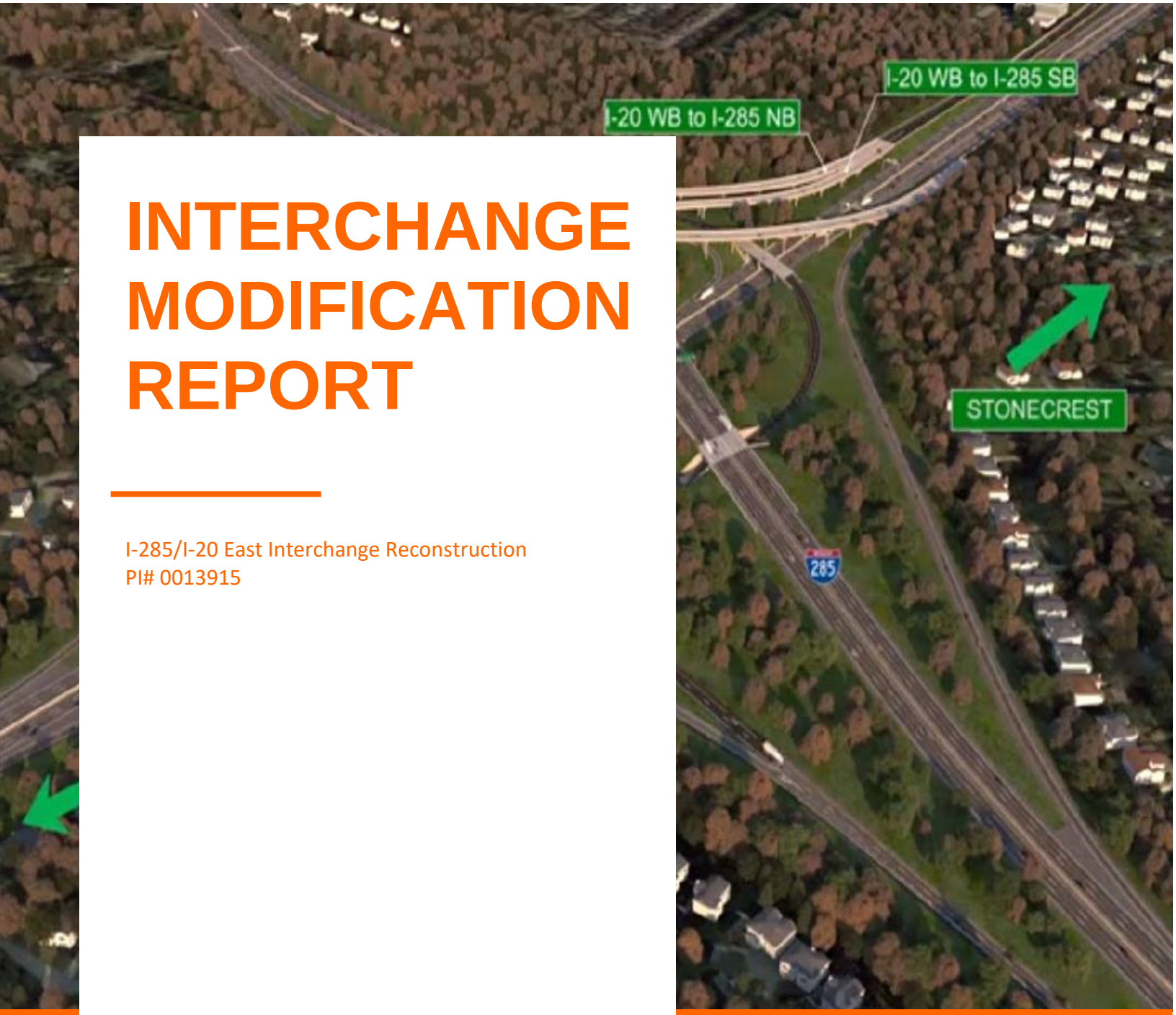

INTERCHANGE MODIFICATION REPORT

I-285/I-20 East Interchange Reconstruction
PI# 0013915

GEORGIA DEPARTMENT OF TRANSPORTATION

May 2021

PARSONS

Prepared for:
Georgia Department of Transportation

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I-285/I-20 East Interchange Reconstruction

PI# 0013915

INTERCHANGE MODIFICATION REPORT

Prepared for
GEORGIA DEPARTMENT OF TRANSPORTATION

In Coordination With
U.S. DEPARTMENT OF TRANSPORTATION
and
FEDERAL HIGHWAY ADMINISTRATION

Revision 0: November 2020

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Revision 2: May 2021

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ACRONYMS

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
AOI	Area of Influence
APE	Area of Potential Effect
ARC	Atlanta Regional Commission
CD	Collector - Distributor
CFR	Code of Federal Regulations
DRI	Development of Regional Impact
EB	Eastbound
FHWA	Federal Highway Administration
GDOT	Georgia Department of Transportation
GEARS	Georgia Electronic Accident Reporting System
GEH	Geoffrey. E. Havers.
I-20	Interstate 20
I-285	Interstate 285 or Perimeter
IMR	Interchange Modification Report
IJR	Interchange Justification Report
ITS	Intelligent Transportation System
LIB	Lithonia Industrial Boulevard
LOS	Level of Service
MP	Milepost
mph	miles per hour
NB	Northbound
NRHP	National Register of Historic Places
PE	Professional Engineer
SB	Southbound
v/c	Volume to Capacity ratio
WB	Westbound

EXECUTIVE SUMMARY

The purpose of this study is to seek approval for modifications to the East interchange at I-20 and I-285 in DeKalb county, Georgia. The modifications improve operations, reduce congestion, and enhance safety at the interchange. Furthermore, the improvements are aimed at increasing the efficiency of the I-285/I-20 East system interchange ramps. This report addresses the purpose, need, alternatives and evaluation of Federal Highway Administration's (FHWA) policy points for approval of modification to the existing interstate system.

PROJECT BACKGROUND

As a part of the Major Mobility Investment Program (MMIP) funded by Georgia Department of Transportation (Georgia DOT) the I-285 @ I-20 East Interchange Reconstruction (PI # 0013915) is being assessed. The project proposes to modify or replace:

- Modification and/or reconstruction of multiple existing ramps at the I-285 @ I-20 East Interchange including:
  - I-20 westbound to I-285 northbound and southbound ramps,
  - I-285 southbound to I-20 eastbound and westbound ramps,
  - I-20 eastbound to I-285 northbound and southbound ramps.
  - I-285 northbound to I-20 eastbound and westbound ramps will be retained.
- I-20 WB: Addition of one westbound auxiliary lane between Lithonia Industrial Boulevard and Wesley Chapel Road, and new westbound Collector-Distributor (CD) lanes between Wesley Chapel Road and the I-20 @ I-285 East Interchange.
- I-20 EB: Extension of fourth lane on eastbound existing CD road between I-285 @ I-20 interchange and Wesley Chapel Road and construction of one eastbound auxiliary lane from Panola Road to Lithonia Industrial Boulevard.
- I-285 NB: Addition of auxiliary lane on I-285 northbound between I-20 westbound on-ramp and off-ramp to Glenwood Road.

PURPOSE AND NEED

The purpose of the I-285/I-20 East Interchange Reconstruction Project is to reduce crashes and improve traffic flow within the corridor.

The need of the I-285/I-20 East Interchange Reconstruction project includes:

- Improving Safety (reduce crashes)
- Improving Traffic operations (increase throughput, relieve congestion)

STUDY AREA

The project study limits along I-20 will extend from Candler Road (western terminus) to Evans Mill Road (eastern terminus) which is approximately 9.6 miles; and on I-285 it will extend from Flat Shoals Road (southern terminus) to Glenwood Road (northern terminus) which is approximately 4.6 miles. The study limits along the corridor extend on each crossroad up to the first signalized intersection beyond the ramp terminus.

PLANNING AND FUNDING

The I-285/I-20 East Interchange Reconstruction Project (ARC reference number DKAR-241) is included in the conforming 2050 RTP and FY 2020-2025 TIP adopted by the ARC in February 2020. The TIP includes implementation priorities for the first six years of the RTP (the current RTP extends through 2050) and lists all projects for which federal funding will be used, along with any other regionally significant projects, regardless of funding source. Regionally significant projects must be drawn from the RTP, and all projects in the TIP must help implement the goals of the long-range plan.

The I-285/I-20 East Interchange Reconstruction Project, PI No. 0013915, is included in GDOT's Major Mobility Investment Program (MMIP). The MMIP projects rely on state and federal funding as dedicated in the Transportation Funding Act of 2015 (TFA). The TFA provides sustainable funding that will jump-start back-logged maintenance and operations projects and fund the major mobility projects that include resurfacing, and widening of roadways, replacement and rehabilitation of aging bridges, and upgrading intersections with new signals. The state funding is allocated for roadway and bridge improvements only.

COMPLIANCE WITH FHWA GENERAL REQUIREMENTS

This report was prepared in accordance with the FHWA policies on Access to the Interstate System dated May 22, 2017. Responses to each of the FHWA's two policy points are provided to show that the proposed modification for the I-285 @ I-20 East Interchange is viable based on the conceptual analysis performed to date. The following requirements serve as the primary decision criteria used in approval of interchange modification projects.

FHWA POLICY POINT 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))

A detailed operational and safety analysis was conducted to study the impacts of the proposed improvements on the existing freeways. The area of influence of the study included one interchange on either side of the proposed improvements along the mainline and the first major intersection on either side of the proposed change in access along the arterials. Additionally, all benefits measured and reported for this project are primarily due to the improvements proposed as part of this project and are not dependent on any other project listed in the Regional Transportation Plan (PLAN 2040).

Several performance measures were used to compare the operational safety of the existing systems under the No-Build and Build Alternatives. Key measures included freeway densities, freeway corridor peak periods, network-wide throughput, intersection delays and network-wide travel times, safety benefits, and benefit-to-cost ratio.

The benefits of the Build Alternative over the No-Build Alternative were evaluated by analyzing three hours of traffic data for the AM peak and three hours of data for the PM peak. Overall, the Build Alternative performed better than the No-Build Alternative for the above-identified performance measures. Following are some key benefits of the Build Alternative over the No-Build Alternative:

Throughput: Build Alternative showed relatively higher densities at a few locations along the I-20 mainline segments. This was primarily because the Build Alternative addresses the bottlenecks in the existing system and improve throughput significantly. I-20 WB where the new CD system and auxiliary lanes are added, about 600 additional vehicles were processed compared to the no-build condition in the AM peak and 1,700 additional vehicles were processed in the PM peak. Clearly, the Build alternative processes a significant number of vehicles that would have been delayed by the bottlenecks in the No-Build Alternative.

Travel Time: In accordance with the FHWA toolbox, the temporal time limits of the model were developed to allow for recovery and dissipation of traffic. Four-hour AM and PM analyses (6AM to 10AM and 3PM to 7PM) were conducted using 15-minute flow rates with the microsimulation for the existing year (2018), open year (2025) and design year (2045). A Warm-up and cool-down periods of 30 minutes each are considered within the four-hour analysis. It is concluded that the proposed Build Alternative will reduce travel times and improve operations for most vehicles traversing through the interchange and study area.

In detail, no significant change in travel times (highest difference ratio less than 4%) are observed in I-20 EB direction between no build vs build in both the open year and design years for both peaks. For the I-20 WB direction, in the year 2045 significant improvement in travel time is expected. Travel times savings of 48% (AM Peak) and 47% (PM Peak) are observed when build is compared to no-build. In the open year, significant improvement in travel time, 35% during the AM Peak is observed when build condition is compared to no-build. No significant change in travel times are observed along I-285 SB between no build vs build in both the open year and design years for both peaks. For I-285 NB, no significant changes in travel times are observed in the open year. Similarly, there is no significant change in travel time for the design year (AM

Peak) as traffic demand doesn't reach the capacity of the corridor, but substantial travel time savings of 58% are observed in the PM peak of the design year.

Safety: A detailed study of historical crash data between the years 2013 and 2018 was performed. The crash data was collected from Georgia Electronic Accident Reporting System (GEARS) along I-285, I-20, crossroads, and local street network within the project limits. This study was later enhanced to include a predictive crash analysis, based on methodologies outlined in the Highway Safety Manual (HSM), published by American Association of State Highway and Transportation Officials (AASHTO) to identify safety improvements that can be included in the project design. A Benefit Cost Ratio of 0.53 was calculated for the project. It can be concluded from the study that the proposed improvements would improve the safety (reduce crashes) of the corridor and that direct safety benefits can compensate for half of the project's cost.

The above discussed operation and safety improvements along the freeway corridors demonstrate that FHWA Policy Point 1 is satisfied.

FHWA POLICY POINT 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 I-285 and I-20 East interchange is a public facility that provides full access and will continue to do so with the reconstruction of ramps and addition of the CD system on the westbound direction of I-20. During the development of the Interchange Modification Report (IMR), an access management plan was not needed within the area of influence to supplement improvements to the interchanges. All access areas remain the same. Appropriate signage will be provided for the new system-to-system interchange configuration and CD system. Conceptual layout is included in **Appendix A**.

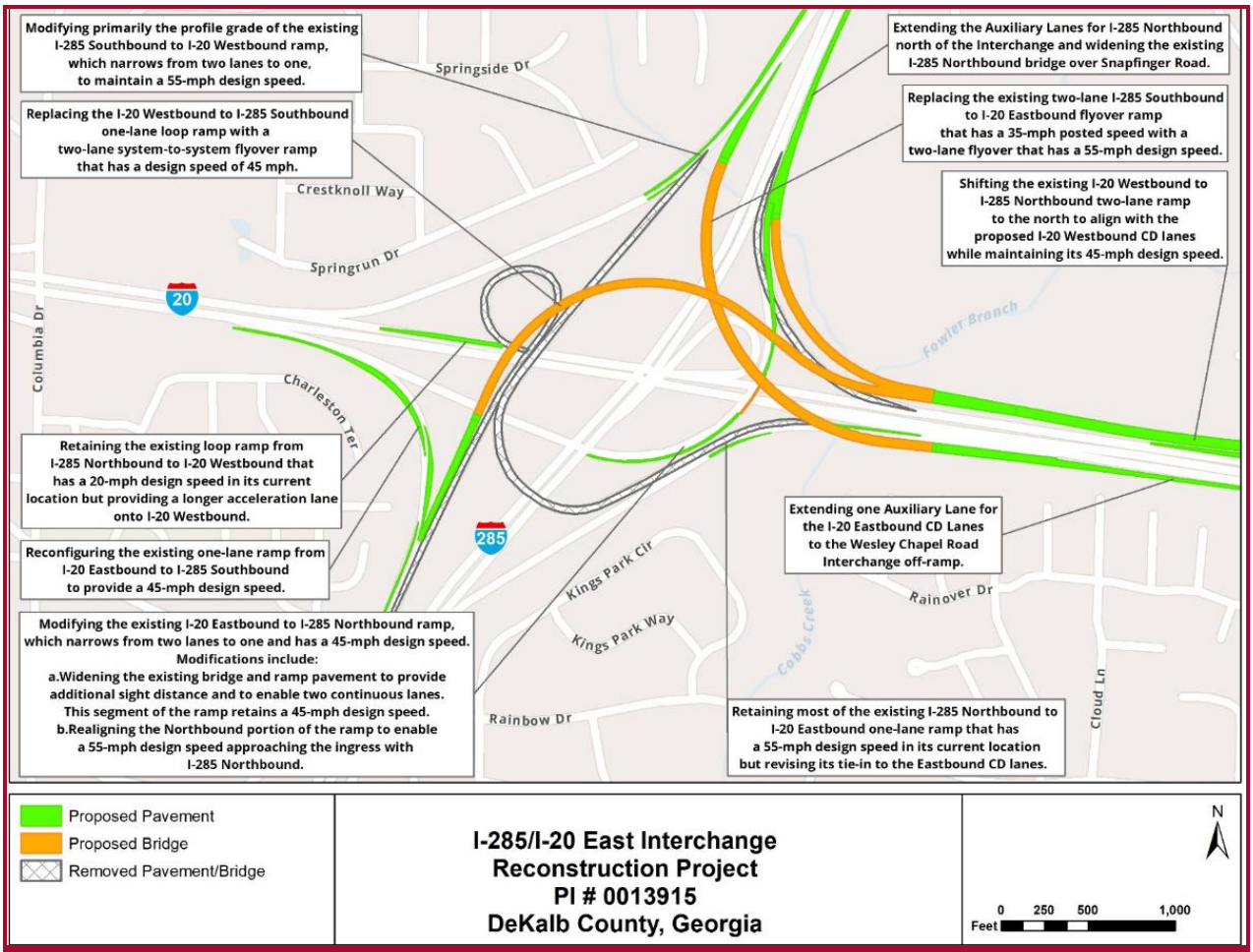
The proposed design, for the most part, would meet and/or exceed the current standards for federal-aid projects along the interstate system and state routes. The design criteria established for this project were referenced from the following documents: American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets (7th Edition); AASHTO Policy on Design Standards Interstate System (2016); AASHTO Roadside Design Guide (4th Edition); and GDOT Design Policy Manual (Rev 6.0).

Several design exceptions (DE) to the controlling criteria as outlined in the above-cited references are required for this project in order to retain several crossroads bridge structures, existing

interstate lane and shoulder widths, and service ramp shoulder widths. The design exceptions for this project are:

- DE1- Inside shoulder width along I-20 – this DE has been split into DE 6, 7 and 8
- DE2- Cross slope along I-20 and I-285
- DE3- Super elevation along I-20 and I-285,
- DE4- Shoulder and lane widths under Panola Bridge,
- DE5- Maximum grade I-20 EB off-ramp to Panola Road,
- DE6- I-20/I-285 Inside shoulder widths,
- DE7- I-20 EB CD shoulder widths,
- DE8- I-20/I-285 outside shoulder widths,
- DE9- I-20 / I-285 Inside shoulder bump outs,
- DE10- Ramp shoulder widths,
- DE11- I-285 NB horizontal sight distance.

All these exceptions are a result of physical constraints caused by retaining existing conditions, except for DE 4 and 5, which are temporary condition that will be corrected when PI 0002868, Panola Road DDI bridge replacement and widening project is built. At that time DE 4 and 5 will not be applicable. Based on the above procedures for determining the project's required design criteria, it can be concluded that the requirements of FHWA Policy # 2 have been met.



Concept Layout

1 INTRODUCTION

1.1 PROJECT DESCRIPTION

The I-285 @ I-20 East Interchange Reconstruction (PI # 0013915) is a part of the Major Mobility Investment Program (MMIP) funded by Georgia Department of Transportation (Georgia DOT). The project proposes to modify and/or replace multiple existing ramps at the I-285 @ I-20 East interchange: the I-20 westbound to I-285 northbound and southbound ramps, the I-285 southbound to I-20 eastbound and westbound ramps, and the I-20 eastbound to I-285 northbound ramp . In addition to the reconstruction of the interchange, the project would consist of the following: 1) one westbound auxiliary lane between Lithonia Industrial Boulevard and Panola Road, 2) one westbound auxiliary lane from Panola Road to Wesley Chapel Road, and 3) a westbound Collector-Distributor (CD) lanes between Wesley Chapel Road and the I-20 @ I-285 interchange. The project would also include improvements to a segment of I-20 eastbound, consisting of one eastbound auxiliary lane from Panola Road to Lithonia Industrial Boulevard. The construction of the Eastbound and Westbound auxiliary lanes would require the reconstruction of the Miller Road overpass bridge, and the Fairington Road/DeKalb Medical Parkway Overpass Bridge, as well as the associated intersection at Fairington Road and DeKalb Medical Parkway. The project adds an auxiliary lane from westbound I-20 to northbound I-285 that would extend up to Glenwood Road. The project is scheduled to open in 2025.

The project study limits along I-20 extend from Candler Road (western terminus) to Evans Mill Road (eastern terminus); along I-285, the limits extend from Flat Shoals Road (southern terminus) to Glenwood Road (northern terminus). I-20 is a six-lane, limited access east-west interstate. I-285 is an eight-lane, limited access north-south interstate. The posted speed limit on I-285 is 65 mph, and the posted speed limit on I-20 varies between 55 mph to 70 mph. On I-20 westbound, the speed limit is 70 mph from Klondike Road underpass to Miller Road, then 65 mph from Miller Road to the east of Candler Road and then 55 mph to the west. On I-20 eastbound, the posted speed limit is 65 mph from Candler Road to Lithonia Industrial Boulevard and then 70 mph to the east. The I-285 @ I-20 East Interchange project study area includes seven interchanges along I-20 including the system-to-system interchange and two interchanges along the I-285 corridor.

1.2 PURPOSE AND NEED STATEMENT

The primary purpose of this project is to reduce crashes and improve traffic flow within the I-285/I-20 East Interchange corridor. DeKalb County is Georgia's fourth most populous county. A continual source of peak period delays, the I-285/I-20 east interchange area is a critical juncture in DeKalb County that requires operational and geometric improvements. The I-285/I-20 East Interchange Reconstruction Project which includes interchange re-construction, collector-distributor lanes that runs parallel to the interstate between Wesley Chapel Road and the I-285 interchange along I-20 will help improve traffic flow, speed and safety (reduce crashes). A

secondary purpose of the project is job creation and the promotion of growth in the state's economy in accordance with the goals of Georgia DOT Major Mobility Investment Program.

The need for the proposed project includes:

1) *Reduce crashes*: The need to reduce crashes is demonstrated by the analysis of crash data. Over the six-year period from 2013 to 2018 within and just beyond the project limits, the number and rate of total crashes on I-20 and the number and rate of injury crashes have increased, and the crash rates for both were higher than the statewide average every year. The most prevalent type of crashes within the project limits were rear end crashes, which is an indication of congestion and improper lane changes. These types of crashes generally result from driver aggressiveness and inattention where motorists follow too closely, frequently accelerate and decelerate, and unsafely change lanes. In addition, non-standard and/or non-conforming geometry, such as short weave sections or non-standard acceleration and deceleration lane lengths, also contribute to these types of crashes.

2) *Operational improvements:* The need for operational improvements in the project area is evident from the analysis of existing and future traffic operations within the project limits. Existing traffic volumes exceed capacity in several sections along the project corridor, resulting in congested conditions and travel delays, and forecast traffic volumes are anticipated to be even higher, resulting in worsening of these conditions. The analysis confirms that I-20 is a congested commuter corridor, with the westbound direction towards Atlanta the peak direction of travel during the AM peak period, and the eastbound direction away from Atlanta the peak direction of travel during the PM peak period.

1.3 PROJECT LOCATION /STUDY AREA LIMITS

The proposed project area is on the eastern side of the City of Atlanta in DeKalb County and is shown in **Figure 1-1**. The project is located within the Atlanta Regional Commission's (ARC) Metropolitan Planning Organization (MPO) area limits within metro Atlanta.

The project study limits along I-20 will extend from Candler Road (western terminus) to Evans Mill Road (eastern terminus) which is approximately 9.6 miles; and on I-285 from Flat Shoals Pkwy (southern terminus) to Glenwood Road (northern terminus) which is approximately 4.6 miles. The study limits along the corridor extend on each crossroad up to the first signalized intersection beyond the ramp terminus. **Table 1-1** lists all the mainline/cross-roads that fall within the Project Analysis Limits. The project area of influence includes the mainline and the crossroads with the adjacent intersections as shown in **Figure 1-2**.

Table 1-1. Major Roads within the Project Analysis Limits

Mainline	Crossroads	Local Roads
I-20	Candler Road	Eastwyck Road
		H F Shepherd Drive
	Columbia Drive	Columbia Woods
		Rainbow Drive
	Wesley Chapel Road	Snapfinger Woods Drive
		Eastside Drive
	Miller Road overpass	Panola Industrial Boulevard
		Minola Drive
	Panola Road	Hillandale Drive
		Fairington Road
	Fairington Road overpass	Chupp Road
		Chupp Way
	Lithonia Industrial Boulevard	The Crossing Way
		C-D Road
	Evans Mill Road	Hillandale Drive
		Evans Mill Road
I-285	Flat Shoals Road	Fair Lake Drive
		Glen Hollow Drive
	Glenwood Road	Austin Drive
		Atherton Drive

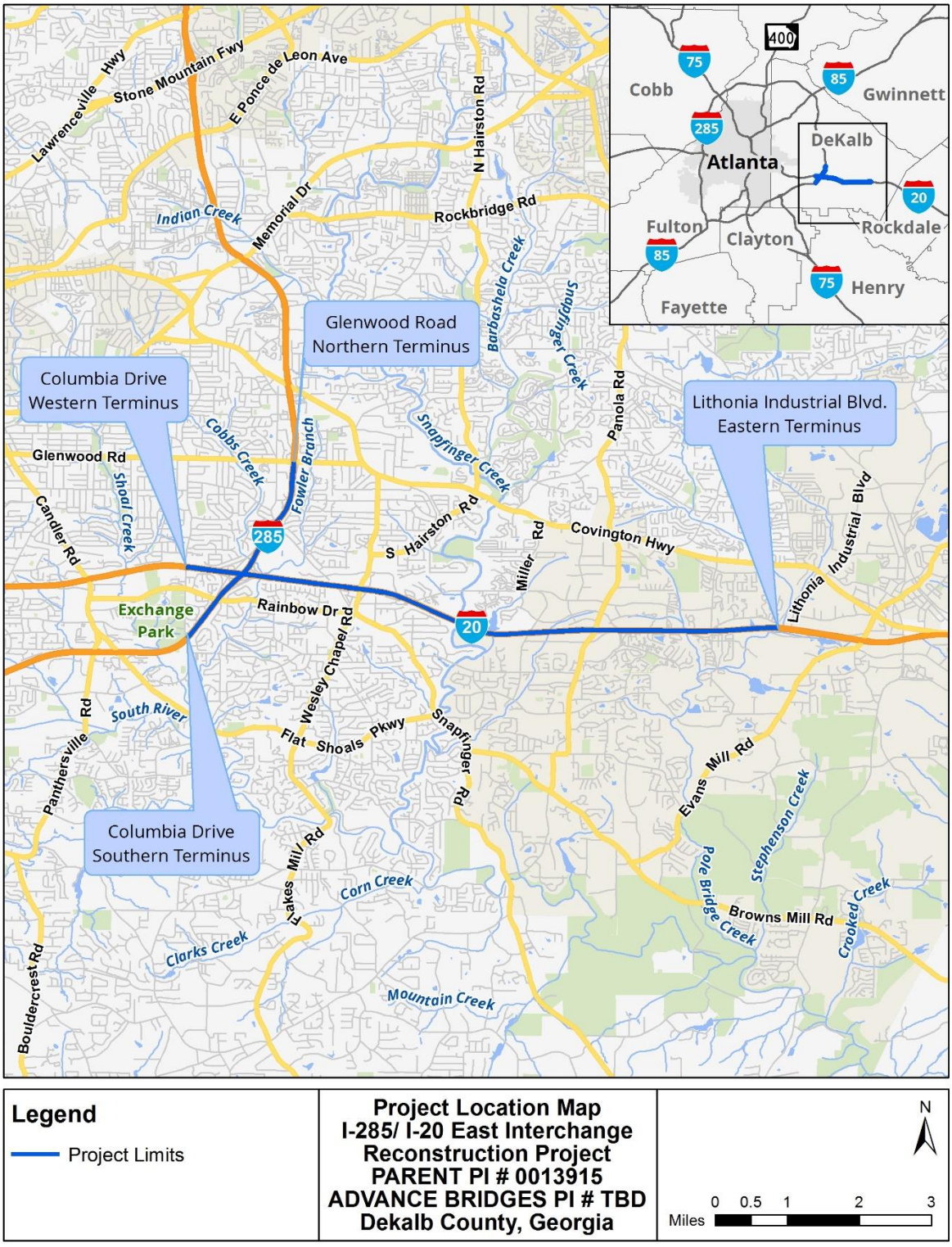


Figure 1-1. Project Location Map

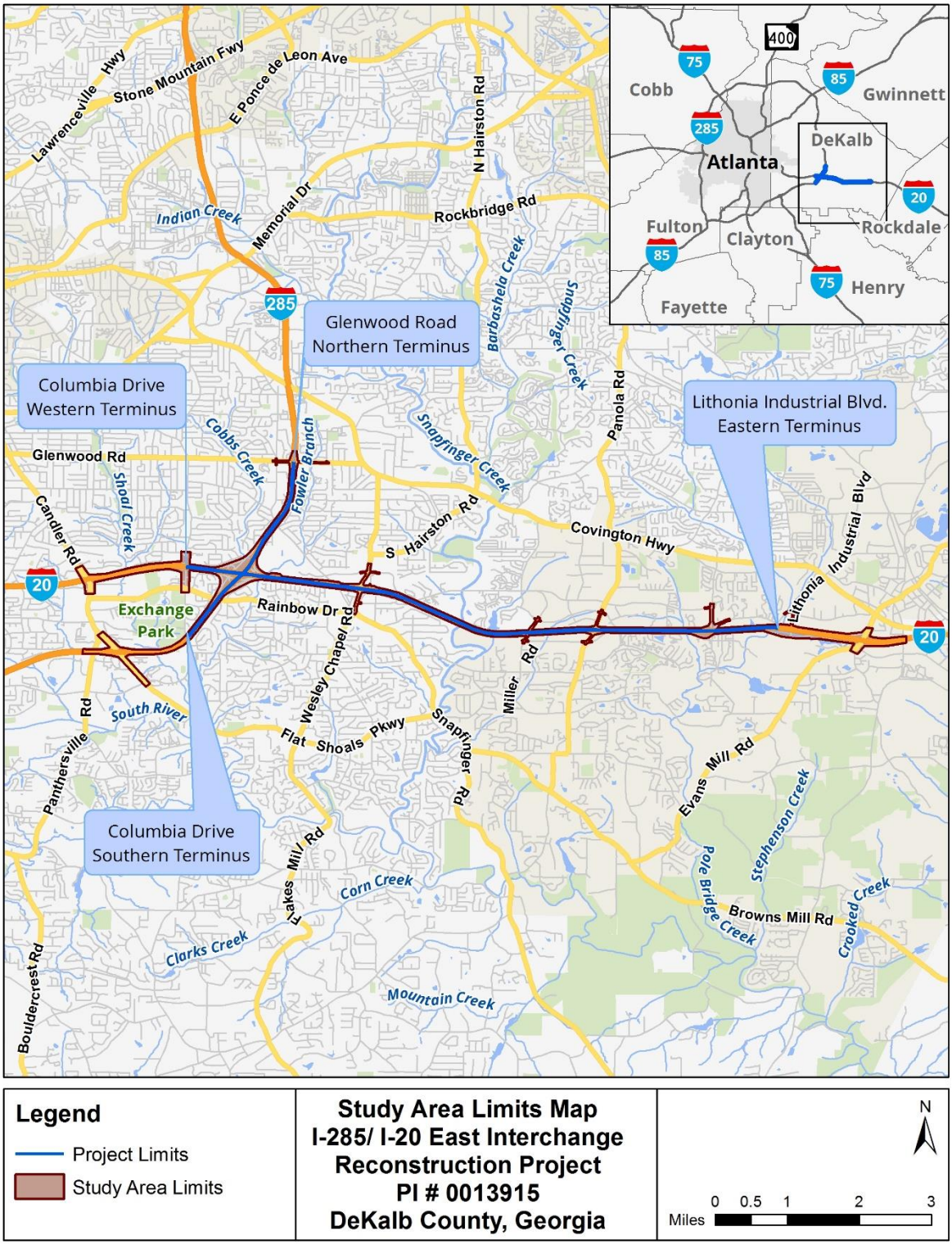


Figure 1-2. Study Area Limits

1.4 ADJACENT PROJECT INFORMATION

The following nearby projects were identified from the GeoPI website:

- P.I. No. 0013914 – DeKalb County – I-285 Eastside Express Lanes From I-20 To I-85

This project includes building one Express Lane in each direction along I-285 between I-20 and I-85. Existing lanes would be maintained and a new 12 ft outside lane would be constructed. The Express Lane will be separated from the general-purpose lanes with delineators and pavement striping. Access to the express lane will be provided with the use of direct access ramps connecting to the surrounding arterial system and slip ramp access to adjacent general-purpose lanes. Preliminary plan development is underway for the I-285 Express Lanes, which includes Glenwood Road interchange as an overlapping area with the current I-285/I-20 East Interchange project. This project is expected to open in 2028.

- P.I. No. 0013913– DeKalb County – I-20 Express Lanes from I-285 to SR 124

This project includes building one Express Lane in each direction along I-20 between I-285/20 interchange and SR 124 (Turner Hill Road) and is expected to be constructed from 2038. The existing lanes will be maintained and a new 12 ft outside lane will be constructed and 4 ft buffer from the general-purpose lanes. The Express Lane would be separated from the general-purpose lanes using delineators and pavement striping. Access to the Express lane would be provided with the use of direct access ramps connecting to the surrounding arterial system and slip ramp access to adjacent general-purpose lanes.

- P.I. No. 0002868 – DeKalb County – Panola Road @ I-20 from Fairington Road to Snapfinger Woods Drive

This project proposes the reconstruction of the Panola Road Interchange and widen the existing Panola Road corridor from a five-lane flush median to a six-lane raised median section. The Panola Road will remain an urban section and will vary from two to three 12 ft lanes in each direction with a 20 ft raised concrete median, 4 ft bike lanes, and 12 ft shoulders that include curb and gutter and 5 ft sidewalks. At the I-20 interchange bridge, Panola Road will widen to 4 lanes in each direction and will include a Diverging Diamond Interchange design. Intersection improvements, including turn lane additions, will also be incorporated for several side roads along the project corridor. This project is planned to be completed in 2025.

2 STUDY METHODOLOGY

This section presents an overview of the methodology used to complete the traffic and safety analyses for this IMR.

2.1 OVERVIEW

The Traffic Forecasting Report for the project was developed according to the Georgia DOT's Design Traffic Forecasting Manual. It explains in detail the procedure used for development of growth rates and design hour traffic volumes. Georgia DOT approved the Traffic Forecasting Report on February 2020. The approved traffic volumes for the existing, open and design year are provided in **Appendix F**.

Traffic forecasting, traffic operational analyses and safety analyses for this project were performed in accordance with the FHWA Traffic Analysis Tools Program guidelines and Georgia DOT's Design Policy Manual, Revision 5.13. An existing conditions model was developed and calibrated using Vissim 10.0 microsimulation software. The existing model calibration report is included in **Appendix C**.

2.2 ANALYSIS YEARS

The established study years for the IMR are as follows:

- Existing Year: 2018
- Open Year: 2025
- Design Year: 2045

2.3 COORDINATION WITH ADJACENT PROJECTS WITHIN THE STUDY AREA

According to the current MMIP program, the major projects within the influence area scheduled to complete by design year are I-285 Eastside Express Lanes (PI 0013914), Panola Interchange Reconstruction (PI 002868) and I-20 Express Lanes (PI 0010913).

2.4 DATA COLLECTION

Detailed information on the types of data collected and time frames for traffic data collection is documented in the Traffic Forecasting Report (**Appendix B**) and Vissim Existing Conditions Model Development and Calibration Report (**Appendix C**). The data collection effort conforms to GDOT's Design Policy Manual Traffic Projection Chapter (Chapter 13 – Traffic Studies). The list of data collected to develop this IMR includes, but is not limited to, the following:

- **Road Geometrics**
  - Number of lanes, lane usage, and presence and type of medians
  - Shoulder widths
  - Speed and delay data
- **Existing and Historical Traffic Data**
  - Existing turning movement counts
  - Existing queuing at signals
  - Existing signal timing
  - Existing traffic volumes
  - Historical traffic volumes (GDOT Annual Count Program)
- **Control Data**
  - Signal timing data
  - Stop/Yield signs
  - Regulatory/Advisory speed limits
- **Calibration Data**
  - Traffic volumes
  - Travel times
  - Visual bottleneck locations
  - Queue data
- **Planned and Programmed Projects**

A list of planned and programmed MMIP projects were taken into consideration in future ARC models, as well as other involved stakeholder agencies, and were reviewed for consistency.

2.5 DESIGN TRAFFIC FACTORS

Factors used for the design traffic analysis include K, D, T_{PH} and T_{24}. The K-factor is the proportion of the Annual Average Daily Traffic (AADT) occurring during the peak hours of the design year. The D-factor is the traffic volume proportion moving in the higher volume direction during the peak hour to the combined volume in both directions. The T_{PH} is the percentage of truck traffic occurring during peak hours, and T_{24} is the percentage of truck traffic occurring for an entire day. The traffic factors used in this IMR are discussed in the Existing and Future Conditions section of the Traffic Forecasting Report (**Appendix B)**.

Table 2-1 summarizes the existing K and D factors for the interstate segments, ramps and arterials where ADT counts were taken. Comparison of existing and future conditions K and D factors are included in **Section 3.3.2.1** of this report.

Table 2-1. Existing K and D Factors

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
INTERSTATE	I-20, west of SR 155/ Candler Road	1001, 1002	0.06	0.08	0.74 (WB)	0.68 (EB)
	I-20, east of Columbia Dr	1003, 1004	0.06	0.07	0.71 (WB)	0.63 (EB)
	I-20, west of Columbia Dr	1005, 1006	0.06	0.07	0.72 (WB)	0.63 (EB)
	I-285, north of Glenwood Rd	1007, 1008	0.06	0.07	0.55 (SB)	0.53 (SB)
	I-285, south of Glenwood Rd	1009, 1010	0.06	0.07	0.58 (SB)	0.52 (SB)
	I-285, north of SR 155/ Flat Shoals Rd	1011, 1012	0.06	0.06	0.52 (NB)	0.52 (NB)
	I-285, south of SR 155/ Flat Shoals Rd	1013, 1014	0.06	0.06	0.53 (NB)	0.53 (SB)
	I-20, west of Wesley Chapel Rd	1015, 1016	0.06	0.06	0.6 (WB)	0.59 (EB)
	I-20, east of Wesley Chapel Rd	1017, 1018	0.05	0.06	0.56 (WB)	0.58 (EB)
	I-20, east of Panola Road	1019, 1020	0.05	0.07	0.52 (WB)	0.55 (WB)
	I-20, east of Lithonia Industrial Blvd	1021, 1022	0.04	0.06	0.51 (WB)	0.57 (EB)
	I-20, east of Evans Mill Road	1024, 1023	0.06	0.07	0.58 (WB)	0.62 (EB)
	I-20 EB, east of I-285 SB Off-Ramp	1199	0.04	0.09	1 (EB)	1 (EB)
	I-20 WB, east of I-285 SB Off-Ramp	1200	0.09	0.05	1 (WB)	1 (WB)
	I-20 WB, between On-ramp from I-285 NB & I-285 SB Off-ramp	1201	0.08	0.06	1 (WB)	1 (WB)
	I-20 WB, west of Off-ramp to I-285 NB	1203	0.07	0.05	1 (WB)	1 (WB)
	I-20 EB, west of Off-Ramp from I-285 EB to CD	1205	0.04	0.10	1 (EB)	1 (EB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	I-20 EB CD between on ramps from I-285 and off-ramp to Wesley Chapel Rd	1206	0.05	0.06	1 (EB)	1 (EB)
	I-20 EB, east of CD merge after Wesley Chapel Road	1207	0.04	0.08	1 (EB)	1 (EB)
ARTERIALS	Columbia Dr, south of I-20 WB ramps	1078, 1078	0.09	0.08	0.8 (NB)	0.56 (NB)
	Columbia Dr, north of I-20 WB ramps	1079, 1079	0.08	0.08	0.6 (NB)	0.54 (SB)
	Columbia Dr, south of I-20 EB ramps	1080, 1080	0.08	0.08	0.73 (NB)	0.62 (SB)
	Columbia Woods Dr west of Columbia Dr	1081, 1081	0.10	0.06	0.58 (EB)	0.64 (EB)
	Columbia Dr, south of Columbia Crossing Dr	1082, 1082	0.08	0.08	0.74 (NB)	0.62 (SB)
	Columbia Crossing Dr east of Columbia Dr	1083, 1083	0.09	0.10	0.7 (WB)	0.75 (EB)
	The Forest Driveway, west of Columbia Drive	1084, 1084	0.04	0.07	0.51 (WB)	0.52 (WB)
	Columbia Dr, south of Abbeywood Dr	1085, 1085	0.08	0.08	0.74 (NB)	0.61 (SB)
	Abbeywood Dr, west of Columbia Dr	1086, 1086	0.05	0.05	0.7 (EB)	0.8 (WB)
	Columbia Dr, south of Old Rainbow Dr	1087, 1087	0.08	0.08	0.73 (NB)	0.62 (SB)
	Rainbow Dr east of Columbia Dr	1088, 1088	0.08	0.09	0.77 (WB)	0.64 (EB)
	Old Rainbow Dr west of Columbia Dr	1089, 1089	0.09	0.14	0.5 (WB)	0.67 (EB)
	Glenwood Rd, west of I-285 NB ramps	1090, 1090	0.06	0.07	0.57 (WB)	0.55 (EB)
	Glenwood Rd, east of I-285 SB ramps	1091, 1091	0.07	0.07	0.69 (WB)	0.69 (EB)
	Glenwood Road overpass on I-285	1092, 1092	0.07	0.07	0.77 (WB)	0.56 (EB)
	Meadowglades Dr, north of Glenwood Rd	1093, 1093	0.06	0.06	0.7 (SB)	0.55 (NB)
	Glenwood Rd, west of Moseri Rd	1094, 1094	0.06	0.07	0.55 (WB)	0.55 (EB)
	Glenwood Rd, east of Austin Dr	1095, 1095	0.06	0.07	0.57 (WB)	0.54 (EB)
	Glenfair Rd, south of Glenwood Rd	1096, 1096	0.04	0.07	0.61 (NB)	0.69 (SB)
	Glenwood Rd, east of Glenfair Rd	1097, 1097	0.07	0.07	0.68 (WB)	0.67 (EB)
	Glenwood Rd, west of Glen Acres Ct	1098, 1098	0.08	0.07	0.7 (WB)	0.67 (EB)
	Glenwood Rd, west of Meadowglades Dr	1099, 1099	0.08	0.07	0.7 (WB)	0.68 (EB)
	Glenwood Rd, west of Atherton Dr	1100, 1100	0.07	0.07	0.69 (WB)	0.69 (EB)
	Glen Acres Ct, north of Glenwood Rd	1101, 1101	0.04	0.06	0.76 (SB)	0.57 (NB)
	Arthurs Ct, south of Glenwood Rd	1102, 1102	0.04	0.07	0.66 (NB)	0.55 (SB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	Atherton Dr, north of Glenwood Rd	1103, 1103	0.04	0.07	0.51 (SB)	0.56 (NB)
	Flat Shoals Pkwy, south of I-285 eastbound ramps	1104, 1104	0.05	0.07	0.62 (NB)	0.6 (SB)
	Flat Shoals Pkwy, north of I-285 westbound ramps	1105, 1105	0.06	0.06	0.56 (NB)	0.51 (SB)
	Flat Shoals Pkwy, overpass on I-285	1106, 1106	0.06	0.06	0.69 (NB)	0.51 (SB)
	Lumby Dr north of Flat Shoals Pkwy	1107, 1107	0.04	0.05	0.66 (WB)	0.54 (WB)
	Flat Shoals Pkwy, north of Lumby Dr	1108, 1108	0.06	0.06	0.58 (NB)	0.5 (SB)
	Panthersville Rd, south of Flat Shoals Pkwy	1109, 1109	0.07	0.07	0.62 (EB)	0.59 (WB)
	Fairlake Drive, east of Flat Shoals Pkwy	1110, 1110	0.06	0.08	0.69 (WB)	0.54 (EB)
	Glen Hollow Dr, south of Flat Shoals Pkwy	1114, 1114	0.05	0.07	0.56 (EB)	0.61 (EB)
	Flat Shoals Pkwy, west of Glen Hollow Dr	1115, 1115	0.05	0.06	0.59 (NB)	0.55 (SB)
	Barton Morgan Way, north of Flat Shoals Pkwy	1116, 1116	0.04	0.07	0.59 (EB)	0.55 (WB)
	Flat Shoals Pkwy, south of Barton Morgan Way	1117, 1117	0.05	0.06	0.59 (NB)	0.55 (SB)
	Columbia Dr, north of Flat Shoals Pkwy	1118, 1118	0.07	0.07	0.68 (EB)	0.52 (WB)
	Clifton Springs Rd, south of Flat Shoals Pkwy	1119, 1119	0.07	0.08	0.63 (WB)	0.67 (EB)
	Wesley Chapel Rd, north of I-20 WB ramps	1120, 1120	0.06	0.06	0.54 (NB)	0.52 (NB)
	Wesley Chapel Rd, south of I-20 WB ramps - on the overpass	1121, 1121	0.06	0.06	0.78 (NB)	0.58 (NB)
	Wesley Chapel Rd, south of I-20 EB ramps	1122, 1122	0.06	0.07	0.68 (NB)	0.6 (SB)
	Wesley Chapel Rd, south of Snapfinger Woods Dr	1123, 1123	0.06	0.07	0.51 (SB)	0.55 (NB)
	Wesley Chapel Rd , north of Eastside Dr	1124, 1124	0.06	0.07	0.67 (NB)	0.62 (SB)
	Snapfinger Woods Dr, east of Wesley Chapel Rd	1125, 1125	0.06	0.07	0.67 (WB)	0.55 (EB)
	Snapfinger Woods Dr, west of Wesley Chapel Rd	1126, 1126	0.07	0.08	0.67 (WB)	0.54 (EB)
	Eastside Dr, east of Wesley Chapel Rd	1127, 1127	0.11	0.05	0.88 (WB)	0.57 (EB)
	Wesley Club Drive, west of Wesley Chapel Rd	1128, 1128	0.02	0.04	0.69 (EB)	0.68 (EB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	Miller Rd, south of Chatooga Dr	1129, 1129	0.09	0.08	0.59 (NB)	0.59 (SB)
	Chatooga Dr, east of Miller Rd	1130, 1130	0.15	0.10	0.54 (EB)	0.53 (WB)
	Shire Drive, west of Miller Rd	1132, 1132	0.09	0.08	0.66 (EB)	0.58 (WB)
	Minola Dr, east of Miller Rd	1134, 1134	0.07	0.09	0.5 (WB)	0.62 (EB)
	Panola Industrial Blvd, east of Miller Rd	1135, 1135	0.09	0.08	0.66 (WB)	0.61 (EB)
	Panola Industrial Blvd, west of Miller Rd	1136, 1136	0.08	0.08	0.63 (WB)	0.62 (EB)
	Panola Rd, south of I-20 EB ramps	1137, 1137	0.06	0.06	0.61 (NB)	0.58 (SB)
	Panola Rd, north of I-20 EB ramps - on the overpass	1138, 1138	0.06	0.06	0.7 (NB)	0.54 (NB)
	Panola Rd, north of I-20 WB ramps	1139, 1139	0.06	0.06	0.53 (NB)	0.54 (SB)
	Panola Rd, south of Snapfinger Park Dr	1140, 1140	0.06	0.06	0.53 (NB)	0.56 (SB)
	Panola Rd, north of Snapfinger Park Dr	1141, 1141	0.06	0.06	0.52 (NB)	0.55 (SB)
	Snapfinger Park Dr, west of Panola Rd	1142, 1142	0.04	0.06	0.58 (WB)	0.56 (EB)
	Hillandale Park Ct, east of Panola Rd	1143, 1143	0.06	0.06	0.59 (EB)	0.6 (EB)
	Panola Rd, south of Panola Park and Ride Lot	1144, 1144	0.06	0.07	0.63 (NB)	0.53 (SB)
	Park and Ride lot Entrance, west of Panola Rd	1145, 1145	0.05	0.09	0.95 (WB)	0.84 (WB)
	Fairington Rd, east of Panola Rd	1146, 1146	0.05	0.07	0.61 (WB)	0.52 (EB)
	Minola Dr, west of Panola Rd	1147, 1147	0.06	0.08	0.51 (EB)	0.69 (EB)
	Hillandale Dr, east of Panola Rd	1148, 1148	0.06	0.07	0.7 (WB)	0.58 (WB)
	Panola Industrial Blvd, west of Panola Rd	1149, 1149	0.08	0.08	0.63 (WB)	0.75 (EB)
	Panola Rd, south of Hillandale Dr/ Panola Industrial Blvd	1150, 1150	0.06	0.07	0.5 (NB)	0.58 (SB)
	Hillandale Dr, west of Fairington Rd	1151, 1151	0.08	0.07	0.7 (WB)	0.61 (EB)
	Hillandale Dr, east of Fairington Rd	1152, 1152	0.08	0.07	0.71 (WB)	0.57 (EB)
	Athena Ln, east of Fairington Rd	1153, 1153	0.09	0.09	0.63 (NB)	0.66 (SB)
	Fairington Rd, south of Athena Ln	1154, 1154	0.06	0.07	0.54 (WB)	0.51 (WB)
	Chupp Way, south of Fairington Ln	1155, 1155	0.08	0.07	0.62 (NB)	0.55 (SB)
	Fairington Ln, west of Chupp Way	1156, 1156	0.07	0.07	0.6 (WB)	0.52 (EB)
	Hillandale Dr, west of Lithonia Industrial Blvd	1157, 1157	0.07	0.07	0.69 (EB)	0.55 (WB)
	Chupp Rd, east of Lithonia Industrial Blvd	1158, 1158	0.07	0.07	0.55 (EB)	0.51 (WB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	Lithonia Industrial Blvd, south of Hillandale Dr/ Chupp Rd	1159, 1159	0.08	0.07	0.6 (SB)	0.51 (SB)
	Lithonia Industrial Blvd, north of Old Hillandale Dr	1160, 1160	0.07	0.07	0.7 (NB)	0.54 (SB)
	Lithonia Industrial Blvd, north of I-20 EB C/D	1161, 1161	0.06	0.08	0.68 (NB)	0.5 (SB)
	Evans Mill Rd, south of Old Hillandale Dr/I-20 WB, underpass	1162, 1162	0.07	0.07	0.5 (NB)	0.56 (SB)
	Evans Mill Rd, north of Old Hillandale Dr/I-20 WB	1163, 1163	0.08	0.07	0.62 (NB)	0.57 (SB)
	Evans Mill Rd, south of I-20 EB	1164, 1164	0.07	0.08	0.53 (NB)	0.55 (SB)
	Mall Pkwy, east of Evans Mill Rd	1165, 1165	0.04	0.09	0.57 (WB)	0.55 (EB)
	Evans Mill Rd, west of Woodrow Dr/ Evans Mill Rd	1166, 1166	0.08	0.08	0.54 (WB)	0.59 (EB)
	Hillandale Dr, west of Evans Mill Dr	1167, 1167	0.09	0.05	0.73 (EB)	0.56 (EB)
	Eastwyck Rd, east of Candler Rd	1168, 1168	0.05	0.06	0.66 (WB)	0.52 (EB)
	Candler Rd, south of Eastwyck Rd	1169, 1169	0.06	0.07	0.65 (NB)	0.51 (SB)
	Ember Dr, east of Candler Rd	1171, 1171	0.03	0.06	0.62 (EB)	0.53 (WB)
	H F Shepherd Dr, west of Candler Rd	1172, 1172	0.04	0.07	0.65 (EB)	0.56 (EB)
	Rainbow Way, east of Candler Rd	1173, 1173	0.02	0.07	0.51 (WB)	0.56 (WB)
	Candler Rd, north of I-20 west Ramps	1174, 1174	0.05	0.07	0.64 (NB)	0.51 (SB)
	Candler Rd, south of I-20 west Ramps - Overpass	1175, 1175	0.06	0.07	0.62 (NB)	0.56 (SB)
	Candler Rd, south of I-20 east Ramps	1176, 1176	0.05	0.07	0.65 (NB)	0.55 (SB)
	Austin Dr, north of Glenwood Rd	1177, 1177	0.08	0.07	0.61 (NB)	0.58 (SB)
	Austin Dr, south of Glenwood Rd	1178, 1178	0.07	0.08	0.69 (NB)	0.65 (SB)
	Rainbow Dr, west of Columbia Dr	1179, 1179	0.06	0.09	0.64 (WB)	0.55 (EB)
	Hillandale Dr, west of DeKalb Medical Pkwy	1180, 1180	0.08	0.08	0.76 (WB)	0.59 (EB)
	DeKalb Medical Pkwy, north of Hillandale Rd	1181, 1181	0.07	0.07	0.56 (NB)	0.56 (SB)
	Candler Rd, south of Ember Dr	1188, 1188	0.05	0.07	0.65 (NB)	0.55 (SB)
	Columbia Dr, north of Columbia Crossing Dr	1189, 1189	0.08	0.08	0.74 (NB)	0.62 (SB)
	Driveway across from Lumby Drive	1191, 1191	0.11	0.08	0.75 (WB)	0.67 (WB)
	Evans Mill Rd, south of Millwood Ln	1192, 1192	0.07	0.08	0.53 (NB)	0.55 (SB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	Glenwood Rd, west of Arthurs Ct Dr	1193, 1193	0.07	0.07	0.69 (WB)	0.67 (EB)
	Flat Shoals Pkwy, east of Glen Hollow Dr	1195, 1195	0.05	0.06	0.59 (NB)	0.55 (SB)
	U-Turn Lane on Lithonia Industrial Boulevard	1197	0.00	0.04	0 (SB)	0 (SB)
	U-Turn Lane on Evans Mill Road	1198	0.00	0.05	0 (NB)	0 (NB)
	Columbia Dr, north of Columbia Woods Dr	1060, 1060	0.07	0.08	0.62 (NB)	0.54 (SB)
	Columbia Dr, south of Rainbow Dr	1061, 1061	0.08	0.08	0.68 (NB)	0.56 (SB)
	Glenwood Rd, west of Austin Dr	1062, 1062	0.06	0.07	0.6 (WB)	0.59 (EB)
	Glenwood Rd, east of Atherton Dr	1063, 1063	0.07	0.07	0.69 (WB)	0.69 (EB)
	Flat Shoals Rd, north of Panthersville Rd	1064, 1064	0.06	0.07	0.66 (NB)	0.58 (SB)
	Flat Shoals Rd, south of Clifton Springs Rd	1065, 1065	0.07	0.07	0.72 (NB)	0.66 (SB)
	Wesley Chapel Rd, north of Snapfinger Woods Dr	1066, 1066	0.06	0.07	0.56 (NB)	0.55 (NB)
	Wesley Chapel Rd, south of Eastside Dr	1067, 1067	0.06	0.07	0.63 (NB)	0.62 (SB)
	Miller Rd, on the bridge over I-20	1068, 1068	0.09	0.08	0.59 (NB)	0.59 (SB)
	Panola Rd, south of Fairington Rd/ Minola Dr	1069, 1069	0.06	0.07	0.57 (NB)	0.59 (SB)
	Panola Rd, north of Hillandale Dr	1070, 1070	0.06	0.06	0.55 (NB)	0.5 (SB)
	Fairington Rd, on the bridge over I-20	1071, 1071	0.06	0.08	0.52 (SB)	0.53 (SB)
	Lithonia Industrial Blvd, north of Hillandale Dr/ Chupp Rd	1072, 1072	0.08	0.08	0.69 (NB)	0.57 (SB)
	Overpass from C/D between Lithonia Ind Blvd and Evans Mill Rd on I-20	1073, 1073	0.05	0.03	0.56 (SB)	0.8 (NB)
	Evans Mill Rd, South of Mall Pkwy/ Evans Mill Rd	1074, 1074	0.08	0.08	0.58 (NB)	0.69 (SB)
	Evans Mill Rd, north of Hillandale Dr	1075, 1075	0.08	0.07	0.62 (NB)	0.57 (SB)
	Candler Rd, south of H F Shepherd Dr	1076, 1076	0.06	0.07	0.65 (NB)	0.55 (SB)
	Candler Rd, north of Eastwyck Rd	1077, 1077	0.06	0.07	0.67 (NB)	0.51 (SB)
	Miller Rd, north of Panola Industrial Blvd	1131, 1131	0.11	0.09	0.59 (NB)	0.62 (SB)
	Miller Rd, south of Minola Dr	1133, 1133	0.09	0.08	0.62 (NB)	0.52 (SB)
	Klondike Rd underpass, under I-20	1187, 1187	0.06	0.09	0.59 (NB)	0.55 (SB)
	Rainbow Dr overpass, over I-285	1190, 1190	0.07	0.08	0.81 (WB)	0.66 (EB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	Columbia Dr overpass, over I-285	1194, 1194	0.07	0.08	0.74 (EB)	0.51 (WB)
	Moseri Rd, north of Glenwood Rd	1401, 1401	0.07	0.06	0.82 (NB)	0.66 (SB)
	Austin Dr underpass West of I-285	1186, 1186	0.08	0.08	0.76 (WB)	0.63 (EB)
	Panthersville Rd overpass, over I-285	1196, 1196	0.09	0.05	0.59 (NB)	0.64 (NB)
	Wellington Ct, North of Flat Shoals Pkwy	1111, 1111	0.03	0.05	0.74 (SB)	0.59 (NB)
	Orchard Walk Apartments Dwy, North of Flat Shoals Pkwy	1112, 1112	0.05	0.07	0.71 (SB)	0.52 (NB)
	Flat Shoals Pkwy, West of Orchard Walk Apartments	1113, 1113	0.05	0.06	0.66 (WB)	0.5 (EB)
	The Park at Candler Apartments Dwy, West of Candler Rd	1170, 1170	0.07	0.07	0.63 (EB)	0.54 (WB)
	Danrich Dr, North of Glenwood Dr	1402, 1402	0.07	0.06	0.59 (SB)	0.55 (SB)
	Flea Mart Dwy (across from Danrich Dr), South of Glenwood Dr	1403, 1403	0.06	0.08	0.94 (SB)	0.79 (SB)
Ramps	On-Ramp from Candler Road to I-20 WB	1025	0.06	0.06	1 (WB)	1 (WB)
	Off-Ramp from I-20 EB to Candler Road	1026	0.04	0.08	1 (EB)	1 (EB)
	On-Ramp from Candler Road to I-20 EB	1027	0.05	0.07	1 (EB)	1 (EB)
	Off-Ramp from I-20 WB to Candler Rd	1028	0.05	0.05	1 (WB)	1 (WB)
	On-Ramp from Columbia Dr to I-20 WB	1029	0.11	0.05	1 (WB)	1 (WB)
	Off-Ramp from I-20 EB to Columbia Dr	1030	0.05	0.11	1 (EB)	1 (EB)
	On-Ramp from Glenwood Rd to I-285 NB	1039	0.05	0.06	1 (NB)	1 (NB)
	Off-Ramp from I-285 NB to Glenwood Rd	1040	0.05	0.08	1 (NB)	1 (NB)
	On-Ramp from Glenwood Rd to I-285 SB	1041	0.10	0.05	1 (SB)	1 (SB)
	Off-Ramp from I-285 SB to Glenwood Rd	1042	0.04	0.08	1 (SB)	1 (SB)
	On-Ramp from Flat Shoals Rd to I-285 WB	1043	0.08	0.06	1 (WB)	1 (WB)
	Off-Ramp from I-285 WB to Flat Shoals Rd	1044	0.04	0.07	1 (WB)	1 (WB)
	On-Ramp from Flat Shoals Rd to I-285 EB	1045	0.06	0.05	1 (EB)	1 (EB)
	Off-Ramp from I-285 EB to Flat Shoals Rd	1046	0.07	0.08	1 (EB)	1 (EB)
	On-Ramp from Panola Rd to I-20 WB	1047	0.06	0.05	1 (WB)	1 (WB)
	Off-Ramp from I-20 WB to Panola Rd	1048	0.03	0.06	1 (WB)	1 (WB)
	On-Ramp from Panola Rd to I-20 EB	1049	0.06	0.07	1 (EB)	1 (EB)
	Off-Ramp from I-20 EB to Panola Rd	1050	0.05	0.06	1 (EB)	1 (EB)

Road Classification	Location	Traffic Count ID #	K - Factor		D - Factor	
			AM	PM	AM	PM
	On-Ramp from Lithonia Industrial Blvd to I-20 WB	1051	0.06	0.06	1 (WB)	1 (WB)
	Off-Ramp from I-20 EB to Lithonia Industrial Blvd	1052	0.06	0.07	1 (EB)	1 (EB)
	On-Ramp from Lithonia Industrial Blvd to I-20 EB C/D	1053	0.05	0.09	1 (EB)	1 (EB)
	Old Hillandale Dr to Lithonia Industrial Blvd	1054	0.11	0.05	1 (WB)	1 (WB)
	C/D after Evans Mill Rd	1056	0.04	0.09	1 (EB)	1 (EB)
	On-Ramp from Evans Mill Rd to Old Hillandale Dr	1057	0.10	0.05	1 (WB)	1 (WB)
	Off-Ramp from I-20 WB to Evans Mill Rd	1058	0.15	0.05	1 (WB)	1 (WB)
	On-Ramp from Evans Mill Rd to I-20 EB	1059	0.06	0.10	1 (EB)	1 (EB)
	On-Ramp from Wesley Chapel Rd to I-20 WB	1182	0.08	0.04	1 (WB)	1 (WB)
	Off-Ramp from I-20 WB to Wesley Chapel Rd	1183	0.03	0.06	1 (WB)	1 (WB)
	On-Ramp from Wesley Chapel Rd to I-20 EB	1184	0.06	0.06	1 (EB)	1 (EB)
	Off-Ramp from I-20 EB to Wesley Chapel Rd	1185	0.04	0.07	1 (EB)	1 (EB)
	Merge of I-285 NB & SB Off-ramps to I-20 EB	1202	0.06	0.06	1 (EB)	1 (EB)
	Off-Ramp from I-20 EB to CD	1204	0.05	0.07	1 (EB)	1 (EB)
	Ramp from I-20 EB to I-285 NB	1031	0.03	0.09	1 (EB)	1 (EB)
	Ramp from I-20 EB to I-285 SB	1032	0.05	0.09	1 (EB)	1 (EB)
	Ramp from I-20 WB to I-285 NB	1033	0.05	0.05	1 (WB)	1 (WB)
	Ramp from I-20 WB to I-285 SB	1034	0.06	0.05	1 (WB)	1 (WB)
	Ramp from I-285 SB to I-20 WB	1035	0.07	0.06	1 (SB)	1 (SB)
	Ramp from I-285 SB to I-20 EB	1036	0.05	0.07	1 (SB)	1 (SB)
	Ramp from I-285 NB to I-20 WB	1037	0.09	0.04	1 (NB)	1 (NB)
	Ramp from I-285 NB to I-20 EB	1038	0.06	0.06	1 (NB)	1 (NB)
	Off Ramp from I-20 EB to C/D	1204	0.04	0.09	1 (EB)	1 (EB)
	Off Ramp from I-20 EB C/D to Evans Mill Rd	1055	0.05	0.07	1 (EB)	1 (EB)

The summary of the Truck percentages for each location in both the AM and PM peaks and for the daily (24hr) is presented in **Table 2-2**, The percentages are rounded to the nearest 0.5%. Since the proposed project does not result in additional truck destinations and the travel demand model does not show an increase in truck volume along the corridor in the future years, truck percentages for the future year conditions were assumed to be the same as existing years.

Table 2-2. Truck Percentages

Road Classification	Location	Traffic Count ID #	AM Peak			PM Peak			24 Hr		
			S.U.	COMB	TOTAL	S.U.	COMB	TOTAL	S.U.	COMB	TOTAL
Interstate	I-20, west of SR 155/ Candler Road	1001, 1002	2.5%	1.5%	4.0%	1.5%	1.0%	2.5%	2.0%	1.5%	3.5%
	I-20, east of Columbia Dr	1003, 1004	2.5%	1.5%	4.0%	1.5%	1.0%	2.5%	2.5%	1.5%	4.0%
	I-20, west of Columbia Dr	1005, 1006	3.0%	1.5%	4.5%	1.5%	1.0%	2.5%	2.0%	1.5%	3.5%
	I-285, north of Glenwood Rd	1007, 1008	3.5%	6.0%	9.5%	2.5%	4.5%	7.0%	3.5%	8.0%	11.5%
	I-285, south of Glenwood Rd	1009, 1010	3.0%	6.0%	9.0%	2.5%	4.5%	7.0%	3.0%	8.0%	11.5%
	I-285, north of SR 155/ Flat Shoals Rd	1011, 1012	4.5%	8.5%	13.0%	3.0%	8.5%	11.5%	4.0%	11.5%	15.5%
	I-285, south of SR 155/ Flat Shoals Rd	1013, 1014	3.5%	7.5%	11.0%	2.5%	7.5%	10.0%	3.5%	11.5%	15.0%
	I-20, west of Wesley Chapel Rd	1015, 1016	3.5%	4.0%	7.5%	2.0%	4.5%	6.5%	3.0%	6.0%	9.0%
	I-20, east of Wesley Chapel Rd	1017, 1018	4.0%	5.0%	9.0%	2.5%	5.5%	8.0%	3.0%	7.0%	10.0%
	I-20, east of Panola Road	1019, 1020	4.5%	6.0%	10.5%	2.0%	4.5%	6.5%	3.5%	7.5%	11.0%
	I-20, east of Lithonia Industrial Blvd	1021, 1022	4.0%	7.5%	11.5%	3.0%	6.0%	9.0%	3.0%	8.0%	11.0%
	I-20, east of Evans Mill Road	1024, 1023	3.5%	5.5%	9.0%	2.0%	5.5%	7.5%	3.0%	7.5%	10.5%
	I-20 EB, east of I-285 SB Off-Ramp	1199	3.5%	1.5%	5.0%	1.5%	0.5%	3.0%	2.5%	2.0%	4.5%
	I-20 WB, east of I-285 SB Off-Ramp	1200	1.5%	1.0%	2.5%	2.0%	2.0%	4.0%	2.0%	2.0%	4.0%
	I-20 WB, between On-ramp from I-285 NB & I-285 SB Off-ramp	1201	2.5%	3.0%	5.5%	2.5%	6.0%	8.5%	2.5%	6.0%	8.5%
	I-20 WB, west of Off-ramp to I-285 NB	1203	2.5%	3.5%	6.0%	2.5%	6.0%	8.5%	3.0%	6.5%	9.5%
	I-20 EB, west of Off-Ramp from I-285 EB to CD	1205	3.5%	2.0%	5.5%	1.5%	1.0%	2.5%	2.5%	2.5%	5.0%
	I-20 EB CD between on ramps from I-285 and off-ramp to Wesley Chapel Rd	1206	4.5%	6.5%	11.0%	1.5%	5.0%	6.5%	3.0%	8.0%	11.0%
	I-20 EB, east of CD merge after Wesley Chapel Road	1207	4.5%	6.0%	10.5%	1.5%	3.5%	5.0%	3.0%	7.0%	10.0%

Road Classification	Location	Traffic Count ID #	AM Peak			PM Peak			24 Hr		
			S.U.	COMB	TOTAL	S.U.	COMB	TOTAL	S.U.	COMB	TOTAL
Arterials	Columbia Dr, north of Columbia Woods Dr	1060, 1060	3.0%	0.0%	3.0%	3.5%	0.0%	3.5%	2.5%	0.0%	2.5%
	Columbia Dr, south of Rainbow Dr	1061, 1061	3.0%	0.0%	3.0%	5.0%	0.0%	5.0%	4.0%	0.0%	4.0%
	Glenwood Rd, west of Austin Dr	1062, 1062	4.0%	0.0%	4.0%	3.5%	0.0%	3.5%	2.5%	0.0%	3.5%
	Glenwood Rd, east of Atherton Dr	1063, 1063	3.5%	0.5%	4.0%	4.0%	0.5%	4.5%	2.5%	0.5%	3.0%
	Flat Shoals Rd, north of Panthersville Rd	1064, 1064	2.5%	0.0%	2.5%	2.0%	0.5%	2.5%	2.5%	0.5%	3.0%
	Flat Shoals Rd, south of Clifton Springs Rd	1065, 1065	2.0%	0.0%	2.0%	2.5%	0.0%	2.5%	2.5%	0.5%	3.0%
	Wesley Chapel Rd, north of Snapfinger Woods Dr	1066, 1066	2.0%	0.5%	2.5%	1.5%	0.5%	2.0%	1.5%	0.5%	2.0%
	Wesley Chapel Rd, south of Eastside Dr	1067, 1067	2.0%	0.5%	2.5%	2.0%	0.5%	2.5%	1.5%	0.5%	2.0%
	Miller Rd, on the bridge over I-20	1068, 1068	3.0%	0.0%	3.0%	1.5%	0.0%	1.5%	2.0%	0.0%	2.0%
	Panola Rd, south of Fairington Rd/ Minola Dr	1069, 1069	2.5%	0.0%	2.5%	2.5%	0.0%	2.5%	2.0%	0.0%	2.0%
	Panola Rd, north of Hillandale Dr	1070, 1070	3.0%	1.0%	4.0%	2.5%	1.0%	3.5%	2.5%	1.5%	4.0%
	Fairington Rd, on the bridge over I-20	1071, 1071	5.0%	0.0%	5.0%	2.5%	0.0%	2.5%	2.5%	0.0%	2.5%
	Lithonia Industrial Blvd, north of Hillandale Dr/ Chupp Rd	1072, 1072	4.5%	0.0%	4.5%	3.5%	0.0%	3.5%	3.5%	0.0%	3.5%
	Overpass from C/D between Lithonia Ind Blvd and Evans Mill Rd on I-20	1073, 1073	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	5.0%
	Evans Mill Rd, South of Mall Pkwy/ Evans Mill Rd	1074, 1074	5.0%	0.5%	5.5%	1.5%	0.0%	1.5%	1.5%	0.5%	2.0%
	Evans Mill Rd, north of Hillandale Dr	1075, 1075	4.0%	0.5%	4.5%	3.0%	0.5%	3.5%	3.5%	0.5%	4.0%
	Candler Rd, south of H F Shepherd Dr	1076, 1076	2.5%	0.0%	2.5%	3.0%	0.0%	3.0%	3.0%	0.5%	3.5%
	Candler Rd, north of Eastwyck Rd	1077, 1077	3.0%	0.5%	3.5%	2.0%	0.5%	2.5%	2.5%	0.5%	3.0%
	Miller Rd, north of Panola Industrial Blvd	1131, 1131	3.0%	0.0%	3.0%	2.0%	0.5%	2.5%	2.5%	0.5%	3.0%

Road Classification	Location	Traffic Count ID #	AM Peak			PM Peak			24 Hr		
			S.U.	COMB	TOTAL	S.U.	COMB	TOTAL	S.U.	COMB	TOTAL
	Miller Rd, south of Minola Dr	1133, 1133	2.0%	0.0%	2.0%	1.5%	0.0%	1.5%	2.0%	0.0%	2.0%
	Klondike Rd underpass, under I-20	1187, 1187	4.5%	1.5%	6.0%	5.0%	3.5%	8.5%	3.5%	2.0%	5.5%
	Rainbow Dr overpass, over I-285	1190, 1190	3.5%	3.5%	7.0%	5.0%	5.0%	10.0%	4.5%	3.5%	8.0%
	Columbia Dr overpass, over I-285	1194, 1194	4.0%	1.5%	5.5%	6.5%	4.0%	10.5%	5.0%	2.0%	7.0%
	Moseri Rd, north of Glenwood Rd	1401, 1401	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Austin Dr underpass West of I-285	1186, 1186	3.5%	0.0%	3.5%	2.5%	0.0%	2.5%	1.5%	0.0%	1.5%
	Panthersville Rd overpass, over I-285	1196, 1196	5.0%	1.0%	6.0%	8.5%	1.0%	9.5%	6.0%	0.5%	6.5%
	Wellington Ct, North of Flat Shoals Pkwy	1111, 1111	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Orchard Walk Apartments Drwy, North of Flat Shoals Pkwy	1112, 1112	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Flat Shoals Pkwy, West of Orchard Walk Apartments	1113, 1113	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	The Park at Candler Apartments Drwy, West of Candler Rd	1170, 1170	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Danrich Dr, North of Glenwood Dr	1402, 1402	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Flea Mart Drwy (across from Danrich Dr), South of Glenwood Dr	1403, 1403	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ramps	On-Ramp from Candler Road to I-20 WB	1025	1.0%	0.5%	1.5%	1.5%	0.5%	2.0%	2.0%	0.5%	2.5%
	Off-Ramp from I-20 EB to Candler Road	1026	2.5%	0.5%	3.0%	1.5%	0.0%	1.5%	2.0%	0.5%	2.5%
	On-Ramp from Candler Road to I-20 EB	1027	3.0%	0.5%	3.5%	1.5%	0.0%	1.5%	2.5%	0.5%	3.0%
	Off-Ramp from I-20 WB to Candler Rd	1028	2.0%	0.5%	2.5%	2.5%	0.5%	3.0%	2.5%	0.5%	3.0%
	On-Ramp from Columbia Dr to I-20 WB	1029	1.0%	0.0%	1.0%	2.5%	0.0%	2.5%	1.0%	0.0%	1.0%
	Off-Ramp from I-20 EB to Columbia Dr	1030	3.0%	0.0%	3.0%	1.0%	0.0%	1.0%	1.5%	0.0%	1.5%

Road Classification	Location	Traffic Count ID #	AM Peak			PM Peak			24 Hr		
			S.U.	COMB	TOTAL	S.U.	COMB	TOTAL	S.U.	COMB	TOTAL
	On-Ramp from Glenwood Rd to I-285 NB	1039	2.0%	0.0%	2.0%	2.5%	0.5%	3.0%	2.0%	0.5%	2.5%
	Off-Ramp from I-285 NB to Glenwood Rd	1040	2.0%	1.5%	3.5%	1.5%	1.0%	2.5%	2.0%	1.0%	3.0%
	On-Ramp from Glenwood Rd to I-285 SB	1041	1.5%	0.5%	2.0%	4.0%	0.5%	4.5%	2.0%	1.0%	3.0%
	Off-Ramp from I-285 SB to Glenwood Rd	1042	4.5%	0.5%	5.0%	1.0%	0.0%	1.0%	1.5%	0.5%	2.0%
	On-Ramp from Flat Shoals Rd to I-285 WB	1043	1.5%	1.0%	2.5%	1.5%	1.0%	2.5%	2.5%	2.0%	4.5%
	Off-Ramp from I-285 WB to Flat Shoals Rd	1044	2.0%	1.5%	3.5%	7.5%	1.0%	8.5%	3.5%	1.5%	5.0%
	On-Ramp from Flat Shoals Rd to I-285 EB	1045	3.0%	1.5%	4.5%	2.0%	2.0%	4.0%	4.0%	2.0%	6.0%
	Off-Ramp from I-285 EB to Flat Shoals Rd	1046	1.5%	1.5%	3.0%	1.5%	1.5%	3.0%	2.5%	2.0%	4.5%
	On-Ramp from Panola Rd to I-20 WB	1047	2.5%	1.0%	3.5%	3.5%	1.5%	5.0%	2.5%	1.5%	4.0%
	Off-Ramp from I-20 WB to Panola Rd	1048	11.5%	3.5%	15.0%	3.0%	0.5%	3.5%	3.0%	1.5%	4.5%
	On-Ramp from Panola Rd to I-20 EB	1049	2.0%	1.5%	3.5%	4.0%	0.5%	4.5%	3.0%	1.5%	4.5%
	Off-Ramp from I-20 EB to Panola Rd	1050	4.5%	1.5%	6.0%	3.0%	1.5%	4.0%	3.0%	2.0%	5.0%
	On-Ramp from Lithonia Industrial Blvd to I-20 WB	1051	4.5%	3.0%	7.5%	4.5%	1.5%	6.0%	4.0%	4.0%	8.0%
	Off-Ramp from I-20 EB to Lithonia Industrial Blvd	1052	4.5%	3.0%	7.5%	3.5%	2.5%	6.0%	4.0%	3.5%	7.5%
	On-Ramp from Lithonia Industrial Blvd to I-20 EB C/D	1053	7.0%	1.0%	8.0%	2.0%	0.5%	2.5%	3.0%	1.0%	4.0%
	Old Hillandale Dr to Lithonia Industrial Blvd	1054	2.5%	0.5%	3.0%	4.0%	1.5%	5.5%	2.5%	1.5%	4.0%
	C/D after Evans Mill Rd	1056	8.0%	1.5%	9.5%	1.5%	0.5%	2.0%	3.0%	1.5%	4.5%
	On-Ramp from Evans Mill Rd to Old Hillandale Dr	1057	2.0%	0.5%	2.5%	3.5%	1.5%	5.0%	2.5%	1.0%	3.5%
	Off-Ramp from I-20 WB to Evans Mill Rd	1058	1.5%	0.5%	2.0%	1.5%	1.5%	3.0%	1.5%	1.0%	2.5%

Road Classification	Location	Traffic Count ID #	AM Peak			PM Peak			24 Hr		
			S.U.	COMB	TOTAL	S.U.	COMB	TOTAL	S.U.	COMB	TOTAL
	On-Ramp from Evans Mill Rd to I-20 EB	1059	2.5%	1.5%	4.0%	1.5%	0.5%	2.0%	2.0%	1.5%	3.5%
	On-Ramp from Wesley Chapel Rd to I-20 WB	1182	1.0%	0.5%	1.5%	2.0%	1.0%	3.0%	1.5%	0.5%	2.0%
	Off-Ramp from I-20 WB to Wesley Chapel Rd	1183	5.0%	1.0%	6.0%	2.0%	0.0%	2.0%	2.0%	0.5%	2.5%
	On-Ramp from Wesley Chapel Rd to I-20 EB	1184	3.5%	0.5%	4.0%	2.0%	0.5%	2.5%	2.0%	0.5%	2.5%
	Off-Ramp from I-20 EB to Wesley Chapel Rd	1185	2.5%	1.5%	4.0%	1.0%	0.5%	1.5%	1.5%	1.0%	2.5%
	Merge of I-285 NB & SB Off-ramps to I-20 EB	1202	4.5%	7.5%	12.0%	2.5%	8.5%	11.0%	3.0%	9.5%	12.5%
	Off-Ramp from I-20 EB to CD	1204	4.5%	6.0%	10.5%	2.0%	4.0%	6.0%	3.0%	7.0%	10.0%
	Ramp from I-20 EB to I-285 NB	1031	5.0%	2.0%	7.0%	3.5%	2.5%	6.0%	4.0%	1.5%	5.5%
	Ramp from I-20 EB to I-285 SB	1032	7.0%	2.5%	9.5%	4.5%	1.5%	6.0%	4.5%	3.5%	8.0%
	Ramp from I-20 WB to I-285 NB	1033	5.0%	4.0%	9.0%	5.0%	4.0%	9.0%	5.5%	5.0%	10.5%
	Ramp from I-20 WB to I-285 SB	1034	14.5%	3.5%	18.0%	13.5%	3.5%	17.0%	16.5%	5.0%	21.5%
	Ramp from I-285 SB to I-20 WB	1035	6.0%	0.5%	6.5%	5.0%	1.0%	6.0%	6.0%	0.5%	6.5%
	Ramp from I-285 SB to I-20 EB	1036	6.5%	2.0%	8.5%	5.0%	1.5%	6.5%	8.0%	4.0%	12.0%
	Ramp from I-285 NB to I-20 WB	1037	4.0%	1.5%	5.5%	3.5%	3.5%	7.0%	8.5%	3.5%	12.0%
	Ramp from I-285 NB to I-20 EB	1038	7.5%	6.5%	14.0%	9.5%	11.5%	21.0%	9.0%	12.5%	21.5%
	Off Ramp from I-20 EB to C/D	1204	15.0%	0.5%	15.5%	7.0%	0.0%	7.0%	8.0%	0.5%	8.5%
	Off Ramp from I-20 EB C/D to Evans Mill Rd	1055	3.0%	0.0%	3.0%	2.0%	0.5%	2.5%	2.0%	0.5%	2.5%

2.6 TRAFFIC FORECASTING METHODOLOGY

The methodology used for travel demand forecasting and development of design hour traffic volumes is consistent with GDOT's Design Policy Manual Traffic Projection Chapter (Chapter 13 – Traffic Studies). The Program Management Consultant (PMC) modified the ARC travel demand models for the base year (2015), interim (2030) and horizon (2040) year to maintain consistency in modeling methodology between the two adjacent MMIP projects: I-285/I-20 East Interchange (PI # 0013915) and I-285 Eastside Express Lanes (PI # 0013914). The ARC network was checked and any required updates were identified and presented to the Georgia DOT/PMC for subsequent update.

This section briefly discusses the need for understanding existing traffic volumes and adopting the appropriate travel demand model for the project, and the procedure to estimate growth rate for No-Build and Build Alternatives for all major corridors, arterials within the study area. Detailed information related to volume development is provided in the approved Traffic Forecast Report.

2.6.1 EXISTING CONDITIONS TRAFFIC VOLUMES

The steps involved in volume development from existing traffic data are: develop balanced AADT using daily,and monthly factors; perform temporal distribution of traffic to identify peak periods; and develop peak hour volume diagrams using the directional factor and percentage of trucks along study area roadways. A review of existing traffic data provides an understanding of current demand and a basis for future traffic estimates for the study area.

2.6.2 FUTURE TRAFFIC FORECASTING

The design traffic forecasting is based on existing conditions (2018) volumes along the I-20 and I-285 corridors. Future year traffic forecasts have been developed for the open year (2025) and design year (2045).

The growth rates between the years 2018 to 2025 and 2025 to 2045 were calculated from ARC's 2015, 2030 and 2050 Models. The ARC travel demand model (TDM) base model was reviewed for purposes of comparing model attributes against existing conditions with respect of number of lanes, free flow speeds, select point-to-point travel times, and lane capacities. Based on the review results, the selected TDM network link attributes were updated where discrepancies were noted between TDM and site observations or estimated results from google. The resulting growth rate was then applied to year 2018 traffic counts to obtain open year and design year traffic input volumes. Overall, the model showed 0.1% to 0.3% difference between the No-Build and Build growth rates depending on the year and interstate, which have been incorporated while estimating the Build and No-Build volumes. Volume diagrams are included in **Appendix F**.

A summary of the growth rates can be seen in **Table 2-3** and**Table 2-4** for the I-20/I-285 mainlines and crossroads, respectively.

Table 2-3. Growth Rates – I-20/I-285 Mainline

Scenario	Average Growth Rate (2018 – 2025)		Average Growth Rate (2025 – 2045)	
	No-Build	Build	No-Build	Build
I-20	1.3%	1.6%	1.5% *	1.6% *
I-285	1.0% *	1.2% *	0.8%*	0.9%*

*Overall Growth Rate (GP + EL)

Table 2-4. Growth Rates – Crossroads

Scenario	Average Growth Rate (2018 – 2025)		Average Growth Rate (2025 – 2045)	
	No-Build	Build	No-Build	Build
Candler Road	0.5%	0.5%	0.5%	0.5%
Columbia Drive	1.5%	1.4%	0.9%	0.8%
Wesley Chapel Road	1.4%	1.2%	1.4%	1.4%
Miller Road	1.5%	0.5%	4.7%	6.5%
Panola Road	0.8%	1.1%	0.5%	0.7%
Lithonia Industrial Blvd	0.8%	3.3%	2.2%	0.5%
Evans Mill Road	0.5%	0.5%	1.5%	2.0%
Flat Shoals Road	0.9%	0.8%	0.6%	0.6%
Glenwood Road	1.2%	0.9%	0.5%	0.5%

2.7 TRAFFIC OPERATIONS ANALYSIS METHODOLOGY

This section outlines the study methodology used to conduct detailed operational analyses using Vissim as microsimulation software. The methodology follows the FHWA Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software and is illustrated on **Figure 2-1**.

The purpose of the microscopic simulation model is to examine detailed operational aspects of the transportation network within the corridor. These operating characteristics are measured for both freeway and surface-street systems. For the freeway system, operating characteristics are measured in terms of lane density (vehicles per mile per lane). Lane density is translated into a measure of congestion called Level of Service (LOS). The LOS has letter values between A and F, with A being the free flow and F being severely congested.

For surface streets, both Vissim and Synchro tools are considered for analysis, Operational standards of intersections are expressed in terms of average delay per vehicle at intersections. For the freeway system, these standards are expressed in terms of LOS, using lane density.

2.7.1 PEAK HOUR

Traffic data collection was conducted during months of May, April, and August 2018 on typical weekdays Tuesday, Wednesday and Thursday. Forty-eight-hour classification count were collected for two days in May, April, and August 2018. In compliance with the GDOT Design Traffic Forecasting Manual, these days represent the normal conditions in the project area. The raw counts on I-20 were used to find the AM and PM peak hours for each day separately. Peak hours were derived from the data observed within the peak periods (the AM peak period is from 6:00 to 10:00 AM and the PM peak period is from 3:00 to 7:00 PM). A common hour with highest volume for AM

and PM was identified for the entire study area. The AM peak hour was defined to be 6:45 AM to 7:45 AM and the PM peak hour was defined to be 4:00 PM to 5:00 PM.

2.7.2 PERFORMANCE MEASURES

The following performance measures from detailed Vissim and Synchro operational analyses were used in evaluating the existing and future year scenarios:

- Corridor-Wide (Link-Based) Freeway Operational Performance
  - I-20 and I-285 freeway segments throughput and density evaluation
  - I-20 and I-285 Speed Heat Maps
  - I-20 and I-285 Travel Time Comparison
- Arterial Operational Performance based on Intersection Delay

Table 2-5 lists the measure of effectiveness derived from each software utilized.

Table 2-5. Software Measures of Effectiveness (MOEs)

Software	Measure of Effectiveness
SYNCRHO	Intersection Delay
	Intersection LOS
VISSIM	Freeway Segment - Speed
	Freeway Segment - Density
	Freeway Segment – LOS
	Intersection Delay
	Intersection LOS
	Ramp Terminal Queues
	Travel Time

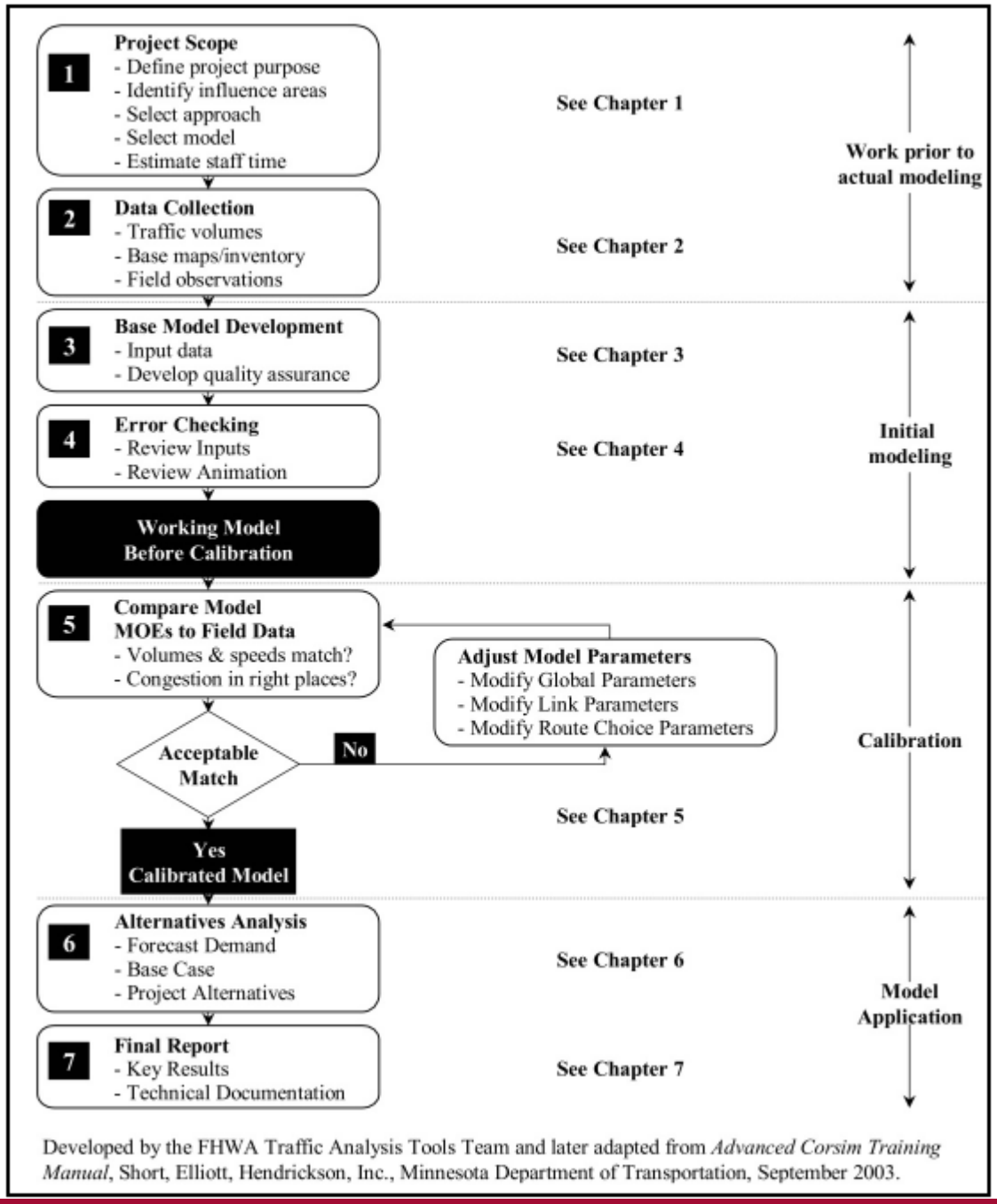


Figure 2-1. FHWA Simulation Studies Methodology

3 EXISTING CONDITIONS

3.1 EXISTING ROADWAY NETWORK AND INTERCHANGES

The existing I-285 / I-20 East Interchange is a system-to-system partial cloverleaf configuration. Through the interchange, I-20 and I-285 consists three lanes in each direction, with short auxiliary lanes between the loop ramps.

I-20, from the system to system interchange to Lithonia Industrial Boulevard (LIB), is a 3-lane freeway in the westbound direction and a 4-lane freeway in the eastbound direction up to the Panola Road interchange where it reduces to three lanes from Panola Road to LIB. I-20 is classified as an urban interstate principal arterial with posted speed limits ranging from 65 to 70 miles per hour (mph). The existing year (2018) average daily traffic (ADT) volume on I-20 within the project limits ranges from 135,075 to 194,500, with an average truck percentage ranging from 9% to 11%. At the I-285/I-20 East Interchange, the percentages of truck traffic on the ramps range from 4.5% to 21.5%, indicating significant truck movement within the interchange.

I-285, from the system-to-system interchange to the Glenwood Road interchange to the north is four through lanes with auxiliary lanes from I-20 EB/WB on-ramps. The existing year (2018) ADT is 102,575 in this section with a truck percentage of 11%. **Table 3-1** lists the interstates, arterials and collectors that are within the study area of influence. The project area of influence includes the mainlines and the crossroads with the adjacent intersections as shown in **Figure 3-1**.

The study area of influence includes eight service interchanges and one system-to-system interchange at the I-20/I-285 intersection. The I-20 corridor includes six service interchanges and the I-285 corridor includes two service interchanges.

Table 3-1. Calibration Study Area Corridors/Streets

Roadway Name	Start Location	End Location	Directions
I-20	East of Evans Mill Road	West of Candler Road	EB/WB
I-285	South of Flat Shoals Road	North of Glenwood Road	NB/SB
Candler Road	Eastwyck Road	H F Shepherd Road	NB/SB
Columbia Drive	Columbia Woods Drive	Rainbow Drive	NB/SB
Wesley Chapel Road	Snapfinger Woods Drive	East Side Drive	NB/SB
Panola Road	Panola Industrial Drive	Fairington Road	NB/SB
Lithonia Industrial Boulevard	I-20	Chupp Road	NB/SB
Evans Mill Road	Hillandale Drive	Mall Pkwy	NB/SB
Flat Sholas Pkwy	Panthersville Road	Columbia Drive	EB/WB
Glenwood Road	Austin Drive	Atherton Road	EB/WB

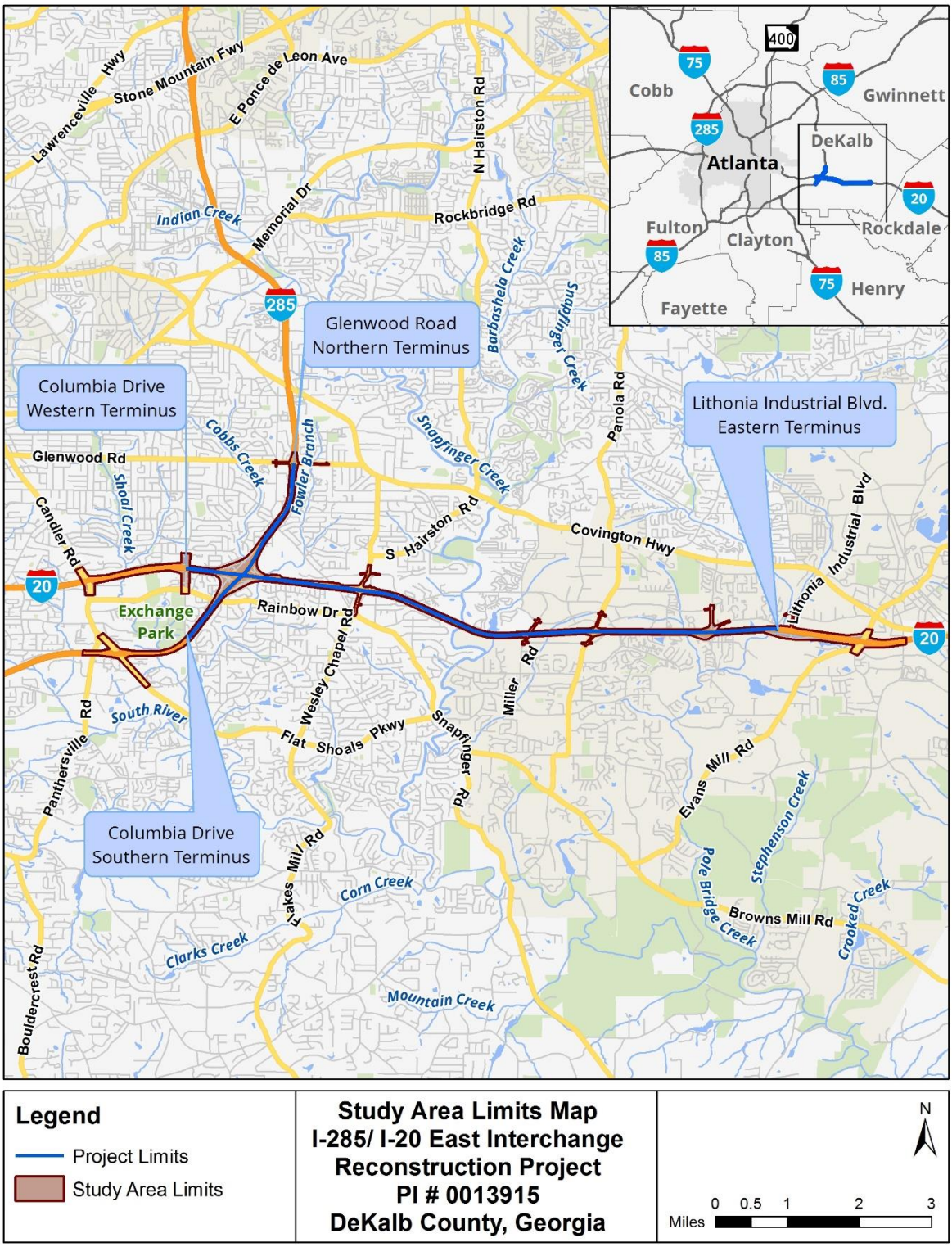


Figure 3-1. Area of Influence – Study Area Limits Map

3.2 COMMUNITIES SERVED BY THE PROJECT

I-20 provides access to key employment centers located in and around the Atlanta metropolitan region and is a major commuter route. This corridor struggles to meet the high demand of daily traffic commuting from DeKalb, Rockdale, and Newton Counties into the City of Atlanta. High congestion currently exists throughout the day, but particularly along westbound I-20 from Panola Road to I-285 during the morning peak period due to the high truck volume.

3.3 EXISTING TRAFFIC VOLUMES

This section summarizes the methodology adopted and key activities performed to estimate traffic demand volumes for year 2018. A detailed discussion of this methodology is presented in the approved Traffic Forecasting Report (**Appendix B**). The methodology described in this document for volume development is consistent with GDOT's procedures for projecting volumes for existing and future years. The key activities performed to project traffic volumes for the proposed projects are explained below.

3.3.1 COMPREHENSIVE DATA COLLECTION

The approved traffic counts location map provided in the Traffic Forecasting Report **(Appendix B-1**) shows the data collection type and locations. The count locations included 48-hour ADT counts (including classification counts) and 6-hour counts at crossroads along the project mainlines. 48-hour classification counts were collected at interstate locations, ramp locations, and arterial locations. Data was collected on April 10-12, April 17-19, May 8-9, May 15-16, and August 14-15 of 2018. The counts were collected at fifteen-minute intervals for both directions of travel at all locations where applicable. Turning movement counts (TMC) were collected at all ramp termini and significant intersections until the next signalized location along the arterials. Travel time data was collected at the following five locations along the I-20 westbound direction in the AM peak and in the eastbound direction during the PM peak:

- I-20 from Candler Road overpass to I-285 interchange
- I-20 from I-285 interchange to Wesley Chapel Road
- I-20 from Wesley Chapel Road to Panola Road
- I-20 from Panola Road to Lithonia Industrial Boulevard
- I-20 from Lithonia Industrial Boulevard to Klondike Road overpass

3.3.2 YEAR 2018 VOLUME DEVELOPMENT METHODOLOGY

3.3.2.1 K-FACTOR CALCULATION

K-factors were calculated for each ADT count by dividing the peak hourly volume by the total daily volume. The directional distribution factor, D, is the proportion of the total, two-way design hour traffic traveling in the peak direction. A calculation chart for all count locations is included in **Appendix B-4** of Traffic Forecasting Report (**Appendix B)**, which lists the existing K and D factors for the interstate segments, ramps and arterials where ADT counts were taken.

Future year K and D factors sometimes differ, due to balancing after the growth rates are applied. These factors are compared with the existing factors to confirm they were within an appropriate range. K and D factors along the I-20 mainline affected by the proposed project were compared with the existing K and D factors for the same location. The only location along the mainline that will be impacted by the proposed project is I-20 WB, between I-285 and Wesley Chapel Road where a CD section is being constructed. All the improvements to the system-to-system interchange only result in

a lateral shift of the current roadway sections and do not include substantial roadway configuration changes. A comparison of the K and D factors along this segment in existing and build conditions is summarized in **Table 3-2.**

Table 3-2. Comparison of K and D Factors Along I-20, west of Wesley Chapel Road

Scenario	K-Factor		D-Factor	
	AM	PM	AM	PM
Existing	0.06	0.06	0.60 (WB)	0.59 (EB)
2025 Build	0.06	0.06	0.61 (WB)	0.58 (EB)
2045 Build	0.06	0.06	0.62 (WB)	0.56 (EB)

3.3.2.2 Traffic Adjustment Factors

Traffic counts were adjusted using a monthly factor (MF), a daily factor (DF) and an axle correction factor (ACF) to estimate existing AADT volumes as follows:

$$AADT = ADT * MF * DF * ACF$$

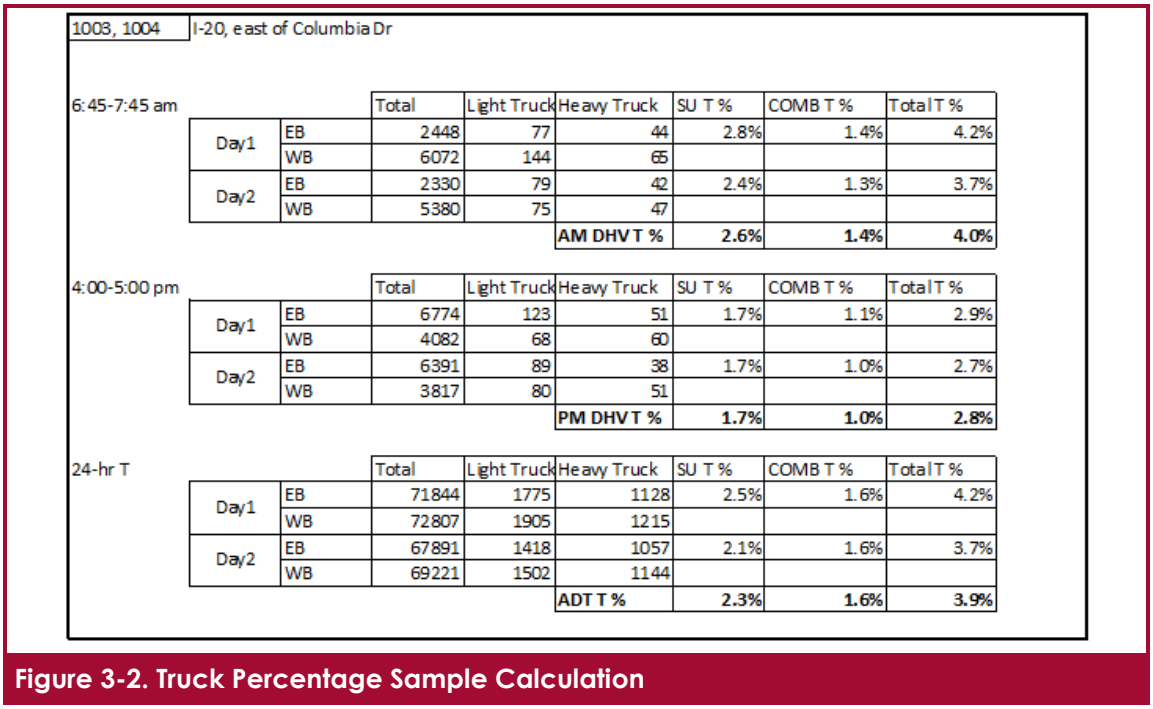
The AADT was calculated for both days of ADT counts and averaged. The axle correction factor was applied only on the non-classification traffic counts. The MF, DF & ACF are provided in the Table 3-3 below:

Table 3-3. Traffic Adjustment Factors

Monthly Factors											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.06	1.01	0.97	0.98	0.98	0.98	0.99	0.98	0.99	0.99	1.03	1.06
Daily Factors											
Sun	Mon	Tue	Wed	Thu	Fri	Sat					
1.19	1	0.99	0.96	0.95	0.92	1.04					
Axle Factor											
0.94											

3.3.2.3 Truck Percentage

The truck percentages for I-20, east of Columbia Drive, were calculated for two days in both directions i.e. eastbound and westbound. Average of the truck percentage for two days data was considered for AM peak, PM peak and 24 hour period. The **Figure 3-2** shows Truck percentage calculation for I-20. The summary of the truck percentages for each location in both the peaks and for the daily (24hr) is presented in **Appendix B-5** of the Traffic Forecasting Report (**Appendix B**), they are rounded to the nearest 0.5%.



1003, 1004 I-20, east of Columbia Dr

6:45-7:45 am			Total	Light Truck	Heavy Truck	SU T %	COMB T %	Total T %
Day1	EB		2448	77	44	2.8%	1.4%	4.2%
	WB		6072	144	65			
Day2	EB		2330	79	42	2.4%	1.3%	3.7%
	WB		5380	75	47			
					AM DHV T %	**2.6%**	**1.4%**	**4.0%**

4:00-5:00 pm			Total	Light Truck	Heavy Truck	SU T %	COMB T %	Total T %
Day1	EB		6774	123	51	1.7%	1.1%	2.9%
	WB		4082	68	60			
Day2	EB		6391	89	38	1.7%	1.0%	2.7%
	WB		3817	80	51			
					PM DHV T %	**1.7%**	**1.0%**	**2.8%**

24-hr T			Total	Light Truck	Heavy Truck	SU T %	COMB T %	Total T %
Day1	EB		71844	1775	1128	2.5%	1.6%	4.2%
	WB		72807	1905	1215			
Day2	EB		67891	1418	1057	2.1%	1.6%	3.7%
	WB		69221	1502	1144			
					ADT T %	**2.3%**	**1.6%**	**3.9%**

Figure 3-2. Truck Percentage Sample Calculation

Since the proposed project does not result in additional truck destinations and the travel demand model does not show an increase in truck volume along the corridor in the future years, truck percentages for the future year conditions were assumed to be the same as the existing year.

3.3.2.4 Growth Rates

Growth rates were determined by analyzing AADT volumes from the Atlanta Regional Commission Travel Demand Model (TDM). The base 2015 model was compared to the 2030 No-Build and Build models to calculate a growth rate from 2018-2025. Similarly, the 2030 models were compared to the 2050 models to calculate the 2025-2045 growth rate. The growth rates can be seen in **Table 3-4** and **Table 3-5** for the I-20/I-285 mainlines and crossroads, respectively. **Figure 3-3.** shows scenarios and corresponding infrastructure inclusions to the TDM model.

Table 3-4. Growth Rates – I-20/I-285 Mainline

	Average Growth Rate (2018 – 2025)		Average Growth Rate (2025 – 2045)	
Scenario	**No-Build**	**Build**	**No-Build**	**Build**
I-20	1.3%	1.6%	1.5% *	1.6% *
I-285	1.0% *	1.2% *	0.8%*	0.9%*

*Overall Growth Rate (GP + EL)

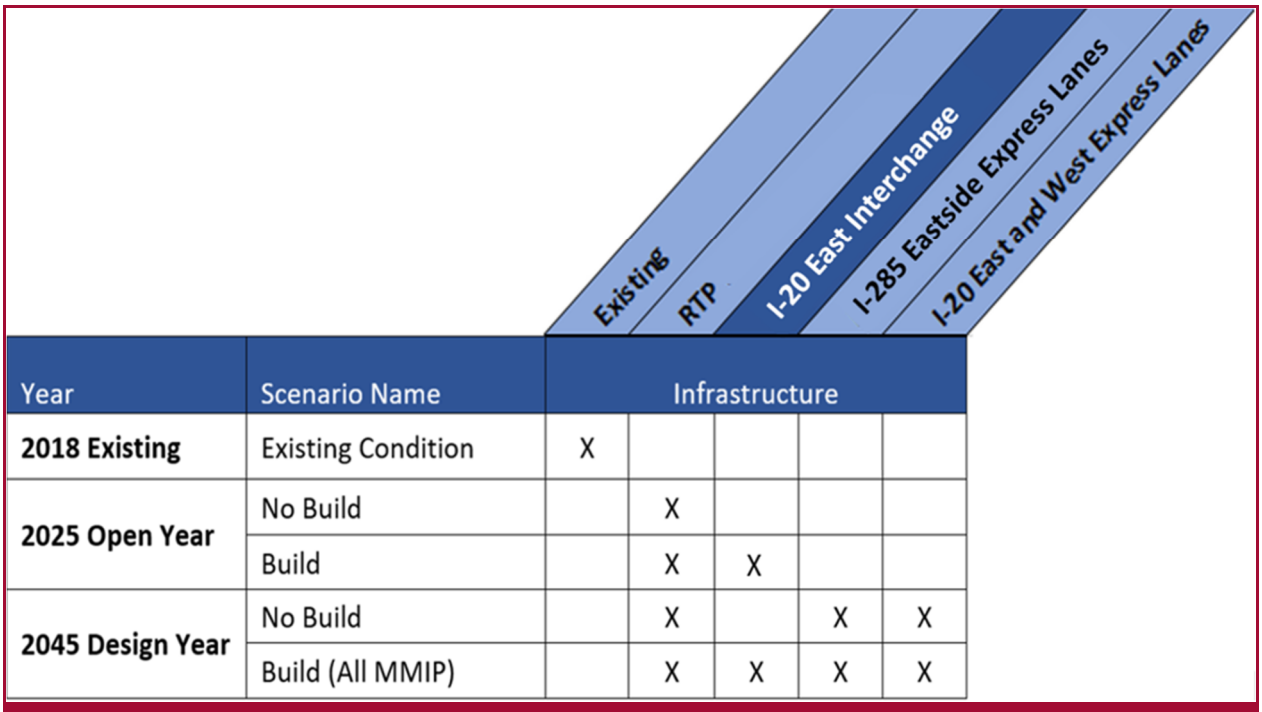
Table 3-5. Growth Rates – Crossroads

	Average Growth Rate (2018 – 2025)		Average Growth Rate (2025 – 2045)	
Scenario	**No-Build**	**Build**	**No-Build**	**Build**
Candler Road	0.5%	0.5%	0.5%	0.5%
Columbia Drive	1.5%	1.4%	0.9%	0.8%
Wesley Chapel Road	1.4%	1.2%	1.4%	1.4%
Miller Road	1.5%	0.5%	4.7%	6.5%
Panola Road	0.8%	1.1%	0.5%	0.7%
Lithonia Industrial Blvd	0.8%	3.3%	2.2%	0.5%
Evans Mill Road	0.5%	0.5%	1.5%	2.0%

Table 3-5. Growth Rates – Crossroads

Scenario	Average Growth Rate (2018 – 2025)		Average Growth Rate (2025 – 2045)	
	No-Build	Build	No-Build	Build
Flat Shoals Road	0.9%	0.8%	0.6%	0.6%
Glenwood Road	1.2%	0.9%	0.5%	0.5%

This section explains the method adopted for estimating the ramp growth rate. Year 2025 ramp volumes were developed using the growth rate for the mainline. Since each section has a different growth rate, some of the volumes are slightly adjusted as a part of volume balancing. For the Year 2045, the growth rate of arterials was applied to all the ramps. It is anticipated the ramp volumes will not grow at the same rate as the mainline from 2025 to 2045. Most of the arterials have an approximate growth rate of 0.5%, which was applied to the ramps. Our assumption is that until 2025, the mainline volume and ramp volumes will increase at about same rate. Between 2025 and 2045, with the I-20 express lanes and other MMIP projects also completed, I-20 volumes are assumed to increase at a higher growth rate. However, the mainline growth rate does not translate to the arterials, which forecast to have lower growth percentages between 2025 to 2045. To be able to reflect that the growth on I-20 mainline is mostly through traffic in the study area and not originating from arterials, the ramp growth rate for 2045 has been limited to observed arterial growth rate of 0.5%.



Year	Scenario Name	Infrastructure				
2018 Existing	Existing Condition	X				
2025 Open Year	No Build		X			
	Build		X	X		
2045 Design Year	No Build		X		X	X
	Build (All MMIP)		X	X	X	X

Figure 3-3. Travel Demand Model (TDM) Scenarios

3.3.3 TRAFFIC VOLUME DIAGRAMS

Traffic volume diagrams, including AADTs and DHVs, for the existing condition, open year (2025), design year (2045), are provided in **Appendix F.**

3.3.4 Field Observations – AM and PM Peak

During field visits, Google Traffic maps and RITIS travel time data along with the travel time and speed data from Quality Traffic field data based on the peak hour the queues were observed in both peak hours at the following sections along I-20 and I-285 within the study area:

AM Peak:

- I-20 WB mainline between Evans Mill Road off-ramp and the Panola Road on-ramp is highly congested due to heavy truck volume destined to the I-285 NB/SB ramps.
- I-20 WB mainline between Panola Road on-ramp and Columbia Drive on-ramp is moderately congested.
- I-285 NB and SB mainline between the I-285/I-20 system-to-system interchange and Glenwood Road off-ramp is moderately congested at the ramp merge/diverge locations.

PM Peak:

- I-20 EB, between the Wesley Chapel on-ramp and Panola Road off-ramp is highly congested.
- I-20 EB CD road between the I-285/I-20 system-to-system interchange and Wesley Chapel Road is highly congested due to the high weaving volume and lack of continuous fourth lane.
- I-20 WB mainline between the Lithonia Industrial Boulevard on-ramp and the system-to-system interchange is moderately congested.
- I-285 NB mainline between Flat Shoals Road off-ramp and Glenwood Road off-ramp is moderately congested.

3.4 EXISTING CONDITIONS MODEL CALIBRATION AND OPERATION ANALYSIS

Vissim is the primary microsimulation tool used to study the existing conditions traffic performance. The primary objective of developing the existing conditions model is to identify bottleneck locations along the freeway corridors that contribute to the congested operations observed during field investigations. Second, the existing conditions microsimulation model serves as a foundation for developing future year no-build and build Vissim models. To meet these objectives, the existing conditions Vissim model was thoroughly calibrated with field data.

3.4.1 Existing Conditions Model Calibration

Vissim model simulation calibration is used to achieve adequate validity of the model by establishing suitable parameter values so that the model replicates local traffic conditions as closely as possible. Calibration is achieved by iteratively changing model parameters to replicate traffic patterns, congestion, bottlenecks, and driver behavior observed within the study area. The existing conditions calibrated model parameters are then used for alternative comparisons with future traffic conditions.

This study utilized the calibration criteria from FHWA's Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software. **Table 3-6** provides the established Vissim model calibration criteria used for this project. Reasonable efforts were made to calibrate the AM and PM peak period Vissim models to the proposed calibration criteria and targets. Additionally, individual link flows have been checked to determine if they are within 15 percent of field flows for more than 85 percent of the cases.

Table 3-6. Vissim Model Calibration Criteria

Calibration Item	Calibration Target/Goal
Traffic Volume	Simulated and measured link volumes for more than 85% of the links to be: • Within 100 vph for volumes less than 700 vph • Within 15% for volumes between 700 vph and 2700 vph • Within 400 vph for volumes greater than 2700 vph Simulated and measured link volumes for more than 85% of links to have a Geoffrey. E. Havers (GEH *) statistic value of five (5) or lower. Sum of link volumes within calibration area to be within 5%
Travel Time	Simulated travel time within 15% (or $\pm$ 1 minute, if higher) for routes with observed travel times less than seven (7) minutes for all the routes identified in the data collection plan
Visualization	Checking consistency with the field conditions of the following: On/Off-ramp queueing; weaving maneuvers; patterns and extent of queue at intersection and congested links, lane utilization/choice; location of bottle necks, verifying unrealistic U-turns etc.

* GEH = $\sqrt{2 * (M - C)^2 / (M + C)}$ where M is the simulation model volume and C is the field counted volume.

The calibration parameters in Vissim are based on operational characteristics and help replicate field conditions. The operational parameters are generally modified in Vissim to replicate the capacity observed along mainline segments, merges, diverges, and weaving sections of freeways.

The parameters that play a large role in the capacity calibration of the Vissim model are car following behavior, lane change behavior, and lane changing distance parameters. To change these parameters effectively in order to calibrate existing conditions, different "Driver Behavior Types" were coded in the AM and PM peak period models.

Ten model iterations with varying random seed numbers were conducted for the AM and PM models. The required number of runs for Vissim operational analysis has been determined using the general statistical formula to determine the sample size for any set of data. A detailed calculation of the required number of runs is presented in **Section 8.3** of Vissim Existing Conditions Model Development and Calibration Report (**Appendix C)**.

To validate the calibration parameters, a three-and-half -hour peak period Vissim simulation model was developed. A detailed analysis of the existing conditions model was performed to evaluate corridor-wide performance and location-specific performance. The Vissim model was supplemented by a Synchro analysis for arterial intersections.

Simulated travel times and speeds for the AM and PM peak hours were compared and matched to existing conditions travel times between major origin and destination points. Link throughputs for all freeway and ramp sections were compared to meet the FHWA-recommended criteria. Finally, a visual audit of the Vissim simulation was performed to confirm that the model showed the buildup and dissipation of congestion consistent with field observations.

In summary, the existing conditions Vissim models reflected existing traffic operations during the AM and PM peak periods along the I-20 and I-285 corridors and met the calibration criteria based on FHWA's Traffic Analysis Toolbox. The 15 percent link throughput criteria were matched up to 97% for the AM peak period and 97.4% for the PM peak period. The travel comparison between Vissim results and field-observed results showed an 85 % match.

Detailed information on the calibration methodology, quantitative justifications for selection of the calibration parameters, and measures of effectiveness to meet the defined calibration criteria are documented in **Chapters 7 & 8** of Vissim Existing Conditions Model Development and Calibration Report (**Appendix C**).

3.4.2 Existing Conditions Operational Analysis

This section discusses I-20 & I-285 mainline performances in both the AM and PM peak in year 2018. In 2018, the existing network can process 99% of the AM peak demand and 98.2% of PM peak demand.

I-20 WB Direction:

Schematic **Figure 3-4** shows I-20 WB freeway segment operations during AM & PM peak. In the AM peak, the segment between Lithonia Ind. Boulevard and Panola Road operates at LOS F. The weaving segment between Wesley Chapel Road to the system interchange operates at LOS E. In the PM peak, I-20 WB weaving segment between I-285 NB on-ramp to I-285 SB off-ramp within the system interchange operates at LOS F.

Figure 3-5 shows a speed heat map of both the peak hours. In the AM peak, along I-20 WB the sections between the Lithonia Industrial Boulevard on-ramp and the Panola Road off-ramp operates with speeds less than 30 mph in peak & post-peak hours. Additionally, the weaving section between the Wesley Chapel Road on-ramp and the system to system interchange operates with speeds between 30 to 40mph in the peak hour and less than 30 mph in the post peak hour. In the PM peak, the weaving section within the system interchange operates with speeds less than 30 mph in both peak & post-peak hours.

I-20 EB Direction:

Schematic **Figure 3-6** shows I-20 EB freeway segment operations of both AM & PM Peak. In the AM Peak, the I-20 EB and the EB CD segment corridor perform at acceptable LOS C or better. Whereas, in the PM Peak, the diverge section approaching the Panola Road off-ramp operates at LOS F and the EB CD road operates with LOS E as the CD weaving section has four lanes initially and then it converges into three lanes.

Figure 3-7 shows a speed heat map for both the peaks along the I-20 EB mainline. It is observed from the speed heat map that I-20 EB is not a peak direction during the AM peak. All the other sections operate with free flow speed as per the posted speeds. During the PM peak, the diverge section approaching the Panola Road off-ramp & the EB CD segment operate with speeds between 30 to 40 mph in the peak hour and with speeds less than 30 mph in post-peak hour.

I-285 NB Direction:

Schematic **Figure 3-8** shows the I-285 NB freeway segment operations in both the AM & PM peaks. In the AM Peak, the I-285 NB corridor performs at an acceptable LOS D or better, whereas, in the PM peak the sections upstream and downstream of the I-20 EB and WB on-ramps operate with LOS E.

Figure 3-9 shows a speed heat map details of both peaks along I-285 NB. In the AM Peak, the sections within the system interchange and upstream of system interchange operate with free flow speeds and in the PM peak the sections between system interchange and the Glenwood Road on-ramp operates with speeds between 30 to 40 mph; and at the Flat Shoals Road on-ramp the speeds observed are less than 20 mph in the post-peak hour.

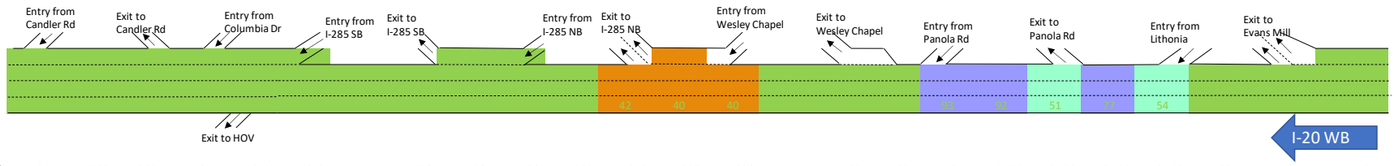
I-285 SB Direction:

Schematic **Figure 3-10** shows I-285 SB freeway segment operations of both the AM & PM peaks. In the AM peak, the I-285 SB segments operate with an acceptable LOS. Similarly, in PM peak all the sections work with an acceptable LOS.

Figure 3-11 shows speed heat map of both peaks along the I-285 SB mainline. In the AM peak all sections operate with free-flow speeds. In the PM peak, the Glenwood Road off-ramp section operates with speeds less than 30 mph in the post peak hour.

YR 2018 Existing AM Peak - Graphical Results ---- I-20 WB

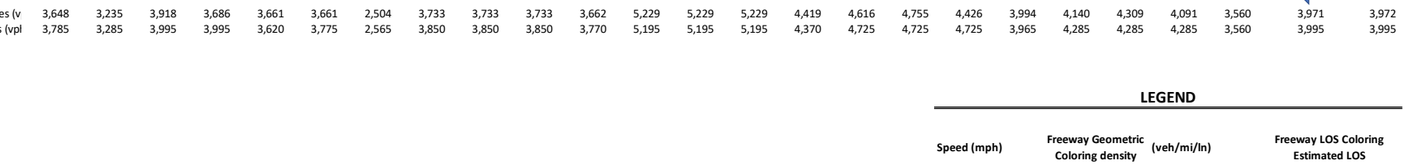
No of Lanes	5	4	4	5	4	4	3	4	4	4	3	4	4	4	3	4	3	4	3	4	3	4	3	4	3	
Distance (ft)	531	2,500	3,174	470	1,767	500	2,023	200	364	200	1,192	1,741	2,713	500	1,759	390	15,245	250	2,129	270	6,513	405	10,692	2,500	4,960	
Speed (mph)	60	62	60	59	61	61	61	55	55	55	57	35	38	38	53	45	60	11	12	17	16	18	58	60	62	
Level of Service	C	C	C	C	C	C	C	C	C	C	D	E	E	E	D	C	C	F	F	F	F	F	B	B	C	
Density (pc/mi/ln))	19	22	25	19	23	23	24	23	23	23	29	42	40	40	27	23	24	93	92	51	77	54	17	18	23	
Ramp Demand Volum	630		690		855		1,410	1,070			270	1,100		2,050		140		1,010		180		675		1,340		



Simulated Volumes (v	5,840	5,369	6,025	5,674	5,673	5,673	4,374	5,196	5,196	5,196	4,929	5,848	5,926	5,926	4,174	4,182	4,327	4,043	3,409	3,492	3,723	3,799	2,884	4,211	4,212	
Demand Volumes (vpl	6,100	5,470	6,160	6,160	5,305	5,810	4,400	5,470	5,470	5,470	5,200	6,300	6,300	6,300	4,250	4,390	4,390	4,390	3,380	3,560	3,560	3,560	2,885	4,225	4,225	

YR 2018 Existing PM Peak - Graphical Results ---- I-20 WB

No of Lanes	5	4	4	5	4	4	3	4	4	4	3	4	4	4	3	4	3	4	3	4	3	4	3	4	3	
Distance (ft)	531	2,500	3,174	470	1,767	500	2,023	200	364	200	1,192	1,741	2,713	500	1,759	390	15,245	250	2,129	270	6,513	405	10,692	2,500	4,960	
Speed (mph)	59	63	62	60	61	61	58	21	21	21	40	58	58	58	49	34	47	52	52	35	58	37	62	61	62	
Level of Service	B	B	B	B	B	B	B	F	F	F	D	C	C	C	D	D	D	C	C	D	C	D	C	B	C	
Density (pc/mi/ln))	12	13	16	12	15	15	14	48	48	48	33	22	22	22	30	34	34	21	26	30	25	28	19	16	21	
Ramp Demand Volum	500		710		375		1,210	1,285			80	1,425		825		355		760		320		725		435		



Simulated Volumes (v	3,648	3,235	3,918	3,686	3,661	3,661	2,504	3,733	3,733	3,733	3,662	5,229	5,229	5,229	4,419	4,616	4,755	4,426	3,994	4,140	4,309	4,091	3,560	3,971	3,972	
Demand Volumes (vpl	3,785	3,285	3,995	3,995	3,620	3,775	2,565	3,850	3,850	3,850	3,770	5,195	5,195	5,195	4,370	4,725	4,725	4,725	3,965	4,285	4,285	4,285	3,560	3,995	3,995	

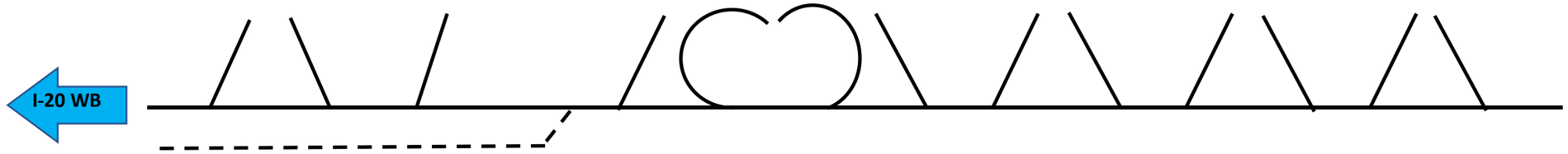
LEGEND

Speed (mph)	Freeway Geometric Coloring density	(veh/mi/ln)	Freeway LOS Coloring Estimated LOS	
<25	Density above	75	LOS A to C	< 28
25-30	Density above	55	LOS D	28-35
30-40	Density above	43	LOS E	35-43
40-50	Density above	35	LOS F	> 43
50-55	Density below	35		
55-60				
>60				

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 3-4. Freeway Schematic Results (Vissim) – 2018 AM & PM Peak Hour (I-20 WB)

EXISTING -WEST BOUND_ SPEED HEAT MAPS _ AM PEAK



LEGEND
Mainline
Expresslane
CD Road

Speed
>60
55-60
50-55
40-50
30-40
25-30
<25

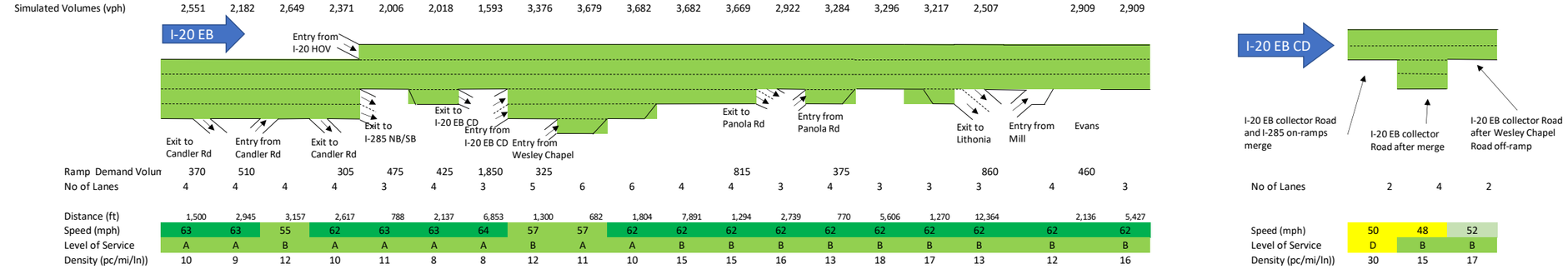
Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	5:45 AM																
	6:00 AM																
	6:15 AM																
	6:30 AM																
Analysis Period	6:45 AM																
	7:00 AM																
	7:15 AM																
	7:30 AM																
Post Peak	7:45 AM																
	8:00 AM																
	8:15 AM																
	8:30 AM																

EXISTING - WEST BOUND_SPEED HEAT MAPS _ PM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	3:00 PM																
	3:15 PM																
	3:30 PM																
	3:45 PM																
Analysis Period	4:00 PM																
	4:15 PM																
	4:30 PM																
	4:45 PM																
Post Peak	5:00 PM																
	5:15 PM																
	5:30 PM																
	5:45 PM																

Figure 3-5. Speed Heat Map Results (Vissim) – 2018 AM & PM Peak Period (I-20 WB)

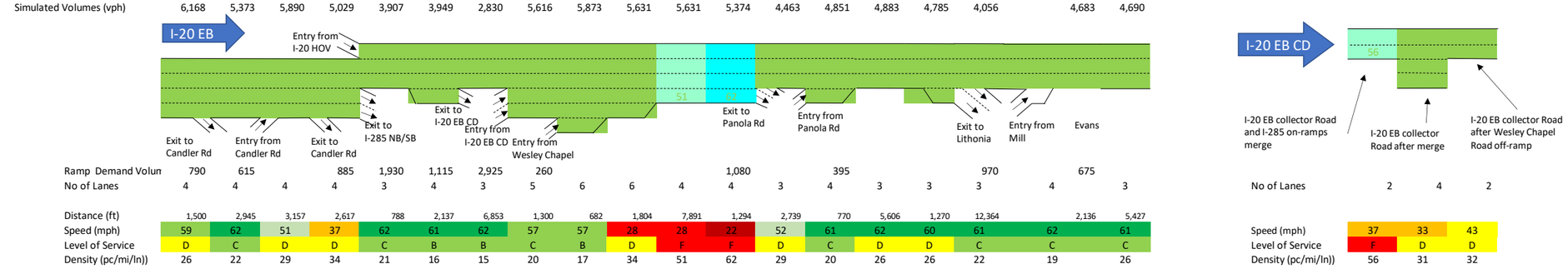
YR 2018 Existing AM Peak - Graphical Results ---- I-20 EB



Demand Volumes (vph)	2,570	2,200	2,710	2,405	2,030	2,030	1,605	3,455	3,780	3,780	3,780	3,780	2,965	3,340	3,340	3,340	2,480		2,940	2,940	
Simulated Volumes (vph)	2,551	2,182	2,649	2,371	2,006	2,018	1,593	3,376	3,679	3,682	3,682	3,669	2,922	3,284	3,296	3,217	2,507		2,909	2,909	
Ramp Demand Volun	370	510		305	475	425	1,850	325				815		375			860		460		
No of Lanes	4	4	4	4	3	4	3	5	6	6	4	4	3	4	3	3	3	4		3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,891	1,294	2,739	770	5,606	1,270	12,364		2,136	5,427	
Speed (mph)	63	63	55	62	63	63	64	57	57	62	62	62	62	62	62	62	62	62	62	62	
Level of Service	A	A	B	A	A	A	A	B	A	A	B	B	B	B	B	B	B	B	B	B	
Density (pc/mi/ln))	10	9	12	10	11	8	8	12	11	10	15	15	16	13	18	17	13	12		16	

No of Lanes	2	4	2
Speed (mph)	50	48	52
Level of Service	D	B	B
Density (pc/mi/ln))	30	15	17

YR 2018 Existing PM Peak - Graphical Results ---- I-20 EB



Demand Volumes (vph)	6,185	5,395	6,010	5,125	4,015	4,015	2,900	5,825	6,085	6,085	6,085	6,085	5,005	5,400	5,400	5,400	4,430		5,105	5,105	
Simulated Volumes (vph)	6,168	5,373	5,890	5,029	3,907	3,949	2,830	5,616	5,873	5,631	5,631	5,374	4,463	4,851	4,883	4,785	4,056		4,683	4,690	
Ramp Demand Volun	790	615		885	1,930	1,115	2,925	260				1,080		395			970		675		
No of Lanes	4	4	4	4	3	4	3	5	6	6	4	4	3	4	3	3	3	4		3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,891	1,294	2,739	770	5,606	1,270	12,364		2,136	5,427	
Speed (mph)	59	62	51	37	62	61	62	57	57	28	28	22	52	61	62	60	61	62	62	61	
Level of Service	D	C	D	D	C	B	B	C	B	D	F	F	D	C	D	D	C	C		C	
Density (pc/mi/ln))	26	22	29	34	21	16	15	20	17	34	51	62	29	20	26	26	22	19		26	

No of Lanes	2	4	2
Speed (mph)	37	33	43
Level of Service	F	D	D
Density (pc/mi/ln))	56	31	32

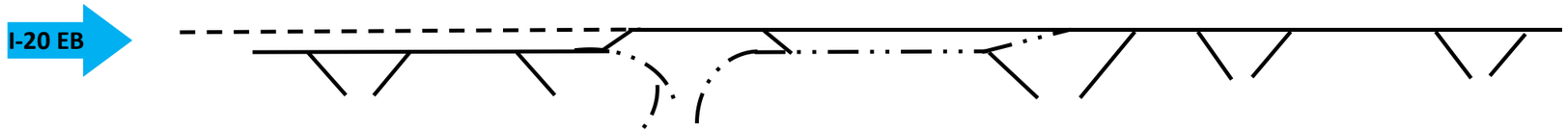
LEGEND

Speed (mph)	Freeway Geometric	(veh/mi/ln)	Freeway LOS Coloring	
<25	Density above	75	LOS A to C	< 28
25-30	Density above	55	LOS D	28-35
30-40	Density above	43	LOS E	35-43
40-50	Density above	35	LOS F	> 43
50-55	Density below	35		
55-60				
>60				

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 3-6. Freeway Schematic Results (Vissim) – 2018 AM & PM Peak Hour (I-20 EB)

EXISTING - EAST BOUND_SPEED HEAT MAPS _ AM PEAK



Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD _ AM PEAK

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB collector Road after Wesley Chapel Road off-ramp

LEGEND
- Mainline
- Expresslane
- CD Road

Speed
>60
55-60
50-55
40-50
30-40
25-30
<25

EXISTING -EAST BOUND_SPEED HEAT MAPS _ PM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	3:00 PM															
	3:15 PM															
	3:30 PM															
	3:45 PM															
Analysis Period	4:00 PM															
	4:15 PM															
	4:30 PM															
	4:45 PM															
Post Peak	5:00 PM															
	5:15 PM															
	5:30 PM															
	5:45 PM															

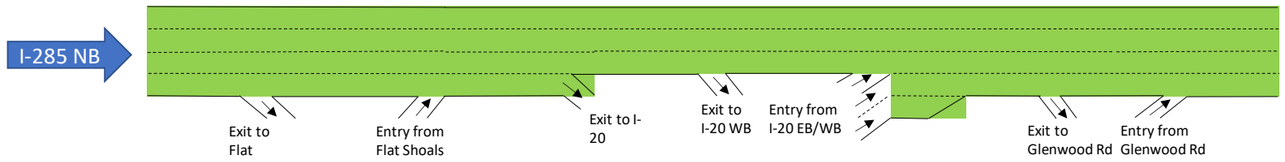
I-20 EB CD _ PM PEAK

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB collector Road after Wesley Chapel Road off-ramp

Figure 3-7. Speed Heat Map Results (Vissim) – 2018 AM & PM Peak Period (I-20 EB)

YR 2018 Existing AM Peak - Graphical Results ---- I-285 NB

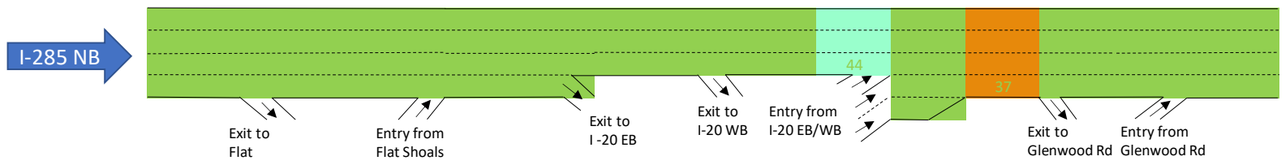
Demand Volumes (vpl	4,960	4,960	4,355	4,795	4,795	4,795	3,415	3,415	3,145	4,665	4,665	4,665	4,190	4,500	4,500
Simulation Volumes (\	4,948	4,948	4,390	4,623	4,741	4,741	3,374	3,374	3,098	4,375	4,346	4,360	3,947	3,992	4,172



Ramp Demand Volume (vph)		540		375			1,380	270		1,520			475	310	
No of Lanes	4	4	4	5	4	4	3	3	3	3	5	4	4	5	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609	295	730
Speed (mph)	57	57	61	52	62	62	62	62	63	56	55	52	53	53	53
Level of Service	C	C	C	B	C	C	C	C	B	D	B	C	C	B	C
Density (pc/mi/ln))	22	22	18	18	19	19	18	18	16	26	16	21	18	15	20

YR 2018 Existing PM Peak - Graphical Results ---- I-285 NB

Demand Volumes (vpl	4,855	4,855	4,355	4,735	4,735	4,735	3,320	3,320	3,240	6,510	6,510	6,510	5,795	6,120	6,120
Simulation Volumes (\	4,645	4,645	4,220	4,473	4,585	4,585	3,206	3,206	3,127	6,456	6,413	6,424	5,695	5,708	5,968



Ramp Demand Volume (vph)		500		380			1,415	80		3,270			715	325	
No of Lanes	4	4	4	5	4	4	3	3	3	3	5	4	4	5	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609	295	730
Speed (mph)	62	62	62	56	42	42	60	60	63	49	45	44	45	42	43
Level of Service	C	C	B	B	D	D	B	B	B	E	D	E	D	D	D
Density (pc/mi/ln))	19	19	17	16	28	28	18	18	16	44	28	37	32	27	34

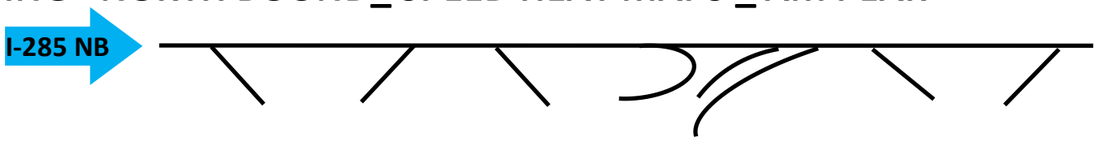
LEGEND

Speed (mph)	Freeway Geometric	(veh/mi/ln)	Freeway LOS Coloring	
<25	Density above	75	LOS A to C	< 28
25-30	Density above	55	LOS D	28-35
30-40	Density above	43	LOS E	35-43
40-50	Density above	35	LOS F	> 43
50-55	Density below	35		
55-60				
>60				

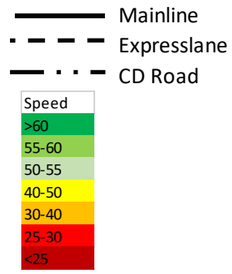
1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 3-8. Freeway Schematic Results (Vissim) – 2018 AM & PM Peak Hour (I-285 NB)

EXISTING - NORTH BOUND_ SPEED HEAT MAPS _ AM PEAK



Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									



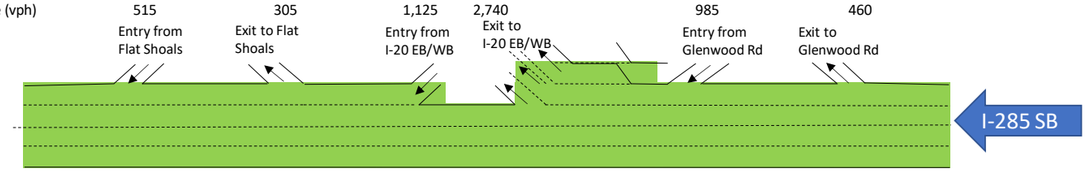
EXISTING - NORTH BOUND_SPEED HEAT MAPS _ PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	3:00 PM									
	3:15 PM									
	3:30 PM									
	3:45 PM									
Analysis Period	4:00 PM									
	4:15 PM									
	4:30 PM									
	4:45 PM									
Post Peak	5:00 PM									
	5:15 PM									
	5:30 PM									
	5:45 PM									

Figure 3-9. Speed Heat Map Results (Vissim) – 2018 AM & PM Peak Period (I-285 NB)

YR 2018 Existing AM Peak - Graphical Results ---- I-285 SB

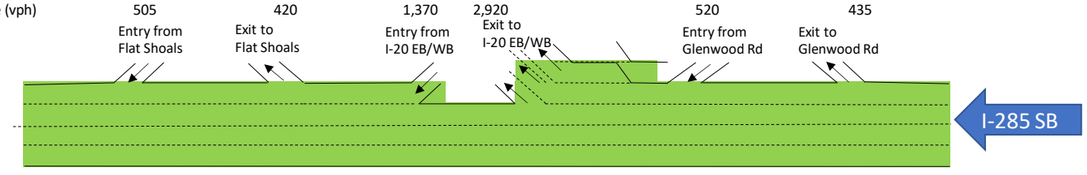
No of Lanes	4	5	4	4	4	4	3	5	4	5	4	4	4	
Distance (ft)	867	330	2,776	1,500	2,762	1,500	5,996	1,242	2,958	340	2,334	1,500	1,103	
Speed (mph)	61	59	61	61	61	61	63	60	55	44	55	51	51	
Level of Service	C	B	B	C	C	C	C	C	D	D	C	D	D	
Density (pc/mi/ln))	19	16	17	18	18	18	19	20	28	28	25	29	29	
Ramp Demand Volume (vph)		515		305		1,125	2,740			985		460		



Simulated Volumes (vph)	4,725	4,681	4,243	4,492	4,492	4,492	3,612	6,159	6,201	6,139	5,538	5,986	5,986
Demand Volumes (vph)	5,135	5,135	4,620	4,925	4,925	4,925	3,800	6,510	6,540	6,540	5,555	6,015	6,015

YR 2018 Existing PM Peak - Graphical Results ---- I-285 SB

No of Lanes	4	5	4	4	4	4	3	5	4	5	4	4	4	
Distance (ft)	867	330	2,776	1,500	2,762	1,500	5,996	1,242	2,958	340	2,334	1,500	1,103	
Speed (mph)	62	60	61	61	61	61	63	60	60	50	54	53	53	
Level of Service	C	B	C	C	C	C	C	C	D	D	D	D	D	
Density (pc/mi/ln))	20	17	18	20	20	20	19	21	27	26	29	31	31	
Ramp Demand Volume (vph)		505		420		1,370	2,920			520		435		



Simulated Volumes (vph)	5,024	4,977	4,540	4,940	4,940	4,940	3,621	6,438	6,476	6,404	6,054	6,511	6,511
Demand Volumes (vph)	5,240	4,735	4,735	5,155	5,155	5,155	3,785	6,705	6,705	6,705	5,555	6,620	6,620

LEGEND

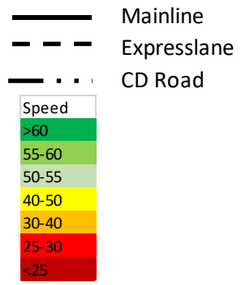
Speed (mph)	Freeway Geometric Coloring density	(veh/mi/ln)	Freeway LOS Coloring Estimated LOS	
<25	Density above	75	LOS A to C	< 28
25-30	Density above	55	LOS D	28-35
30-40	Density above	43	LOS E	35-43
40-50	Density above	35	LOS F	> 43
50-55	Density below	35		
55-60				
>60				

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 3-10. Freeway Schematic Results (Vissim) – 2018 AM & PM Peak Hour (I-285 SB)

EXISTING - SOUTH BOUND_ SPEED HEAT MAPS _ AM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									



EXISTING - SOUTH BOUND_SPEED HEAT MAPS _ PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	3:00 PM									
	3:15 PM									
	3:30 PM									
	3:45 PM									
Analysis Period	4:00 PM									
	4:15 PM									
	4:30 PM									
	4:45 PM									
Post Peak	5:00 PM									
	5:15 PM									
	5:30 PM									
	5:45 PM									

Figure 3-11. Speed Heat Map Results (Vissim) – 2018 AM & PM Peak Period (I-285 SB)

3.4.3 Travel Time Analysis Findings and Observations

This section compares the details of travel time data that were extracted from Regional Integrated and Transportation System (RITIS) data in the month of March 2018 and the simulation travel times from existing calibrated models. The average values of all travel time runs were used for the Vissim model calibration. FHWA's Toolbox III was used to evaluate travel time criteria. It was ensured that the modeled travel times are within 10% (+/-) of the RITIS travel time data for segments less than 7 minutes of travel time and 15% (+/-) for the segments with over 7 minutes of travel time. **Tables 3-7** presents the RITIS & modeled travel time results for the AM and PM peak hour model. The calibration calculations and the percentage of segments meeting the criteria are provided in **Section 9** of Vissim Existing Conditions Model Development and Calibration Report (**Appendix C**).

I-20 West: The I-20 corridor in the westbound direction experiences congestion with high travel times during the AM peak period. The average travel time during the AM peak period is around 18.3 minutes (32 mph) whereas in the PM peak the travel time is around 12.1 minutes (49 mph). During the AM peak, both in the field and the simulation model shows existing congestion between the Lithonia Industrial Boulevard on-ramp and the Panola Road off-ramp and in the weaving section between the Wesley Chapel Road on-ramp and the system interchange. During the AM peak, the I-20 WB speed varied widely depending on the day due to unreliable travel conditions with heavy truck volume using the loop ramps at the system to system interchange.

I-20 East: The I-20 corridor in the eastbound direction experiences congestion with high travel times during the PM peak period. The average travel time during the PM peak period is around 13 minutes (47 mph) whereas in the AM peak the travel time is around 9.5 minutes (65 mph). During PM peak, in the field and the simulation model, congestion is observed at the Panola Road diverge and the upstream section of Panola Road off-ramp.

I-285 North: The I-285 corridor in the northbound direction experiences congestion with high travel times during the PM peak period. The average travel time during the PM peak period is around 5.4 minutes (45 mph) whereas in the AM peak the travel time is around 4.3 minutes (57 mph). During the PM peak, in the field and in the simulation, congestion is observed between Flat Shoals Road on-ramp and I-20 EB off-ramp; between I-20 WB on-ramp and Glenwood Road on-ramp.

I-285 South: The I-285 corridor in the southbound direction experiences congestion with higher travel times during the PM peak period. The average travel time during the PM peak period is around 4.4 minutes (56 mph) whereas in the AM peak the travel time is around 3.8 minutes (64 mph). No congestion is observed in this direction.

Table 3-7. Summary of Existing Travel Time along I-20 & I-285 corridors

Direction	From	To	Distance	AM Peak				PM Peak			
				RITIS Data		Modeled		RITIS Data		Modeled	
				Travel Time (sec)	Speed (mph)	Travel Time (sec)	Speed (mph)	Travel Time (sec)	Speed (mph)	Travel Time (sec)	Speed (mph)
I-20 EAST	Candler Road Off-Ramp	Columbia Drive Off-Ramp	1.14	64	64.3	66	62.6	76	54.3	71	57.6
	Columbia Drive Off-Ramp	I-285 NB/SB Off-Ramp	0.48	27	64.9	28	61.3	39	44.1	38	45.9
	I-285 NB/SB Off-Ramp	Wesley Chapel Road On-Ramp	2.11	113	67.4	120	63.2	142	53.4	122	62.1
	Wesley Chapel Road On-Ramp	Panola Road On-Ramp	2.73	154	64.0	160	61.7	292	33.7	299	32.9
	Panola Road On-Ramp	Lithonia Ind. Boulevard. Off-Ramp	1.49	84	64.2	84	64.0	93	57.8	85	63.1
	Lithonia Ind. Boulevard. Off-Ramp	Evans Mill Road On-Ramp	2.32	130	64.5	135	61.8	133	62.7	137	61.1
	Candler Road Off-Ramp	**Evans Mill Road On-Ramp**	**10.28**	**570**	**64.9**	**593**	**62.4**	**775**	**47.7**	**752**	**53.8**
I-285 NORTH	Flat Shoals Road Off-Ramp	I-20 EB Off-Ramp	1.71	105	58.6	119	51.6	166	37.1	157	39.2
	I-20 EB Off-Ramp	I-20 WB On-Ramp	0.68	38	64.4	38	65.0	42	58.5	39	63.1
	I-20 WB On-Ramp	Glenwood Road On-Ramp	1.71	114	54.0	114	54.0	124	49.6	134	46.1
	Flat Shoals Road Off-Ramp	**Glenwood Road On-Ramp**	**4.1**	**257**	**57.4**	**271**	**54.5**	**322**	**44.8**	**330**	**44.8**
I-20 WEST	Evans Mill Road Off-Ramp	Lithonia Ind. Boulevard. On-Ramp	2.03	158	37.0	142	51.4	156	46.7	120	60.7
	Lithonia Ind. Boulevard. On-Ramp	Panola Road Off-ramp	1.38	318	16.0	273	18.2	94	47.8	88	56.7
	Panola Road Off-ramp	Wesley Chapel Road Off-Ramp	2.86	303	28.8	260	39.6	216	47.7	205	50.4
	Wesley Chapel Road Off-Ramp	I-285 SB On-Ramp	2.01	182	39.8	157	46.2	165	43.8	150	48.3
	I-285 SB On-Ramp	Columbia Drive On-Ramp	0.45	28	58.7	26	63.9	28	58.1	25	64.2
	Columbia Drive On-Ramp	Candler Road On-Ramp	1.19	69	36.0	70	61.1	67	64.1	68	63.0
	Evans Mill Road Off-Ramp	**Candler Road On-Ramp**	**9.92**	**1056**	**33.83**	**928**	**38.5**	**726**	**49.2**	**656**	**57.2**
I-285 SOUTH	Glenwood Road Off-Ramp	I-20 WB Off-Ramp	1.35	78	62.5	87	56.0	90	54.0	86	56.8
	I-20 WB Off-Ramp	I-20 EB On-Ramp	1.14	65	63.1	65	63.4	71	57.7	65	63.4
	I-20 EB On-Ramp	Flat Shoals Road On-Ramp	1.62	90	64.8	95	61.4	100	58.5	95	61.1
	Glenwood Road Off-Ramp	**Flat Shoals Road On-Ramp**	**4.1**	**233**	**63.6**	**247**	**60**	**261**	**56.7**	**246**	**60.2**

3.4.4 Intersection Capacity Analysis

The project area of influence includes eight arterial corridors consisting of several signalized intersections. The capacity analyses of 33 signalized intersections from the arterial corridors were evaluated. This section presents a summary of the capacity analysis of the existing conditions.

Table 3-8 provides a summary of existing intersection-level capacity analyses using Synchro. The Synchro files are included in **Appendix G**.

Table 3-8. Peak Hour Intersection Capacity Analysis Summary

Intersection	2018	
	AM	PM
	Delay (LOS)	
Candler Road at Eastwyck Road	8.6 (A)	9.2 (A)
Candler Road at I-20 WB Ramps	20 1	24.3 (C)
Candler Road at I-20 EB Ramps	31.4 (C)	41.5 (D)
Candler Road at H F Shepherd Drive/ Rainbow Way	7.8 (A)	9.5 (A)
Columbia Drive at Columbia Woods Drive	9.8 (A)	7.5 (A)
Columbia Drive at I-20 EB Ramps	7.9 (A)	15.7 (B)
Columbia Drive at Rainbow Drive	39.1 (D)	53.8 (D)
Glenwood Road at I-285 NB Ramps	50.8 (D)	23.5 (C)
Glenwood Road at I-285 SB Ramps	49.8 (D)	19.5 (B)
Glenwood Road at Austin Drive	29.8 (C)	18.9 (B)
Glenwood Road at Atherton Drive	1.9 (A)	2.5 (A)
Flat Shoals Road at I-285 EB Ramps	22 (C)	24 (C)
Flat Shoals Road at I-285 WB Ramps	12.4 (B)	20.2 (C)
Flat Shoals Road at Panthersville Road/ Fairlake Drive	34.8 (C)	30.7 (C)
Flat Shoals Road at Clifton Springs Road/ Columbia Drive	22.9 C)	45.4 (D)
Wesley Chapel Road at I-20 EB Ramps	37.4 D)	35 D)
Wesley Chapel Road at I-20 WB Ramps	25.3 (C)	29.2 (C)
Wesley Chapel Road at Snapfinger Woods Drive	47.6 (D)	75.5 (E)
Wesley Chapel Road at Eastside Drive	26.7 (C)	5.4 (A)
Minola Drive/ Shire Drive at Miller Road	13.4 (B)	12.3 (B)
Panola Road at I-20 EB Ramps	26.3 (C)	38.3 (D)
Panola Road at I-20 WB Ramps	38.5 (D)	45.5 (D)
Panola Road at Panola Industrial Boulevard/ Hillandale Drive	44.7 (D)	61 (E)
Panola Road at Minola Drive/ Fairington Road	38.4 (D)	45.5 (D)
Hillandale Drive at Fairington Road	147.2 (F)	65.8 (E)
Chupp Way at Fairington Road	13.7 (B)	15 (B)
Old Hillandale Drive at Lithonia Industrial Boulevard	23.3 (C)	12.7 (B)
Lithonia Industrial Boulevard at I-20 EB CD Road	35.7 (D)	36.2 (D)
Evans Mill Road at Old Hillandale Drive/ I-20 WB Ramp	25.1 (C)	14 (B)
Evans Mill Road at I-20 EB CD Road	16.3 (B)	18.9 (B)
Hillandale Drive at Evans Mill Road	5.9 (A)	4.1 (A)
Evans Mill Road/ Mall Pkwy at Evans Mill Road/ Woodrow Drive	27 (C)	24.3 (C)
Lithonia Industrial Boulevard at Hillandale Drive	25.9 (C)	23.2 (C)

3.5 EXISTING SAFETY ANALYSIS

The purpose of safety analysis is to evaluate the historical crash data along the study corridor and to identify existing safety deficiencies within the project limits. This study will further be enhanced in later part of the project development to include predictive crash analysis, based on methodologies outlined in the Highway Safety Manual (HSM), published by American Association of State Highway and Transportation Officials (AASHTO) and identify safety improvements that can be included in the project design.

3.5.1 CRASH ANALYSIS

Historical crash data was obtained from Georgia Electronic Accident Reporting System (GEARS) for the six-year period from 2013 to 2018 along I-285, I-20, crossroads and the local street network within the project limits. Crash data was obtained on I-20 from the western terminus, Candler Road to the eastern terminus, Evans Mill Road (approximately 9.6 miles); and on I-285 from the southern terminus, Flat Shoals Road to the northern terminus, Glenwood Road (approximately 4.6 miles).

3.5.1.1 INTERSTATES- 285 AND 20

The crash data for interstate sections within this study includes both the I-285 and I-20 corridors. A total of 15,554 crashes occurred during the analysis period on the interstates within the study limits. 10,070 crashes were recorded on I-20 and 5,484 crashes were recorded on I-285. The number of crashes per year on I-20 increased from 1,156 in the year 2013 to 2,280 by year 2018. Similarly, along I-285, crashes per year increased from 656 in year 2013 to 1048 in year 2018.

The 'Average Crash Rate Method' of crash analysis, based on segment length, AADT and number of crashes occurred, was used for calculating actual crash rate for the roadway segments. Crash rates were calculated using the following equation:

$$Crash\ Rate_i = \frac{C_i * 10^8}{L * 365 * AADT_i}$$

in which; C is the number of crashes along the segment in year *i*, L is the segment length, and AADT is the segment's annual average daily volume for year *i*. Traffic volumes were obtained from TADA (Traffic Analysis and Data Application) for all count stations along the interstates within the study limits. **Tables 3-9 through 3-12** , show the crash rate calculation for the years 2013-2018 in greater detail.

Crash rates are calculated for total crashes, crashes involving injuries, and crashes involving fatalities along the freeway segments and on the ramps. These are then compared to the statewide averages for Interstate (Urbanized) highways and urbanized ramps. The benefit of crash rate analysis is that it provides a more effective comparison of similar locations with safety issues**. Figures 3-12 through 3-17** provide the GDOT Statewide Crash Rates for years 2013 to 2018.

The overall trend of the crash data for I-20 corridor indicates that the number and rate of the total crashes, as well as the number and rate of the injury crashes has increased during the study period. Crash rate information showed that the overall crash rates for I-20 were significantly higher than the statewide average during the study period. The crash rates involving injuries were substantially higher than the statewide average data in the years 2015 and 2016. The crash rate for 2017 was higher than the previous year statewide average rate. The fatal crash rates on half of the segments along I-20 were twice the statewide averages during the study period. **Table 3-9** indicates that every ramp along I-20 experienced a high crash rate in one or more of the study years.

Table 3-9. Crash rate Calculation for I-20 from Candler Road to Evans Mill Road

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/ day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
2018											
Klondike Rd to Lithonia Industrial Blvd	201	66	0	2	130720	211	201	69	72	0	0.62
Lithonia Industrial Blvd to Panola Rd	347	97	0	1.85	156794	328		92		0	
Panola Rd to Wesley Chapel Rd	621	177	2	2.3	181020	409		116		1.32	
Wesley Chapel Rd to I-285 Interchange	225	80	0	1.35	230843	198		70		0	
At I-285 Interchange	24	2	0	0.82	97388	82		7		0	
I-285 Interchange to Columbia Drive	46	14	2	0.45	137388	204		62		8.86	
Columbia Drive to Candler Rd	178	60	0	1.25	148138	263		89		0	
2017											
Klondike Rd to Lithonia Industrial Blvd	120	32	1	2	125036	131	203	35	48	1.1	0.56
Lithonia Industrial Blvd to Panola Rd	354	93	0	1.85	150261	349		92		0	
Panola Rd to Wesley Chapel Rd	269	76	2	2.3	175939	182		51		1.35	
Wesley Chapel Rd to I-285 Interchange	433	118	1	1.35	218068	403		110		0.93	
At I-285 Interchange	269	76	2	2.3	175939	182		75		0	
I-285 Interchange to Columbia Drive	77	21	0	0.82	93128	276		133		0	
Columbia Drive to Candler Rd	168	62	0	1.25	144012	256		94		0	

Table 3-9. Crash rate Calculation for I-20 from Candler Road to Evans Mill Road Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/ day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
2016											
Klondike Rd to Lithonia Industrial Blvd	143	44	0	2	119600	164	190	50	45	0	0.5
Lithonia Industrial Blvd to Panola Rd	357	93	1	1.85	144000	367		96		1.03	
Panola Rd to Wesley Chapel Rd	262	71	1	2.3	171000	183		49		0.7	
Wesley Chapel Rd to I-285 Interchange	466	144	1	1.35	206000	459		142		0.99	
At I-285 Interchange	123	32	0	0.82	89000	462		120		0	
I-285 Interchange to Columbia Drive	82	31	0	0.45	129000	387		146		0	
Columbia Drive to Candler Rd	164	60	0	1.25	140000	257		94		0	
2015											
Klondike Rd to Lithonia Industrial Blvd	125	42	1	2	114400	150	183	50	46	1.2	0.48
Lithonia Industrial Blvd to Panola Rd	308	95	0	1.85	138000	331		102		0	
Panola Rd to Wesley Chapel Rd	212	66	0	2.3	166200	152		47		0	
Wesley Chapel Rd to I-285 Interchange	339	103	1	1.35	194600	354		107		1.04	
At I-285 Interchange	86	38	0	0.82	85000	338		149		0	
I-285 Interchange to Columbia Drive	51	10	0	0.45	125000	248		49		0	
Columbia Drive to Candler Rd	164	46	0	1.25	136100	264		74		0	
2014											
Klondike Rd to Lithonia Industrial Blvd	89	23	0	2	112100	109	163	28	39	0	0.4
Lithonia Industrial Blvd to Panola Rd	207	53	1	1.85	132000	232		59			

Table 3-9. Crash rate Calculation for I-20 from Candler Road to Evans Mill Road Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Panola Rd to Wesley Chapel Rd	138	44	1	2.3	138000	119		38		0.86	
Wesley Chapel Rd to I- 285 Interchange	250	73	1	1.35	169000	300		88		1.2	
At I-285 Interchange	61	14	0	0.82	81000	252		58		0	
I-285 Interchange to Columbia Drive	28	9	0	0.45	121000	141		45		0	
Columbia Drive to Candler Rd	100	39	1	1.25	118000	186		72		1.86	
2013											
Klondike Rd to Lithonia Industrial Blvd	64	18	1	2	105460	83		23		1.3	
Lithonia Industrial Blvd to Panola Rd	211	56	0	1.85	125360	249		66		0	
Panola Rd to Wesley Chapel Rd	151	48	1	2.3	140000	128		41		0.85	
Wesley Chapel Rd to I- 285 Interchange	280	73	0	1.35	175000	325	143	85	35	15	0.55
At I-285 Interchange	72	25	1	0.82	80000	301		104		4.18	
I-285 Interchange to Columbia Drive	56	19	0	0.45	120000	284		96		0	
Columbia Drive to Candler Rd	110	43	0	1.25	125000	193		75		0	

Note: Highlighted cells show crash rates higher than the statewide average rate.

Table 3-10. Crash rate Calculation for Ramps along I-20

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/ day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
2018											
Evans Mill Rd-I20 EB Onramp	10	3	0	0.88	7380	422	905	127	200	0	0.02
Evans Mill Rd-I20 WB Offramp	26	10	0	0.48	9160	1620		623		0	
Lithonia Blvd-I20 EB Offramp	15	4	0	0.6	13900	493		131		0	
Lithonia Blvd-I20 WB Onramp	5	0	0	0.78	13900	126		0		0	
Panola Rd-I20 EB Offramp	47	10	0	0.25	19600	2628		559		0	
Panola Rd-I20 EB Onramp	4	0	0	0.24	8420	542		0		0	
Panola Rd-I20 WB Offramp	21	5	0	0.19	7210	4200		1000		0	
Panola Rd-I20 WB Onramp	36	5	0	0.22	21800	2057		286		0	
Wesley Chapel Rd-I20 EB Offramp	47	16	0	0.21	18600	3297		1122		0	
Wesley Chapel Rd-I20 EB Onramp	27	5	0	0.3	5660	4356		807		0	
Wesley Chapel Rd-I20 WB Offramp	18	3	0	0.18	5560	4928		821		0	
Wesley Chapel Rd-I20 WB Onramp	22	6	0	0.2	24000	1256		342		0	
I-20 EB to I-285 NB Ramp	34	11	0	0.82	17100	664		215		0	
I-20 EB to I-285 SB Ramp	8	3	0	0.38	8030	718		269		0	
I-20 WB to I-285 NB Ramp	80	21	0	0.26	24200	3483		914		0	
I-20 WB to I-285 SB Loop	20	7	0	0.78	20700	339		119		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Columbia Dr-I20 EB Offramp	4	2	0	0.27	6610	614		307		0	
Columbia Dr-I20 WB Onramp	2	0	0	0.29	7670	246		0		0	
Candler-I20 EB OffRamp	29	11	0	0.25	9950	3194		1212		0	
Candler-I20 EB OnRamp	15	5	0	0.29	10700	1324		441		0	
Candler-I20 WB OffRamp	21	10	0	0.26	11700	1891		901		0	
Candler-I20 WB OnRamp	13	4	0	0.29	10100	1216		374		0	
					2017						
Evans Mill Rd-I20 EB Onramp	6	1	0	0.88	6500	287		48		0	
Evans Mill Rd-I20 WB Offramp	38	10	0	0.48	7000	3098		815		0	
Lithonia Blvd-I20 EB Offramp	20	3	0	0.6	13000	702		105		0	
Lithonia Blvd-I20 WB Onramp	20	4	0	0.78	12600	558		112		0	
Panola Rd-I20 EB Offramp	59	10	0	0.25	20000	3233		548		0	
Panola Rd-I20 EB Onramp	13	4	0	0.24	8000	1855	822	571	173	0	0.59
Panola Rd-I20 WB Offramp	30	7	0	0.19	7300	5926		1383		0	
Panola Rd-I20 WB Onramp	17	4	0	0.22	21500	985		232		0	
Wesley Chapel Rd-I20 EB Offramp	80	20	0	0.21	25000	4175		1044		0	
Wesley Chapel Rd-I20 EB Onramp	0	0	0	0.3	6000	0		0		0	
Wesley Chapel Rd-I20 WB Offramp	21	4	0	0.18	6000	5327		1015		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Wesley Chapel Rd-I20 WB Onramp	15	5	0	0.2	25000	822		274		0	
I-20 EB to I-285 NB Ramp	21	5	0	0.82	20000	351		84		0	
I-20 EB to I-285 SB Ramp	17	5	0	0.38	5000	2451		721		0	
I-20 WB to I-285 NB Ramp	40	13	0	0.26	33000	1277		415		0	
I-20 WB to I-285 SB Loop	13	4	0	0.78	27500	166		51		0	
Columbia Dr-I20 EB Offramp	3	2	0	0.27	6500	468		312		0	
Columbia Dr-I20 WB Onramp	6	1	0	0.29	7090	799		133		0	
Candler-I20 EB OffRamp	19	2	0	0.25	10700	1946		205		0	
Candler-I20 EB OnRamp	0	0	0	0.29	13000	0		0		0	
Candler-I20 WB OffRamp	15	3	0	0.26	10700	1477		295		0	
Candler-I20 WB OnRamp	6	2	0	0.29	9020	628		209		0	
2016											
Evans Mill Rd-I20 EB Onramp	10	2	0	0.88	6470	481		96		0	
Evans Mill Rd-I20 WB Offramp	18	5	0	0.48	6610	1554		432		0	
Lithonia Blvd-I20 EB Offramp	5	0	0	0.6	12100	189		0		0	
Lithonia Blvd-I20 WB Onramp	6	2	0	0.78	12300	171	396	57	87	0	0.02
Panola Rd-I20 EB Offramp	44	8	0	0.25	19400	2486		452		0	
Panola Rd-I20 EB Onramp	11	3	0	0.24	7660	1639		447		0	
Panola Rd-I20 WB Offramp	33	5	0	0.19	7090	6712		1017		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Panola Rd-I20 WB Onramp	15	3	0	0.22	20900	894		179		0	
Wesley Chapel Rd-I20 EB Offramp	60	18	0	0.21	22000	3558		1067		0	
Wesley Chapel Rd-I20 EB Onramp	0	0	0	0.3	5950	0		0		0	
Wesley Chapel Rd-I20 WB Offramp	13	4	0	0.18	5890	3359		1034		0	
Wesley Chapel Rd-I20 WB Onramp	8	1	0	0.2	23300	470		59		0	
I-20 EB to I-285 NB Ramp	14	4	0	0.82	19300	242		69		0	
I-20 EB to I-285 SB Ramp	12	4	1	0.38	5100	1696		565		141.37	
I-20 WB to I-285 NB Ramp	33	6	0	0.26	32700	1063		193		0	
I-20 WB to I-285 SB Loop	13	5	0	0.78	27200	168		65		0	
Columbia Dr-I20 EB Offramp	5	2	0	0.27	6480	783		313		0	
Columbia Dr-I20 WB Onramp	1	0	0	0.29	6960	136		0		0	
Candler-I20 EB OffRamp	19	9	0	0.25	10100	2062		977		0	
Candler-I20 EB OnRamp	2	0	0	0.29	11700	161		0		0	
Candler-I20 WB OffRamp	8	4	0	0.26	10700	788		394		0	
Candler-I20 WB OnRamp	4	1	0	0.29	9020	419		105		0	
2015											
Evans Mill Rd-I20 EB Onramp	10	3	0	0.88	6250	498		149		0	
Evans Mill Rd-I20 WB Offramp	16	2	0	0.48	6380	1431	353	179	83	0	0.35
Lithonia Blvd-I20 EB Offramp	1	1	0	0.6	11700	39		39		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Lithonia Blvd-I20 WB Onramp	4	0	0	0.78	11900	118		0		0	
Panola Rd-I20 EB Offramp	53	18	0	0.25	18700	3106		1055		0	
Panola Rd-I20 EB Onramp	15	8	0	0.24	7390	2317		1236		0	
Panola Rd-I20 WB Offramp	21	4	0	0.19	6840	4427		843		0	
Panola Rd-I20 WB Onramp	12	2	0	0.22	20200	740		123		0	
Wesley Chapel Rd-I20 EB Offramp	65	16	0	0.21	18000	4711		1160		0	
Wesley Chapel Rd-I20 EB Onramp	3	1	0	0.3	5810	472		157		0	
Wesley Chapel Rd-I20 WB Offramp	13	4	0	0.18	7080	2795		860		0	
Wesley Chapel Rd-I20 WB Onramp	5	1	0	0.2	21000	326		65		0	
I-20 EB to I-285 NB Ramp	14	5	0	0.82	18600	251		90		0	
I-20 EB to I-285 SB Ramp	11	6	0	0.38	5900	1344		733		0	
I-20 WB to I-285 NB Ramp	26	5	0	0.26	31600	867		167		0	
I-20 WB to I-285 SB Loop	18	8	0	0.78	26300	240		107		0	
Columbia Dr-I20 EB Offramp	3	2	0	0.27	2840	1072		715		0	
Columbia Dr-I20 WB Onramp	0	0	0	0.29	6040	0		0		0	
Candler-I20 EB OffRamp	12	2	0	0.25	6450	2039		340		0	
Candler-I20 EB OnRamp	2	0	0	0.29	10000	189		0		0	
Candler-I20 WB OffRamp	8	4	0	0.26	10700	788		390		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Candler-I20 WB OnRamp	4	1	0	0.29	9020	419		99		0	
2014											
Evans Mill Rd-I20 EB Onramp	6	3	0	0.88	5900	317		158		0	
Evans Mill Rd-I20 WB Offramp	25	5	0	0.48	5560	2566		513		0	
Lithonia Blvd-I20 EB Offramp	7	0	0	0.6	10600	302		0		0	
Lithonia Blvd-I20 WB Onramp	8	2	0	0.78	9300	302		76		0	
Panola Rd-I20 EB Offramp	35	2	0	0.25	13300	2884		165		0	
Panola Rd-I20 EB Onramp	9	1	0	0.24	7390	1390		154		0	
Panola Rd-I20 WB Offramp	12	2	0	0.19	6550	2642		440		0	
Panola Rd-I20 WB Onramp	4	1	0	0.22	13000	383		96		0	
Wesley Chapel Rd-I20 EB Offramp	60	14	0	0.21	17400	4499	367	1050	81	0	0.2
Wesley Chapel Rd-I20 EB Onramp	0	0	0	0.3	5630	0		0		0	
Wesley Chapel Rd-I20 WB Offramp	7	1	0	0.18	6860	1553		222		0	
Wesley Chapel Rd-I20 WB Onramp	6	1	0	0.2	20300	405		67		0	
I-20 EB to I-285 NB Ramp	7	4	0	0.82	18000	130		74		0	
I-20 EB to I-285 SB Ramp	9	2	0	0.38	6500	998		222		0	
I-20 WB to I-285 NB Ramp	26	8	0	0.26	30600	895		275		0	
I-20 WB to I-285 SB Loop	17	3	0	0.78	25500	234		41		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Columbia Dr-I20 EB Offramp	5	2	0	0.27	2750	1845		738		0	
Columbia Dr-I20 WB Onramp	1	0	0	0.29	5850	161		0		0	
Candler-I20 EB OffRamp	20	5	0	0.25	9150	2395		599		0	
Candler-I20 EB OnRamp	1	0	0	0.29	9680	98		0		0	
Candler-I20 WB OffRamp	10	3	0	0.26	10500	1004		301		0	
Candler-I20 WB OnRamp	0	0	0	0.29	9280	0		0		0	
2013											
Evans Mill Rd-I20 EB Onramp	6	2	0	0.88	5900	317		106		0	
Evans Mill Rd-I20 WB Offramp	10	3	0	0.48	5560	1027		308		0	
Lithonia Blvd-I20 EB Offramp	3	1	0	0.6	10560	130		43		0	
Lithonia Blvd-I20 WB Onramp	0	0	0	0.78	9300	0		0		0	
Panola Rd-I20 EB Offramp	22	4	0	0.25	13290	1814		330		0	
Panola Rd-I20 EB Onramp	6	2	0	0.24	7390	927	292	309	68	0	0.16
Panola Rd-I20 WB Offramp	16	7	0	0.19	6550	3522		1541		0	
Panola Rd-I20 WB Onramp	4	1	0	0.22	13040	382		96		0	
Wesley Chapel Rd-I20 EB Offramp	55	7	0	0.21	17400	4124		525		0	
Wesley Chapel Rd-I20 EB Onramp	1	0	0	0.3	5630	162		0		0	
Wesley Chapel Rd-I20 WB Offramp	7	1	0	0.18	6860	1553		222		0	

Table 3-10. Crash rate Calculation for Ramps along I-20 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Wesley Chapel Rd-I20 WB Onramp	3	0	0	0.2	20300	202		0		0	
I-20 EB to I-285 NB Ramp	9	2	0	0.82	14750	204		45		0	
I-20 EB to I-285 SB Ramp	9	6	0	0.38	6300	1030		687		0	
I-20 WB to I-285 NB Ramp	21	5	0	0.26	25790	858		204		0	
I-20 WB to I-285 SB Loop	14	2	0	0.78	23230	212		30		0	
Columbia Dr-I20 EB Offramp	4	0	0	0.27	5320	763		0		0	
Columbia Dr-I20 WB Onramp	0	0	0	0.29	5310	0		0		0	
Candler-I20 EB OffRamp	9	2	0	0.25	8960	1101		245		0	
Candler-I20 EB OnRamp	3	0	0	0.29	8990	315		0		0	
Candler-I20 WB OffRamp	8	2	0	0.26	9500	887		222		0	
Candler-I20 WB OnRamp	3	0	0	0.29	8300	341		0		0	

Note: Highlighted cells show crash rates higher than the statewide average rate.

Table 3-11. Crash rate Calculation for I-285 from Flat Shoals Parkway to Glenwood Road

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
2018											
FlatShoals Rd to I-20 Interchange	446	165	3	1.84	144000	461	201	171	49	3.1	0.61
I-20 Interchange to Glenwood Rd	259	84	1	1.4	195000	260		84		1	
At I-285/20 Interchange	64	20	0	1.2	94000	155		49		0	
2017											
FlatShoals Rd to I-20 Interchange	472	133	1	1.84	167000	421	203	119	48	0.89	0.56
I-20 Interchange to Glenwood Rd	331	95	1	1.4	126000	514		148		1.55	
At I-285/20 Interchange	239	71	0	1.2	117000	466		139		0	
2016											
FlatShoals Rd to I-20 Interchange	435	138	0	1.84	155000	418	190	133	45	0	0.5
I-20 Interchange to Glenwood Rd	249	65	1	1.4	182000	268		70		1.08	
At I-285/20 Interchange	247	70	0	1.2	105000	537		152		0.7	
2015											
FlatShoals Rd to I-20 Interchange	278	71	1	1.84	130700	317	183	81	46	1.14	0.48
I-20 Interchange to Glenwood Rd	215	65	0	1.4	182500	231		70		0	
At I-285/20 Interchange	170	56	0	1.2	80700	481		158		0	
2014											
FlatShoals Rd to I-20 Interchange	225	70	0	1.84	140000	239	163	74	39	0	0.4
I-20 Interchange to Glenwood Rd	176	60	1	1.4	183000	188		64		1.07	
At I-285/20 Interchange	102	25	0	1.2	90000	259		63		0	

Table 3-11. Crash rate Calculation for I-285 from Flat Shoals Parkway to Glenwood Road Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
2013											
FlatShoals Rd to I-20 Interchange	217	72	1	1.84	140000	231	44	77	35	1.06	0.55
I-20 Interchange to Glenwood Rd	157	39	0	1.4	175000	176		66		0	
At I-285/20 Interchange	136	42	0	1.2	90000	345		107		0	

Note: Highlighted cells show crash rates higher than the statewide average rate.

Table 3-12. Crash rate Calculation for Ramps along I-285

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
2018											
FlatShoals Rd-I285 EB Offramp	35	14	0	0.41	11600	2016		806		0	
FlatShoals Rd-I285 EB Onramp	9	2	0	0.25	12000	822		183		0	
FlatShoals Rd-I285 WB Offramp	12	4	0	0.33	9150	1089		363		0	
FlatShoals Rd-I285 WB Onramp	8	4	0	0.3	11000	664		332		0	
I-285 NB to I-20 EB Ramp	54	16	1	0.81	24200	755		224		13.98	
I-285 NB to I-20 WB Loop	33	15	0	0.31	2350	12411		5641		0	
I285 SB ramp to diverge to I20-WB and I285 SB	4	1	0	0.26	44200	95	905	24	200	0	0.02
I-285 SB to I-20 EB Ramp	58	16	0	0.75	64600	328		90		0	
I-285 SB to I-20 WB Ramp	22	8	0	0.6	20400	492		179		0	
Glenwood Rd-I285 NB Offramp	5	1	0	0.2	11700	585		117		0	
Glenwood Rd-I285 NB Onramp	11	0	0	0.27	8480	1316		0		0	
Glenwood Rd-I285 SB Offramp	13	3	0	0.18	9200	2151		496		0	
Glenwood Rd-I285 SB Onramp	15	6	0	0.3	10500	1305		522		0	
2017											
FlatShoals Rd-I285 EB Offramp	29	7	0	0.41	11700	1656	822	400	173	0	0.59
FlatShoals Rd-I285 EB Onramp	3	0	0	0.25	12800	257		0		0	

Table 3-12. Crash rate Calculation for Ramps along I-285 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
FlatShoals Rd-I285 WB Offramp	17	6	0	0.33	8770	1609		568		0	
FlatShoals Rd-I285 WB Onramp	3	1	0	0.3	11500	238		79		0	
I-285 NB to I-20 EB Ramp	24	6	0	0.81	27000	301		75		0	
I-285 NB to I-20 WB Loop	21	6	0	0.31	1230	15089		4311		0	
I285 SB ramp to the diverge to I20-WB and I285 SB	3	2	0	0.26	50000	63		42		0	
I-285 SB to I-20 EB Ramp	49	15	0	0.75	65000	275		84		0	
I-285 SB to I-20 WB Ramp	15	4	0	0.6	22400	306		82		0	
Glenwood Rd-I285 NB Offramp	10	4	0	0.2	8000	1712		685		0	
Glenwood Rd-I285 NB Onramp	1	0	0	0.27	5800	175		0		0	
Glenwood Rd-I285 SB Offramp	7	5	0	0.18	7500	1421		1015		0	
Glenwood Rd-I285 SB Onramp	4	1	0	0.3	8500	430		107		0	
2016											
FlatShoals Rd-I285 EB Offramp	10	1	0	0.41	11500	581		58		0	
FlatShoals Rd-I285 EB Onramp	7	2	0	0.25	11200	685		196		0	
FlatShoals Rd-I285 WB Offramp	21	3	0	0.33	8770	1988	396	284	87	0	0.02
FlatShoals Rd-I285 WB Onramp	1	0	0	0.3	11300	81		0		0	
I-285 NB to I-20 EB Ramp	18	6	0	0.81	25800	236		79		0	

Table 3-12. Crash rate Calculation for Ramps along I-285 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/ day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
I-285 NB to I-20 WB Loop	10	1	0	0.31	1170	7554		755		0	
I285 SB ramp to the diverge to I20-WB and I285 SB	8	2	0	0.26	46500	181		45		0	
I-285 SB to I-20 EB Ramp	27	9	0	0.75	62600	158		53		0	
I-285 SB to I-20 WB Ramp	10	3	0	0.6	19500	234		70		0	
Glenwood Rd-I285 NB Offramp	4	1	0	0.2	7820	701		175		0	
Glenwood Rd-I285 NB Onramp	0	0	0	0.27	5640	0		0		0	
Glenwood Rd-I285 SB Offramp	3	1	0	0.18	7220	632		211		0	
Glenwood Rd-I285 SB Onramp	5	2	0	0.3	8360	546		218		0	
2015											
FlatShoals Rd-I285 EB Offramp	10	4	0	0.41	11100	602	353	241	83	0	0.35
FlatShoals Rd-I285 EB Onramp	5	3	0	0.25	10800	507		304		0	
FlatShoals Rd-I285 WB Offramp	14	1	0	0.33	11300	1029		73		0	
FlatShoals Rd-I285 WB Onramp	2	0	0	0.3	10900	168		0		0	
I-285 NB to I-20 EB Ramp	19	5	0	0.81	24900	258		68		0	
I-285 NB to I-20 WB Loop	13	7	0	0.31	1130	10167		5475		0	
I285 SB ramp to the diverge to I20-WB and I285 SB	11	4	0	0.26	49100	236		86		0	
I-285 SB to I-20 EB Ramp	72	26	1	0.75	60400	435		157		6.05	

Table 3-12. Crash rate Calculation for Ramps along I-285 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
I-285 SB to I-20 WB Ramp	19	4	0	0.6	18800	461		97		0	
Glenwood Rd-I285 NB Offramp	1	0	0	0.2	7550	181		0		0	
Glenwood Rd-I285 NB Onramp	1	0	0	0.27	5440	187		0		0	
Glenwood Rd-I285 SB Offramp	2	1	0	0.18	6970	437		218		0	
Glenwood Rd-I285 SB Onramp	0	0	0	0.3	8070	0		0		0	
2014											
FlatShoals Rd-I285 EB Offramp	14	2	0	0.41	10800	866		124		0	
FlatShoals Rd-I285 EB Onramp	1	0	0	0.25	10500	104		0		0	
FlatShoals Rd-I285 WB Offramp	7	2	0	0.33	11000	528		151		0	
FlatShoals Rd-I285 WB Onramp	1	0	0	0.3	10600	86		0		0	
I-285 NB to I-20 EB Ramp	16	4	1	0.81	24100	225		56		14.03	
I-285 NB to I-20 WB Loop	10	3	0	0.31	1100	8034	367	2410	81	0	0.2
I285 SB Ramp to the diverge to I20-WB and I285 SB	5	1	0	0.26	47600	111		22		0	
I-285 SB to I-20 EB Ramp	92	21	0	0.75	58500	574		131		0	
I-285 SB to I-20 WB Ramp	7	0	0	0.6	18200	176		0		0	
Glenwood Rd-I285 NB Offramp	4	2	0	0.2	7320	749		374		0	
Glenwood Rd-I285 NB Onramp	0	0	0	0.27	5270	0		0		0	

Table 3-12. Crash rate Calculation for Ramps along I-285 Cont.

Segment	No. of Crashes			Segment	AADT	Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
	Count	Involving Injuries	Involving Fatalities	Length	(veh/day)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Glenwood Rd-I285 SB Offramp	1	1	0	0.18	6760	225		225		0	
Glenwood Rd-I285 SB Onramp	0	0	0	0.3	7820	0		0		0	
2013											
FlatShoals Rd-I285 EB Offramp	11	4	0	0.41	8830	832		303		0	
FlatShoals Rd-I285 EB Onramp	0	0	0	0.25	9230	0		0		0	
FlatShoals Rd-I285 WB Offramp	8	2	0	0.33	8420	789		197		0	
FlatShoals Rd-I285 WB Onramp	0	0	0	0.3	8540	0		0		0	
I-285 NB to I-20 EB Ramp	34	8	0	0.81	20000	575		135		13.98	
I-285 NB to I-20 WB Loop	5	0	0	0.31	990	4464		0		0	
I285 SB ramp to the diverge to I20-WB and I285 SB	1	0	0	0.26	36610	29	292	0	68	0	0.16
I-285 SB to I-20 EB Ramp	69	19	0	0.75	51280	492		135		0	
I-285 SB to I-20 WB Ramp	13	2	0	0.6	15290	388		60		0	
Glenwood Rd-I285 NB Offramp	4	1	0	0.2	6280	873		218		0	
Glenwood Rd-I285 NB Onramp	0	0	0	0.27	4800	0		0		0	
Glenwood Rd-I285 SB Offramp	1	0	0	0.18	5550	274		0		0	
Glenwood Rd-I285 SB Onramp	2	1	0	0.3	5890	310		155		0	

Note: Highlighted cells show crash rates higher than the statewide average rate.

Highway System	Statewide Mileage, Travel & Crashes Data - 2013												
	Road Mileage & Travel			Fatal Crashes				Non-Fatal Injury Crashes		All Non-Fatal Injuries		All Crashes	
	Roads & Streets in Service (Miles)	ADVMT (Millions)	Average DT/Mile	Crashes Number	Crashes 100 MVM	Fatalities Number	Fatalities 100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM
Interstate, Rural	536	6,595	33,710	35	0.53	45	0.68	859	13	1,349	20	3,319	50
Interstate, Small Urban	110	1,582	39,402	10	0.63	10	0.63	208	13	331	21	793	50
Interstate, Urbanized	602	20,638	93,924	114	0.55	126	0.61	7,210	35	10,401	50	29,576	143
Subtotal, Interstate	1,248	28,815	63,257	159	0.55	181	0.63	8,277	29	12,081	42	33,686	117
Principal Arterial, Rural	2,313	4,790	5,674	69	1.44	74	1.54	1,790	37	2,883	60	6,021	126
Principal Arterial, Non-Freeway, Small Urban	794	2,890	9,972	28	0.97	28	0.97	2,451	85	3,966	137	9,716	336
Principal Arterial, Non-Freeway, Urbanized	1,517	11,372	20,538	134	1.18	141	1.24	16,014	141	23,837	210	69,173	608
Principal Arterial, Freeway, Small Urban	8	38	13,014	0	0.00	0	0.00	5	13	6	16	32	84
Principal Arterial, Freeway, Urbanized	139	3,082	60,747	17	0.55	19	0.62	1,181	38	1,676	54	4,850	157
Subtotal, All Principal Arterial	4,771	22,172	12,732	248	1.12	262	1.18	21,441	97	32,368	146	89,792	405
Minor Arterial, Rural	4,695	4,916	2,869	82	1.67	89	1.81	2,305	47	3,495	71	7,437	151
Minor Arterial, Small Urban	1,132	1,966	4,758	23	1.17	30	1.53	1,852	94	2,885	147	7,506	382
Minor Arterial, Urbanized	3,720	14,587	10,743	171	1.17	182	1.25	18,993	130	28,129	193	79,210	543
Subtotal, All Minor Arterial	9,547	21,469	6,161	276	1.29	301	1.40	23,150	108	34,509	161	94,153	439
Major Collector, Rural	11,690	4,303	1,008	100	2.32	106	2.46	2,776	65	3,860	90	8,951	208
Minor Collector, Rural	6,827	972	390	27	2.78	31	3.19	709	73	971	100	2,424	249
Collector, Small Urban	1,441	1,081	2,055	15	1.39	17	1.57	893	83	1,323	122	3,642	337
Collector, Urbanized	3,030	5,617	5,079	59	1.05	64	1.14	5,878	105	8,651	154	24,891	443
Subtotal, Collector	22,988	11,973	1,427	201	1.68	218	1.82	10,256	86	14,805	124	39,908	333
Local, Rural	48,795	3,918	220	78	1.99	88	2.25	2,433	62	3,379	86	9,400	240
Local, Small Urban	7,286	1,919	722	23	1.20	26	1.35	1,229	64	1,808	94	6,018	314
Local, Urbanized	30,173	18,689	1,697	99	0.53	106	0.57	8,990	48	13,024	70	47,490	254
Subtotal, Local	86,254	24,526	779	200	0.82	220	0.90	12,652	52	18,211	74	62,908	256
Ramps, Rural	133	81	1,669	1	1.23	1	1.23	62	77	91	112	277	342
Ramps, Small Urban	63	137	5,958	0	0.00	0	0.00	78	57	116	85	373	272
Ramps, Urbanized	581	3,699	17,443	6	0.16	6	0.16	2,513	68	3,469	94	10,804	292
Subtotal, Ramps	777	3,917	13,811	7	0.18	7	0.18	2,653	68	3,676	94	11,454	292
All State, Rural	12,598	18,796	4,088	240	1.28	267	1.42	6,420	34	9,782	52	21,512	114
All State, Small Urban	1,674	5,946	9,731	54	0.91	60	1.01	3,957	67	6,330	106	15,506	261
All State, Urbanized	3,640	40,900	30,784	353	0.86	380	0.93	32,370	79	47,664	117	133,975	328
Subtotal, All State	17,912	65,642	10,040	647	0.99	707	1.08	42,747	65	63,776	97	170,993	260
Non-State, Rural	62,259	6,697	295	152	2.27	167	2.49	4,514	67	6,246	93	16,316	244
Non-State, Small Urban	9,097	3,531	1,063	45	1.27	51	1.44	2,759	78	4,107	116	12,572	356
Non-State, Urbanized	35,542	33,085	2,550	247	0.75	264	0.80	28,409	86	41,521	125	132,020	399
Subtotal, Non-State	106,898	43,313	1,110	444	1.03	482	1.11	35,682	82	51,874	120	160,908	372
Subtotal, Rural	74,989	25,575	934	392	0.00	434	1.70	10,934	43	16,028	63	37,829	148
Subtotal, Small Urban	10,834	9,613	2,431	99	1.03	111	1.15	6,716	70	10,435	109	28,078	292
Subtotal, Urbanized	39,762	77,684	5,353	600	0.77	644	0.83	60,779	78	89,187	115	265,994	342
Total	125,585	112,872	2,462	1,091	0.97	1,189	1.05	78,429	69	115,650	102	331,901	294

Figure 3-12. 2013-GDOT Statewide Crash Rates

Highway System	Statewide Mileage, Travel & Crash Data - 2014													
	Road Mileage & Travel			Fatal Crashes				Non-Fatal Injury Crashes		All Non-Fatal Injuries		All Crashes	
	Roads & Streets in Service (Miles)	ADVMT (Millions)	Average	Crashes		Fatalities							
			DT/Mile	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM
Interstate, Rural	536	7,000	35,780	38	0.54	42	0.60	819	12	1,289	18	3,345	48
Interstate, Small Urban	110	1,671	41,619	8	0.48	9	0.54	256	15	396	24	1,041	62
Interstate, Urbanized	602	21,248	96,700	85	0.40	96	0.45	8,296	39	11,991	56	34,639	163
Subtotal, Interstate	1,248	29,919	65,681	131	0.44	147	0.49	9,371	31	13,676	46	39,025	130
Principal Arterial, Rural	2,365	5,101	5,909	65	1.27	75	1.47	1,928	38	2,946	58	6,584	129
Principal Arterial, Non-Freeway, Small Urban	797	2,894	9,948	40	1.38	41	1.42	2,643	91	4,248	147	10,495	363
Principal Arterial, Non-Freeway, Urbanized	1,663	13,073	21,537	150	1.15	161	1.23	17,544	134	26,055	199	76,997	589
Principal Arterial, Freeway, Small Urban	8	35	11,986	0	0.00	0	0.00	8	23	14	40	41	117
Principal Arterial, Freeway, Urbanized	150	3,288	60,055	13	0.40	14	0.43	1,607	49	2,251	68	6,532	199
Subtotal, All Principal Arterial	4,983	24,391	13,411	268	1.10	291	1.19	23,730	97	35,514	146	100,649	413
Minor Arterial, Rural	4,652	4,806	2,830	94	1.96	107	2.23	2,414	50	3,558	74	7,868	164
Minor Arterial, Small Urban	1,127	1,969	4,787	36	1.83	42	2.13	1,825	93	2,838	144	7,285	370
Minor Arterial, Urbanized	3,553	13,481	10,395	163	1.21	169	1.25	19,566	145	29,102	216	81,017	601
Subtotal, All Minor Arterial	9,332	20,256	5,947	293	1.45	318	1.57	23,805	118	35,498	175	96,170	475
Major Collector, Rural (F5)	11,700	4,497	1,053	123	2.74	140	3.11	2,854	63	3,996	89	8,960	199
Minor Collector, Rural (F6)	6,822	880	353	25	2.84	25	2.84	690	78	926	105	2,437	277
Collector, Small Urban (F5,6)	1,449	1,002	1,895	7	0.70	7	0.70	837	84	1,319	132	3,375	337
Collector, Urbanized (F5,6)	3,086	5,429	4,820	67	1.23	70	1.29	5,352	99	7,819	144	21,934	404
Subtotal, Collector	23,057	11,808	1,403	222	1.88	242	2.05	9,733	82	14,060	119	36,706	311
Local, Rural	48,779	3,503	197	66	1.88	66	1.88	1,898	54	2,565	73	7,110	203
Local, Small Urban	7,293	1,693	636	15	0.89	16	0.95	873	52	1,289	76	4,436	262
Local, Urbanized	30,149	19,776	1,797	80	0.40	82	0.41	6,726	34	9,464	48	35,874	181
Subtotal, Local	86,221	24,972	794	161	0.64	164	0.66	9,497	38	13,318	53	47,420	190
Ramps, Rural	135	268	5,439	1	0.37	1	0.37	80	30	126	47	392	146
Ramps, Small Urban	65	147	6,196	0	0.00	0	0.00	119	81	184	125	503	342
Ramps, Urbanized	584	3,532	16,570	7	0.20	7	0.20	2,849	81	4,044	114	12,971	367
Subtotal, Ramps	784	3,947	13,793	8	0.20	8	0.20	3,048	77	4,354	110	13,866	351
All State, Rural	12,593	19,402	4,221	257	1.32	293	1.51	6,765	35	10,084	52	22,721	117
All State, Small Urban	1,676	6,071	9,924	76	1.25	84	1.38	4,182	69	6,674	110	16,636	274
All State, Urbanized	3,638	41,846	31,514	317	0.76	343	0.82	35,468	85	52,338	125	149,232	357
Subtotal, All State	17,907	67,319	10,300	650	0.97	720	1.07	46,415	69	69,096	103	188,589	280
Non-State, Rural	62,261	6,385	281	155	2.43	163	2.55	3,918	61	5,321	83	13,975	219
Non-State, Small Urban	8,110	3,192	1,078	30	0.94	31	0.97	2,377	74	3,612	113	10,540	330
Non-State, Urbanized	35,564	34,449	2,654	248	0.72	256	0.74	26,474	77	38,391	111	120,732	350
Subtotal, Non-State	105,935	44,026	1,139	433	0.98	450	1.02	32,769	74	47,324	107	145,247	330
Subtotal, Rural	74,989	26,055	952	412	0.00	456	1.75	10,683	41	15,406	59	36,696	141
Subtotal, Small Urban	10,849	9,411	2,377	106	1.13	115	1.22	6,561	70	10,288	109	27,176	289
Subtotal, Urbanized	39,787	79,827	5,497	565	0.71	599	0.75	61,940	78	90,726	114	269,964	338
Total	125,625	115,293	2,514	1,083	0.94	1,170	1.01	79,184	69	116,420	101	333,836	290

Figure 3-13. 2014-GDOT Statewide Crash Rates

Statewide Mileage, Travel & Crash Data - 2015													
	Road Mileage & Travel			Fatal Crashes				Non-Fatal Injury Crashes		All Non-Fatal Injuries		All Crashes	
Highway System	Roads & Streets in Service (Miles)	ADVMT (Millions)	Average DT/Mile	Crashes Number	Crashes 100 MVM	Fatalities Number	Fatalities 100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM
Interstate, Rural	536	7,091	36,245	41	0.58	56	0.79	1,101	16	1,829	26	4,060	57
Interstate, Small Urban	110	1,750	43,587	15	0.86	17	0.97	289	17	493	28	1,117	64
Interstate, Urbanized	602	21,747	98,971	105	0.48	114	0.52	9,897	46	14,284	66	39,840	183
Subtotal, Interstate	1,248	30,588	67,150	161	0.53	187	0.61	11,287	37	16,606	54	45,017	147
Principal Arterial, Rural (F3)	2,369	5,947	6,878	90	1.51	99	1.66	1,966	33	3,146	53	6,460	109
Principal Arterial, Non-Freeway, Small Urban (F3)	796	3,056	10,518	45	1.47	50	1.64	2,625	86	4,301	141	10,225	335
Principal Arterial, Non-Freeway, Urbanized(F3)	1,630	13,445	22,599	167	1.24	180	1.34	18,610	138	27,750	206	78,397	583
Principal Arterial, Freeway, Small Urban (F2)	8	38	13,014	0	0.00	0	0.00	4	11	8	21	31	82
Principal Arterial, Freeway, Urbanized (F2)	168	3,576	58,317	12	0.34	12	0.34	1,537	43	2,129	60	6,325	177
Subtotal, All Principal Arterial	4,971	26,062	14,364	314	1.20	341	1.31	24,742	95	37,334	143	101,438	389
Minor Arterial, Rural	4,702	5,588	3,256	119	2.13	135	2.42	2,689	48	4,132	74	8,466	152
Minor Arterial, Small Urban	1,151	2,103	5,006	30	1.43	33	1.57	2,079	99	3,258	155	7,777	370
Minor Arterial, Urbanized	3,671	14,737	10,998	248	1.68	258	1.75	23,041	156	34,347	233	93,858	637
Subtotal, All Minor Arterial	9,524	22,428	6,452	397	1.77	426	1.90	27,809	124	41,737	186	110,101	491
Major Collector, Rural (F 5)	11,661	4,900	1,151	133	2.71	141	2.88	3,100	63	4,420	90	9,483	194
Minor Collector, Rural (F 6)	6,802	988	398	35	3.54	40	4.05	776	79	1,069	108	2,450	248
Collector, Small Urban (F 5,6)	1,424	1,009	1,941	18	1.78	19	1.88	1,039	103	1,601	159	3,914	388
Collector, Urbanized (F 5,6)	3,014	5,068	4,607	68	1.34	69	1.36	7,059	139	10,275	203	28,789	568
Subtotal, Collector	22,901	11,965	1,431	254	2.12	269	2.25	11,974	100	17,365	145	44,636	373
Local, Rural	48,835	4,050	227	69	1.70	70	1.73	2,350	58	3,254	80	8,915	220
Local, Small Urban	7,294	1,774	666	15	0.85	16	0.90	1,164	66	1,676	94	5,903	333
Local, Urbanized	30,358	21,045	1,899	102	0.48	104	0.49	10,509	50	15,081	72	54,024	257
Subtotal, Local	86,487	26,869	851	186	0.69	190	0.71	14,023	52	20,011	74	68,842	256
Ramps, Rural	136	276	5,560	3	1.09	3	1.09	99	36	141	51	409	148
Ramps, Small Urban	65	200	8,430	0	0.00	0	0.00	110	55	169	85	453	227
Ramps, Urbanized	587	3,992	18,632	14	0.35	16	0.40	3,321	83	4,720	118	14,074	353
Subtotal, Ramps	788	4,468	15,534	17	0.38	19	0.43	3,530	79	5,030	113	14,936	334
All State, Rural	12,588	21,296	4,635	323	1.52	368	1.73	7,479	35	11,587	54	24,189	114
All State, Small Urban	1,676	6,352	10,383	84	1.32	94	1.48	4,414	69	7,172	113	16,727	263
All State, Urbanized	3,638	43,140	32,488	423	0.98	451	1.05	39,522	92	58,316	135	160,687	372
Subtotal, All State	17,902	70,788	10,833	830	1.17	913	1.29	51,415	73	77,075	109	201,603	285
Non-State, Rural	62,317	7,269	320	167	2.30	176	2.42	4,603	63	6,404	88	16,054	221
Non-State, Small Urban	9,107	3,377	1,016	39	1.15	42	1.24	2,896	86	4,335	128	12,692	376
Non-State, Urbanized	35,804	36,478	2,791	293	0.80	301	0.83	34,451	94	50,269	138	154,621	424
Subtotal, Non-State	107,228	47,124	1,204	499	1.06	519	1.10	41,950	89	61,008	129	183,367	389
Subtotal, Rural	75,041	28,840	1,053	490	1.70	544	1.89	12,081	42	17,991	62	40,243	140
Subtotal, Small Urban	10,848	9,930	2,508	123	1.24	135	1.36	7,310	74	11,506	116	29,420	296
Subtotal, Urbanized	40,030	83,610	5,722	716	0.86	753	0.90	73,974	88	108,586	130	315,307	377
Total	125,919	122,380	2,663	1,329	1.09	1,432	1.17	93,365	76	138,083	113	384,970	315

Figure 3-14. 2015-GDOT Statewide Crash Rates

Highway System	Statewide Mileage, Travel & Crash Data - 2016													
	Road Mileage & Travel			Fatal Crashes				Non-Fatal Injury Crashes		All Non-Fatal Injuries		All Crashes	
				Crashes		Fatalities							
	Roads & Streets in Service (Miles)	ADVMT (Millions)	Average DT/Mile	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM
Interstate, Rural	536	7,689	39,302	57	0.74	68	0.88	1,070	14	1,731	23	5,218	68
Interstate, Small Urban	110	1,843	45,903	15	0.81	17	0.92	243	13	389	21	1,022	55
Interstate, Urbanized	602	22,446	102,153	112	0.50	124	0.55	10,211	45	14,985	67	42,710	190
Subtotal, Interstate	1,248	31,978	70,201	184	0.58	209	0.65	11,524	36	17,105	53	48,950	153
Principal Arterial, Rural (F3)	2,395	6,164	7,051	97	1.57	108	1.75	2,072	34	3,203	52	6,629	108
Principal Arterial, Non-Freeway, Small Urban (F3)	801	3,256	11,137	41	1.26	47	1.44	2,807	86	4,469	137	10,895	335
Principal Arterial, Non-Freeway, Urbanized(F3)	1,588	13,596	23,457	200	1.47	220	1.62	19,782	145	29,597	218	85,340	628
Principal Arterial, Freeway, Small Urban (F2)	8	40	13,699	0	0.00	0	0.00	7	18	7	18	32	80
Principal Arterial, Freeway, Urbanized (F2)	166	3,519	58,079	19	0.54	22	0.63	1,417	40	1,974	56	5,876	167
Subtotal, All Principal Arterial	4,958	26,575	14,685	357	1.34	397	1.49	26,085	98	39,250	148	108,772	409
Minor Arterial, Rural	4,648	5,663	3,338	137	2.42	155	2.74	2,755	49	4,192	74	8,186	145
Minor Arterial, Small Urban	1,138	2,161	5,208	28	1.30	30	1.39	2,101	97	3,277	152	8,175	378
Minor Arterial, Urbanized	3,710	15,598	11,519	239	1.53	250	1.60	24,257	156	36,182	232	102,133	655
Subtotal, All Minor Arterial	9,496	23,422	6,758	404	1.72	435	1.86	29,113	124	43,651	186	118,494	506
Major Collector, Rural (F 5)	11,571	5,128	1,214	140	2.73	155	3.02	3,230	63	4,583	89	9,540	186
Minor Collector, Rural (F 6)	6,798	1,154	465	45	3.90	49	4.25	825	71	1,123	97	2,395	208
Collector, Small Urban (F 5,6)	1,450	1,093	2,065	19	1.74	20	1.83	1,166	107	1,776	162	4,331	396
Collector, Urbanized (F 5,6)	3,106	5,496	4,848	82	1.49	89	1.62	7,815	142	11,540	210	32,921	599
Subtotal, Collector	22,925	12,871	1,538	286	2.22	313	2.43	13,036	101	19,022	148	49,187	382
Local, Rural	48,862	4,159	233	86	2.07	90	2.16	2,636	63	3,689	89	9,508	229
Local, Small Urban	7,303	1,851	694	9	0.49	9	0.49	1,443	78	2,169	117	6,807	368
Local, Urbanized	30,495	21,939	1,971	97	0.44	106	0.48	12,253	56	17,486	80	63,207	288
Subtotal, Local	86,660	27,949	884	192	0.69	205	0.73	16,332	58	23,344	84	79,522	285
Note: Ramps are estimated based off 2013-2015 SW Rates													
Ramps, Rural	138	405	8,041	1	0.25	1	0.25	105	26	163	40	416	103
Ramps, Small Urban	67	226	9,241	0	0.00	0	0.00	91	40	137	61	474	210
Ramps, Urbanized	590	4,035	18,737	1	0.02	1	0.02	3,519	87	5,018	124	15,967	396
Subtotal, Ramps	795	4,666	16,080	2	0.04	2	0.04	3,715	80	5,318	114	16,857	361
All State, Rural	12,500	22,537	4,940	377	1.67	426	1.89	8,630	38	11,788	52	25,312	112
All State, Small Urban	1,683	6,688	10,887	81	1.21	90	1.35	4,658	70	7,286	109	17,863	267
All State, Urbanized	3,730	44,377	32,595	443	1.00	483	1.09	42,260	95	61,969	140	175,586	396
Subtotal, All State	17,913	73,602	11,257	901	1.22	999	1.36	55,548	75	81,043	110	218,761	297
Non-State, Rural	62,310	7,420	326	186	2.51	200	2.70	5,013	68	6,897	93	16,583	223
Non-State, Small Urban	9,127	3,556	1,067	31	0.87	33	0.93	3,293	93	4,940	139	13,873	390
Non-State, Urbanized	35,936	38,216	2,914	307	0.80	329	0.86	37,930	99	54,813	143	172,567	452
Subtotal, Non-State	107,373	49,192	1,255	524	1.07	562	1.14	46,236	94	66,650	135	203,023	413
Subtotal, Rural	74,948	30,362	1,110	563	1.85	626	2.06	12,693	42	18,684	62	41,892	138
Subtotal, Small Urban	10,877	10,470	2,637	112	1.07	123	1.17	7,858	75	12,224	117	31,736	303
Subtotal, Urbanized	40,257	86,629	5,896	750	0.87	812	0.94	79,254	91	116,782	135	348,154	402
Total	126,082	127,461	2,770	1,425	1.12	1,561	1.22	99,805	78	147,690	116	421,782	331

Figure 3-15. 2016-GDOT Statewide Crash Rates

Statewide Mileage, Travel & Crash Data - 2017													
	Road Mileage & Travel			Fatal Crashes				Non-Fatal Injury Crashes		All Non-Fatal Injuries		All Crashes	
Highway System	Roads & Streets in Service (Miles)	ADVMT (Millions)	Average DT/Mile	Crashes		Fatalities							
				Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM
Interstate, Rural	537	8,002	40,825	54	0.67	59	0.74	1,081	14	1,779	22	4,125	52
Interstate, Small Urban	110	1,907	47,497	15	0.79	15	0.79	279	15	435	23	1,202	63
Interstate, Urbanized	600	22,535	102,900	127	0.56	137	0.61	10,723	48	15,937	71	45,766	203
Subtotal, Interstate	1,247	32,444	71,281	196	0.60	211	0.65	12,083	37	18,155	56	51,093	157
Principal Arterial, Rural (F3)	2,422	5,885	6,657	101	1.72	109	1.85	2,294	39	3,710	63	7,414	126
Principal Arterial, Non-Freeway, Small Urban (F3)	761	3,106	11,182	40	1.29	42	1.35	2,767	89	4,478	144	10,834	349
Principal Arterial, Non-Freeway, Urbanized(F3)	1,617	14,259	24,159	177	1.24	189	1.33	21,195	149	31,859	223	87,670	615
Principal Arterial, Freeway, Small Urban (F2)	5	20	10,959	0	0.00	0	0.00	4	20	4	20	23	115
Principal Arterial, Freeway, Urbanized (F2)	173	3,663	58,009	21	0.57	21	0.57	1,483	40	2,147	59	6,176	169
Subtotal, All Principal Arterial	4,978	26,933	14,823	339	1.26	361	1.34	27,743	103	42,198	157	112,117	416
Minor Arterial, Rural	4,726	5,446	3,157	116	2.13	129	2.37	2,294	42	4,483	82	8,707	160
Minor Arterial, Small Urban	1,110	2,234	5,514	40	1.79	41	1.84	2,043	91	3,221	144	8,067	361
Minor Arterial, Urbanized	3,691	16,063	11,923	217	1.35	234	1.46	24,647	153	36,825	229	100,072	623
Subtotal, All Minor Arterial	9,527	23,743	6,828	373	1.57	404	1.70	28,984	122	44,529	188	116,846	492
Major Collector, Rural (F 5)	11,572	4,811	1,139	151	3.14	165	3.43	3,213	67	4,611	96	9,588	199
Minor Collector, Rural (F 6)	6,715	1,201	490	44	3.66	45	3.75	680	57	910	76	2,206	184
Collector, Small Urban (F 5,6)	1,473	1,193	2,219	26	2.18	26	2.18	978	82	1,422	119	3,770	316
Collector, Urbanized (F 5,6)	3,017	5,522	5,015	79	1.43	83	1.50	7,807	141	11,409	207	31,824	576
Subtotal, Collector	22,777	12,727	1,531	300	2.36	319	2.51	12,678	100	18,352	144	47,388	372
Local, Rural	48,996	4,897	274	77	1.57	79	1.61	2,063	42	2,806	57	7,915	162
Local, Small Urban	7,330	2,821	1,054	24	0.85	26	0.92	1,058	38	1,557	55	5,576	198
Local, Urbanized	30,572	22,744	2,038	122	0.54	129	0.57	11,238	49	16,118	71	56,609	249
Subtotal, Local	86,898	30,462	960	223	0.73	234	0.77	14,359	47	20,481	67	70,100	230
Ramps, Rural	138	65	1,290	0	0.00	0	0.00	83	128	128	197	333	512
Ramps, Small Urban	69	60	2,382	5	8.33	9	15.00	72	120	101	168	337	562
Ramps, Urbanized	597	1,682	7,719	10	0.59	11	0.65	2,903	173	4,131	246	13,822	822
Subtotal, Ramps	804	1,807	6,158	15	0.83	20	1.11	3,058	169	4,360	241	14,492	802
All State, Rural	12,615	21,944	4,766	363	1.65	397	1.81	8,213	37	12,709	58	25,728	117
All State, Small Urban	1,666	6,714	11,041	100	1.49	105	1.56	4,683	70	7,422	111	17,983	268
All State, Urbanized	3,678	45,343	33,776	450	0.99	482	1.06	44,278	98	65,623	145	180,611	398
Subtotal, All State	17,959	74,001	11,289	913	1.23	984	1.33	57,174	77	85,754	116	224,322	303
Non-State, Rural	62,355	8,300	365	180	2.17	189	2.28	4,218	51	5,723	69	14,561	175
Non-State, Small Urban	9,124	4,567	1,371	51	1.12	54	1.18	2,610	57	3,798	83	11,825	259
Non-State, Urbanized	35,991	39,442	3,002	303	0.77	322	0.82	36,732	93	52,803	134	161,327	409
Subtotal, Non-State	107,470	52,309	1,334	534	1.02	565	1.08	43,560	83	62,324	119	187,713	359
Subtotal, Rural	75,106	30,307	1,106	543	1.79	586	1.93	11,708	39	18,427	61	40,288	133
Subtotal, Small Urban	10,858	11,341	2,862	150	1.32	159	1.40	7,201	63	11,222	99	29,809	263
Subtotal, Urbanized	40,267	86,468	5,883	753	0.87	804	0.93	79,996	93	118,426	137	341,939	395
Total	126,231	128,116	2,781	1,446	1.13	1,549	1.21	98,905	77	148,075	116	412,036	322

Figure 3-16. 2017-GDOT Statewide Crash Rates

Statewide Mileage, Travel & Crash Data - 2018													
	Road Mileage & Travel			Fatal Crashes				Non-Fatal Injury Crashes		All Non-Fatal Injuries		All Crashes	
Highway System	Roads & Streets in Service (Miles)	ADVMT (Millions)	Average	Crashes		Fatalities							
			DT/Mile	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM	Number	100 MVM
Interstate, Rural	537	7,711	39,340	38	0.49	42	0.54	1,080	14	1,706	22	4,675	61
Interstate, Small Urban	110	1,853	46,150	9	0.49	9	0.49	223	12	362	20	1,098	59
Interstate, Urbanized	599	22,407	102,486	137	0.61	147	0.66	10,959	49	16,090	72	45,034	201
Subtotal, Interstate	1,246	31,971	70,298	184	0.58	198	0.62	12,262	38	18,158	57	50,807	159
Principal Arterial, Rural (F3)	2,452	6,855	7,659	89	1.30	94	1.37	2,264	33	3,512	51	7,997	117
Principal Arterial, Non-Freeway, Small Urban (F3)	764	3,191	11,444	56	1.75	59	1.85	2,478	78	3,920	123	11,563	362
Principal Arterial, Non-Freeway, Urbanized(F3)	1,622	14,375	24,280	210	1.46	223	1.55	20,248	141	30,347	211	83,485	581
Principal Arterial, Freeway, Small Urban (F2)	5	19	10,590	0	0.00	0	0.00	7	36	9	47	38	197
Principal Arterial, Freeway, Urbanized (F2)	171	3,238	51,882	17	0.52	17	0.52	1,561	48	2,208	68	6,439	199
Subtotal, All Principal Arterial	5,014	27,678	15,124	372	1.34	393	1.42	26,558	96	39,996	145	109,522	396
Minor Arterial, Rural	4,711	6,362	3,700	127	2.00	139	2.18	2,936	46	4,390	69	10,323	162
Minor Arterial, Small Urban	1,120	2,570	6,286	40	1.56	43	1.67	1,859	72	2,829	110	8,346	325
Minor Arterial, Urbanized	3,672	17,725	13,225	238	1.34	252	1.42	23,804	134	35,677	201	95,708	540
Subtotal, All Minor Arterial	9,503	26,657	7,685	405	1.52	434	1.63	28,599	107	42,896	161	114,377	429
Major Collector, Rural (F 5)	11,585	6,662	1,575	151	2.27	160	2.40	3,066	46	4,329	65	11,349	170
Minor Collector, Rural (F 6)	6,694	1,240	508	29	2.34	29	2.34	774	62	1,063	86	2,819	227
Collector, Small Urban (F 5,6)	1,463	1,549	2,900	26	1.68	26	1.68	823	53	1,229	79	3,776	244
Collector, Urbanized (F 5,6)	2,992	7,047	6,453	77	1.09	82	1.16	7,537	107	10,990	156	29,894	424
Subtotal, Collector	22,734	16,497	1,988	283	1.72	297	1.80	12,200	74	17,611	107	47,838	290
Local, Rural	49,011	4,890	273	79	1.62	81	1.66	2,024	41	2,726	56	8,354	171
Local, Small Urban	7,378	2,774	1,030	16	0.58	17	0.61	890	32	1,241	45	5,184	187
Local, Urbanized	30,543	21,337	1,914	79	0.37	83	0.39	9,685	45	13,720	64	49,709	233
Subtotal, Local	86,932	29,001	914	174	0.60	181	0.62	12,599	43	17,687	61	63,241	218
Ramps, Rural	138	70	1,390	1	1.43	1	1.43	86	123	115	164	384	549
Ramps, Small Urban	69	62	2,462		0.00	0	0.00	69	111	89	144	371	598
Ramps, Urbanized	608	1,741	7,845	9	0.52	10	0.57	3,484	200	4,987	286	15,750	905
Subtotal, Ramps	815	1,873	6,296	10	0.53	11	0.59	3,639	194	5,191	277	16,505	881
All State, Rural	12,620	23,817	5,170	337	1.41	364	1.53	8,041	34	12,106	51	29,393	123
All State, Small Urban	1,678	6,694	10,931	100	1.49	106	1.58	4,150	62	6,501	97	18,554	277
All State, Urbanized	3,645	44,457	33,418	468	1.05	496	1.12	43,594	98	64,953	146	178,644	402
Subtotal, All State	17,943	74,968	11,447	905	1.21	966	1.29	55,785	74	83,560	111	226,591	302
Non-State, Rural	62,370	9,902	435	177	1.79	182	1.84	4,189	42	5,735	58	16,507	167
Non-State, Small Urban	9,167	5,262	1,573	46	0.87	48	0.91	2,202	42	3,179	60	11,821	225
Non-State, Urbanized	35,959	41,672	3,175	299	0.72	318	0.76	33,684	81	49,068	118	147,369	354
Subtotal, Non-State	107,496	56,836	1,449	522	0.92	548	0.96	40,075	71	57,982	102	175,697	309
Subtotal, Rural	75,128	33,789	1,232	514	1.52	546	1.62	12,230	36	17,841	53	45,901	136
Subtotal, Small Urban	10,909	12,018	3,018	147	1.22	154	1.28	6,349	53	9,679	81	30,376	253
Subtotal, Urbanized	40,207	87,870	5,988	767	0.87	814	0.93	77,278	88	114,019	130	326,013	371
Total	126,244	133,678	2,901	1,428	1.07	1,514	1.13	95,857	72	141,539	106	402,290	301

Figure 3-17. 2018-GDOT Statewide Crash Rates

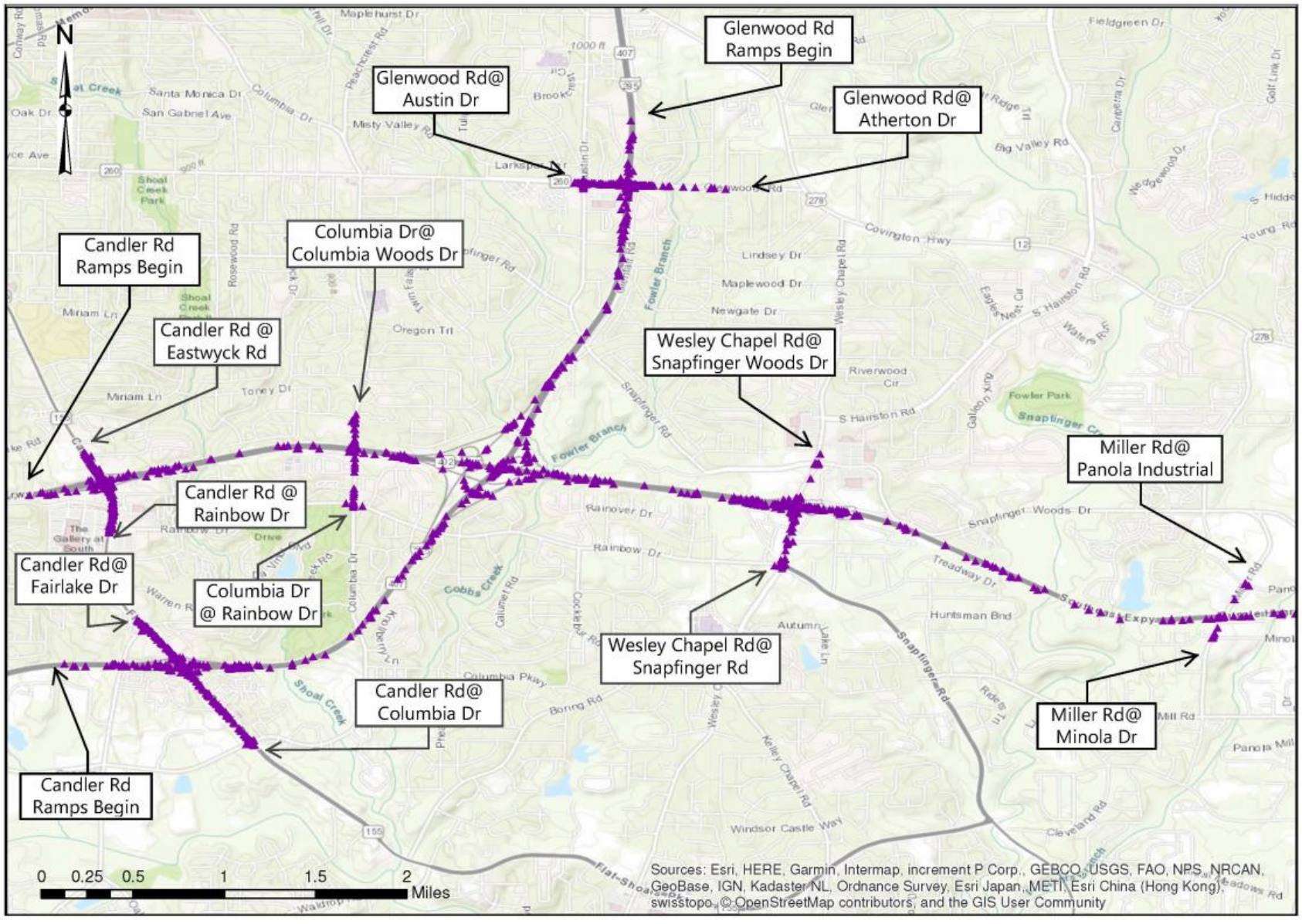


Figure 3-18. Angle Crashes Heat Map

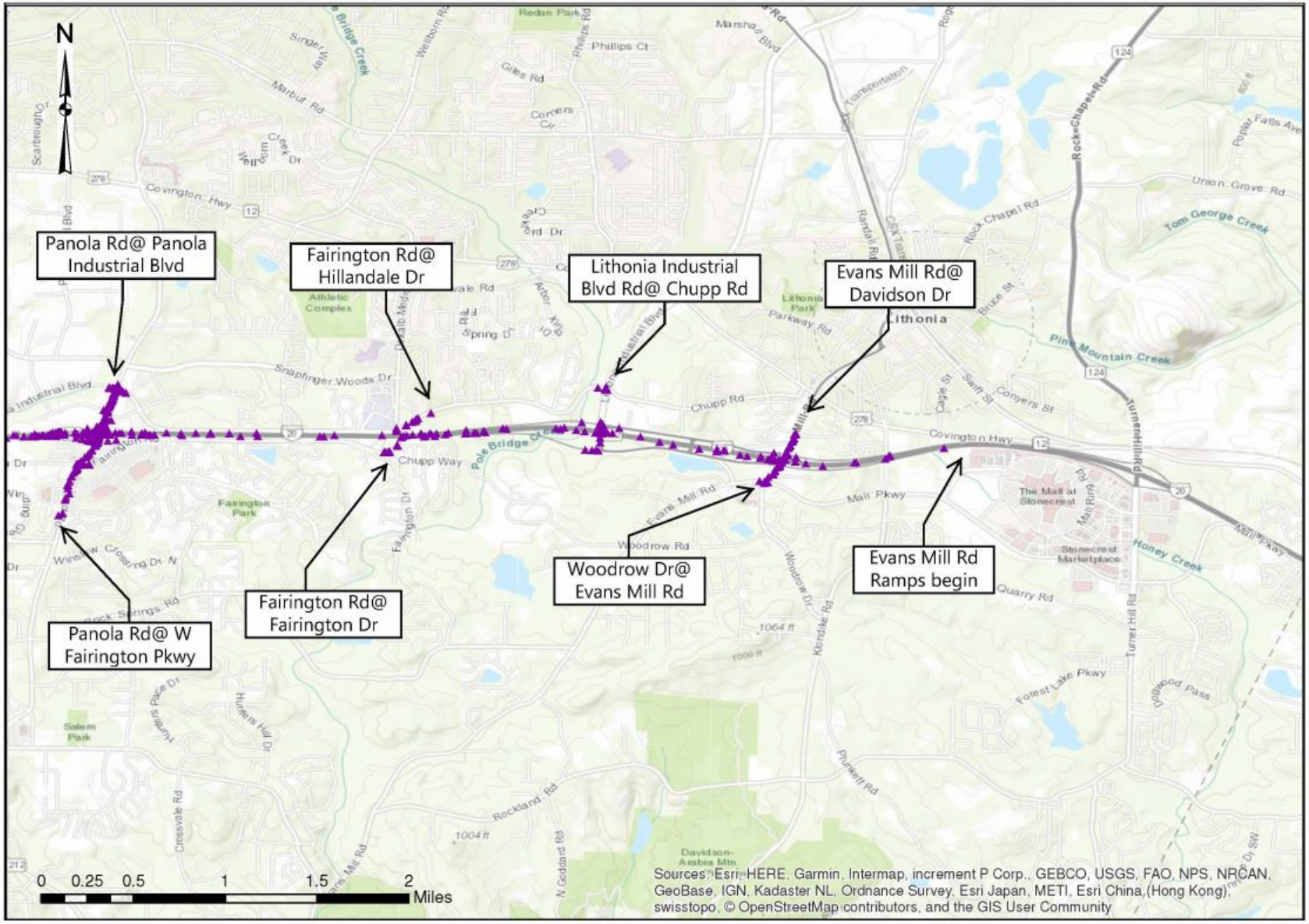


Figure 3-18. Angle Crashes Heat Map (Cont.)

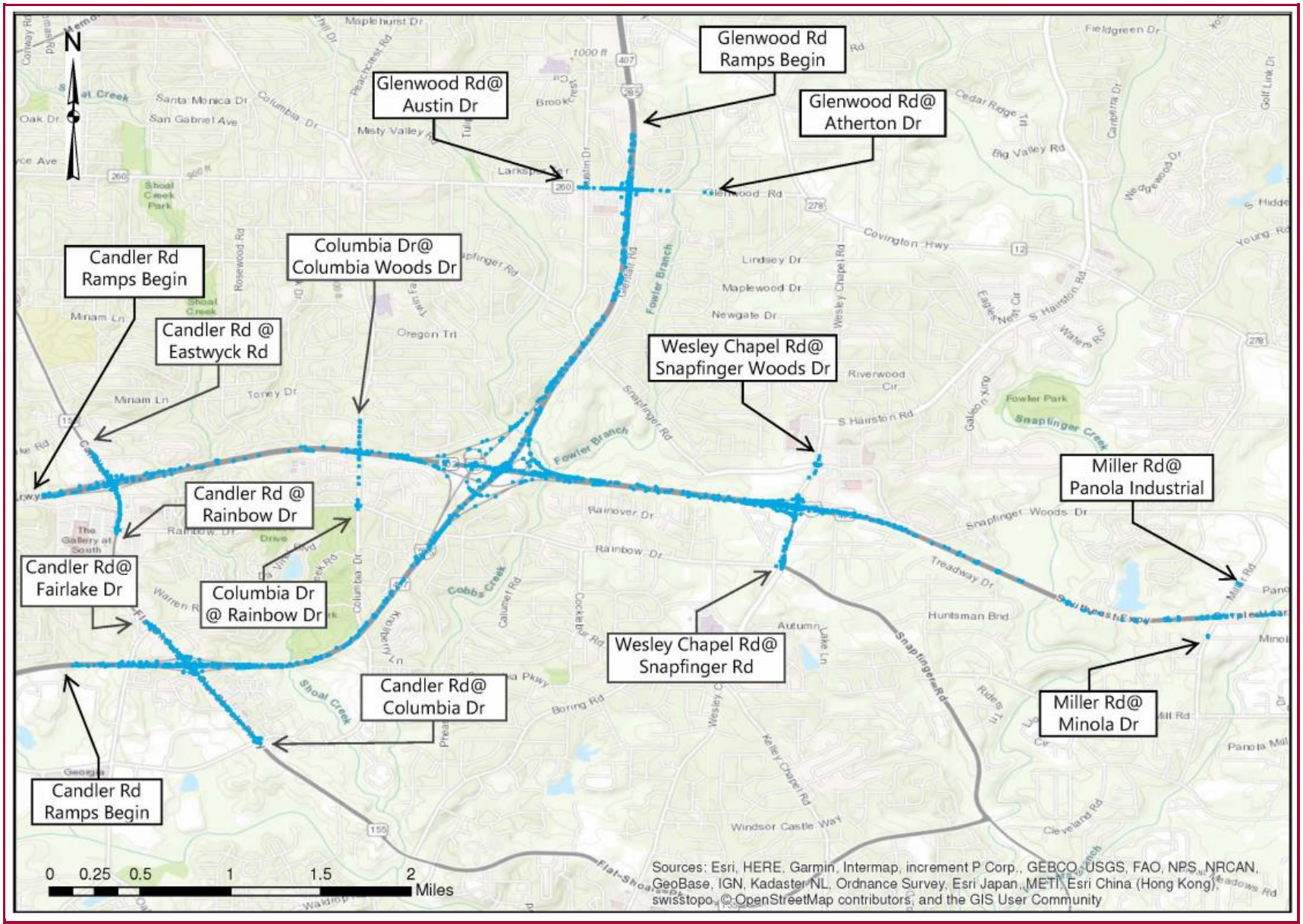


Figure 3-19. Side Swipe Same Direction Crashes Heat Map

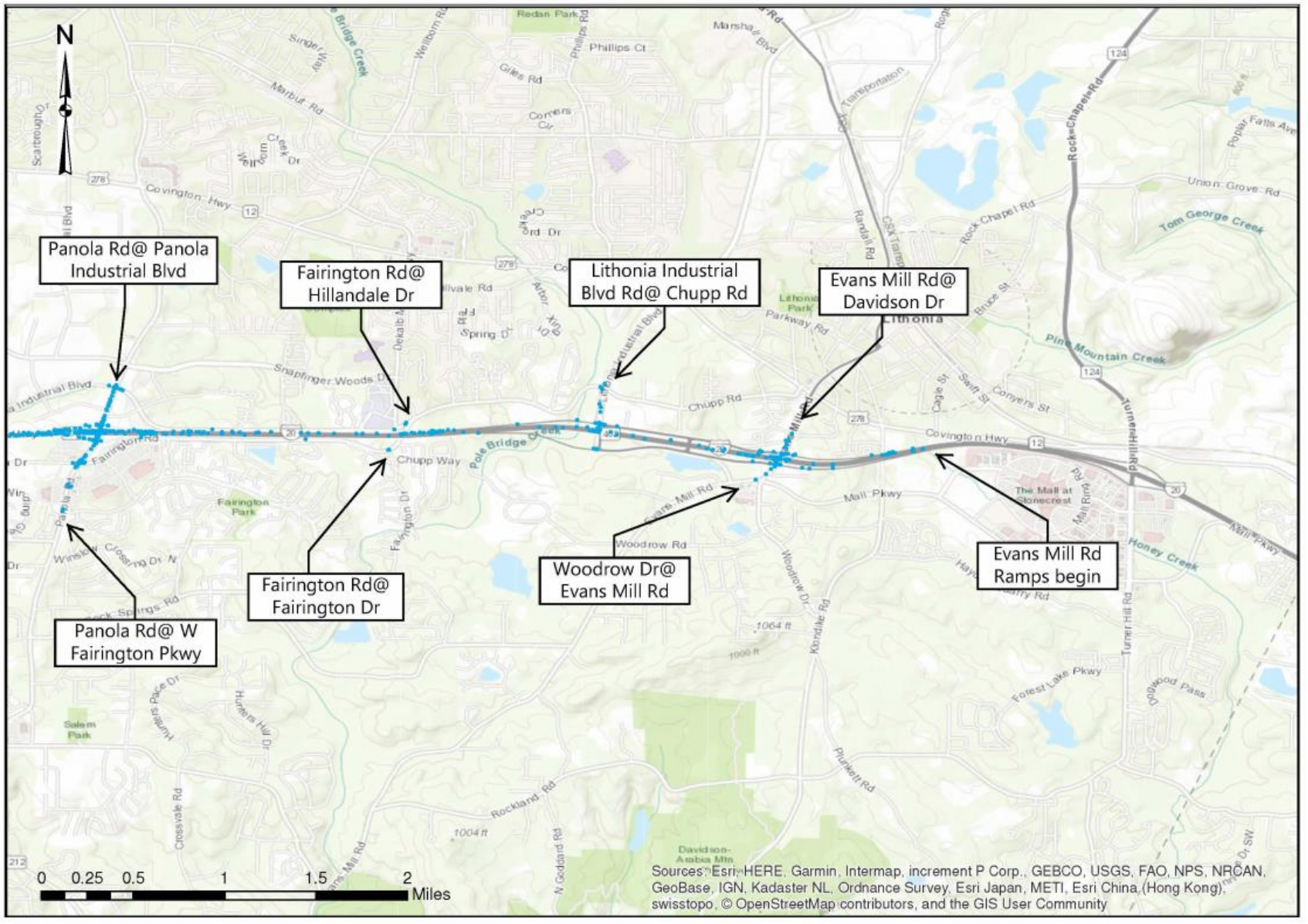


Figure 3-19. Side Swipe Same Direction Crashes Heat Map (Cont.)

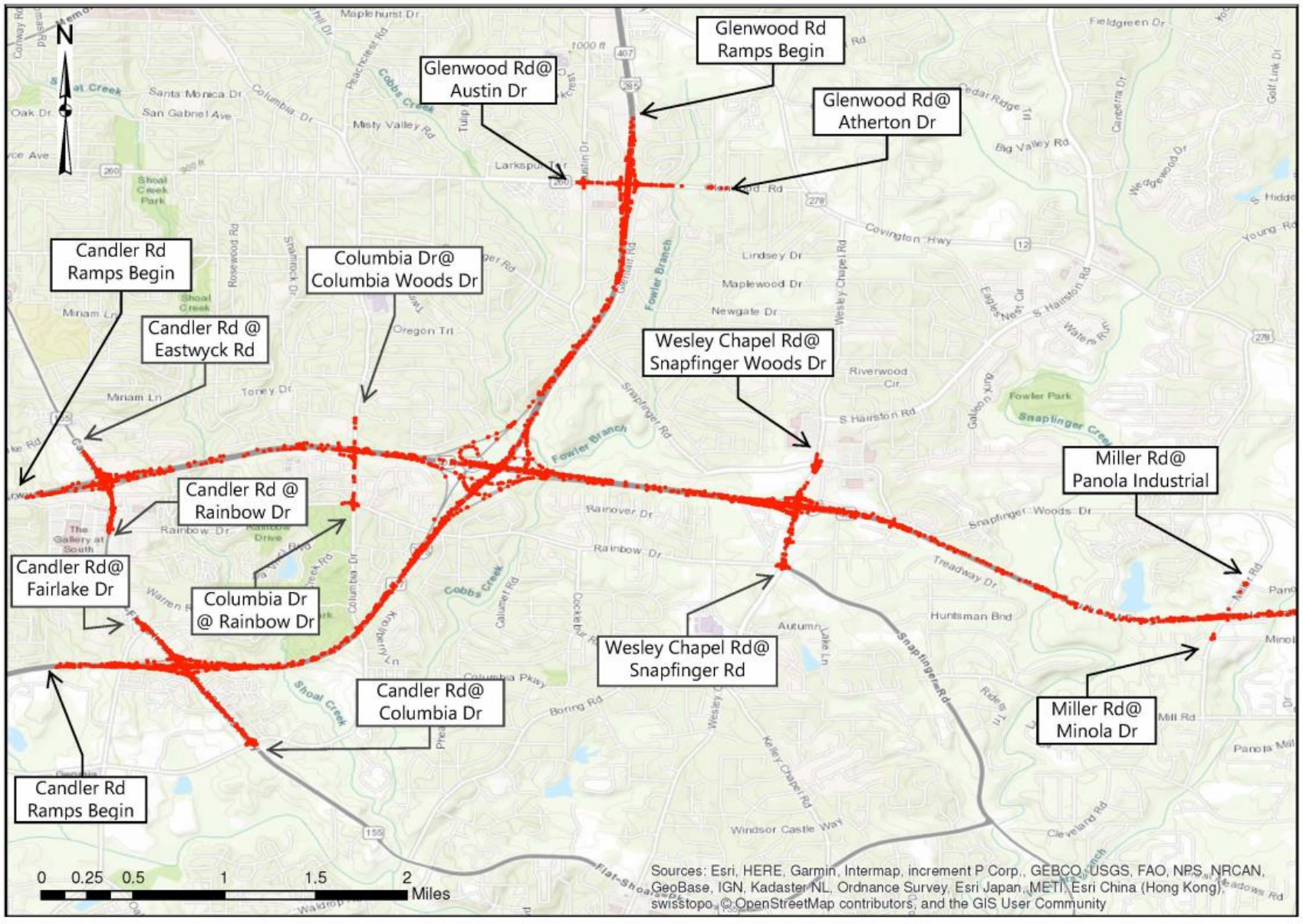


Figure 3-20. Rear End Crashes Heat Map

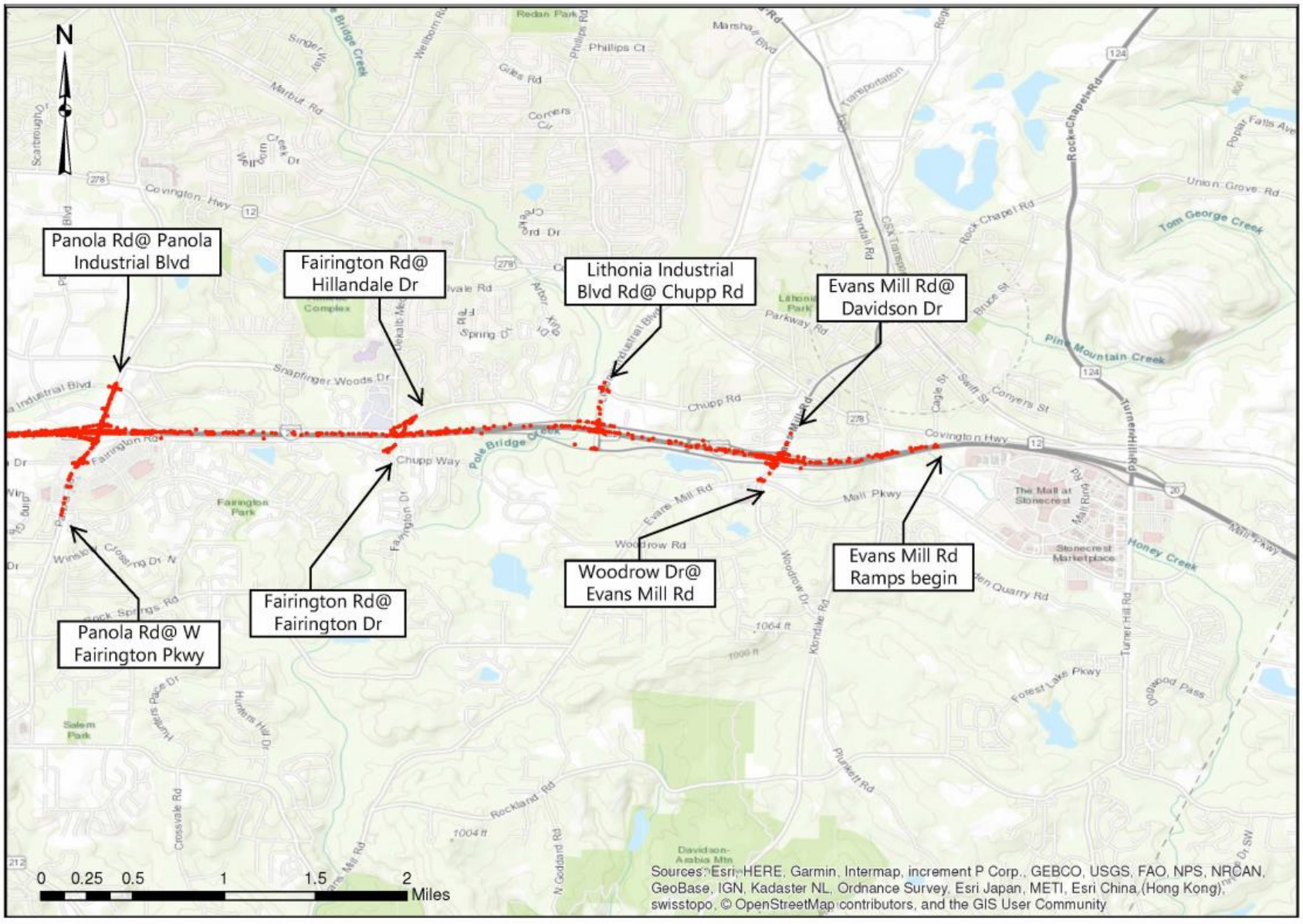


Figure 3-20. Rear End Crashes Heat Map (Cont.)

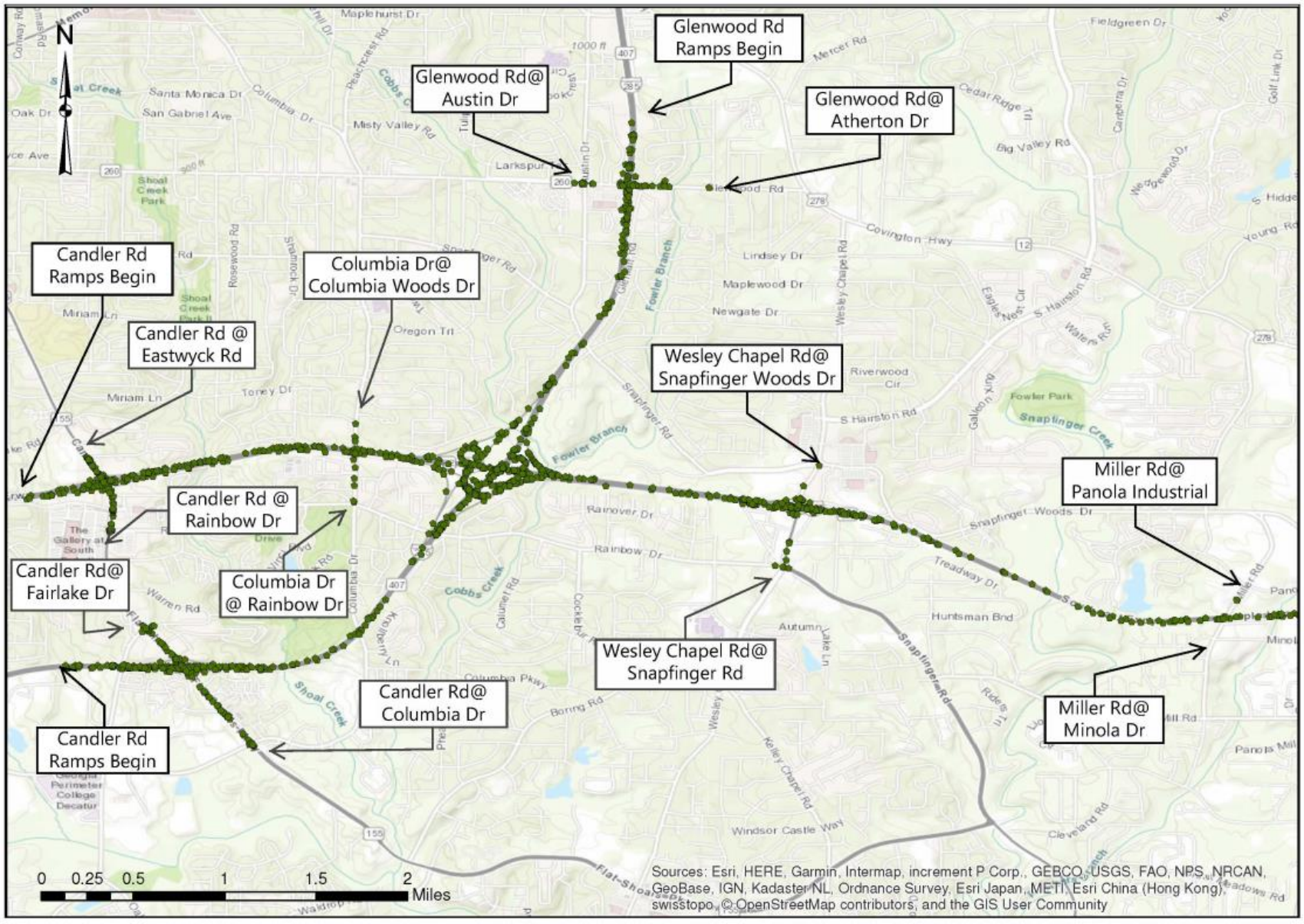


Figure 3-21. Not a Collision with Motor Vehicle Crashes Heat Map

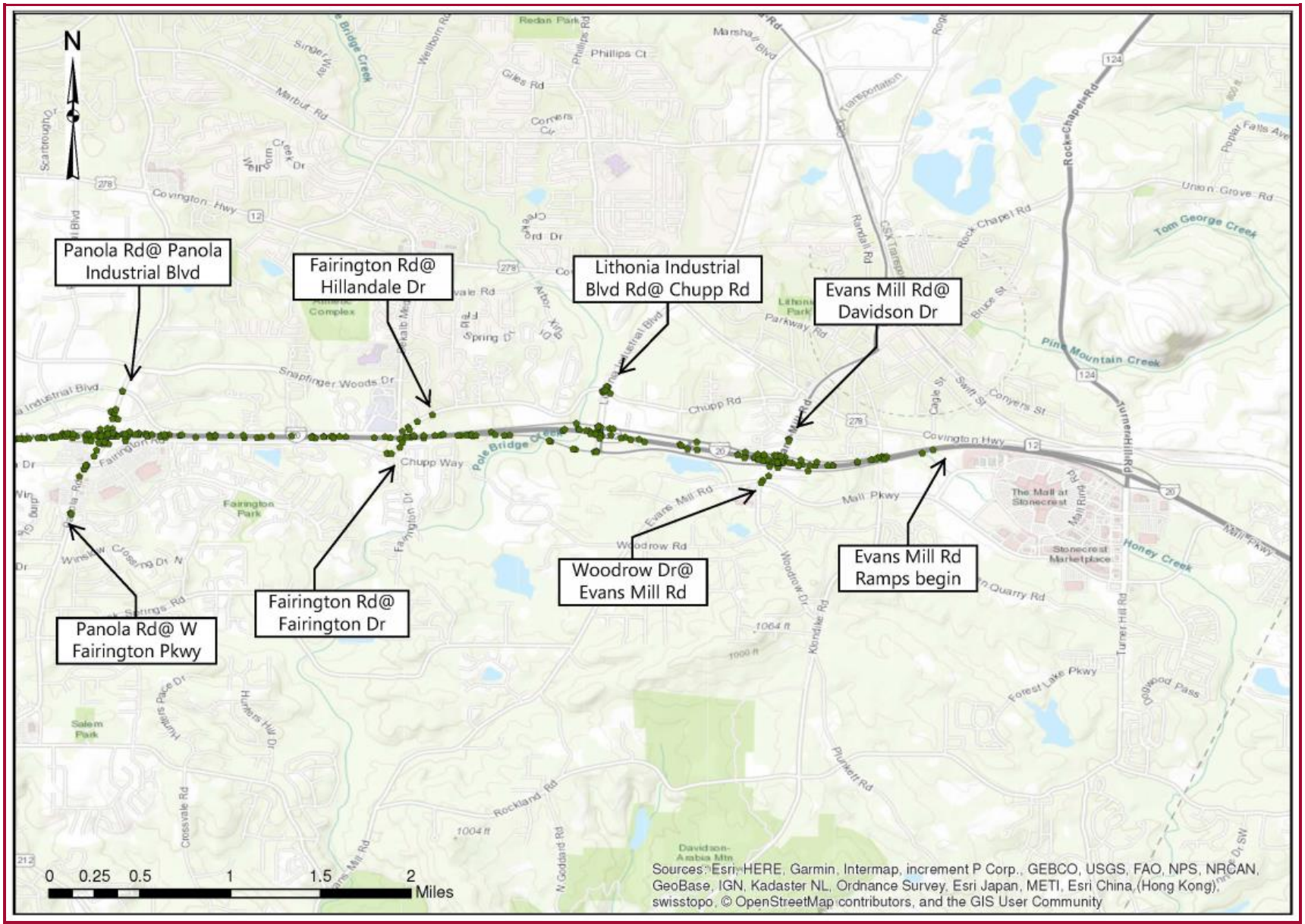


Figure 3-21. Not a Collision with Motor Vehicle Crashes Heat Map (Cont.)

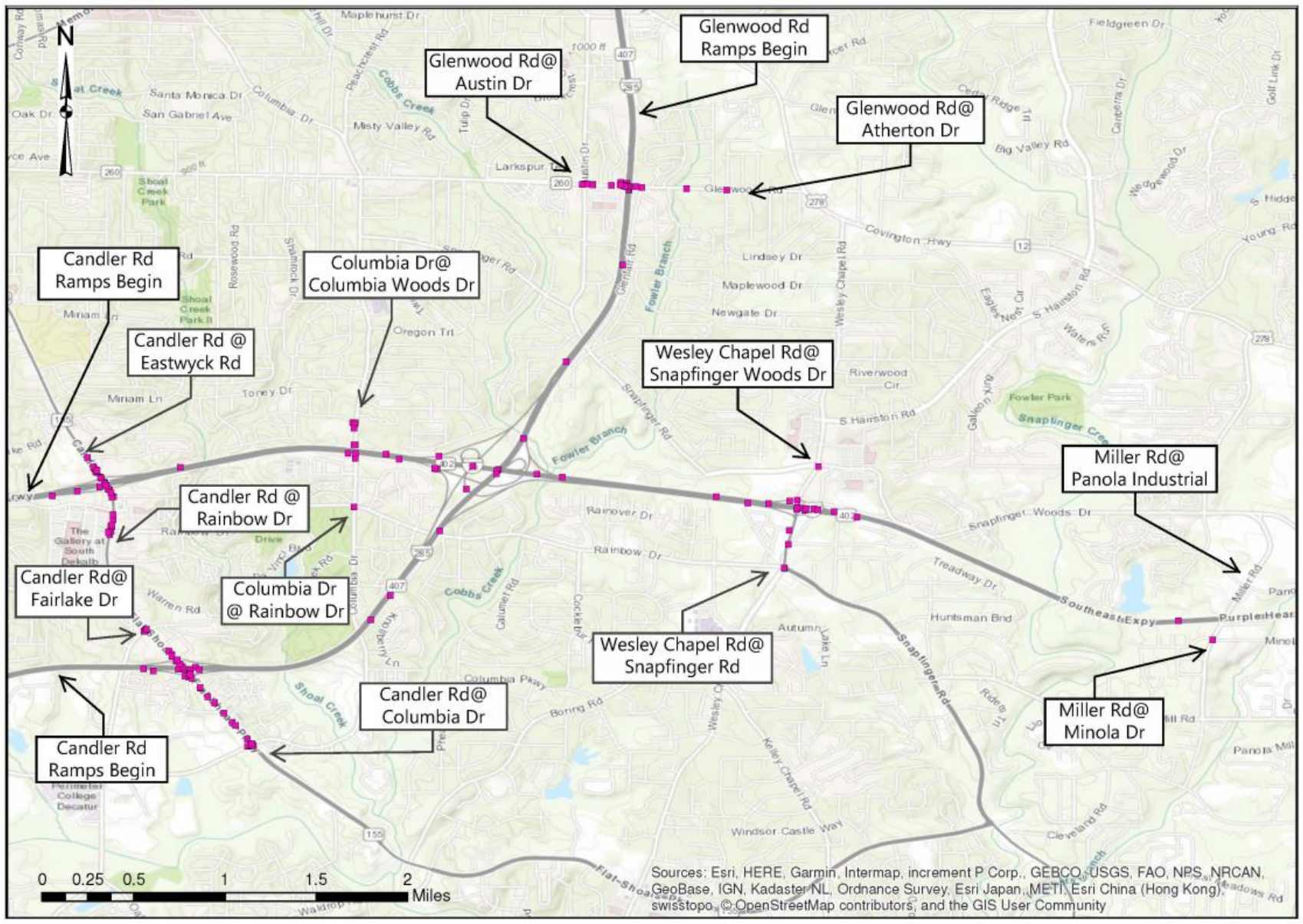


Figure 3-22. Head on Crashes Heat Map

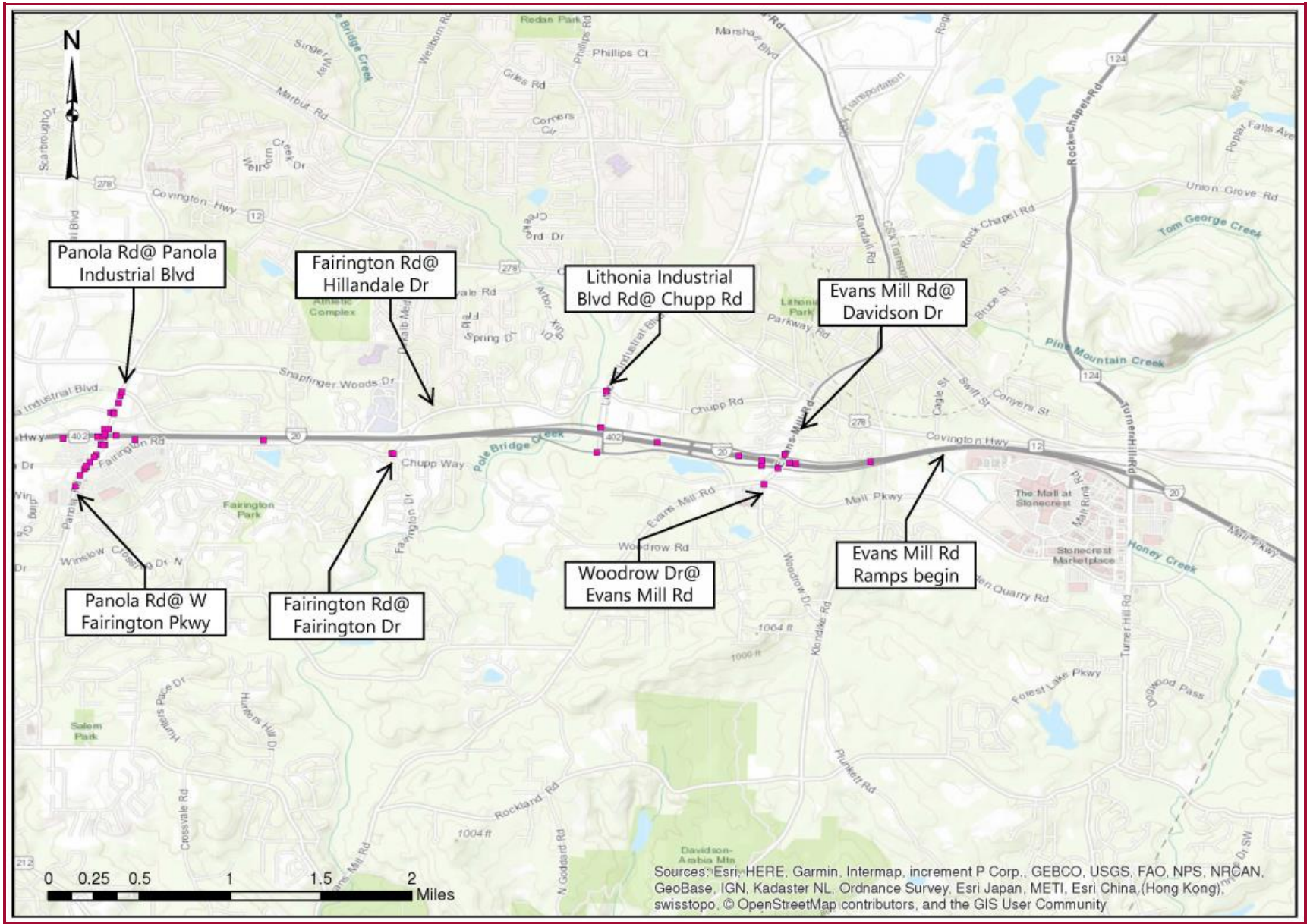


Figure 3-22. Head on Crashes Heat Map (Cont.)

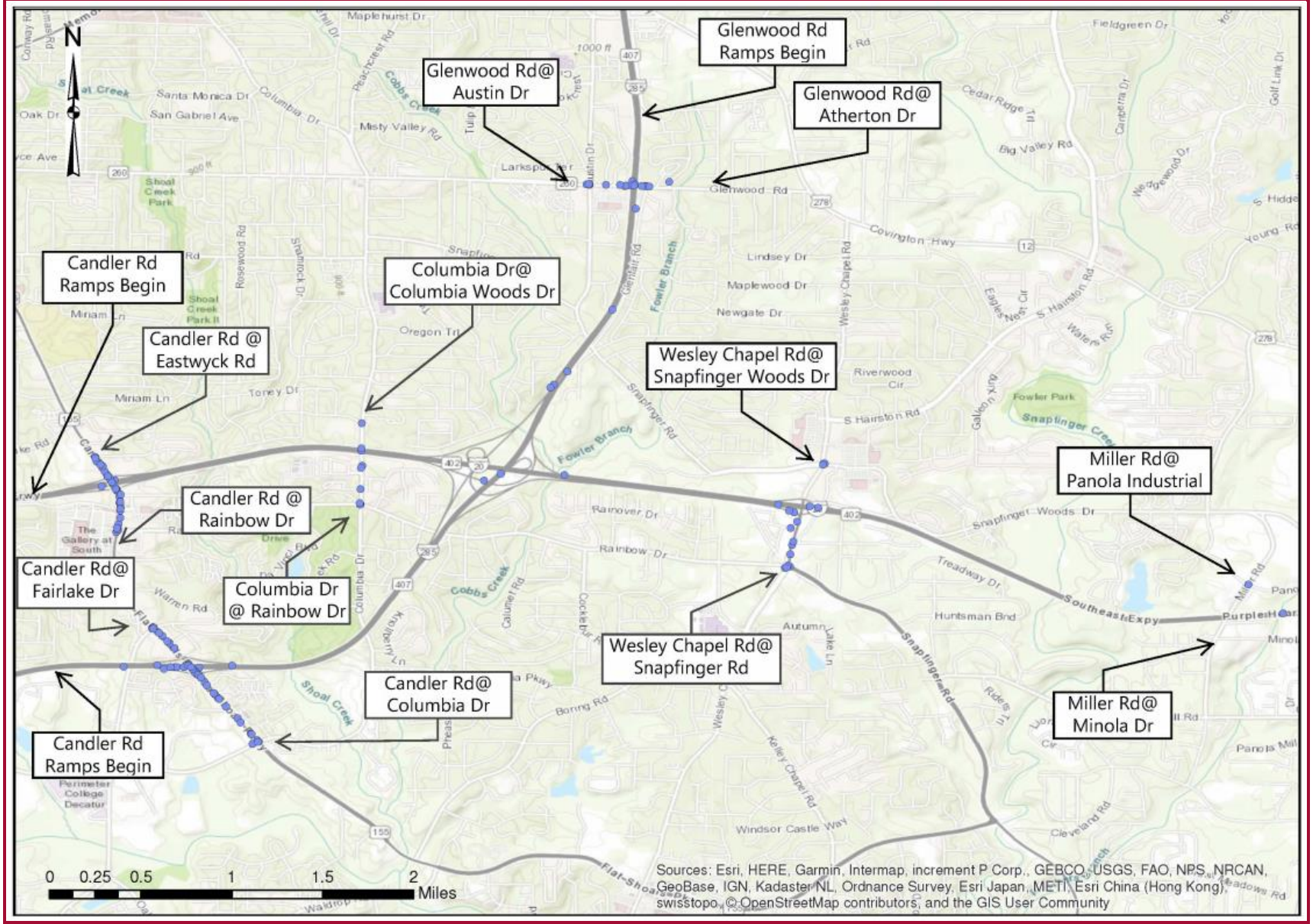


Figure 3-23. Side Swipe Opposite Direction Crashes Heat Map

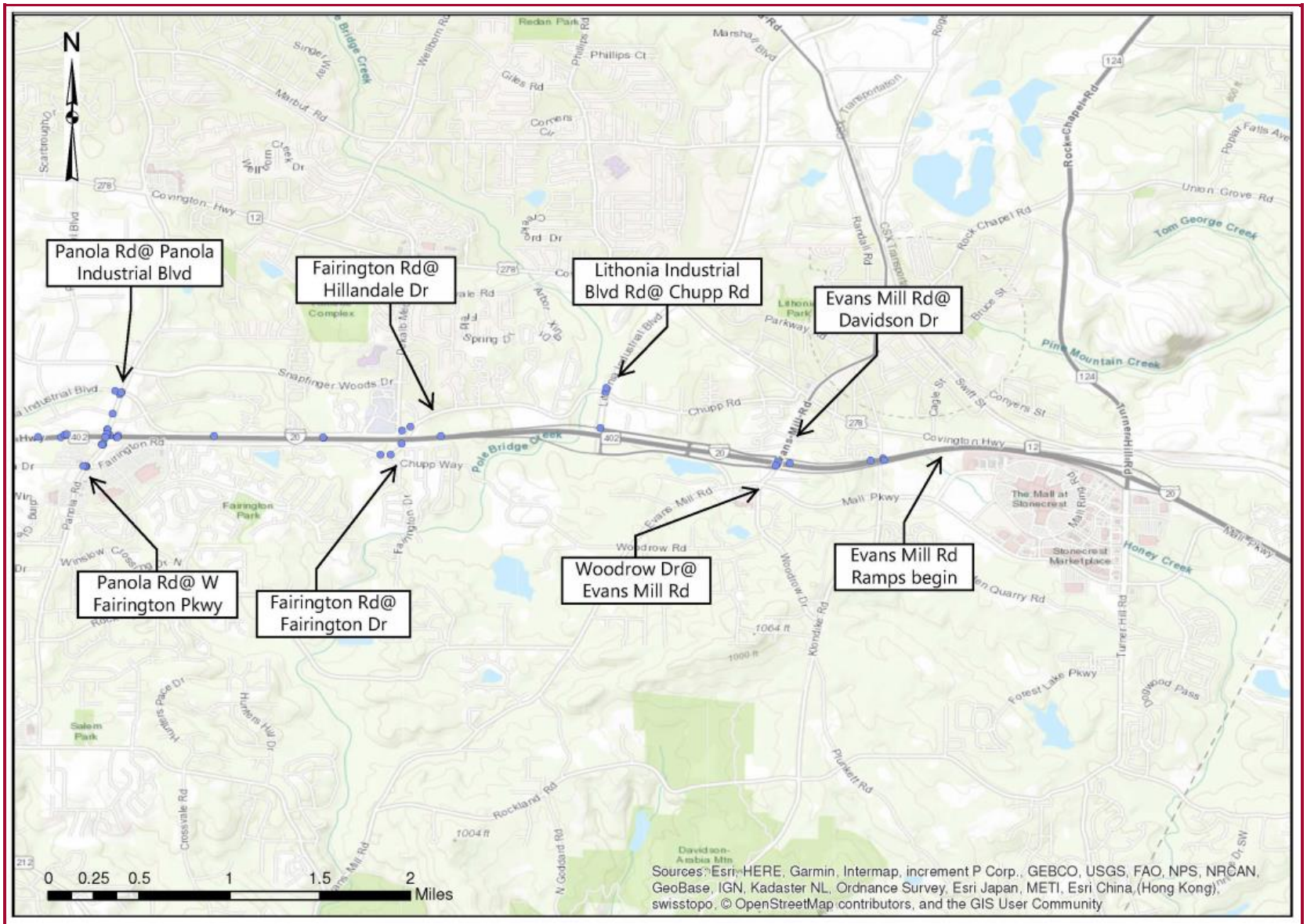


Figure 3-23. Side Swipe Opposite Direction Crashes Heat Map (Cont.)

Similarly, **Table 3-10** shows that since 2013 there has been an increase in the number and rate of the total crashes as well as the number and rate of the injury crashes occurring along I-285 within the study limits. All segments along I-285 within the study limits have higher crash rates than the statewide averages (by 50-80 percent) during the study period. Regarding the ramps on the I-285 corridor, **Table 3-11** indicates that only two ramps, the I-285 WB on-ramp at Flat Shoals Road and the I-285 NB on-ramp at Glenwood Road, had crash rates lower than the statewide average rates.

Figures 3-18 through 3-23 show the location of different crash types analyzed along the I-285/ I-20 East Interchange and the interchanges with all other cross streets within the study area. The crash density increases in the vicinity of interchanges and intersections. The most prevalent type of crashes at the interchanges and along the corridors are rear end crashes. The crash density for angle and side swipe opposite direction crashes are higher on crossroads compared to the interstates.

Crash data was analyzed to determine the type of crashes and frequency of each crash type occurring along the interstates. In Georgia, crash data are categorized by manner of collision or type of crash. Except for the crashes that are "not a collision with a motor vehicle," all other types of crashes focus on the manner of collision. A crash categorized as "not a collision with a motor vehicle" occurs when a vehicle leaves the roadway and/or strikes a fixed object (utility pole, guardrail, curb, structure, etc.), a cyclist, or a pedestrian. **Figure 3-24** presents crash frequencies by crash type for I-20 and I-285.

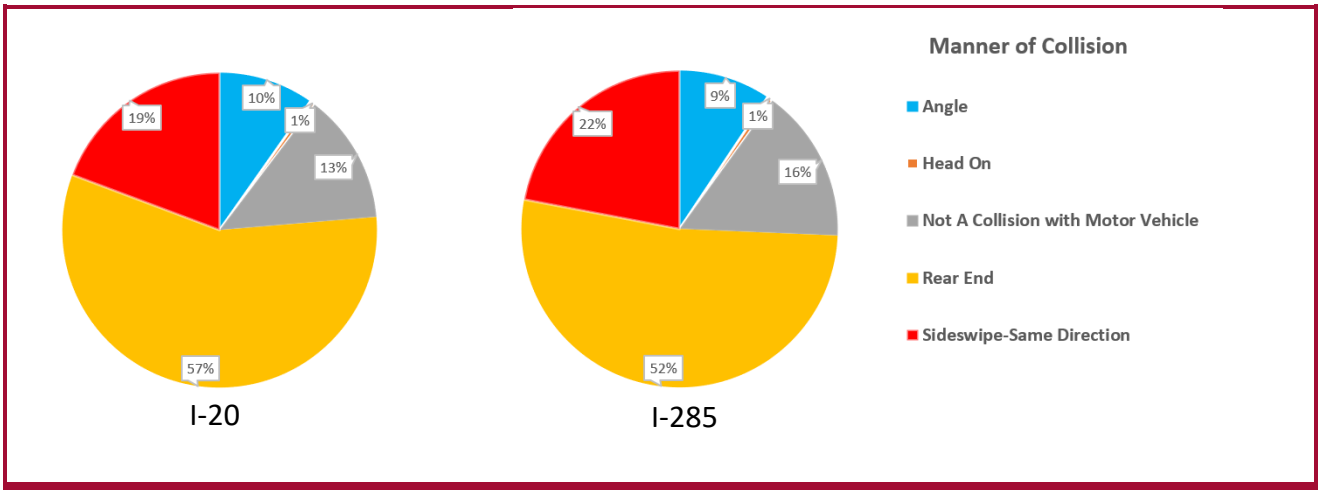


Figure 3-24. Crashes by Type along I-20 and I-285 (2013 to 2018)

On I-20, rear end crashes occurred the most (57 percent of the total crashes), followed by sideswipe in the same direction crashes (19 percent). The next most common crash type is collision with non-motor vehicle (13 percent) and the remaining crash types each accounted for 10 percent or less of the total crashes.

On I-285, rear end crashes occurred the most (52 percent of the total crashes), followed by sideswipe in the same direction (22 percent) and collisions with non-motor vehicle (17 percent). The high percentage of rear end crashes and sideswipe crashes in the same direction is an indication of congestion and improper lane changes.

Table 3-13 and **Table 3-14** show the number of crashes that occurred by first harmful event and where they occurred on Interstates.

Table 3-13. Crashes by First Harmful Event on I-20

First Harmful Event	Entrance/Exit	Gore	Median	Off Roadway	On Roadw–y - Non-Intersection	On Roadw–y - Roadway Intersection	On Shoulder	Other	Total (Percent)
Animal	2	1	0	0	6	6	0	0	**15 (0.1%)**
Curb	4	0	0	2	1	0	0	0	**7 (0.1%)**
Deer	0	0	0	0	4	2	0	0	**6 (0.1%)**
Ditch	1	3	1	12	1	2	3	0	**23 (0.2%)**
Embankment	2	1	0	11	4	0	2	0	**20 (0.2%)**
Guard Rail End	10	7	0	2	3	6	5	0	**33 (0.3%)**
Guard Rail Face	17	3	0	13	7	8	15	0	**63 (0.6%)**
Highway Traffic Sign Post	0	3	1	3	0	0	0	0	**7 (0.1%)**
Median Barrier	26	15	82	18	102	82	24	1	**350 (3.5%)**
Motor Vehicle in Motion	682	40	17	60	2987	4044	51	143	**8024 (79.7%)**
Motor Vehicle in Moti–n - In Other Roadway	2	0	0	0	7	11	1	0	**21 (0.2%)**
Other - Fixed Object	33	4	22	31	48	66	19	1	**224 (2.2%)**
Other Non-Collision	12	4	4	8	46	34	7	2	**117 (1.2%)**
Other Object (Not Fixed)	3	5	2	4	67	85	1	0	**167 (1.7%)**
Other Post/Pole Support	1	0	0	1	0	2	0	0	**4 (0%)**
Overturn	9	0	0	5	3	9	0	0	**26 (0.3%)**
Parked Motor Vehicle	4	1	1	2	8	14	9	1	**40 (0.4%)**
Pedestrian	0	0	0	0	2	1	0	0	**3 (0%)**
Tree	5	1	0	8	6	4	1	0	**25 (0.2%)**
Other	101	5	13	13	69	618	11	66	**896 (8.9%)**
Total	914	93	143	193	3371	4994	149	214	**10071 (100%)**

Out of the 10,071 crashes occurring on I-20 in the six-year analysis period, 8,024 (79.7%) involved motor vehicles in motion, with all other harmful events accounting for less than 4 percent each. Collision with median barrier (3.5%) and fixed objects (2.2%) were also crash causes along I-20.

Table 3-14. Crashes by First Harmful Event on I-285

First Harmful Event	Entrance/Exit Ramp	Gore	Median	Off Roadway	On Roadway - Non-Intersection	On Roadway - Roadway Intersection	On Shoulder	Other	Total (Percent)
Animal	0	0	0	0	1	1	0	0	**2 (0%)**
Curb	8	0	0	0	0	0	0	0	**8 (0.1%)**
Deer	0	0	0	0	0	2	0	0	**2 (0%)**
Ditch	1	1	0	12	2	1	1	0	**18 (0.3%)**
Embankment	4	2	0	7	0	0	1	0	**14 (0.3%)**
Guard Rail End	4	1	0	0	4	1	2	0	**12 (0.2%)**
Guard Rail Face	27	0	1	6	3	4	10	0	**51 (0.9%)**
Median Barrier	146	3	25	9	31	49	11	0	**274 (5%)**
Motor Vehicle in Motion	551	22	9	34	1484	2033	32	27	**4192 (76.5%)**
Motor Vehicle in Motion - In Other Roadway	1	0	0	0	2	4	0	0	**7 (0.1%)**
Other - Fixed Object	75	3	8	10	19	29	9	2	**155 (2.8%)**
Other Non-Collision	22	3	2	8	11	19	2	1	**68 (1.2%)**
Other Object (Not Fixed)	5	0	1	3	15	25	2	0	**51 (0.9%)**
Other Post/Pole Support	0	0	0	0	1	0	0	0	**1 (0%)**
Overturn	8	0	0	10	5	6	0	0	**29 (0.5%)**
Parked Motor Vehicle	4	0	0	1	4	5	3	0	**17 (0.3%)**
Pedestrian	0	0	0	0	0	1	0	0	**1 (0%)**
Tree	5	0	0	7	0	1	0	0	**13 (0.2%)**
Other	91	1	4	10	53	393	4	12	**568 (10.4%)**
Total	952	36	50	117	1635	2574	77	42	**5483 (100%)**

Crash data on I-285 indicates that out of 5,483 crashes that occurred during the six-year analysis period, 4,192 (76.5%) crashes were due to motor vehicles in motion, followed by 274 (5%) collisions with median barrier, and 154 collisions with fixed objects (2.8%).

A total of 1,866 crashes occurred on the ramps of which 1,237 crashes were reported at the I-285/I-20 East Interchange. There had been 17 overturn crashes on entrance/exit ramps for the entire study area, of which five occurred on the exit ramp from I-285 SB to I-20 EB, four on I-20 WB to I-285 SB loop ramp, two on I-20 WB to I-285 NB ramp, two on I-285 SB to I-20 WB ramp, two on I-20 EB to I-285 SB ramp, one on I-20 EB to I-285 NB ramp, and one on I-285 NB exit ramp to Flat Shoals Road. Eleven out of 17 overturn crashes occurred during the dark and not-lighted condition. The vehicles type involved in the ten crashes on the I-285/20 Interchange ramps Tractor/Trailer, were negotiating a curve and their speed was reported "Too fast for the condition". **Table 3-** provides information about the crashes on the I-285/20 Interchange ramps.

Results indicate that 285 out of 1,237 (23%) crashes occurred during the dark and not lighted condition; 485 crashes (38%) occurred when the ramp surface was wet or covered with ice or snow; and 495 crashes (40%) were a single vehicle crash.

Table 3-15. Crashes on I-285/20 Interchange Ramps Characteristics

Crash Characteristic	Category	Crash count (%)
Lighting Condition	Dark Lighted	227 (18%)
	Dark Not Lighted	285 (23%)
	Dawn	22 (3%)
	Daylight	690 (56%)
	Dusk	13 (1%)
	Total	**1,237 (100%)**
Crash Type	Angle	101 (8%)
	Head On	5 (0%)
	Not A Collision with Motor Vehicle	495 (40%)
	Rear End	392 (32%)
	Sideswipe-Opposite Direction	3 (0%)
	Sideswipe-Same Direction	241 (19%)
	Total	**1,237 (100%)**
Surface Condition	Dry	752 (61%)
	Ice/Frost	4 (0%)
	Other	5 (0%)
	Snow	3 (0%)
	Wet	473 (38%)
	Total	**1,237 (100%)**

Table 3-16 exhibits the number of crashes by severity level on interstates. Most of the crashes are Property Damage Only (PDO) type. Most of the fatal crashes occurred due to driver-related errors. Four (4) fatal crashes occurred on the ramps at the interchange of I-285 and I-20. All 4 crashes happened during the dark-not lighted conditions.

Table 3-16. Crashes by Severity

Crash Severity	I-20	I-285
Fatal Crash	21	13
Injury Crash	2,914	1,647
PDO Crash	7,136	3,822
Total	**10,071**	**5,483**

Thirteen (13) fatal crashes were recorded along I-285 corridor, out of which four (4) crashes occurred between the off-ramp and on-ramp at the interchange of Glenwood Road due to vehicles following too close, exceeding speed limit with improper lane change, and improper passing. Six (6) crashes occurred between the on-ramp and off-ramp of Flat Shoals Road, due to exceeding speed limit and losing control of the vehicle. One fatal crash occurred on I-285 SB to I-20 EB ramp when the driver of a tractor/trailer lost control of the vehicle, and one fatal crash occurred on the I-285 NB to I-20 EB ramp due to driving under the influence and another occurred on the Columbia Road Bridge due to driving over the speed limit.

Twenty-one fatal crashes occurred along the I-20 corridor over the six-year study period. The contributing factors for these crashes were dark-not lighted condition (13 crashes), driving under the influence (3 crashes), exceeding speed limit (one crash), mechanical or vehicle failure (one crash),

driver losing control (one crash) and striking a pedestrian (two crashes). Fatal and Injury crash locations within the study limits are shown in **Figure 3-25** and **3-26** below**.**

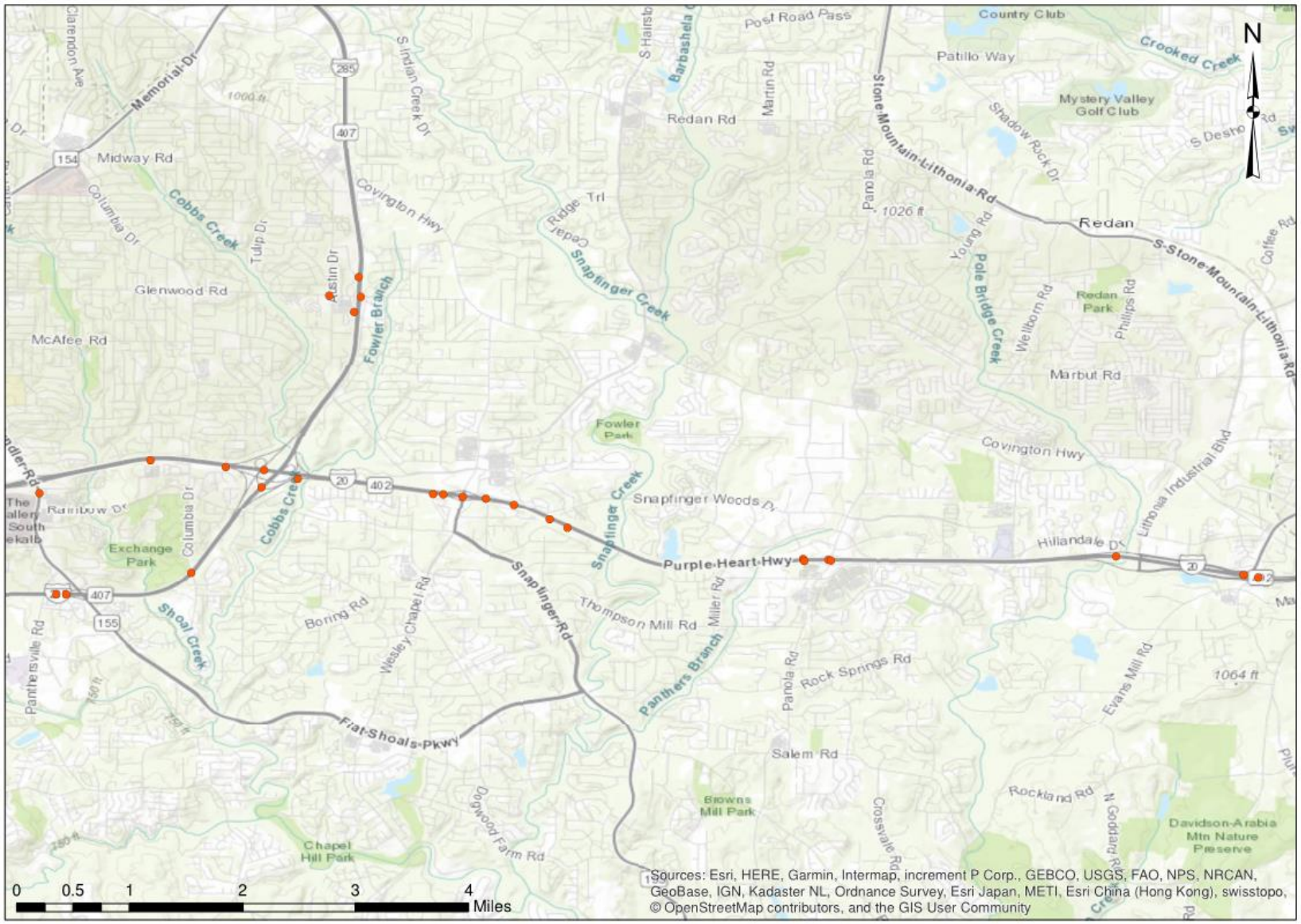


Figure 3-25. Fatality Location Map

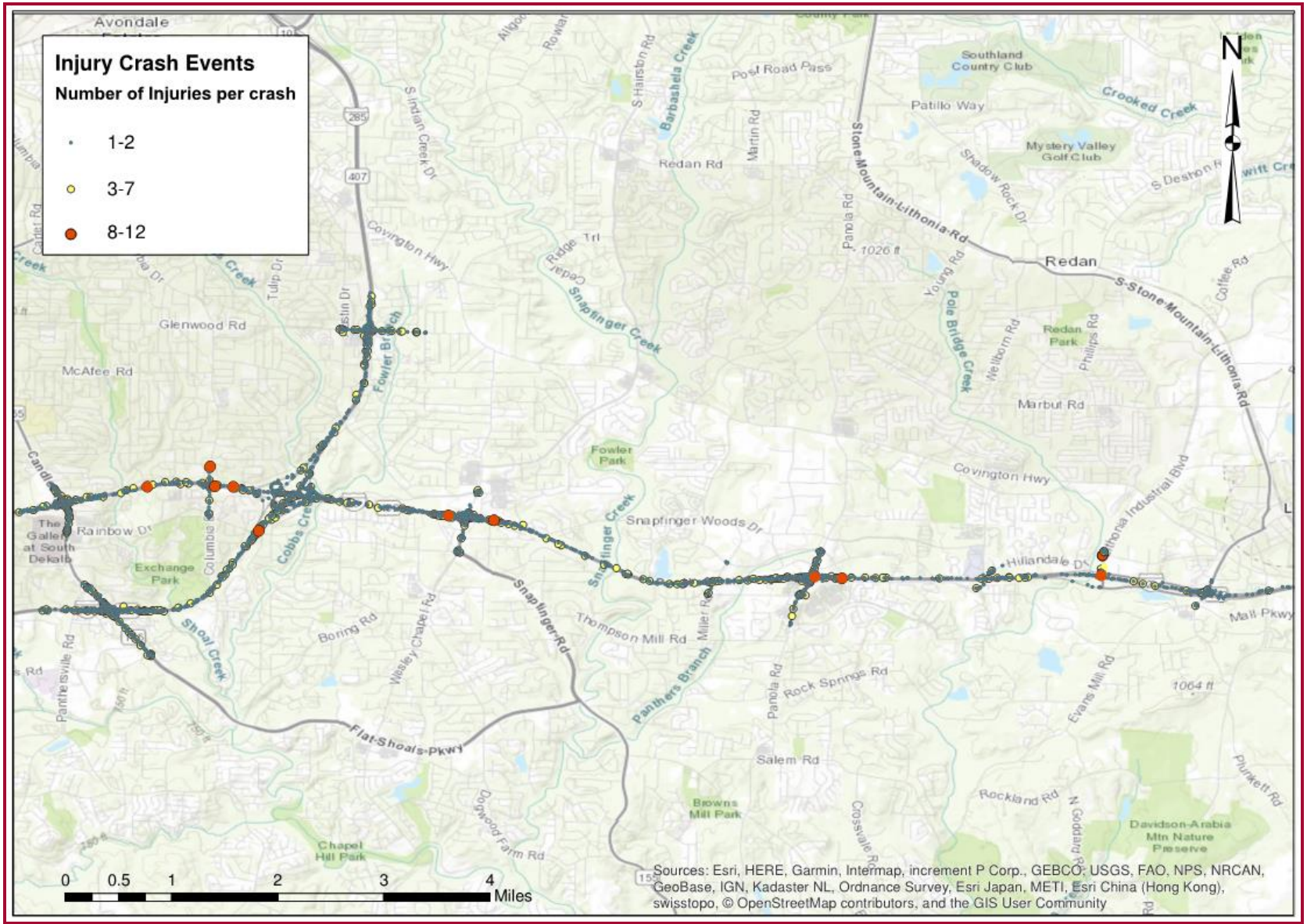


Figure 3-26. Injury Crash Location Heat Map

Table 3- shows that about 65 percent of all crashes on I-20 and I-285 occurred in daylight condition. However, the results indicate that lighting condition plays a significant role in fatal crash occurrence. Although, the number of miles driven decreases substantially at night compared with daytime, 80 percent of all traffic deaths (28 out of 34) on interstate corridors occurred after dark (either lighted or not lighted conditions) of which 55 percent (19 out of 34) occurred in the dark-not lighted condition and 26 percent occurred in to the dark-lighted condition.

Table 3-17. Crashes by Lighting Condition

I-20		
Lighting Condition	**All Crashes**	**Fatalities**
Dark Lighted	1,746 (17%)	5(24%)
Dark Not Lighted	1,619 (16%)	13 (62%)
Dawn	147 (1%)	0 (0%)
Daylight	6,463 (64%)	3 (14%)
Dusk	88 (1%)	0 (0%)
Unknown	7 (0%)	0 (0%)
Total	**10,071 (100%)**	**21 (100%)**
I-285		
Lighting Condition	**All Crashes**	**Fatalities**
Dark Lighted	815 (15%)	4 (31%)
Dark Not Lighted	892 (16%)	6 (46%)
Dawn	72 (1%)	1 (8%)
Daylight	3,657 (67%)	2 (15%)
Dusk	45 (1%)	0 (0%)
Unknown	3 (0%)	0 (0%)
Total	**5,483 (100%)**	**13 (100%)**

3.5.1.2 CROSSROADS

A total of 7,324 crashes occurred during the analysis period (2013-2018) on the crossroads, intersections along the crossroads and local street networks that are impacted by this project. The crossroads and the local street network include the first major intersection on either side of the studied interchanges. GDOT's Functional Classification Application has been used to identify the roadway classification for each crossroad. **Table 3-** shows the crash history for the crossroads in the study area.

Table 3-18. Crash History by Rate & Comparison with Statewide Average for Crossroads

Crossroad	Year	No. of Crashes			Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
		Count	Involving Injuries	Involving Fatalities	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
Candler Road Urban Minor Arterial	2013	203	51	0	3206	543	805	130	0	1.17
	2014	213	62	0	3363	601	979	145	0	1.21
	2015	205	49	0	3011	637	720	156	0	1.68
	2016	268	66	1	4137	655	1019	156	15	1.53
	2017	322	94	0	4970	623	1451	153	0	1.35
	2018	240	86	0	3613	540	1295	201	0	1.42
Columbia Road Urban Minor Collectors	2013	20	7	0	525	443	184	105	0	1.05
	2014	47	16	0	1234	404	420	99	0	1.23
	2015	68	21	0	1594	568	492	139	0	1.34
	2016	74	19	0	1694	599	435	142	0	1.49
	2017	15	1	0	343	576	23	141	0	1.43
	2018	116	41	0	2383	424	842	156	0	1.16
Evans Mill Road Urban Minor Collectors	2013	21	6	0	859	443	245	105	0	1.05
	2014	20	10	0	818	404	409	99	0	1.23
	2015	18	4	0	708	568	157	139	0	1.34
	2016	20	8	0	769	599	307	142	0	1.49
	2017	29	7	0	1115	576	269	141	0	1.43
	2018	98	26	0	3047	424	808	156	0	1.16
Fairington Road Urban Minor Collectors	2013	18	3	0	1468	443	245	105	0	1.05
	2014	30	8	0	2446	404	652	99	0	1.23
	2015	38	10	0	2992	568	787	139	0	1.34
	2016	38	16	0	2916	599	1228	142	0	1.49
	2017	13	5	0	998	576	384	141	0	1.43
	2018	12	3	0	788	424	197	156	0	1.16
Flat Shoals Road Urban Minor Arterial	2013	253	66	0	2125	543	554	130	0	1.17
	2014	240	67	0	2016	601	563	145	0	1.21
	2015	313	75	0	2446	637	586	156	0	1.68
	2016	317	77	0	2603	655	632	156	0	1.53
	2017	316	70	0	2594	623	575	153	0	1.35
	2018	265	74	0	2122	540	593	201	0	1.42
Glenwood Road Urban Minor Arterial	2013	92	24	0	1703	543	444	130	0	1.17
	2014	106	28	0	1962	601	518	145	0	1.21
	2015	146	48	0	2514	637	827	156	0	1.68
	2016	191	56	0	3185	655	934	156	0	1.53
	2017	51	15	1	851	623	250	153	17	1.35
	2018	194	76	0	3800	540	1489	201	0	1.42
Lithonia Blvd Urban Minor Collectors	2013	14	5	0	607	443	178	105	0	1.05
	2014	38	11	0	1649	404	391	99	0	1.23
	2015	43	16	0	1796	568	548	139	0	1.34
	2016	59	20	0	2404	599	668	142	0	1.49
	2017	16	5	0	652	576	167	141	0	1.43

Table 3-18. Crash History by Rate & Comparison with Statewide Average for Crossroads

Crossroad	Year	No. of Crashes			Total Crashes		Crashes Involving Injuries		Crashes Involving Fatalities	
		Count	Involving Injuries	Involving Fatalities	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)	Rate (100MVM)	Statewide Ave. Rate (100MVM)
	2018	59	22	1	1809	424	553	156	31	1.16
Miller Road Urban Local Road	2013	3	0	0	148	254	0	48	0	0.53
	2014	10	4	0	493	181	197	34	0	0.40
	2015	8	0	0	379	257	0	50	0	0.48
	2016	19	5	0	876	288	231	56	0	0.44
	2017	8	3	0	369	249	138	49	0	0.54
	2018	9	2	0	411	233	91	64	0	0.39
Old Hillandale Drive Urban Local Road	2013	0	0	0	0	254	0	48	0	0.53
	2014	2	1	0	110	181	55	34	0	0.40
	2015	1	0	0	48	257	0	50	0	0.48
	2016	5	1	0	230	288	46	56	0	0.44
	2017	0	0	0	0	249	0	49	0	0.54
	2018	13	3	0	432	233	100	64	0	0.39
Panola Road Urban Minor Arterial	2013	94	18	0	1207	543	231	130	0	1.17
	2014	255	61	0	3275	601	784	145	0	1.21
	2015	304	84	0	3630	637	1003	156	0	1.68
	2016	308	74	0	3753	655	902	156	0	1.53
	2017	91	26	0	1109	623	317	153	0	1.35
	2018	436	102	0	5331	540	1247	201	0	1.42
Wesley Chapel Road Urban Principal Arterial	2013	88	17	0	656	608	127	141	0	1.18
	2014	90	19	0	671	589	142	134	0	1.15
	2015	90	18	0	633	583	127	138	0	1.24
	2016	97	29	0	661	628	198	145	0	1.47
	2017	93	14	0	634	615	95	149	0	1.24
	2018	438	115	0	2878	581	756	211	0	1.55

Note: Highlighted crash rate is higher than the statewide average

The crash rates are calculated for total crashes, crashes involving injuries, and crashes involving fatalities along the segments. These are then compared to the statewide averages for minor arterial, minor collector, local urban, and principal arterials (Urbanized). The crash rate information showed that the overall crash rates and crash rates involving injuries for almost all crossroads were substantially higher than the statewide averages during the study period. Only Miller Road showed some lower rates than the statewide average rates. Panola Road, Flat Shoals Road, Candler Road, and Glenwood Road had the highest crash rates. Two fatal crashes occurred in five years, one on the Candler Road and the other on Glenwood Road.

Crash data was analyzed to determine the type of crashes and frequency of each crash type occurring along the crossroads. Crash data are categorized by manner of collision (or type of crash). **Figure 3-27** presents the crash counts on each crossroads in the parenthesis and the proportion of crash types using histograms.

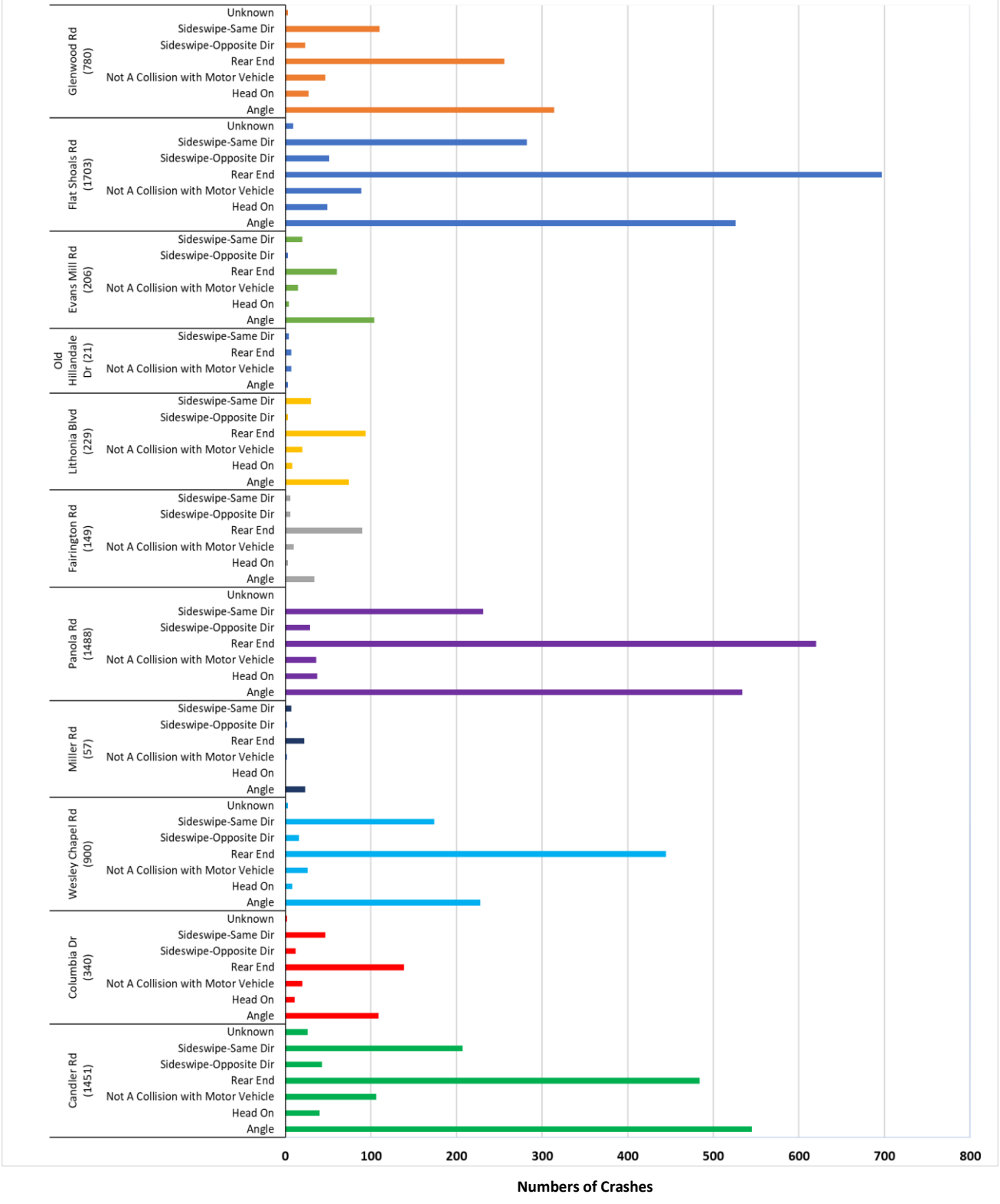


Figure 3-27. Crash Frequency in Terms of Crash Type along Crossroads (2013 to 2018)

Overall, rear end crashes on crossroads occurred the most (40% of the total crashes), followed by angle crashes (34%) and sideswipe in the same direction crashes (15%). The remaining crash types each accounted for less than 5 percent of the total crashes. Rear end crashes have been found to be the most predominant manner of crash on Columbia Drive, Fairington Road, Flat Shoals Road, Lithonia Boulevard, Panola Road, and Wesley Chapel Road. Angle crash was major crash type on Candler Road, Evans Mill Road, Glenwood Road, and Miller Road.

Rear end and side swipe collisions are more likely to happen at mid-blocks; while, it is more likely to have angle crashes at intersections. The high percentage of rear end crashes and sideswipe crashes in the same direction is an indication of congestion and improper lane changing. A large number of angle crashes implies the potential of a sight distance restriction and high intersection volume.

The results presented in **Table 3-** indicate that vehicles following too close, fail to yield right of way and improper lane changing are the main crash contributing factors.

Table 3-19. Crash Contributing Factors along Crossroads

Contributing Factors	Candler Road	Columbia Drive	Evans Mill Road	Fairington Road	Flat Shoals Road	Glenwood Road	Lithonia Blvd	Miller Road	Old Hillandale Drive	Panola Road	Wesley Chapel Road	Total
Following too Close	349	109	56	74	579	211	80	20	5	518	372	**2373**
Failed to Yield	333	65	45	23	310	186	27	14	1	287	103	**1394**
Changed Lanes Improperly	127	28	10	1	168	74	18	2	7	158	117	**710**
Improper Turn	70	18	17	3	77	70	16	4	0	61	23	**359**
Improper Backing	94	14	5	5	92	24	2	4	0	70	44	**354**
Misjudged Clearance	59	4	1	0	55	28	5	0	0	47	20	**219**
Disregard Stop Sign/Signal	25	7	24	2	17	17	21	4	0	34	23	**174**
Inattentive or Other Distraction	21	2	0	0	22	8	5	1	0	16	13	**88**
Driver Lost Control	19	7	2	4	25	7	4	0	2	10	10	**90**
Improper Passing	2	0	0	1	4	2	1	0	0	5	2	**17**
Under the Influence (U.I.)	8	3	3	0	15	6	2	0	1	8	7	**53**
Wrong Side of Road	7	2	0	3	7	3	0	0	0	9	2	**33**
Mechanical or Vehicle Failure	2	0	0	1	5	2	2	0	0	3	3	**18**
Driver Condition	12	5	1	2	42	7	3	0	0	13	8	**93**
Weather Conditions	4	1	1	0	1	1	0	0	0	2	0	**10**
No Contributing Factors	144	37	20	21	133	58	30	6	2	130	65	**646**
Other	175	38	21	9	151	76	13	2	3	117	88	**693**
Total	**1,451**	**340**	**206**	**149**	**1703**	**780**	**229**	**57**	**21**	**1488**	**900**	**7324**

3.5.2 Existing Safety Analysis Findings

The study limits of the safety analysis cover the freeway sections, ramp sections and crossroads within the study limits. The safety analysis in this report estimated crash rates from the historic crash data and compared them with the statewide averages. The benefit of crash rate analysis is that it provides an effective comparison of similar locations with safety issues. Crash data was analyzed based on the crash type, the first harmful event and potential contributing factors such as geometric features or roadway condition. Crash data was geocoded which enabled generating crash maps to find the high injury and fatality crash locations within the network.

A total of 15,554 and 7,324 crashes occurred during the analysis period along the Interstates and crossroads respectively, within the study limits. 10,071 crashes were recorded on I-20 and 5,483 crashes on I-285. There has been an overall increase in total crash rate and injury crash rate from year 2013 to year 2018 for both interstate corridors. The overall crash rates as well as injury and fatal crash rates for I-20 were significantly higher than the statewide average during the study period. Similarly, the total crash and fatality rates for I-285 were substantially higher than the statewide averages during the study period, except for two ramps,the I-285 WB on-ramp at Flat Shoals Road and the I-285 NB on-ramp at Glenwood Road.

On Interstate corridors, rear end crashes occurred the most (over 50%), followed by sideswipe in the same direction crashes (around 20%). On crossroads, rear end crash was the predominant type (40%) followed by angle crashes (34%) and sideswipe in the same direction crashes (15%). Mainline rear end and sideswipe crashes typically reflect congested traffic flow conditions and generally result from driver aggressiveness and inattention where motorists follow too closely, frequently accelerate and decelerate, and unsafely change lanes. In addition, existing non-standard and non-conforming geometry such as short weave sections, non-standard acceleration and deceleration lane lengths also contribute to these types of crashes.

The majority of crashes are PDO type. Most of the fatal crashes occurred due to driver-related errors. Four (4) fatal crashes occurred on the ramps at the interchange of I-285 and I-20, all occurred during the dark-not lighted conditions. There have been five (5) overturn crashes on entrance/exit ramps at the I-285 and I-20 interchange, of which three (3) occurred on the I-20 WB exit loop ramp to I-285 SB. Vehicles of all three crashes on the loop ramp were Tractor/Trailer, negotiating a curve. The leading causes of this type of crashes are failing to adjust speed to curves in the road, the load being carried, condition of the brakes, or road surface. Tractor-trailers are particularly vulnerable because of the trailer's high center of gravity and frequently unstable loads.

Along the crossroads, overall crash rates as well as injury crash rates were substantially higher than the statewide averages. The most common type of crash at intersections is angle crash. Lack of left-turn offset, skew at the intersection, speed limit of the intersecting roadways, and inadequate yellow and all-red clearance intervals contribute to these types of crashes.

Hot spot locations were also identified by calculating the crash density for individual roadways segments **Figures 3-28 and 3-29** show the roadway segments density of crashes within the study limits. The goal was to estimate the crash density by summing the number of events within a search bandwidth of 0.25 miles. The figures show that the top ten high crash locations are as follows:

1. Between the Wesley Chapel Road on-ramp and the off-ramps on I-20
2. Between the Panola Road off-ramp and on-ramps on I-20
3. On Panola Road, between the intersection of Fairington Road and I-20 EB on and off-ramp terminal

4. On Flat Shoals Road, between the intersection of Fairlake Drive and the I-285 SB on and off-ramp terminal
5. Between the Flat Shoals Road off-ramps and on-ramps on I-285
6. On Candler Road, between the intersection of Rainbow Drive and the I-20 EB on and off-ramp terminal
7. On Panola Road, between the intersection of Hillandale Drive and the I-20 WB on and off-ramp terminal
8. Between Glenwood Road off and on-ramps on I-285
9. Between Candler Road off and on-ramps on I-20
10. On I-20 between the off-ramp to I-285 NB and the on-ramp from I-285 NB.

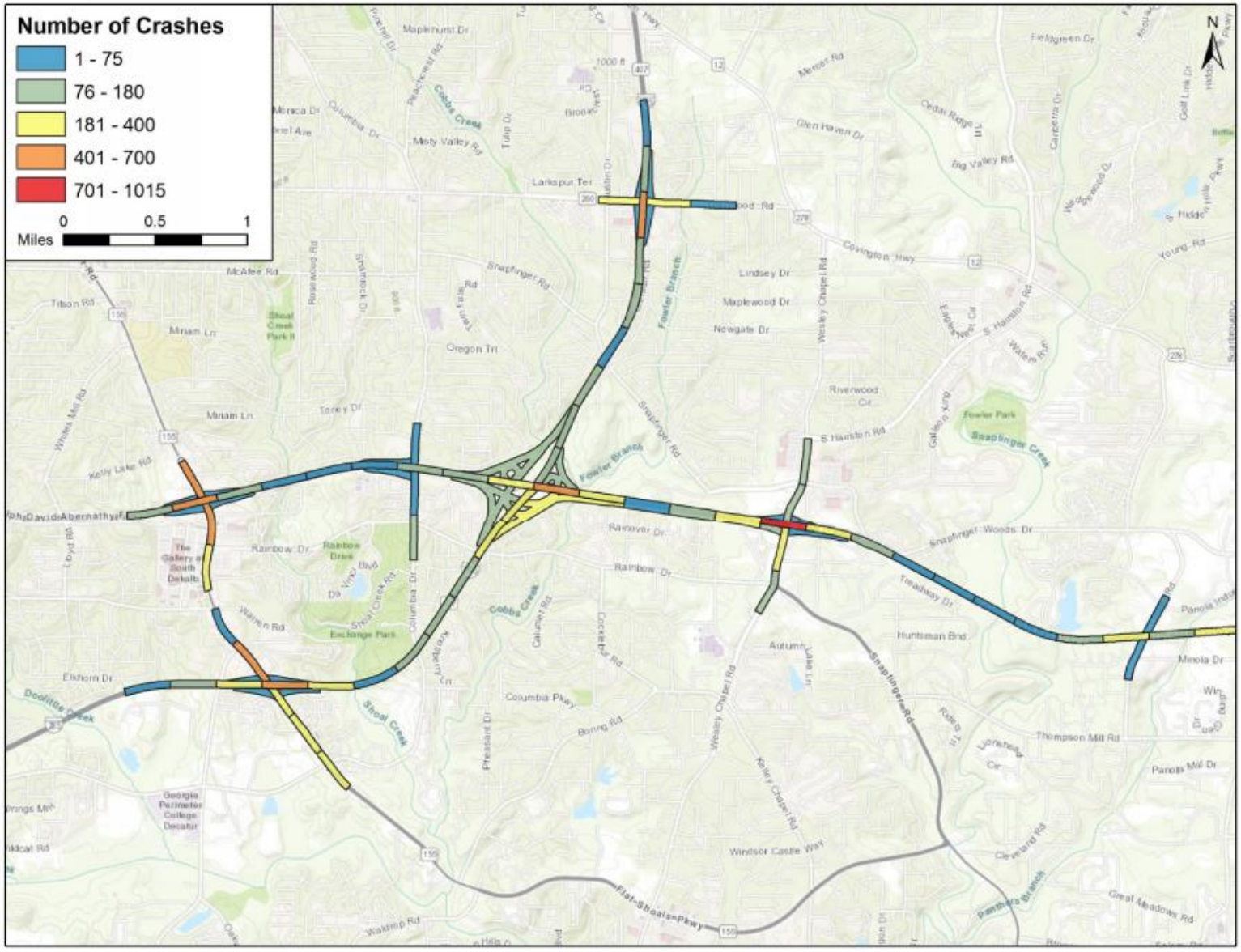


Figure 3-28. Crash Density Map

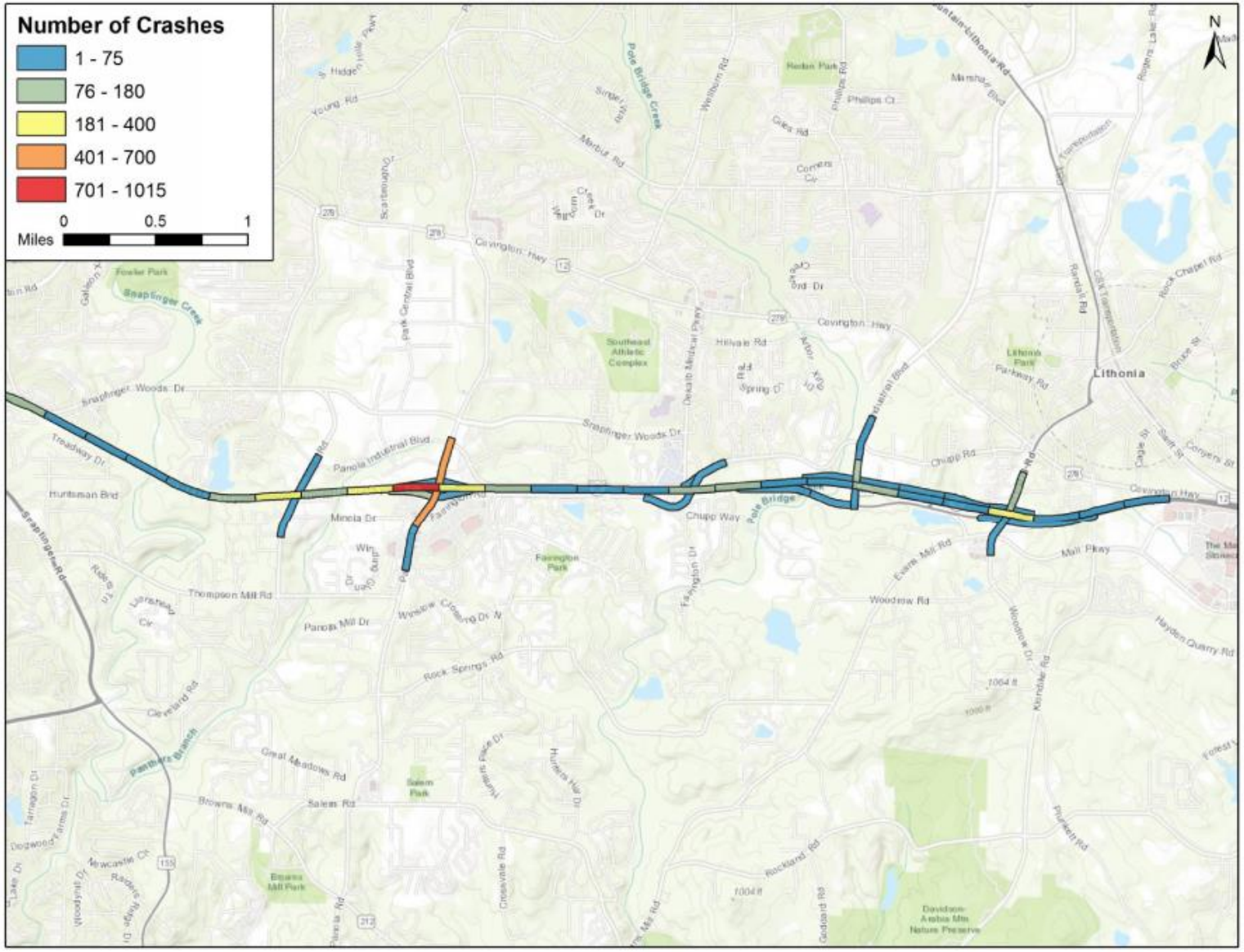


Figure 3-28. Crash Density Map (Cont.)

4 NEED

The primary goal of the project is to reduce congestion by improving operations and safety along a heavily travelled 6.3-mile stretch of westbound I-20 between Lithonia Industrial Boulevard and the system-to-system I-285/I-20 East Interchange. The project will also improve safety, mobility, and operational efficiency of the I-285/I-20 East Interchange through the reconstruction of directional ramps with improved design speeds.

4.1 STRATEGIC LOCATION/ DEMAND

As interstate routes, I-20 and I-285 are designated Oversize Truck Routes and Freight Corridors and are on the Strategic Highway Network (STRAHNET), which provide defense access, continuity, and emergency capabilities for defense purposes. I-20 provides access to key employment centers located in and around the Atlanta Metropolitan Area and is a major commuter route. This corridor struggles to meet the high demand of daily traffic commuting from DeKalb, Rockdale, and Newton counties into the City of Atlanta. Heavy congestion currently exists throughout the day but particularly along westbound I-20 from Panola Road to I-285 during the morning peak period due to the heavy truck traffic.

The I-20 corridor has a high degree of directionality, with strong westbound (headed towards Atlanta) movement for most of the morning peak period and a strong eastbound (leaving Atlanta) movement for the majority of the afternoon and evening peak period. An interim improvement for eastbound I-20 that was constructed in 2013 (PI No. 0009542) added a collector-distributor (CD) system and auxiliary lanes between I-285 and Panola Road to primarily serve PM peak period traffic; this project did not include any improvements to westbound I-20.

4.2 STUDY AREA OPERATIONAL DEFICIENCIES

The need for improving and reconfiguring westbound I-20 and the I-285/I-20 East Interchange was identified in the 2013 GDOT Concept Feasibility Report - I-20 East Managed Lane Feasibility Study between Columbia Drive and Sigman Road. The Traffic Analysis Technical Brief for this study had the following findings and observations for the existing I-20 AM peak hour:

- Heavy weaving along I-20 westbound between Wesley Chapel Road and I-285 resulting in LOS E.
- Lack of sufficient capacity to handle high traffic volumes entering westbound I-20 from Lithonia Industrial Boulevard and Panola Road, resulting in LOS F.
- Correlating operational and safety deficiencies (for locations with crash ratings higher than statewide rates) that dictate a need to improve serviceability along westbound I-20, especially between Lithonia Industrial Boulevard and I-285.

- Eastbound I-20 (off-peak direction) operates at LOS D or better.
- Collectively, approximately 50 percent (5.5 miles) of I-20 operates at LOS F.
- Along the I-20 EB to I-285 NB ramp, bottle neck due to the reduction of one lane.
- Along the I-20 WB to I-285 SB ramp, due to loop ramps existing slow speed creates congestion on I-20 WB mainline.

4.3 LACK OF ADEQUATE RAMP CAPACITY AT THE I-20/I-285 SYSTEM INTERCHANGE

The following are existing single-lane ramps:

- I-20 EB to I-285 SB,
- I-20 WB to I-285 NB & SB (loop),
- I-285 NB to I-20 EB & WB (loop).

In addition:

- The I-20 EB to I-285 NB and I-285 SB to I-20 WB ramps start as a two lane but merge into one lane before merging on to the mainline.
- The ramp from I-285 SB to I-20 EB is a continuous two-lane ramp.

In existing conditions, the I-20 EB to I-285 NB, I-20 WB to I-285 SB and I-285 SB to I-20 EB ramps have inadequate capacity, which causes backups in the upstream sections along I-20 EB, I-20 WB and I-285 SB. In the opening year, I-285 SB to I-20 EB and I-20 WB to I-285 NB will have inadequate capacity. In the design year, I-20 WB to I-285 NB, I-285 NB to I-20 EB, I-285 SB to I-20 EB and I-285 SB to I-20 WB will have inadequate capacity.

A volume-to-capacity (v/c) analysis was conducted to evaluate the adequacy of ramp capacity. Results of this analysis are summarized in **Table 4-1**. Bold-faced values indicate ramps that are over capacity.

Table 4-1. Existing Volume to Capacity along Ramps

Movement/Ramp	2018 (Existing)		Open Year (No-Build)		Design Year (No-Build)	
	AM	PM	AM	PM	AM	PM
I-20 EB to I-285 NB	0.27	**1.17**	0.30	**1.33**	0.34	**1.47**
I-20 EB to I-285 SB	0.04	0.07	0.05	0.08	0.07	0.09
I-20 WB to I-285 NB	0.90	**1.16**	**1.02**	**1.32**	**1.13**	**1.46**
I-20 WB to I-285 SB	0.68	0.82	0.77	0.93	0.85	**1.07**
I-285 NB to I-20 WB	0.39	0.11	0.44	0.13	0.48	0.14
I-285 NB to I-20 EB	0.88	0.90	0.97	0.99	**1.09**	**1.25**
I-285 SB to I-20 EB	**1.09**	**1.40**	**1.24**	**1.59**	**1.37**	**1.93**
I-285 SB to I-20 WB	0.90	0.77	**1.02**	0.87	**1.19**	**1.03**

Note: Bold = Ramps that are over capacity

4.4 MMIP PROGRAM AND FUNDING

Based on the findings from the I-20 East Managed Lane Feasibility Study, the required near-term improvements for the I-285/I-20 East Interchange and I-20 to the east were included in the programming of the Major Mobility Investment Program (MMIP which includes 11 large-scale projects and 6 advance improvement projects that will build a better Georgia by enhancing mobility and safety, fueling economic growth, and improving quality of life.

The I-285/I-20 East Interchange Reconstruction Project (reference number DKAR-241) is included in the conforming 2050 RTP and FY 2020-2025 TIP adopted by the ARC in February 2020. The TIP includes implementation priorities for the first six years of the RTP (the current RTP extends through 2050) and lists all projects for which federal funding will be used, along with any other regionally significant projects, regardless of funding source. Regionally significant projects must be drawn from the RTP, and all projects in the TIP must help implement the goals of the long-range plan.

The I-285/I-20 East Interchange Reconstruction Project, PI No. 0013915, is one project in GDOT's Major Mobility Investment Program (MMIP). The MMIP projects rely on state and federal funding as dedicated in the Transportation Funding Act of 2015 (TFA). The Transportation Funding Act of 2015 (TFA) provides sustainable funding that will jump-start back-logged maintenance and operations projects and fund the major mobility projects, resurface and widen roadways, replace and rehabilitate aging bridges, and upgrade intersections with new signals. The state funding is allocated for roadway and bridge improvements only.

GDOT Managed Lane Implementation Plan (MLIP) on I-20 has identified the need for the construction of one new Express (Managed) lane in each direction as a long-term solution to meet capacity needs in the corridor. Construction of the long-term Express Lane project (GDOT PI No. 0013913) is programmed to proceed in 2038. However, there is an immediate need for an interim solution that would reduce peak hour congestion in this corridor while the larger Express Lane project concept is developed and funded.

4.5 INTERCHANGE GEOMETRIC DEFICIENCIES

In addition to insufficient ramp capacity, there are some geometric deficiencies in the current configuration of the I-285/I-20 system interchange. The ramp from I-20 WB to I-285 SB is a loop ramp with posted speed 15 mph and high truck percentage of trucks traversing through this ramp and the steep curve creates safety concerns for the trucks to maneuver the loop ramp. The two lane I-285 SB to I-20 EB ramp has a sharp curve towards the left and even lack of lightning in the evenings are cause of safety concern. Along I-20 EB to I-285 NB the two-lane ramp reduces to one lane causing turbulence, safety concern and reducing the capacity of the ramp.

These existing interchange geometric deficiencies contribute to congestion on the interstate mainlines leading to the I-285/I-20 system interchange, as well as to safety concerns when approaching the system interchange.

4.6 SAFETY

The number of crashes per year increased from 1,156 in the year 2013 to 2,280 by year 2018 on I-20. Similarly, along I-285, crashes per year increased from 658 crashes in year 2013 to 1,048 crashes in year 2018. Along I-20 corridor the number of crashes, rate of the total crashes, and rate of the injury crashes has increased during 2013 to 2018 (study period). Crash rate were significantly higher than the statewide average during the study period. The fatal crash rates on half of the segments along I-20 were twice the statewide averages during the study period. Every ramp along I-20 experiences a high crash rate in one or more of the study years. Similarly, in the study period there has been an increase in the number and rate of the total crashes and rate of the injury crashes occurring along I-285 within the study limits. All segments along I-285 within the study limits had higher crash rates than the statewide averages during the study period. These crashes further worsen congestion in the system interchange area during peak periods, which increases accident potential in the corridor, creating a cyclic pattern.

5 DESCRIPTION OF ALTERNATIVES

5.1 LANE CONFIGURATIONS

The No-Build Alternative means that no improvements will be made as a result of this study. This alternative is required for evaluation purposes to compare to an alternative that includes changes to the transportation system network to provide a safe and efficient transportations system.

Lane configuration diagrams have been developed for the open year and design year No-Build and Build Alternatives to obtain a comprehensive understanding of the adjacent projects incorporated and proposed geometries in the Build scenario.

- **Figures 5-1** and **5-2** show the lane configurations for the no-build scenario for the open year (2025) freeway corridors and interchanges
- **Figures 5-3** and **5-4** show the lane configurations for the build scenario for the open year (2025) freeway corridors and intersection locations, which includes proposed improvements along I-20, I-285 and at the I-285/I-20 system interchange.
- **Figures 5-5** and **5-6** show the lane configurations for the no-build scenario for the design year (2045) freeway corridors and interchanges, which includes I-20 Express Lanes and the I-285 Eastside Express Lanes project.
- **Figures 5-7** and **5-8** show the lane configurations for build scenario for the design year (2045) freeway corridors and interchanges, which includes the I-20 Express Lanes, I-285 Eastside Express Lanes project and proposed improvements along I-20, I-285 and at the I-285/I-20 system interchange.

5.2 PROPOSED IMPROVEMENTS IN BUILD SCENARIO

Interchanges/Mainline and Major Intersections:

- Interchanges
  - I-285 / I-20 - As discussed above, the existing partial clover, fully directional, system-to-system interchange will be upgraded with new directional ramps with longer curve radii and for some ramps and additional lane to improve the ramps' and interchange's capacity and safety by accommodating higher design speeds.
    - Re-alignment of I-285 SB to I-20 EB, improving the design speed and making it 2 lanes throughout.
    - Re-alignment of I-285 NB to I-20 EB, reducing the number of lane changes.
    - Continuing second lane along I-20 EB to I-285 NB.

- Converting the I-20 WB to I-285 SB loop ramp to a 2-lane direction-ramp, improving the capacity.

➢ Wesley Chapel Road / I-20 – The existing diamond ramps on the north side of I-20 will be reconfigured to tie into, and cross over, the new westbound CD lanes that will be constructed as part of this project. GDOT replaced the Wesley Chapel Road Bridge over I-20 in 2006 with one that accommodates future I-20 widenings and the proposed westbound CD lanes.

• Mainline

➢ Construction of westbound auxiliary lane between Lithonia Industrial Boulevard and Panola Road.
➢ Addition of westbound auxiliary lane from Panola Road to Wesley Chapel Road.
➢ Westbound Collector Distributor (CD) lanes between Wesley Chapel Road and the I-20/I-285 interchange.
➢ Construction of one eastbound auxiliary lane from Panola Road to Lithonia Industrial Boulevard.
➢ Continuing fourth auxiliary lane on eastbound CD road between system interchange and Wesley Chapel Road interchange.

• Intersections Modifications

➢ Wesley Chapel Road / westbound I-20 ramps – There is no significant proposed change other than additional storage lengths will be provided at the westbound approach to the intersection. A signal timing modification is proposed at this intersection.
➢ Miller Road / Minola Drive – There is no significant proposed change other than a shifted alignment for Miller Road requiring a new signal at this location.
➢ Fairington Road / Hillandale Drive - Fairington Road and DeKalb Medical Parkway are staggered where they intersect with Hillandale Drive on the north side of I-20. Fairington Road will be realigned to be an extension of DeKalb Medical Parkway. As a result, a new 4-way, signalized intersection will be provided at the junction of Fairington Road / DeKalb Medical Parkway and Hillandale Drive.
➢ Fairington Road / Chupp Way – There is no significant proposed change other than a shifted alignment for Fairington Road requiring a new signal at this location.

5.3 BUILD ALTERNATIVE HIGHWAY SIGNAGE

The proposed reconstruction at the interchange of I-285 and I-20 was verified for freeway sign placements. A conceptual freeway signing plan, adhering to the guidelines and standards of the Manual on Uniform Traffic Control Devices (MUTCD) and GDOT's Signing and Marking Design Guidelines, was developed for the open year Build Alternative geometry (**Conceptual Signage-Appendix D**). The sign locations shown are preliminary only. The actual locations of these signs would be finalized during the construction stage of the project.

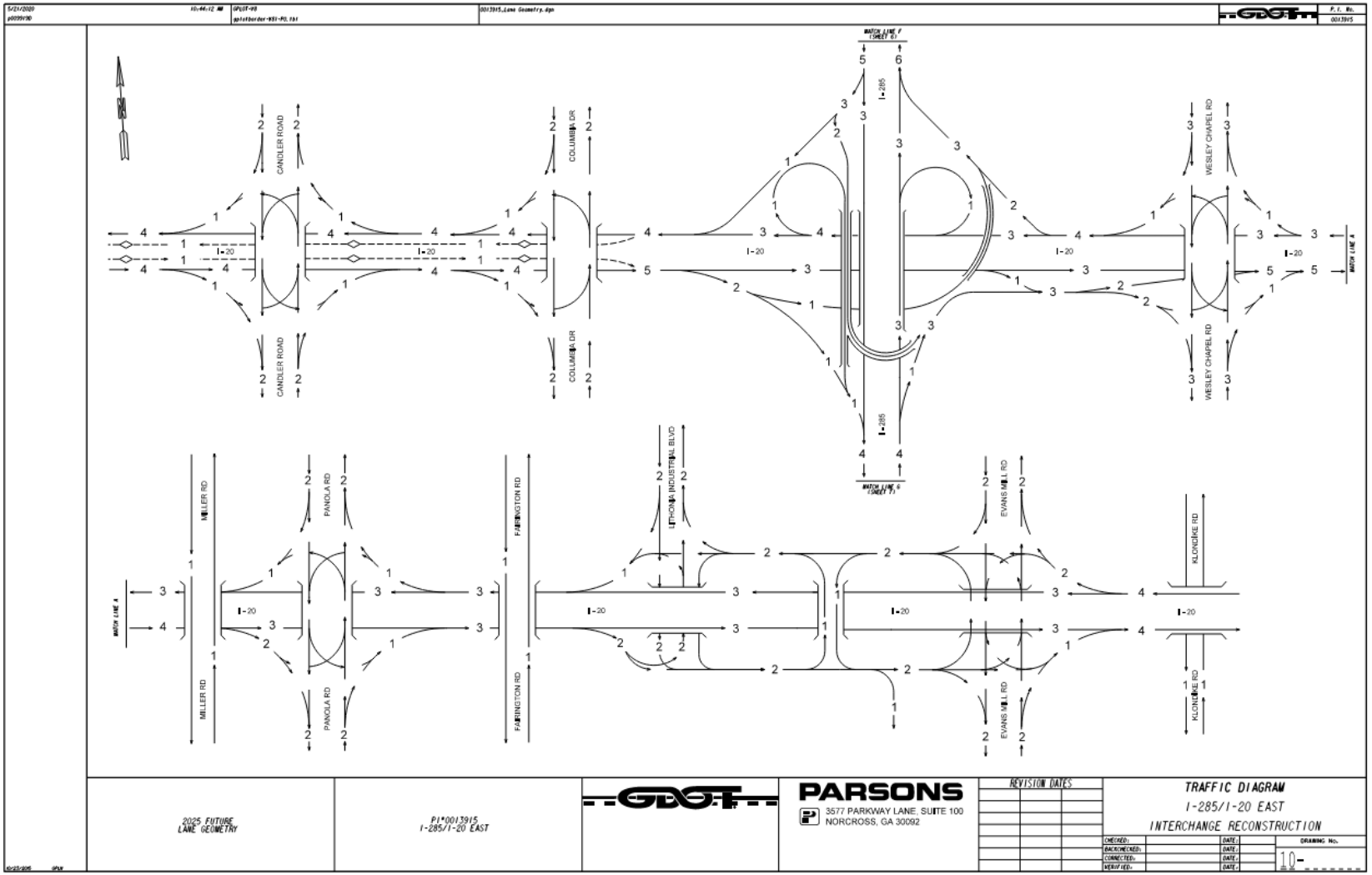


Figure 5-1.No-Build Lane Configuration for Open Year (2025)

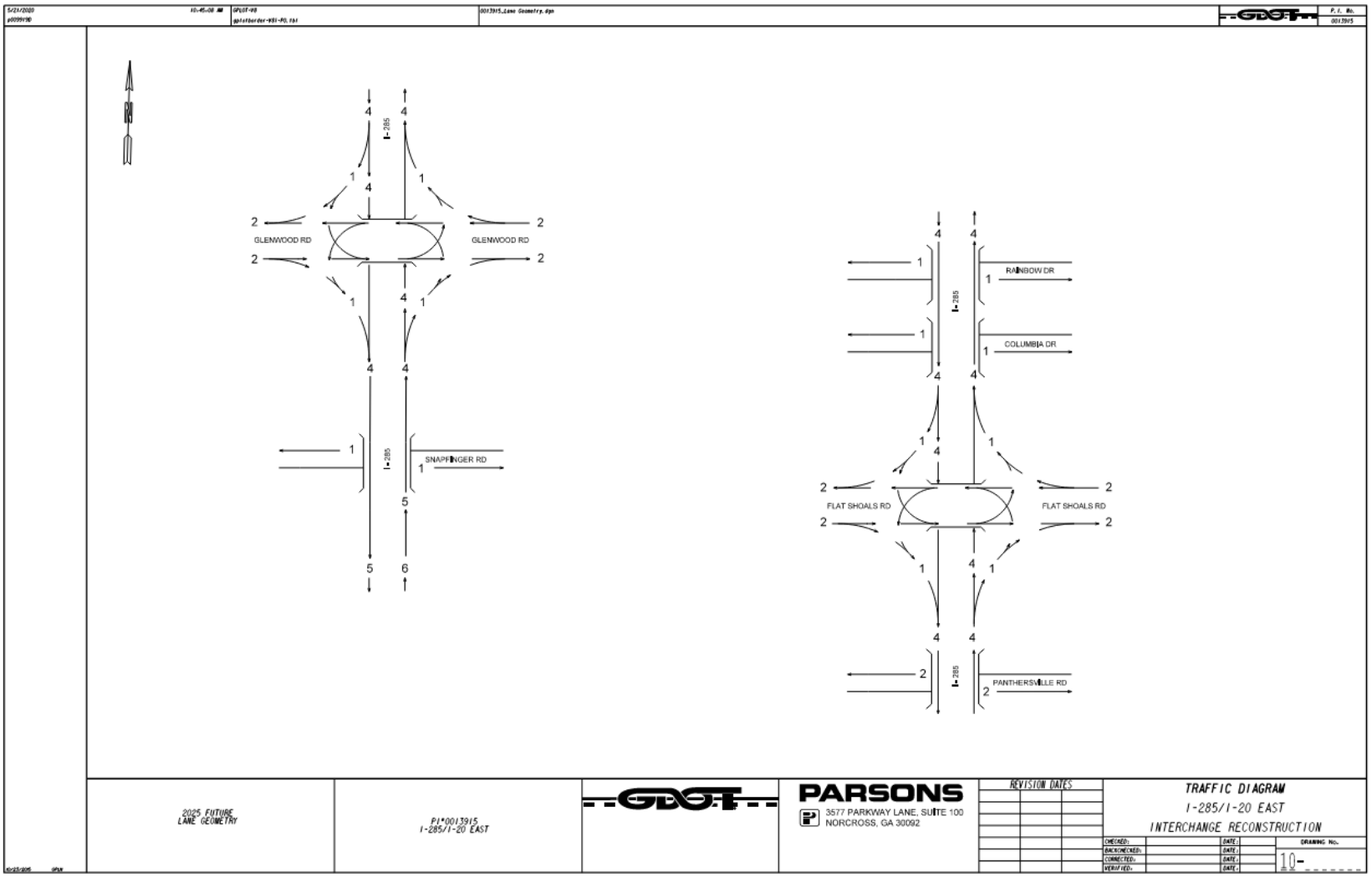


Figure 5-2. No-Build Lane Configuration for Open Year (2025)

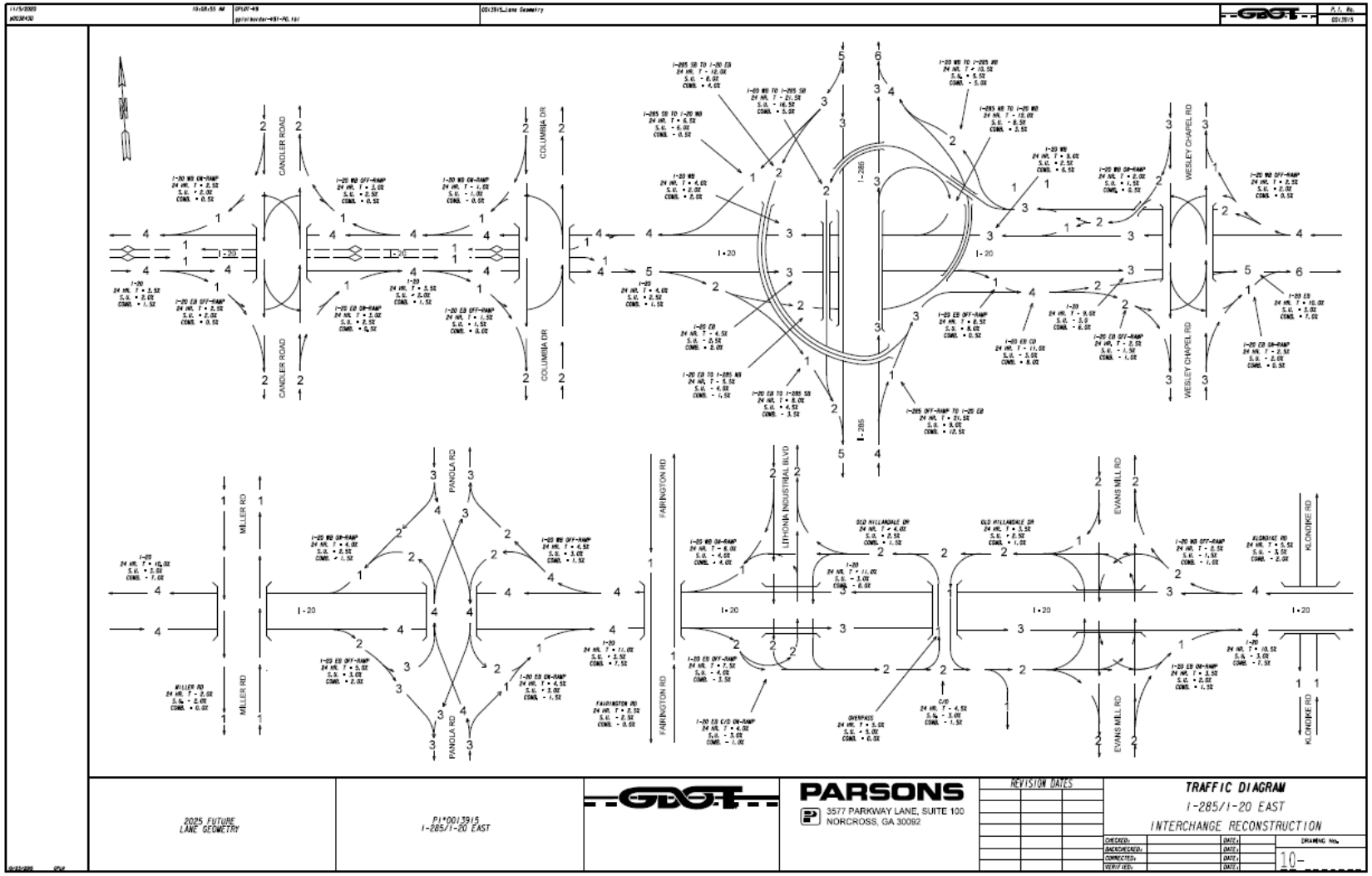


Figure 5-3. Build Lane Configuration for Open Year (2025)

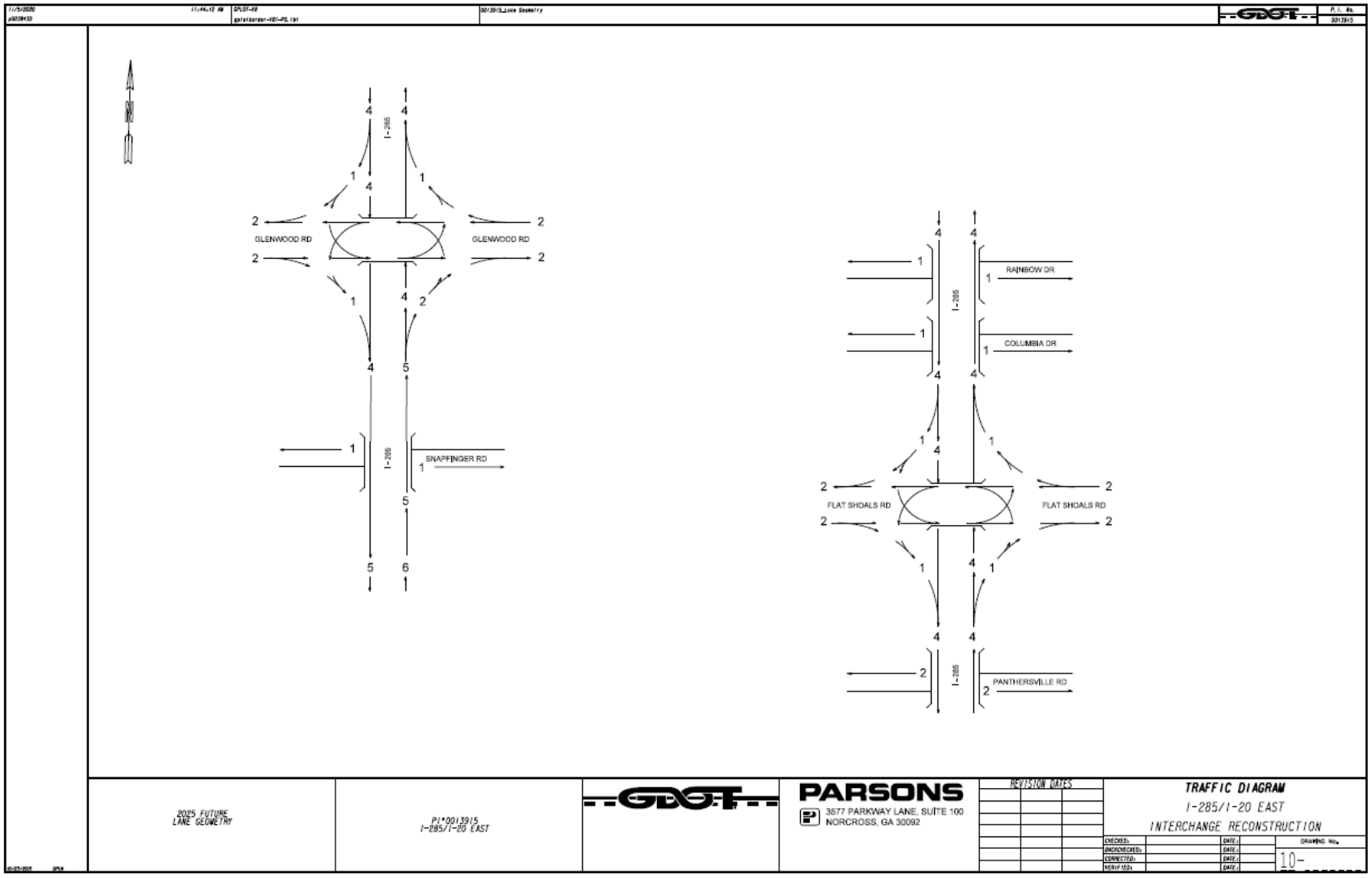


Figure 5-4. Build Lane Configuration for Open Year (2025)

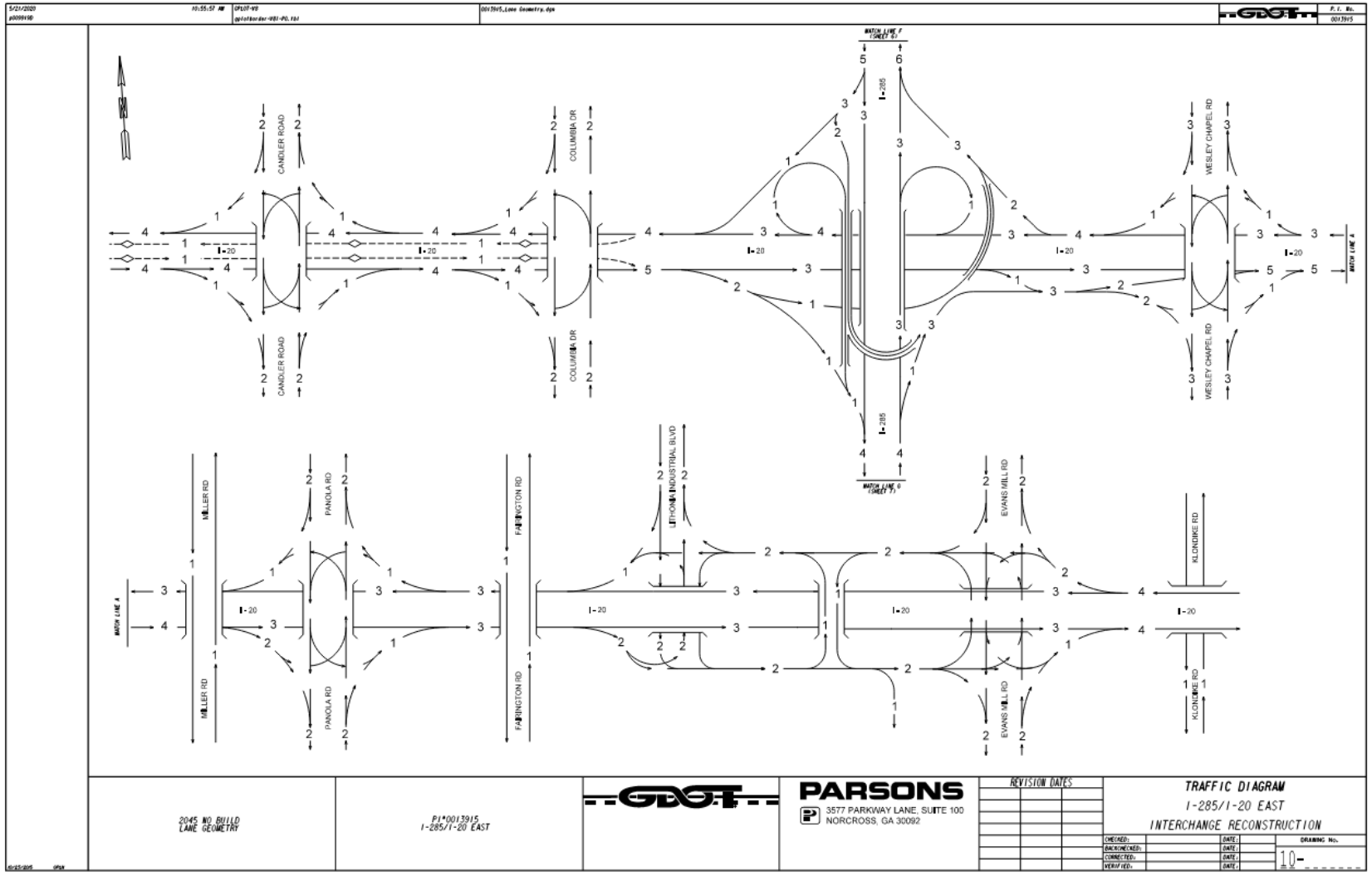


Figure 5-5.No-Build Lane Configuration for Design Year (2045)

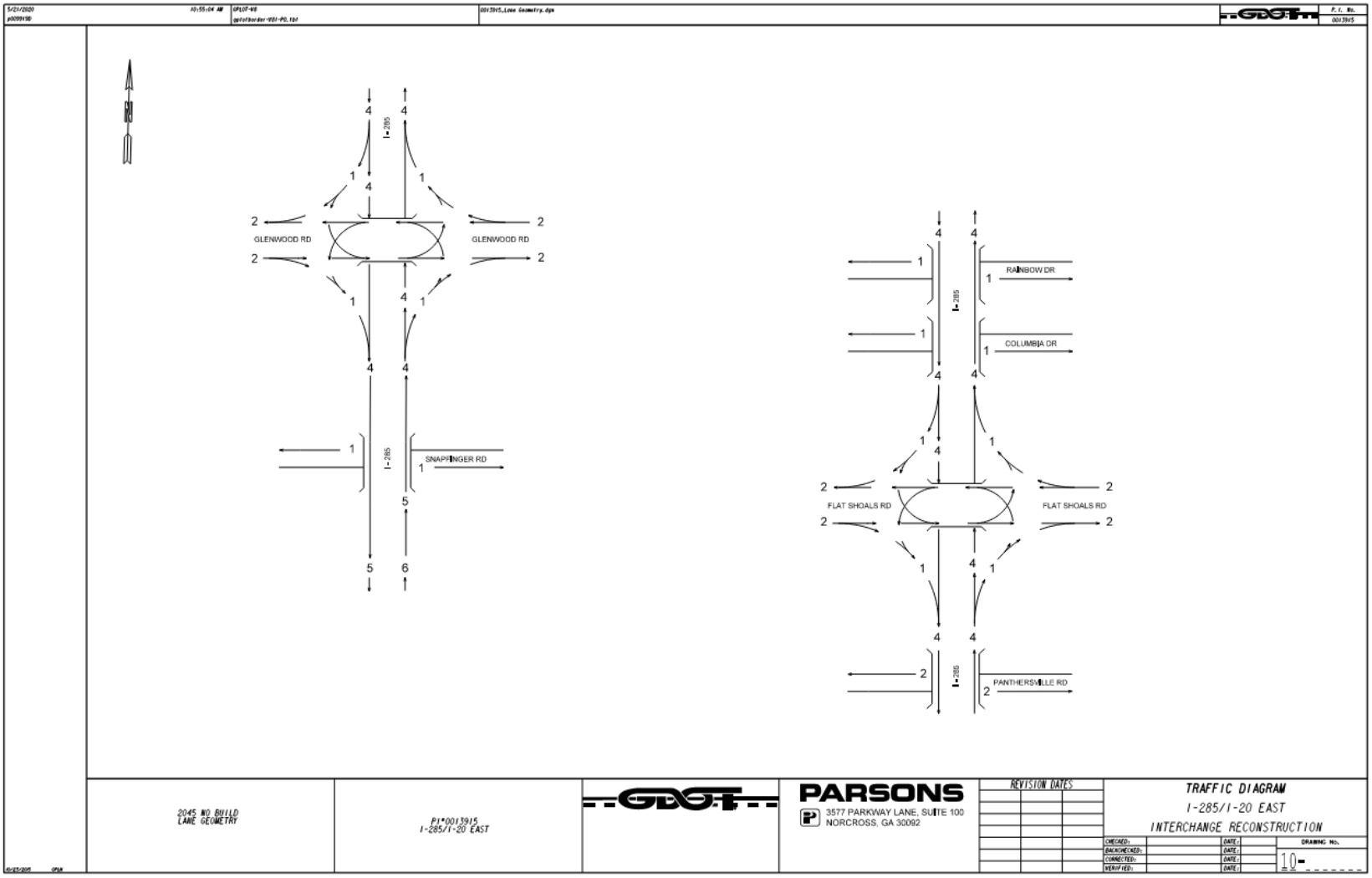


Figure 5-6. No-Build Lane Configuration for Design Year (2045)

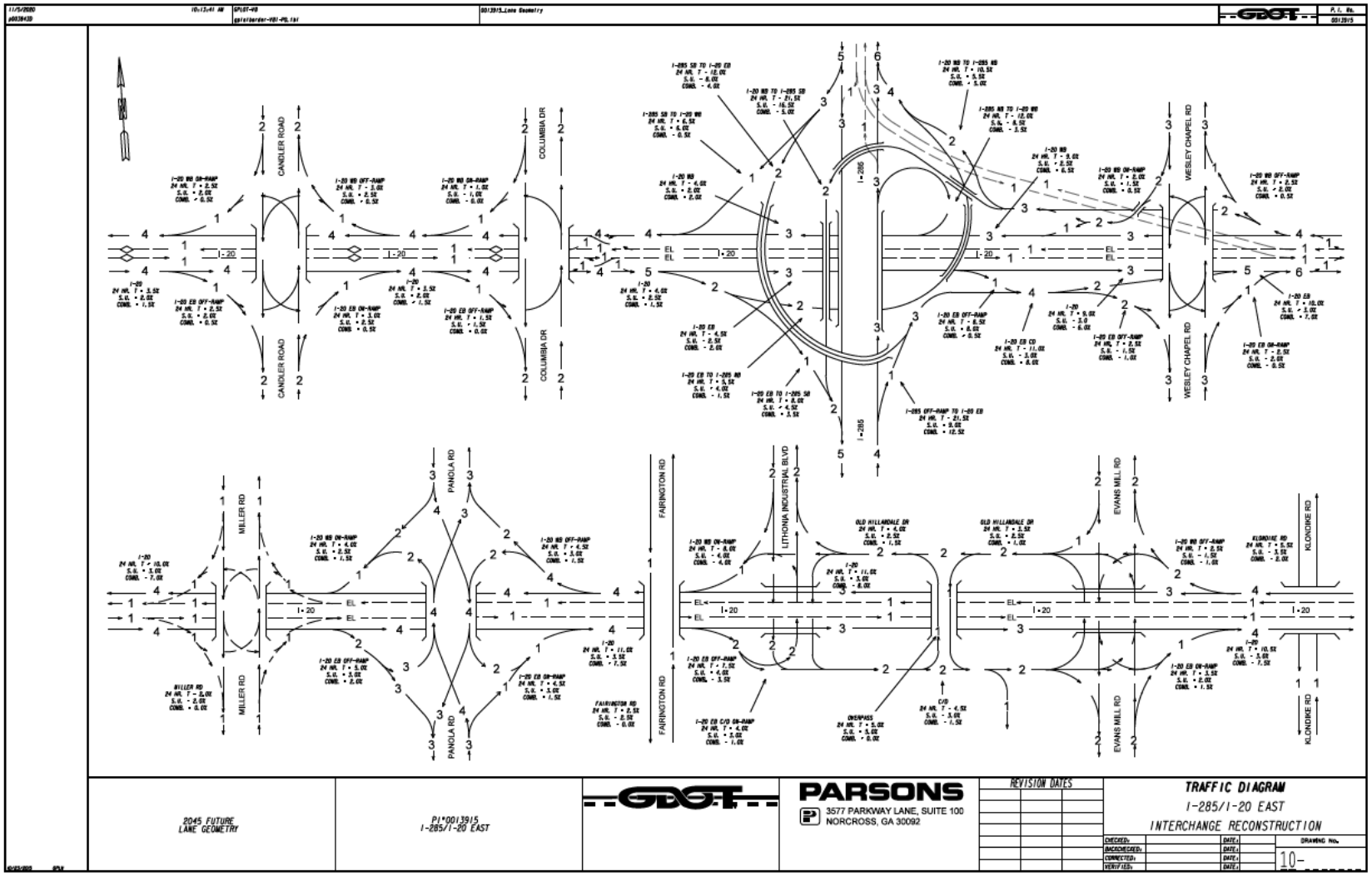


Figure 5-7. Build Lane Configuration for Design Year (2045)

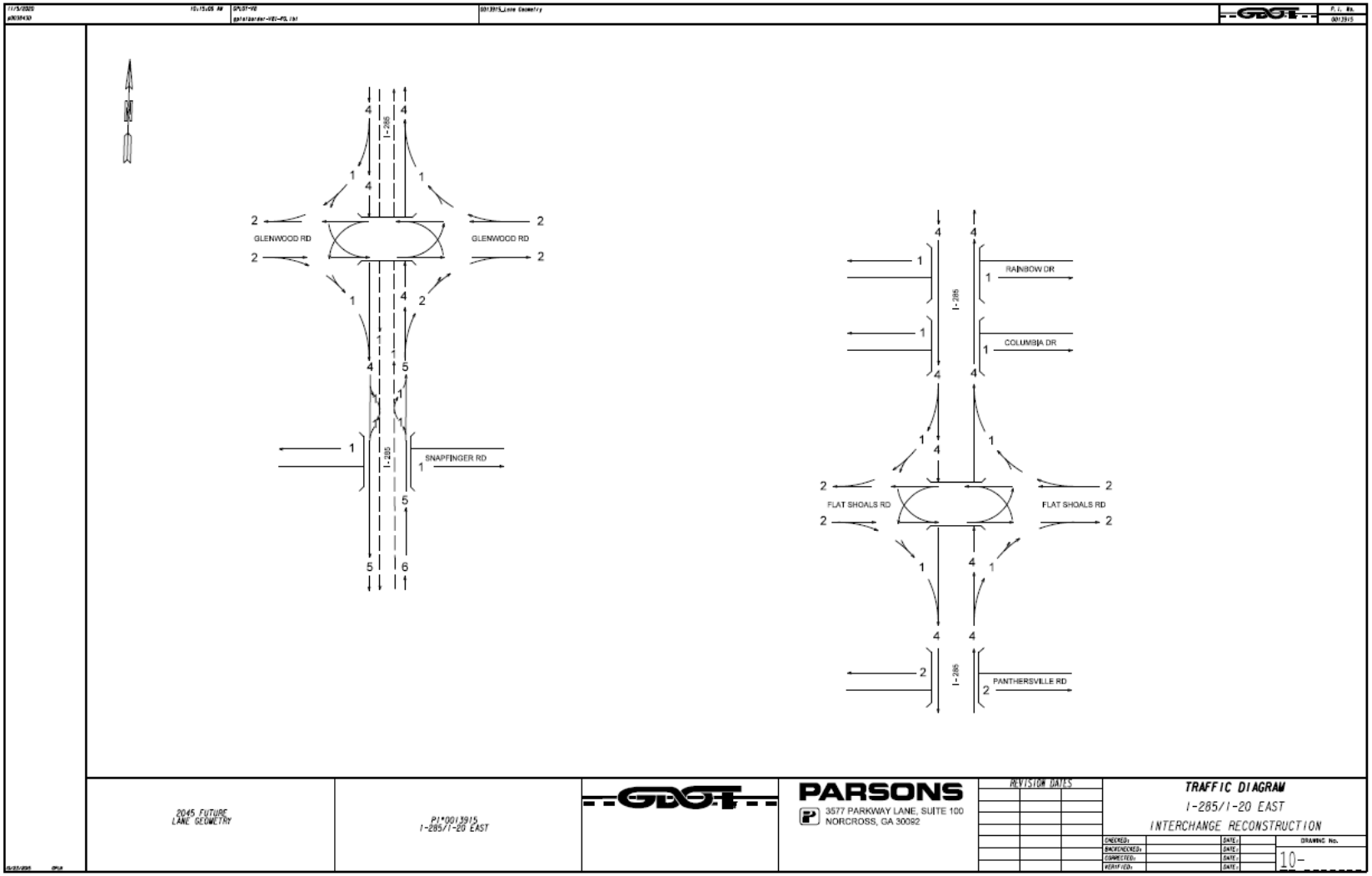


Figure 5-8. Build Lane Configuration for Design Year (2045)

6 FUTURE YEAR TRAFFIC

This section provides an overview of the future open year and design year No-Build and Build volumes calculated for this project. Traffic Forecasting Report (**Appendix B**) covers the methodology of calculating existing and balanced volumes, future growth rates and projected volumes.

The estimated future year volumes were developed in coordination with the I-285 Eastside Express Lanes project (P.I. No. 0013914), which lies within the project influence area. The existing year, open year, and design year volume diagrams developed for this project were approved by GDOT's Office of Planning in February 2020. Copies of the volume approval letter, the memoranda, and the existing and future year Build and No-Build volumes are included in **Appendix F**.

The following sections present a summary of the future year growth rates and shoulder hour volume distributions for the project. The complete methodology is documented in the approved Traffic Forecasting Report (**Appendix B)**.

6.1 GROWTH RATE

Growth rates were determined by analyzing AADT volumes from the Atlanta Regional Commission Travel Demand Model (TDM). The base 2015 model was compared to the 2030 No-Build and Build models to calculate a growth rate from 2018-2025. Similarly, the 2030 models were compared to the 2050 models to calculate the 2025-2045 growth rate.

6.2 COORDINATION WITH ADJACENT PROJECTS

To ensure that the volume development lies within the range of the adjacent project (I-285 Eastside Express Lanes) the two project teams coordinated with each other throughout existing and future volume development process. All mainline and express lane AADT volumes in the existing and future conditions were compared between the two projects. A difference threshold of 15% between matching segments was established, and the volumes were determined to be within the appropriate range. DHV volumes are also compared, however they were not held to the same 15% threshold as the peak hours of both the projects are different.

6.3 SHOULDER HOUR VOLUMES

Increasing congestion along highway corridors may force motorists to spend more time in traffic, which in turn increases the overall peak period length by "spreading" the peak volumes into the adjacent non-peak hours. The non-peak hours or the hours adjacent to the peak hours are referred to as "shoulder hours." The existing shoulder hour percentages were used for the future Build and No-Build scenarios. **Table 6-** presents before-peak, peak, and after-peak (shoulder hour) volume percentages for the AM and PM peak periods. The shoulder hour periods are pre-peak and post-peak hours. The Peak period is determined based on field observation, data collected

and historic daily volume graphs for the corridor. From the peak period, the highest hourly volume is selected as peak hour and the remaining hours are determined as the shoulder hours. The shoulder hour volume percentage is then calculated using peak hour volume as 100%.

Table 6-1. Peak Period Volume Distribution

From	Shoulder Hours	I-20 EB	I-20 WB	I-285 EB	I-285 WB
AM Peak Period	Before Peak Hour (5:45 AM to 6:45 AM)	67.5%	81.0%	83.2%	54.3%
	Peak Hour (6:45 AM to 7:45 AM)	100.0%	100.0%	100.0%	100.0%
	After Peak Hour (7:45 AM to 8:45 AM)	103.9%	90.0%	108.4%	88.8%
PM Peak Period	Before Peak Hour (3:00 PM to 4:00 PM)	78.5%	101.3%	89.4%	99.0%
	Peak Hour (4:00 PM to 5:00 PM)	100.0%	100.0%	100.0%	100.0%
	After Peak Hour (5:00 PM to 6:00)	97.9%	102.1%	109.4%	101.1%

It is important to note that the I-285 peak hour starts after the I-20 peak hour. The backlog from the I-285 peak hour which starts during the after peak hour of I-20 is the reason for some of the "After peak hour" showing higher than 100% distribution. This happens for I-20 EB and I-285 EB/SB in the AM peak and I-20 WB and I-285 both directions in the PM peak. It should be noted that these are off-peak directions for those time periods. The peak hour has been selected based on highest volume in peak direction of travel.

7 ALTERNATIVE ANALYSIS

This section presents a detailed discussion of the analysis of alternatives based on engineering, environmental, safety, and financial factors. Benefits of the proposed Build Alternative are compared to the No-Build Alternative. The alternative benefits have been measured by a microsimulation analysis using Vissim supported by the application of Synchro for intersection analysis. Additionally, this section presents brief discussions of overall compliance of the Build Alternative with transportation plans and engineering standards.

7.1 FREEWAY OPERATIONAL ANALYSIS

The results of the operational analysis are presented to provide a broader understanding of operational issues under the No-Build Alternative and the benefits of the improvements proposed to address those issues. AM and PM scenarios were developed for the No-Build and Build alternatives using Vissim. The simulated peak periods consisted of three and half hours. A total of ten model runs were performed for the No-Build and Build Alternatives as part of this analysis. The average outputs from the ten runs were collected and summarized for evaluation.

The results of the detailed operational analysis by scenario are presented in the following sections. The analysis of the No-Build and Build Alternative freeway operations are summarized in two sections:

- System-Level Performance Evaluation
- Link-Level Evaluation for Freeway Corridor

The No-Build and Build analyses for intersections (Arterials) has been performed using Synchro software and is summarized in Section 7.3.

7.1.1 System-Level Performance Evaluation

A system-level performance comparison of the alternatives presents an overview of the networkwide benefits for the Build Alternative. The system-level alternatives comparison evaluated the following MOEs:

- System-level travel time summary

Figure 7-1 presents a comparison of travel time between the No-build and Build scenarios along I-20 EB. No significant change in travel times are observed along I-20 EB between the No-build vs Build in both the open and design years for both peaks. It should be noted that the travel times in the Build are slightly worse than the No-build in several scenarios since higher traffic volumes are processed in the Build condition.

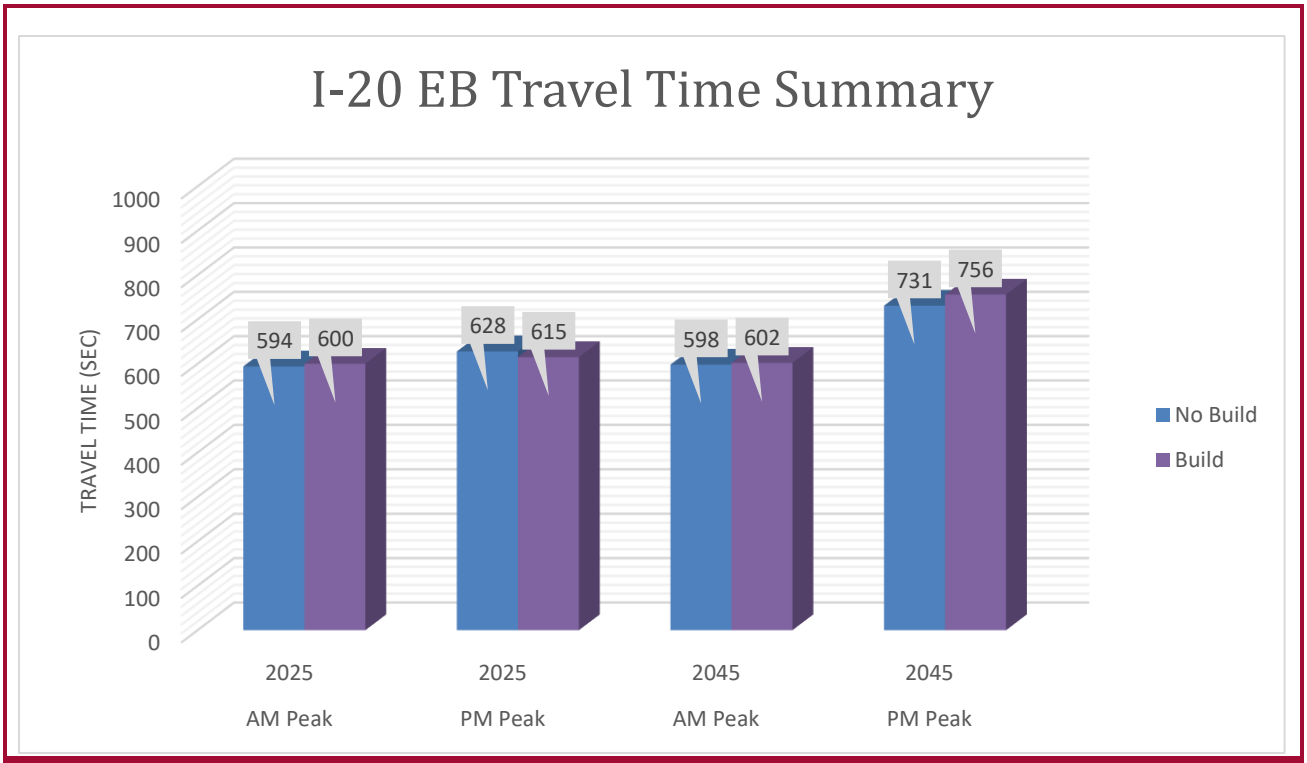


Figure 7-1. I-20 EB Travel Time Summary for Open Year and Design Year

Figure 7-2 presents a comparison of travel time between the No-build and the Build scenarios along I-20 WB. In the design year, significant improvement in travel time is expected. Travel times savings of 48% (AM Peak) and 47% (PM Peak) are observed when the Build is compared to the No-build. In the open year, 35% (AM Peak) travel time savings are observed when the Build condition is compared to the No-build. There is no significant change in the PM Peak travel time in the design year. This improvement in travel times is observed as a result of adding a WB auxiliary lane between Lithonia Industrial Boulevard and Wesley Chapel Road; adding WB CD System lanes between Wesley Chapel Road and the system interchange; modifying the single lane loop ramp from I-20 WB to I-285 SB to a two-lane directional ramp.

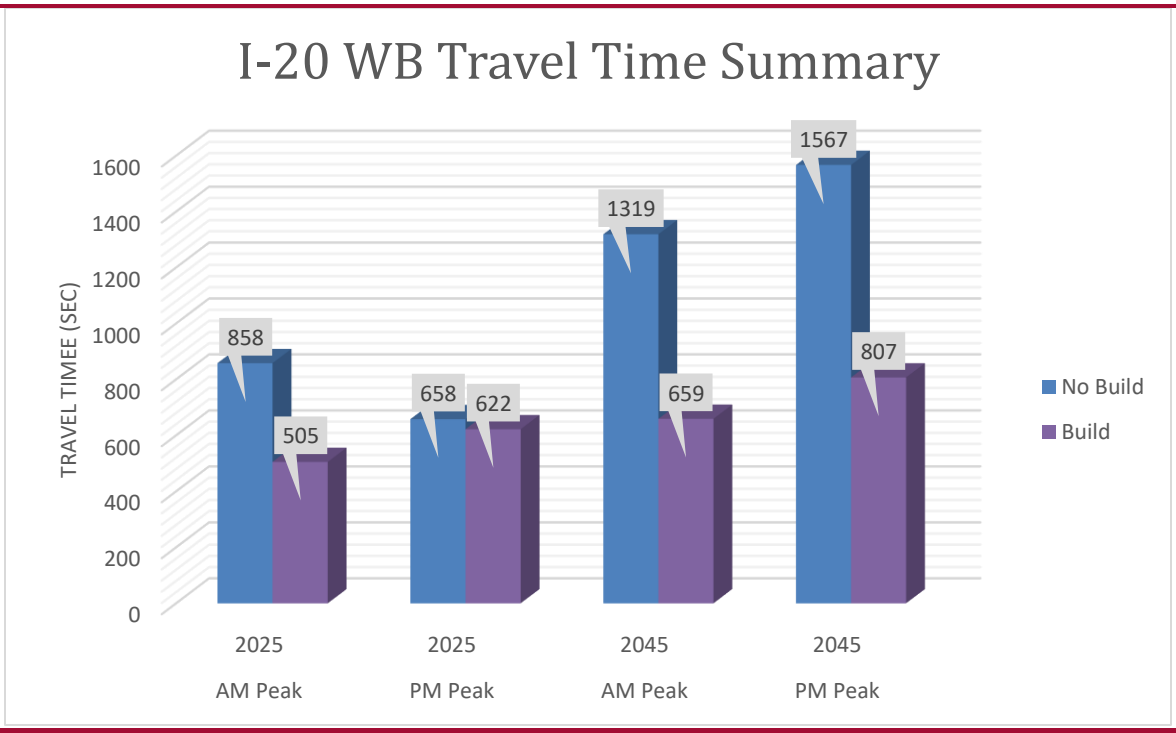


Figure 7-2. I-20 WB Travel Time Summary for Open Year and Design Year

Figure 7-3 presents a comparison of travel time between the No-build and the Build scenarios along I-285 SB. In the open and design year, no significant change in travel time is observed between the No-build and the Build in both the peaks. It should be noted that the travel time in 2045 Build are slightly higher than 2045 No Build since the Build processes higher traffic volume.

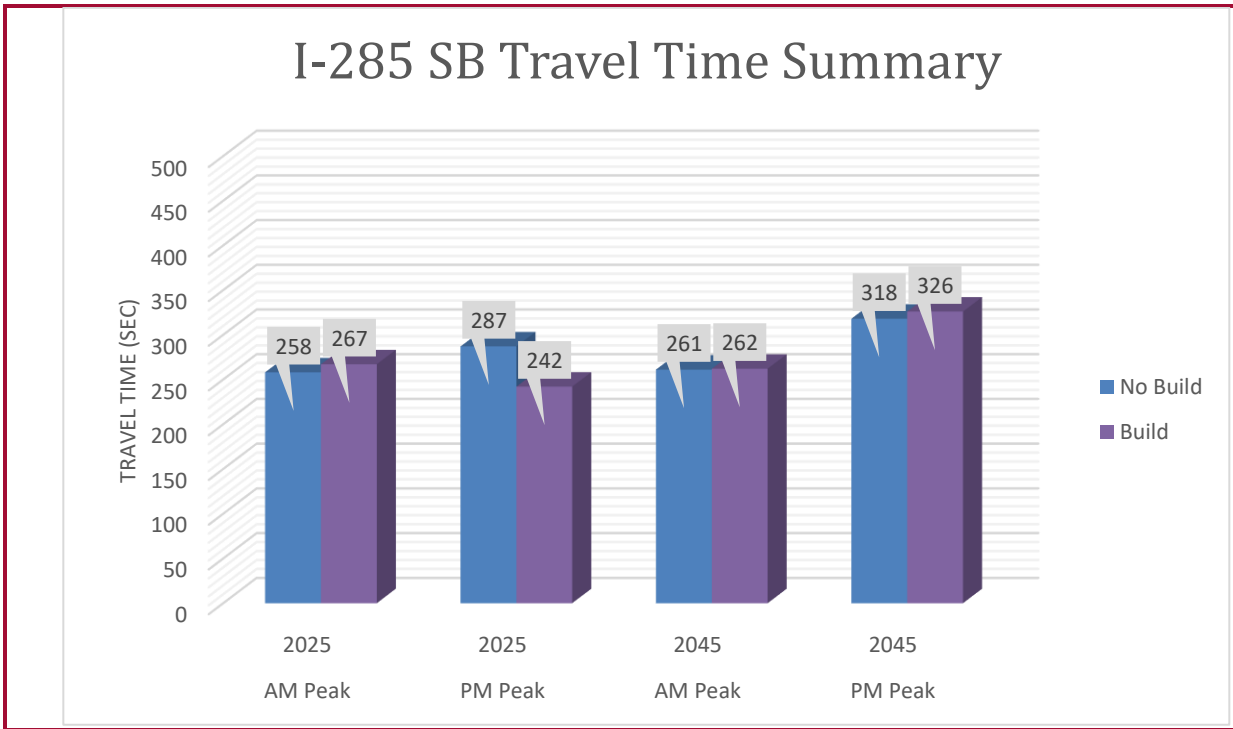


Figure 7-3. I-285 SB Travel Time Summary for Open Year and Design Year

Figure 7-4 presents a comparison of travel time between the No-build and the Build along I-285 NB. In the open year, no significant changes in travel times are observed. In the design year AM peak, there is no significant change in travel time as traffic volume doesn't reach the capacity of the corridor. However, substantial travel time savings of 58% are observed in design year PM. This is due to addition of auxiliary lane between system to system interchange and Glenwood Road.

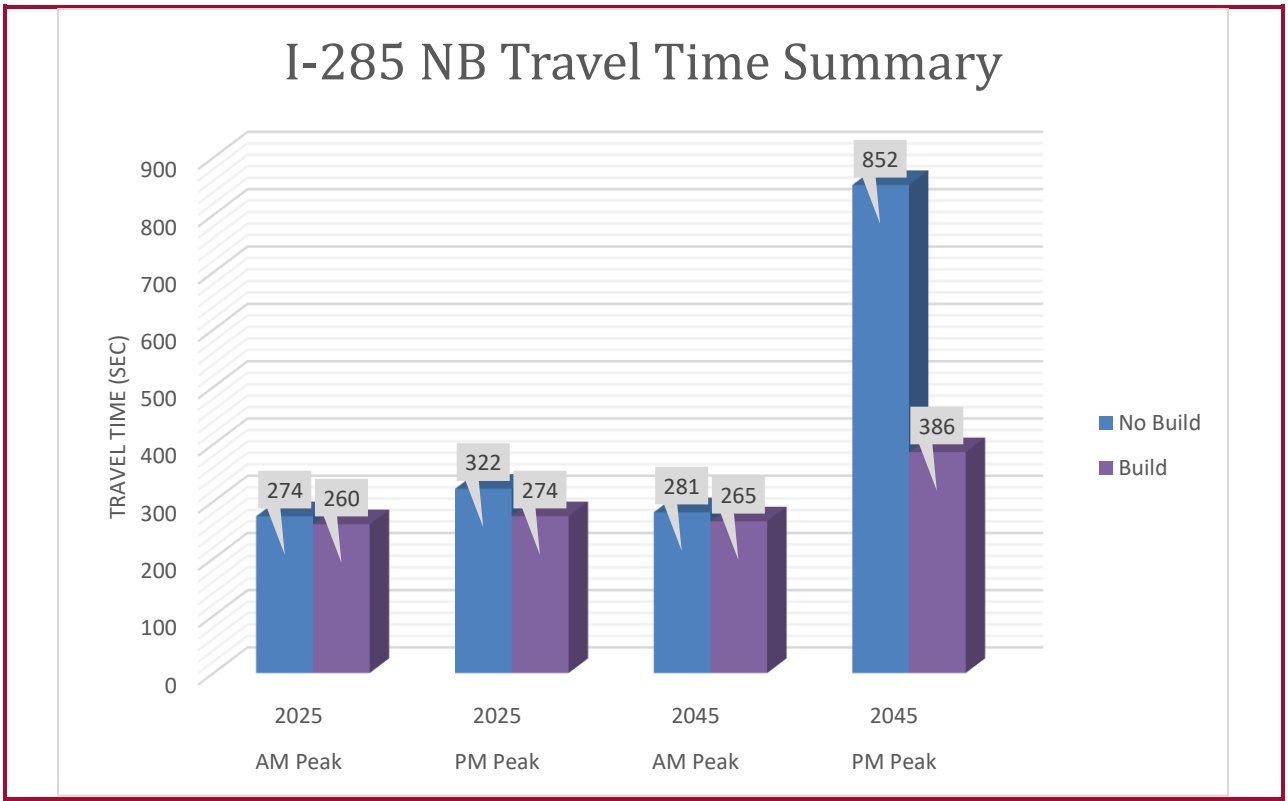


Figure 7-4. I-285 NB Travel Time Summary for Open Year and Design Year

7.1.2 Link-Level Evaluations for Freeway Corridors

A corridor-level evaluation was conducted to compare the performance of the Build and No-Build alternatives by specific freeway corridors. The following link-level MOEs were used to compare the benefits of the Build Alternative to the No-Build Alternative:

• Freeway Density and Speed Heat Maps

The Build and No-Build Alternatives have been simulated for analysis hour for the AM and PM peak periods, similar to the freeway schematic maps discussed in Section 3 of this IMR. Freeway schematic figures represent the density, LOS, demand and simulated volumes.

The traffic operation is measured in terms of operating speed, shown in 15-minute intervals. The function of the speed heat map is to show the change in speed performance along sections of freeway corridor across all three hours of simulation. Speed heat maps can be used to deduce several key parameters to infer the performance of a freeway corridor over the entire simulation period. These parameters include:

• Location and time of congestion occurrence – Heat maps can be used to easily identify the actual location of congestion along a freeway corridor. In addition, they can be used to identify the time reference of when congestion may begin or end during the simulation period.

• Duration of mainline peak period (at the most congested location) – This parameter is a location-specific parameter that measures the duration of congestion at the most affected freeway mainline segment. This parameter varies by direction of travel, peak period, and model year. As the build scenario incorporates proposed improvements, level of congestion varies between the as the build scenario incorporates proposed improvements.

Heat maps have been created for the I-20 and I-285 corridors to depict performance in the different directions of travel (eastbound, westbound, northbound, and southbound) for the AM and PM peak periods.

7.1.3 Open Year (2025) No-Build Vs Build Analysis

7.1.3.1 AM Peak

This section discusses I-20 and I-285 mainline performances in the no-build and build scenarios in the open year AM Peak. In the open year, the no-build network is able to process 92% of the AM peak demand whereas the build network process 93.06%.

I-20 WB Direction:

Schematic **Figures 7-5** shows I-20 WB freeway segment operations comparison between the no-build and the build scenarios during AM peak. Two segments deteriorate along the I-20 WB, one between Lithonia Industrial Boulevard and Panola Road and the second weaving segment between Wesley Chapel Road and I-285 NB off-ramp. In the build scenario during AM Peak, I-20 westbound between Wesley Chapel Road and Columbia Drive operates at a speed below 35 mph. The proposed CD road operates with an acceptable LOS.

Figure 7-6 shows speed heat map comparison between the no-build and the build scenarios. In the no-build scenario along I-20 WB the sections between Lithonia Industrial Boulevard and Panola Road operates with speeds less than 30 mph in the peak and post-peak hours whereas in build condition the section between the Wesley Chapel Road on-ramp and Columbia Road on-ramp operates with

speeds less than 30 mph in the post-peak hour. The congestion shown at Lithonia Industrial Blvd and Panola Road is cleared in the build condition, however there is degradation during the post peak at the I-285/ I-20 system interchange. The throughput that was being metered near Lithonia Industrial Boulevard and Panola Road in no-build condition is being released in build condition and reaching the interchange during post peak period.

I-20 EB Direction:

Schematic **Figure 7-7** shows I-20 EB freeway segment operations comparison between the no-build and the build scenarios. In the AM peak, the no-build scenario along EB direction of the main line and the CD segment corridor perform at an acceptable LOS C or better. Similarly, in the build scenario the corridor operates at an acceptable LOS B or better. The EB CD roads operate at acceptable LOS in both the no-build and the build scenarios.

Figure 7-8 shows speed heat map comparison between the no-build and the build scenarios along the I-20 EB mainline. In the EB direction the operations are similar in both the build and the no-build scenarios (average speeds above 60mph) with the build scenario processing 3% more volume. All the mainline sections operate with free flow speeds except on the CD section where are the segment operates between 40 to 50 mph.

I-285 NB Direction:

Schematic **Figure 7-9** shows I-285 NB freeway segment operations comparison between the no-build and the build scenarios. In the AM peak, the no-build scenario along the entire I-285 NB corridor performs at an acceptable LOS D or better. Similarly, in the build scenario all sections operate with LOS C or better.

Figure 7-10 shows speed heat map comparison between the no-build and the build scenarios along I-285 NB mainline. In the AM peak, all sections operate at 40 mph and more. There is a slight deterioration of speed in the post peak at Flat Shoals Rd. This is because of the start of I-285 peak at this time and additional vehicle throughput (150 vehicles) being processed in the build condition.

I-285 SB Direction:

Schematic **Figure 7-11** shows the I-285 SB freeway segment operations comparison between the no-build and build scenarios. In the AM peak, for the no-build scenario, the segments between the Glenwood Road off-ramp and on-ramp operate at LOS D or E. In the build scenario, the segments between the Glenwood Road off-ramp and on-ramp operate at LOS E and F, worse than no-build, due to 1000 additional vehicles being processed in the build scenario that were not able to enter the system in the no-build scenario because of congestion.

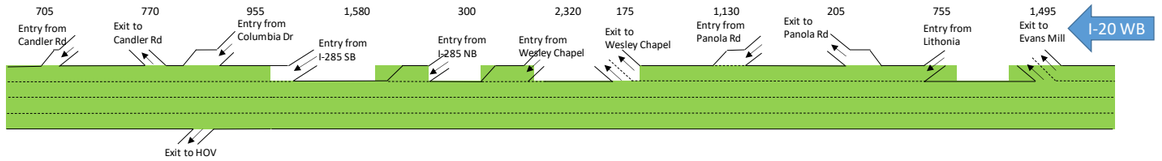
Figure 7-12 shows speed heat map comparison between the no-build and build scenarios along the I-285 SB mainline. The sections upstream of Glenwood on-ramp are observed to operate with an average speed below 30 mph in the peak and post peak hours.

Open Year AM Peak Summary:

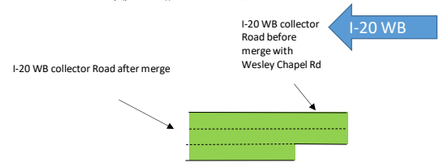
In the Build scenario, along I-20 WB all the sections operate at an acceptable LOS with the improvements and can process more volume (2.1% more volume). It also provides acceptable average speed of 60 mph compared to an average speed of 45 mph in the no-build condition. In the EB direction, the operations are similar in both the build and no-build scenarios (average speeds above 60 mph) with the build scenario processing 3% more volume. It must be noted that I-20 EB is the non-peak direction during AM.

YR 2025 BUILD AM Peak - Graphical Results ---- I-20 WB

No of Lanes	5	5	4	4	4	4	3	4	3	4	3	4	4	5	4	5	4	4	3	3	3	
Distance (ft)	531	2500	3174	470	1767	500	2031	767	1193	1740	5243	1107	11306	250	2129	270	6520	405	10692	2500	4960	
Speed (mph)	60	63	58	55	57	57	59	60	61	58	63	60	62	61	62	59	62	62	62	62	62	
Level of Service	C	B	D	D	C	C	C	C	C	B	B	B	B	B	B	B	B	B	B	C	C	
Density (pc/mi/ln))	20	17	27	28	26	26	25	18	23	18	13	18	18	17	17	14	17	17	17	25	25	
Ramp Demand Volume (vph)	705		770		955		1,580		300		2,320	175		1,130		205		755		1,495		
Simulated Volumes (vph)	5868	5406	6096	5749	5696	5696	4321	4351	4098	4117	2396	4252	4389	5088	4105	4095	4348	4230	3223	4705	4714	
Demand Volumes (vph)	6850	6145	6915	6915	5960	6525	4945	4945	4945	4645	2740	4905	4905	4905	3775	3980	3980	3980	3225	4720	4720	

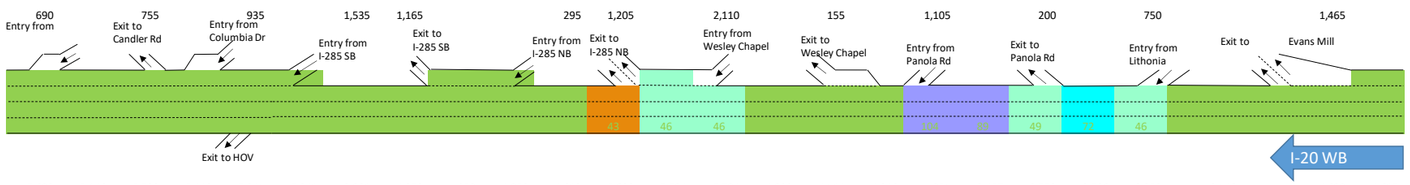


No of Lanes	3	2
Speed (mph)	60	62
Level of Service	A	B
Density (pc/mi/ln))	11	15



YR 2025 NO BUILD AM Peak - Graphical Results ---- I-20 WB

No of Lanes	5	4	4	5	4	4	3	4	4	4	3	4	4	4	3	4	3	4	3	4	3	4	3			
Distance (ft)	531	2,500	3,174	470	1,767	500	2,023	200	364	200	1,192	1,741	2,713	500	1,759	390	15,245	250	2,129	270	6,513	405	10,692		2,500	4,960
Speed (mph)	58	62	60	58	61	61	60	43	43	43	55	33	32	32	46	47	61	10	13	18	18	21	53		58	62
Level of Service	C	C	C	C	C	C	C	D	D	D	D	E	F	F	D	C	C	F	F	F	F	F	C		C	C
Density (pc/mi/ln))	20	21	24	19	22	22	22	29	29	29	28	43	46	46	30	23	23	104	89	49	72	46	20		20	25
Ramp Demand Volume (vph)	690		755		935		1,535	1,165			295	1,205		2,110		155		1,105		200		750			1,465	
Simulated Volumes (vph)	5,693	5,146	5,793	5,448	5,341	5,341	3,991	4,952	4,952	4,952	4,613	5,699	5,794	5,794	4,099	4,114	4,246	4,251	3,457	3,573	3,786	3,853	3,148		4,609	4,617
Demand Volumes (vph)	6,545	5,855	6,610	6,610	6,230	6,230	4,695	5,860	5,860	5,860	5,565	6,770	6,770	6,770	4,660	4,815	4,815	4,815	3,710	3,910	3,910	3,910	3,160		4,625	4,625



LEGEND

Speed (mph)	Freeway Geometric Coloring density	(veh/mi/ln)		Freeway LOS Coloring Estimated LOS	
<25	Density above	75		LOS A to C	< 28
25-30	Density between	56	75	LOS D	28-35
30-40	Density between	44	55	LOS E	35-43
40-50	Density between	35	43	LOS F	> 43
50-55	Density between	0	35		
55-60					
>60					

1,000 Demand volume highlighted if simulated falls below 90%
1,000 Demand volume
1,000 Simulated Volume
Density Derived from VISSIM
LOS Letter Grades based on density ranges specified in HCM

Figure 7-5. Freeway Schematic Results I-20 WB - 2025 No-build Vs Build - AM Peak Hour

2025 BUILD I-20 WB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB (Btw Turner Hill on-ramp & Evans Mill Rd off-ramp)
Pre-Peak	5:45 AM																
	6:00 AM																
	6:15 AM																
	6:30 AM																
Analysis Period	6:45 AM																
	7:00 AM																
	7:15 AM																
	7:30 AM																
Post Peak	7:45 AM																
	8:00 AM																
	8:15 AM																
	8:30 AM																

I-20 WB CD - AM Peak

I-20 WB CD after Merge	I-20 WB CD Merge with Wesley Chapel Road Ramp

2025 NO BUILD I-20 WB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB (Btw Turner Hill on-ramp & Evans Mill Rd off-ramp)
Pre-Peak	5:45 AM																
	6:00 AM																
	6:15 AM																
	6:30 AM																
Analysis Period	6:45 AM																
	7:00 AM																
	7:15 AM																
	7:30 AM																
Post Peak	7:45 AM																
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	8:15 AM																
	8:30 AM																

LEGEND

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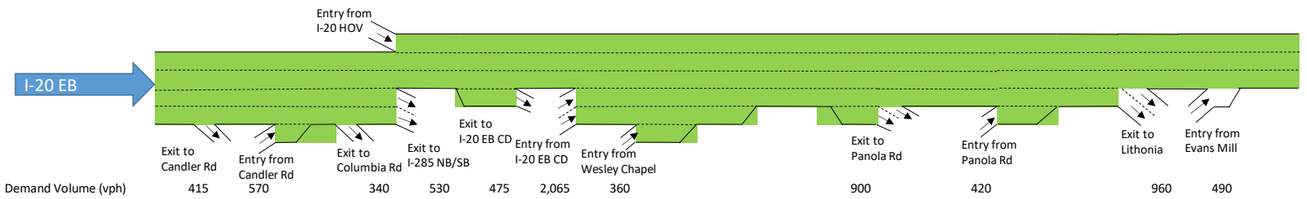
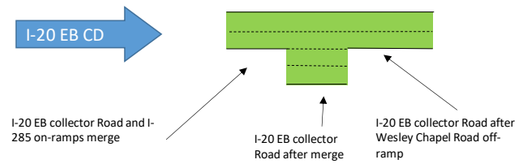
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-6. Speed Heat Map Results I-20 WB 2025 - No-build Vs Build - AM Peak Period

YR 2025 BUILD AM Peak - Graphical Results ---- I-20 EB

Demand Volumes (vph)	2870	2455	3025	2685	2265	2265	1790	3855	4215	4215	4215	4215	3315	3735	3735	3735	2775	3265	3265	
Simulated Volumes (vph)	2848	2433	2855	2552	2141	2147	1696	3652	3979	3984	3992	3957	3148	3524	3539	3462	2645	2839	2828	
Ramp Demand Volume (vph)	415	570		340	530	475	2,065	360				900		420			960	490		
No of Lanes	4	4	4	4	3	4	3	5	6	5	4	5	4	4	5	4	3	4	3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,176	2,368	2,739	770	5,606	1,270	12,364	2,136	5,427	
Speed (mph)	63	63	55	63	63	63	63	51	51	58	62	62	63	62	63	61	62	62	62	
Level of Service	B	A	B	A	B	A	A	B	B	B	B	B	B	B	B	B	B	B	B	
Density (pc/mi/ln))	11	10	13	10	11	9	9	14	13	14	16	13	13	14	11	14	14	11	15	

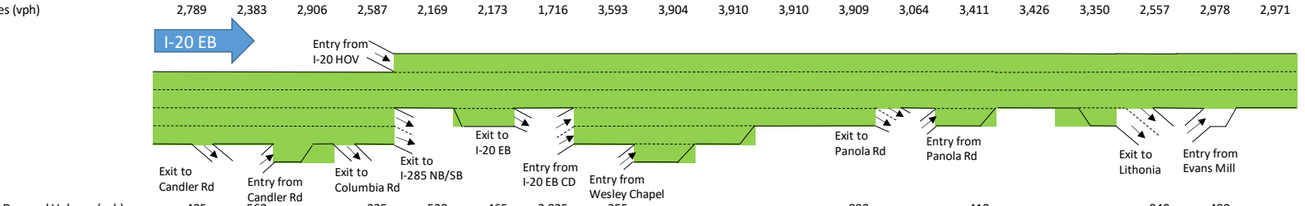


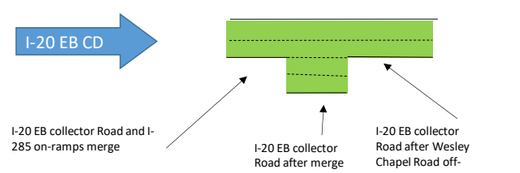


No of Lanes	2	4	2		
Speed (mph)	41	44	44		
Level of Service	C	C	C		
Density (pc/mi/ln))	24	18	23		

YR 2025 NO BUILD AM Peak - Graphical Results ---- I-20 EB

Demand Volumes (vph)	2,810	2,405	2,965	2,630	2,220	2,220	1,755	3,780	4,135	4,135	4,135	4,135	3,245	3,655	3,655	3,655	2,715	3,205	3,205	
Simulated Volumes (vph)	2,789	2,383	2,906	2,587	2,169	2,173	1,716	3,593	3,904	3,910	3,910	3,909	3,064	3,411	3,426	3,350	2,557	2,978	2,971	
Ramp Demand Volume (vph)	405	560		335	520	465	2,025	355				890		410			940	490		
No of Lanes	4	4	4	4	3	4	3	5	6	6	4	4	3	4	3	3	3	4	3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,891	1,294	2,739	770	5,606	1,270	12,364	2,136	5,427	
Speed (mph)	63	63	53	62	63	63	63	57	56	62	62	61	62	62	62	62	62	62	62	
Level of Service	B	A	B	A	B	A	A	B	B	A	B	B	B	B	C	C	B	B	B	
Density (pc/mi/ln))	11	9	14	10	11	9	9	13	12	10	16	16	16	14	18	18	14	12	16	





No of Lanes	2	4	2		
Speed (mph)	50	48	52		
Level of Service	C	C	C		
Density (pc/mi/ln))	24	18	23		

LEGEND

Speed (mph)	Freeway Geometric Coloring density (veh/mi/ln)		Freeway LOS Coloring Estimated LOS	
<25	Density above	75	LOS A to C	< 28
25-30	Density between	56 75	LOS D	28-35
30-40	Density between	44 55	LOS E	35-43
40-50	Density between	35 43	LOS F	> 43
50-55	Density between	0 35		
55-60				
>60				

1,000 Demand volume highlighted if simulated falls below 90%
1,000 Demand volume
1,000 Simulated Volume
Density Derived from VISSIM
LOS Letter Grades based on density ranges specified in HCM

Figure 7-7. Freeway Schematic Results I-20 EB - 2025 No-build Vs Build - AM Peak Hour

2025 BUILD I-20 EB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - BD AM

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

2025 NO BUILD I-20 EB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - NB AM

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

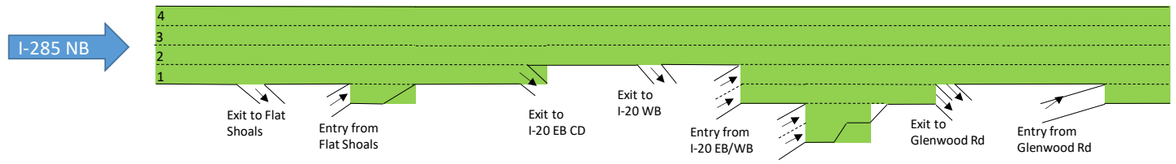
LEGEND

<25
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-8. Speed Heat Map Results I-20 EB - 2025 No-build Vs Build - AM Peak Period

YR 2025 BUILD AM Peak - Graphical Results ---- I-285 NB

Demand Volumes	5405	5405	4820	5235	5235	5235	3720	3720	3420	5095	5095	5095	4580		4925	4925
Simulated Volumes	5397	5397	4813	5078	5208	5208	3686	3686	3373	4825	4793	4873	4319		4462	4662



Ramp Demand Volume (vph)		730	505		1,735		345	545	1,425				640		405	
No of Lanes	4	4	4	5	4	4	3	3	3	5	7	5	4		4	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609		295	730
Speed (mph)	62	62	62	47	61	61	63	63	63	55	55	53	54		52	53
Level of Service	C	C	C	C	C	C	C	C	B	B	B	C	C		C	C
Density (vehicles)	22	22	19	22	21	21	20	20	18	18	13	18	20		21	22

YR 2025 NO BUILD AM Peak - Graphical Results ---- I-285 NB

Demand Volumes (vph	5,275	5,275	4,695	5,100	5,100	5,100	3,620	3,620	3,325	4,990	4,990	4,990	4,480		4,820	4,820
Simulated Volumes (vp	5,268	5,268	4,686	4,952	5,082	5,082	3,579	3,579	3,248	4,783	4,756	4,752	4,277		4,355	4,531

Ramp Demand Volume (vph)		700		490			1,710	335		1,915			615		400	
No of Lanes	4	4	4	5	4	4	3	3	3	3	5	4	4	5		4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609		295	730
Speed (mph)	61	61	62	48	61	61	62	62	63	55	54	51	52	51		52
Level of Service	C	C	C	C	C	C	C	C	B	D	B	C	C	B		C
Density (pc/mi/ln))	22	22	19	21	21	21	19	19	17	29	18	23	21	17		22

LEGEND

Speed (mph)
<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density	(veh/mi/ln)
Density above	75
Density above	55
Density above	43
Density above	35
Density below	35

Freeway LOS Coloring Estimated LOS	
LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-9. Freeway Schematic Results I-285 NB - 2025 No-build Vs Build - AM Peak Hour

2025 BUILD I-285 NB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

2025 NO BUILD I-285 NB - SPEED HEAT MAPS - AM PEAK

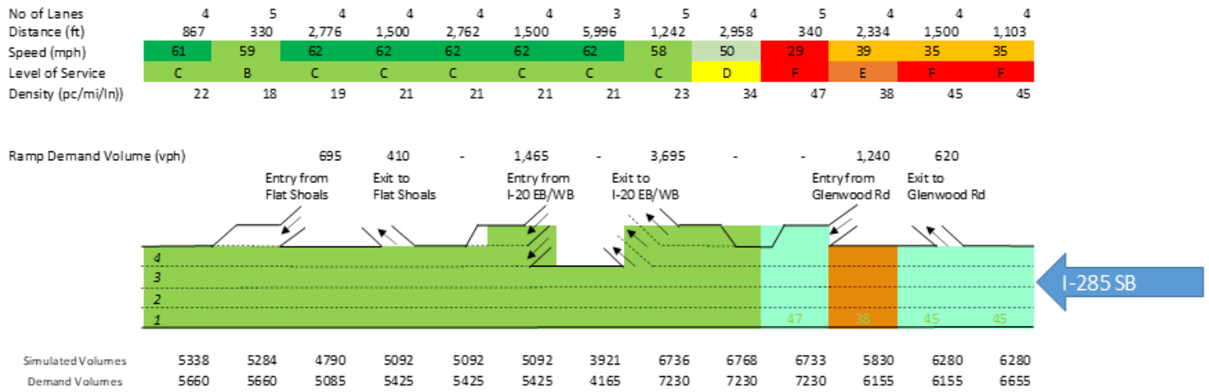
Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND

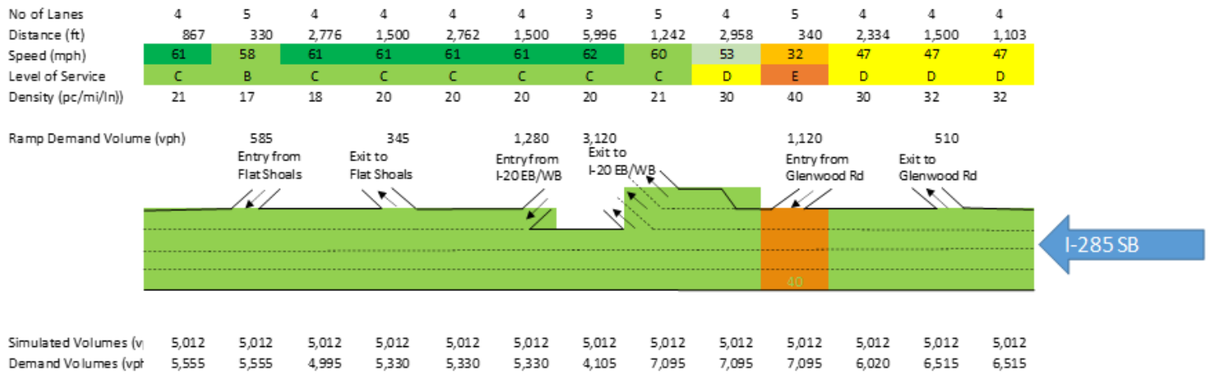
<25
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-10. Speed Heat Map Results I-285 NB - 2025 No-build Vs Build - AM Peak Period

YR 2025 BUILD AM Peak - Graphical Results ---- I-285 SB



YR 2025 NO BUILD AM Peak - Graphical Results ---- I-285 SB



LEGEND

Speed (mph)
<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density	(veh/mi/ln)
Density above	75
Density above	55
Density above	43
Density above	35
Density below	35

Freeway LOS Coloring Estimated LOS	
LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000 Demand volume highlighted if simualted falls below 90%
1,000 Demand volume
1,000 Simulated Volume
Density Derived from VISSIM
LOS Letter Grades based on density ranges specified in HCM

Figure 7-11. Freeway Schematic Results I-285 SB 2025 - No-build Vs Build - AM Peak Hour

2025 BUILD I-285 SB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

2025 NO BUILD I-285 SB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND
<25
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-12. Speed Heat Map Results I-285 SB - 2025 No-build Vs Build - AM Peak Period

7.1.3.2 PM PEAK

This section discusses I-20 and I-285 mainline performances in the no-build and build scenarios in the open year PM Peak. In the open year, the no-build model can process 85% of the PM peak demand whereas build network processes 95.5%.

I-20 WB Direction:

Schematic **Figure 7-13** shows I-20 WB freeway segment operations comparison between the no-build and build scenarios. In the no-build scenario, the section between the Panola Road on-ramp and the I-285 SB on-ramp operates at LOS F. In the build scenario, the I-20 WB direction operates at an acceptable LOS C or better except for the segment for the Wesley Chapel Road off-ramp, which operates at LOS E, which is a better level of service compared to no-build condition. Additionally, the proposed WB CD road operates at an acceptable LOS.

Figure 7-14 shows a speed heat map comparison between the no-build and build scenarios. In the build scenario along I-20 WB, the section west of the Panola Road on-ramp operates generally between 50 mph to 55 mph during the peak hour and may see some reduced speed (30 mph to 50 mph) during post peak. The other remaining sections operate at greater than 60 mph. In the no-build scenario, the segment between the Wesley Chapel Road on-ramp and the I-285 NB ramp merge operate below 25 mph. All other segments operate at 40 mph or better. This condition is due to the I-285 peak starting during post peak hours of I-20. This condition is also seen in the existing condition where the off-peak section close to the system interchange experiences some spill back congestion from I-285 peak period.

I-20 EB Direction:

Schematic **Figure 7-15** shows I-20 EB freeway segment operations comparison between the no-build and the build scenarios during the PM peak. In the no-build scenario, the segment between the Candler Road on-ramp to the Columbia Drive off-ramp operates at LOS F. This is due to the lane change of vehicles at the diverge section between I-20 EB mainline and Candler Road off-ramp and I-285 NB and SB ramp exit. Due to congestion at this location, vehicles are metered at the ramp and throughput entering the I-20 EB study corridor is less than the demand volume. The study corridor from Columbia Drive to Evans Mill Road operates at an acceptable LOS D or better. However, the I-20 EB CD operates at LOS F due to the high weaving movement and lack of capacity. This is due to the auxiliary lane drop that reduces the CD section from four to three lanes before the Wesley Chapel Road exit. In the build scenario, the section between the Candler Road on-ramp and Columbia Road off-ramp operates at LOS E which is an improvement from the no-build which operates at LOS F. The build scenario processes 3% more volume compared to the no-build condition. The EB CD road operates at acceptable LOS C due to the continuation of the fourth lane.

Figure 7-16 shows a speed heat map comparison between the no-build and build scenarios along I-20 EB mainline. It is observed from the speed heat map that the section between the Candler Road on-ramp and Columbia Drive off-ramp operates with stream speeds of 40 mph or better in both the no-build and build in the peak and post peak hour. And the EB CD section operates between 25 mph to 40 mph in both the build and no-build scenario.

I-285 NB Direction:

Schematic **Figure 7-17** shows I-285 NB freeway segment operations comparison between the no-build and build scenarios during the PM peak. In the No-build scenario, the segment between the I-20 WB on-ramp and Glenwood Road off-ramp operates at LOS E; the segment north of the Glenwood Road

on-ramp operates at LOS E and the segment at the I-20 WB merge operates at LOS F. Other segments operate at LOS D or better. In the build scenario, all the sections operate at LOS D or better.

Figure 7-18 shows speed heat map comparison between the no-build and build scenarios along the I-285 NB mainline. In both the no-build and build scenarios the section between the Flat Shoals Road on-ramp and off-ramp operate with speeds less than 30 mph in the peak and post peak hours. The section north of the system interchange operates with speeds between 40 to 50 mph in the no-build scenario. Whereas, in the build scenario, due to the improvements the speeds are above 55 mph.

I-285 SB Direction:

Schematic **Figure 7-19** shows I-285 SB freeway segment operations comparison between the no-build and build scenarios during the PM peak. In the no-build scenario, the segments between the Glenwood Road off-ramp and on-ramp operate at LOS F. In the build scenario, I-285 SB operates at LOS F upstream of the Glenwood Road on-ramp, then operates at LOS D or better from the Glenwood Road on-ramp to Flat Shoals Rd.

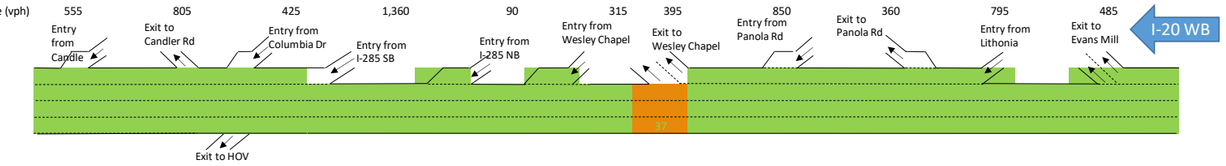
Figure 7-20 shows speed heat map comparison between the no-build and build scenarios along the I-285 SB mainline. In the no-build scenario, the sections upstream of the Glenwood Road on-ramp are observed to operate with an average speed below 30 mph in the peak and post peak hours. The build scenario operates at an average speed of 40 mph or better.

Open Year PM Peak Summary:

In the build scenario, all sections of I-20 WB operate at a better LOS. With the improvements, it processes the same amount of volume and at an average speed of 60 mph against an average speed of 35 mph in the no-build scenario. In the EB direction, the build scenario processes 3% more volume compared to the no-build condition and failures are observed in both the build and no-build scenarios along I-20 between Candler Road and the system interchange. The congestion in this section of freeway meters traffic entering the study segments along I-20 EB.

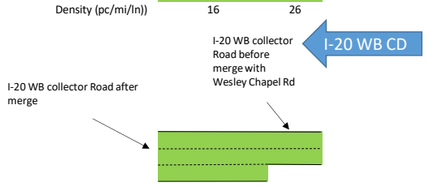
YR 2025 BUILD PM Peak - Graphical Results ---- I-20 WB

No of Lanes	5	5	4	4	4	4	3	4	3	4	3	4	4	5	4	5	4	4	3	3	3		
Distance (ft)	531	2,500	3,174	470	1,767	500	2,031	767	1,193	1,740	5,243	1,107	11,306	250	2,129	270	6,520	405	10,692	2,500	4,960		
Speed (mph)	60	63	62	60	61	61	62	62	61	62	62	39	45	60	61	51	62	56	61	60	62		
Level of Service	B	B	B	B	B	B	B	B	B	B	B	E	D	B	C	C	C	C	C	C	C		
Density (pc/mi/ln))	14	12	18	17	17	17	16	12	16	12	14	37	33	14	21	21	22	23	22	25	24		
Ramp Demand Volume (vph)	555		805		425		1,360		90		315	395		850		360		795		485			



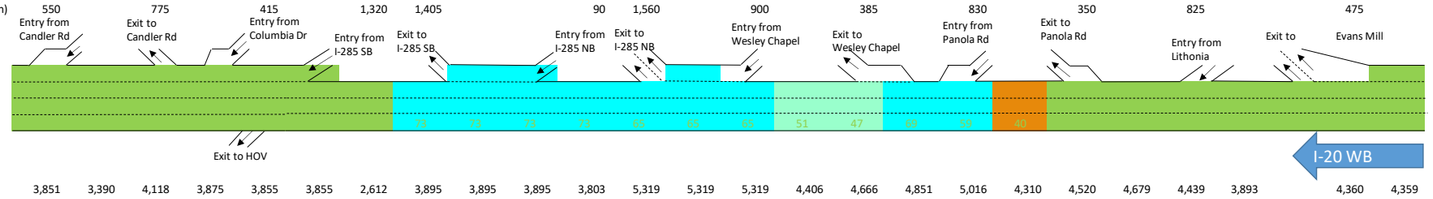
Simulated Volumes (vph)	4090	3654	4433	4174	4169	4169	3008	3024	2973	2967	2665	5778	5919	4171	5095	5387	5529	5088	4015	4515	4508		
Demand Volumes (vph)	4235	3680	4485	4485	4060	4235	2875	2875	2785	2785	2470	5265	5265	5265	4415	4775	4775	4775	3980	4465	4465		

No of Lanes	3	2
Speed (mph)	58	58
Level of Service	B	C
Density (pc/mi/ln))	16	26



YR 2025 NO BUILD PM Peak - Graphical Results ---- I-20 WB

No of Lanes	5	4	4	5	4	4	3	4	4	4	3	4	4	4	3	4	3	4	3	4	3	4	3	4		4		3
Distance (ft)	531	2,500	3,174	470	1,767	500	2,023	200	364	200	1,192	1,741	2,713	500	1,759	390	15,245	250	2,129	270	6,513	405	10,692		2,500		4,960	
Speed (mph)	59	63	62	60	61	61	56	13	13	13	17	20	20	20	29	25	24	31	43	44	58	32	61		61		62	
Level of Service	B	B	B	B	B	B	B	F	F	F	F	F	F	F	F	F	F	F	E	D	D	D	C		B		C	
Density (pc/mi/ln))	13	13	17	13	16	16	16	73	73	73	73	65	65	65	51	47	69	59	40	27	27	35	21		18		23	
Ramp Demand Volume (vph)	550		775		415		1,320	1,405			90	1,560		900		385		830		350		825		475			



Simulated Volumes (vph)	3,851	3,390	4,118	3,875	3,855	3,855	2,612	3,895	3,895	3,895	3,803	5,319	5,319	5,319	4,406	4,666	4,851	5,016	4,310	4,520	4,679	4,439	3,893	4,360	4,359
Demand Volumes (vph)	4,150	3,600	4,375	4,375	3,960	4,130	2,810	4,215	4,215	4,215	4,125	5,685	5,685	5,685	4,785	5,170	5,170	5,170	4,340	4,690	4,690	4,690	3,895	4,370	4,370

LEGEND

Speed (mph)		Freeway Geometric Coloring density (veh/mi/ln)			Freeway LOS Coloring Estimated LOS	
<25		Density above	75		LOS A to C	< 28
25-30		Density between	56	75	LOS D	28-35
30-40		Density between	44	55	LOS E	35-43
40-50		Density between	35	43	LOS F	> 43
50-55		Density between	0	35		
55-60						
>60						

1,000	Demand volume highlighted if simulated falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-13. Freeway Schematic Results I-20 WB 2025 - No-build Vs Build - PM Peak Hour

2025 BUILD I-20 WB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	3:00 PM																
	3:15 PM																
	3:30 PM																
	3:45 PM																
Analysis Period	4:00 PM																
	4:15 PM																
	4:30 PM																
	4:45 PM																
Post Peak	5:00 PM																
	5:15 PM																
	5:30 PM																
	5:45 PM																

I-20 WB CD - PM

I-20 WB CD after Merge	I-20 WB CD Merge with Wesley Chapel Road Ramp

2025 NO BUILD I-20 WB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	3:00 PM																
	3:15 PM																
	3:30 PM																
	3:45 PM																
Analysis Period	4:00 PM																
	4:15 PM																
	4:30 PM																
	4:45 PM																
Post Peak	5:00 PM																
	5:15 PM																
	5:30 PM																
	5:45 PM																

LEGEND

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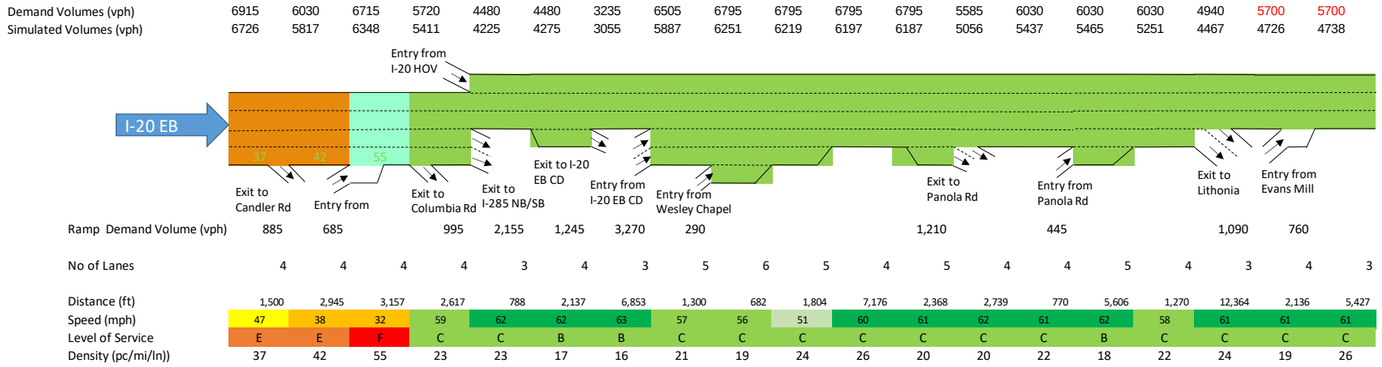
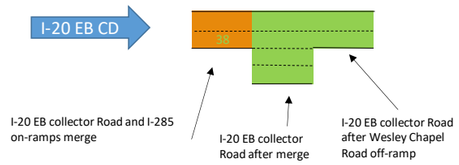
55-60
>60

Figure 7-14. Speed Heat Map Results I-20 WB - 2025 No-build Vs Build - PM Peak Period

YR 2025 BUILD PM Peak - Graphical Results ---- I-20 EB

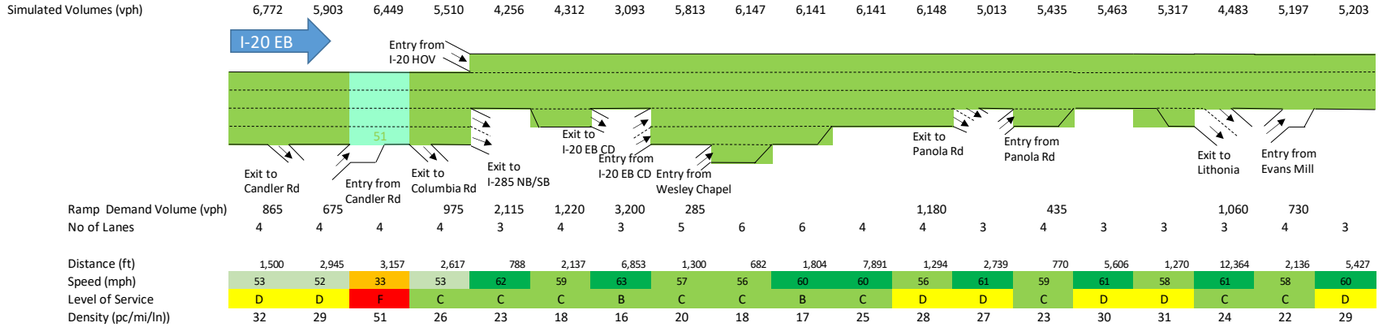


Demand Volumes (vph)	6915	6030	6715	5720	4480	4480	3235	6505	6795	6795	6795	6795	5585	6030	6030	6030	4940	5700	5700
Simulated Volumes (vph)	6726	5817	6348	5411	4225	4275	3055	5887	6251	6219	6197	6187	5056	5437	5465	5251	4467	4726	4738
Ramp Demand Volume (vph)	885	685		995	2,155	1,245	3,270	290				1,210		445			1,090	760	
No of Lanes	4	4	4	4	3	4	3	5	6	5	4	5	4	4	5	4	3	4	3
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,176	2,368	2,739	770	5,606	1,270	12,364	2,136	5,427
Speed (mph)	47	38	32	59	62	62	63	57	56	51	60	61	62	61	62	58	61	61	61
Level of Service	E	E	F	C	C	B	B	C	C	C	C	C	C	C	B	C	C	C	C
Density (pc/mi/ln))	37	42	55	23	23	17	16	21	19	24	26	20	20	22	18	22	24	19	26

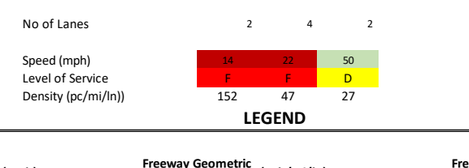


No of Lanes	2	4	2
Speed (mph)	35	47	51
Level of Service	E	C	D
Density (pc/mi/ln))	38	23	28

YR 2025 NO BUILD PM Peak - Graphical Results ---- I-20 EB



Demand Volumes (vph)	6,770	5,905	6,580	5,605	4,390	4,390	3,170	6,370	6,655	6,655	6,655	6,655	5,475	5,910	5,910	5,910	4,850	5,580	5,580
Simulated Volumes (vph)	6,772	5,903	6,449	5,510	4,256	4,312	3,093	5,813	6,147	6,141	6,141	6,148	5,013	5,435	5,463	5,317	4,483	5,197	5,203
Ramp Demand Volume (vph)	865	675		975	2,115	1,220	3,200	285				1,180		435			1,060	730	
No of Lanes	4	4	4	4	3	4	3	5	6	6	4	4	3	4	3	3	3	4	3
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,891	1,294	2,739	770	5,606	1,270	12,364	2,136	5,427
Speed (mph)	53	52	33	53	62	59	63	57	56	60	60	56	61	59	61	58	61	58	60
Level of Service	D	D	F	C	C	C	B	C	C	B	C	D	D	C	D	D	C	C	D
Density (pc/mi/ln))	32	29	51	26	23	18	16	20	18	17	25	28	27	23	30	31	24	22	29



No of Lanes	2	4	2
Speed (mph)	14	22	50
Level of Service	F	F	D
Density (pc/mi/ln))	152	47	27

LEGEND

Speed (mph)

<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density (veh/mi/ln)

Density above	75	
Density between	56	75
Density between	44	55
Density between	35	43
Density between	0	35

Freeway LOS Coloring Estimated LOS

LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000 Demand volume highlighted if simulated falls below 90%
1,000 Demand volume
1,000 Simulated Volume
Density Derived from VISSIM
LOS Letter Grades based on density ranges specified in HCM

Figure 7-15. Freeway Schematic Results I-20 EB 2025 - No-build Vs Build - PM Peak Hour

2025 BUILD I-20 EB SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - PM Peak

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

2025 NO BUILD I-20 EB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - PM PEAK

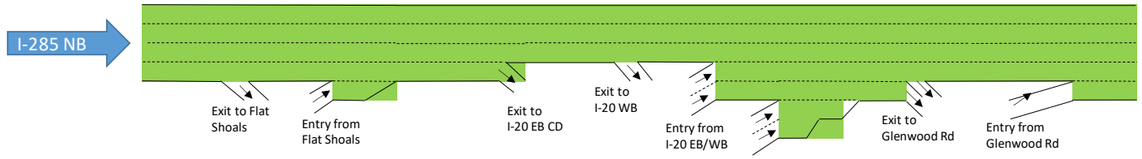
I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

LEGEND
<25
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-16. Speed Heat Map Results I-20 EB - 2025 No-build Vs Build - PM Peak Period

YR 2025 BUILD PM Peak - Graphical Results ---- I-285 NB

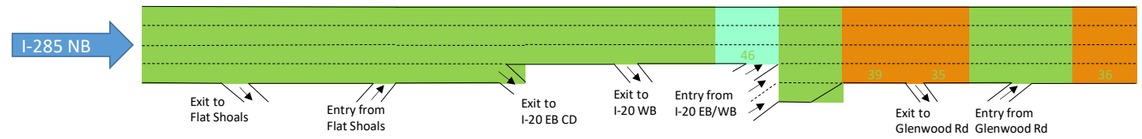
Demand Volumes	5305	5305	4760	5165	5165	5165	3605	3605	3515	5575	7160	7160	6385	6740	6740
Simulated Volumes	5286	5286	4750	5003	5134	5134	3555	3555	3445	5459	7108	7165	6389	6376	6666



Ramp Demand Volume (vph)		545	405			1,560		90	2,060	1,585			775	355	
No of Lanes	4	4	4	5	4	4	3	3	3	5	7	5	4	4	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609	295	730
Speed (mph)	61	61	62	49	58	58	61	61	63	57	53	48	52	53	54
Level of Service	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D
Density (vehicles)	22	22	19	20	22	22	19	19	18	19	19	31	31	30	31

YR 2025 NO BUILD PM Peak - Graphical Results ---- I-285 NB

Demand Volumes (vph)	5,210	5,210	4,675	5,075	5,075	5,075	3,560	3,560	3,470	7,050	7,050	7,050	6,285	6,635	6,635
Simulated Volumes (vph)	5,202	5,202	4,682	4,934	4,960	4,960	3,479	3,479	3,391	6,754	6,582	6,745	6,040	6,071	6,347



Ramp Demand Volume (vph)		550		420			1,565	90		3,720			790	365	
No of Lanes	4	4	4	5	4	4	3	3	3	3	5	4	4	5	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609	295	730
Speed (mph)	62	62	63	48	42	42	62	62	63	49	45	43	43	41	44
Level of Service	C	C	C	C	D	D	C	C	B	F	D	E	E	D	E
Density (pc/mi/ln))	21	21	19	21	31	31	19	19	18	46	29	39	35	30	36

LEGEND

Speed (mph)
<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density	(veh/mi/ln)
Density above	75
Density above	55
Density above	43
Density above	35
Density below	35

Freeway LOS Coloring Estimated LOS	
LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-17. Freeway Schematic Results I-285 NB 2025 - No-build Vs Build - PM Peak Hour

2025 BUILD I-285 NB- SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

2025 NO BUILD I-285 NB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
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LEGEND

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Figure 7-18. Speed Heat Map Results I-285 NB - 2025 No-build Vs Build - PM Peak Period

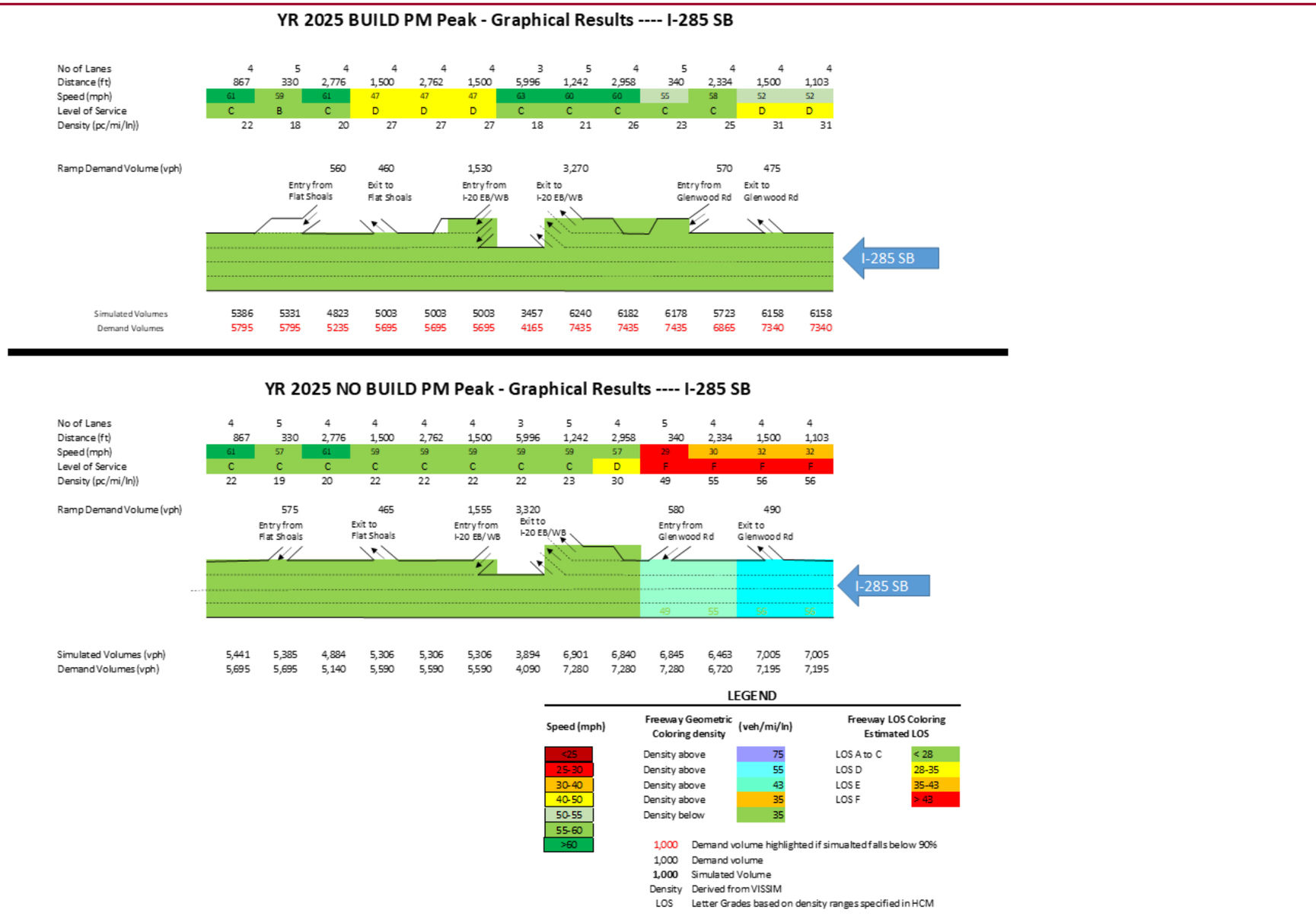

Figure 7-19. Freeway Schematic Results I-285 SB 2025 - No-build Vs Build - PM Peak Hour

2025 BUILD I-285 SB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

2025 NO BUILD I-285 SB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND

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40-50
50-55
55-60
>60

Figure 7-20. Speed Heat Map Results I-285 SB - 2025 No-build Vs Build - PM Peak Period

7.1.4 Design Year (2045) No-Build Vs Build Analysis

7.1.4.1 AM peak

This section discusses the I-20 and I-285 mainline performances in the no-build and build scenarios in the design year AM Peak. In the design year, the no-build network can process 86% of the AM peak demand whereas, the build network processes 92.4%.

I-20 WB Direction:

Schematic **Figure 7-21** shows the I-20 WB freeway segment operations comparison between the no-build and build scenarios during the AM peak. In the no-build scenario, the section between Evans Mill Road and the Wesley Chapel Road off-ramp operates at LOS F and the section between Wesley Chapel Road on-ramp and I-285 SB on-ramp operates at LOS E. In the build scenario, I-20 westbound between Wesley Chapel Road and Candler Drive operates at LOS E or F as this section processes more volume than in no-build condition.

Figure 7-22 shows a speed heat map comparison between the no-build and build scenarios. In the no-build scenario along I-20 WB, the section between Evans Mill Road and Panola Road operates at speeds less than 30 mph. Congestion in this section meters the upstream traffic. Whereas, in the build condition due to the proposed improvements the congestion between Evans Mill Road and Wesley Chapel Road is dissipated. In the section between the Wesley Chapel Road on-ramp and Columbia Road on-ramp starts to get congested and operates with speeds less than 30 mph in the peak and post-peak hour. This is due to the bottleneck at Evans Mill Road and Panola Road getting released allowing vehicles that were metered in no-build condition to enter the network. This increases the throughput along the corridor near the Wesley Chapel Road and the Columbia Road on-ramp. The speed in this section in the build condition is reduced due to the increased density in this area. The post peak congestion in this section is caused by of impacts from the I-285 corridor which has a later peak than the I-20 corridor.

I-20 EB Direction:

Schematic **Figure 7-23** shows the I-20 EB freeway segment operations comparison between the no-build and build scenarios during the AM peak. In the no-build scenario, the main line sections operate at LOS C or better. Similarly, in the build scenario the corridor operates at LOS C or better. The EB CD roads operate at an acceptable LOS in both the no-build and build scenarios. Overall, the build scenario performs better as a greater volume of traffic is processed than no-build scenario.

Figure 7-24 shows a speed heat map comparison between the no-build and build scenarios along the I-20 EB mainline. From speed heat map I-20 EB is observed to be the non-peak direction in the AM. In the EB direction, the operations are similar in both the build and no-build scenarios with the build scenario processing 9% more volume due to improved operations. All the mainline sections operate with free flow speeds except on the CD section where are the segment speed operates between 55 to 40 mph. The average speed for the build condition on the CD section is slightly lower than the no build condition possibly because the build condition can process higher volumes than the no build condition (3,281 vehicles vs 3,174 vehicles)

I-285 NB Direction:

Schematic **Figure 7-25** shows the I-285 NB freeway segment operations comparison between the no-build and build scenarios during the AM peak. In the no-build scenario, the entire corridor performs at LOS D or better. In the build scenario, all the sections operate at LOS D or better, except the Flat

Shoals Road on-ramp section which operates at LOS E. The Flat Shoals Road on-ramp section performs worse in the build condition compared to the no-build because this section in the no-build model operates with a density of 31 pc/mi/ln, which is closer to LOS E. Due to a higher growth rate in the build condition, the traffic volumes are slightly higher when compared to no-build scenario. Therefore, in the build condition, the model at the I-285 NB Flat Shoals Road on-ramp section deteriorates by processing 300 additional vehicles along the mainline at the merge section. This is also because the I-285 NB peak starts after the I-20 peak and this congestion reflects additional vehicles being processed during the I-285 peak.

Figure 7-26 shows a speed heat map comparison between the no-build and build scenarios along the I-285 NB mainline. In the no-build scenario, all the sections operate at speeds of 40 mph or better. In build scenario, it operates at speeds greater than 40 mph for the majority of the peak period.

I-285 SB Direction:

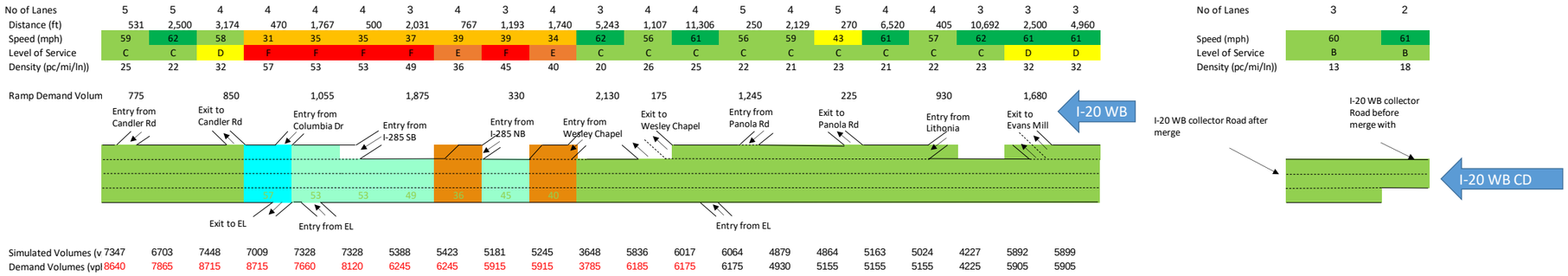
Schematic **Figure 7-27** shows the I-285 SB freeway segment operations comparison between the no-build and build scenarios during the AM peak. In the no-build scenario, the segments between the Glenwood Road off-ramp and on-ramp operate at LOS E or F. Similarly, in the build scenario the segments between the Glenwood Road off-ramp and on-ramp operate at LOS D, E or F, but a higher volume of traffic is being processed in the build scenario. The build segment at the Flat Shoals Road on-ramp operates at a lower LOS than the no-build due to higher volumes in the build scenario.

Figure 7-28 shows a speed heat map comparison between the no-build and build scenarios along the I-285 SB mainline. In the no-build scenario, the sections upstream of the Glenwood Road on-ramp operate with a speed below 35 mph in the peak and post peak hour. In the build scenario, the sections between the system interchange and the Glenwood Road off-ramp operates at speeds less than 35 mph in both the peak and post peak hours.

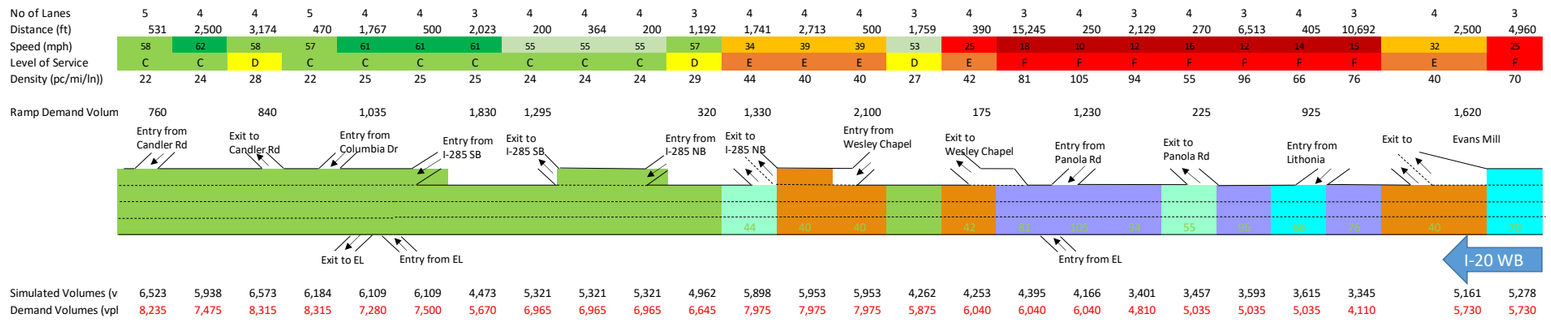
Design Year AM Peak Summary:

In the no-build scenario, the sections between Evans Mill Road and the system interchange are deteriorating. In the build scenario due to the additional auxiliary lane and new CD system the corridor even though still performing at unacceptable LOS, is able to process a greater volume at better speeds compared to no-build scenario. In the build scenario, along I-20 WB an additional 800 vehicles are being processed per hour (16% more volume) when compared to the no-build condition. As a result, more volume is able to reach I-20 WB near Columbia Drive causing congestion in that area. This is not new traffic that is arriving at the Columbia Drive location. It is traffic that was being metered upstream at Lithonia Industrial Boulevard before the improvements. In the build scenario the congestion seems to extend from the Columbia Drive on-ramp to the Wesley Chapel Road WB on-ramp. However, even with the congestion shown in the section, I-20 WB processes 800 more vehicles in the build condition compared to the no-build condition. In the EB direction the operations are similar in both the build and no-build scenarios (average speeds above 60 mph) and the build scenario is processing 10.5% greater volume due to the improved capacity.

YR 2045 BUILD AM Peak - Graphical Results ---- I-20 WB



YR 2045 NO BUILD AM Peak - Graphical Results ---- I-20 WB



LEGEND

Speed (mph)	Freeway Geometric Coloring density (veh/mi/ln)		Freeway LOS Coloring Estimated LOS	
<25	Density above	75	LOS A to C	< 28
25-30	Density above	55	LOS D	28-35
30-40	Density above	43	LOS E	35-43
40-50	Density above	35	LOS F	> 43
50-55	Density below	35		
55-60				
>60				

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-21. Freeway Schematic Results – I-20 WB 2045 - No-build Vs Build - AM Peak Hour

2045 BUILD I-20 WB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	5:45 AM																
	6:00 AM																
	6:15 AM																
	6:30 AM																
Analysis Period	6:45 AM																
	7:00 AM																
	7:15 AM																
	7:30 AM																
Post Peak	7:45 AM																
	8:00 AM																
	8:15 AM																
	8:30 AM																

I-20 WB CD - AM

I-20 WB CD Merge with Wesley Chapel Road ramp	I-20 WB CD after Merge

2045 NO BUILD I-20 WB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	5:45 AM																
	6:00 AM																
	6:15 AM																
	6:30 AM																
Analysis Period	6:45 AM																
	7:00 AM																
	7:15 AM																
	7:30 AM																
Post Peak	7:45 AM																
	8:00 AM																
	8:15 AM																
	8:30 AM																

LEGEND

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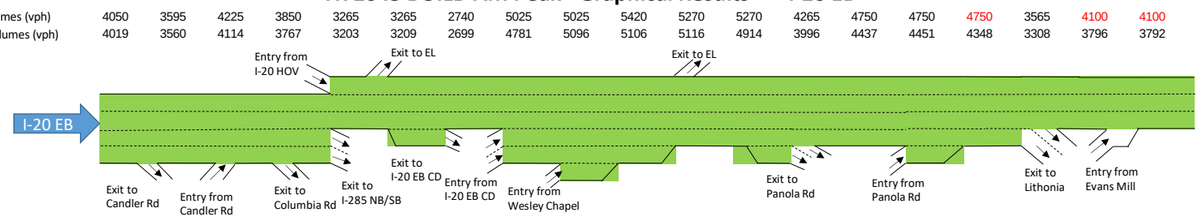
40-50
50-55
55-60
>60

Figure 7-22. Speed Heat Map Results I-20 WB - 2045 No-build Vs Build - AM Peak Period

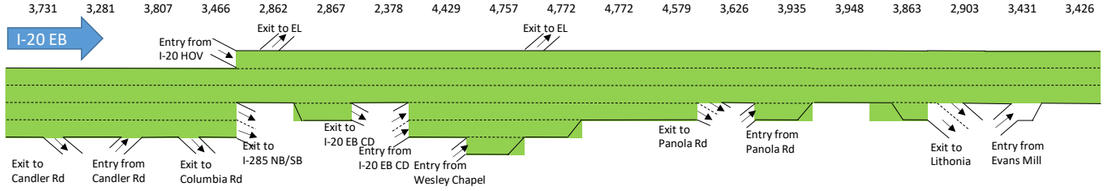
YR 2045 BUILD AM Peak - Graphical Results ---- I-20 EB

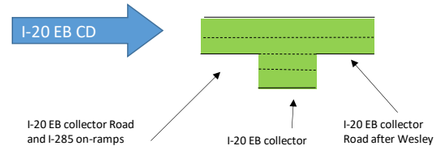


Demand Volumes (vph)	4050	3595	4225	3850	3265	3265	2740	5025	5025	5420	5270	5270	4265	4750	4750	4750	3565	4100	4100	
Simulated Volumes (vph)	4019	3560	4114	3767	3203	3209	2699	4781	5096	5106	5116	4914	3996	4437	4451	4348	3308	3796	3792	
Ramp Demand Volun	455	630		375	605	525	2,285	395				1,005		485			1,185	535		
No of Lanes	4	4	4	4	3	4	3	5	6	5	4	5	4	4	5	4	3	4	3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,176	2,368	2,739	770	5,606	1,270	12,364	2,136	5,427	
Speed (mph)	62	63	52	61	63	63	63	53	52	57	62	62	63	62	62	61	62	61	62	
Level of Service	B	B	C	B	B	B	B	C	B	B	C	B	B	B	B	B	B	B	C	
Density (pc/mi/ln))	16	14	20	15	17	13	14	18	16	18	21	16	16	18	14	18	18	15	21	

No of Lanes	2	4	2
Speed (mph)	40	44	44
Level of Service	D	C	C
Density (pc/mi/ln))	27	20	24

YR 2045 NO BUILD AM Peak - Graphical Results ---- I-20 EB





Demand Volumes (vph)	3,760	3,315	3,930	3,560	2,940	2,940	2,425	4,665	5,060	4,860	4,860	4,860	3,875	4,330	4,330	4,330	3,190	3,775	3,775	
Simulated Volumes (vph)	3,731	3,281	3,807	3,466	2,862	2,867	2,378	4,429	4,757	4,772	4,772	4,579	3,626	3,935	3,948	3,863	2,903	3,431	3,426	
Ramp Demand Volun	445	615		370	595	515	2,240	395				985		455			1,140	585		
No of Lanes	4	4	4	4	3	4	3	5	6	6	4	4	3	4	3	3	3	4	3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,891	1,294	2,739	770	5,606	1,270	12,364	2,136	5,427	
Speed (mph)	62	63	52	60	63	63	63	57	56	62	62	60	62	61	62	62	62	62	62	
Level of Service	B	B	C	B	B	B	B	B	B	B	C	C	C	B	C	C	B	B	C	
Density (pc/mi/ln))	15	13	18	14	15	11	13	15	14	13	19	19	20	16	21	21	16	14	19	

No of Lanes	2	4	2
Speed (mph)	50	48	52
Level of Service	C	C	C
Density (pc/mi/ln))	24	18	23

LEGEND

Speed (mph)	Freeway Geometric Coloring density	(veh/mi/ln)	Freeway LOS Coloring Estimated LOS	
<25	Density above	75	LOS A to C	< 28
25-30	Density above	55	LOS D	28-35
30-40	Density above	43	LOS E	35-43
40-50	Density above	35	LOS F	> 43
50-55	Density below	35		
55-60				
>60				

1,000	Demand volume highlighted if simualted falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-23. Freeway Schematic Results – I-20 EB 2045 - No-build Vs Build - AM Peak Hour

2045 BUILD I-20 EB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - AM PEAK

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

2045 NO BUILD I-20 EB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - AM PEAK

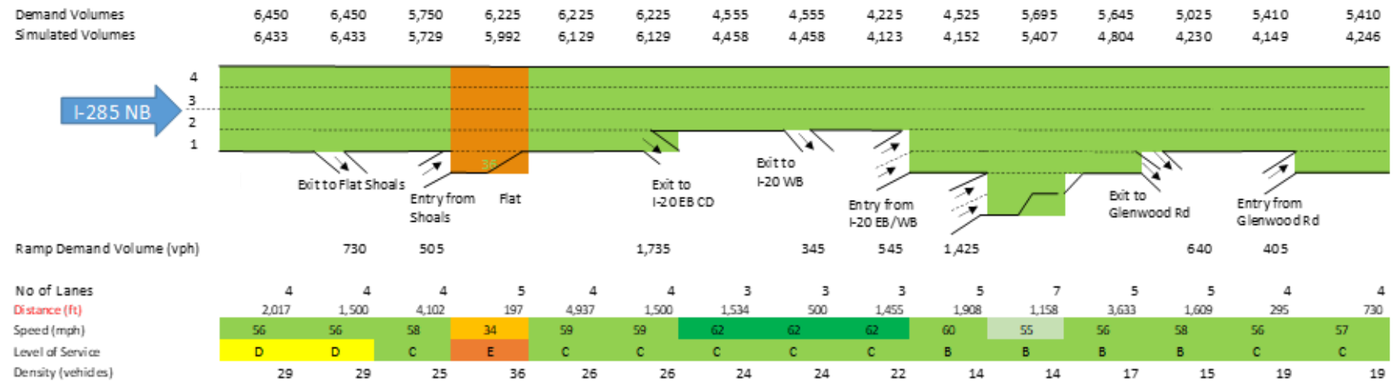
I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

LEGEND

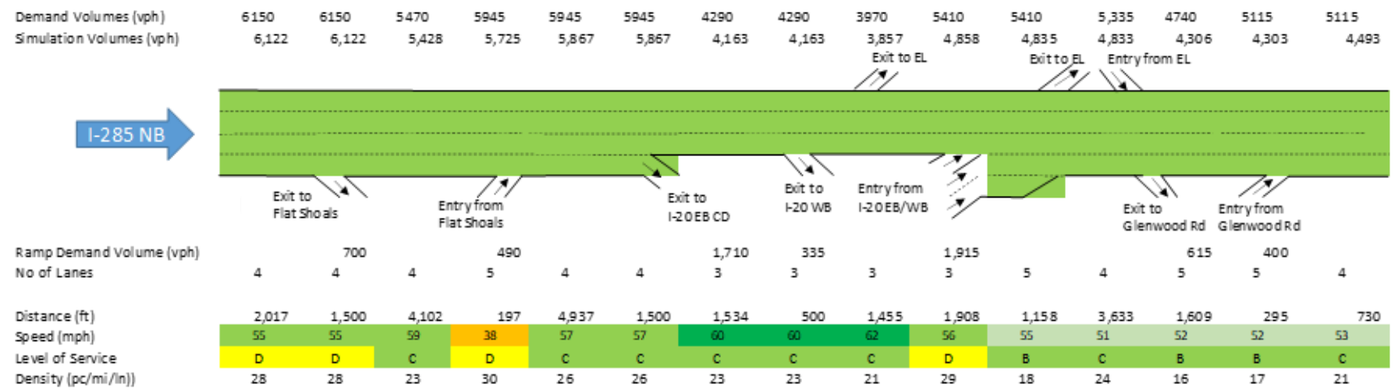
<25
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-24. Speed Heat Map Results I-20 EB - 2045 No-build Vs Build- AM Peak Period

YR 2045 BUILD AM Peak - Graphical Results ---- I-285 NB



YR 2045 NO BUILD AM Peak - Graphical Results ---- I-285 NB



LEGEND

Speed (mph)	Freeway Geometric Coloring density	(veh/mi/ln)		Freeway LOS Coloring Estimated LOS	
<25	Density above	75		LOS A to C	< 28
25-30	Density between	56	75	LOS D	28-35
30-40	Density between	44	55	LOS E	35-43
40-50	Density between	35	43	LOS F	> 43
50-55	Density between	0	35		
55-60					
>60					

1,000 Demand volume highlighted if simulated falls below 90%
1,000 Demand volume
1,000 Simulated Volume
Density Derived from VISSIM
LOS Letter Grades based on density ranges specified in HCM

Figure 7-25. Freeway Schematic Results I-285 NB 2045 - No-build Vs Build - AM Peak Hour

2045 BUILD I-285 NB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

2045 NO BUILD I-285 NB - SPEED HEAT MAPS - AM PEAK

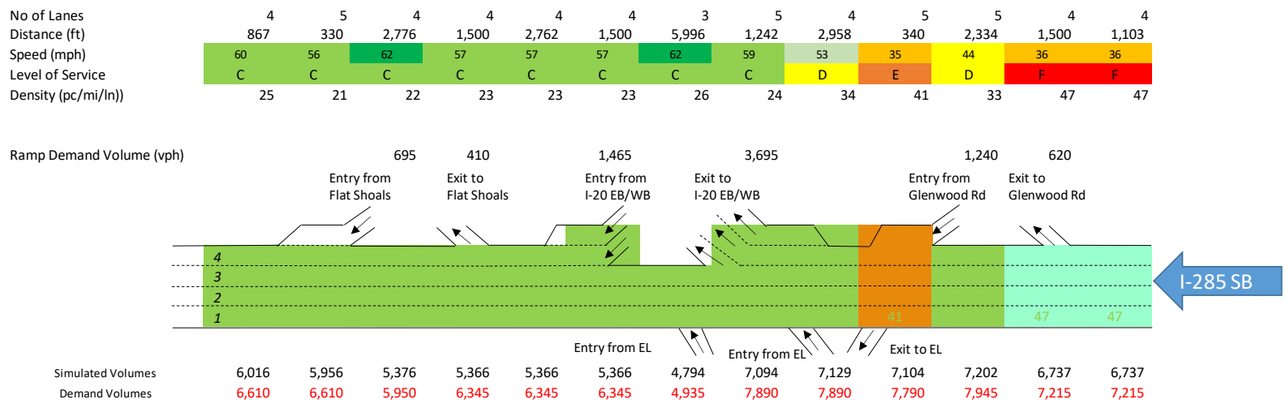
Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND

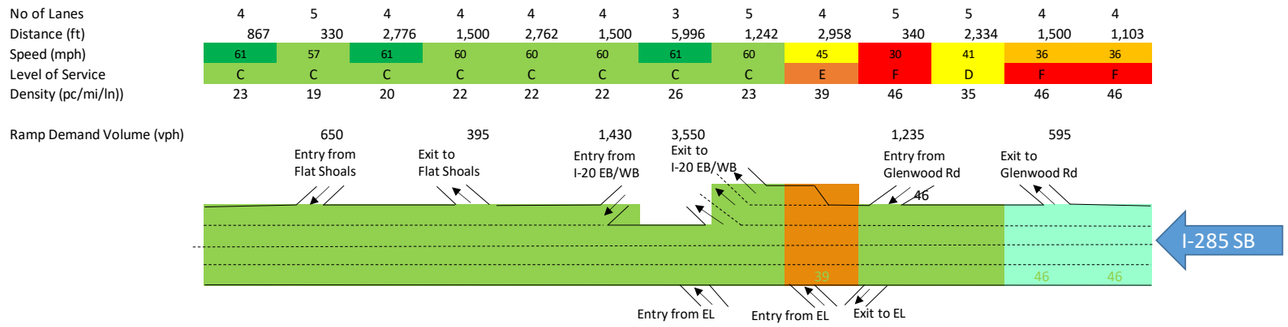
<25
25-30
30-40
40-50
50-55
55-60
>60

Figure 7-26. Speed Heat Map Results I-285 NB - 2045 No-build Vs Build - AM Peak Period

YR 2045 BUILD AM Peak - Graphical Results ---- I-285 SB



YR 2045 NO BUILD AM Peak - Graphical Results ---- I-285 SB



LEGEND

Speed (mph)
<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density	(veh/mi/ln)	
Density above	75	
Density between	56	75
Density between	44	55
Density between	35	43
Density between	0	35

Freeway LOS Coloring Estimated LOS	
LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000	Demand volume highlighted if simulated falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-27. Freeway Schematic Results I-285 SB 2045 - No-build Vs Build - AM Peak Hour

2045 BUILD I-285 SB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

2045 NO BUILD I-285 SB - SPEED HEAT MAPS - AM PEAK

Time / Location		I-285 SB FlatShoals Road merge	I-285 SB after FlatShoals Road off ramp	I-285 SB FlatShoals Road diverge	I-285 SB after I-20 ramps split	I-285 SB off-ramp to I-20 EB and WB	I-285 SB before off-ramp to I-20 EB and WB	I-285 SB after Glenwood on-ramp merge	I-285 SB after Glenwood off-ramp	I-285 SB before Glenwood off-ramp
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND

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55-60
>60

Figure 7-28. Speed Heat Map Results I-285 SB - 2045 No-build Vs Build - AM Peak Hour

7.1.4.2 PM PEAK

This section discusses about the I-20 and I-285 mainline performances in the no-build and build scenarios in the design year. In the design year, the no-build network is able to process 73.7% of the PM peak demand whereas, the build network process 78.15%.

I-20 WB Direction:

Schematic **Figure 7-29** shows the I-20 WB freeway segment operations comparison between the no-build and build scenarios during the PM peak. The entire study section between Evans Mill Road and the I-285 SB off-ramp operates at LOS E or F. In build scenario, the section between the Evans Mill Road off-ramp and the Wesley Chapel Road CD diverge section operates at LOS C or worse. Even though the volume throughput and speed have improved when compared to the no-build scenario, the turbulence from the high diverge volume ratio at the Wesley Chapel Road off-ramp creates back-ups, which affects sections upstream. Although several sections perform at an unacceptable LOS in the build condition, the build scenario processes 5% more vehicles compared to the no-build condition in 2045. Also, the average stream speed along I-20 WB is 44 mph in the build scenario compared to 30 mph in the no-build. Additionally, the proposed CD road operates with an acceptable LOS in the build condition.

Figure 7-30 shows a speed heat map comparison between the no-build and build scenarios. In the no-build condition, all the sections between system interchange and the Lithonia Industrial Boulevard on-ramp have speeds less than 30 mph. In the build condition, due to the proposed improvements the speeds have improved slightly. In the peak and post-peak hours the sections between the Wesley Chapel Road CD off-ramp diverge and the Evans Mill Road off-ramp operates with speeds less than 30 mph. The build scenario is able to process 5% more vehicles compared to the no-build condition even though the stream speeds in the peak and post-peak hours are less than 30 mph.

I-20 EB Direction:

Schematic **Figure 7-31** shows an I-20 EB freeway segment operations comparison between the no-build and build scenarios during the PM peak. In the No-build scenario, the section between Candler Road and Columbia Drive operates at LOS F. At the Columbia Drive off-ramp, the maximum queue extends beyond the ramp length, primarily because the queue spilling back on to the mainline, which is due to the congestion along the SB Columbia Drive. The Columbia Drive/Rainbow Drive intersection, which needs capacity improvement, queues up and spills back on to the I-20 EB mainline. This queue backup affects the mainline throughput in the post-peak period and the congestion in this section of freeway meters traffic entering the study segments along I-20 EB. Because of this, the study corridor from Columbia Drive to the end at Evans Mill Road operates at LOS D or better. The I-20 EB CD, however, operates at LOS F due to high weaving movement and reduction in capacity. This is because of the auxiliary lane drop; the CD section reduces from four lane to three lanes before the Wesley Chapel Road exit. Similarly, in the build scenario the sections between Candler Road and the system interchange operate at LOS E and F but the volume processed is 5.8% greater than the no-build. The EB CD roads operate at acceptable LOS D due to the improvement.

Figure 7-32 shows a speed heat map comparison between the no-build and build scenarios along the I-20 EB mainline. It is observed from the speed heat map that the section between the Candler Road off-ramp and Columbia Drive off-ramp operates with speeds less than 30 mph in both the no-build and build (peak and post peak hours). The EB CD section operates with speeds less than 30 mph in the no-build scenario whereas in the build scenario the speeds greater than 30mph.

I-285 NB Direction:

Schematic **Figure 7-33** shows an I-285 NB freeway segment operations comparison between the no-build and build scenarios during the PM peak. In the no-build scenario, the section between Flat Shoals Road and the I-20 interchange operates at LOS F and at the I-20 EB/WB on-ramp merge operates at LOS E. In the build scenario, the section upstream of system interchange operates at LOS E, but the section between the system interchange and the Glenwood Road interchange operates at a better LOS due to the proposed improvements.

Figure 7-34 shows a speed heat map comparison between the no-build and build scenarios along the I-285 NB mainline. In both no-build and build scenarios, the section between the Flat Shoals Road on-ramp and the system interchange operate at speeds less than 30 mph in the peak and post peak hours. The section north of the system interchange operates at speeds between 40 to 50 mph in the no-build scenario and in the build due to the improvements the speeds exceed 55 mph.

I-285 SB Direction:

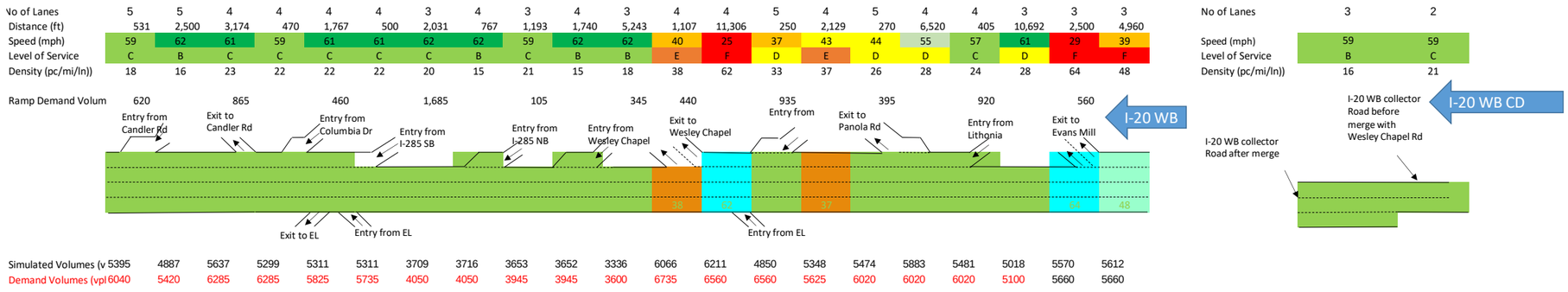
Schematic **Figure 7-35** shows an I-285 SB freeway segment operations comparison between the no-build and build scenarios during the PM peak. In the no-build scenario, the segments between the Glenwood Road off-ramp and on-ramp operate at LOS E and F. In the build scenario, the segments between the Glenwood Road off-ramp and on-ramp operates at a similar LOS E or F.

Figure 7-36 shows a speed heat map comparison between the no-build and build scenarios along the I-285 SB mainline. In both no-build and build the sections upstream of Glenwood Road on-ramp are observed to operate with an average speed below 30 mph in the peak and post peak hours.

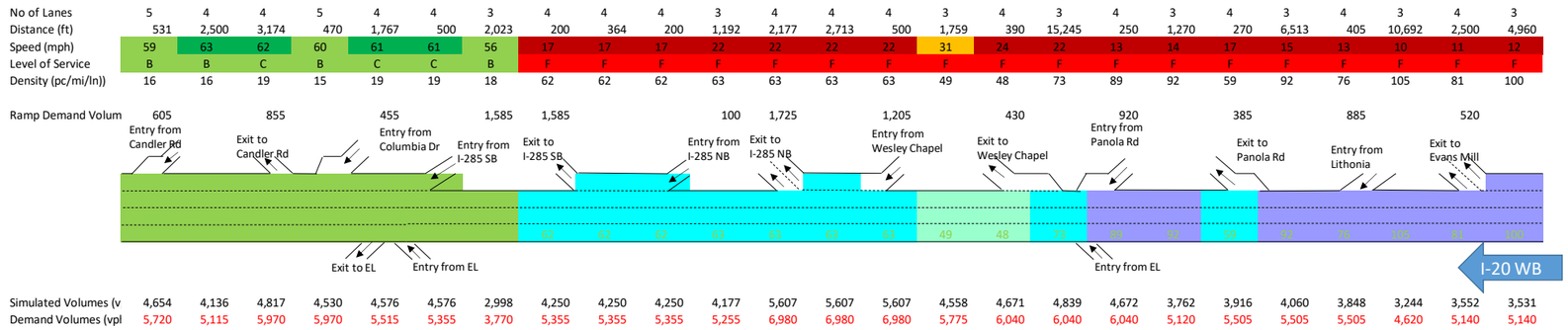
Design Year PM Peak Summary:

In the no-build scenario, the entire I-20 WB segment in the study area is at deteriorating LOS. In the build condition, the overall LOS of the corridor is also at unacceptable levels. However, in the build scenario 4.5% more vehicles are processed compared to the no-build condition and in the build scenario I-20 WB operates with an average stream speed of 44 mph compared to 30 mph in the no-build condition. In the EB direction, the segments between the Candler Road off-ramp and the Columbia Drive off-ramp operate at a LOS F in both the build and no-build conditions. The congestion in this section is caused due to the closely spaced interchanges between Candler Rd and the system to system interchange along with the turbulence from future I-20 Express lanes slip ramp. This congestion restricts the amount of traffic that can enter the study area. However, the build scenario still processes a 5.8% greater volume than the no-build. The results are discussed further in the following section.

YR 2045 BUILD PM Peak - Graphical Results ---- I-20 WB



YR 2045 NO BUILD PM Peak - Graphical Results ---- I-20 WB



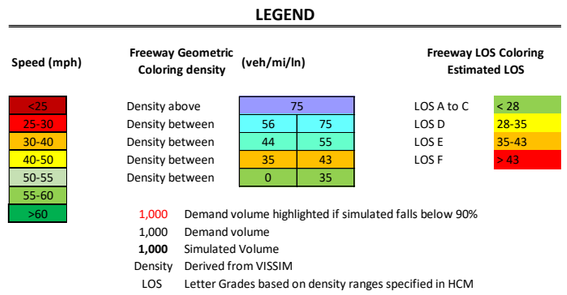


Figure 7-29. Freeway Schematic Results I-20 WB - 2045 No-build Vs Build - PM Peak Hour

2045 BUILD I-20 WB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	3:00 PM																
	3:15 PM																
	3:30 PM																
	3:45 PM																
Analysis Period	4:00 PM																
	4:15 PM																
	4:30 PM																
	4:45 PM																
Post Peak	5:00 PM																
	5:15 PM																
	5:30 PM																
	5:45 PM																

I-20 WB CD - PM PEAK

I-20 WB CD Merge with Wesley Chapel Road ramp	I-20 WB CD after Merge

2045 NO BUILD I-20 WB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 WB SR 155/Candler Road on-ramp merge	I-20 WB GP after SR 155/Candler Road off-ramp	I-20 WB GP before SR 155/Candler Road off-ramp	I-20 WB GP before Columbia Drive on-ramp	I-20 WB HOV after HOV lane diverge	I-20 WB HOV after I-285 SB on-ramp merge	I-20 WB after I-20 WB off-ramp loop	I-285 NB ramp merge to I-20 WB	I-20 WB after off ramp to I-285 NB	I-20 WB after Wesley Chapel Road on-ramp	I-20 WB after Wesley Chapel Road off-ramp	I-20 WB after Panola Road on-ramp merge	I-20 WB after Panola Road off-ramp	I-20 WB Lithonia Industrial Boulevard on-ramp merge	I-20 WB after Evans Mill Road off-ramp	I-20 WB mainline (Between Turner Hill on-ramp and Evans Mill Rd off-ramp)
Pre-Peak	3:00 PM																
	3:15 PM																
	3:30 PM																
	3:45 PM																
Analysis Period	4:00 PM																
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	4:45 PM																
Post Peak	5:00 PM																
	5:15 PM																
	5:30 PM																
	5:45 PM																

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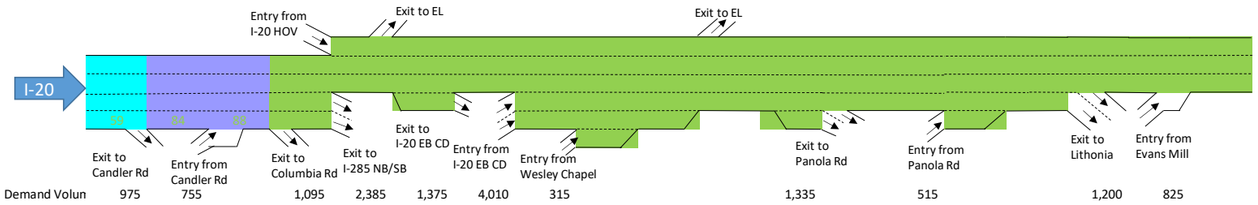
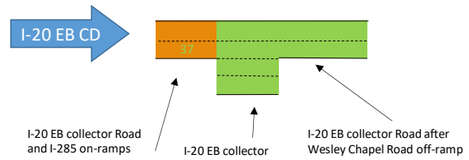
Figure 7-30. Speed Heat Map Results I-20 WB - 2045 No-build Vs Build - PM Peak Period

YR 2045 BUILD PM Peak - Graphical Results ---- I-20 EB

Demand Volumes (vph)	8370	7395	8150	7055	5200	5200	3825	7835	7835	8150	8125	8125	6790	7305	7305	7305	6105	6930	6930	
Simulated Volumes (vph)	6103	5416	6100	5304	4073	4130	3045	6284	6623	6604	6602	6566	5498	5925	6022	5783	5048	5873	5874	
Ramp Demand Volun	975	755		1,095	2,385	1,375	4,010	315				1,335		515			1,200	825		
No of Lanes	4	4	4	4	3	4	3	5	6	5	4	5	4	4	5	4	3	4	3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,176	2,368	2,739	770	5,606	1,270	12,364	2,136	5,427	
Speed (mph)	26	16	18	49	61	62	63	56	55	44	59	61	62	60	61	51	61	63	64	
Level of Service	F	F	F	D	C	B	B	C	C	D	D	C	C	C	C	D	D	C	D	
Density (pc/mi/ln))	59	84	88	27	22	17	16	23	20	30	28	21	22	25	20	29	28	23	30	

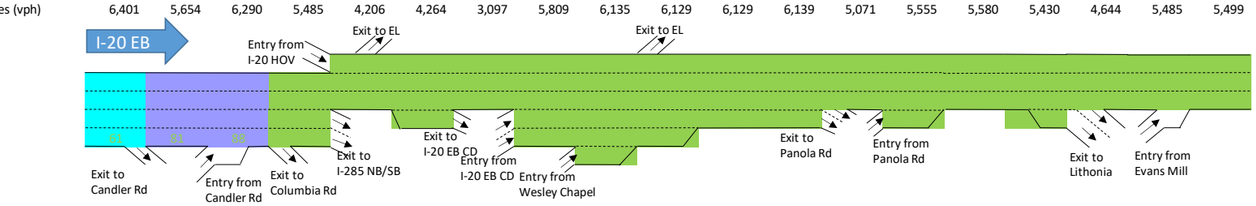


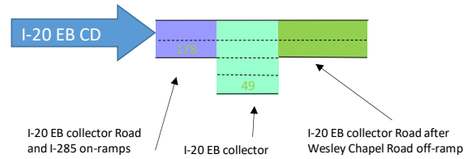


No of Lanes	2	4	2
Speed (mph)	37	47	51
Level of Service	E	C	D
Density (pc/mi/ln))	37	24	32

YR 2045 NO BUILD PM Peak - Graphical Results ---- I-20 EB

Demand Volumes (vph)	8,140	7,190	7,935	6,865	5,000	5,000	3,650	7,595	7,910	7,885	7,885	7,885	6,580	7,060	7,060	7,060	5,885	6,755	6,755	
Simulated Volumes (vph)	6,401	5,654	6,290	5,485	4,206	4,264	3,097	5,809	6,135	6,129	6,129	6,139	5,071	5,555	5,580	5,430	4,644	5,485	5,499	
Ramp Demand Volun	950	745		1,070	2,340	1,350	3,945	315				1,305		480			1,175	870		
No of Lanes	4	4	4	4	3	4	3	5	6	6	4	4	3	4	3	3	3	4	3	
Distance (ft)	1,500	2,945	3,157	2,617	788	2,137	6,853	1,300	682	1,804	7,891	1,294	2,739	770	5,606	1,270	12,364	2,136	5,427	
Speed (mph)	26	18	18	44	61	60	62	57	56	60	60	56	59	57	60	57	61	60	60	
Level of Service	F	F	F	D	C	B	B	C	C	B	C	D	D	C	D	D	C	C	D	
Density (pc/mi/ln))	61	81	88	32	23	18	17	20	18	17	25	27	29	25	31	32	25	23	31	





No of Lanes	2	4	2
Speed (mph)	12	21	50
Level of Service	F	F	D
Density (pc/mi/ln))	178	49	27

LEGEND

Speed (mph)	Freeway Geometric Coloring density (veh/mi/ln)			Freeway LOS Coloring Estimated LOS	
<25	Density above	75		LOS A to C	< 28
25-30	Density between	56	75	LOS D	28-35
30-40	Density between	44	55	LOS E	35-43
40-50	Density between	35	43	LOS F	> 43
50-55	Density between	0	35		
55-60					
>60					

1,000	Demand volume highlighted if simulated falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-31. Freeway Schematic Results I-20 EB 2045 - No-build Vs Build - PM Peak Hour

2045 BUILD I-20 EB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
	8:30 AM															

I-20 EB CD - PM PEAK

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

2045 NO BUILD I-20 EB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-20 EB HOV	I-20 EB before SR 155/Candler Road off-ramp	I-20 EB after SR 155/Candler Road off-ramp	I-20 EB SR 155/Candler Road on-ramp merge	I-20 EB before Columbia Drive off-ramp	I-20 EB after Columbia Drive off-ramp to diverge area	I-20 EB after GP and HOV lane merge	I-20 EB after I-20 EB collector Road diverge	I-20 EB and collector Road merge	I-20 EB after Wesley Chapel Road on-ramp	I-20 EB after Panola Road off-ramp	I-20 EB Panola Road on-ramp merge	I-20 EB Before Lithonia Ind Blvd off-ramp	I-20 EB after Lithonia Industrial Boulevard off-ramp	I-20 EB Evans Mill Road on-ramp merge
Pre-Peak	5:45 AM															
	6:00 AM															
	6:15 AM															
	6:30 AM															
Analysis Period	6:45 AM															
	7:00 AM															
	7:15 AM															
	7:30 AM															
Post Peak	7:45 AM															
	8:00 AM															
	8:15 AM															
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I-20 EB CD - PM PEAK

I-20 EB collector Road and I-285 on-ramps merge	I-20 EB collector Road after merge	I-20 EB CD Road after Wesley Chapel Road off-ramp

LEGEND

<25
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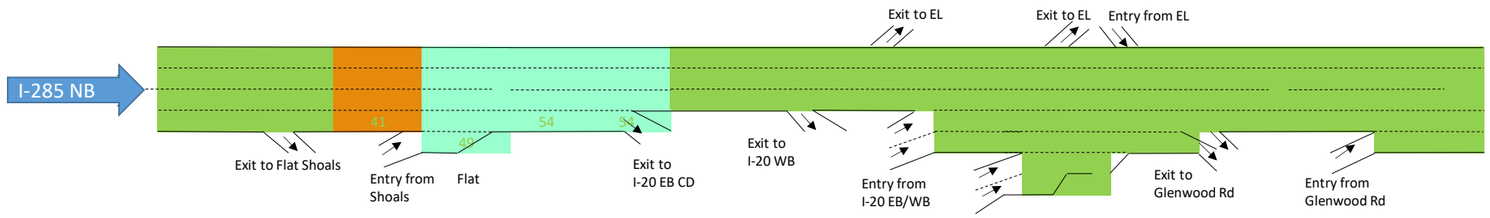
Figure 7-32. Speed Heat Map Results I-20 EB 2045 - No-build Vs Build - PM Peak Period

YR 2045 BUILD PM Peak - Graphical Results ---- I-285 NB

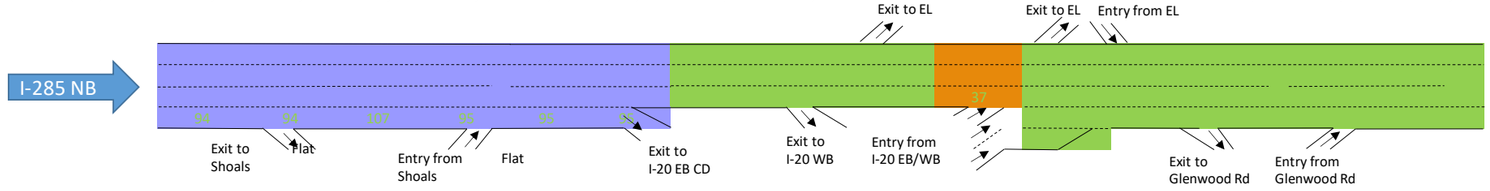
Demand Volumes	6390	6390	5740	6230	6230	6230	4315	4315	4210	3910	7960	8010	7160	7560	7560
Simulated Volumes	6325	6325	5568	5766	5828	5828	4042	4042	3918	5350	7161	6103	5463	5787	6052



Ramp Demand Volume (vph)		675	510			1,980		100	2,390	1,850			885	425	
No of Lanes	4	4	4	5	4	4	3	3	3	5	7	5	4	4	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609	295	730
Speed (mph)	50	50	36	24	27	27	59	59	63	59	56	48	51	52	55
Level of Service	D	D	E	F	F	F	C	C	C	C	C	C	D	D	D
Density (vehicles)	32	32	41	49	54	54	23	23	21	18	18	26	27	28	27

YR 2045 NO BUILD PM Peak - Graphical Results ---- I-285 NB

Demand Volumes (vph)	6140	6140	5515	5995	5995	5995	4085	4085	3985	7645	7645	7,695	6845	7240	7240
Simulation Volumes (vph)	4,018	4,018	3,414	3,607	3,653	3,653	2,461	2,461	2,403	5,342	5,214	5,360	4,795	5,001	5,232



Ramp Demand Volume (vph)		645		495			1,965	95		4,110			875	410	
No of Lanes	4	4	4	5	4	4	3	3	3	3	5	4	4	5	4
Distance (ft)	2,017	1,500	4,102	197	4,937	1,500	1,534	500	1,455	1,908	1,158	3,633	1,609	295	730
Speed (mph)	11	11	8	8	10	10	61	61	63	48	46	45	46	43	45
Level of Service	F	F	F	F	F	F	B	B	B	E	C	D	D	C	D
Density (pc/mi/ln))	94	94	107	95	95	95	13	13	13	37	23	30	26	23	29

LEGEND

Speed (mph)
<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density	(veh/mi/ln)	
Density above	75	
Density between	56	75
Density between	44	55
Density between	35	43
Density between	0	35

Freeway LOS Coloring Estimated LOS	
LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000	Demand volume highlighted if simulated falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-33. Freeway Schematic Results I-285 NB – 2045 No-build Vs Build - PM Peak Hour

2045 BUILD I-285 NB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	3:00 PM									
	3:15 PM									
	3:30 PM									
	3:45 PM									
Analysis Period	4:00 PM									
	4:15 PM									
	4:30 PM									
	4:45 PM									
Post Peak	5:00 PM									
	5:15 PM									
	5:30 PM									
	5:45 PM									

2045 NO BUILD I-285 NB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	3:00 PM									
	3:15 PM									
	3:30 PM									
	3:45 PM									
Analysis Period	4:00 PM									
	4:15 PM									
	4:30 PM									
	4:45 PM									
Post Peak	5:00 PM									
	5:15 PM									
	5:30 PM									
	5:45 PM									

LEGEND

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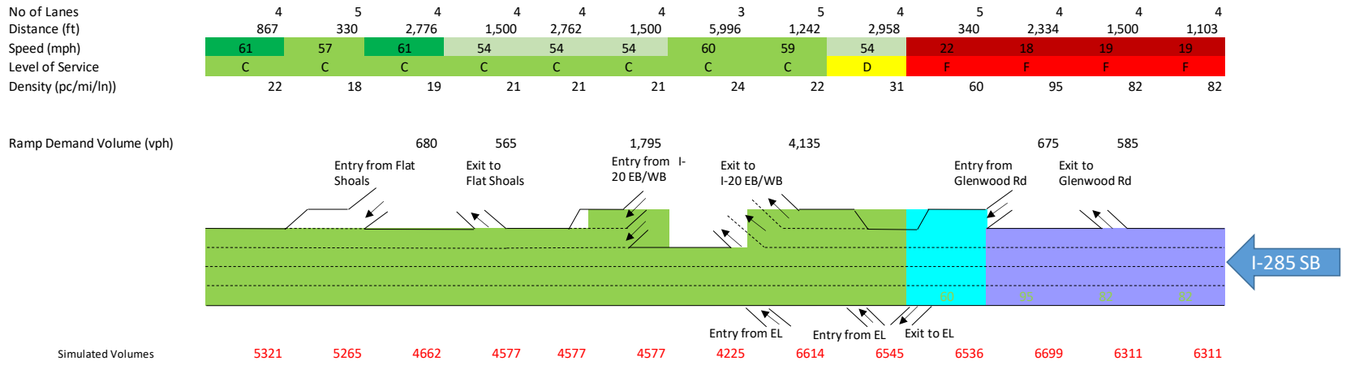
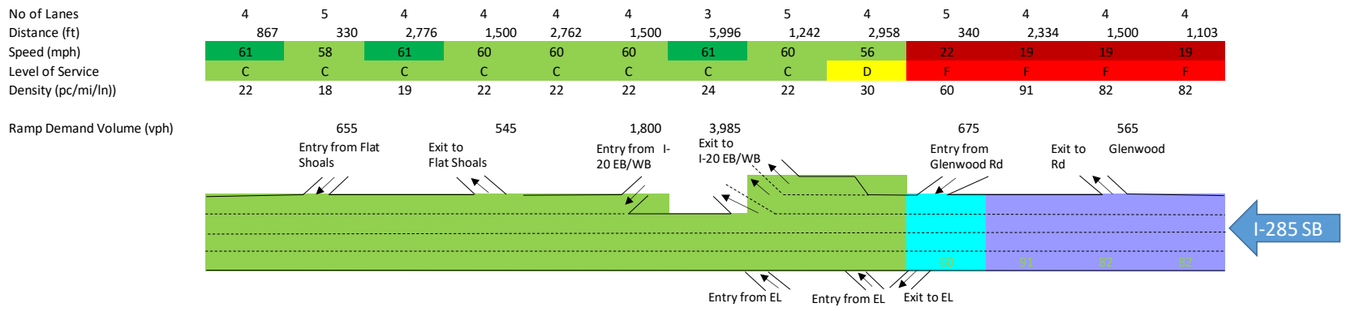
Figure 7-34. Speed Heat Map Results I-285 NB - 2045 No-build Vs Build - PM Peak Period

YR 2045 BUILD PM Peak - Graphical Results ---- I-285 SB



YR 2045 NO BUILD PM Peak - Graphical Results ---- I-285 SB



LEGEND

Speed (mph)
<25
25-30
30-40
40-50
50-55
55-60
>60

Freeway Geometric Coloring density	(veh/mi/ln)	
Density above	75	
Density between	56	75
Density between	44	55
Density between	35	43
Density between	0	35

Freeway LOS Coloring Estimated LOS	
LOS A to C	< 28
LOS D	28-35
LOS E	35-43
LOS F	> 43

1,000	Demand volume highlighted if simulated falls below 90%
1,000	Demand volume
1,000	Simulated Volume
Density	Derived from VISSIM
LOS	Letter Grades based on density ranges specified in HCM

Figure 7-35. Freeway Schematic Results I-285 SB - 2045 No-build Vs Build - PM Peak Hour

2045 BUILD I-285 SB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND

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2045 NO BUILD I-285 SB - SPEED HEAT MAPS - PM PEAK

Time / Location		I-285 NB FlatShoals Road diverge	I-285 NB after FlatShoals Road off-ramp	I-285 NB after FlatShoals Road on-ramp	I-285 NB after I-20 EB off-ramp	I-285 NB after I-20 WB loop	I-285 NB and I-20 EB and WB ramps merge	I-285 NB before Glenwood off-ramp	I-285 NB after Glenwood off-ramp	I-285 NB Glenwood on-ramp merge
Pre-Peak	5:45 AM									
	6:00 AM									
	6:15 AM									
	6:30 AM									
Analysis Period	6:45 AM									
	7:00 AM									
	7:15 AM									
	7:30 AM									
Post Peak	7:45 AM									
	8:00 AM									
	8:15 AM									
	8:30 AM									

LEGEND

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>60

Figure 7-36. Speed Heat Map Results I-285 SB - 2045 No-build Vs Build - PM Peak Period

7.1.5 SUMMARY OF BUILD ALTERNATIVE COMPARED TO NO-BUILD ALTERNATIVE

Chapters 5 and 6 a illustrate comparison of no-build and build conditions utilizing Vissim modeling. Reviewing the results, the I-285/ I-20 system-to-system interchange and corresponding ramps perform at acceptable LOS. Several sections upstream and downstream of the interchange seem to be at undesirable levels of service especially in the design year. However, the improved throughput and travel speed through the corridor in the build condition should be considered as a direct benefit of the project.

The improvements in volume processed, speed and density of the Build scenario compared to No-Build are listed below:

7.1.5.1 YR 2025 (NO-BUILD VS BUILD)

AM Peak: In the build scenario along I-20 WB all the sections operate at an acceptable LOS with the build improvements and are able to process more volume (2.1% more volume) and provide an acceptable average speed of 60 mph compared to an average speed of 45 mph along the corridor in the no-build condition. In the EB direction the operations are similar in both the build and no-build scenarios (average speeds above 60 mph) with the build scenario processing 3% greater volume. It must be noted that I-20 EB is the non-peak direction during AM.

PM Peak: In the build scenario along I-20 WB all the sections operate at an acceptable LOS with the build improvements and can process the same amount of volume and provide an acceptable average speed of 60 mph against an average speed of 35 mph in the no build along the corridor. In the EB direction the build scenario is processing 3% greater volume compared to the no-build condition, however, the merge section after Candler Road onto I-20 EB is deteriorating because of the increase in traffic volume and no improvements made in the build condition.

7.1.5.2 YR 2045 (NO-BUILD VS BUILD)

AM Peak: In the no-build scenario along I-20 WB, the sections between Evans Mill Road and the Panola Road on-ramp are deteriorating. Whereas, in the build scenario due to the addition of one auxiliary lane and a new CD system the corridor performs at a better LOS, is able to process a greater volume and at a better speed compared to the no-build scenario. West of Wesley Chapel Road on-ramp merge, the LOS deteriorates in the build because there is increase in volume and there are no upstream improvements (I-20 EB between interchange and Candler Road) made for free movement of traffic. Along I-20 EB, both build and no-build perform at acceptable LOS. Therefore, the build condition processes more volume when compared to no-build condition.

PM Peak: In the no-build scenario, the entire I-20 WB segment between Evans Mill Road and the Wesley Chapel Road on-ramp performs at LOS E or F. In the build condition, the LOS of the segment between the Evans Mill Road on-ramp and Wesley Chapel Road on-ramp performs at much better LOS. In the build scenario, 4.5% more vehicles are processed compared to the no-build condition and in the build scenario I-20 WB operates with average stream speed of 44 mph compared to 30 mph in the no-build condition. Along the EB direction, the segments between the Candler Road off-ramp and Columbia Drive off-ramp operate at an LOS F in both the build and no-build conditions. In addition the segments

between the Lithonia Industrial Boulevard off-ramp and Evans Mill Road off-ramp operate at LOS E in the build condition due to the addition of auxiliary lane. Columbia interchange location due to close proximity to Candler Road interchange and I-285 system interchange along with the turbulence from the future I-20 express lane slip ramp creates a bottle neck which restricts the amount of traffic that can enter the study area. However, the build scenario still processes 5.8% more volume than the no-build.

7.1.5.3 Overall Network Performance (No-build Vs Build)

The traffic analysis results in **Table 7-1** show that for both 2025 and 2045, the Build conditions would process more vehicles. Average delay reduces significantly – by up to 38.47% in 2025 and 54.99% in 2045 in the AM condition and 15.5% in 2025 and 49.5% in 2045 in the PM condition. There is significant increase in average speed along the corridor in the build condition of up to 45 percent in the 2045 PM and 37% in the AM peak, in comparison to their respective No-Build conditions.

Table 7-1. Average Networkwide Delay and Speed (No-build Vs Build)

	2025 AM			2025 PM		
	No-Build	**Build**	**% Change**	**No-Build**	**Build**	**% Change**
Average Number of Vehicles	39,483	41,624	5.42%	47,343	47,237	-0.22%
Average Delay (sec)	104	64	-38.47%	122	103	-15.52%
Average Speed (mph)	41	46	12.83%	39	43	8.05%
	2045 AM			**2045 PM**		
	No-Build	**Build**	**% Change**	**No-Build**	**Build**	**% Change**
Average Number of Vehicles	46,343	45,621	-1.56%	50,711	50,294	-0.82%
Average Delay (sec)	209	94	-54.99%	327	165	-49.50%
Average Speed (mph)	32	43	37.17%	25	36	45.20%

7.2 TRAVEL TIME ANALYSIS

To evaluate the benefits of the proposed project, travel time data for the no-build and build scenarios of the open and design year were derived from the respective Vissim models. Travel time segments were selected between every two adjacent interchanges along the I-20 and I-285 mainlines. **Table 7-2** and **Table 7-3** show the travel times for 2025 and 2045. A comparison of the travel time reveals that there will be time savings for vehicles driving on I-20 WB and I-285 NB in the build condition. A slight increase in travel time will be observed on I-20 EB and I-285 SB due to a higher volume in the build model. This increase is acceptable considering that more vehicle throughput is processed in the build model compared to the no-build.

Table 7-2.Travel Time (Vissim) – Opening Year

Direction	From	To	Distance (mi)	2025 AM			2025 PM		
				No-build (secs)	Build (secs)	Travel Time Saving (%)	No-build (secs)	Build (secs)	Travel Time Saving (%)
I-20 Mainline									
Eastbound	Candler Road Off-Ramp	Columbia Drive Off-Ramp	1.14	66	66	0%	84	77	9%
	Columbia Drive Off-Ramp	I-285 NB/SB Off-Ramp	0.48	28	28	1%	32	30	5%
	I-285 NB/SB Off-Ramp	Wesley Chapel Road On-Ramp	2.11	120	125	-4%	122	123	-1%
	Wesley Chapel Road On-Ramp	Panola Road On-Ramp	2.73	160	161	-1%	167	164	2%
	Panola Road On-Ramp	Lithonia Ind. Blvd. Off-Ramp	1.49	84	84	0%	86	85	1%
	Lithonia Ind. Blvd. Off-Ramp	Evans Mill Road On-Ramp	2.32	135	135	0%	137	137	0%
	Candler Road Off-Ramp	**Evans Mill Road On-Ramp**	**10.28**	**594**	**600**	**-1%**	**628**	**615**	**2%**
Westbound	Evans Mill Road Off-Ramp	Lithonia Ind. Blvd. On-Ramp	2.03	150	120	20%	124	120	-3%
	Lithonia Ind. Blvd. On-Ramp	Panola Road Off-ramp	1.38	247	79	68%	85	81	5%
	Panola Road Off-ramp	Wesley Chapel Road Off-Ramp	2.86	267	162	39%	190	207	-9%
	Wesley Chapel Road Off-Ramp	I-285 SB On-Ramp	2.01	169	117	31%	164	120	27%
	I-285 SB On-Ramp	Columbia Drive On-Ramp	0.45	26	27	-5%	26	25	1%
	Columbia Drive On-Ramp	Candler Road On-Ramp	1.19	70	70	0%	68	68	0%
	Evans Mill Rd (Overpass)	**Candler Road On-Ramp**	**9.92**	**858**	**505**	**41%**	**658**	**622**	**5%**
I-285 Mainline									
Southbound	Glenwood Road On-Ramp	I-20 WB Off-Ramp	1.35	97	108	-11%	123	81	35%
	I-20 WB Off-Ramp	I-20 EB On-Ramp	1.14	65	65	0%	68	65	4%
	I-20 Off-Ramp	Flat Shoals Road On-Ramp	1.62	96	94	1%	96	97	-1%
	Glenwood Rd Off-Ramp	**Flat Shoals Road On-Ramp**	**4.11**	**258**	**267**	**-4%**	**287**	**242**	**16%**
Northbound	Flat Shoals Road Off-Ramp	I-20 EB Off-Ramp	1.71	119	119	0%	145	124	15%
	I-20 EB Off-Ramp	I-20 WB On-Ramp	0.68	38	38	1%	38	38	-1%
	I-20 WB On-Ramp	Glenwood Road On-Ramp	1.71	116	104	11%	139	112	19%
	Flat Shoals Road Off-Ramp	**Glenwood Road On-Ramp**	**4.10**	**274**	**260**	**5%**	**322**	**274**	**15%**

In the year 2025, significant improvement in travel time is observed along I-20 WB. Travel time savings of 41% (AM Peak) and 5% (PM Peak) are observed when the build compared to no-build. This improvement is observed as result of adding an WB auxiliary lane between Lithonia Industrial Boulevard and Wesley Chapel Road, WB CD System lanes between Wesley Chapel Road and system interchange , and modifying the existing single lane loop ramp from I-20 WB to I-285 SB to a two lane directional ramp.

Along I-285 NB , travel time savings of 15% are observed in the PM peak. This is due to the addition of an auxiliary lane between the system interchange and Glenwood Road and the improvement of the I-20 to I-285 NB/SB ramps. For the remainder along I-20 EB and I-285 SB no significant difference in travel times was observed.

Table 7-3. Travel Time (Vissim) – Design Year

Direction	From	To	Distance (mi)	2045 AM			2045 PM		
				No-build	Build	Travel Time Saving (%)	No-build	Build	Travel Time Saving (%)
I-20 Mainline									
Eastbound	Candler Road Off-Ramp	Columbia Drive Off-Ramp	1.14	66	67	-1%	172	196	-14%
	Columbia Drive Off-Ramp	I-285 NB/SB Off-Ramp	0.48	29	29	1%	38	38	-1%
	I-285 NB/SB Off-Ramp	Wesley Chapel Road On-Ramp	2.11	121	125	-3%	124	122	2%
	Wesley Chapel Road On-Ramp	Panola Road On-Ramp	2.73	161	162	0%	170	171	-1%
	Panola Road On-Ramp	Lithonia Ind. Blvd. Off-Ramp	1.49	85	84	1%	88	90	-2%
	Lithonia Ind. Blvd. Off-Ramp	Evans Mill Road On-Ramp	2.32	136	136	0%	138	138	0%
	Candler Road Off-Ramp	**Evans Mill Road On-Ramp**	**10.28**	**598**	**602**	**-1%**	**731**	**756**	**-3%**
Westbound	Evans Mill Road Off-Ramp	Lithonia Ind. Blvd. On-Ramp	2.03	432	120	72%	627	123	80%
	Lithonia Ind. Blvd. On-Ramp	Panola Road Off-ramp	1.38	355	81	77%	277	90	68%
	Panola Road Off-ramp	Wesley Chapel Road Off-Ramp	2.86	274	169	38%	439	380	13%
	Wesley Chapel Road Off-Ramp	I-285 SB On-Ramp	2.01	155	166	-7%	131	121	8%
	I-285 SB On-Ramp	Columbia Drive On-Ramp	0.45	27	46	-67%	26	26	1%
	Columbia Drive On-Ramp	Candler Road On-Ramp	1.19	75	75	0%	69	69	0%
	Evans Mill Road (Overpass)	**Candler Road On-Ramp**	**9.92**	**1319**	**659**	**50%**	**1567**	**807**	**48%**
I-285 Mainline									
Southbound	Glenwood Road On-Ramp	I-20 WB Off-Ramp	1.35	100	102	-2%	159	161	-1%
	I-20 WB Off-Ramp	I-20 EB On-Ramp	1.14	65	65	0%	65	65	0%
	I-20 Off-Ramp	Flat Shoals Road On-Ramp	1.62	96	95	1%	94	100	-6%
	Glenwood Road Off-Ramp	**Flat Shoals Road On-Ramp**	**4.11**	**261**	**262**	**0%**	**318**	**326**	**-2%**
Northbound	Flat Shoals Road Off-Ramp	I-20 EB Off-Ramp	1.71	124	125	-1%	679	233	66%
	I-20 EB Off-Ramp	I-20 WB On-Ramp	0.68	39	38	2%	39	39	0%
	I-20 WB On-Ramp	Glenwood Road On-Ramp	1.71	118	102	13%	134	113	15%
	Flat Shoals Road Off-Ramp	**Glenwood Road On-Ramp**	**4.10**	**281**	**265**	**6%**	**852**	**386**	**55%**

In the year 2045, significant improvement in travel time is observed along I-20 WB, 50% (AM Peak) and 48% (PM Peak) travel time savings are observed when the build condition is compared to no-build. This improvement is observed as result of adding a WB auxiliary lane between Lithonia Industrial Boulevard and Wesley Chapel Road, WB CD System lanes between Wesley Chapel Road and the system interchange, and modifying the single lane loop ramp from I-20 WB to I-285 SB to a two -lane directional ramp. There is a slight increase in travel time along the section between the Wesley Chapel Road off-ramp and I-285 south ramp in the build condition. This is attributed to the increase in volume being processed in the AM peak and does not impact the overall travel time of the corridor.

Along I-285 NB, travel time savings of 55% are observed in the PM peak. This is due to the addition of an auxiliary lane between the system interchange and Glenwood Road, and improvement of I-20 to I-285 NB/SB ramps. The remainder along I-20 EB no significant difference in travel times is observed. Along I-285 SB travel times increase slightly in the build condition when compared to no-build. This is due to the difference in growth rates between the no-build and build scenarios; the traffic volumes are slightly higher in build scenario when compared to no-build scenario.

7.3 INTERSECTION CAPACITY ANALYSIS

The project area of influence includes eight arterial corridors that typically include signalized intersections. The capacity analyses of 33 signalized intersections from the arterial corridors were evaluated. This section presents a summary of the capacity analysis of the build and no-build operations of these signalized intersections.

This project does not propose any lane configuration geometric changes along the arterial systems within the project area. Therefore, the core capacity of the ramp terminals and the adjacent signalized intersections remain unchanged between the build and no-build alternatives. However, the build alternative LOS results change at signalized intersections due to different growth rates between no-build and build scenarios and signal optimization (build and no-build scenarios) for future years.

Due to the re-construction of Fairington Road overpass, the intersections at Fairington Road/Hillandale Drive and Hillandale Drive/ DeKalb Medical Parkway intersections are reconfigured. All other intersection geometries in the project stay the same.

Table 7-4 provides a summary of intersection-level capacity analyses using Synchro. The Synchro files are included in **Appendix G**.

Table 7-4. Peak Hour Intersection Capacity Analysis Summary

Intersection	2025				2045			
	AM		PM		AM		PM	
	Delay (LOS)		Delay (LOS)		Delay (LOS)		Delay (LOS)	
	No-Build	Build	No-Build	Build	No-Build	Build	No-Build	Build
Candler Road at Eastwyck Road	14.2 (B)	14.5 (B)	11.2 (B)	11.3 (B)	14.8 (B)	15.4 (B)	11.1 (B)	11.5 (B)
Candler Road at I-20 WB Ramps	27.5 (C)	27.5 (C)	31.9 (C)	31.8 (C)	32.2 (C)	33.3 (C)	35.3 (D)	34.7 (C)
Candler Road at I-20 EB Ramps	37.7 (D)	38.8 (D)	45 (D)	44.4 (D)	38.8 (D)	42.1 (D)	46 (D)	44.9 (D)
Candler Road at H F Shepherd Drive/ Rainbow Way	6.7 (A)	6.7 (A)	9.7 (A)	9.6 (A)	7.3 (A)	7.5 (A)	10.3 (B)	10.4 (B)
Columbia Drive at Columbia Woods Drive	9.8 (A)	9.8 (A)	8.1 (A)	8.1 (A)	9.9 (A)	10.2 (B)	8.4 (A)	8.9 (A)
Columbia Drive at I-20 EB Ramps	8.9 (A)	8.9 (A)	18.7 (B)	19.2 (B)	10.6 (B)	11.5 (B)	24.9 (C)	24.1 (C)
Columbia Drive at Rainbow Drive	42.9 (D)	42.7 (D)	44.6 (D)	42.6 (D)	57.3 (E)	55.7 (E)	65.5 (E)	55.9 (E)
Glenwood Road at I-285 NB Ramps	44.8 (D)	43 (D)	31.7 (C)	30.6 (C)	58.3 (E)	70.8 (E)	31.7 (C)	30.7 (C)
Glenwood Road at I-285 SB Ramps	62.6 (E)	72.9 (E)	70.7 (E)	65.6 (E)	87 (F)	85.1 (F)	74 (E)	85 (F)
Glenwood Road at Austin Drive	28.9 (C)	28.5 (C)	28.4 (C)	27.9 (C)	34.9 (C)	36.2 (D)	30.2 (C)	30.6 (C)
Glenwood Road at Atherton Drive	2.1 (A)	2 (A)	2.5 (A)	2.6 (A)	2.2 (A)	2.2 (A)	2.8 (A)	2.8 (A)
Flat Shoals Road at I-285 EB Ramps	24 (C)	24.5 (C)	21.4 (C)	22.3 (C)	24.5 (C)	24.8 (C)	22.2 (C)	23.5 (C)
Flat Shoals Road at I-285 WB Ramps	13.6 (B)	14.1 (B)	28.6 (C)	29.7 (C)	33.6 (C)	14.3 (B)	31.4 (C)	31.9 (C)
Flat Shoals Road at Panthersville Road/ Fairlake Drive	38.6 (D)	38 (D)	33.6 (C)	33.2 (C)	45.7 (D)	43.1 (D)	36.1 (D)	35.8 (D)
Flat Shoals Road at Clifton Springs Road/ Columbia Drive	23.1 (C)	23.4 (C)	47.2 (D)	47.2 (D)	33.2 (C)	23.1 (C)	61 (E)	60.7 (E)
Wesley Chapel Road at I-20 EB Ramps	38.2 (D)	38 (D)	36.7 (D)	37.1 (D)	38.3 (D)	47.2 (D)	59.9 (E)	57.5 (E)
Wesley Chapel Road at I-20 WB Ramps	25.2 (C)	32.1 (C)	15.7 (B)	16.2 (B)	28.5 (C)	45.1 (D)	31.4 (C)	19.1 (B)
Wesley Chapel Road at Snapfinger Woods Drive	46.6 (D)	43 (D)	61.1 (E)	60.3 (E)	49.7 (D)	51.2 (D)	123 (F)	106.8 (F)
Wesley Chapel Road at Eastside Drive	26.4 (C)	26.2 (C)	6.2 (A)	6.1 (A)	41.3 (D)	60.9 (E)	10.3 (B)	10.4 (B)
Minola Drive/ Shire Drive at Miller Road	12.3 (B)	11.5 (B)	14.5 (B)	12.8 (B)	1777.6 (F)	2589.2 (F)	1439.2 (F)	3764.7 (F)
Panola Road at I-20 EB Ramps	28.7 (C)	29.2 (C)	43 (D)	45.7 (D)	16.2 (B)	20.2 (C)	25.1 (C)	26 (C)
Panola Road at I-20 WB Ramps	38.1 (D)	39.4 (D)	50.2 (D)	47.9 (D)	44.1 (D)	43.2 (D)	47.9 (D)	37.8 (D)
Panola Road at Panola Industrial Boulevard/ Hillandale Drive	50.6 (D)	53.1 (D)	73.5 (E)	74.6 (E)	41.5 (D)	43.9 (D)	40.3 (D)	47.3 (D)
Panola Road at Minola Drive/ Fairington Road	39.4 (D)	39.8 (D)	45.5 (D)	45.3 (D)	40.3 (D)	37.8 (D)	42.6 (D)	45.1 (D)
Hillandale Drive at Fairington Road	60.7 (E)	27.1 (C)	66.8 (E)	31.3 (C)	64 (E)	27 (C)	76.3 (E)	32.5 (C)
Chupp Way at Fairington Road	12.1 (B)	14.2 (B)	15.4 (B)	15.7 (B)	12.3 (B)	14.7 (B)	17.9 (B)	16.4 (B)
Old Hillandale Drive at Lithonia Industrial Boulevard	27 (C)	40.7 (D)	17.2 (B)	16.9 (B)	60.7 (E)	58.4 (E)	17 (B)	16.8 (B)
Lithonia Industrial Boulevard at I-20 EB CD Road	36.2 (D)	36.3 (D)	35.2 (D)	32.5 (C)	36.5 (D)	36.1 (D)	35.4 (D)	33.4 (C)
Evans Mill Road at Old Hillandale Drive/ I-20 WB Ramp	30.8 (C)	31 (C)	14.2 (B)	14.4 (B)	53.5 (D)	52.1 (D)	20.9 (C)	20.3 (C)
Evans Mill Road at I-20 EB CD Road	16.2 (B)	16.8 (B)	20.3 (C)	22 (C)	23.5 (C)	20.9 (C)	40.5 (C)	40.1 (D)
Hillandale Drive at Evans Mill Road	5.7 (A)	7.6 (A)	4 (A)	3.8 (A)	6.3 (A)	6.6 (A)	5.7 (A)	4.9 (A)
Evans Mill Road/ Mall Pkwy at Evans Mill Road/ Woodrow Drive	47.7 (D)	43.6 (D)	29 (C)	29.5 (C)	56.9 (E)	49.2 (D)	54.7 (D)	55.4 (E)
Lithonia Industrial Boulevard at Hillandale Drive	26.5 (C)	36.6 (D)	16.9 (B)	16.5 (B)	97 (F)	48 (D)	23.5 (C)	18.4 (B)

Table 7-5 summarizes the number of intersections with LOS E or worse during the AM and PM peak hours for both the open and design years. In the open year, the number of intersections with LOS E or worse reduced by one when the no-build compared to build in both peaks. Whereas in design year, the number of intersections reduce by two in AM peak. In the PM peak, the number of intersections stay the same (seven). Miller Road intersections show substantial deterioration in the build condition is because of change in traffic pattern in the area with the addition of I-20 East Express Lanes Project in the future. With the future proposed project this intersection will process over 300 more vehicles along each approach. At this time an ICE (Intersection Control Evaluation) analysis has been performed and a waiver has been approved by Georgia DOT for this intersection. A future configuration to address the operational needs of the intersection will be included as a part of I-20 East Express Lanes Project.

Table 7-5. Number of intersections with LOS E or worse in Open and Design Years

Alternative	Number of Intersections (LOS E or worse)			
	Open Year		Design Year	
	AM Peak	PM Peak	AM Peak	PM Peak
No-Build	2	4	8	7
Build	1	3	6	7

7.3.1 Summary of Synchro Results

For signalized and unsignalized intersections, delay and LOS are the measures of effectiveness (MOEs) that are being reviewed utilizing Synchro to compare the no-build and build conditions. The performance of the signalized and unsignalized intersections continue to deteriorate when compared to the existing year. Furthermore, the number of intersections deteriorating in the open year and design year continue to increase. This deterioration is not a direct result of the proposed project but is because of traffic volume growth in the area. The project scope does not include improvements to arterials or adjacent intersections. The performance of the intersections is only documented to ensure that the proposed project does not negatively impact arterials in the area.

8 FUTURE CRASH ANALYSIS

8.1 PREDICTIVE CRASH ANALYSIS

8.1.1 INTRODUCTION AND BACKGROUND

The purpose of this safety analysis section is to assess the potential safety impact (positive or negative) of the proposed improvements for the I-285 @ I-20 East Interchange Reconstruction Project (PI No. 0013915). The analysis conducted is based on methodologies outlined in the Highway Safety Manual (HSM), published by American Association of State Highway and Transportation Officials (AASHTO) and assist in identifying safety improvements that can be included in the project design.

The study limits of analysis cover the freeway sections, ramp sections and crossroads (including the first major intersection on the either side of the crossroad interchange terminus across the freeway) within the project limits. **Figure 8-1** shows the roadway and intersections facility types within the study area.

Safety analysis limits on I-20 extends from Candler Road (western terminus) to Evans Mill Road (eastern terminus) which is approximately 9.6 miles; and on I-285 it extends from Flat Shoals Road (southern terminus) to Glenwood Road (northern terminus) which is approximately 4.6 miles

For the purpose of this study, the quantitative analysis is performed for the proposed alternatives between the no-build and build scenarios.

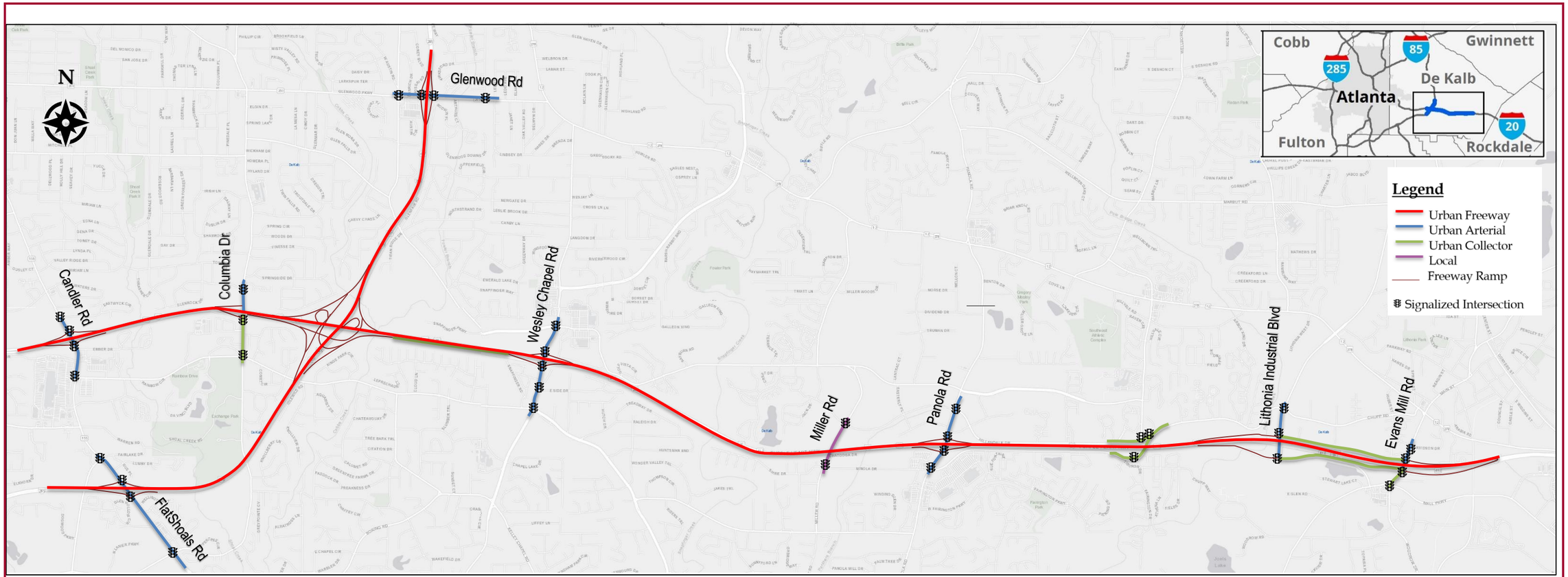

Figure 8-1. Roadway and Intersection Facility Types within the Study Limits

8.1.2 PREDICTIVE CRASH ANALYSIS

Using the American Association of State & Highway Transportation Officials Highway Safety Manual (HSM) Predictive Method, expected crash totals are estimated using the Interactive Highway Safety Design Model (IHSDM) to evaluate safety improvement for the Build and No-Build alternatives. HSM Part C predictive method provides an 18-step procedure to estimate the "expected average crash frequency" of a roadway network, facility, or site as shown in **Figure 8-2.**

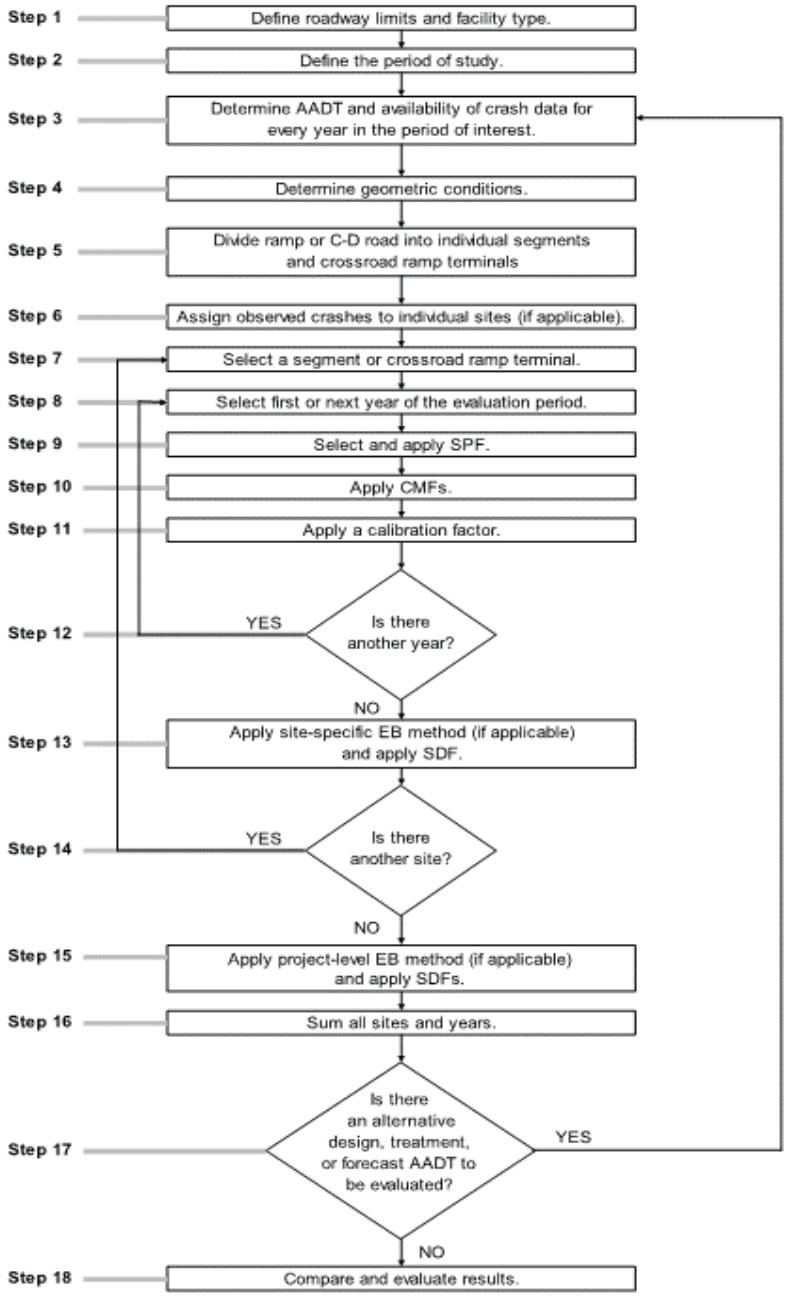

Figure 8-2. The HSM Predictive Method

8.1.2.1 Analysis Tool

IHSDM which is a project-level safety analysis tool that supports HSM predictive methods, was developed by the Federal Highway Administration before HSM was published. IHSDM uses the Empirical Bayes (EmB) process and implements the calibration procedures to HSM Part C. IHSDM can be used for evaluating the safety of all facility types covered in HSM Part C. It automatically segments highways for evaluation using HSM Part C segmentation rules. Crash and roadway data outputs can be graphically displayed, allowing users to quickly and easily identify potential safety concerns.

8.1.2.2 EmB method

The EmB method combines the historical crash records of the site and predicted number of crashes obtained from a safety performance function (SPF) for similar sites. This method addresses two problems of safety estimation; (1) it increases the precision of estimates beyond what is possible with the use of a minimum of three-year history crashes, and (2) it corrects for the regression-to-mean bias. However, the EmB procedure is not always applicable. The EmB method is used when an existing highway with available crash history data is being evaluated. For the roadways on new locations, there is no relevant crash history and, therefore, use of the EmB procedure is not an option. In addition, the EmB method cannot be applied to the locations where major improvements in the substantial proportion of the roadway length are proposed in the build condition. For instance, due to the recent construction on Flat Shoals Road, the crash history between 2013 to 2018 cannot be used in HSM analysis, and therefore no EmB method will be applied for this interchange. It should be noted that if the EmB method cannot be consistently applied to all alternatives (Build and No-Build), then it should not be used for any alternatives.

8.1.2.3 GDOT Calibration Factors

In order to predict reflecting levels of crash frequencies in jurisdiction of interest, the predicted number of crash frequencies are adjusted using calibration factors that are determined for each facility type. Georgia district-based calibration and distribution factors were provided by GDOT for intersections and segments in **Table 8-1** and **Table 8-2** respectively.

Table 8-1. District 7 - Intersection Calibration Factors

HSM Facility Type	Sample Size	Fatal & Injury	PDO	Total
Urban Three Leg Signalized	911	3.07	5.14	4.26
Urban Three Leg Unsignalized	1,440	0.86	1.13	1.11
Urban Four Leg Signalized	436	2.62	4.31	3.64
Urban Four Leg Unsignalized	221	0.69	1.00	0.90
Rural Three Leg Signalized	6	0.38	0.65	0.55
Rural Three Leg Signalized Two Lane	4	1.92	0.78	0.98
Rural Three Leg Unsignalized	8	0.49	1.37	0.98
Rural Three Leg Unsignalized Two Lane	88	0.56	0.46	0.49
Rural Four Leg Signalized	4	0.97	0.99	0.98
Rural Four Leg Signalized Two Lane	-	-	-	-
Rural Four Leg Unsignalized	-	-	-	-
Rural Four Leg Unsignalized Two-Lane	20	0.47	0.57	0.54
Urban Three Leg Signalized Ramp	125	4.39	6.63	5.64
Urban Three Leg Unsignalized Ramp	26	2.01	2.58	2.56
Urban Four Leg Signalized Ramp	98	2.95	4.80	4.04
Urban Four Leg Unsignalized Ramp	8	3.08	5.46	4.60
Rural Three Leg Signalized Two-Lane Ramp	-	-	-	-
Rural Three Leg Signalized Ramp	-	-	-	-
Rural Three Leg Unsignalized Two-Lane Ramp	1	-	-	-
Rural Three Leg Unsignalized Ramp	-	-	-	-
Rural Four Leg Signalized Two-Lane Ramp	1	0.71	0.33	0.41
Rural Four Leg Signalized Ramp	-	-	-	-
Rural Four Leg Unsignalized Two-Lane Ramp	1	0.58	1.00	0.87
Rural Four Leg Unsignalized Ramp	-	-	-	-
All Intersections	**12,037**	**1.28**	**1.51**	**1.45**

Source: GDOT traffic operations provided by PMC

Table 8-2. District 7 - Segment Calibration Factors

HSM Facility Type	Sample Size		Calibration Factor		
	No.	Total Miles	Fatal & Injury	PDO	Total
Two Lane	2,958	1,956	5.07	5.58	5.53
Three Lane	314	56	9.21	12.16	11.19
Four Lane Divided	601	350	3.64	3.98	4.08
Four Lane Undivided	1,528	609	6.29	7.70	7.12
Five Lane	113	16	7.37	10.20	9.71
Rural Freeway - Four Lanes	-	-	-	-	-
Rural Freeway - Six Lanes	6	13	0.27	0.33	0.31
Rural Freeway - Eight or More Lanes	-	-	-	-	-
Rural Divided	7	2	0.95	1.76	1.38
Rural Undivided	18	12	0.78	2.26	1.42
Rural Two Lane	159	259	0.91	1.14	1.06
Urban Freeway - Four Lanes	118	29	1.93	2.77	2.52
Urban Freeway - Six Lanes	270	95	1.66	1.83	1.78
Urban Freeway - Eight Lanes	317	109	1.58	1.76	1.70
Urban Freeway - Ten or More Lanes	341	68	2.61	3.14	2.99
Freeway Ramp	1,632	275	4.55	10.85	8.25
All Segments	**9,175**	**4,038**	**3.97**	**4.95**	**4.68**

Source: GDOT traffic operations provided by PMC

8.2 DATA COLLECTION

The study area is divided into homogenous analysis sites, called "segmentation," for intersections and roadway segments. Segments are split into distinct sites where any of the followings change: geometry of the roadway, speed limit, area type, Annual Average Daily Traffic (AADT), or median type. Safety-related data for each segment was collected and imported into the IHSDM models.

HSM predictive methods require a substantial amount of roadway geometric design, traffic volume, crashes and traffic control data. AADT volumes are used in the crash analysis calculations. AADT for the existing year and design year are obtained from our predicted traffic volumes presented in the Design Traffic Report. In addition to AADT on each mainline segment, interchange ramp, and arterial segment in the study area, the quantitative crash analysis tool for freeways and interchanges requires the collection and use of detailed design-level factors, such as:

- General: area type, speed limit and functional classification
- Horizontal alignment: Curves and tangent portions of the roadway
- Cross-section: through lane width, auxiliary lanes, shoulders, median and ramps
- Roadside: clear zone
- Intersection: Traffic control information, lane configuration, number of bus stops and schools within 1000 ft radius
- Other: median barrier, outside barrier, shoulder rumble strip, high volume sections and type B weaving sections

Site-specific crash history data is used for the roadways for which the EmB method can be applied. Six years of historical interstate crash data—from January 1, 2013, to December 31, 2018—was obtained from Georgia Electronic Accident Reporting System (GEARS) along I-285 and I-20 within the project limits. In order to enter crash data to the model, each crash was geocoded to determine the station number of the location where the crash occurred.

8.3 CRASH MODIFICATION FACTORS

In Step 10 of the predictive method shown in **Figure 8-2**, crash modification factors are applied to the selected SPF, which was selected in Step 9. Crash modification factors (CMFs) are used to adjust the SPF estimate of predicted average crash frequency for the effect of individual geometric design and traffic control features. The CMF for the SPF base condition of each geometric design or traffic control feature has a value of 1.00. Any feature associated with a higher crash frequency than the base condition has a CMF with a value greater than 1.00; any feature associated with a lower crash frequency than the base condition has a CMF with a value less than 1.00.

A list of CMFs used for the key geometric elements are presented in **Appendix E**.

The only CMF that was applied manually to the estimated crashes, was the CMF for the conversion of a diamond interchange to a diverging diamond interchange (DDI) at Panola Road. To estimate the crash frequency at the Panola Road Interchange, several CMFs available in the Clearing House were investigated. Ultimately, a CMF of 0.821 from a recently published study[1], conducted in Georgia State with fair to excellent rating, was selected for this purpose (Nye, T. S., Cunningham, C. M., & Byrom, E. (2019). National-Level Safety Evaluation of Diverging Diamond Interchanges. Transportation Research Record).

8.4 ALTERNATIVES

Four conditions have been modeled in IHSDM and analyzed to estimate the future safety conditions. Future crash frequencies, either predicted or expected, are reported by severity and for each facility type. The Panola Road DDI is expected to be constructed before 2025, so it is included in all the scenarios. No analysis is available for local and collector roads.

8.4.1 2025 No-Build Condition

The existing alignment of the roadways is used to create the no-build models. The Panola Road DDI project is added to the no-build open year condition as it is anticipated to be built by 2025. Six years

[1] http://www.cmfclearinghouse.org/detail.cfm?facid=10136

of crash data (from 2013 to 2018) and corresponding AADT is added in this model. **Figure 8-3** shows the no-build condition, modeled in IHSDM.

Predicted/expected crash frequencies by severity and for each facility type are reported in **Table 8-3** and **Table 8-4.** The EmB method cannot be applied to the following locations in the 2025 No-build model: Flat Shoals Road and its ramps to/from I-285, I-285 SB to I-20 EB ramp, I-20 WB to I-285 SB ramp, I-20 WB exit and entrance ramps at the Wesley Chapel Road Interchange, I-20 EB and WB entrance ramps at the Panola Road Interchange.

Table 8-3. 2025 No-Build - Expected Crash Severity Distribution- Freeway and Ramps

Facility	Fatal and Injury		Property Damage Only		Total	
	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
I-20	421	27%	1069	73%	1490	100%
I-20 EB CD	9	23%	16	77%	26	100%
I-20 EB onramp from CD	8	23%	21	77%	30	100%
I-20 EB to CD offramp	1	23%	5	77%	6	100%
I-285	221	28%	546	72%	767	100%
EB to NB ramp	4	23%	12	77%	16	100%
NB to EB Ramp	8	23%	9	77%	17	100%
SB To EB Ramp	22	23%	81	77%	103	100%
WB to NB ramp	8	23%	31	77%	39	100%
NB to WB loop	4	23%	6	77%	9	100%
WB to SB Loop	24	23%	78	77%	102	100%
EB to SB Ramp	3	23%	7	77%	11	100%
SB to WB ramp	4	23%	7	77%	11	100%
Total	**738**	**28%**	**1888**	**72%**	**2626**	**100%**

Table 8-4. 2025 No-Build - Expected Crash Severity Distribution- Crossroads

		Fatal and Injury		Property Damage Only		Total	
Interchange	Facility	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Candler Rd	Candler Rd	55	24%	136	76%	191	100%
	I-20 WB Exit	2	23%	7	77%	9	100%
	I-20 WB Entrance	1	23%	3	77%	4	100%
	I-20 EB Exit	1	23%	8	77%	9	100%
	I-20 EB Entrance	2	23%	7	77%	8	100%
	Total	**61**	**27%**	**161**	**73%**	**222**	**100%**
Columbia Dr	Columbia Dr	10	24%	16	76%	26	100%
	I-20 WB Entrance	1	23%	2	77%	2	100%
	I-20 EB Exit	0	23%	2	77%	3	100%
	Total	**11**	**34%**	**21**	**66%**	**31**	**100%**
Wesley Chapel Rd	Wesley Chapel Rd	33	24%	91	76%	124	100%
	I-20 EB Entrance	1	23%	5	77%	6	100%
	I-20 EB Exit	7	23%	42	77%	49	100%
	I-20 WB Exit	1	23%	2	77%	3	100%
	I-20 WB Entrance	2	23%	8	77%	10	100%

Interchange	Facility	Fatal and Injury		Property Damage Only		Total	
		Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
	Total	**44**	**23%**	**149**	**77%**	**193**	**100%**
Panola Rd	Panola Rd	47	24%	144	76%	191	100%
	I-20 EB Entrance	1	23%	2	77%	3	100%
	I-20 EB Exit	3	23%	26	77%	28	100%
	I-20 WB Exit	1	23%	6	77%	7	100%
	I-20 WB Entrance	2	23%	5	77%	7	100%
	Total	**53**	**22%**	**184**	**78%**	**237**	**100%**
Evans Mill Rd and Lithonia Industrial Boulevard	Lithonia Industrial Boulevard	12	24%	19	76%	32	100%
	I-20 EB Exit Ramp	1	23%	2	77%	3	100%
	I-20 WB Entry Ramp	2	23%	8	77%	10	100%
	Evans Mill Rd	4	24%	7	76%	11	100%
	I-20 EB Entry Ramp	1	23%	2	77%	3	100%
	I-20 WB Exit Ramp	1	23%	7	77%	9	100%
	Total	**21**	**31%**	**46**	**69%**	**67**	**100%**
Glenwood Road	Glenwood Road	49	24%	100	76%	149	100%
	I-285 SB Exit Ramp	1	23%	2	77%	3	100%
	I-285 SB Entry Ramp	1	23%	2	77%	3	100%
	I-285 NB Exit Ramp	0	23%	2	77%	2	100%
	I-285 NB Entry Ramp	1	23%	2	77%	3	100%
	Total	**51**	**32%**	**108**	**68%**	**160**	**100%**
Flat Shoals Road	Flat Shoals Road	70	24%	169	76%	239	100%
	I-285 SB Entry Ramp	2	23%	4	77%	6	100%
	I-285 SB Exit Ramp	1	23%	3	77%	4	100%
	I-285 NB Exit Ramp	1	23%	3	77%	4	100%
	I-285 NB Entry Ramp	1	23%	3	77%	4	100%
	Total	**75**	**29%**	**181**	**71%**	**256**	**100%**
Total		**314**	**27%**	**851**	**73%**	**1165**	**100%**

8.4.2 2025 Build Condition

To create the 2025 Build model, the 2025 No-Build models was modified to include the new improvements at the system-to-system interchange ramps, improvements at the Wesley Chapel Road interchange, the addition of the I-20 WB CD, and the extension of the auxiliary lane along the I-20 EB CD to Wesley Chapel Road.

Figure 8-4 shows the build condition, modeled in IHSDM. Although some ramps do not show to match the proposed design and they are not shown fully connected to the freeways, the connections between ramps and roads are defined in the software. It must be noted that the viewer of the IHSDM is not a perfect tool to show the geometry of the roadways and small gaps or overlaps in the viewer would not affect the analysis results.

Predicted/expected crash frequencies by severity and for each facility type are reported in **Table 8-5** and **Table 8-6**. The EmB method cannot be applied to the following locations: I-20 WB CD road and its ramps to/from the freeway, Flat Shoals Road and its ramps to/from I-285, I-285 SB to I-20 EB ramp,

I-20 WB to I-285 SB ramp, I-20 WB exit and entrance ramps at the Wesley Chapel Road Interchange, I-20 EB and WB entrance ramps at the Panola Road Interchange.

Table 8-5. 2025 Build - Expected Crash Severity Distribution- Freeway and Ramps

Facility	Fatal and Injury		Property Damage Only		Total	
	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
I-20	366	27%	929	73%	1294	100%
I-20 EB CD	3	23%	6	77%	9	100%
I-20 EB onramp from CD	9	23%	22	77%	31	100%
I-20 EB to CD offramp	2	23%	4	77%	6	100%
I-285	233	28%	595	72%	827	100%
EB to NB ramp	4	23%	12	77%	16	100%
NB to EB Ramp	14	23%	20	77%	34	100%
SB To EB Ramp	18	23%	67	77%	85	100%
WB to NB ramp	9	23%	31	77%	40	100%
NB to WB loop	5	23%	8	77%	13	100%
WB to SB Loop	13	23%	58	77%	71	100%
EB to SB Ramp	3	23%	7	77%	10	100%
SB to WB ramp	5	23%	7	77%	12	100%
I-20 WB C-D	21	20%	14	80%	35	100%
I-20 WB CD Entrance to Freeway	1	23%	1	77%	1	100%
I-20 WB CD Entrance to C-D	0	23%	0	77%	1	100%
Total	**704**	**28%**	**1782**	**72%**	**2486**	**100%**

Table 8-6. 2025 Build - Expected Crash Severity Distribution- Crossroads

		Fatal and Injury		Property Damage Only		Total	
Interchange	Facility	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Candler Rd	Candler Rd	56	24%	139	76%	195	100%
	I-20 WB Exit	2	23%	7	77%	9	100%
	I-20 WB Entrance	1	23%	3	77%	4	100%
	I-20 EB Exit	1	23%	8	77%	10	100%
	I-20 EB Entrance	2	23%	7	77%	9	100%
	Total	**62**	**27%**	**165**	**73%**	**227**	**100%**
Columbia Dr	Columbia Dr	9	24%	16	76%	26	100%
	I-20 WB Entrance	1	23%	2	77%	3	100%
	I-20 EB Exit	0	23%	2	77%	3	100%
	Total	**11**	**34%**	**21**	**66%**	**31**	**100%**
Wesley Chapel Rd	Wesley Chapel Rd	33	24%	90	76%	124	100%
	I-20 EB Entrance	1	23%	6	77%	6	100%
	I-20 EB Exit	7	23%	44	77%	51	100%
	I-20 WB Exit	1	23%	2	77%	3	100%
	I-20 WB Entrance	4	23%	17	77%	21	100%
	Total	**45**	**22%**	**159**	**78%**	**204**	**100%**
Panola Rd	Panola Rd	48	24%	146	76%	194	100%
	I-20 EB Entrance	1	23%	3	77%	4	100%
	I-20 EB Exit	3	23%	26	77%	29	100%
	I-20 WB Exit	1	23%	10	77%	10	100%

		Fatal and Injury		Property Damage Only		Total	
Interchange	**Facility**	**Crashes**	**Crashes (%)**	**Crashes**	**Crashes (%)**	**Crashes**	**Crashes (%)**
	I-20 WB Entrance	2	23%	7	77%	8	100%
	Total	**54**	**22%**	**192**	**78%**	**246**	**100%**
Evans Mill Rd and Lithonia Industrial Boulevard	Lithonia Industrial Boulevard	15	24%	25	76%	40	100%
	I-20 EB Exit Ramp	2	23%	6	77%	8	100%
	I-20 WB Entry Ramp	2	23%	8	77%	10	100%
	Evans Mill Rd	6	24%	12	76%	18	100%
	I-20 EB Entry Ramp	2	23%	7	77%	9	100%
	I-20 WB Exit Ramp	1	23%	7	77%	9	100%
	Total	**28**	**30%**	**65**	**70%**	**94**	**100%**
Glenwood Road	Glenwood Road	47	24%	96	76%	143	100%
	I-285 SB Exit Ramp	1	23%	2	77%	3	100%
	I-285 SB Entry Ramp	1	23%	2	77%	3	100%
	I-285 NB Exit Ramp	0	23%	2	77%	2	100%
	I-285 NB Entry Ramp	1	23%	2	77%	3	100%
	Total	**49**	**32%**	**105**	**68%**	**154**	**100%**
Flat Shoals Road	Flat Shoals Road	71	24%	172	76%	242	100%
	I-285 SB Entry Ramp	2	23%	4	77%	6	100%
	I-285 SB Exit Ramp	1	23%	3	77%	4	100%
	I-285 NB Exit Ramp	1	23%	3	77%	4	100%
	I-285 NB Entry Ramp	1	23%	3	77%	4	100%
	Total	**76**	**29%**	**184**	**71%**	**259**	**100%**
Total		**325**	**27%**	**891**	**73%**	**1216**	**100%**

8.4.3 2045 No-build Condition

The existing model is used for the 2045 no-build condition with the new DDI at Panola Road Interchange and new Express Lanes on I-20 and I-285. **Figure 8-3** shows the no-build condition, modeled in IHSDM.

Predicted/expected crash frequencies by severity and for each facility type are reported in the below **Table 8-7** and **Table 8-8**. The EmB method cannot be applied to the following locations: Flat Shoals Road and its ramps to/from I-285, I-285 SB to I-20 EB ramp, I-20 WB to I-285 SB ramp, I-20 WB exit and entrance ramps at the Wesley Chapel Road Interchange, I-20 EB and WB entrance ramps at the Panola Road Interchange.

Table 8-7. 2045 No-Build - Expected Crash Severity Distribution- Freeway and Ramps

Facility	Fatal and Injury		Property Damage Only		Total	
	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
I-20	616	27%	1563	73%	2180	100%
I-20 EB CD	10	23%	18	77%	29	100%
I-20 EB onramp from CD	11	23%	24	77%	35	100%
I-20 EB to CD offramp	2	23%	5	77%	6	100%
I-285	283	28%	706	72%	989	100%
EB to NB ramp	4	23%	13	77%	17	100%
NB to EB Ramp	9	23%	11	77%	20	100%
SB To EB Ramp	26	23%	88	77%	114	100%
WB to NB ramp	10	23%	36	77%	46	100%
NB to WB loop	4	23%	6	77%	10	100%
WB to SB Loop	26	23%	84	77%	110	100%
EB to SB Ramp	3	23%	8	77%	12	100%
SB to WB ramp	5	23%	8	77%	12	100%
Total	**1010**	**28%**	**2570**	**72%**	**3580**	**100%**

Table 8-8. 2045 No-Build - Expected Crash Severity Distribution- Crossroads

		Fatal and Injury		Property Damage Only		Total	
Interchange	Facility	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
Candler Rd	Candler Rd	61	24%	152	76%	213	100%
	I-20 WB Exit	2	23%	8	77%	10	100%
	I-20 WB Entrance	1	23%	4	77%	5	100%
	I-20 EB Exit	1	23%	9	77%	11	100%
	I-20 EB Entrance	2	23%	7	77%	9	100%
	Total	**68**	**27%**	**180**	**73%**	**247**	**100%**
Columbia Dr	Columbia Dr	12	24%	21	76%	33	100%
	I-20 WB Entrance	1	23%	2	77%	3	100%
	I-20 EB Exit	1	23%	3	77%	3	100%
	Total	**13**	**34%**	**25**	**66%**	**39**	**100%**
Wesley Chapel Rd	Wesley Chapel Rd	43	24%	121	76%	163	100%
	I-20 EB Entrance	1	23%	6	77%	7	100%
	I-20 EB Exit	8	23%	49	77%	57	100%
	I-20 WB Exit	1	23%	3	77%	4	100%
	I-20 WB Entrance	3	23%	9	77%	12	100%
	Total	**55**	**23%**	**188**	**77%**	**243**	**100%**
Panola Rd	Panola Rd	48	24%	156	76%	204	100%
	I-20 EB Entrance	1	23%	2	77%	3	100%
	I-20 EB Exit	3	23%	29	77%	32	100%
	I-20 WB Exit	1	23%	7	77%	8	100%
	I-20 WB Entrance	2	23%	6	77%	8	100%
	Total	**55**	**22%**	**200**	**78%**	**255**	**100%**
Evans Mill Rd and Lithonia Industrial Boulevard	Lithonia Industrial Boulevard	18	24%	33	76%	51	100%
	I-20 EB Exit Ramp	2	23%	7	77%	8	100%
	I-20 WB Entry Ramp	2	23%	9	77%	11	100%
	Evans Mill Rd	6	24%	12	76%	18	100%
	I-20 EB Entry Ramp	2	23%	7	77%	10	100%
	I-20 WB Exit Ramp	1	23%	8	77%	10	100%
	Total	**31**	**29%**	**76**	**71%**	**107**	**100%**
Glenwood Road	Glenwood Road	55	24%	112	76%	168	100%
	I-285 SB Exit Ramp	1	23%	3	77%	4	100%
	I-285 SB Entry Ramp	1	23%	3	77%	4	100%
	I-285 NB Exit Ramp	0	23%	2	77%	3	100%
	I-285 NB Entry Ramp	1	23%	3	77%	3	100%
	Total	**58**	**32%**	**123**	**68%**	**181**	**100%**
Flat Shoals Road	Flat Shoals Road	94	24%	227	76%	321	100%
	I-285 SB Entry Ramp	2	23%	5	77%	6	100%
	I-285 SB Exit Ramp	1	23%	3	77%	5	100%
	I-285 NB Exit Ramp	1	23%	3	77%	4	100%
	I-285 NB Entry Ramp	1	23%	3	77%	4	100%
	Total	**99**	**29%**	**241**	**71%**	**340**	**100%**
Grand Total		**380**	**27%**	**1033**	**73%**	**1413**	**100%**

8.4.4 2045 Build Condition

The 2045 Build condition is shown in **Figure 8-4**. The 2025 Build model is used for the 2045 Build condition with the addition of Express Lanes on I-20.

Predicted/expected crash frequencies by severity and for each facility type are reported in **Table 8-9** and

Table 8-10. The EmB method cannot be applied to the new facilities since crash history does not exist at new location roadways. These include: I-20 WB CD road and its ramps to/from the freeway, Flat Shoals Road and its ramps to/from I-285, I-285 SB to I-20 EB ramp, I-20 WB to I-285 SB ramp, I-20 WB exit and entrance ramps at the Wesley Chapel Road Interchange, I-20 EB and WB entrance ramps at the Panola Road Interchange.

Table 8-9. 2045 Build - Expected Crash Severity Distribution- Freeway and Ramps

Facility	Fatal and Injury		Property Damage Only		Total	
	Crashes	Crashes (%)	Crashes	Crashes (%)	Crashes	Crashes (%)
I-20	593	28%	1508	72%	2101	100%
I-20 EB CD	4	35%	8	65%	12	100%
I-20 EB onramp from CD	12	33%	24	67%	36	100%
I-20 EB to CD offramp	2	27%	5	73%	6	100%
I-285	311	29%	772	71%	1084	100%
EB to NB ramp	5	25%	15	75%	20	100%
NB to EB Ramp	12	44%	15	56%	26	100%
SB To EB Ramp	45	31%	102	69%	147	100%
WB to NB ramp	10	21%	36	79%	46	100%
NB to WB loop	4	41%	6	59%	10	100%
WB to SB Loop	14	19%	60	81%	74	100%
EB to SB Ramp	3	26%	8	74%	11	100%
SB to WB ramp	5	38%	8	62%	13	100%
I-20 WB CD	31	67%	16	33%	47	100%
I-20 WB entrance to Freeway	1	42%	1	58%	2	100%
I-20 WB Entrance to CD	0	40%	1	60%	1	100%
Total	1052	29%	2584	71	3637	100%

Table 8-10. 2045 Build - Expected Crash Severity Distribution- Crossroads

		Fatal and Injury		Property Damage Only		Total	
Interchange	**Facility**	**Crashes**	**Crashes (%)**	**Crashes**	**Crashes (%)**	**Crashes**	**Crashes (%)**
Candler Rd	Candler Rd	45	29%	110	71%	155	100%
	I-20 WB Exit	2	18%	8	82%	10	100%
	I-20 WB Entrance	1	26%	4	74%	5	100%
	I-20 EB Exit	1	12%	9	88%	11	100%
	I-20 EB Entrance	2	22%	8	78%	10	100%
	Total	**52**	**27%**	**139**	**73%**	**191**	**100%**
Columbia Dr	Columbia Dr	11	37%	20	63%	31	100%
	I-20 WB Entrance	1	24%	2	76%	3	100%
	I-20 EB Exit	1	16%	3	84%	3	100%
	Total	**13**	**34%**	**24**	**66%**	**37**	**100%**
Wesley Chapel Rd	Wesley Chapel Rd	42	26%	118	74%	159	100%
	I-20 EB Entrance	1	12%	6	88%	7	100%
	I-20 EB Exit	8	14%	51	86%	60	100%
	I-20 WB Exit	1	21%	3	79%	3	100%
	I-20 WB Entrance	5	20%	20	80%	25	100%
	Total	**56**	**22%**	**198**	**78%**	**254**	**100%**
Panola Rd	Panola Rd	55	25%	170	75%	225	100%
	I-20 EB Entrance	1	19%	3	81%	4	100%
	I-20 EB Exit	3	10%	30	90%	33	100%
	I-20 WB Exit	1	8%	11	92%	12	100%
	I-20 WB Entrance	2	20%	7	80%	9	100%
	Total	**62**	**22%**	**221**	**78%**	**284**	**100%**
Evans Mill Rd and Lithonia Industrial Boulevard	Lithonia Industrial Blvd	17	38%	28	62%	45	100%
	I-20 EB Exit Ramp	2	20%	7	80%	8	100%
	I-20 WB Entry Ramp	2	21%	9	79%	12	100%
	Evans Mill Rd	8	34%	15	66%	23	100%
	I-20 EB Entry Ramp	2	21%	8	79%	10	100%
	I-20 WB Exit Ramp	2	15%	8	85%	10	100%
	Total	**33**	**30%**	**75**	**70%**	**108**	**100%**
Glenwood Road	Glenwood Road	54	33%	112	67%	167	100%
	I-285 SB Exit Ramp	1	23%	3	77%	4	100%
	I-285 SB Entry Ramp	1	23%	3	77%	4	100%
	I-285 NB Exit Ramp	0	16%	2	84%	3	100%
	I-285 NB Entry Ramp	1	20%	3	80%	3	100%
	Total	**57**	**32%**	**123**	**68%**	**180**	**100%**
Flat Shoals Road	Flat Shoals Road	78	29%	190	71%	268	100%
	I-285 SB Entry Ramp	2	28%	5	72%	7	100%
	I-285 SB Exit Ramp	1	31%	3	69%	5	100%
	I-285 NB Exit Ramp	1	31%	3	69%	4	100%
	I-285 NB Entry Ramp	1	27%	3	73%	4	100%
	Total	**84**	**29%**	**204**	**71%**	**288**	**100%**
Total		**357**	**27%**	**984**	**73%**	**1341**	**100%**

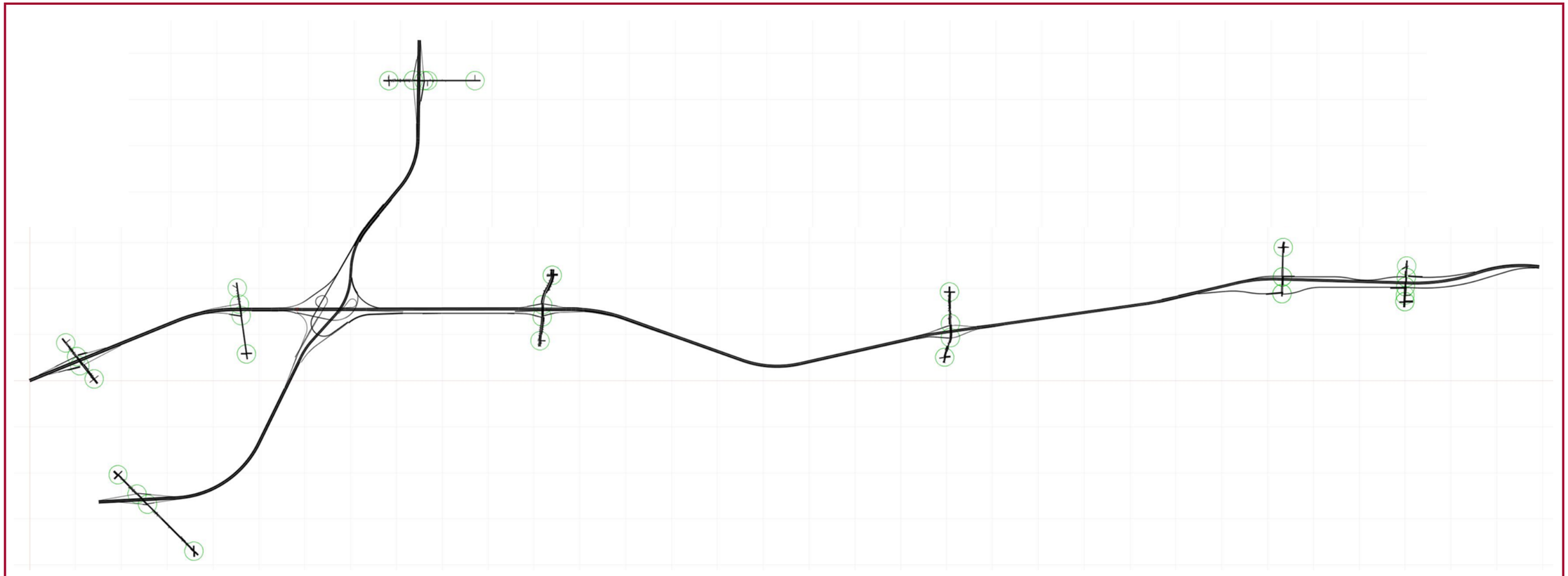

Figure 8-3. No-Build Models in IHSDM

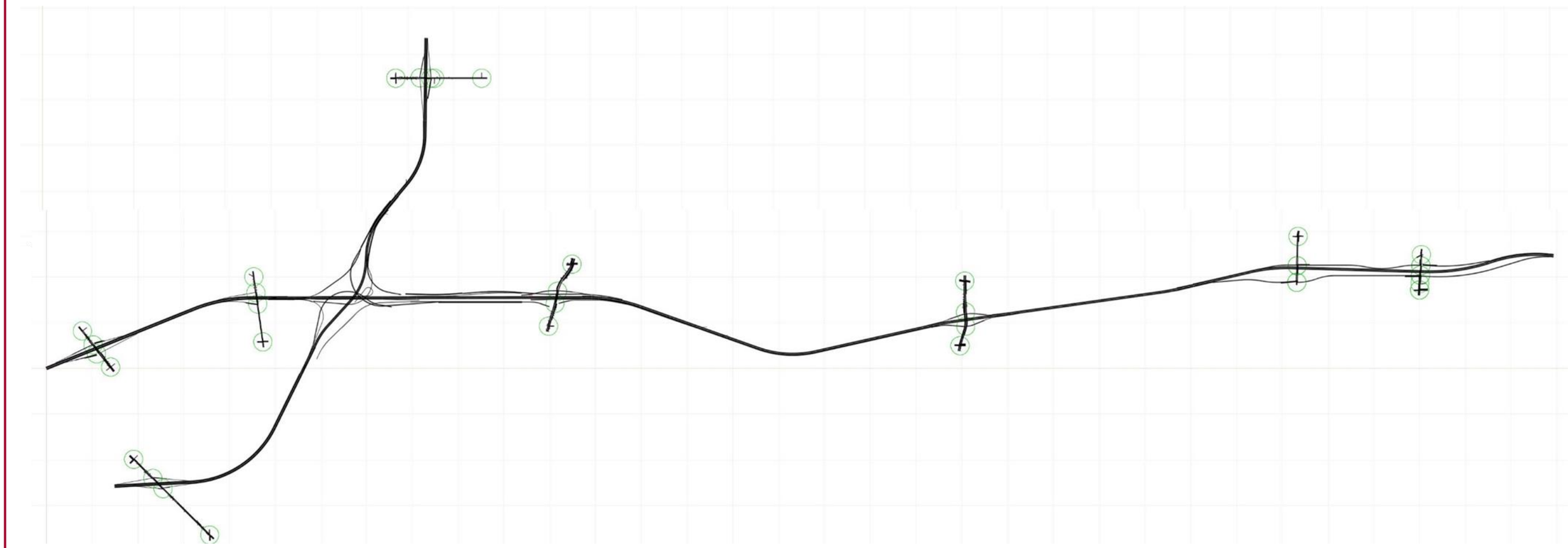

Figure 8-4. Build Models in IHSDM

8.5 RESULTS

Following sections include a comparison of crash numbers between the build and no-build conditions in each study year.

8.5.1 SAFETY CONDITION IN YEAR 2025

A comparison of the crash frequencies between the 2025 build and 2025 no-build alternatives is summarized in **Table 8-11** and **Table 8-12**.

The results from **Table 8-11** indicate that there is a significant crash reduction (196 total crashes) on I-20 mainline if the proposed design will be built in 2025.A total of 56 out of 196 reduced crashes will be fatal or injury type. The geometry improvements on I-20 EB CD has also improved the level of safety on this road.

The number of crashes on I-285 NB to I-20 EB ramp will increase in the build condition due to (1) AADT increase in build condition and (2) the extension of this ramp. The longer length of a roadway, the higher probability of a crash.

Less number of crashes have been predicted on the proposed ramps at the interchange (i.e. I-285 SB to I-20 EB ramp, I-20 WB to I-285 NB ramp and I-20 WB to I-285 SB ramp) compared to the existing ramps in the no-build condition.

Crash reductions for the I-20 WB CD and its ramps are negative, since these facilities do not exist in the no-build. Other existing segments on the interstates show zero to some safety improvements in the build condition.

The number of crashes on I-285 will increase from 767 in 2025 No-Build to 827 in 2025 Build condition, which is about 8 percent increase. This is due to the higher volume on I-285 in the build condition.

Table 8-12 shows the crash reduction on crossroads and their ramps to/from the freeways. The number of crashes on the Columbia Road Interchange remains about the same in build condition compared to the no-build and crash reduction during build conditions is observed at Glenwood Road Interchange. Slight increase in the crash frequency at other interchanges is due to slightly higher traffic volume on the crossroads and their ramps in the build condition.

Crashes on Evans Mill Road and Lithonia Industrial Boulevard Interchange will increase from 67 to 94 crashes, mostly due to the volume increase on Lithonia Industrial Boulevard.

Overall, the results show safety improvement in the network in 2025 build condition. The total number of crashes will reduce from 3,925 in no-build to 3,835 in the build condition in 2025 (90 crashes saving).

Table 8-11. 2025 Total No-Build vs Build – Crash Reduction on Freeway, CD Roads and System-to-system Ramps by Severity

Facility	Fatal and Injury	Property Damage Only	Total
I-20	56	140	196
I-20 EB CD	6	11	17
I-20 EB on-ramp from CD	0	-1	-1
I-20 EB to CD off-ramp	0	0	0
I-285	-12	-49	-61
EB to NB ramp	0	-1	-1
NB to EB Ramp	-6	-11	-17
SB to EB Ramp	5	13	18
WB to NB ramp	0	-1	-1
NB to WB loop	-1	-2	-3
WB to SB Loop	11	20	31
EB to SB Ramp	0	0	0
SB to WB ramp	-1	0	-1
I-20 WB C-D	-21	-14	-35
I-20 WB CD Entrance to Freeway	-1	0	-1
I-20 WB CD Entrance to C-D	0	0	-1
Total Crashes (No Build vs Build)	**35**	**106**	**141**

Note: All values and totals are rounded to the nearest whole number.
Note: Negative values indicate an increase in the crashes in Build scenario.

Table 8-12. 2025 Total No-Build vs Build- Crash Reduction on Crossroads by Severity

Interchange	Facility	Fatal and Injury	Property Damage Only	Total
Candler Road	Candler Road	-1	-3	-4
	I-20 WB Exit	0	0	0
	I-20 WB Entrance	0	0	0
	I-20 EB Exit	0	0	0
	I-20 EB Entrance	0	0	0
	Total	**-1**	**-4**	**-5**
Columbia Drive	Columbia Drive	0	0	0
	I-20 WB Entrance	0	0	0
	I-20 EB Exit	0	0	0
	Total	**0**	**0**	**0**
Wesley Chapel Road	Wesley Chapel Road	0	1	1
	I-20 EB Entrance	0	0	0
	I-20 EB Exit	0	-2	-2
	I-20 WB Exit	0	0	0
	I-20 WB Entrance	-2	-9	-11
	Total	**-1**	**-11**	**-12**
Panola Road	Panola Road	-1	-2	-3
	I-20 EB Entrance	0	-1	-1
	I-20 EB Exit	0	-1	-1
	I-20 WB Exit	0	-3	-3
	I-20 WB Entrance	0	-2	-2
	Total	**-1**	**-8**	**-9**
Evans Mill Road and Lithonia Industrial Boulevard	Lithonia Industrial Boulevard	-3	-6	-9
	I-20 EB Exit Ramp	-1	-4	-5
	I-20 WB Entry Ramp	0	0	0
	Evans Mill Road	-2	-5	-7
	I-20 EB Entry Ramp	-1	-5	-6
	I-20 WB Exit Ramp	0	0	0
	Total	**-8**	**-19**	**-27**
Glenwood Road	Glenwood Road	2	4	6
	I-285 SB Exit Ramp	0	0	0
	I-285 SB Entry Ramp	0	0	0
	I-285 NB Exit Ramp	0	0	0
	I-285 NB Entry Ramp	0	0	0
	Total	**2**	**3**	**5**
Flat Shoals Road	Flat Shoals Road	-1	-2	-3
	I-285 SB Entry Ramp	0	0	0
	I-285 SB Exit Ramp	0	0	0
	I-285 NB Exit Ramp	0	0	0
	I-285 NB Entry Ramp	0	0	0
	Total	**-1**	**-2**	**-3**
Grand Total		**-10**	**-41**	**-51**

Note: All values and totals are rounded to the nearest whole number.
Note: Negative values indicate an increase in the crashes in Build scenario.

8.5.2 Safety Condition in Year 2045

A comparison of the crash frequencies between the two alternatives is summarized in **Table 8-13** and **Table 8-14**.

In the 2045 Build condition, safety improvements are expected on I-20, I-20 EB CD, and I-20 WB to I-285 SB ramp. The geometric improvements like the WB CD between Wesley Chapel Road and the I-20/I-285 interchange have reduced the number of crashes slightly.

No improvements will be expected for I-20 EB CD ramps, I-285 SB to I-20 EB ramp, I-20 WB to I-285 NB ramp, I-285 NB to I-20 WB ramp, I-20 EB to I-285 SB Ramp, I-285 SB to I-20 WB ramp, and I-20 WB CD ramps.

The results from **Table 8-13** show safety improvement in the network in 2045 build condition. The total number of crashes will reduce by 16 in the build condition compared to the no-build condition. It is expected that safety on I-20 corridor, I-20 EB CD and the proposed ramps at the system-to-system interchange improves, however it will deteriorate on I-285 due to the volume increase in the build condition.

The results indicate that the number of crashes on I-285 will increase from 989 in the 2045 No-Build to 1,084 in the 2045 Build condition, which is about a 10 percent increase. This is due to the higher volume on I-285 in the build condition.

Results shown in **Table 8-14** indicate that the crashes on the Wesley Chapel Road interchange, Panola Road Interchange and Candler Road interchange will increase in the 2045 Build condition. Other interchanges with crossroads show safety improvements.

Table 8-13. 2045 Total No-Build vs Build – Crash Reduction on Freeway, CD Roads and System-to-system Ramps by Severity

Facility	Fatal and Injury	Property Damage Only	Total
I-20	23	56	79
I-20 EB CD	6	10	16
I-20 EB on-ramp from CD	-1	0	-1
I-20 EB to CD off-ramp	0	0	0
I-285	-28	-66	-94
EB to NB ramp	-1	-2	-3
NB to EB Ramp	-3	-4	-7
SB to EB Ramp	-18	-15	-33
WB to NB ramp	0	0	0
NB to WB ramp	0	0	0
WB to SB ramp	12	24	36
EB to SB Ramp	1	0	1
SB to WB ramp	-1	0	-1
I-20 WB CD	-31	-16	-47
I-20 WB CD Entrance to Freeway	-1	-1	-2
I-20 WB Entrance to CD	0	-1	-1
Total	**-42**	**-15**	**-57**

Note: All values and totals are rounded to the nearest whole number.
Note: Negative values indicate an increase in the crashes in Build scenario.

Table 8-14. 2045 Total No-Build vs Build- Crash Reduction on Crossroads by Severity

Interchange	Facility	Fatal and Injury	Property Damage Only	Total
Candler Road	Candler Road	16	41	57
	I-20 WB Exit	0	0	0
	I-20 WB Entrance	0	0	0
	I-20 EB Exit	0	0	0
	I-20 EB Entrance	0	0	0
	Total	**16**	**41**	**57**
Columbia Drive	Columbia Drive	1	1	2
	I-20 WB Entrance	0	0	0
	I-20 EB Exit	0	0	0
	Total	**1**	**1**	**2**
Wesley Chapel Road	Wesley Chapel Road	1	3	4
	I-20 EB Entrance	0	0	0
	I-20 EB Exit	0	-3	-3
	I-20 WB Exit	0	0	0
	I-20 WB Entrance	-2	-11	-13
	Total	**-1**	**-10**	**-11**
Panola Road	Panola Road	-7	-14	-21
	I-20 EB Entrance	0	-1	-1
	I-20 EB Exit	0	-1	-1
	I-20 WB Exit	0	-4	-4
	I-20 WB Entrance	0	-2	-2
	Total	**-7**	**-21**	**-28**
Evans Mill Road and Lithonia Industrial Boulevard	Lithonia Industrial Blvd	1	5	6
	I-20 EB Exit Ramp	0	0	0
	I-20 WB Entry Ramp	0	0	0
	Evans Mill Road	-2	-3	-5
	I-20 EB Entry Ramp	0	0	0
	I-20 WB Exit Ramp	0	0	0
	Total	**-2**	**1**	**-1**
Glenwood Road	Glenwood Road	1	0	1
	I-285 SB Exit Ramp	0	0	0
	I-285 SB Entry Ramp	0	0	0
	I-285 NB Exit Ramp	0	0	0
	I-285 NB Entry Ramp	0	0	0
	Total	**1**	**0**	**1**
Flat Shoals Road	Flat Shoals Road	15	38	53
	I-285 SB Entry Ramp	0	0	0
	I-285 SB Exit Ramp	0	0	0
	I-285 NB Exit Ramp	0	0	0
	I-285 NB Entry Ramp	0	0	0
	Total	**16**	**37**	**53**
Grand Total		**23**	**49**	**73**

Note: All values and totals are rounded to the nearest whole number.
Note: Negative values indicate an increase in the crashes in Build scenario.

8.6 Conclusion

Using the IHSDM to complete the HSM Predictive Method, the future effects of the roadway improvements with respect to safety for each alternative are quantified and compared to the No-Build condition.

The results show safety improvement in the network during the open year and design year build conditions. In 2025 Build condition, the total number of crashes will reduce by 141, of which 35 are fatal/injury type and 65 are Property Damage Only (PDO) crashes. In the 2045 Build condition, 73 crashes will be reduced compared to the no-build condition out of which 23 are fatal and injury crashes. Lower safety benefit is anticipated in 2045 for two reasons: (1) highly congested corridor in the final year of the project's life and (2) the addition of I-20 East Express lanes; which causes more turbulence to the general-purpose lane traffic at the entrance and exit locations.

The results contained within the safety report along with other monetary/non-monetary considerations, and project funding/budget should be used to determine how to proceed and improve the network.

9 BENEFIT COST ANALYSIS

9.1 INTRODUCTION AND BACKGROUND

The purpose of this Benefit-Cost Analysis (BCA) section is to assess the potential safety impact (positive or negative) and operational benefits of the proposed improvements for the I-285 @ I-20 East Interchange Reconstruction Project (PI 0013915).

The safety analysis conducted was based on methodologies outlined in the Highway Safety Manual (HSM), published by American Association of State Highway and Transportation Officials (AASHTO) and identify safety improvements that can be included in the project design.

Travel time data for this analysis was based on the average travel time from Vissim simulation runs.

Analysis limits on I-20 extends from Candler Road (western terminus) to Evans Mill Road (eastern terminus) which is approximately 9.6 miles; and on I-285 it extends from Flat Shoals Road (southern terminus) to Glenwood Road (northern terminus) which is approximately 4.6 miles. No analysis is available for local and collector roads.

For the purpose of this study, the economic analysis is performed for the proposed alternative, between the no-build and build conditions. Conducting consistent and reliable BCA will support decision making, optimize the return on investments, and increase the effectiveness of projects and programs.

9.2 ANALYSIS AND RESULTS

The estimated monetary benefits are compared to the estimated cost of an alternative. For each facility, either the "expected" or "predicted" results are used for BCA purpose. Expected crashes are used for the locations where Empirical Bayes method can be applied. The predicted crashes, however, are useful for the locations with new highway/ramps when Empirical Bayes method is not applicable.

9.2.1 SAFETY BENEFITS

There are two types of safety-related benefits of project alternatives: direct and indirect. Direct safety benefits include the expected change in crash frequency and severity. Indirect benefits include the

operational and environmental benefits that result from a reduction in crashes (e.g., reduced delay, fuel use, and emissions)

To estimate the direct safety benefit of a given alternative, the difference in expected/predicted crashes between the no-build condition and alternative condition must be calculated and converted to a dollar amount. This is done for each analysis year and for each facility.

Indirect safety benefits of the improvements, however, are not easy to estimate. Motor vehicle crashes result in significant time delays to other motorists who are inconvenienced by lane closures, police, fire, or emergency services activity, detours, and general traffic slowdowns. This results in a significant time penalty for those affected. It also results in wasted fuel, increased greenhouse gas production, and increased pollution. Assessing congestion costs is difficult because virtually every crash occurs under unique circumstances.

In this study, the direct benefits of the proposed design are estimated. Build and No-build conditions were modeled in IHSDM and analyzed to estimate the future crash frequencies in each of the build and no-build conditions.

Table 9-1 shows the frequency of predicted/estimated crashes by severity for 2025-2045 analysis period. The 'difference' indicates the reduction in future crash frequencies in the build design compared to the no-build.

It is to be noted that since there are no improvements being done for I-285 or arterials in the study area, due to an increase in volume projected crashes are shown as increasing. The increase of crashes along I-285 is also attributed to the addition of the express lanes system in the median.

Table 9-1. Expected Crash Frequencies by Severity

Facility	Title	Fatal (K) Crashes	Incapacitating Injury (A) Crashes	Non-Incapacitating Injury (B) Crashes	Possible Injury (C) Crashes	No Injury (O) Crashes	Total Crashes	Crash Rate (MVM)
I-20	No-build	223.7	596.5	3,274.4	6,861.4	27,578.2	38,534.3	316
	Build	207.0	551.9	3,029.5	6,348.2	25,515.3	35,651.8	287
	Difference	**16.7**	**44.6**	**244.9**	**513.3**	**2,062.9**	**2,882.5**	**29**
I-285	No-build	112.7	305.7	1,635.2	3,475.1	13,528.0	19,056.8	362
	Build	122.5	331.9	1,780.1	3,769.0	14,787.1	20,790.6	352
	Difference	**-9.8**	**-26.2**	**-144.9**	**-293.9**	**-1,259.1**	**-1,733.9**	**10**
Candler Road	No-build	15.7	93.9	389.7	501.5	3,636.6	4,637.3	4171
	Build	16.0	95.7	397.2	511.3	3,734.0	4,754.2	4433
	Difference	**-0.3**	**-1.8**	**-7.5**	**-9.8**	**-97.4**	**-116.9**	**-262**
Columbia Road	No-build	3.5	22.9	94.5	114.4	517.7	753.0	1482
	Build	3.3	21.1	87.3	106.0	488.8	706.6	1447
	Difference	**0.2**	**1.7**	**7.2**	**8.3**	**28.9**	**46.4**	**36**
Wesley Chapel Road	No-build	12.6	61.5	241.6	535.8	3,671.1	4,522.6	1441
	Build	13.1	62.4	245.7	568.9	3,916.3	4,806.3	1570
	Difference	**-0.4**	**-1.0**	**-4.1**	**-33.1**	**-245.1**	**-283.7**	**-129**
Panola Road	No-build	8.3	60.4	302.8	956.6	1,177.5	2,505.6	1428
	Build	9.3	63.4	310.6	983.0	1,742.2	3,108.5	1657
	Difference	**-1.0**	**-3.0**	**-7.8**	**-26.4**	**-564.6**	**-602.9**	**-229**
Evans Mill Road & Lithonia Industrial Boulevard	No-build	6.0	38.3	181.3	289.7	1,299.9	1,815.3	927
	Build	7.5	46.7	218.8	343.1	1,556.2	2,172.3	1109
	Difference	**-1.5**	**-8.5**	**-37.4**	**-53.3**	**-256.3**	**-357.0**	**-182**
Glenwood Road	No-build	13.4	98.8	376.4	480.4	2,513.1	3,482.1	2622
	Build	13.2	96.6	368.6	470.8	2,505.5	3,454.8	2613
	Difference	**0.2**	**2.2**	**7.7**	**9.6**	**7.6**	**27.3**	**8**
Flat Shoals Road	No-build	25.9	169.2	749.3	960.4	4,614.7	6,519.4	4021
	Build	25.7	168.5	748.6	959.1	4.618.0	6,519.9	4150
	Difference	**0.2**	**0.7**	**0.7**	**1.3**	**-3.3**	**-0.4**	**-129**

Note: Negative values indicate an increase in the crashes in Build scenario.

The comprehensive crash costs provided by GDOT are used to estimate the direct benefits of the proposed design. These comprehensive costs depend on the severity level of a crash and are applied to the reduction in crashes to estimate, in monetary terms, the safety benefit. GDOT considers $9,100,000 for a fatality crash; $955,000 for an A injury crash and $27,300 for a PDO crash. The default values in IHSDM were used for the costs of B injury ($198,500) and C injury ($125,600) crashes.

IHSDM uses a Crash Cost Index (CCI) of 0.02 to estimate the societal cost per crash (unit cost) for each analysis year and for each severity level and then applies a discount rate[2] (0.03) to calculate the

[2] The rate at which predicted cash expenditures (costs) or inflows (benefits) are reduced in future years to reflect the time cost of money. The purpose of the discount rate is to convert future values to present value.

"present value" of crash costs at "Base" year or present year. In the IHSDM Economic Analysis, the Base year is usually the first year of the evaluations, which in this study it is the open year, 2025. Table 9-2 shows the crash costs and the net present value of benefits for the Build design. Based on the analysis results, the most benefits will be expected on I-20 mainline. Negative benefits are found at crossroad interchanges and on I-285 showing that these locations will generally experience more crashes due to higher volume in the build condition. Overall, the total net present value of the direct safety benefits of this project will be $186,667,908.

Table 9-2. Crash Cost Summary

Facility	Title	Present Value of Crash Cost ($)	Net Present Value of Benefits (B) ($)
I-20	No-build	4,949,715,698	
	Build	4,571,267,882	**378,447,817**
I-285	No-build	2,671,709,998	
	Build	2,767,223,014	**-95,513,016**
Ramps and CD Roads	No-build	1,222,293,517	
	Build	1,224,467,706	**-2,174,189**
Candler Road	No-build	512,008,504	
	Build	522,967,551	**-10,959,047**
Columbia Road	No-build	109,582,160	
	Build	102,116,996	**7,465,164**
Wesley Chapel Road	No-build	420,871,079	
	Build	438,718,276	**-17,847,198**
Panola Road	No-build	374,493,213	
	Build	409,579,877	**-35,086,664**
Evans Mill Road & Lithonia Industrial Boulevard	No-build	214,781,106	
	Build	261,672,189	**-46,891,083**
Glenwood Road	No-build	455,278,861	
	Build	448,168,077	**7,110,784**
Flat Shoals Road	No-build	857,566,727	
	Build	855,451,387	**2,115,340**
Total	**No-build**	**11,788,300,868**	
	Build	**11,601,632,9560**	**186,667,908**

9.2.2 Travel Time Benefits

Travel time data for this analysis was based on the average travel time from Vissim simulation runs. Vehicle demand through the network is based on the average of opening (2025) and design year (2045) traffic demand through the network.

Existing (2018) truck percentages were calculated and included in the Traffic Forecasting Report (**Appendix B**). Since the proposed project does not result in additional truck destinations and the travel demand model does not show increase in truck volume along the corridor in the future years, truck percentages for the future year conditions were assumed to be the same as existing years.

Truck and passenger car per hour costs are assumed to be based in opening year 2025, and the lifespan of the network is assumed to be 20 years. VISSIM models that were developed for this benefit cost

study were based on design year (2045) traffic volumes. Due to travel time data being only based on the design year no interest/growth was applied to the assumed truck and passenger car per hour costs in order to reduce the potential for over estimation of costs. Finally, benefits are assumed to be gained over a one hour period during each peak period, therefore, the total travel time presented in **Table 9-3** below is based on one hour for each peak period.

Table 9-3 shows the travel time costs and the net present value of benefits of the Build design. Based on the analysis results, the most benefits will be expected for I-20 westbound and I-285 northbound. Overall, the total net present value of the travel time benefits of this project will be $191,779,095.

Table 9-3. Travel Time Cost Summary

		Avg Travel Time (sec/veh)	Total Vehicles (veh/hr)	Total Travel Time (hrs)	Truck Percentage	Truck Value/Hr ($/hr)	Passenger Car Value/Hr ($/hr)	Number of Years	Total Travel Time Cost	Net Value of Travel Time Savings ($)
I-20 Eastbound AM	No-Build	598	3698	1229	9	73	14	20	60,853,661	-5,940,059
	Build	602	4032	1348	9	73	14	20	66,793,720	
I-20 Eastbound PM	No-Build	731	5391	2189	8	73	14	20	105,091,187	-6,860,091
	Build	756	5553	2332	8	73	14	20	111,951,279	
I-20 Westbound AM	No-Build	1319	4873	3571	9	73	14	20	176,872,301	73,143,332
	Build	659	5720	2094	9	73	14	20	103,728,969	
I-20 Westbound PM	No-Build	1567	4724	4113	8	73	14	20	197,405,148	90,361,992
	Build	807	4974	2230	8	73	14	20	107,043,156	
I-285 Southbound AM	No-Build	261	6116	887	11	73	14	20	46,642,653	-1,143,307
	Build	262	6242	909	11	73	14	20	47,785,960	
I-285 Southbound PM	No-Build	318	5374	949	9	73	14	20	47,026,581	-3,434,756
	Build	326	5625	1019	9	73	14	20	50,461,336	
I-285 Northbound AM	No-Build	281	4982	778	11	73	14	20	40,905,839	857,948
	Build	265	5172	761	11	73	14	20	40,047,891	
I-285 Northbound PM	No-Build	852	4343	2056	9	73	14	20	101,823,505	44,794,036
	Build	386	5369	1151	9	73	14	20	57,029,469	
Sub-Total:										**191,779,095**

9.2.3 Costs

The costs of the Build design, including right-of-way (ROW), utilities, construction, and operations are evaluated against the projected benefits from reduced property damages, injuries, and fatalities. Table 9-4 lists estimated probable costs of construction for six segments, inclusive of design, construction, contingencies and ROW costs.

Table 9-4. Construction Cost Summary

Description	Cost ($)	Segment Description
Segment 1	131,047,000	I-285/I-20 East Interchange
Segment 2	15,456,300	I-285 Northbound GP Lane Widening
Segment 3	84,265,100	I-20 Collector Distributor Lanes
Segment 4	88,820,700	I-20 Auxiliary Lanes
Segment 5	9,456,000	Miller Road Overpass
Segment 6	17,962,800	Fairington Road Overpass
Sub-Total:	**347,007,900**	

The total cost for BCA will be $347,007,900.

9.2.4 Benefit-Cost Ratio

The benefit-cost ratio (BCR) is the ratio of present value benefits (including negative benefits) to present value costs. In general, a higher BCR is desirable. The BCR for the safety aspect of this project is 0.53. The BCR for the travel time aspect of this project is 0.50.

9.3 CONCLUSION

A BCA is performed for the entire improvement project. The costs, including ROW, utilities, construction, and operations are evaluated against the projected benefits from reduced property damages, injuries, and fatalities. Overall, the total net present value of the direct safety benefits and travel time savings for this project is $378,447,003 and the total cost of the project along the roadways where safety was studied is $347,007,900. A BCR of 1.09 indicates that direct safety and travel time benefits can compensate for the total project's cost.

10 JUSTIFICATION FOR PROJECT

The proposed interchange modifications for this project are consistent with the requirements of the FHWA policy on "Access to the Interstate System" dated May 22, 2017. The FHWA policy requires the following two points to be addressed:

FHWA POLICY POINT 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))

An in-depth operational and safety analysis was conducted to study the impacts of the proposed improvements on the existing freeways. The area of influence of the study included one interchange on either side of the proposed improvements along the mainline and the first major intersection on either side of the proposed change in access along the arterials. Additionally, all benefits measured and reported for this project are primarily due to the improvements proposed as part of this project and are not dependent on any other project listed in the Regional Transportation Plan (PLAN 2040).

Several performance measures were used to compare the operational safety of the existing systems under the No-Build and Build Alternatives. Key measures included freeway densities, freeway corridor peak periods, network-wide throughput, intersection delays and network-wide travel times, safety benefits, and benefit-to-cost ratio.

The benefits of the Build Alternative over the No-Build Alternative were evaluated by analyzing three hours of traffic data for the morning conditions and three hours of data for the evening conditions. Overall, the Build Alternative performed better than the No-Build Alternative for the

above-identified performance measures. Following are some key benefits of the Build Alternative over the No-Build Alternative:

Throughput: Build Alternative showed relatively higher densities at a few locations along the I-20 mainline segments. This was primarily because the Build Alternative addresses the bottlenecks in the existing system and is able to improve throughput significantly. I-20 WB where the new CD system and auxiliary lanes are added, in AM peak about 600 additional vehicles were processed compared to the no-build condition and 1,700 additional vehicles were process in the PM peak. Higher number of vehicles that would have been delayed by the bottlenecks in the No-Build Alternative are being processed in the Build condition.

Travel Time: In accordance with the FHWA toolbox, the temporal time limits of the model were developed in order to allow for recovery and dissipation of traffic. Four-hour AM and PM analysis (6AM to 10AM and 3PM to 7PM) were conducted using the 15-minute flow rates with the microsimulation for the existing year (2018), open year (2025) and design year (2045). A warm-up and cool-down periods of each 30 minutes are considered within the four-hour analysis. It is concluded that the proposed Build Alternative will reduce travel times and improve operations for majority of vehicles traversing through the interchange and study area.

Safety: A detailed study of historical crash data between the years 2013 and 2018 was performed. The crash data was collected from Georgia Electronic Accident Reporting System (GEARS) along I-285, I-20, crossroads and local street network within the project limits. This study was enhanced in later part of the project development to include predictive crash analysis, based on methodologies outlined in the Highway Safety Manual (HSM), published by American Association of State Highway and Transportation Officials (AASHTO) and identify safety improvements that can be included in the project design. A BCR of 0.53 was calculated for the project. It can be concluded from the study that the proposed improvements improve the safety of the corridor and that direct safety benefits can compensate for half of the project's cost.

In addition to performing better than the No-Build Alternative for the above-identified performance measures, the Build Alternative also showed relatively higher densities at a few locations along the I-20 mainline segments. This was primarily because the Build Alternative addresses the bottlenecks in the existing system and thus is able to serve a significantly higher number of vehicles that would have been delayed behind the bottlenecks in the No-Build Alternative. In accordance with the FHWA toolbox, the temporal time limits of the model were developed in order to allow for recovery and dissipation of traffic. It is concluded that the proposed Build Alternative will reduce travel times and improve operations for the majority of vehicles using the interchange.

The above discussed operation and safety improvements along the freeway corridors demonstrate that FHWA Policy Point 1 is satisfied.

FHWA POLICY POINT 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 interchange of I-20 and I-285 is a public facility that provides full access and will continue to do so with the addition of the I-20 WB CD system. Currently the interchange has loop ramps with posted speeds 30mph leading to capacity constraints, weaving and queue spill back on to mainline. During the development of the Interchange Modification Report, an access management plan was not needed within the area of influence to supplement improvements to the interchanges. All access areas remain the same.

The proposed design, for the most part, would meet and/or exceed the current standards for federal-aid projects along the interstate system and state routes. The design criteria established for this project were referenced from the following documents: American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets (7th Edition); AASHTO Policy on Design Standards Interstate System (2016); AASHTO Roadside Design Guide (4th Edition); and GDOT Design Policy Manual (Rev 6.0).

Based on the above procedures for determining the project's required design criteria, it can be concluded that the requirements of Policy 2 have been met.