1: Diverging Diamond Interchange.....23

Figure 3.3: Interchange Alternative 3: Single Point Urban Interchange (SPUI).....25

Figure 3.4: Interchange Alternative 4: Flyovers from North and to South.....27

Figure 5.1: Open Water #1: Adjacent to I-95 SB Off-Ramp .....43

Figure 5.2: Jurisdictional Waters .....44

**APPENDICES**

*Appendix A: Traffic Volume Figures and Forecasting Methodology*

*Appendix B: HCS Basic Freeway Analysis and Merge/Diverge Analysis*

*Appendix C: Synchro Intersection Analysis*

*Appendix D: VISSIM Model Development and Calibration*

*Appendix E: Cost Information for Improvement Alternatives*

*Appendix F: Public Meeting Summaries*

## EXECUTIVE SUMMARY

The Chatham County – Savannah Metropolitan Planning Commission (MPC), on behalf of the Coastal Region Metropolitan Planning Organization (CORE MPO), in cooperation with the Savannah Airport Commission, commissioned this transportation study of the I-95 at Airways Ave/Pooler Pkwy interchange. Over the past two decades, rapid commercial and residential growth surrounding this interchange has resulted in significant increases in traffic volumes and congestion on area roadways, constraining access and mobility, and degrading safety for users of this important interchange. The purpose of this interchange study is to evaluate existing and future traffic conditions at the I-95 at Airways Avenue/Pooler Parkway interchange and adjacent roadways and identify and analyze interchange and roadway improvements that will provide for safe and efficient access and mobility for users of these facilities for the next 20 years.

The need for modified freeway access along I-95 was examined in relation to the two policy requirements outlined by the FHWA in their May 22, 2017 Policy on Access to the Interstate System. The following presents an examination of the results of the analysis contained within this report and how they relate to these two criteria. In order for an interchange modification to be recommended, both criteria must be met.

### **Policy #1: Operational Analysis**

*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. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (Title 23, Code of Federal Regulations (CFR), paragraphs 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access should include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute, and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

The proposed interchange modifications at the I-95 at Airways Avenue/Pooler Parkway would enhance the ability to move vehicles to and from I-95 and would provide the capacity and operational efficiency needed to mitigate queuing which currently results in spillback of traffic onto I-95. As presented in this report, freeway segments and ramp junctions all operate at acceptable level of service (LOS) under existing conditions and are expected to provide adequate operations in year 2046 with both no-build and build conditions except for the following cases:

- I-95 southbound freeway section south of US 80 which is expected to operate at LOS E in the PM peak hour under either the Build or No-Build condition.
- I-95 southbound on-ramp from Airways Avenue, which operates at LOS E. To address the high demand on this ramp and the adjacent I-95 northbound off-ramp to Airways Avenue, Build alternatives are proposed to have two-lane ramp junctions for the I-95 northbound off-ramp to Airways Avenue and the I-95 southbound on-ramp from Airways Avenue.

### **Policy #2: Access Connections & Design**

*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. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

The existing and modified interstate access would connect to existing public roads (Airways Avenue east of I-95 and Pooler Parkway west of I-95) and would provide for all traffic movements. The proposed interchange would be constructed to meet or exceed current design standards to provide safe and efficient traffic operations with minimal impacts to the surrounding environment.

### **Conclusions**

As presented in this report, the existing interchange at I-95 at Airways Avenue/Pooler Parkway provides service to the Savannah International Airport, as well as large retail developments and residential communities. The heavy traffic volumes experienced during the peak hours have resulted in vehicle delays and queuing, with queues sometimes reaching back to I-95. Interchange modifications were examined to improve the efficiency of the interchange and reduce vehicle queues. The interchange modification alternatives satisfy the two FHWA policy requirements for breaks in Interstate access. This study examined the no-build condition along with four interchange improvement concepts indicated below.

1. Flyover ramps for I-95 Southbound movements at Airways Avenue
2. Single Point Urban Interchange
3. Widened Bridge with Diamond Interchange
4. Diverging Diamond Interchange \*
5. No-Build Hybrid\*
6. No-Build \*

(* alternative does not meet need and purpose for interchange due to queue spillback and significant design year congestion)
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A major factor affecting the operation of the alternatives is preventing queue spillback between intersections. The alternatives with fewer traffic signals and greater spacing between the interchange and Mill Creek Circle intersection (the Flyover Ramps and SPUI) provide the best operations and lowest delay and rated first and second, respectively, in the improvement evaluation.

## 1. INTRODUCTION AND PLANNING BACKGROUND

The Chatham County – Savannah Metropolitan Planning Commission (MPC), on behalf of the Coastal Region Metropolitan Planning Organization (CORE MPO), in cooperation with the Savannah Airport Commission, commissioned this detailed transportation study of the I-95 at Airways Ave/Pooler Pkwy interchange. Over the past two decades, rapid commercial and residential growth surrounding this interchange has resulted in significant increases in traffic volumes and congestion on area roadways, constraining access and mobility, and degrading safety for users of this important interchange. The purpose of this interchange study is to evaluate existing and future traffic conditions at the I-95 at Airways Avenue/Pooler Parkway interchange and adjacent roadways and identify and analyze interchange and roadway improvements that will provide for safe and efficient access and mobility for users of these facilities for the next 20 years.

### 1.1 Study Area

The interchange study area is located in northwest Chatham County. As presented in **Figure 1.1**, the study area consists of the I-95 at Jimmy DeLoach Parkway interchange to the north, the I-95 at US 80 interchange to the south, the I-95 at Airways Avenue/Pooler Parkway interchange, and I-95 between all three interchanges. Since the focus of this study is the Airway Avenue/Pooler Parkway interchange, the study area also includes Airways Avenue and Pooler Parkway for approximately one mile to the east and west respectively. The study area extends north on I-95 to the Jimmy DeLoach Parkway interchange and south to the US 80 interchange in order to understand the operation of adjacent interchanges in accordance with Federal Highway Administration (FHWA) guidelines.

### 1.2 Planning Background/Previous Studies

The proposed interchange has been studied and improvements recommended in local and regional transportation planning studies and plans. These were reviewed to ensure consistency of the proposed project with other applicable long-range planning projects. Below is a brief description of these studies/plans and how the proposed project is included or recommended.

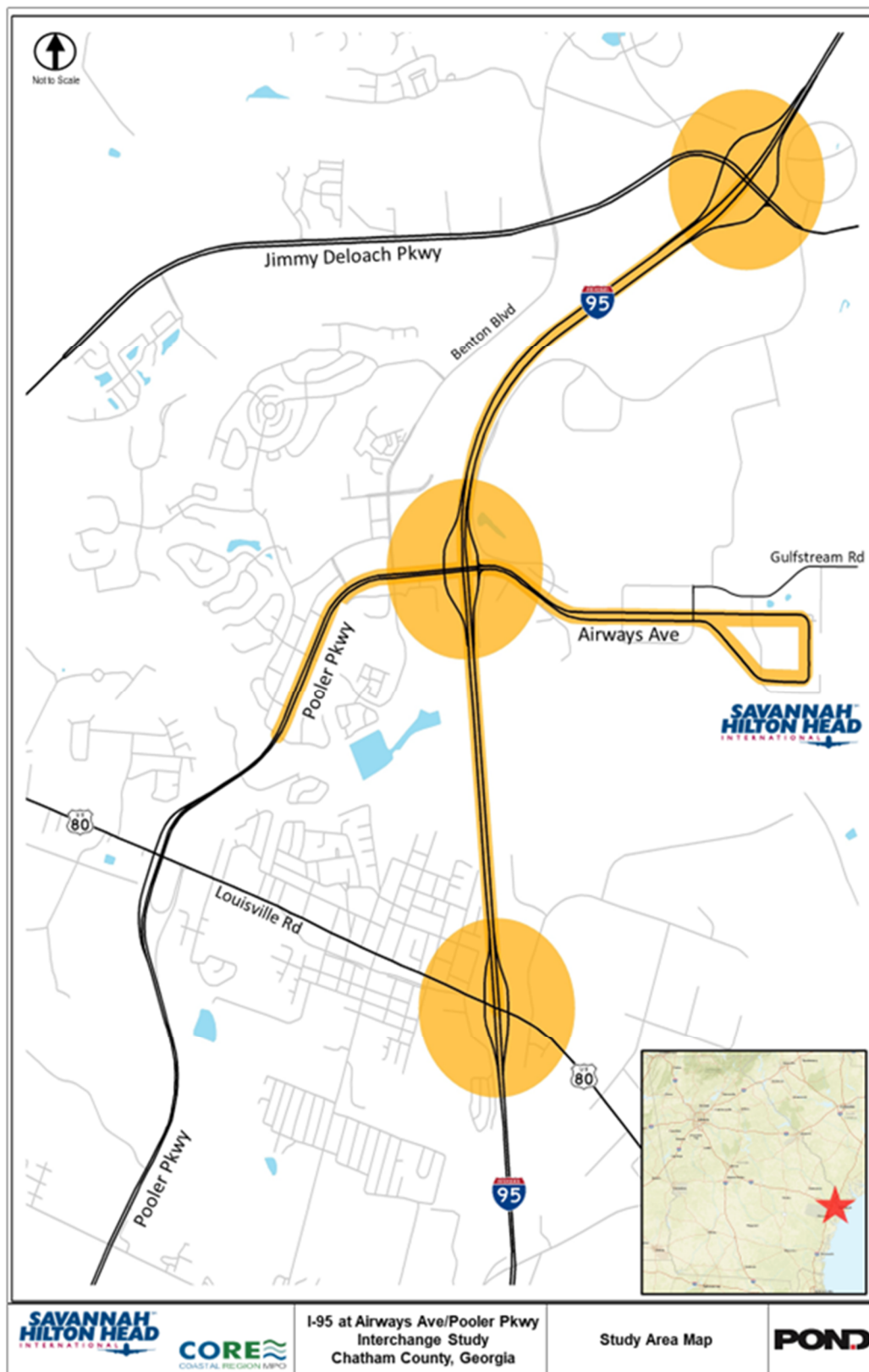
#### **CORE MPO Metropolitan Transportation Plan (MTP) Mobility 2045**

The MTP is the long-range transportation plan for the Coastal Region Metropolitan Planning Organization (CORE). Adopted in August 2019, the plan is financially constrained, meaning project costs and revenue streams are balanced. The I-95 at Airways Avenue/Pooler Parkway interchange reconstruction is included in the 2045 MTP Cost Feasible Project List. The project is shown the 2020-2027 Cost Band 1 with a cost of \$33,000,000. The Mobility 2045 improvements are listed in **Table 1.1**.

#### **CORE MPO Total Mobility Plan 2040 Metropolitan Transportation Plan (MTP)**

This was the previous MTP prepared by CORE. Adopted in August 2014, the plan was financially constrained, meaning project costs and revenue streams are balanced. This plan included multiple short-term, mid-term, and long-term roadway and interchange improvements at and adjacent to the I-95 at Airways Avenue/Pooler Parkway interchange.

Figure 1.1: Interchange Study Area Map



**Table 1.1: I-95 at Airways Ave Project listed in 2045 MTP**

<b>Project ID</b>	<b>Name</b>	<b>Funding Band</b>	<b>Total Cost</b>
16	I-95 at Airways Avenue Interchange Improvements	Band 1 2020-2027	\$33 M
24	Gulfstream Road Widening from Airways Avenue to SR 21	Band 3 2037-2045	\$6.4 M (PE Only)
Vision	Gulfstream Road Widening from Airways Avenue to SR 21	Vision Plan	\$31 M (ROW and Construction)
Vision	Airways Avenue Eastbound Flyover to Gulfstream Road	Vision Plan	\$18.8 Million
Vision	Airways Avenue Widening from I-95 to SR 21	Vision Plan	\$7.2 M
Vision	Pooler Parkway/Quacco Road Widening from I-95 to South Godley Station	Vision Plan	\$41.3 M

**CORE MPO 2015 Chatham County Interstate Study Update**

This study served as an update to the Chatham County Interstate Needs Analysis and Prioritization Plan completed by the Georgia Department of Transportation (GDOT) in 2008. The 2008 study did not recommend any improvements at the I-95 at Airways Avenue/Pooler Parkway interchange since that study was completed prior to the rapid commercial expansion along Pooler Parkway. By 2015, the expansion of the Gulfstream manufacturing facilities and Tanger Outlet Mall were underway. In preparation for this rapid growth, the 2015 Update recommended multiple short-term improvements to the study interchange. The study also referenced the major interchange improvements recommended in the 2040 MTP adopted in 2014.

**CORE MPO Freight Transportation Plan - 2014**

The CORE MPO Freight Transportation Plan provided a road map for enhancing freight mobility within and outside of the study area in an effort to improve the Savannah metropolitan area's economic competitiveness. The conversion of the I-95 at Airways Avenue/Pooler Parkway interchange to a diverging diamond interchange (DDI) was recommended as a Mid-Term Freight Infrastructure Improvement Recommendation (Years 6 – 15). Additionally, the full reconstruction of the I-95 at Airways Avenue/Pooler Parkway interchange was included as a Long-Term Freight Infrastructure Improvement Recommendation (Years 16 – 25). These recommendations were in line with those from the 2040 MTP.

### **1.3 Project Need and Purpose**

The I-95 at Airways Ave/Pooler Pkwy interchange was opened to traffic in 1994. At the time, the interchange only provided access to the airport east of I-95 on Airways Ave. Several years later Pooler Pkwy was opened, providing access to land west of I-95. As shown in **Figure 1.1**, the land adjacent to and east of the I-95 at Airways Ave/Pooler Pkwy has seen significant commercial and residential development over the past 2 ½ decades. This growth is also evidenced by the population growth within the City of Pooler, growing from a 1994 population of 5,700 to 23,800 by 2017, an increase of more than 400%<sup>1</sup>.

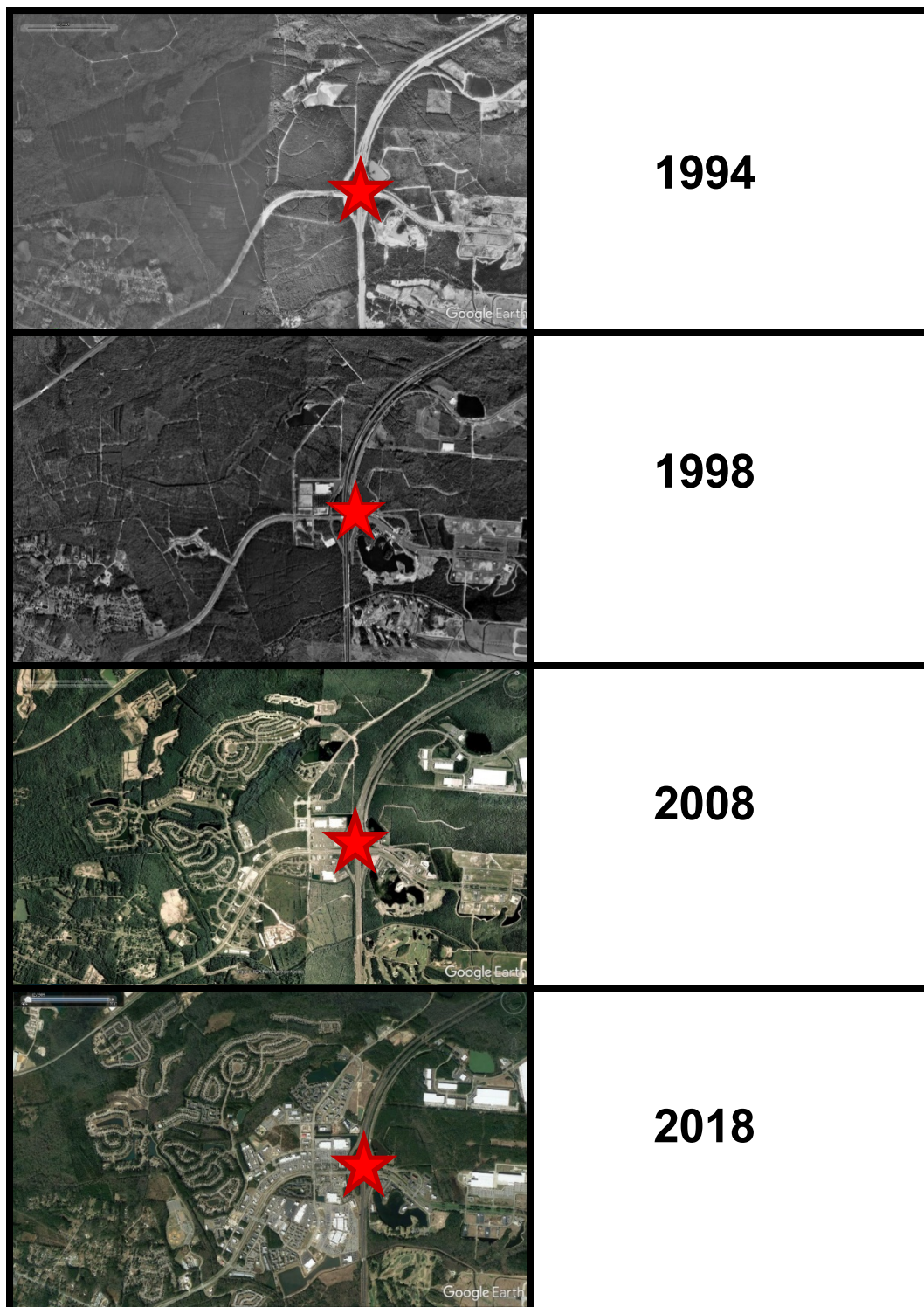
As presented in the Figure 1.1, in early 1994, Airways Ave east of I-95, Pooler Pkwy west of I-95, and the interchange with I-95 were all under construction with no development adjacent to these roadways. With the exception of the Savannah Hilton Head International Airport, the study area experienced only modest commercial and residential development by 1998. By 2008, significant development was completed or underway. By 2018, much of the land adjacent to Pooler Pkwy west of I-95 had been developed. Major big-box stores and retailers adjacent to Pooler Pkwy now include Sams, Home Depot, Walmart, Tanger Outlet Mall, and many others. Developments include 11 hotels adjacent to the interchange east of I-95 with 6 more open or nearing completion west of I-95. Commercial development east of I-95 has primarily been associated with growth of Gulfstream Aerospace, which now attracts Gulfstream's more than 13,000 direct, contract, and vendor employees.



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<sup>1</sup> US Census Bureau

**Figure 1.2: Study Area Development**



\*source: Google Earth Pro



I-95 at Airways Ave Study Interchange

This rapid development intensity has driven a steady increase in traffic volumes and congestion on study area roadways with this area now a major retail and commercial destination for local and regional trips. According to GDOT historic traffic counts, average daily traffic (ADT) traffic on Pooler Pkwy north of US 80 has grown from 17,000 in 2007 to 31,000 in 2017. Commercial development east of I-95 and retail and residential development west of I-95 now attracts significant commuter and shopping traffic leading to worsening congestion in the vicinity of the interchange. Interchange intersections as well adjacent intersections to the east and west experience queuing during weekday peak hours, as well as on Saturday. Queuing on the northbound exit ramp during the PM peak hour frequently backs up almost to the I-95 mainline lanes, creating a safety concern.



**Looking west: Traffic congestion and queuing on Airways Ave/Pooler Pkwy**

While much of the land adjacent to Airways Ave/Pooler Pkwy is already developed, the study is expected to continue to experience relatively strong traffic volume growth over the next 25 years. This is due to the ongoing commercial and residential development in the western portion of Chatham County. With large tracts of land currently developing on Pooler Pkwy south of the study area, traffic demand and congestion are expected to increase on this important regional facility which provides connectivity and mobility east to area residents, workers, shoppers, as well as travelers accessing the airport. The proposed interchange improvements are needed to improve safety and traffic operations for all users while balancing the mobility and access needs of study area businesses, residents, and tourists. Additionally, the interchange improvements would support existing and future economic growth by providing improved access to the Airport, commercial businesses, and residential developments.

## 1.4 Land Use

Land uses vary dramatically between the three study interchanges. Land uses adjacent to the I-95 interchange with Jimmy DeLoach Parkway are primarily industrial and commercial with some residential land uses northwest of the interchange. At the southern end of the study area, land uses surrounding the I-95 at US 80 interchange are comprised primarily of commercial and industrial land uses east of I-95 with residential and commercial land uses west of the interchange.



Warehouse on Jimmy DeLoach Pkwy



The majority of land immediately east of the I-95 at Airways Ave/Pooler Pkwy interchange is owned by the Savannah Airport Commission (SAC). While much of this land is associated with the Savannah Hilton Head International Airport, Gulfstream Aerospace leases a large portion of the land for its airplane manufacturing facilities. Gulfstream has multiple manufacturing facilities on this property and employs over 13,000 employees and contractors. The property

containing the airport and Gulfstream manufacturing facilities is currently zoned light-industrial. The land immediately east of I-95 houses 12 hotels and several retail businesses. This portion of the SAC property is zoned business-community.



Gulfstream manufacturing facility on Airways Ave

Retail and residential land uses comprise most of the land adjacent to Pooler Pkwy west of I-95. As described previously, the land west of I-95 has experienced rapid commercial and residential growth over the past two decades. The majority of commercial development is in the form of retail shopping centers. New retail development along Pooler Pkwy includes big box retail

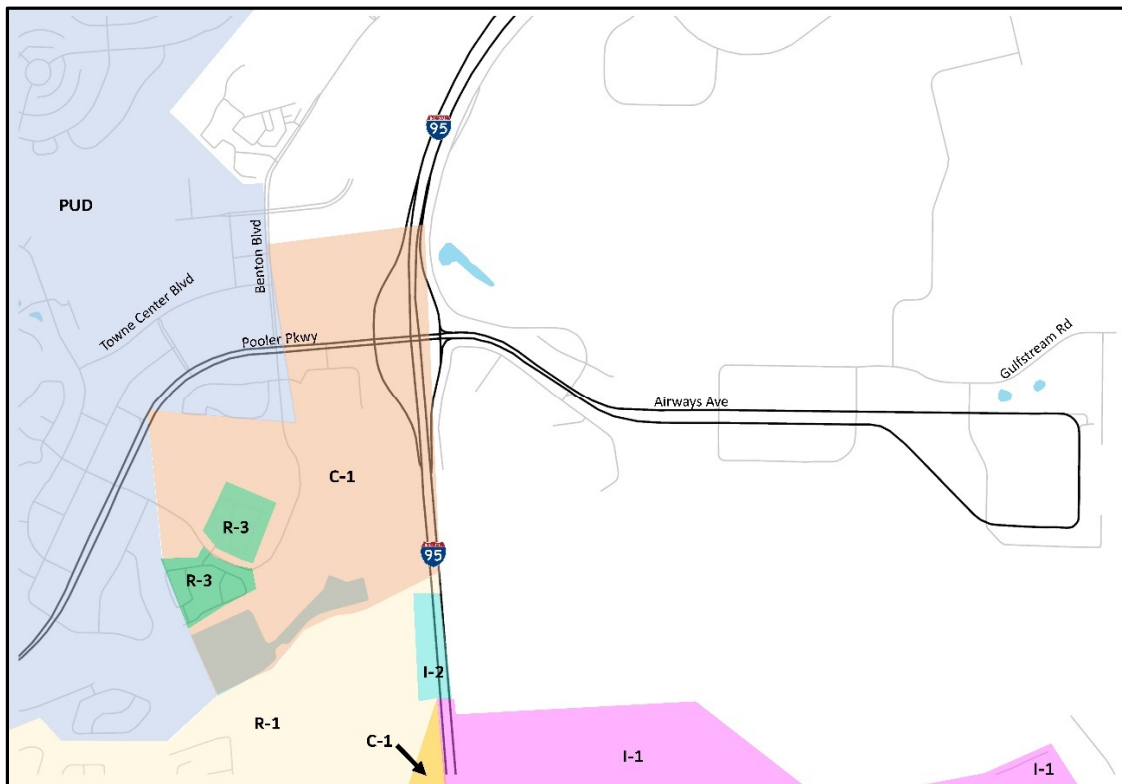


including Sam's Club, Walmart, Home Depot and multiple others. In 2015, Tanger Outlets, a 400,000+ square foot retail shopping mall, opened on the south side of Pooler Pkwy. In addition to these major retail businesses, numerous fast food and sit-down restaurants have located in this growing regional shopping destination. Land uses west of I-95 also include several major residential developments. These include several large multi-family developments south of Pooler Parkway and a large planned unit development (PUD) north of Pooler Parkway that includes multi-family and low-density housing. Existing zoning in this area is comprised primarily of PUD and commercial zoning.

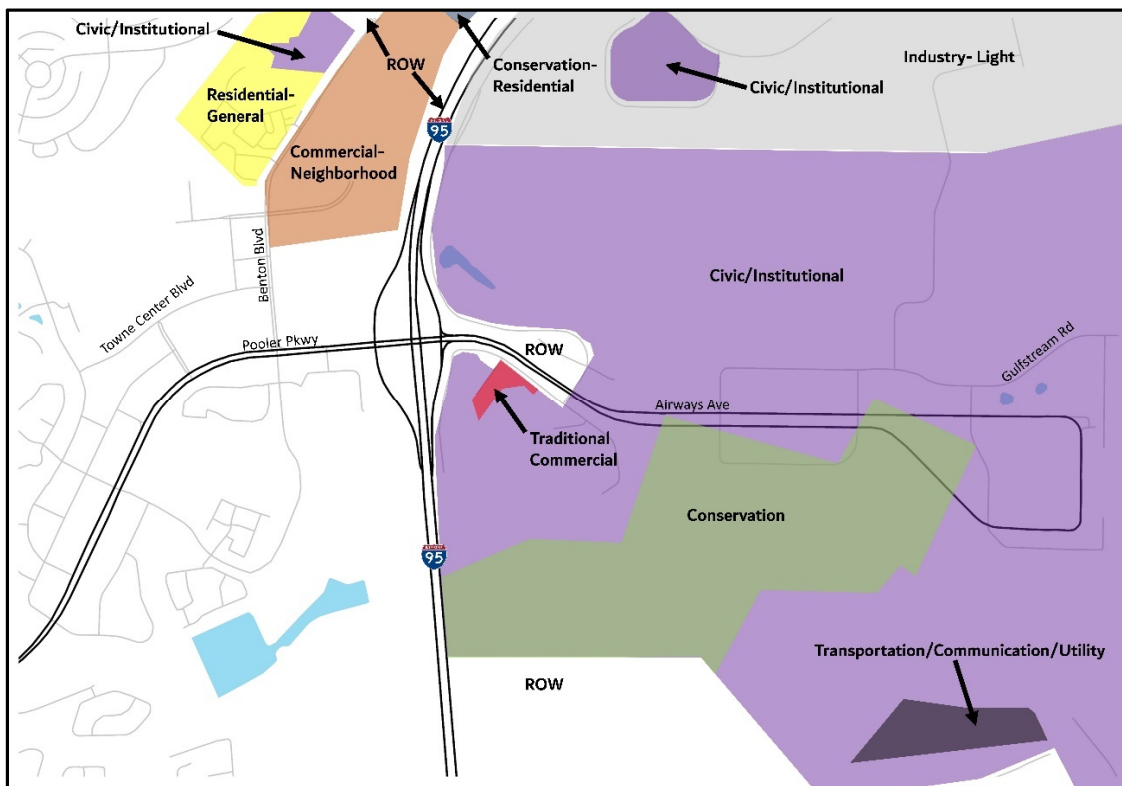


As shown in **Figures 1.3 and 1.4**, the future land use maps for the City of Savannah and City of Pooler indicate that land uses adjacent to the I-95 at Airways Avenue/Pooler Parkway interchange are not expected to change in the future. Given the existing zoning and future PUD and commercial designated land uses west of I-95, additional commercial and residential growth is expected along Pooler Parkway and Benton Boulevard.

**Figure 1.3: Future Land Use Map for City of Pooler Portion of Study Area**



**Figure 1.4: Future Land Use Map for City of Savannah Portion of Study Area**



## 1.5 Planned Transportation Improvements

A review of all planned and programmed projects within the study area was completed in order to understand how adjacent transportation improvements would influence the need and effectiveness of the proposed interchange. **Table 1.2** presents all major planned state and local transportation improvements within the study area.

**Table 1.2: Programmed Area Transportation Projects**

Project	Project Type	GDOT PI# / MTP #	Total Cost	Funding Band
I-16 at I-95 Interchange Reconstruction	Interchange	0012758 / 10	\$211.9 M	2020-2027
I-16 From I-95 to I-516	Widening	0012757/ 9		
I-16 @ SR 307	Interchange	0013727 /11	\$28 M	2020-2027
I-16 From Pooler Pkwy to I-95	Widening	0015528 / 22	\$4.5 M	2028-2036
Effingham Parkway from SR 119/Effingham to SR 30/Chatham	New Location Roadway	0006700 / 8	\$41.9 M	2020-2027
I-95 at Airways Avenue Interchange Improvements	Interchange	N/A / 16	\$33 M	2020-2027
Gulfstream Road Widening	Widening	N/A / 24	\$6.4 M	2037-2045
Airways Avenue Widening from I-95 to SR 21	Widening	N/A / Vision Plan	\$7.2 M	Vision
Pooler Parkway/Quacco Road Widening from I-95 to South Godley Station	Widening	N/A / Vision Plan	\$41.3 M	Vision

## 2. EXISTING CONDITIONS

### 2.1 Crash Analysis

In order to identify potential safety issues and crash trends at the existing interchanges within the study area, the most recent available crash data (2015-2017) was analyzed. Crash rates and injury accident rates for Pooler Parkway, Airways Avenue, Jimmy DeLoach Parkway, US 80 and I-95 were calculated in terms of crashes and injury accidents per one hundred million vehicle miles of travel and were compared to GDOT statewide average crash and injury accident rates for urban minor arterials (see **Table 2.2**).

**Table 2.2: Summary of Crash Rates**

Jimmy DeLoach Pkwy from Benton Blvd to Crossroads Pkwy (1.5 miles) – Urban Minor Arterial						
Year	No. of Crashes	Crash Rate*	Statewide Average Crash Rate	No of Injury Accidents	Injury Accident Rate*	Statewide Injury Accident Rate
2015	73	648	370	18	160	99
2016	90	783	378	21	183	97
2017	54	461	361	12	102	91
Pooler Pkwy from Grand Central Blvd to I-95 SB Ramp (1.3 miles) – Urban Minor Arterial						
Year	No. of Crashes	Crash Rate*	Statewide Average Crash Rate	No of Injury Accidents	Injury Accident Rate*	Statewide Injury Accident Rate
2015	241	1,682	370	92	642	99
2016	249	1,687	378	71	481	97
2017	235	1,582	361	61	411	91
Airways Ave from I-95 NB Ramp to Gulfstream Rd (1.2 miles) – Small Urban Major Collector						
Year	No. of Crashes	Crash Rate*	Statewide Average Crash Rate	No of Injury Accidents	Injury Accident Rate*	Statewide Injury Accident Rate
2015	59	687	388	10	116	103
2016	65	738	396	11	125	107
2017	33	377	316	6	68	82
US 80 from Rogers St to Coleman Blvd (1.4 miles) – Small Urban Principal/Minor Arterial						
Year	No. of Crashes	Crash Rate*	Statewide Average Crash Rate	No of Injury Accidents	Injury Accident Rate*	Statewide Injury Accident Rate
2015	196	1,653	370	77	650	99
2016	157	1,268	378	52	426	97
2017	174	1,461	361	51	428	91
I-95 from US 80 to Jimmy DeLoach Blvd (5.4 miles)– Small Urban Interstate						
Year	No. of Crashes	Crash Rate*	Statewide Average Crash Rate	No of Injury Accidents	Injury Accident Rate*	Statewide Injury Accident Rate
2015	147	102	64	36	25	17
2016	135	84	55	52	33	13
2017	135	83	63	32	20	15

\* Values for rate of crashes and injury accidents are per 100 million veh.-miles. / \*\* Incomplete data

As presented in Table 2.2, Pooler Parkway within the study area experienced crash rates significantly above statewide averages for all analysis years. Similarly, Pooler Parkway experienced injury accident rates four to six times higher than the statewide averages for all years. Airways Avenue similarly experienced crash and injury crash rates well above statewide averages. I-95 within the study area experienced crash and injury rates above statewide averages.

In order to better understand the crash data and trends within the study area, crash types were analyzed for each study roadway. **Table 2.3** presents the total number of crashes by type for study roadways. As shown in this table, rear-end and angle accidents represent the majority of crashes for the three-year period. The high percentage of rear-end crashes, especially on Pooler Parkway, is indicative of heavy traffic congestion.

**Table 2.3: Summary of Crash Types**

<b>Jimmy DeLoach Pkwy from Benton Blvd to Crossroads Pkwy (1.5 miles) – Small Urban Principal/Minor Arterial</b>					
<b>Years</b>	<b>Accident Type</b>				<b>Total</b>
	<b>Angle</b>	<b>Rear-End</b>	<b>Sideswipe</b>	<b>Other</b>	
2015-2018	45	120	20	32	217
% of Total	21%	55%	9%	15%	100%
<b>Pooler Pkwy from Grand Central Blvd to I-95 SB Ramp (1.3 miles) – Small Urban Minor Arterial</b>					
<b>Years</b>	<b>Accident Type</b>				<b>Total</b>
	<b>Angle</b>	<b>Rear-End</b>	<b>Sideswipe</b>	<b>Other</b>	
2015-2018	115	531	58	30	734
% of Total	16%	72%	8%	4%	100%
<b>Airways Ave from I-95 NB Ramp to Gulfstream Rd (1.2 miles) – Small Urban Major Collector</b>					
<b>Years</b>	<b>Accident Type</b>				<b>Total</b>
	<b>Angle</b>	<b>Rear-End</b>	<b>Sideswipe</b>	<b>Other</b>	
2015-2018	34	70	34	19	157
% of Total	22%	44%	22%	12%	100%
<b>US 80 from Rogers St to Coleman Blvd (1.4 miles) – Small Urban Principal/Minor Arterial</b>					
<b>Years</b>	<b>Accident Type</b>				<b>Total</b>
	<b>Angle</b>	<b>Rear-End</b>	<b>Sideswipe</b>	<b>Other</b>	
2015-2018	125	278	56	68	527
% of Total	24%	53%	10%	13%	100%
<b>I-95 from US 80 to Jimmy DeLoach Pkwy (5.4 miles) – Small Urban Interstate</b>					
<b>Years</b>	<b>Accident Type</b>				<b>Total</b>
	<b>Angle</b>	<b>Rear-End</b>	<b>Sideswipe</b>	<b>Other</b>	
2015-2018	33	208	89	87	417
% of Total	8%	50%	21%	21%	100%

Based on growth trends within the study area, traffic volumes and congestion are expected to worsen significantly over the next 20 years. Given the expected increase in traffic, without roadway and interchange improvements, the already high crash and injury crash rates are similarly expected to worsen.

## 2.2 Existing Conditions Capacity Analysis

Traffic counts were collected for all study ramps, intersections, as well I-95. The existing AM and PM peak hour traffic volumes are presented in **Appendix A**. The existing peak hour traffic volumes were analyzed to determine existing conditions on all freeway segments, at the ramp junctions, and major intersections within the study area. Existing traffic conditions within the study area roadway network were analyzed using the latest version of the Highway Capacity Software (HCS+) for freeway segments and ramp junctions. SYNCHRO 10.0 was utilized for signalized and unsignalized intersection analyses. Output results were based on HCM 2010 methodology and is included in **Appendix B and C**. Existing cycle lengths on all coordinated traffic signals were utilized for all analysis years. No weaving areas are contained in the existing or Build condition within the study area, therefore no weaving analysis is required.

### 2.2.1 Basic Freeway Analysis

Freeway segment analysis was conducted for one-way segments of I-95 between study interchanges. This analysis was performed according to the procedures outlined in the HCM. The resulting LOS values for each segment are presented in **Table 2-4** below. As shown in this table, all study area freeway segments operate at LOS B or C under existing conditions.

**Table 2.4: Basic Freeway LOS Analysis: Existing Conditions (2018)**

Freeway Segment	LOS (Density)*	
	AM	PM
I-95 NB from Pooler Pkwy/Airways Ave to Jimmy Deloach Pkwy	B (12.1)	C (19.7)
I-95 SB from Pooler Pkwy/Airways Ave to US 80	B (17.9)	C (23.9)
I-95 NB from US 80 to Pooler Pkwy/Airways Ave	B (17.0)	C (21.8)
I-95 SB from Jimmy Deloach Pkwy to Pooler Pkwy/Airways Ave	B (16.0)	C (19.4)

\*Density = passenger cars/per mile/per lane (pc/mi/ln)

### 2.2.2 Ramp Merge/Diverge Analysis

Ramp junctions at the I-95 interchanges with Jimmy DeLoach Parkway, Airways Avenue/Pooler Parkway, and US 80 were analyzed for existing conditions. This analysis was performed according to the procedures outlined in the HCM. The resulting LOS and densities for each merge or diverge are presented in **Table 2-5**. As shown in this table, there are no existing deficiencies on study area ramps as all ramp junctions operate at LOS A-C under existing conditions.

**Table 2.5: Ramp Junction LOS Analysis: Existing Conditions (2018)**

Ramp Junction	Type	LOS (Density)*	
		AM	PM
I-95 NB On Ramp @ Jimmy Deloach Pkwy	Merge	A (10.0)	A (9.7)
I-95 SB Off Ramp @ Jimmy Deloach Pkwy	Diverge	B (15.8)	B (18.4)
I-95 NB Off Ramp @ Jimmy Deloach Pkwy	Diverge	B (12.3)	C (19.4)
I-95 SB On Ramp @ Jimmy Deloach Pkwy	Merge	B (17.2)	B (19.9)
I-95 NB On Ramp @ Airways Ave	Merge	B (12.5)	B (19.8)
I-95 SB Off Ramp @ Airways Ave	Diverge	B (16.1)	C (18.9)
I-95 NB Off Ramp @ Airways Ave	Diverge	C (17.4)	C (21.7)
I-95 SB On Ramp @ Airways Ave	Merge	C (19.1)	C (24.7)
I-95 NB On Ramp @ US 80	Merge	B (19.1)	C (21.9)
I-95 SB Off Ramp @ US 80	Diverge	C (18.0)	C (22.8)
I-95 NB Off Ramp @ US 80	Diverge	C (18.9)	C (19.6)
I-95 SB On Ramp @ US 80	Merge	B (16.3)	C (23.7)

### 2.2.3 Intersection Analysis

All study area intersections were analyzed for existing conditions using Synchro 9.0. In accordance with the procedures outlined in the HCM, the resulting delay and LOS values for each intersection are presented in **Table 2-6**. As shown in this table all signalized intersections operate at LOS D or better under existing conditions. Many study area unsignalized intersections experience unacceptable levels of service (LOS E or F) for their stop sign controlled side street approaches. This is not uncommon for stop sign controlled approaches in urbanized areas.

**Table 2.6: Intersection LOS Analysis: Existing Conditions (2018)**

Intersection	Traffic Control	LOS (Delay - sec)	
		AM	PM
I-95 at Airways Avenue/Pooler Parkway Interchange			
Pooler Pkwy @ Park Ave	Signalized	D (35.5)	D (35.9)
Pooler Pkwy @ M Pooler Marketplace Driveway*	Stop Control Side Street	B (10.2)	B (10.9)
Pooler Pkwy @ L Medical Park Dr*	Stop Control Side Street	B (10.8)	C (15.5)
Pooler Pkwy @ Maxwell Dr*	Stop Control Side Street	A (9.8)	B (10.4)
Pooler Pkwy @ Benton Blvd	Signalized	D (40.2)**	D (49.4)**
Pooler Pkwy @ Mill Creek Cir/Home Depot	Signalized	B (15.3)**	C (26.8)**
Pooler Pkwy @ I-95 SB	Signalized	C (24.3)**	D (37.4)**
Airways Ave @ I-95 NB	Signalized	C (23.1)**	C (34.1)**
Airways Ave @ Crossroads Pkwy	Signalized	B (12.7)	B (14.7)
Airways Ave WB @ Mckenna Dr*	Stop Control Side Street	B (14.4)	D (33.1)
Airways Ave EB @ Ida J Gadsden Dr (West)A*	Stop Control Side Street	D (33.6)	B (13.5)
Airways Ave WB @ Gulfstream Main Entrance	Signalized	C (31.8)	B (12.6)
Airways Ave EB @ Gulfstream Main Entrance	Signalized	B (10.1)	B (13.4)
Airways Ave WB @ Gulfstream Rd	Signalized	B (16.1)	B (12.6)
Airways Ave EB @ Ida J Gadsden Dr (East)*	Stop Control Side Street	F (295.8)	C (17.4)
I-95 at Jimmy Deloach Parkway Interchange			
Jimmy Deloach Pkwy @ I-95 SB	Signalized	C (27.6)	C (25.0)
Jimmy Deloach Pkwy @ I-95 NB	Signalized	C (29.2)	D (43.9)
I-95 at US 80 Interchange			
US 80 @ Governor Treutlen Rd	Signalized	A (8.8)	B (13.2)
US 80 @ I-95 SB	Signalized	C (29.9)	C (22.0)
US 80 @ I-95 NB	Signalized	A (9.8)	B (17.7)
US 80 @ R Continental Blvd	Signalized	B (11.1)	B (14.3)

\* For unsignalized intersections LOS shown is for stop controlled side street

\*\*Due to the close proximity of these intersections and interactions between them, queue spillback to adjacent intersections frequently occurs, resulting in delays higher than those calculated. PM peak hour queuing has been observed to reach I-95 for the Airways Avenue at I-95 Northbound off-ramp.

### **3. ALTERNATIVES CONSIDERED**

Several alternative interchange configurations were evaluated for improvement of the I-95 at Airways Avenue/Pooler Parkway interchange. Considerations of locations and alignments included proximity to existing development access points, operations needed to provide adequate LOS with future growth, and operations needed to prevent queue spillback to adjacent intersections and I-95. The following is a description of each interchange alternative.

#### **3.1 No-Build Alternatives**

The No Build Alternative represents future transportation conditions if no investments are made beyond transportation projects that are already planned and committed in the CORE MPO's Transportation Improvement Program (TIP). As such, it serves as the base case against which each of the Build alternatives are compared.

##### Adjacent Improvements on Pooler Parkway and Airways Avenue

The focus of this study and the focus of all four alternatives is the improvement of the I-95 interchange. However, due to the intensity of commercial development along Pooler Parkway and close proximity of the adjacent intersections along Pooler Parkway to the west, in order to address the operational and safety deficiencies of the interchange, the widening of Pooler Parkway to six lanes and improvement of its intersections is necessary. Without the widening and improvement of Pooler Parkway west of I-95, queuing from its intersections with Benton Boulevard and Mill Creek Circle would render any improvements of the interchange ineffective. Therefore, all interchange alternatives and analysis of those alternatives considered in this study assumes that the widening of Pooler Parkway from the I-95 SB ramp to Park Place approximately one mile to the west (Sections B and C below) will be completed in conjunction with the interchange improvements. This study's capacity analysis for the four build alternatives includes the widening of Pooler Parkway and improvement of its main intersections. Because of the intensity of development and associated traffic demands west of I-95, the widening of Pooler Parkway is necessary even if the interchange with I-95 is not improved. As presented later in this report, without widening, the two main intersections along Pooler Parkway just west of I-95 are expected to operate at LOS F.

All interchange alternatives also assume the widening of Airways Avenue to six lanes from the I-95 NB ramp to Crossroads Parkway approximately 0.4 miles to the east (Section A below). Even though the widening of Airways Avenue to six lanes to Gulfstream Road is included the airport's master plan, only the widening to Crossroads Pkwy is necessary to allow the interchange to operate at acceptable LOS. The widening of these approach roads to the interchange was performed for the following roadway sections:

- Section A: Airways Avenue from the east side of I-95 to just east of Crossroads Parkway – This is part of the section identified for widening to six lanes from I-95 to SR 21, as identified in the 2045 Metropolitan Transportation Plan's vision plan. [Cost \$5,600,000]
- Section B: Pooler Parkway from the west side of I-95 to the east side of Benton Boulevard – This is part of the section identified for widening to six lanes from I-95 to South Godley Station as identified in the 2045 Metropolitan Transportation Plan's vision plan. [Cost \$6,500,000]

- Section C: Pooler Parkway from the east side of Benton Boulevard to the west side of Park Street– This is part of the section identified for widening to six lanes from I-95 to South Godley Station as identified in the 2045 Metropolitan Transportation Plan’s vision plan. [Cost \$5,500,000]

Sections A and B are assumed to be constructed in conjunction with the interchange improvements, carrying these through the next adjacent signalized intersection on each side. Section C is assumed to be part of a larger Pooler Parkway widening effort and will be added to Sections A and B in the no-build hybrid alternative, described below.

Cost information for each of the sections is included in **Appendix E** along with cost data for each of the build alternatives. Sections A and B are included separately in the appendix and are also included in the cost estimates for the build alternatives.

#### Hybrid No-Build Alternative

The improvement of Pooler Parkway and Airways Avenue west and east of the I-95 interchange is needed to satisfy future year traffic demands with all alternatives. Therefore, in order to provide a comparison of the build alternatives to future conditions with this independent need to widen the roads approaching the intersection, a hybrid no-build alternative was prepared. This alternative includes widening of Pooler Parkway and Airways Avenue as described above for sections A, B, and C. A comparison of the advantages and disadvantages of the Hybrid No-Build alternative is presented in **Table 3.1**. **Table 3.2** presents the conceptual cost estimate for the Hybrid No-Build alternative

**Table 3.1: Hybrid No-Build - Advantages & Disadvantages**

<b>Advantages</b>	<ol style="list-style-type: none"> <li>1. Does not require interchange modification</li> <li>2. Addresses arterial traffic needs directly by improving intersections upstream from the interchange resulting in good LOS at those locations</li> </ol>
<b>Disadvantages</b>	<ol style="list-style-type: none"> <li>1. I-95 southbound ramp intersection remains very close to first intersection to the west, resulting in continued congestion</li> <li>2. When performed without interchange improvements, this alternative delivers vehicles more efficiently to the capacity constrained area at the intersection, resulting in increased delay at the interchange itself</li> </ol>

**Table 3.2: Hybrid No-Build Cost Breakdown**

CONSTRUCTION	\$13,957,800
RIGHT-OF-WAY	\$0.00
UTILITIES	\$710,000
CONTINGENCY (20%)	\$2,932,200
<b>Rounded TOTAL</b>	<b>\$17,600,000</b>

### **3.2 Interchange Alternative 1: Widen Existing Bridge & Ramps**

Interchange Alternative 1 is presented in **Figure 3.1**. This interchange alternative would improve the existing diamond interchange by widening the existing Airways Avenue bridge over I-95 and

widening and improving the entrance and exit ramps. The existing bridge over I-95 was constructed in 1994 and has a sufficiency rating of 80.0. The bridge sufficiency rating formula was created in part as a universally accepted method of collectively evaluating factors which indicate a bridge's condition and its ability to remain in service. The result of the standardized formula is a number between zero and 100, for which 100 represents an entirely sufficient bridge and zero represents an entirely insufficient or deficient bridge. The Highway Bridge Program uses sufficiency ratings to help prioritize bridges in need of repair or replacement. To qualify for federal replacement funds, a bridge must have a rating of 50 or below. With a sufficiency of 80.0, the Airways Avenue bridge over I-95 is a strong candidate for widening.

The existing bridge has seven travel lanes with two eastbound and westbound through lanes in each direction. The proposed improvement would widen the bridge to provide three through lanes in each direction, three westbound left turn lanes, and two full eastbound left turn lanes. The northbound off-ramp approach to Airways Avenue would be widened to provide three left turn lanes onto Airways Avenue and a single, free-flow right turn lane as exists today. The southbound off-ramp approach to Airways Avenue would be widened to provide two left and two right turn lanes. The southbound on-ramp would be widening to accommodate three left turn lanes from the westbound left. To accommodate future traffic demands, the northbound off-ramp and southbound on-ramp would be converted to two-lane exit and entrance ramps respectively. A comparison of the advantages and disadvantages of this interchange alternative is presented in **Table 3.3**. **Table 3.4** presents the conceptual cost estimate for Alternative 1.

**Table 3.3: Interchange Alternative 1 - Advantages & Disadvantages**

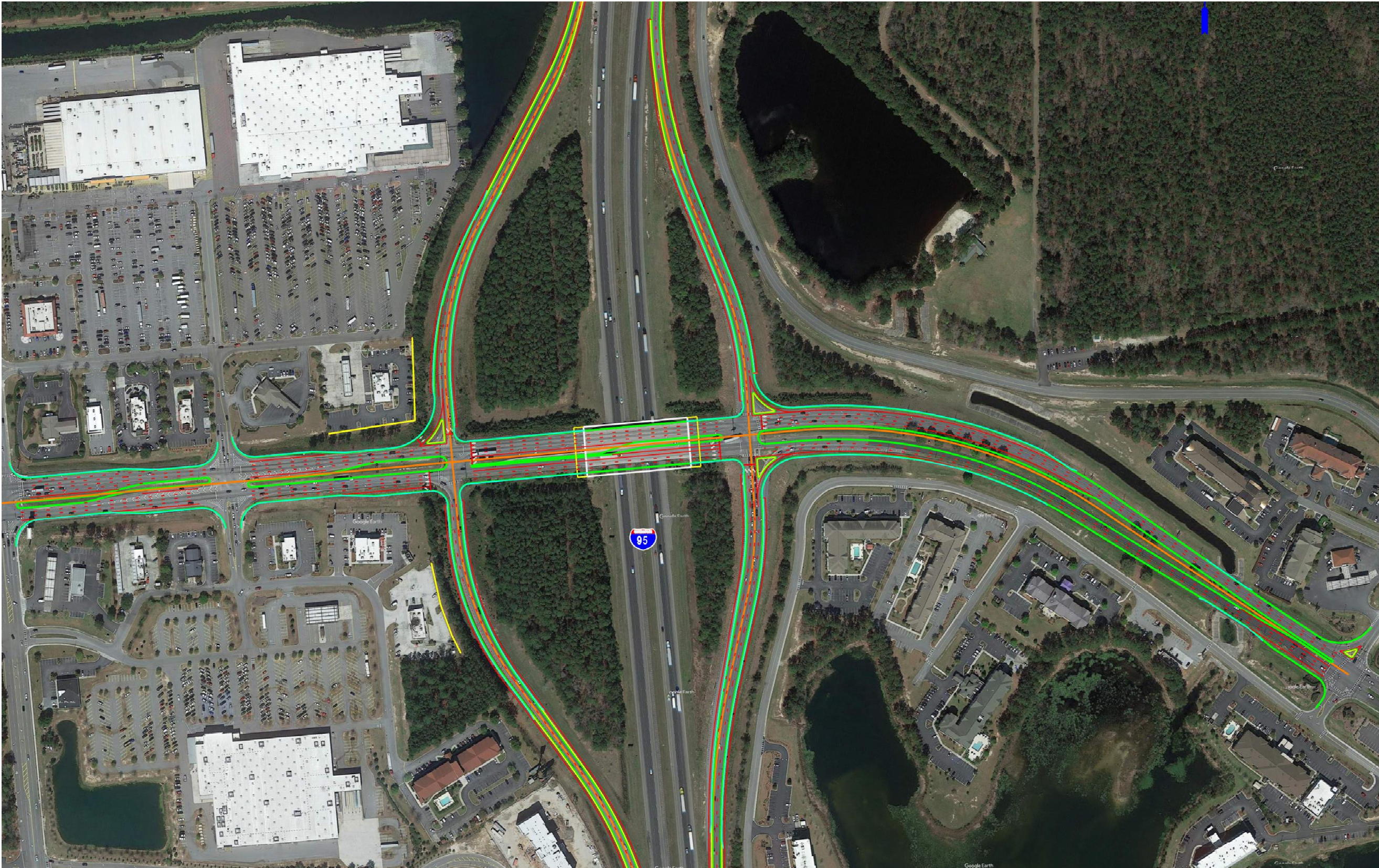
<b>Advantages</b>	<ol style="list-style-type: none"> <li>1. Long-term solution to address traffic demands</li> <li>2. Utilizes existing bridge and ramps</li> <li>3. Lower cost than SPUI or Flyover alternatives</li> <li>4. Maintains driver familiarity</li> </ol>
<b>Disadvantages</b>	<ol style="list-style-type: none"> <li>1. I-95 southbound ramp intersection remains very close to first intersection to the west, which increases congestion</li> <li>2. More expensive than DDI</li> <li>3. Longer construction period than DDI</li> </ol>

**Table 3.4: Alternative 1 Cost Breakdown\***

CONSTRUCTION	\$15,482,000
RIGHT-OF-WAY	\$0.00
UTILITIES	\$800,000
CONTINGENCY (20%)	\$3,256,400
<b>Rounded TOTAL</b>	<b>\$19,600,000</b>

\* Costs are for improvement to the I-95 interchange and do not include widening of Pooler Parkway or Airways Avenue east of west of the interchange area (east of Benton Boulevard to west of Crossroads Parkway).

Figure 3.1: Interchange Alternative 1: Widen Existing Bridge & Ramps



### 3.3 Interchange Alternative 2: Diverging Diamond Interchange (DDI)

Interchange Alternative 2 is presented in **Figure 3.2**. This interchange alternative would convert the existing diamond interchange into a diverging diamond interchange (DDI). A DDI, also known as a double crossover diamond interchange, is an interchange that crosses the surface street traffic to the opposite side of the road between the interchange ramps so vehicles have unimpeded movement onto the freeway ramps. Left-turn movements, which generally oppose through traffic on standard interchanges, are eliminated with a DDI. By eliminating left turn movements, the traffic signals at ramp intersections become two-phase signals rather than three, providing more time for all traffic movements.

One of the main benefits of DDIs is that they are often constructed utilizing the existing interchange bridge since the more efficient intersections often do not need additional lanes. With no or limited structure costs, DDIs are often significantly less costly than traditional interchange improvements. Alternative 2 does not widen the existing bridge, however it does include ramp widening to accommodate additional turn lanes such as a triple left onto Airways Avenue at the I-95 NB offramp. Many DDI's have been constructed in Georgia and the United States, including a DDI at the I-95 and SR 21 interchange just north of the study area. Because of the crossing over of traffic at two locations, DDIs have shown to be less efficient when high volumes of through traffic traveling across the interchange are present rather than predominant flow to/from the interstate. In addition, sufficient space is needed along the road to allow for construction of the cross-over intersections. A comparison of the advantages and disadvantages of this interchange alternative is presented in **Table 3.5**. **Table 3.6** presents the conceptual cost estimate for Alternative 2.

**Table 3.5: Interchange Alternative 2 - Advantages & Disadvantages**

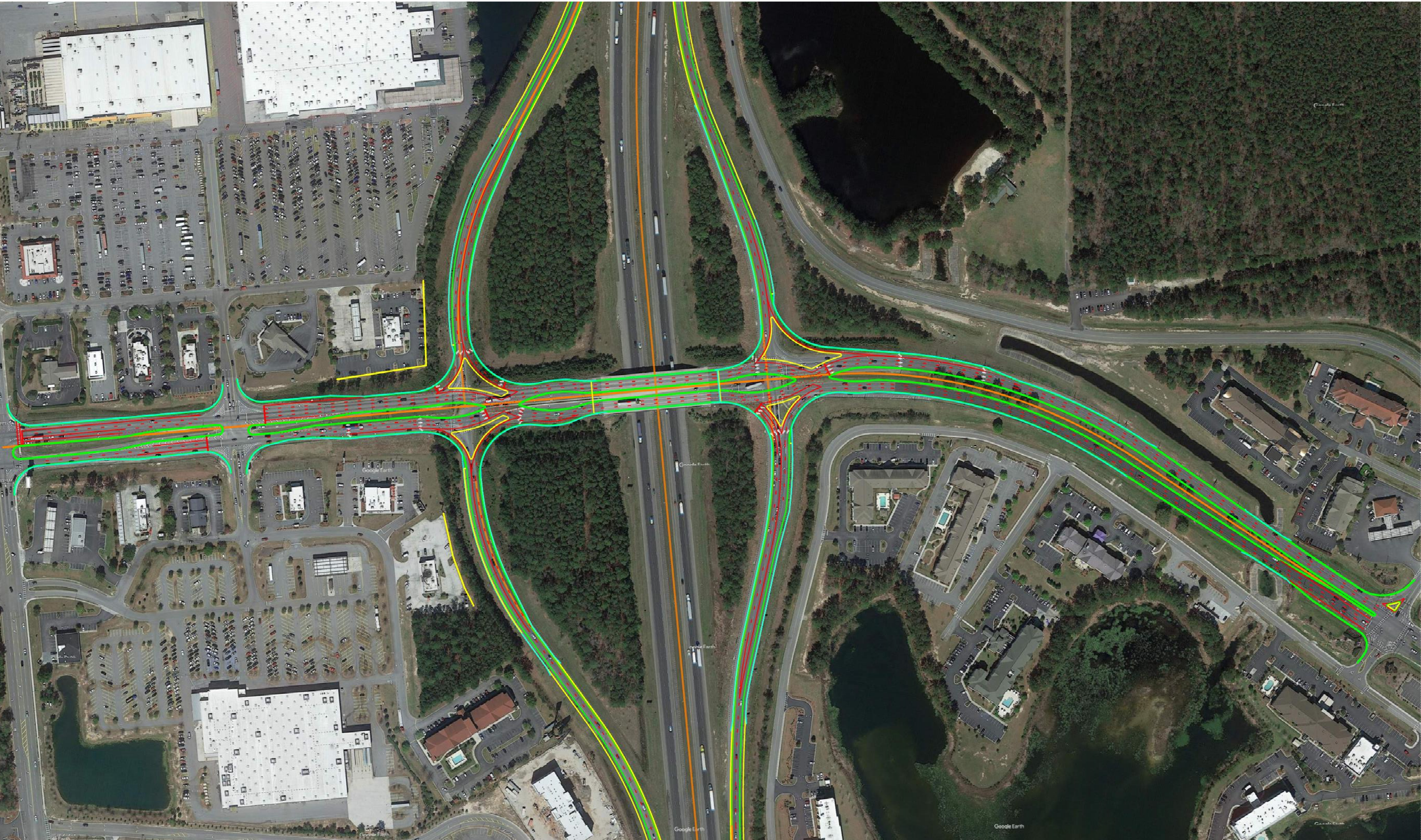
<b>Advantages</b>	<ol style="list-style-type: none"> <li>1. Least expensive option</li> <li>2. Utilizes existing bridge and ramps</li> <li>3. Fewer traffic conflict points</li> </ol>
<b>Disadvantages</b>	<ol style="list-style-type: none"> <li>1. I-95 southbound ramp intersection remains very close to first intersection to the west, which increases weaving and congestion</li> <li>2. Can be confusing to unfamiliar drivers</li> <li>3. Less efficient for 'through' traffic crossing over I-95</li> </ol>

**Table 3.6: Alternative 2 Cost Breakdown\***

CONSTRUCTION	\$10,159,000
RIGHT-OF-WAY	\$0.00
UTILITIES	\$600,000
CONTINGENCY (20%)	\$2,151,800
<b>Rounded TOTAL</b>	<b>\$13,000,000</b>

\* Costs are for improvement to the I-95 interchange and do not include widening of Pooler Parkway or Airways Avenue east of west of the interchange area (east of Benton Boulevard to west of Crossroads Parkway).

Figure 3.2: Interchange Alternative 2: Diverging Diamond Interchange



### 3.4 Interchange Alternative 3: Single Point Urban Interchange (SPUI)

Interchange Alternative 3 is presented in **Figure 3.3**. This interchange alternative would convert the existing diamond interchange into a single point urban interchange (SPUI). A SPUI is a type of interchange where the interchange cross street and ramp entrances/exits are controlled by a single signalized intersection, rather than two intersections as with a traditional diamond interchange. This type of interchange can be more efficient than a standard diamond interchange and takes up less space.

SPUIs are more efficient than traditional diamond interchange for several reasons: First, by allowing left turn phases from the cross street to run concurrently as well as left turn phases from the off-ramps to run concurrently, this interchange is more efficient than a diamond interchange where much of the traffic must traverse two traffic signals. Furthermore, since the freeway ramps connection to the bridge allow for significantly larger turning radii than traditional intersections, the left turn phases operate more like a through phase because there is not a tight turn radius to traverse. Therefore, the left turn movement on the cross street and ramps operate more efficiently, moving more traffic than traditional left turn movements. These interchanges require large bridge structures to carry the ramps which are positioned above the interstate, contributing to the construction cost. In addition to the new ramp connections to Airways Avenue/Pooler Parkway, this alternative would widen the existing bridge to accommodate a third through lane in each direction and a third westbound left turn lane. The new I-95 NB ramp to Airways Avenue would also allow for three left turning lanes. A comparison of the advantages and disadvantages of this interchange alternative is presented in **Table 3.7**. **Table 3.8** presents the conceptual cost estimate for Alternative 3.

**Table 3.7: Interchange Alternative 3 - Advantages & Disadvantages**

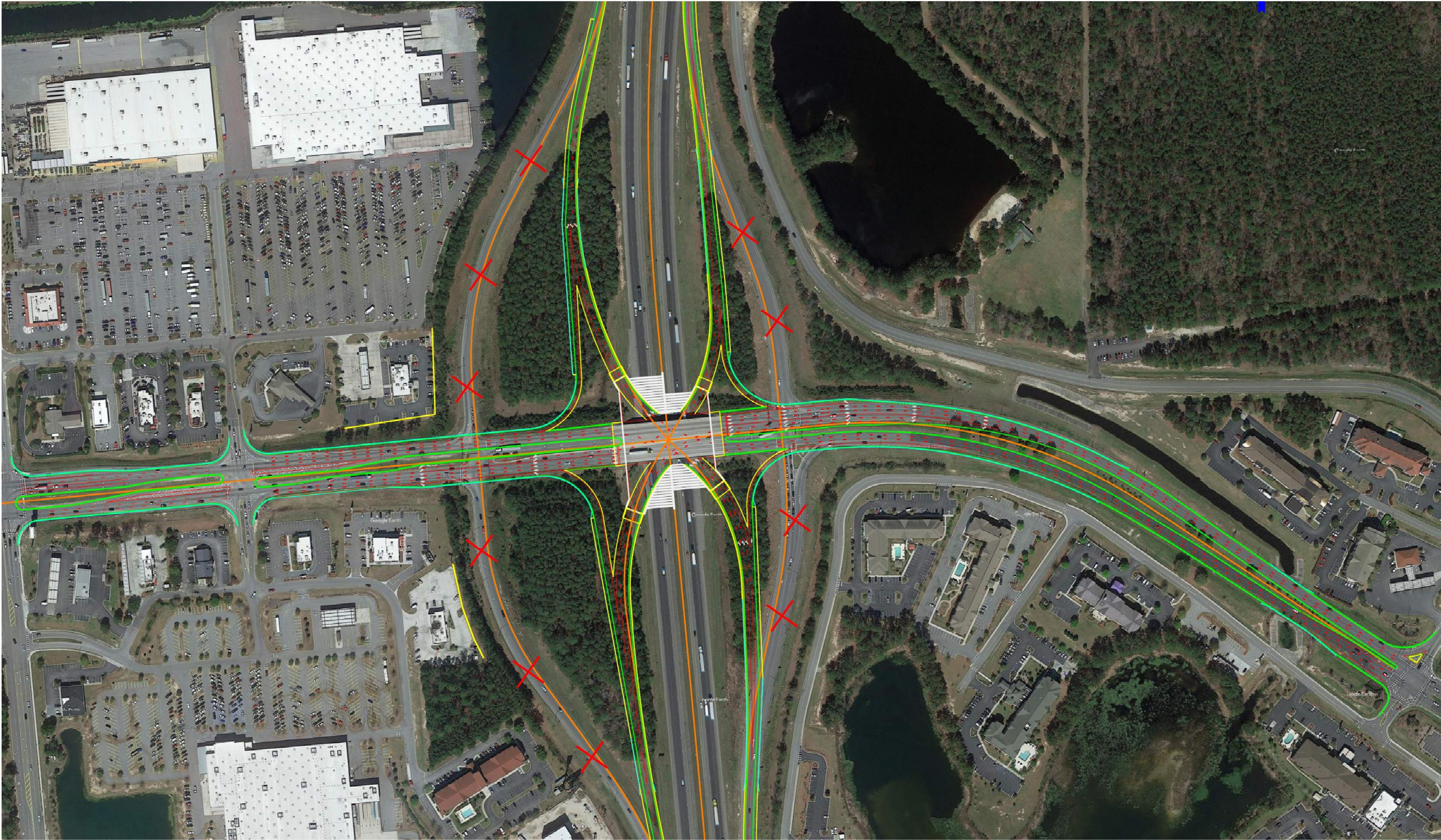
<b>Advantages</b>	<ol style="list-style-type: none"> <li>1. Higher capacity interchange than traditional diamond</li> <li>2. Provides longer distance between I-95 southbound ramp and first intersection to the west, reducing weaving and congestion</li> <li>3. Free-flow movements for right turning traffic</li> <li>4. Fewer traffic conflict points than normal diamond interchange</li> </ol>
<b>Disadvantages</b>	<ol style="list-style-type: none"> <li>1. High construction costs</li> <li>2. Difficult to provide for safe pedestrian movement at free-flow right turns</li> </ol>

**Table 3.8: Alternative 3 Cost Breakdown\***

CONSTRUCTION	\$30,955,000
RIGHT-OF-WAY	\$0.00
UTILITIES	\$1,000,000
CONTINGENCY (20%)	\$6,391,000
<b>Rounded TOTAL</b>	<b>\$38,400,000</b>

\* Costs are for improvement to the I-95 interchange and do not include widening of Pooler Parkway or Airways Avenue east of west of the interchange area (east of Benton Boulevard to west of Crossroads Parkway).

Figure 3.3: Interchange Alternative 3: Single Point Urban Interchange (SPUI)



### 3.5 Interchange Alternative 4: Flyovers from North and to South

Interchange Alternative 4 is presented in **Figure 3.4**. This interchange alternative would add two, direct access, free-flow flyover ramps to the existing diamond interchange. As shown in Figure 3.4 a new flyover ramp would carry traffic travelling southbound who wish to access the airport, Gulfstream, or destinations east of the airport. This ramp would allow these trips to bypass the two existing interchange intersections. The second flyover ramp would carry traffic travelling westbound from the airport, Gulfstream, and origins east of the airport wishing to travel south on I-95. This ramp would allow this westbound traffic heading south on I-95 to avoid the two existing interchange intersections. By removing the southbound to eastbound and westbound to southbound movements from the interchange, the flyovers would reduce the traffic demand on the interchange. Furthermore, by removing the southbound to eastbound and westbound to southbound movements from the interchange, the I-95 SB ramp full intersection would be removed, leaving only a right turn lane from the I-95 SB ramp onto Pooler Parkway and a right turn lane from Pooler Parkway eastbound onto the I-95 SB on-ramp. A raised median would be constructed along the center of Airways Avenue/Pooler Parkway from the I-95 NB ramp to Mill Creek Circle just west of I-95.

Because westbound left turn lanes would no longer exist, the existing bridge could be reconfigured to accommodate three through lanes in each direction without widening. In addition to the flyovers, this alternative would also widen the I-95 NB off-ramp to provide three left turn lanes onto Airways Avenue. A comparison of the advantages and disadvantages of this interchange alternative is presented in **Table 3.9**. **Table 3.10** presents the conceptual cost estimate for Alternative 4.

**Table 3.9: Interchange Alternative 4 - Advantages & Disadvantages**

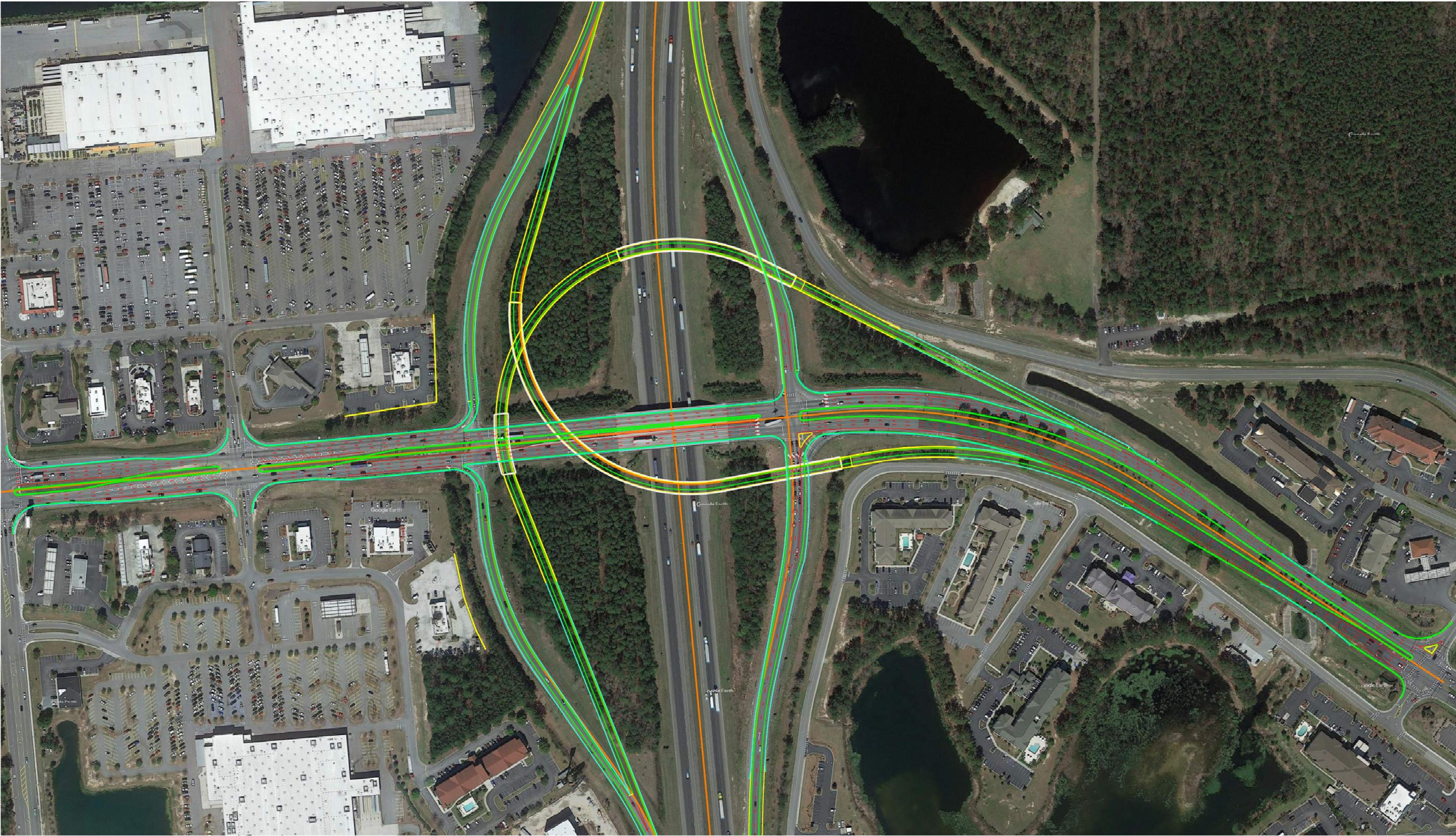
<b>Advantages</b>	<ol style="list-style-type: none"> <li>1. Higher capacity interchange than traditional diamond</li> <li>2. Provides longer distance between I-95 southbound ramp and first intersection to the west, reducing weaving and congestion</li> <li>3. Provides free-flow movement into and out of Airport area</li> </ol>
<b>Disadvantages</b>	<ol style="list-style-type: none"> <li>1. Highest cost</li> <li>2. Complicated construction</li> </ol>

**Table 3.10: Alternative 4 Cost Breakdown**

CONSTRUCTION	\$31,068,000
RIGHT-OF-WAY	\$0.00
UTILITIES	\$2,200,000
CONTINGENCY (30%)	\$9,980,400
<b>Rounded TOTAL</b>	<b>\$43,300,000</b>

\* Costs are for improvement to the I-95 interchange and do not include widening of Pooler Parkway or Airways Avenue east of west of the interchange area (east of Benton Boulevard to west of Crossroads Parkway).

Figure 3.4: Interchange Alternative 4: Flyovers from North and to South



## 4. FUTURE CONDITIONS

### 4.1 Forecast of Future Traffic

The purpose of this study is to evaluate existing and future traffic conditions at the I-95 at Airways Ave/Pooler Pkwy interchange and adjacent roadways and identify and analyze roadway and interchange improvements that will ensure safe and efficient access and mobility for users of these facilities for the next 20 years. It was determined that 2026 was a feasible and appropriate Opening Year for the interchange given the project will need to go through the full NEPA and GDOT PDP processes. With 2026 as an Opening Year, 2046 would be the +20-design year. Traffic projections for this study were developed in accordance with the requirements in the GDOT Design Traffic Forecasting Manual, Rev 1.4 Oct 2018. Since improvements to the I-95 at Airways Avenue/Pooler Parkway interchange represent an operational improvement of an interchange rather than a linear roadway widening, a capacity constrained, lower growth scenario for the No-Build condition was not prepared. Therefore, the Build and No-Build volumes are the same. The full traffic forecasting process is documented in the Traffic Data Report Traffic Forecasting Methodology memorandum (September 5, 2019) submitted to the GDOT Office of Planning and included in **Appendix A** of this report. The forecasting process for this study is summarized below.

As part of the traffic forecasting process, a review of the historical and projected demographic data from various sources was prepared to better understand growth trends within Chatham County and the study area. Demographic data from the CORE MPO 2040 Metropolitan Transportation Plan (2014), Chatham-Savannah Comprehensive Plan (2016), The US Census, and Woods and Poole were analyzed to understand past and future growth rates. As described previously, development trends and land use within the study area were also evaluated.

GDOT historical traffic volume data was relied on heavily to determine annual growth rates based on an exponential regression model of best fit. The CORE region's travel demand model was also reviewed to understand projected traffic volume trends for the future along area roads. It is important to note that while the exact traffic volumes from this model may not accurately reflect actual volumes on study area roadways, the growth rates identified by the model are still useful for traffic projections because they account for changes in future land uses, land use intensities, population, and employment.

Since this study encompasses three separate interchanges and arterial crossroads with differing land uses and development trends, a single traffic growth rate for all study facilities was not appropriate. Due to variations in potential for future development and roadway expansion projects, different growth rates were utilized for the Jimmy DeLoach Pkwy, Airways Ave, and US 80 corridors and their ramp connections to I-95. I-95 also had a separate growth rate because, as an interstate, it serves local, regional, and national travel and is affected by different factors than the arterial corridors. In order to determine growth rates for these facilities, historical traffic count data from GDOT, the CORE MPO's four-step travel demand mode, and demographic data trends were utilized. A growth rate of 2.0% was utilized for Jimmy DeLoach Pkwy, 1.5% for Airways Avenue/Pooler Parkway, 0.75% for US 80, and 1.2% for I-95. As described above, please refer to the traffic forecasting memo in **Appendix A** for further detail regarding the development of traffic growth rates as well as traffic diagrams.

## **4.2 Future Conditions Capacity Analysis**

### **4.2.1 2026 No-Build and Build Conditions**

The following includes the analysis of the 2026 No-Build condition as well as the 2026 Build condition for all Build alternatives. It is important to note that the basic freeway and ramp merge/diverge analysis and results are identical for all Build alternatives since the freeway and ramp volumes, as well as the number of lanes and ramp locations, do not differ among all Build interchange alternatives. Therefore, the basic freeway and merge/diverge results only compare the No-Build and Build conditions since the analysis is the same for all Build alternatives.

#### **4.2.1.1 Basic Freeway Analysis**

The LOS and density values for each freeway segment for both 2025 No-Build and Build conditions are presented in **Table 4.1**. As presented in this table, all freeway segments are expected to operate at LOS D or better in 2026, in fact, Build and No-Build LOS and densities are identical for all segments.

#### **4.2.1.2 Ramp Merge/Diverge Analysis**

**Table 4.2** presents the ramp junction analysis results for the 2026 No-Build and Build conditions. All ramp junctions are expected to operate at acceptable LOS in 2026 under both No-Build and Build conditions.

#### **4.2.1.3 Intersection Analysis**

**Table 4.5** presents the intersection analysis results for the 2026 No-Build and all Build alternative conditions. A review of these results reveals that all signalized intersections are expected to operate as LOS D or better in 2026 in the No-Build condition. While several unsignalized intersections are expected to operate at LOS E and F conditions, these LOS represent only the stop sign controlled side street approaches. These are low volume approaches and it is typical for stop sign controlled approaches to operate at unacceptable LOS on major roadways during peak hours.

The results of the 2026 analysis reveal that all Build alternatives are expected to reduce delay at the interchange intersections. The improvements needed on Pooler Parkway also result in delay reductions at intersection along Pooler Parkway. No improvements are needed at the Jimmy DeLoach and US 80 interchanges by 2026.

**Table 4.1: Basic Freeway LOS Analysis: 2026 No-Build and Build Conditions**

Freeway Segment	2026 No-Build LOS (Density)		2026 Build LOS (Density)	
	AM	PM	AM	PM
I-95 NB from Jimmy DeLoach Pkwy to SR 21	B (13.1)	C (24.1)	B (13.1)	C (24.1)
I-95 SB from SR 21 Pkwy to Jimmy Deloach Pkwy	B (17.6)	C (21.5)	B (17.6)	C (21.5)
I-95 NB from Pooler Pkwy/Airways Ave to Jimmy Deloach Pkwy	B (15.3)	C (21.3)	B (15.3)	C (21.3)
I-95 SB from Pooler Pkwy/Airways Ave to US 80	C (19.7)	D (26.1)	C (19.7)	D (26.1)
I-95 NB from US 80 to Pooler Pkwy/Airways Ave	C (20.8)	C (23.8)	C (20.8)	C (23.8)
I-95 SB from Jimmy Deloach Pkwy to Pooler Pkwy/Airways Ave	B (17.6)	C (20.8)	B (17.6)	C (20.8)
I-95 NB from I-16 to US 80	C (20.7)	C (22.5)	C (20.7)	C (22.5)
I-95 SB from US 80 to I-16	B (17.2)	D (27.0)	B (17.2)	D (27.0)

**Table 4.2: Ramp Junction LOS Analysis: 2026 No-Build and Build Conditions**

Ramp Junction	Type	2026 No-Build LOS (Density)*		2026 No-Build LOS (Density)*	
		AM	PM	AM	PM
I-95 NB On Ramp @ Jimmy Deloach Pkwy	Merge	A (10.7)	A (14.9)	A (10.7)	A (14.9)
I-95 SB Off Ramp @ Jimmy Deloach Pkwy	Diverge	B (16.9)	B (20.3)	B (16.9)	B (20.3)
I-95 NB Off Ramp @ Jimmy Deloach Pkwy	Diverge	B (13.6)	C (21.4)	B (13.6)	C (21.4)
I-95 SB On Ramp @ Jimmy Deloach Pkwy	Merge	B (18.6)	B (22.1)	B (18.6)	B (22.1)
I-95 NB On Ramp @ Airways Ave	Merge	B (13.7)	C (21.7)	B (13.7)	C (21.7)
I-95 SB Off Ramp @ Airways Ave	Diverge	B (17.7)	C (20.9)	B (17.7)	C (20.9)
I-95 NB Off Ramp @ Airways Ave	Diverge	C (19.4)	C (24.0)	B (19.1)	B (24.2)
I-95 SB On Ramp @ Airways Ave	Merge	C (21.2)	D (28.0)	B (20.2)	C (27.6)
I-95 NB On Ramp @ US 80	Merge	B (19.6)	C (24.2)	B (19.6)	C (24.2)
I-95 SB Off Ramp @ US 80	Diverge	C (19.9)	C (25.4)	C (19.9)	C (25.4)
I-95 NB Off Ramp @ US 80	Diverge	C (20.6)	C (21.6)	C (20.6)	C (21.6)
I-95 SB On Ramp @ US 80	Merge	B (18.1)	C (26.6)	B (18.1)	C (26.6)

**Table 4.3: Intersection LOS Analysis: 2026 No-Build and Build Conditions**

Intersection	Traffic Control	2026 No-Build and Hybrid No-Build LOS (Delay)		Build: Diamond		Build: DDI		Build: SPUI		Build: Flyover	
				2026 LOS (Delay)		2026 LOS (Delay)		2026 LOS (Delay)		2026 LOS (Delay)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-95 at Airways Avenue/Pooler Parkway Interchange											
Pooler Pkwy @ Park Ave	Signalized	D (39.8)	D (37.5)	D (40.8)	D (38.5)	D (40.8)	D (38.5)	D (40.8)	D (38.5)	D (40.8)	D (38.5)
Pooler Pkwy @ M Pooler Marketplace Driveway*	Stop Control Side Street	B (10.3)	B (11.1)	A (9.5)	A (9.9)	A (9.5)	A (9.9)	A (9.5)	A (9.9)	A (9.5)	A (9.9)
Pooler Pkwy @ L Medical Park Dr*	Stop Control Side Street	B (11.2)	C (17.2)	B (10.1)	B (12.9)	B (10.1)	B (12.9)	B (10.1)	B (12.9)	B (10.1)	B (12.9)
Pooler Pkwy @ Maxwell Dr*	Stop Control Side Street	A (9.8)	B (11.3)	A (9.4)	A (9.7)	A (9.4)	A (9.7)	A (9.4)	A (9.7)	A (9.4)	A (9.7)
Pooler Pkwy @ Benton Blvd	Signalized	D (43.2)**	D (54.7)**	D (38.2)	D (39.0)	D (40.8)	D (43.3)	D (44.1)	D (42.1)	D (41.7)	D (41.4)
Pooler Pkwy @ Mill Creek Cir/Home Depot	Signalized	B (15.6)**	C (30.5)**	B (14.4)	C (29.4)	B (19.2)	C (32.8)	B (14.2)	C (27.7)	B (16.9)	D (35.3)
Pooler Pkwy @ I-95 SB	Signalized	C (30.7)** B (14.6)#	D (44.1)** B (13.6)#	C (26.1)	C (24.5)					A (0.4)	A (0.3)
DDI: I-95 SB RT @ Pooler Pkwy WB	Signalized					C (26.0)	B (17.0)				
DDI: I-95 SB LT @ Pooler Pkwy EB	Signalized					C (23.3)	A (8.3)				
DDI: Pooler Pkwy Crossover	Signalized					B (19.4)	C (26.0)				
SPUI Intersection: I-95 NB & SB Ramps	Signalized							B (17.4)	C (31.5)		
Airways Ave @ I-95 NB	Signalized	C (23.7)** C (24.2)#	D (36.4)** D (41.4)#	C (22.9)	C (34.6)					C (24.9)	C (35.0)
DDI: I-95 NB RT @ Airways Ave EB	Signalized					A (6.5)	A (3.6)				
DDI: I-95 NB LT @ Airways Ave WB	Signalized					C (32.4)	B (17.9)				
DDI: Airways Ave Crossover	Signalized					B (17.5)	A (8.8)				

**Table 4.3 Continued: Intersection LOS Analysis: 2026 No-Build and Build Conditions**

Intersection	Traffic Control	2026 No-Build LOS (Delay)		Build: Diamond		Build: DDI		Build: SPUI		Build: Flyover	
				2026 LOS (Delay)		2026 LOS (Delay)		2026 LOS (Delay)		2026 LOS (Delay)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-95 at Airways Avenue/Pooler Parkway Interchange											
Airways Ave @ Crossroads Pkwy	Signalized	B (14.2)	B (17.7)	B (16.8)	C (27.6)	C (22.3)	C (31.5)	B (16.2)	C (24.2)	B (17.4)	C (28.2)
Airways Ave WB @ Mckenna Dr *	Stop Control Side Street	C (15.7)	E (41.7)	C (15.7)	E (41.7)	C (15.7)	E (41.7)	C (15.7)	E (41.7)	C (15.7)	E (41.7)
Airways Ave EB @ Ida J Gadsden Dr (West)*	Stop Control Side Street	F (52.0)	B (14.6)	F (55.5)	B (14.6)	F (55.5)	B (14.6)	F (55.5)	B (14.6)	F (55.5)	B (14.6)
Airways Ave WB @ Gulfstream Main Entrance	Signalized	C (31.3)	B (14.0)	C (32.4)	B (14.9)	C (32.4)	B (14.9)	C (32.4)	B (14.9)	F (55.5)	B (14.6)
Airways Ave EB @ Gulfstream Main Entrance	Signalized	B (10.7)	B (13.5)	B (10.7)	B (13.1)	B (10.7)	B (13.1)	B (10.7)	B (13.1)	C (32.4)	B (14.9)
Airways Ave WB @ Gulfstream Rd	Signalized	B (16.9)	B (13.0)	C (20.6)	A (10.0)	C (20.6)	A (10.0)	C (20.6)	A (10.0)	B (10.7)	B (13.1)
Airways Ave EB @ Ida J Gadsden Dr (East)*	Stop Control Side Street	F (***)	C (20.4)	F (***)	C (19.3)	F (***)	C (19.3)	F (***)	C (19.3)	C (20.6)	A (10.0)
I-95 at Jimmy Deloach Parkway Interchange											
Jimmy Deloach Pkwy @ I-95 SB	Signalized	C (31.5)	C (32.2)	C (31.5)	C (32.2)	C (31.5)	C (32.2)	C (31.5)	C (32.2)	C (31.5)	C (32.2)
Jimmy Deloach Pkwy @ I-95 NB	Signalized	C (33.3)	D (52.2)	C (33.3)	D (52.2)	C (33.3)	D (52.2)	C (33.3)	D (52.2)	C (33.3)	D (52.2)
I-95 at US 80 Interchange											
US 80 @ Governor Treutlen Rd	Signalized	A (9.3)	B (12.2)	A (9.3)	B (12.2)	A (9.3)	B (12.2)	A (9.3)	B (12.2)	A (9.3)	B (12.2)
US 80 @ I-95 SB	Signalized	C (31.0)	C (23.4)	C (31.0)	C (23.4)	C (31.0)	C (23.4)	C (31.0)	C (23.4)	C (31.0)	C (23.4)
US 80 @ I-95 NB	Signalized	A (9.8)	B (17.9)	A (9.8)	B (17.9)	A (9.8)	B (17.9)	A (9.8)	B (17.9)	A (9.8)	B (17.9)
US 80 @ R Continental Blvd	Signalized	B (11.9)	B (15.3)	B (11.9)	B (15.3)	B (11.9)	B (15.3)	B (11.9)	B (15.3)	B (11.9)	B (15.3)

\* For unsignalized intersections LOS shown is for stop controlled side street

\*\*Due to the close proximity of these intersections and interactions between them, queue spillback to adjacent intersections frequently occurs in the existing condition, resulting in delays higher than those calculated.

\*\*\* Delay is greater than 180 sec.

# No Build Hybrid Alternative

## **4.2.2 2046 No-Build & Build Conditions**

The following includes the analysis of the 2046 No-Build condition as well as the 2046 Build condition for all Build alternatives. As with the Opening Year analysis, the basic freeway and ramp merge/diverge analysis and results are identical for all Build alternatives since the freeway and ramp volumes as well as the number of lanes and ramp locations do not differ among all Build interchange alternatives. Therefore, the basic freeway and merge/diverge results only compare the No-Build and Build conditions since the analysis is the same for all Build alternatives.

### **4.2.2.1 Basic Freeway Analysis**

The LOS and density values for each freeway segment for both 2046 No-Build and Build conditions are presented in **Table 4.4**. As presented in this table, all freeway segments would operate at LOS D or better in 2046 with the exception of I-95 southbound south of US 80 which is expected to operate at LOS E in the PM peak hour under either the Build or No-Build condition. While the widening of this segment I-95 is not included in the fiscally constrained MTP, it is included in the Unconstrained Mobility 2045 project list.

### **4.2.2.2 Ramp Merge/Diverge Analysis**

**Table 4.5** presents the ramp junction analysis results for the 2046 No-Build and Build conditions. All ramp junctions are expected to operate at acceptable LOS in the No-Build and Build condition with the exception of the I-95 southbound on-ramp from Airways Avenue, which operates at LOS E. To address the high demand on this ramp and the adjacent I-95 northbound off-ramp to Airways Avenue, all Build alternatives are proposed to have two-lane ramp junctions for the I-95 northbound off-ramp to Airways Avenue and the I-95 southbound on-ramp from Airways Avenue.

### **4.2.2.3 Intersection Analysis**

**Table 4.8** presents the intersection analysis results for the 2046 No-Build and all Build alternative conditions. A review of the No-Build analysis reveals that both I-95 northbound and southbound ramp intersections are expected to experience LOS F conditions in the PM peak by 2046. Additionally, the two major intersection just west of I-95, Benton Boulevard and Mill Creek Circle, are expected to also experience LOS F conditions in the PM peak. This is expected since the high traffic volumes and close spacing of these four intersections are the primary operational need for the improvements being studied in this report. The AM peak hour does not experience failing LOS in 2046. Since the development west of I-95 is primarily retail, traffic generated by these businesses is far less the AM peak than the PM peak.

All four Build alternatives allow these four critical intersections to operate at LOS D or better based on Synchro operational analysis. Since the PM peak period is the critical analysis period, a VISSIM microsimulation analysis of the No-Build and Build alternatives was prepared in order to better identify the operational benefits of each Build alternative. This is presented in the following section.

The intersection analysis also reveals that improvements to the Jimmy DeLoach interchange intersections will be necessary by 2046. The US 80 intersections are all expected to operate at acceptable LOS in 2046.

**Table 4.4: Basic Freeway LOS Analysis: 2046 Build and No-Build Conditions**

Freeway Segment	2046 No-Build LOS (Density)		2046 Build LOS (Density)	
	AM	PM	AM	PM
I-95 NB from Jimmy DeLoach Pkwy to SR 21	C (21.2)	D (31.8)	C (21.2)	D (31.8)
I-95 SB from SR 21 Pkwy to Jimmy DeLoach Pkwy	C (19.5)	D (28.5)	C (19.5)	D (28.5)
I-95 NB from Pooler Pkwy/Airways Ave to Jimmy DeLoach Pkwy	B (16.7)	D (27.9)	B (16.7)	D (27.9)
I-95 SB from Pooler Pkwy/Airways Ave to US 80	C (25.8)	E (37.8)	C (25.8)	E (37.8)
I-95 NB from US 80 to Pooler Pkwy/Airways Ave	C (24.4)	D (32.4)	C (24.4)	D (32.4)
I-95 SB from Jimmy DeLoach Pkwy to Pooler Pkwy/Airways Ave	C (22.6)	D (27.5)	C (22.6)	D (27.5)
I-95 NB from I-16 to US 80	D (27.1)	D (30.4)	D (27.1)	D (30.4)
I-95 SB from US 80 to I-16	C (22.4)	E (40.0)	C (22.4)	E (40.0)

**Table 4.5: Ramp Junction LOS Analysis: 2046 Build and No-Build Conditions**

Ramp Junction	Type	2046 No-Build LOS (Density)*		2046 No-Build LOS (Density)*	
		AM	PM	AM	PM
I-95 NB On Ramp @ Jimmy DeLoach Pkwy	Merge	A (12.9)	A (16.3)	A (12.9)	A (16.3)
I-95 SB Off Ramp @ Jimmy DeLoach Pkwy	Diverge	C (21.7)	C (26.0)	C (21.7)	C (26.0)
I-95 NB Off Ramp @ Jimmy DeLoach Pkwy	Diverge	C (17.3)	D (27.2)	C (17.3)	D (27.2)
I-95 SB On Ramp @ Jimmy DeLoach Pkwy	Merge	C (24.3)	C (29.3)	C (24.3)	C (29.3)
I-95 NB On Ramp @ Airways Ave	Merge	B (17.3)	C (28.0)	B (17.3)	C (28.0)
I-95 SB Off Ramp @ Airways Ave	Diverge	C (24.8)	C (26.9)	C (24.8)	C (26.9)
I-95 NB Off Ramp @ Airways Ave	Diverge	D (25.2)	D (30.8)	B (25.0)	C (31.2)
I-95 SB On Ramp @ Airways Ave	Merge	D (28.0)	E (40.6)	C (26.6)	D (39.9)
I-95 NB On Ramp @ US 80	Merge	C (25.6)	D (31.9)	C (25.6)	D (31.9)
I-95 SB Off Ramp @ US 80	Diverge	D (25.6)	D (33.0)	D (25.6)	D (33.0)
I-95 NB Off Ramp @ US 80	Diverge	C (26.6)	C (27.6)	C (26.6)	C (27.6)
I-95 SB On Ramp @ US 80	Merge	C (23.8)	D (36.2)	C (23.8)	D (36.2)

**Table 4.8: Intersection LOS Analysis: 2046 No-Build and Build Conditions**

Intersection	Traffic Control	2046 No-Build and Hybrid No-Build LOS (Delay)		Build: Diamond		Build: DDI		Build: SPUI		Build: Flyover	
				2046 LOS (Delay)		2046 LOS (Delay)		2046 LOS (Delay)		2046 LOS (Delay)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-95 at Airways Avenue/Pooler Parkway Interchange											
Pooler Pkwy @ Park Ave	Signalized	D (42.7)	D (47.3)	D (38.0)	D (43.2)	D (38.0)	D (43.2)	D (38.0)	D (43.2)	D (38.0)	D (43.2)
Pooler Pkwy @ M Pooler Marketplace Driveway*	Stop Control Side Street	B (11.2)	B (12.4)	A (9.9)	B (11.2)	A (9.9)	B (11.2)	A (9.9)	B (11.2)	A (9.9)	B (11.2)
Pooler Pkwy @ L Medical Park Dr*	Stop Control Side Street	B (12.7)	D (25.8)	B (10.1)	C (16.0)	B (10.9)	C (16.0)	B (10.9)	C (16.0)	B (10.9)	C (16.0)
Pooler Pkwy @ Maxwell Dr*	Stop Control Side Street	A (9.6)	B (13.9)	A (9.0)	B (11.4)	A (9.0)	B (11.4)	A (9.0)	B (11.4)	A (9.0)	B (11.4)
Pooler Pkwy @ Benton Blvd	Signalized	D (45.1)**	F (108.0)**	D (39.6)	D (44.8)	D (44.1)	D (50.9)	D (43.6)	D (51.3)	D (44.8)	D (49.2)
Pooler Pkwy @ Mill Creek Cir/Home Depot	Signalized	B (19.5)**	F (81.4)**	B (17.2)	D (41.0)	C (23.7)	D (44.6)	C (20.4)	D (39.5)	B (19.6)	D (48.1)
Pooler Pkwy @ I-95 SB	Signalized	D (48.6)** B (15.8)#	F (147.8)** B (18.2)#	C (25.4)	D (41.3)					A (0.7)	A (0.7)
DDI: I-95 SB RT @ Pooler Pkwy WB	Signalized					C (25.6)	B (16.3)				
DDI: I-95 SB LT @ Pooler Pkwy EB	Signalized					B (14.3)	A (3.3)				
DDI: Pooler Pkwy Crossover	Signalized					C (20.5)	C (32.0)				
SPUI Intersection: I-95 NB & SB Ramps	Signalized							B (13.8)	C (33.2)		
Airways Ave @ I-95 NB	Signalized	C (23.7)** C (22.5)#	F (89.8)** F (93.8)#	C (24.8)	D (40.1)					C (27.6)	D (38.0)
DDI: I-95 NB RT @ Airways Ave EB	Signalized					B (10.4)	A (4.7)				
DDI: I-95 NB LT @ Airways Ave WB	Signalized					B (14.1)	B (19.7)				
DDI: Airways Ave Crossover	Signalized					B (17.1)	B (10.6)				

**Table 4.8 Continued: Intersection LOS Analysis: 2046 No-Build and Build Conditions**

Intersection	Traffic Control	2046 No-Build LOS (Delay)		Build: Diamond		Build: DDI		Build: SPUI		Build: Flyover	
				2046 LOS (Delay)		2046 LOS (Delay)		2046 LOS (Delay)		2046 LOS (Delay)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-95 at Airways Avenue/Pooler Parkway Interchange											
Airways Ave @ Crossroads Pkwy	Signalized	B (18.5)	D (40.2)	C (21.1)	D (37.1)	C (28.4)	D (39.7)	C (20.7)	D (35.5)	C (20.5)	D (38.1)
Airways Ave WB @ Mckenna Dr*	Stop Control Side Street	C (20.7)	F (52.5)	C (20.7)	F (52.5)	C (20.7)	F (52.5)	C (20.7)	F (52.5)	C (20.7)	F (52.5)
Airways Ave EB @ Ida J Gadsden Dr (West)*	Stop Control Side Street	F(304.5)	C (19.0)	F(304.5)	C (19.0)	F(304.5)	C (19.0)	F(304.5)	C (19.0)	F(304.5)	C (19.0)
Airways Ave WB @ Gulfstream Main Entrance	Signalized	C (30.9)	B (18.4)	C (30.9)	B (18.4)	C (30.9)	B (18.4)	C (30.9)	B (18.4)	C (30.9)	B (18.4)
Airways Ave EB @ Gulfstream Main Entrance	Signalized	B (12.7)	B (12.7)	B (12.7)	B (12.7)	B (12.7)	B (12.7)	B (12.7)	B (12.7)	B (12.7)	B (12.7)
Airways Ave WB @ Gulfstream Rd	Signalized	C (23.3)	B (16.1)	C (23.3)	B (16.1)	C (23.3)	B (16.1)	C (23.3)	B (16.1)	C (23.3)	B (16.1)
Airways Ave EB @ Ida J Gadsden Dr (East)*	Stop Control Side Street	F (***)	D (34.6)	F (***)	D (34.6)	F (***)	D (34.6)	F (***)	D (34.6)	F (***)	D (34.6)
I-95 at Jimmy Deloach Parkway Interchange											
Jimmy Deloach Pkwy @ I-95 SB	Signalized	E (71.6)	F (117.2)	E (71.6)	F (117.2)	E (71.6)	F (117.2)	E (71.6)	F (117.2)	E (71.6)	F (117.2)
Jimmy Deloach Pkwy @ I-95 NB	Signalized	F (99.0)	F (164.3)	F (99.0)	F (164.3)	F (99.0)	F (164.3)	F (99.0)	F (164.3)	F (99.0)	F (164.3)
I-95 at US 80 Interchange											
US 80 @ Gov Treutlen Rd	Signalized	A (9.5)	B (12.5)	A (9.5)	B (12.5)	A (9.5)	B (12.5)	A (9.5)	B (12.5)	A (9.5)	B (12.5)
US 80 @ I-95 SB	Signalized	D (36.6)	C (29.6)	D (36.6)	C (29.6)	D (36.6)	C (29.6)	D (36.6)	C (29.6)	D (36.6)	C (29.6)
US 80 @ I-95 NB	Signalized	B (10.3)	B (16.7)	B (10.3)	B (16.7)	B (10.3)	B (16.7)	B (10.3)	B (16.7)	B (10.3)	B (16.7)
US 80 @ R Continental Blvd	Signalized	B (14.2)	C (21.7)	B (14.2)	C (21.7)	B (14.2)	C (21.7)	B (14.2)	C (21.7)	B (14.2)	C (21.7)

\* For unsignalized intersections LOS shown is for stop controlled side street

\*\*Due to the close proximity of these intersections and interactions between them, queue spillback to adjacent intersections frequently occurs in the existing condition, resulting in delays higher than those calculated.

\*\*\* Delay is greater than 180 sec.

# No Build Hybrid Alternative

### **4.3 Public and Stakeholder Input**

In order to understand potential impacts and gauge the perceived value of improvements by the community, the project team met with stakeholders and the public throughout the study process. Stakeholder meetings took place in spring of 2019, with the following stakeholders included:

- Savannah Airport Commission
- City of Pooler
- City of Garden City
- Gulfstream
- GDOT District 5

In addition, public meetings were held at two key times during the study. The first public meeting on August 14, 2019 at the Pooler City Hall. The purpose of this meeting is to introduce the study, present initial study findings and interchange improvement alternatives, and provide an opportunity for the public to give input regarding the transportation challenges facing this interchange and feedback on the initial interchange improvement alternatives. 27 people attended the meeting.

The second public meeting was held on December 11, 2019 at the Pooler City Hall. The purpose of this meeting is to give the public the opportunity to review the study findings and provide feedback regarding the interchange improvement alternatives being considered. 15 People attended the meeting. Summaries of these public meetings are provided in **Appendix F**. In both meetings, the community favored the improvements that provided the greatest separation of the interchange related intersections to the retail oriented intersections along Pooler Parkway at Mill Creek and Benton Boulevard. These were the Single Point Urban Interchange (SPUI) and the Flyover alternatives.

### **4.4 Microsimulation Analysis and Evaluation of Alternatives**

As mentioned above, improvements are needed in order for the I-95 at Airways Avenue/Pooler Parkway interchange to operate at acceptable LOS in the PM peak hour, particularly in design year 2046. Since this segment of Airways Avenue and Pooler Parkway has closely spaced intersections with high traffic demands, a microsimulation analysis was prepared using VISSIM software in order to evaluate the performance of each alternative. This allowed a network evaluation of this critical time period and examination of the interaction of closely spaced intersections, as well as analyze queuing on interchange ramps and between traffic signals. VISSIM is also able to calculate travel times and overall interchange delay. For this reason, VISSIM analysis of the PM peak period was utilized to evaluate the effectiveness of each alternative against the No-Build condition as well as against each Build alternative. Please see **Appendix D** for a detailed explanation about the development and calibration of the VISSIM model.

**Table 4.9** presents the intersection VISSIM LOS for the study interchange intersections in the 2046 PM peak. As with the Synchro results, all Build alternatives are expected to allow the study intersections to operate at LOS D or better, except for the DDI interchange, which experiences significant delay and queue spillback on the I-95 northbound off ramp.

Please see **Appendix D** for a detailed explanation about the development and calibration of the VISSIM model.

**Table 4.9: 2046 PM Peak VISSIM LOS Analysis**

Intersection	No-Build: Hybrid	Build: Diamond	Build: DDI	Build: SPUI	Build: Flyover
	2046	2046	2046	2046	2046
	PM	PM	PM	PM	PM
Pooler Pkwy @ Benton Blvd		C (36)	D (45)	C (35)	C (35)
Pooler Pkwy @ Home Depot		C (38)	D (49)	C (35)	C (36)
Pooler Pkwy @ I-95 SB	D (49)	D (47)	D (49)		A (6)
Airways Ave @ I-95 NB	F (73)	E (56)	D (47)		C (32)
SPUI				B (17)	
Airways Ave @ Crossroads Pkwy		C (21)	C (29)	C (23)	C (22)

#### 4.4.1 Evaluation of Alternatives

Since all Build alternative intersections show acceptable LOS based on Synchro analysis results, additional VISSIM Measures of Effectiveness (MOEs) were analyzed in order to provide a comparative analysis of the highest performing alternatives. In order to evaluate the effectiveness of each Build Alternative, a set of Evaluation Criteria and measures of effectiveness needed to be identified that measured and compared how well each alternative addressed the project's need and purpose. The evaluation process was designed to evaluate how well each alternative address the identified project need and purpose as well as several other criteria. MOEs are the specific and detailed measures established for each evaluation criterion for the purpose of measuring the performance of the alternatives. **Table 4.10** presents the Evaluation Criteria and corresponding MOEs that were utilized to evaluate the Build alternatives.

**Table 4.10: I-95 at Airways Avenue/Pooler Parkway Interchange Modification Evaluation Criteria**

Category	Evaluation Criteria	Criteria Notes
<b>Traffic Operations</b> (Addresses Project Need to Relieve Congestion)Traffic Operations (Addresses Project Need to Relieve Congestion)	PM Peak Hour Vehicle Delay (s/veh)	PM travel delays on interchange (sec/veh).
	Average PM Peak Hour Vehicle Queuing - NB Off-Ramp	Average PM queue(backup) (feet)
	Average PM Peak Hour Vehicle Queuing - SB Off-Ramp	Average PM queue(backup) (feet)
	Spacing between Interchange Traffic Signal and Mill Creek Cir. (Sam's/Home Depot)	Close existing spacing results in weaving and congestion. Several alternatives increase this distance (feet)
	<i>Average Traffic Operations Scoring</i>	<i>Takes average of all above scoring so as not to place too much weighting on this category</i>
<b>Traffic Safety</b> (Addresses Project Need to Improve Safety on Area Roadways)Traffic Safety (Addresses Project Need to Improve Safety on Area Roadways)	Maximum PM Peak Hour Vehicle Queuing - NB Off-Ramp	Maximum PM queue(backup). Ramps backing up to Interstate represent significant safety concern (feet)
	Maximum PM Peak Hour Vehicle Queuing - SB Off-Ramp	Maximum PM queue(backup). Ramps backing up to Interstate represent significant safety concern (feet)
	Does Westbound Queue at Mill Creek Cir. (Sam's/Home Depot) back up into adjacent Interchange intersection?	Yes/No. Traffic backing up into interchange intersection represents safety concern
	<i>Average Traffic Safety Scoring</i>	<i>Takes average of all above scoring so as not to place too much weighting on this category</i>
<b>Access</b> (Addresses Project Need to Improve Access to Support Tourism and Employment)Access (Addresses Project Need to Improve Access to Support Tourism and Employment)	Travel Time for Airport Travelers (from north)	Average PM peak travel times for vehicle exiting I-95 southbound to Crossroads Pkwy just east of interchange (sec)
	Travel Time for Airport Travelers (from south)	Average PM peak travel times for vehicle exiting I-95 northbound to Crossroads Pkwy just east of interchange (sec)
	Travel Time to Retail Center/Benton Blvd (from north)	Average PM peak travel times for vehicle exiting I-95 southbound to Benton Blvd just west of interchange (sec)
	Travel Time to Retail Center/Benton Blvd (from south)	Average PM peak travel times for vehicle exiting I-95 northbound to Benton Blvd just west of interchange (sec)
	Travel Time Crossroads Pkwy to Benton Blvd (Westbound)	Average PM peak travel times for vehicle travelling across the interchange (Crossroads Pkwy to Benton Blvd) (sec)
	Travel Time Benton Blvd to Crossroads Pkwy (Eastbound)	Average PM peak travel times for vehicle travelling across the interchange (Benton Blvd to Crossroads Pkwy) (sec)
	<i>Average of Access Scoring</i>	<i>Takes average of all above scoring so as not to place too much weighting on this category</i>
<b>Environmental</b>	Impacts to Jurisdictional Waters	# of acres of Jurisdictional Waters Impacted
<b>Public Support</b>	Public Support	Did alternative receive public support during public meeting or on online survey
<b>Cost</b>	Interchange Cost	Total Estimated Project Cost
	Benefit/Cost	Compares the long-term economic advantages (benefits) divided by disadvantages (project costs)
	<i>Average of Cost Scoring</i>	<i>Takes average of all above scoring so as not to place too much weighting on this category</i>

As shown in Table 4.10, the first three Evaluation Criteria address the project's need to relieve congestion, improve safety, and support tourism and safety. All MOE's associated with these three criteria were provided by the VISSIM PM peak models. As described previously, the analysis results of the AM peak indicated low levels of congestion, primarily due to the retail nature of the study area. Therefore, the PM peak period, which experiences significant congestion and queuing under existing conditions, was utilized to compare the Build alternatives.

The remaining criteria evaluate each alternative's environmental impact, the level of public support, and finally the cost of each alternative which must be considered given the limited transportation funds available to this region.

Each of the criteria were evaluated for each of the performance metrics. The results were identified and compared to the results for the other alternatives with the same performance metric, for example travel time. This comparison was made by producing a ratio of the square root of the raw numeric data with that of the maximum value for that metric across the various alternatives evaluated. The resulting raw data was normalized to a five point scale. This results in a numeric value that provides a score of 5 for the best achieving result with a proportional scale for the other alternatives.

#### **4.4.2 Evaluation Results**

**Table 4.11** provides a comparison matrix that shows the relationship between these factors for the no-build and build alternatives. As this matrix shows, the following three alternatives meet the need and purpose of the project and are shown in the order of highest ranked to lowest ranked:

1. Flyover ramps for I-95 Southbound movements at Airways Avenue
2. Single Point Urban Interchange
3. Widened Bridge with Diamond Interchange
4. Diverging Diamond Interchange \*
5. No-Build Hybrid\*
6. No-Build \*

(\* alternative does not meet need and purpose for interchange due to queue spillback and significant design year congestion)

A major factor affecting the operation of the alternatives is preventing queue spillback between intersections. The alternatives with fewer traffic signals and greater spacing between the interchange and Mill Creek Circle intersection (the Flyover Ramps and SPUI) provided the best operations and lowest delay. Although these are higher cost options, these alternatives provided the spacing needed to allow this high-volume corridor to function effectively.

Table 4.11: I-95 at Airways Avenue/Pooler Parkway Interchange Modification Comparison of Evaluation Criteria

I-95 at Airways Avenue Interchange Study - Evaluation Matrix			Alternatives						Scoring of Build Alternatives			
Category	Evaluation Criteria	Criteria Notes	No-Build	No-Build Hybrid	Widen Existing Bridge & Ramps	Diverging Diamond Interchange	Single Point Urban Interchange (SPUI)	Flyovers from North & South	Widen Existing Bridge & Ramps	Diverging Diamond Interchange	Single Point Urban Interchange (SPUI)	Flyovers from North & South
Traffic Operations (Addresses Project Need to Relieve Congestion)	PM Peak Hour Vehicle Delay (s/veh)	PM travel delays on interchange (sec/veh).	149.39	188.08	73.6	80.3	35.9	34.7	3.4	3.3	4.9	5.0
	Average PM Peak Hour Vehicle Queuing - NB Off-Ramp	Average PM queue(backup) (feet)	1183.9	1478	214	876	200	167	4.4	2.2	4.6	5.0
	Average PM Peak Hour Vehicle Queuing - SB Off-Ramp	Average PM queue(backup) (feet)	1321.4	114	325	745	36	25	1.4	0.9	4.2	5.0
	Spacing between Interchange Traffic Signal and Mill Creek Cir. (Sam's/Home Depot)	Close existing spacing results in weaving and congestion. Several alternatives increase this distance (feet)	0	0	0	100	575	930	0.0	1.6	3.9	5.0
	Average Traffic Operations Scoring	Takes average of all above Traffic Operations scoring							2.3	2.0	4.4	5.0
Traffic Safety (Addresses Project Need to Improve Safety on Area Roadways)	Maximum PM Peak Hour Vehicle Queuing - NB Off-Ramp	Maximum PM queue(backup). Ramps backing up to Interstate represent significant safety concern (feet)	1713.7	1706	633	1699	648	548	4.7	2.8	4.6	5.0
	Maximum PM Peak Hour Vehicle Queuing - SB Off-Ramp	Maximum PM queue(backup). Ramps backing up to Interstate represent significant safety concern (feet)	1714	1656	643	1656	211	144	2.4	1.5	4.1	5.0
	Does Westbound Queue at Mill Creek Cir. (Sam's/Home Depot) back up into adjacent Interchange intersection?	Yes/No. Traffic backing up into interchange intersection represents safety concern	Yes	Yes	Yes	Yes	No	No	0.0	0.0	5.0	5.0
	Average Traffic Safety Scoring	Takes average of all above Traffic Safety scoring							2.3	1.4	4.6	5.0
Access (Addresses Project Need to Improve Access to Support Tourism and Employment)	Travel Time for Airport Travelers (from north)	Average PM peak travel times for vehicle exiting I-95 southbound to Crossroads Pkwy just east of interchange (sec)	488.1	264.9	144.4	204.6	118.2	83.5	3.8	3.2	4.2	5.0
	Travel Time for Airport Travelers (from south)	Average PM peak travel times for vehicle exiting I-95 northbound to Crossroads Pkwy just east of interchange (sec)	374.9	219.4	73.2	137.9	73.5	75.2	5.0	3.6	5.0	4.9
	Travel Time to Retail Center/Benton Blvd (from north)	Average PM peak travel times for vehicle exiting I-95 southbound to Benton Blvd just west of interchange (sec)	461.9	169.3	286.4	528.3	101.4	107.2	3.0	2.2	5.0	4.9
	Travel Time to Retail Center/Benton Blvd (from south)	Average PM peak travel times for vehicle exiting I-95 northbound to Benton Blvd just west of interchange (sec)	711	437.4	215.9	440.2	133.1	167.8	3.9	2.7	5.0	4.5
	Travel Time Crossroads Pkwy to Benton Blvd (Westbound)	Average PM peak travel times for vehicle travelling across the interchange (Crossroads Pkwy to Benton Blvd) (sec)	640.7	480.5	264.6	275.6	154.9	160.5	3.8	3.7	5.0	4.9
	Travel Time Benton Blvd to Crossroads Pkwy (Eastbound)	Average PM peak travel times for vehicle travelling across the interchange (Benton Blvd to Crossroads Pkwy) (sec)	331.4	347	169.1	227	142.7	126.3	4.3	3.7	4.7	5.0
	Average of Access Scoring	Takes average of all above Access scoring							4.0	3.2	4.8	4.9
Environmental	Impacts to Jurisdictional Waters	# of acres of Jurisdictional Waters Impacted	0	0	0	0	0	0.01	5.0	5.0	5.0	4.8
Public Support	Public Support	Did alternative receive public support during public meeting or on online survey	No Support	No Support	Support	Low Support	Support	Strong Support	4.0	3.0	4.0	5.0
Cost	Interchange Cost	Total Estimated Project Cost	\$0	\$17,600,000	\$19,600,000	\$13,000,000	\$38,400,000	\$43,300,000	4.1	5.0	2.9	2.7
	Benefit/Cost	Compares the long-term economic advantages (benefits) divided by disadvantages (project costs)	N/A	0	7.66	10.52	5.86	5.25	4.3	5.0	3.7	3.5
	Average of Cost Scoring	Takes average of all above Cost scoring							4.2	5.0	3.3	3.1
Overall Ranking					Third	Fourth	Second	First	21.8	19.7	26.1	27.8

## 4.5 Cost of Study Alternatives

A benefit to cost (B/C) ratio for all study alternatives was calculated using GDOT's latest B/C methodology. A benefit cost ratio over 1.0 represents a project whose benefits are greater than its costs. Benefits are calculated by assigning monetary values to the reduction in automobile delay and truck delay and by accounting for fuel cost savings. Project benefits are initially calculated based on the travel time savings for each Build alternative compared to the No-Build multiplied by the AADT for each alternative. These benefits are then annualized based on the assumption of 250 working days per year. Project costs are annualized over a 20-year design life assuming 7% interest.

Vehicle delay for each interchange was calculated utilizing the VISSIM model developed for the study. The VISSIM model provides average vehicle delays for all vehicles for the No-Build and each Build alternative. Travel times savings were calculated by subtracting the Build delay from the No-Build delay. These travel time savings were then entered into the B/C spreadsheet along with ADT volumes for cars, trucks, and total in order to calculate the person time savings benefit, commercial/truck time savings benefit, and fuel savings benefit respectively.

**Table 4.9** presents the travel times savings for each Build alternative, ADT average, annualized benefit, annualized cost, and B/C ratio.

**Table 4.9: Benefit Cost Analysis**

<b>Build Alternative</b>	<b>Travel Time Savings (hrs/veh)</b>	<b>ADT (cars &amp; trucks)</b>	<b>Annualized Benefit</b>	<b>Annualized Cost</b>	<b>B/C Ratio</b>
No-Build Hybrid	None*	133,825	\$0	\$1.66M	<b>0</b>
Diamond	0.0211	133,825	\$14.16M	\$1.85M	<b>7.66</b>
DDI	0.0192	133,825	\$12.91M	\$1.23M	<b>10.52</b>
SPUI	0.0315	133,825	\$21.23M	\$3.62M	<b>5.86</b>
Flyover	0.031	133,825	\$21.46M	\$4.10M	<b>5.25</b>

\* The No-Build Hybrid alternative shows no travel time savings in traffic simulation over the standard no-build. It provides better traffic flow to the interchange, but the critical intersections at the interchange are not improved creating bottlenecks that show a slight increase in overall travel time.

## 5. ENVIRONMENTAL SCREENING

Since the proposed interchange modification would require improvements to an interstate facility and construction within federal right-of-way, a National Environmental Policy Act (NEPA) environmental document would be required to determine the direct, indirect, and cumulative impacts of the proposed action. For this interchange study, an environmental screening of the I-

95 at Airways Avenue/Pooler Parkway interchange area was conducted in order to identify any sensitive environmental resources that could serve to preclude the implementation of the proposed project. The environmental screening consisted of a site visit and database search to identify any sensitive natural, cultural, or community resources. No sensitive cultural or community resources were identified within the study area.

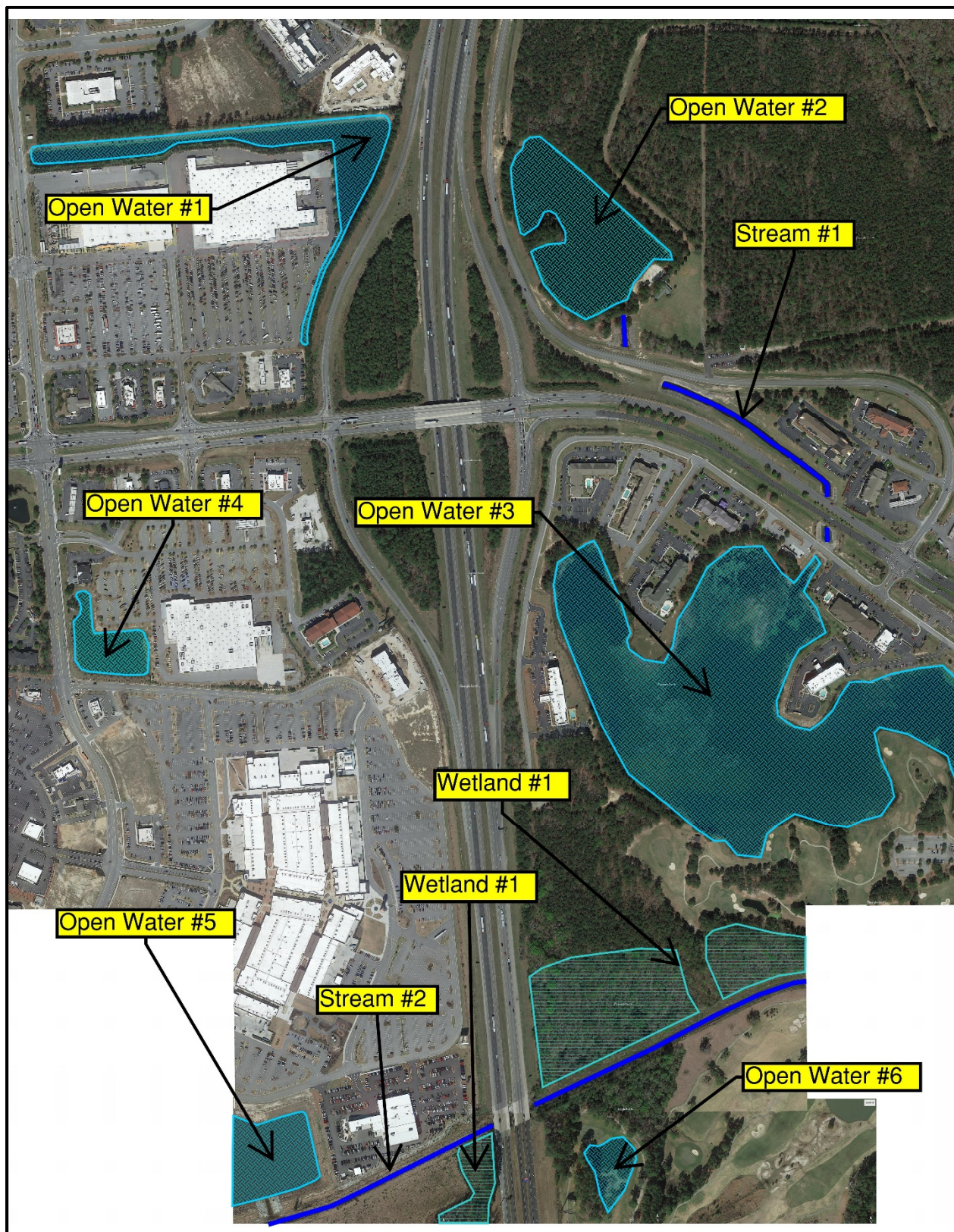
### **Jurisdictional Waters**

Jurisdictional waters of the U.S. are defined by 33 CFR Part 328.3(b) and are protected by Section 404 of the Clean Water Act (33 USC 1344), which is administered and enforced by the U.S. Army Corps of Engineers (ACOE). A windshield and database survey identified multiple jurisdictional waters within the proposed interchange study area including several open waters, wetlands, and streams. Only Alternative 4: Flyovers from North and to South is expected to have any impact to jurisdictional waters. The construction of the southbound off-ramp and flyover would require that fill material be placed in the Open Water #1 shown in **Figure 5.1** and **Figure 5.2** in the northwest quadrant of the interchange. While full delineation of jurisdictional waters will be required as part of the NEPA studies, it is estimated that impacts to Open Water #1 would be approximately 0.10 acres and could be permitted with a Nationwide 404 Permit.

**Figure 5.1: Open Water #1: Adjacent to I-95 SB Off-Ramp**



Figure 5.2: Jurisdictional Waters within Study Area



## 6. CONCLUSIONS

As presented in this report, the existing interchange at I-95 at Airways Avenue/Pooler Parkway provides service to the Savannah International Airport, as well as large retail developments and residential communities. The heavy traffic volumes experienced during the peak hours have resulted in vehicle delays and queuing, with queues sometimes reaching back to I-95. Interchange modifications were examined to improve the efficiency of the interchange and reduce vehicle queues. The interchange modification alternatives satisfy the two FHWA policy requirements for breaks in Interstate access. This study examined the no-build condition along with four interchange improvement concepts indicated below.

1. Flyover ramps for I-95 Southbound movements at Airways Avenue
2. Single Point Urban Interchange
3. Widened Bridge with Diamond Interchange
4. Diverging Diamond Interchange \*
5. No-Build Hybrid\*
6. No-Build \*

(* alternative does not meet need and purpose for interchange due to queue spillback and significant design year congestion)
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A major factor affecting the operation of the alternatives is preventing queue spillback between intersections. The alternatives with fewer traffic signals and greater spacing between the interchange and Mill Creek Circle intersection (the Flyover Ramps and SPUI) provide the best operations and lowest delay and rated first and second, respectively, in the improvement evaluation.