


**TRAFFIC IMPACT ANALYSIS**  
**for**  
**MADE TO ORDER HOLDINGS**

**Proposed Whataburger Drive-Thru Restaurant**  
**Parcels LG110056 & 57, C0210017, LG110059 & LG110061**  
**4764 Atlanta Highway (US Route 78, SR 10, SR 81)**  
**@ Lee Byrd Road & Old Zion Cemetery Road**  
**City of Loganville**  
**Walton County, Georgia 30052**



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**April 25, 2023**

Atlantic TPD, LLC (ATDE) has prepared this Traffic Impact Analysis to support the support the application to City of Loganville for the development of a Whataburger restaurant with drive-thru. The approximately 4-acre subject property is bound by Atlanta Highway (US Route 78, SR 10, SR 81) to the south, Lee Byrd Road to the north and Old Zion Cemetery Road to the east, as shown on the Site Location Map (**Figure 1**) in the **Appendix**.

### CURRENT CONDITION

Parcel LG110056 is currently developed with approximately 4,000 square feet of office space in 2 buildings, located at the westerly edge of the overall parcel; and the remainder of the subject parcels are occupied by 3 single-family homes.

The southerly parcels are located in the CH (Commercial Highway) zoning district, where drive-in restaurants are a permitted use. The northerly parcel, along Lee Byrd Road, is located in the R-16 (Single-Family Urban Residential) zoning district, where drive-in restaurants are not permitted.

Access to the site is currently provided via 2 driveways along westbound Atlanta Highway (US Route 78, SR 10), a driveway along eastbound Lee Byrd Road and a driveway along southbound Old Zion Cemetery Road.

Approximately 500 feet to the east of the site, Atlanta Highway (US Route 78, SR 10) meets Lee Byrd Road at a signalized intersection, where SR 81 forms the northbound approach, and also runs concurrent with the eastbound approach. Old Zion Cemetery Road is currently STOP-controlled at Lee Byrd Road and at Atlanta Highway (US Route 78, SR 10).

### PROPOSED CONDITION

It is proposed to remove the existing site features and to construct a 68-seat, 3,927 square foot Whataburger restaurant on 1.32 acres at the southwestern

portion of the site. The restaurant would be served by 39 parking stalls and a two-lane drive-thru that would accommodate 19 vehicles.

The project would additionally reconstruct the block of Old Zion Cemetery Road between Lee Byrd Road and Atlanta Highway (US Route 78, SR 10, SR 81), and would change the operation along this section to one-way southbound.

Access to the restaurant is proposed via a full-movement driveway along westbound Atlanta Highway (US Route 78, SR 10, SR 81), located approximately 650 feet west of its signalized intersection with Lee Byrd Road, and via a full-movement driveway along southbound Lee Byrd Road, located approximately 700 feet west of the signalized intersection.

The proposed restaurant and drive-thru would be located in the CH (Commercial Highway) zone. The proposed Lee Byrd Road driveway would be located in the R-16 (Single-Family Urban Residential) zone.

The site would circulate one-way counterclockwise around the northerly and westerly sides of the restaurant, to facilitate the drive-thru operation, and would circulate two-way in the parking aisle on the southerly and easterly sides of the building.

The Whataburger site would also be interconnected with an existing Waffle House, to the west; which, in turn, is interconnected with a Verizon store on the next property to the west.

## **SCOPE OF STUDY**

This study has been performed to evaluate potential traffic impacts associated with the development of the proposed Whataburger restaurant. Accordingly, this analysis includes the following:

- A review of roadway and traffic conditions in the vicinity of the site, including roadway geometrics and traffic volumes based on the *City of Loganville Traffic Study and Needs Analysis* dated October 2021, prepared for the City by KCI Technologies;
- Projection of the traffic generated by the proposed Whataburger based on Institute of Transportation Engineers (ITE) research;
- An analysis of existing and future roadway and site driveway operations;
- An evaluation of the Site Plan focusing on access, on-site circulation, drive-thru design, and parking supply; and
- Recommendations and conclusions.

## EXISTING TRAFFIC CONDITIONS

### SUBJECT PROPERTY

The subject property is bound by Atlanta Highway (US Route 78, SR 10) to the south, Lee Byrd Road to the north and Old Zion Cemetery Road to the east in the City of Loganville, Walton County, Georgia. The subject property has the following characteristics:

- Designated as City of Loganville Parcels LG110056, LG110057, C0210017, LG110059 and LG110061.
- Has approximately 270 feet of frontage along westbound Atlanta Highway (US Route 78, SR 10).
- The property is primarily located in the CH (Commercial Highway) zone where drive-in restaurants are a permitted use.
- The northerly parcel, along Lee Byrd Road, is located in the R-16 (Single-Family Urban Residential) zoning district, where drive-in restaurants are not permitted.
- Land uses in the site vicinity of the site are a mix of commercial and residential along the Atlanta Highway (US Route 78, SR 10) corridor and predominately residential along the Lee Byrd Road and Old Zion Cemetery Road corridors.

### ROADWAY NETWORK

The subject property is bound by Atlanta Highway (US Route 78, SR 10) to the south, Lee Byrd Road to the north and Old Zion Cemetery Road to the east. The following is a description of the adjacent roadway network:

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#### Atlanta Highway (US Route 78, SR 10)

- Classified as a Principal Arterial under Georgia Department of Transportation (GDOT) jurisdiction based on the GDOT Functional Classification database.
- Designated as an east/west roadway within the vicinity of the site.

- › Provides 2 lanes of travel in each direction with no shoulders, separated by a two-way left-turn lane (TWLTL) along the site frontage, and additional turn lanes at key intersections.
- › Parking is not permitted within the vicinity of the site.
- › Sidewalks are provided on the southern side of the roadway west of its signalized intersection with Lee Byrd Road.
- › Has a posted speed limit of 45 miles per hour along the site frontage.
- › Serves an Average Annual Daily Traffic (AADT) of approximately 44,000 vehicles according to GDOT data from October 2022.

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#### Lee Byrd Road

- › Classified as local roadway under City jurisdiction based on the GDOT Functional Classification database.
- › Has a northwest/southeast orientation in the vicinity of the site.
- › A "No Trucks" sign is posted on the north leg of its signalized intersection with Atlanta Highway (US Route 78, SR 10).
- › Provides one 1 lane to accommodate each direction of travel with turn lanes provided at key signalized intersections.
- › Parking is not permitted along the site frontage.
- › Has a posted speed limit of 35 miles per hour along the site frontage.
- › Meets its southerly terminus at its signalized intersection with Atlanta Highway (US Route 78, SR 10), south of which the roadway is designated SR 81.

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#### Old Zion Cemetery Road

- › Classified as local roadway under City jurisdiction based on the GDOT Functional Classification database.
- › Has an east/west orientation in the vicinity of the site.
- › Provides one 1 lane to accommodate each direction of travel.

- Parking is not permitted within the vicinity of the site.
- Has a posted speed limit of 25 miles per hour within the vicinity of the site.
- Serves an AADT of approximately 1,900 vehicles according to the City of Loganville Traffic Study and Needs Analysis conducted in May 2021.
- Meets its westerly terminus at its intersection with Atlanta Highway (US Route 78, SR 10).

### **EXISTING TRAFFIC VOLUMES**

To examine the traffic operations at the project site, traffic counts were obtained from the *City of Loganville Traffic Study and Needs Analysis* dated October 2021, which was prepared for the City by KCI Technologies. Data for weekday morning and weekday evening peak hours was obtained for the following intersections:

- Atlanta Highway (US Route 78, SR 10) & Lee Byrd Road
- Lee Byrd Road & Old Zion Cemetery Road

Specifically, manual turning movement counts were conducted on the following dates and times for the *City of Loganville Traffic Study*:

- Thursday, May 6, 2021 from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm
- Tuesday, May 11, 2021 from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm
- Tuesday, May 18, 2021 from 7:00 am to 9:00 am and from 4:00 pm to 6:00 pm

### **PEAK HOURS**

The results of the traffic counts indicate there are distinct hours during the periods of study when traffic experiences its highest level. Based on the traffic count information collected in the City of Loganville report, the 2021

existing weekday morning and weekday evening peak hour traffic volumes are summarized on **Figure 2** in the **Appendix**.

In an effort to provide a conservative analysis, the 2021 peak hour counts were then grown to 2023 at a 1.25% annual background growth rate, consistent with the *City of Loganville Traffic Study*. The resultant 2023 existing peak hour traffic volumes are summarized on **Figure 3** in the **Appendix**.



## PROPOSED DEVELOPMENT TRAFFIC CHARACTERISTICS

### TRIP GENERATION

Traffic projections for the proposed Whataburger restaurant with drive-thru were prepared using the industry standard data published by the Institute of Transportation Engineers (ITE) in the 11th Edition of the *Trip Generation Manual*.

Specifically, trip generation for the existing 4,000 square feet of office space was prepared using ITE Land Use Code 712: "Small Office Building" based on building area and the existing 3 single-family houses were prepared using ITE Land Use Code 210: "Single-Family Detached Housing" based on the number of houses. The proposed 3,927 square foot Whataburger restaurant with drive-thru was prepared using ITE Land Use Code 934: "Fast-Food Restaurant with Drive-Through Window" based on building area.

**Table 1** summarizes the site-generated traffic increases for the proposed Whataburger development compared to the existing uses during the weekday morning and weekday evening peak hours. The ITE trip generation summary printouts are provided in the **Appendix**.

**Table 1**  
**ITE Trip Generation Comparison**  
**Existing Vs. Proposed Developments**

Development	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Existing 4,000 SF Small Office Buildings	5	2	7	3	6	9
Existing 3 Single-Family Houses	1	2	3	2	2	4
Proposed 3,927 SF Whataburger	89	86	175	68	62	130
Difference	+83	+82	+165	+63	+54	+117

A portion of the site-generated traffic is projected to be "pass-by" in nature, as diverted movements into the site from adjacent flows of traffic (i.e., one

stop made in a series of linked "errand" type trips to multiple retail locations; or made by a commuter on the way to work or home).

The average weekday morning and weekday evening peak hour pass-by trip percentage for a fast-food restaurant with drive-thru is 49% and 50%, respectively, based on the ITE's *Trip Generation Handbook*, 3rd Edition, September 2017. **Table 2** presents the increase in site-generated traffic between the existing and proposed developments in terms of "new" and "pass-by" traffic.

**Table 2**  
**Proposed Whataburger Trip Generation Increase**  
**With Consideration of Pass-By Trips**

Land Use	Trip Type	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing 4,000 SF Small Office Buildings	New	5	2	7	3	6	9
	Pass-By	0	0	0	0	0	0
	Total	5	2	7	3	6	9
Existing 3 Single-Family Houses	New	1	2	3	2	2	4
	Pass-By	0	0	0	0	0	0
	Total	1	2	3	2	2	4
Proposed 3,927 SF Whataburger	New	47	44	91	37	31	68
	Pass-By	42	42	84	31	31	62
	Total	89	86	175	68	62	130
Difference	New	+41	+40	+81	+32	+23	+55
	Pass-By	+42	+42	+84	+31	+31	+62
	Total	+83	+82	+165	+63	+54	+117

**TRIP DISTRIBUTION**

The site-generated traffic attributed to the proposed Whataburger development has been oriented to the adjacent roadway network based on travel patterns and driveway using patterns identified from the reported traffic count data.

The new and pass-by trip distributions are illustrated on **Figure 4** and **Figure 5** in the **Appendix**, respectively. **Figure 6** and **Figure 7** in the **Appendix** summarize the new and pass-by site traffic volumes respectively. **Figure 8** in the **Appendix** summarizes the total site-generated traffic from the proposed development.

## FUTURE TRAFFIC CONDITIONS

### OTHER AREA DEVELOPMENTS

The City of Loganville Planning Department was contacted to determine if there are any proposed developments in the vicinity of the site which could impact traffic conditions on the adjacent roadway network. According to the City, there are no significant proposed area developments within the vicinity of the site.

### BACKGROUND GROWTH

It is anticipated that the construction of the project will be completed within 2 years. A growth rate of 1.25% rate per year was utilized to account for potential background traffic growth, in accordance with the *City of Loganville Traffic Study*.

### FUTURE NO-BUILD TRAFFIC VOLUMES

The future-without-the project, or No-Build, traffic volumes were established by applying the 1.25% annual growth rate to the 2023 existing traffic volumes. The future No-Build traffic volumes are summarized on **Figure 9** in the **Appendix**.

### FUTURE BUILD TRAFFIC VOLUMES

To create the future-with-the-project, or Build, traffic volumes, the traffic network was adjusted to account for the elimination of the existing -on-site uses and for proposed one-way operation on Old Zion cemetery road. The redistributed and reallocated trips are shown on **Figure 10** in the **Appendix**.

The future Build traffic volumes were then calculated by adding the site-generated traffic volumes associated with the proposed Whataburger restaurant and the redistributed and reallocated traffic volumes to the future No-Build traffic volumes. The Build traffic network is show on **Figure 11** in the **Appendix**.

## ANALYSIS OF FUTURE TRAFFIC VOLUMES

A Volume/Capacity and Level of Service Analysis was conducted for the Existing, No-Build and Build conditions for the weekday morning and weekday evening peak hours using Synchro 11 Software. This type of analysis is performed to gauge the operational state of traffic activity, and to identify areas of excessive delay or congestion. A description of the Levels of Service is provided in the **Appendix**.

ATDE obtained the GDOT timing directive associated with the signalized intersection of the Atlanta Highway (US Route 78, SR 10) and Lee Byrd Road for use in the analyses. The timing directive is provided in the **Appendix**.

The resulting Synchro 11 summary printouts and Level of Service summary tables are also provided in the **Appendix**.

The following is a summary of the capacity analysis results:

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### Atlanta Highway (US Route 78, SR 10) & Lee Byrd Road

Under **Existing** conditions, the signalized intersection of Atlanta Highway (US Route 78, SR 10) and Lee Byrd Road was calculated to operate at Level of Service E or better for any movement during the study periods with the following exceptions:

- The southbound left-turn movement was calculated to operate at a Level of Service F during the weekday morning peak hour.
- The northbound left-turn and the southbound through/right-turn movements were calculated to operate at a Level of Service F during both study peak hours.

Under **No-Build** conditions, the intersection was calculated to continue to operate at Existing Levels of Service. Under **Build** conditions, the intersection was calculated to continue to operate at the No-Build Levels of Service with the following exceptions:

- The eastbound left-turn movement was calculated to change from a Level of Service C to D during the weekday evening peak hour.
- Vehicle delay at the southbound through/right-turn movement was calculated to increase by as much as 12.8 seconds in comparison to No-Build conditions.

Signal timing Mitigation was evaluated for the signalized intersection. A maximum reallocation of only 2 seconds of green time from the Atlanta Highway (US Route 78, SR 10) phase was analyzed, with 1 second of green time distributed to the Atlanta Highway (US Route 78, SR 10) westbound left-turn lead phase, and 1 second of green time distributed to the southbound approach. **The analysis shows that the proposed signal timing change would return the signal to No-Build or better operations in the Build with Mitigation condition.**

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#### Lee Byrd Road & Old Zion Cemetery Road

Under **Existing, No-Build** and **Build** conditions, the intersection of Lee Byrd Road and Old Zion Cemetery Road was calculated to operate at an acceptable Level of Service D or better for any movement during each of the study peak hours. This Level of Service D translates to a 95th percentile queue of approximately 1 vehicle.

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#### Atlanta Highway (US Route 78, SR 10) & Old Zion Cemetery Road

Under **Existing, No-Build** and **Build** conditions, the intersection of Atlanta Highway (US Route 78, SR 10) and Old Zion Cemetery Road was calculated to operate at an acceptable Level of Service D or better for any movement during each of the study peak hours. This Level of Service D translates to a 95th percentile queue of approximately 1 vehicle.

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## Proposed Site Driveways

Under **Build** conditions, the proposed site driveways were calculated to operate at a Level of Service C or better during each of the study peak hours with the following exception:

The southbound egress movement at the proposed Atlanta Highway (US Route 78, SR 10) driveway was calculated to operate at a Level of Service F during the weekday morning peak hour and a Level of Service E during the weekday evening peak hour. This Level of Service F translates to a 95th percentile queue of approximately 5 vehicles which would be stored on-site.

## SITE ACCESS AND CIRCULATION

An evaluation has been made of the Concept Site Plan Option 5 for the proposed Whataburger restaurant prepared by Sevan Engineering, dated September 9, 2022, and last revised March 3, 2023. In particular, the evaluation focuses on site access, circulation, drive-thru design, and parking supply. The following items address these design characteristics:

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### Site Access

- Access to the site is currently provided via 2 driveways along westbound Atlanta Highway (US Route 78, SR 10), a driveway along eastbound Lee Byrd Road and a driveway along southbound Old Zion Cemetery Road.
- Under future conditions, access to the site is proposed at a full-movement driveway along westbound Atlanta Highway (US Route 78, SR 10) located approximately 650 feet west of its signalized intersection with Lee Byrd Road, which is a net reduction by one driveway along the State highway.
- Access is also proposed at a full-movement driveway along southbound Lee Byrd Road located approximately 700 feet north of its signalized intersection with Atlanta Highway (US Route 78, SR 10).
- An interconnection is proposed between the Whataburger restaurant and the existing Waffle House to the west, and, beyond the Waffle House, to a Verizon store.
- The project would reconstruct Old Zion Cemetery Road and provide one-way southbound operation between Lee Byrd Road and the State highway.

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### Drive-Thru

- The proposed site layout includes a drive-thru with 2 lanes and a full bypass lane.



- Drive-thrus offer expedient customer service and are especially beneficial for parents with small children and elderly or disabled persons, who may find it easier to remain in their vehicles for order transactions.
- The layout provides queueing for 19 vehicles without impacting the on-site circulation, site driveways or parking areas.
- The entrance to the drive-thru is proposed to be located along the north side of the building.

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### Parking

- The City of Loganville requires 1 parking stall per 3 seats, plus 1 per employee; or 38 stalls for the proposed 68-seat Whataburger restaurant and up to 15 employees.
- A total of 39 parking stalls (inclusive of 2 ADA stalls) are provided on the Site Plan, exceeding the City requirement.
- The Site Plan proposes parking spaces 9 feet in width by 19 feet in depth, which dimensions meet City requirements and are consistent with generally accepted engineering standards.
- The proposed parking areas would be served by 30-foot wide two-way access aisles, which exceeds City requirements.

It has been determined from the conduct of a detailed traffic study that the proposed Whataburger development **would not** significantly impact traffic conditions in the vicinity of the site.

The results of the Synchro analysis show that with consideration of minor timing adjustments, the Levels of Service under future Build conditions were similar compared to future No-Build conditions.

The proposed parking supply will provide 39 parking stalls (including 2 ADA stalls) which exceeds the City Ordinance criteria. Additionally, the parking stall and drive aisle dimensions have been designed to meet or exceed City requirements and are consistent with engineering standards.





Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

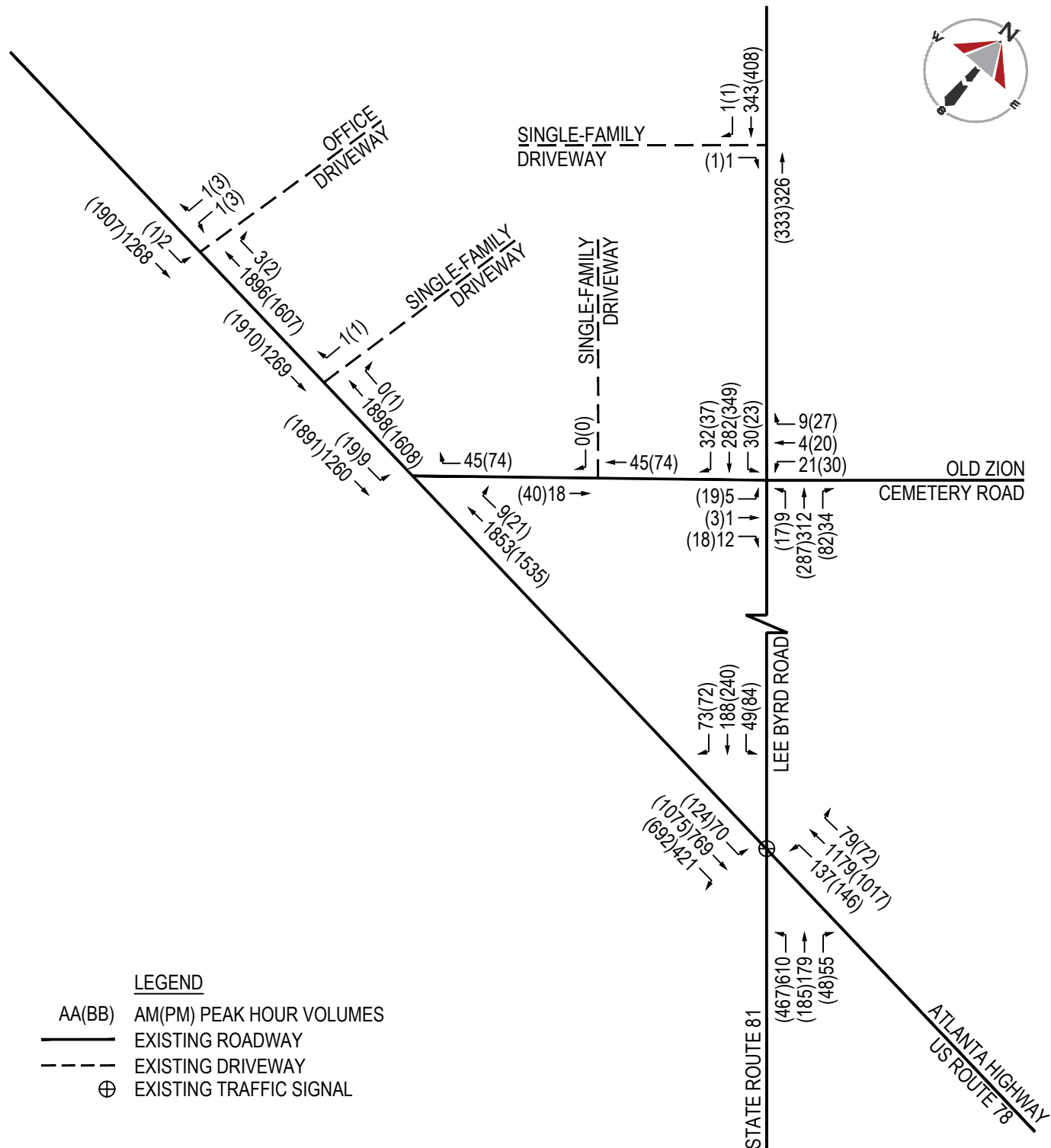
Site Location Map



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

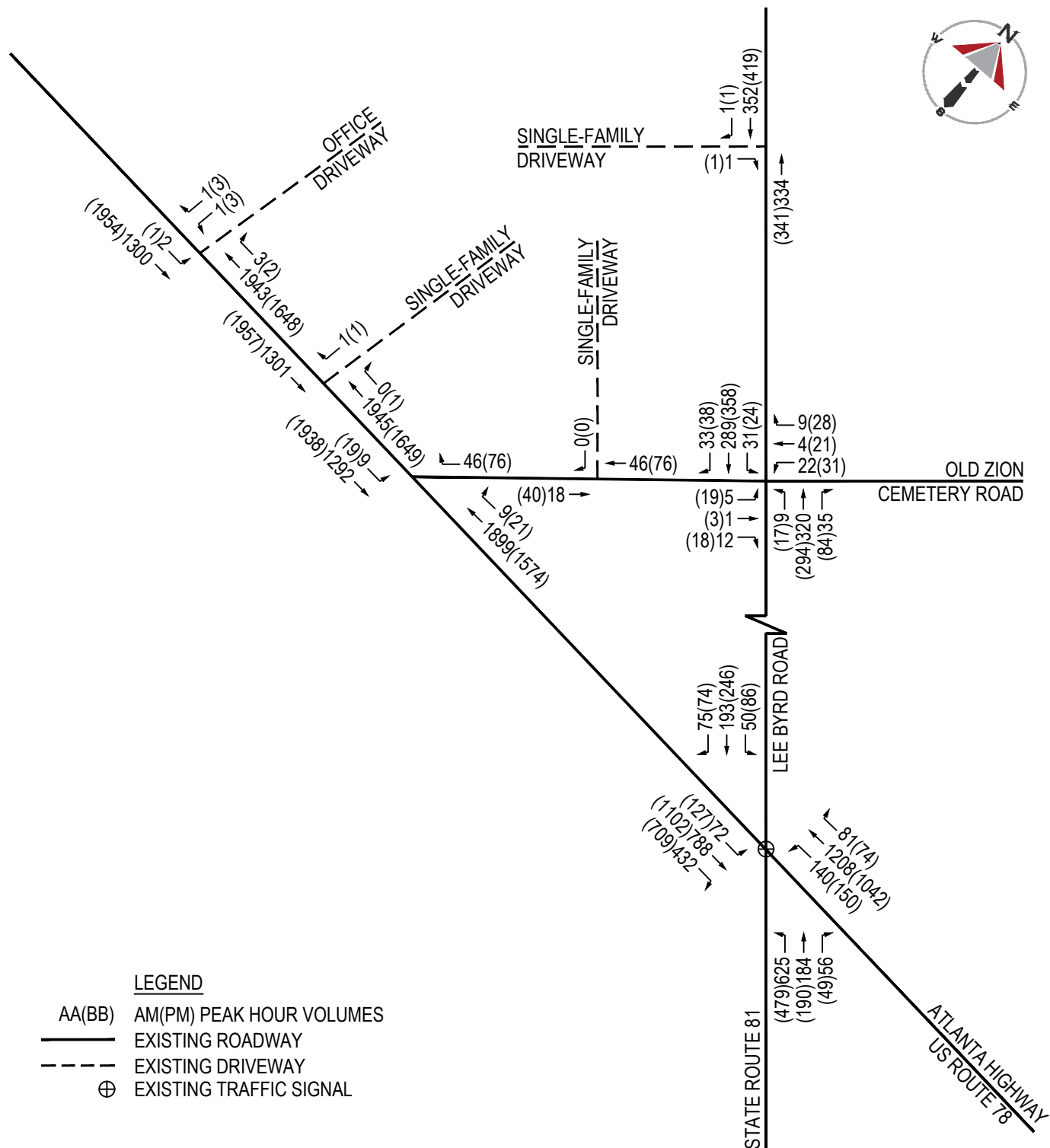
Existing 2021 Traffic Volumes



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

Existing Traffic Volumes + Growth to 2023



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

Distribution of New Project-Generated Trips (Build A)

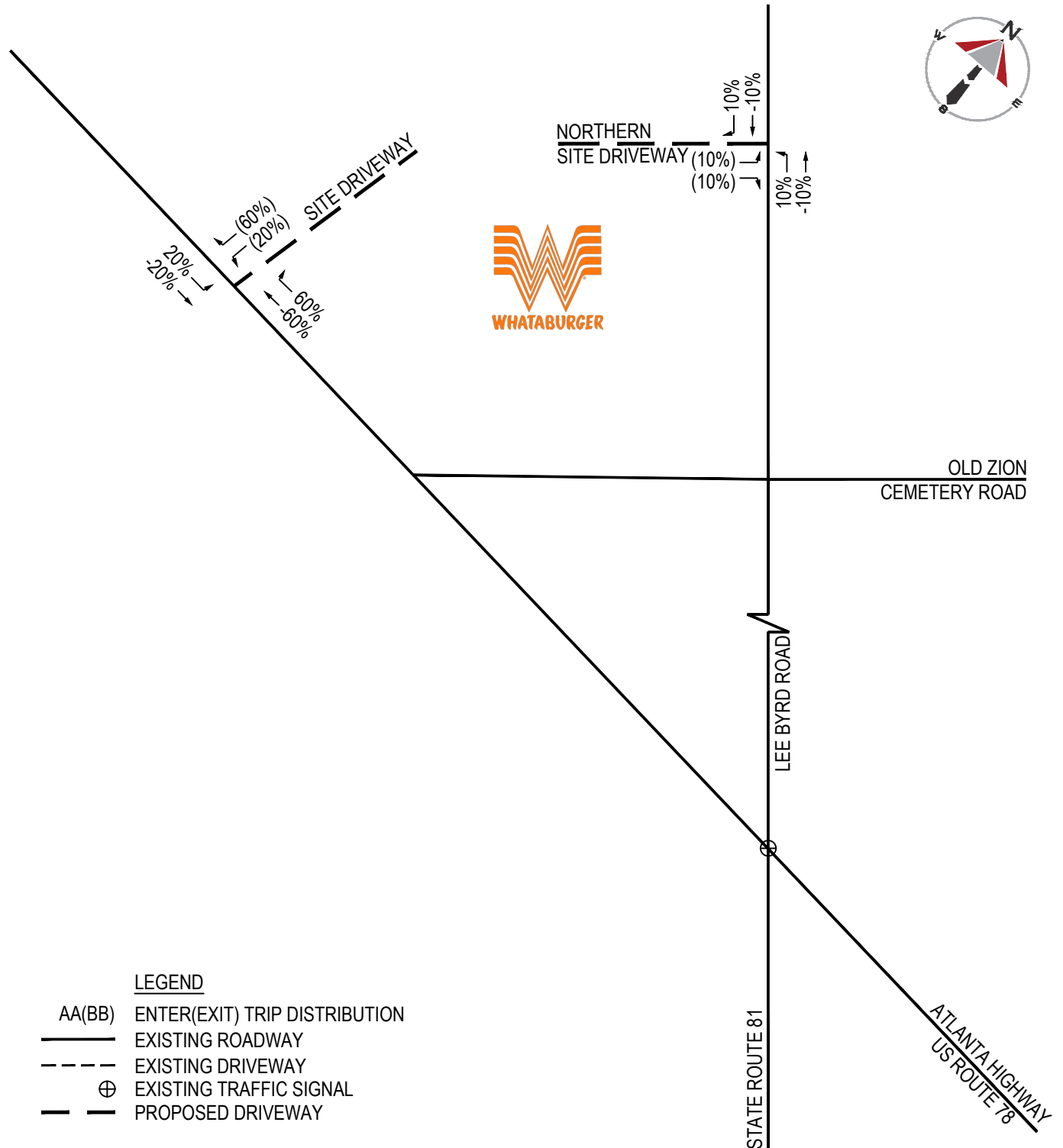


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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

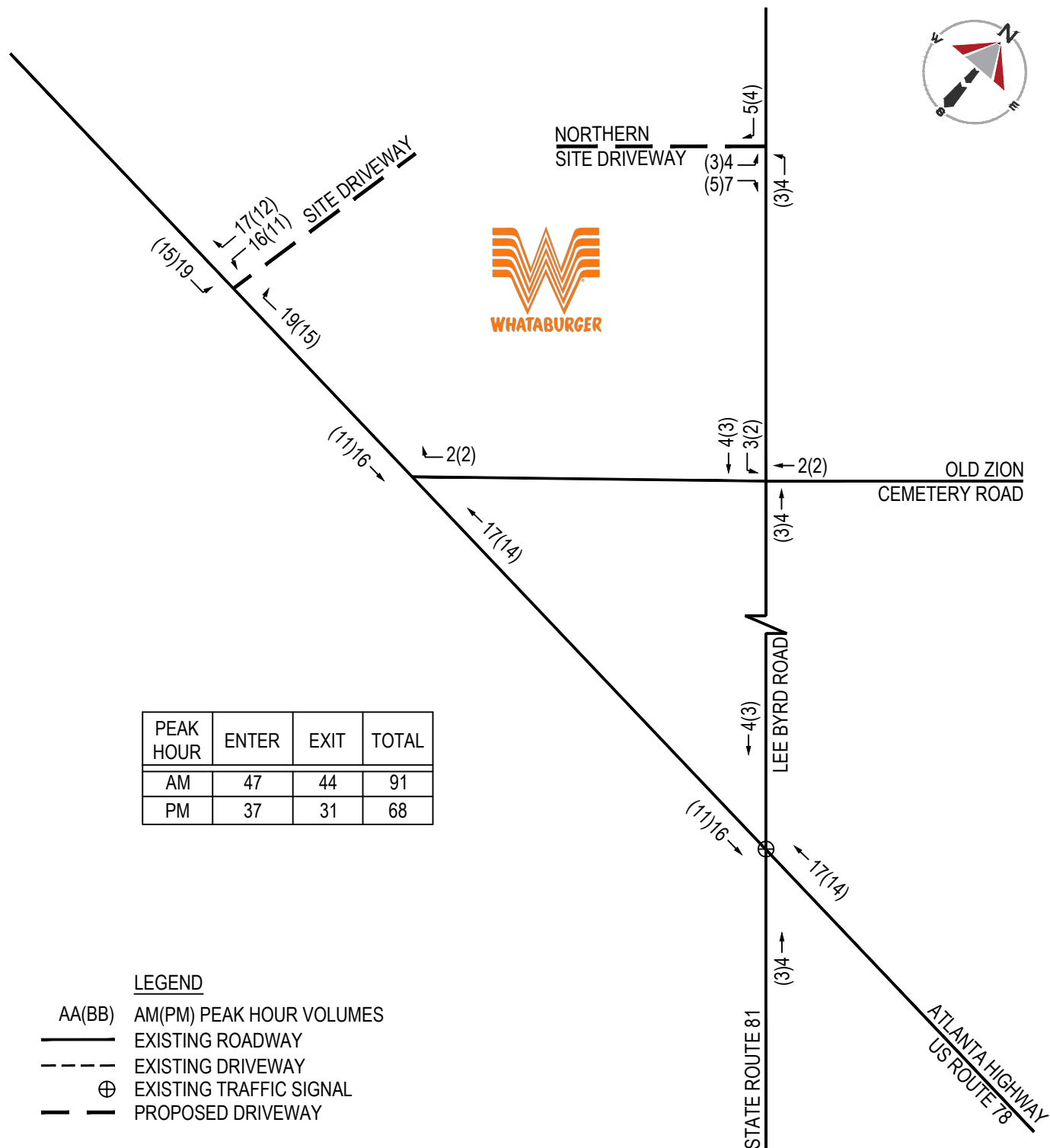
Distribution of Pass-By Project-Generated Trips (Build A)



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

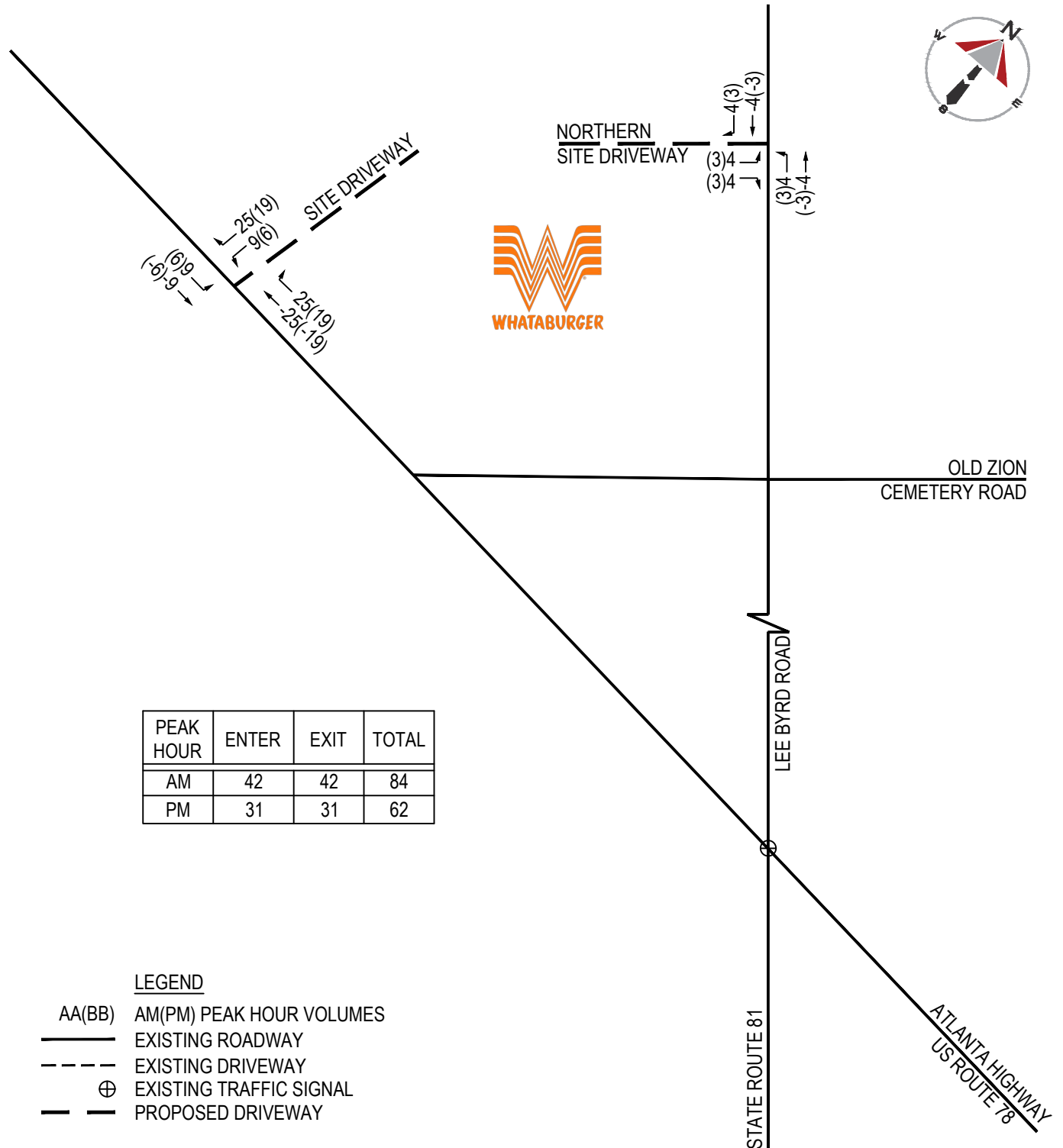
Project-Generated New Traffic Volumes



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

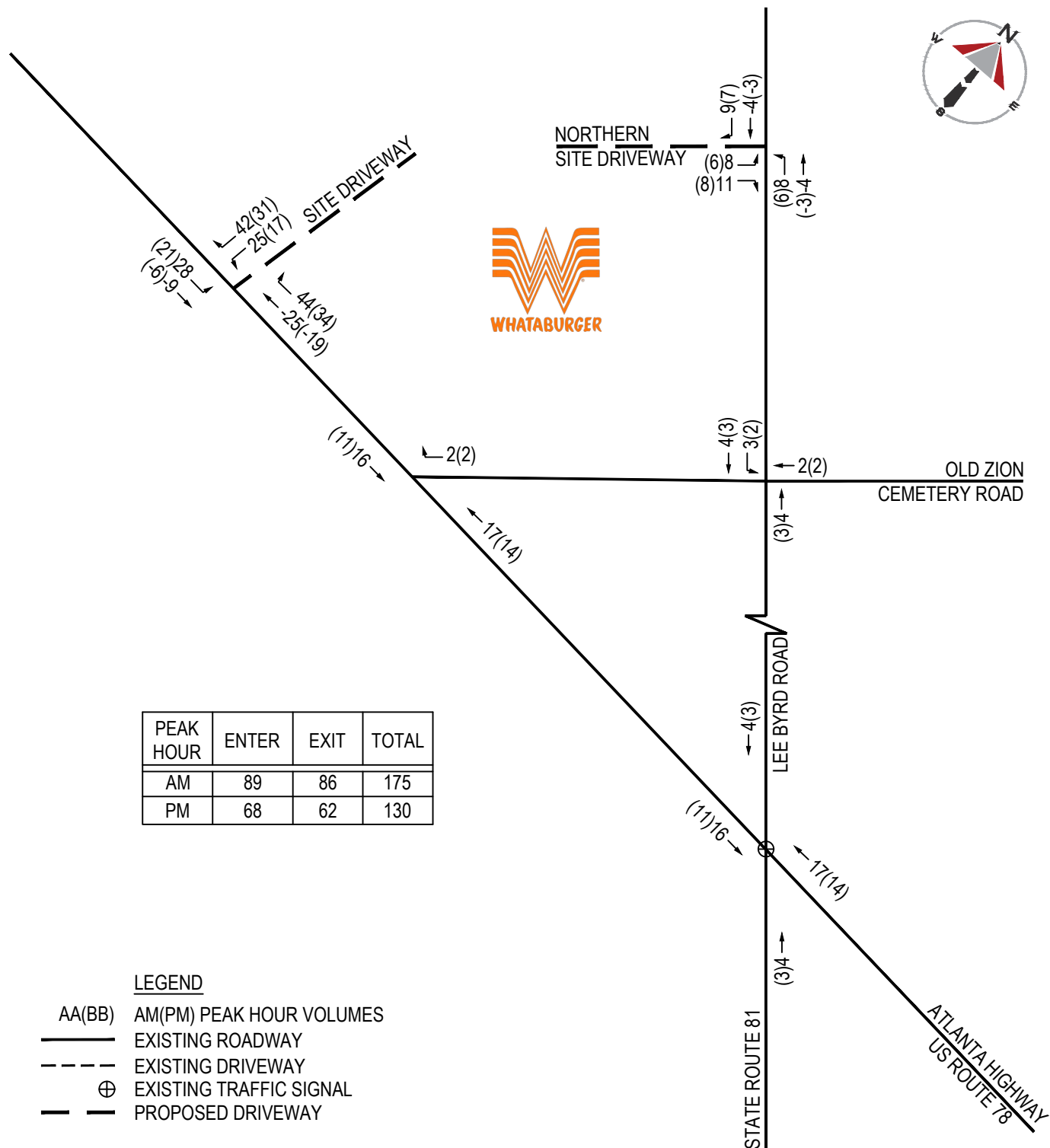
Project-Generated Pass-By Traffic Volumes



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

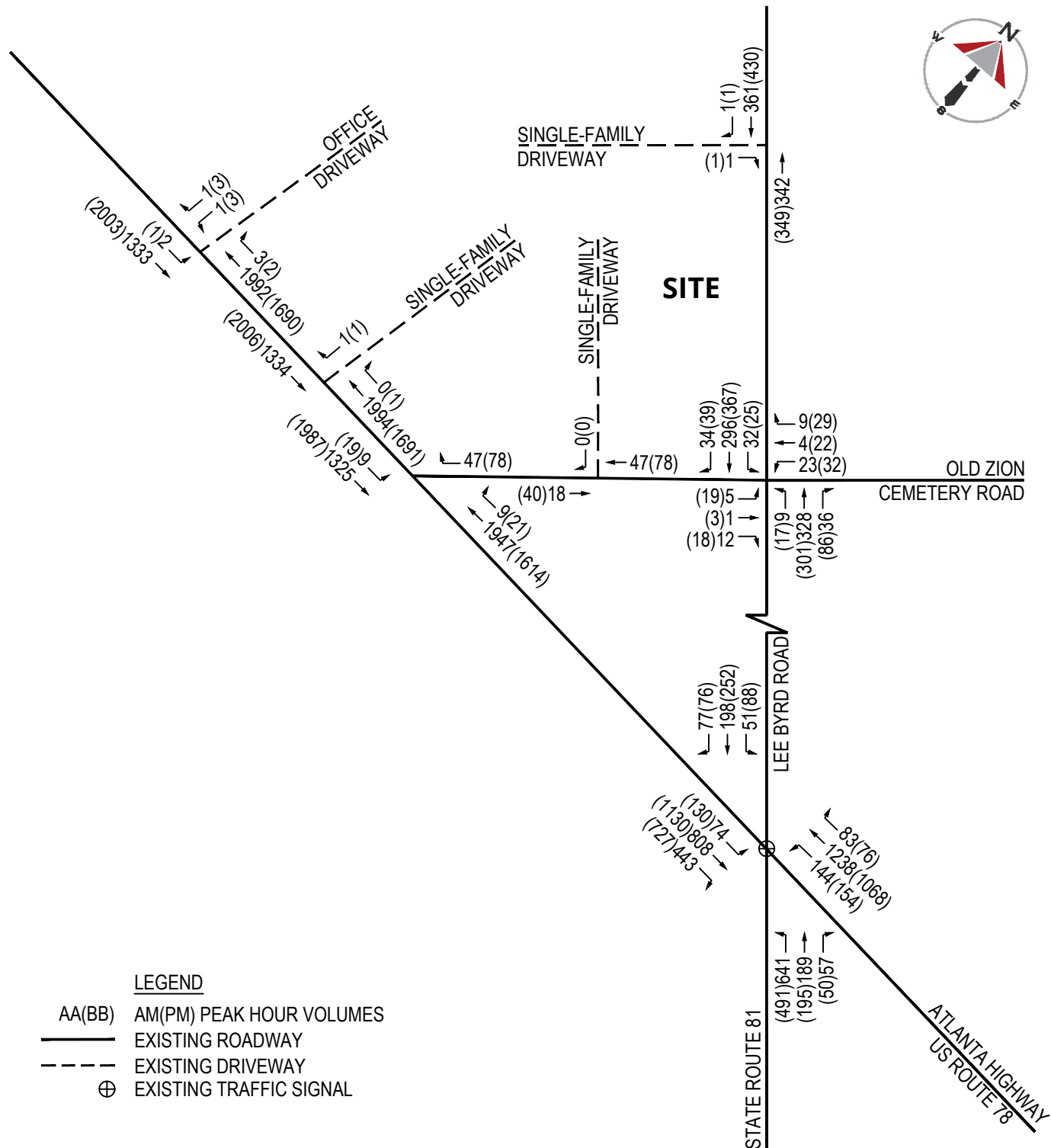
Total Project-Generated Traffic Volumes



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Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

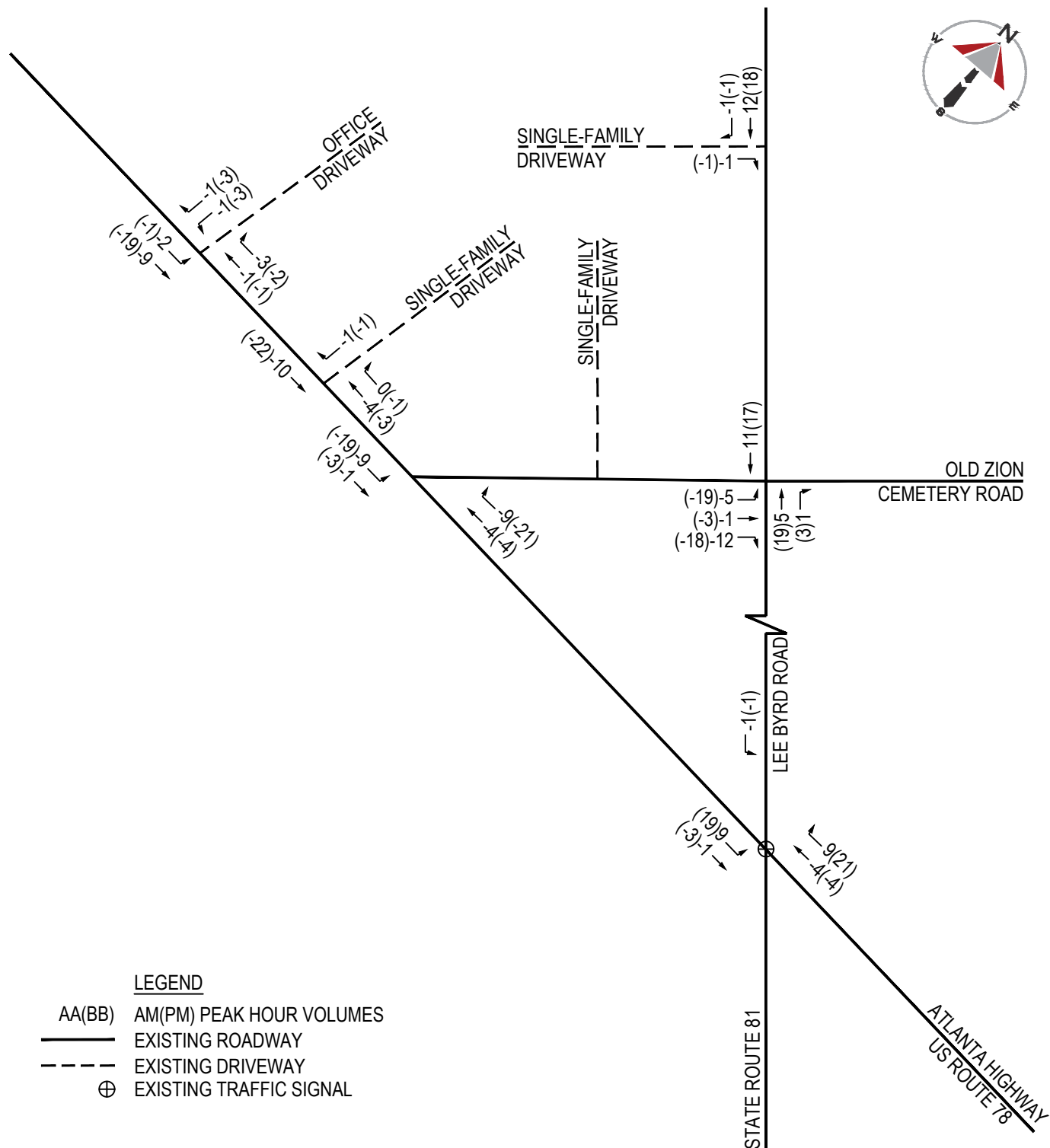
Future No-Build Traffic Volumes



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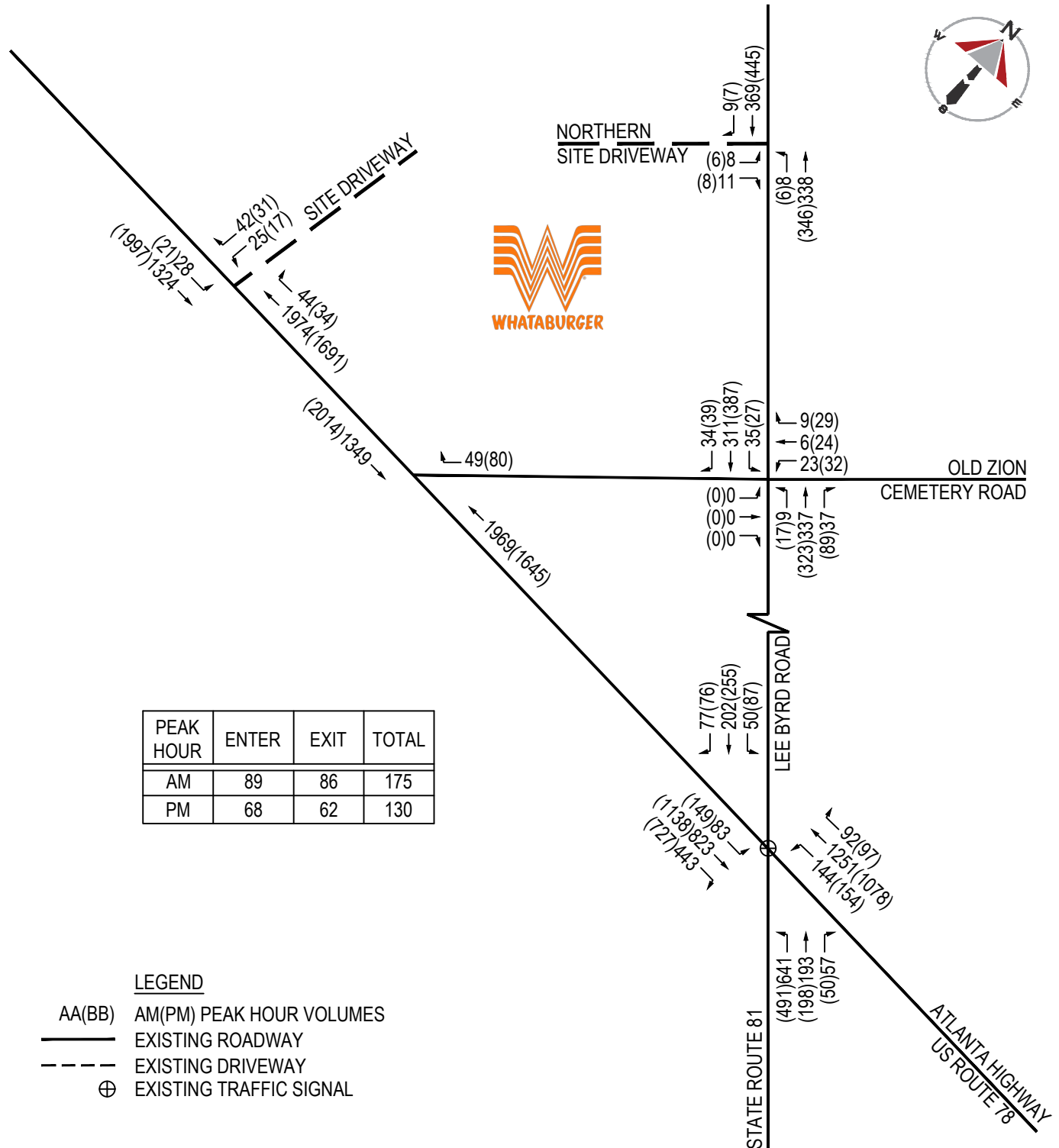
Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

Redistribution & Reallocation of Existing Traffic Volumes



Proposed Whataburger Restaurant with Drive-Thru  
City of Loganville  
Walton County, Georgia

Future Build Traffic Volumes







# Small Office Building (712)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**

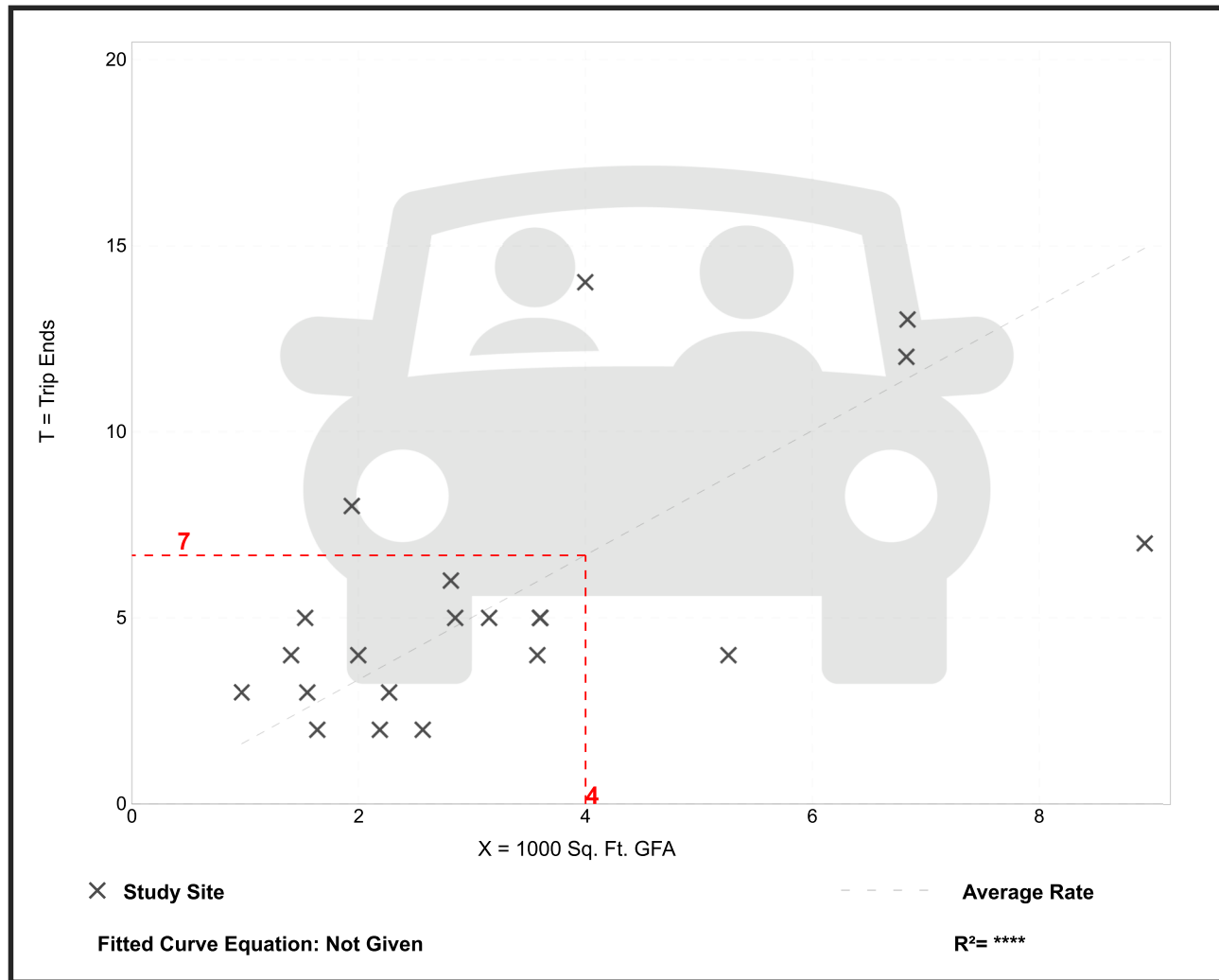
**Setting/Location: General Urban/Suburban**

Number of Studies: 21  
 Avg. 1000 Sq. Ft. GFA: 3  
 Directional Distribution: 82% entering, 18% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.67	0.76 - 4.12	0.88

## Data Plot and Equation



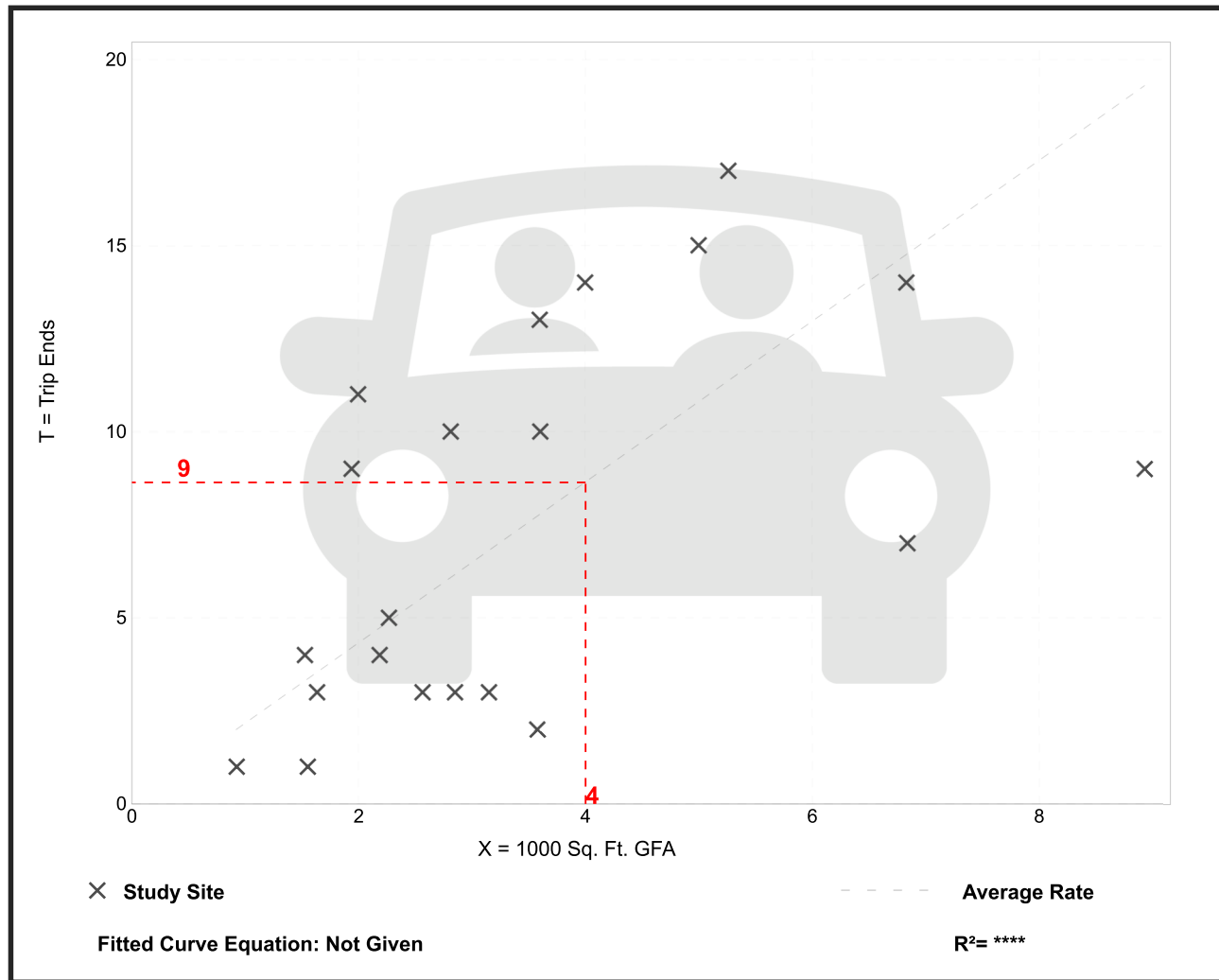
# Small Office Building (712)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 21  
 Avg. 1000 Sq. Ft. GFA: 3  
 Directional Distribution: 34% entering, 66% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.16	0.56 - 5.50	1.26

## Data Plot and Equation



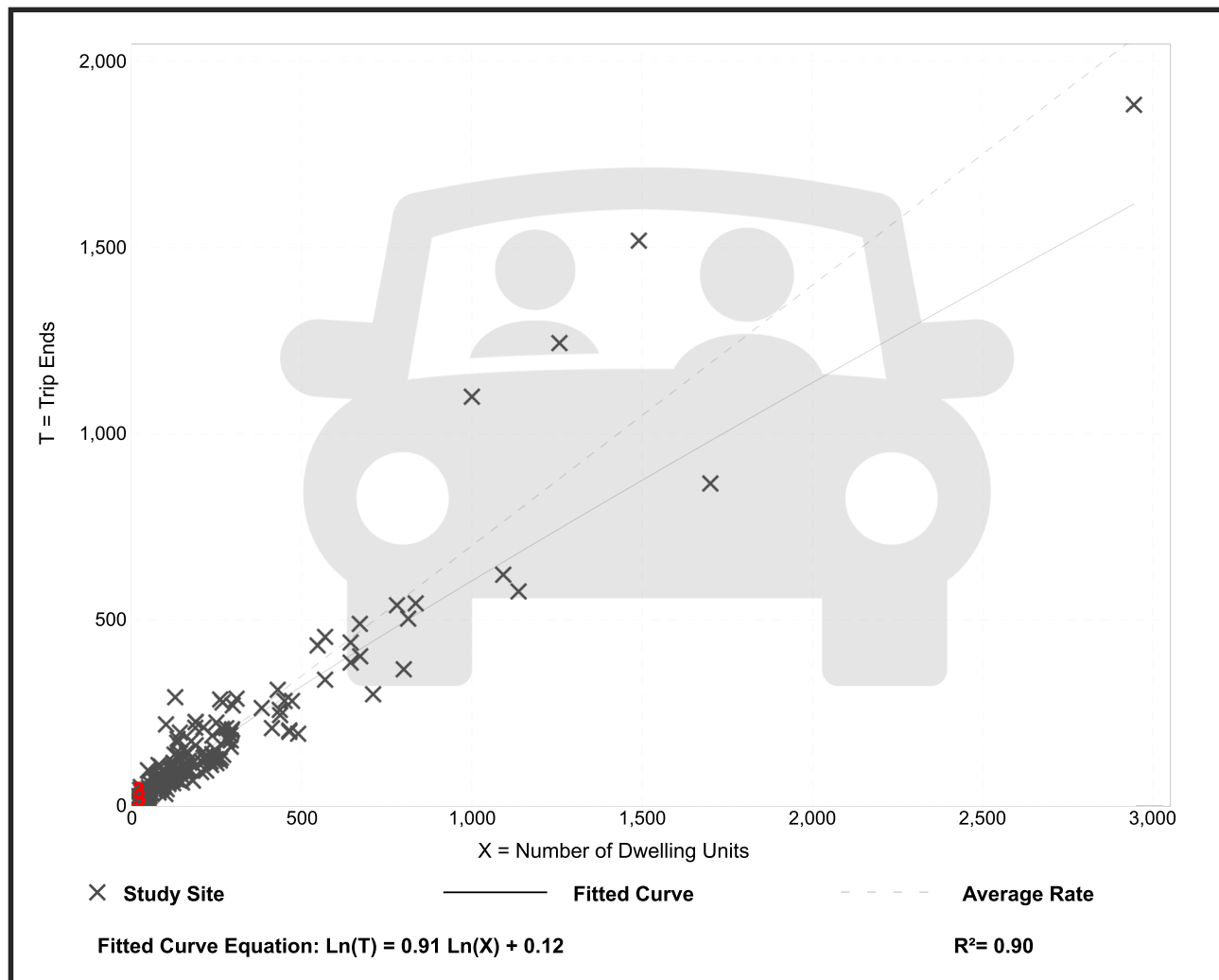
# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 192  
 Avg. Num. of Dwelling Units: 226  
 Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

## Data Plot and Equation



# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

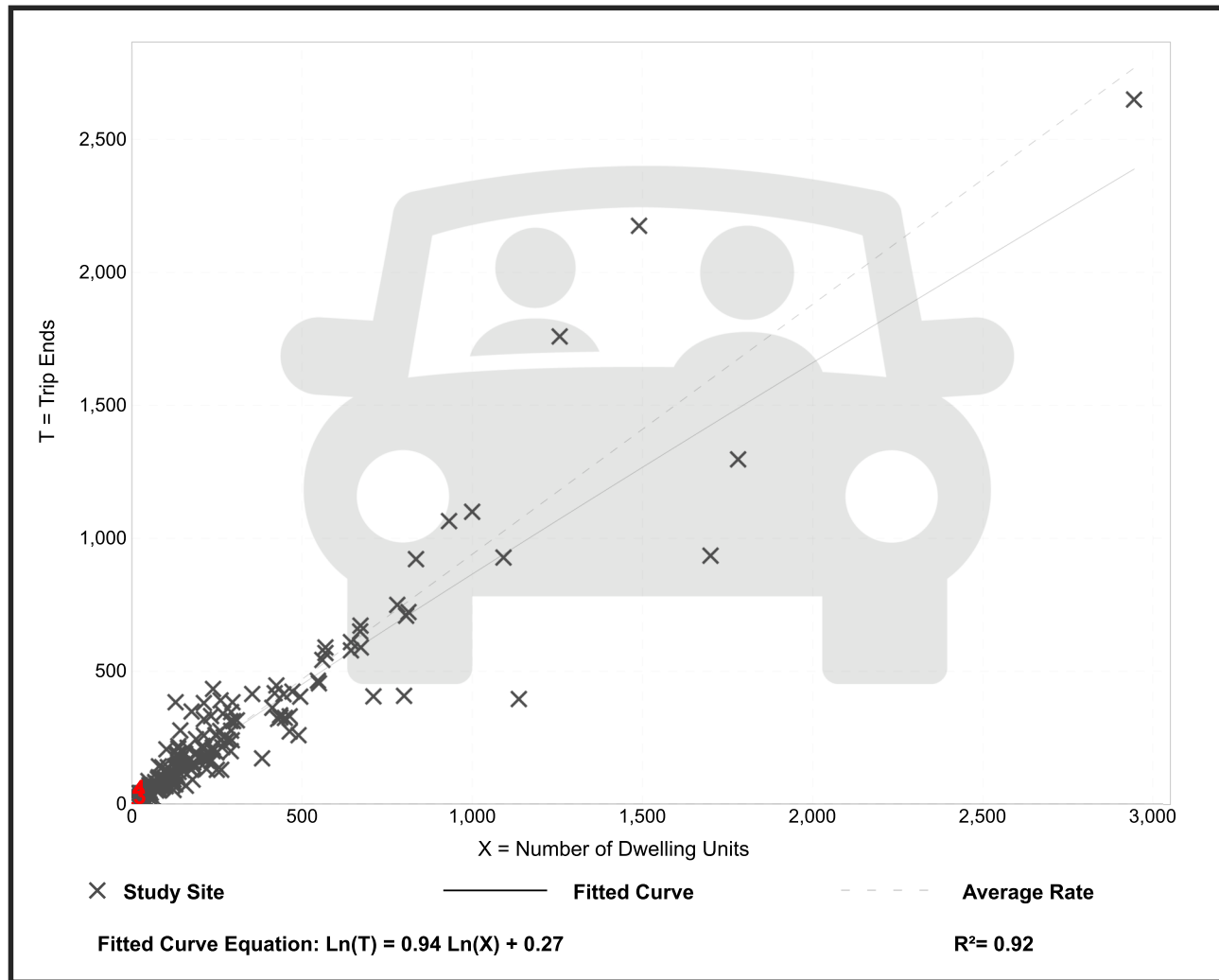
**Setting/Location: General Urban/Suburban**

Number of Studies: 208  
 Avg. Num. of Dwelling Units: 248  
 Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

## Data Plot and Equation



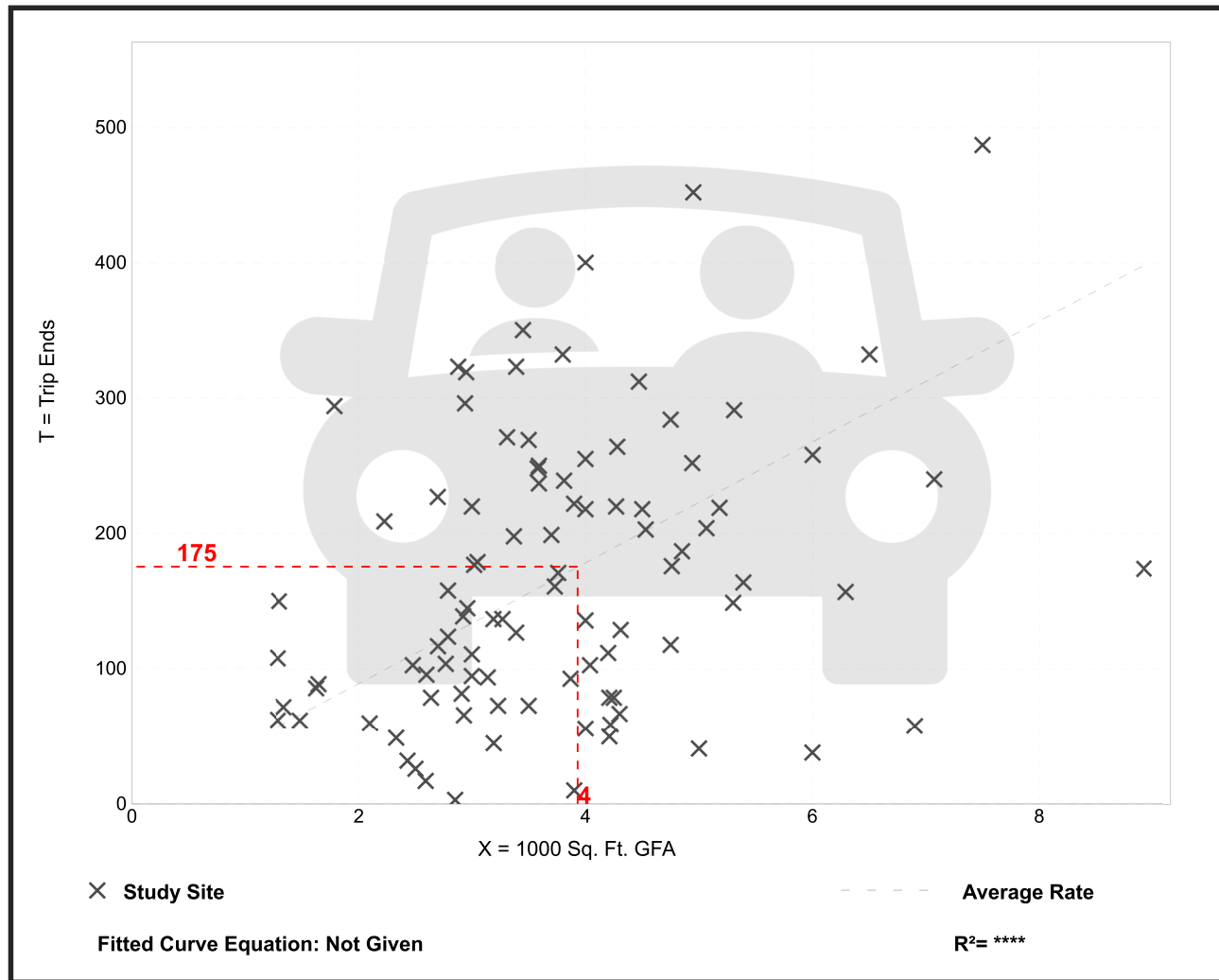
# Fast-Food Restaurant with Drive-Through Window (934)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 96  
 Avg. 1000 Sq. Ft. GFA: 4  
 Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
44.61	1.05 - 164.25	27.14

## Data Plot and Equation



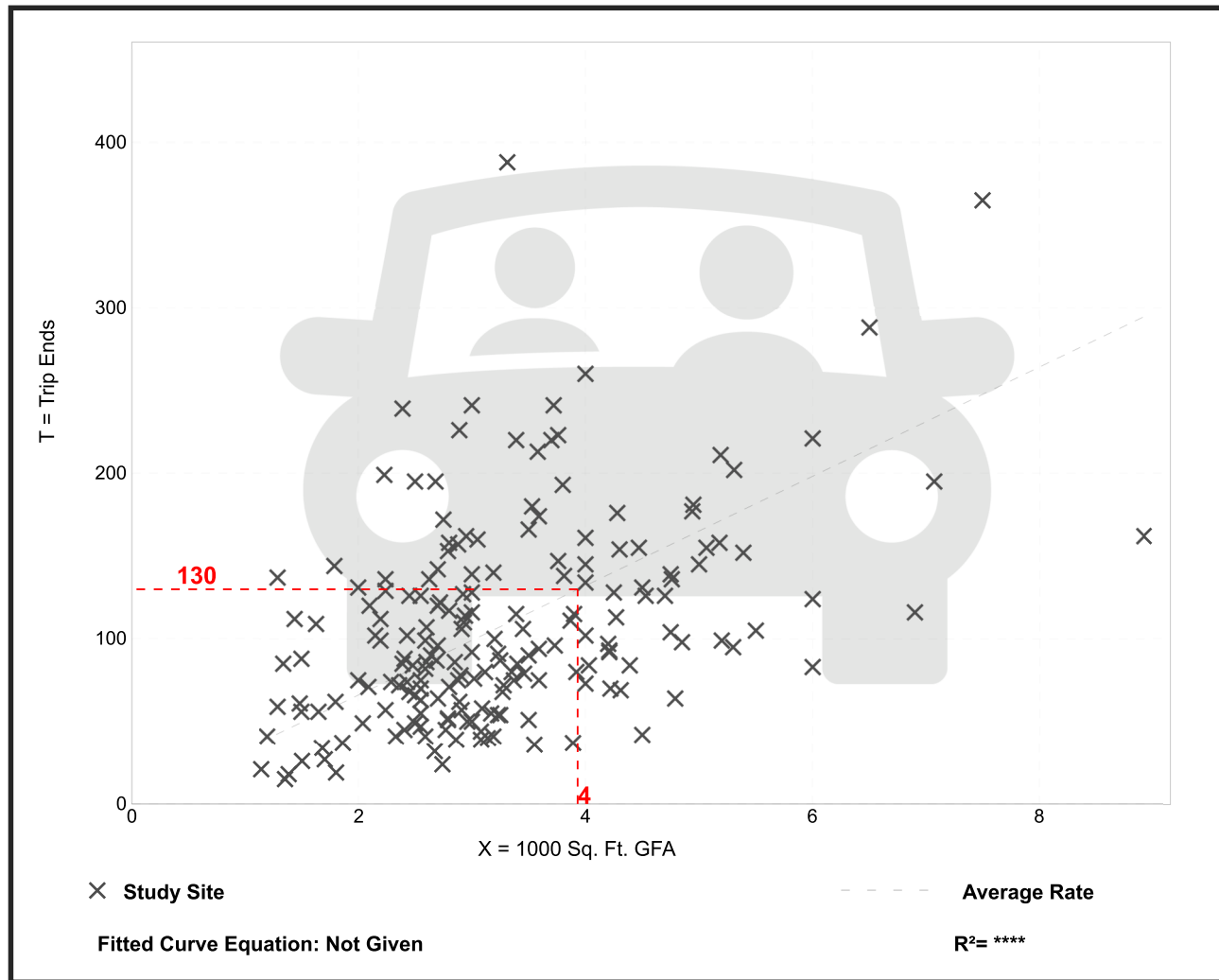
# Fast-Food Restaurant with Drive-Through Window (934)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 190  
 Avg. 1000 Sq. Ft. GFA: 3  
 Directional Distribution: 52% entering, 48% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
33.03	8.77 - 117.22	17.59

## Data Plot and Equation



## C | Level of Service Descriptions

**Table 3**  
**Level of Service and Average Delay**  
**For Unsignalized Intersections**

Level of Service	Average Delay (seconds/vehicle)
A	Up to 10 seconds
B	More than 10 seconds; up to 15 seconds
C	More than 15 seconds; up to 25 seconds
D	More than 25 seconds; up to 35 seconds
E	More than 35 seconds; up to 50 seconds
F	More than 50 seconds

**Table 4**  
**Level of Service and Average Delay**  
**For Signalized Intersections**

Level of Service	Average Delay (seconds/vehicle)	Description
A	Up to 10 seconds	Very short delay, good progression; most vehicles do not stop at intersection.
B	More than 10 seconds Up to 20 seconds	Generally good signal progression and/or short cycle length; more vehicles stop at intersection than Level of Service A.
C	More than 20 seconds Up to 35 seconds	Fair progression and/or longer cycle length; significant number of vehicles stop at intersection.
D	More than 35 seconds Up to 55 seconds	Congestion becomes noticeable; individual cycle failures; longer delays from unfavorable progression, long cycle length; or high volume/capacity ratios; most vehicles stop at intersection.
E	More than 55 seconds Up to 80 seconds	Usually considered limit of acceptable delay indicative of poor progression long cycle length, or high volume/capacity ratio; frequent individual cycle failures.
F	More than 80 seconds	Could be considered excessive delay in some areas, frequently an indication of over-saturation (i.e., arrival flows exceed capacity), or very long cycle lengths with minimal side street green time. Capacity is not necessarily exceeded under this Level of Service.

Reference: *Highway Capacity Manual*, (HCM7), 2022, Transportation Research Board, Washington, D.C.





MaxTime Single Timing Sheet

Intersection  
Net1.IP

SR 10 and SR 81 (Lee Byrd)  
Net2.IP

ID 1287

Agency GDOT

Database Walton 22

Phase	1	2	3	4	5	6	7	8
Description	SR 10	SR 10	SR 10	SR 81	SR 10	SR 10	SR 81	SR 81
Enable	X	X		X	X	X	X	X
Startup								
Ring	1	1	0	1	2	2	2	2
Min Green	6	12	0	8	6	12	3	8
Passage	3.0	6.0	0.0	3.0	3.0	6.0	3.0	5.0
MaxII	25	60	0	35	25	60	30	35
MaxII	25	40	0	45	25	60	40	45
Yel Change	3.3	4.5	3.0	4.2	3.1	4.5	3.1	4.2
Red Clear	3.9	3.2	0.0	3.7	3.4	3.2	3.8	3.7
Delay Green	0	0	0	0	0	0	0	0
Walk	0	7	0	7	0	7	0	7
Ped Clear	0	18	0	15	0	14	0	22
Alt Walk	0	0	0	0	0	0	0	0
Alt Ped Clr								
Delay Walk	0	0	0	0	0	0	0	0
Flash Entry				X				X
Flash Exit		X			X			
Non Lock Mem	X			X	X		X	X
Min Veh Recall		X				X		
Max Veh Recall								
Ped Recall								
Soft Veh Recall								
Dual Entry		X		X		X		X
Split 10	17	68	0	55	17	68	35	20
Coord Phase		X			X			
Ref Phase		X			X			
Split 17	17	49	0	54	17	49	30	24
Coord Phase		X			X			
Ref Phase		X			X			
Split 20	20	58	0	62	20	58	32	30
Coord Phase		X			X			
Ref Phase		X			X			
Split 30	16	83	0	71	16	83	31	40
Coord Phase		X			X			
Ref Phase		X			X			
Split 37	16	55	0	49	16	55	21	28
Coord Phase		X			X			
Ref Phase		X			X			
Split 40	17	49	0	54	17	49	30	24
Coord Phase		X			X			
Ref Phase		X			X			

Overlaps	1	2	3	4	Sequence 1
Description					Ring Phases
Type	->overlap.Type.1	->overlap.Type.2	->overlap.Type.3	->overlap.Type.4	1 1,2,a,4,b
Include Phases					2 5,6,a,7,8,b
Modifier Phase					Sequence 2
Trl Grn	0	0	0	0	Ring Phases
Trl Yel	0.0	0.0	0.0	0.0	1
Trl Red	0.0	0.0	0.0	0.0	2
Walk I	0	0	0	0	Sequence 3
Ped Clr I	0	0	0	0	Ring Phases
Delay	0.0	0.0	0.0	0.0	1
Flash	Off	Off	Off	Off	2

Coordination Parameters				
Ops Mode	Coordination	Max Mode	Force Off	Correction
Automatic	Auto Permissive	Max Inhibit	Fixed	Shortway (Auto)

Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	X						
2		X	X	X	X	X	
3							X
4						X	

Day 1			
It	Hr	Min	Act
1	0	1	1
2	9	0	40
3	11	30	41
4	18	0	42
5	20	0	1
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day 2			
It	Hr	Min	Act
1	0	1	1
2	6	0	10
3	9	0	17
4	11	0	20
5	15	0	30
6	19	0	37
7	21	30	1
8	0	0	
9	0	0	
10	0	0	

Day 3			
It	Hr	Min	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day 4			
It	Hr	Min	Act
1	0	1	1
2	6	0	10
3	9	0	17
4	11	0	20
5	15	0	30
6	17	0	32
7	20	30	3
8	23	30	1
9	0	0	
10	0	0	

Veh.Detectors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	19	21	22	23	24	29	31	32	33
Description																								
Call Phase	2	0	4	0	0	0	6	0	5	0	8	8	0	0	1	7	0	0	0	0	0	0	0	0
Call Ovlp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Call PH									6						2									
Switch Ph	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay	0.0	0.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extend	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Failed Time	255	0	255	0	0	0	255	0	255	0	255	255	0	0	255	255	0	0	0	0	0	0	0	0
Passage	X		X				X		X		X	X			X	X								
Queue	X						X																	
Call																								
Terminate																								

Ped Detectors	Call Phase	Call Ovlp	No Activity	Max Presence	Erratic Count
2	2	0	0	10	25
4	4	0	0	10	25
6	6	0	0	10	25
8	8	0	0	10	25

LS	Channel Type	Item
1	Phs Veh	1
2	Phs Veh	2
3	None	3
4	Phs Veh	4
5	Phs Veh	5
6	Phs Veh	6
7	Phs Veh	7
8	Phs Veh	8

LS	Channel Type	Item
9	None	1
10	None	2
11	None	3
12	None	4
13	Phs Ped	2
14	Phs Ped	4
15	Phs Ped	6
16	Phs Ped	8

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Wknd Peak Period Plan

1287 - SR 10 & SR 81 (Lee Byrd)

Pattern 41 EDIT DESCRIPTION...

### Cycle Timings & Plans

Cycle Time	Offset 1	Offset 2	Offset 3	Ref.	Phs Plan	Det Plan	Ped Plan	Ovlp Plan	Pri/Pre Plan
160	40	0	0	Green	2	1	1	1	1

### Cycle Mode Settings

Coord Mode	Force Off	Max Mode	Transition Cover Peds	Min Permissive Mode
Auto Permissive	Fixed	Max Inhibit	Phase	Phase Only

### Sequence Parameters

Sequence 1  Show All Rings

Ring	Sequence Data
1	1,2,a,4,b
2	5,6,a,7,8,b

### Split Parameters

Split 41  Show All Phases

Phase	Description	Time	Min	Max	Coord	Ref Point	Cover Ped	Force Off Mode	Mode	Pri Min	Pri Max	Pri Force Off Mode
1		20	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float
2		70	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float
4		70	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float
5		21	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float
6		69	0	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float
7		40	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float
8		30	0	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fixed	None	0	0	Float



SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Existing  
AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	788	432	140	1208	81	625	184	56	50	193	75
Future Volume (vph)	72	788	432	140	1208	81	625	184	56	50	193	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.965			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3455	1523	1718	3436	1480	3333	1847	0	1787	1785	0
Flt Permitted	0.084			0.237			0.950			0.602		
Satd. Flow (perm)	160	3455	1523	429	3436	1480	3333	1847	0	1133	1785	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			455			148		12			11	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		392			683			398			312	
Travel Time (s)		5.9			10.3			7.8			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	3%	4%	4%	8%	4%	2%	0%	2%	3%	3%
Adj. Flow (vph)	76	829	455	147	1272	85	658	194	59	53	203	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	829	455	147	1272	85	658	253	0	53	282	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	58.0	58.0	5.0	58.0	58.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	65.7	65.7	11.5	66.2	66.2	11.9	13.2		13.4	13.4	
Total Split (s)	17.0	68.0	68.0	17.0	68.0	68.0	35.0	55.0		20.0	20.0	
Total Split (%)	12.1%	48.6%	48.6%	12.1%	48.6%	48.6%	25.0%	39.3%		14.3%	14.3%	
Yellow Time (s)	3.3	4.5	4.5	3.1	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.4	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		3.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	6.5	7.7	7.7	6.9	7.9		10.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	69.5	60.9	60.9	73.1	62.0	62.0	28.1	47.1		9.1	12.1	
Actuated g/C Ratio	0.50	0.44	0.44	0.52	0.44	0.44	0.20	0.34		0.06	0.09	
v/c Ratio	0.44	0.55	0.49	0.47	0.84	0.12	0.99	0.40		0.73	1.72	
Control Delay	23.0	31.3	4.1	20.1	40.8	0.3	86.7	36.2		111.4	382.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	23.0	31.3	4.1	20.1	40.8	0.3	86.7	36.2		111.4	382.9	
LOS	C	C	A	C	D	A	F	D		F	F	
Approach Delay		21.7			36.5			72.7			340.0	

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Existing  
AM

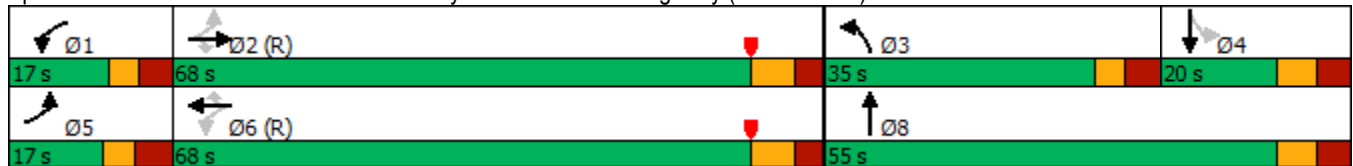


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			E			F		
Queue Length 50th (ft)	31	293	0	62	532	0	310	168		48	~371	
Queue Length 95th (ft)	56	358	64	99	646	0	#438	248		#125	#559	
Internal Link Dist (ft)	312			603			318			232		
Turn Bay Length (ft)	135			200			265			295		
Base Capacity (vph)	197	1503	920	322	1522	737	668	629		73	164	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.39	0.55	0.49	0.46	0.84	0.12	0.99	0.40		0.73	1.72	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 85 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.72  
 Intersection Signal Delay: 64.3  
 Intersection LOS: E  
 Intersection Capacity Utilization 112.8%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 2: Lee Byrd Road & Old Zion Cemetery Road

Existing  
AM

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	12	22	4	9	9	320	35	31	289	33
Future Vol, veh/h	5	1	12	22	4	9	9	320	35	31	289	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	6	-	-	2	-	-	1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	3	0	5	0
Mvmt Flow	5	1	13	24	4	10	10	352	38	34	318	36

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	802	814	336	802	813	371	354	0	0	390	0	0
Stage 1	404	404	-	391	391	-	-	-	-	-	-	-
Stage 2	398	410	-	411	422	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	8.3	7.7	6.8	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	323	317	711	265	259	799	1216	-	-	1199	-	-
Stage 1	627	603	-	720	640	-	-	-	-	-	-	-
Stage 2	728	637	-	542	514	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	304	303	711	250	247	799	1216	-	-	1199	-	-
Mov Cap-2 Maneuver	304	303	-	250	247	-	-	-	-	-	-	-
Stage 1	620	582	-	712	633	-	-	-	-	-	-	-
Stage 2	706	630	-	512	496	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.6		18.6		0.2		0.7	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1216	-	-	491	303	1199	-	-
HCM Lane V/C Ratio	0.008	-	-	0.04	0.127	0.028	-	-
HCM Control Delay (s)	8	0	-	12.6	18.6	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 3: Atlanta Highway (US Route 78) & Old Zion Cemetery Road

Existing  
AM

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑↑	↑↑		↘	
Traffic Vol, veh/h	9	1292	1899	9	0	46
Future Vol, veh/h	9	1292	1899	9	0	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	91	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	9	1360	1999	9	0	50

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	2008	0	-	0	2566 1004
Stage 1	-	-	-	-	2004 -
Stage 2	-	-	-	-	562 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	*439	-	-	-	*265 *293
Stage 1	-	-	-	-	*265 -
Stage 2	-	-	-	-	*507 -
Platoon blocked, %	1	-	-	-	1 1
Mov Cap-1 Maneuver	*439	-	-	-	*259 *293
Mov Cap-2 Maneuver	-	-	-	-	*236 -
Stage 1	-	-	-	-	*259 -
Stage 2	-	-	-	-	*507 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	*439	-	-	-	293
HCM Lane V/C Ratio	0.022	-	-	-	0.171
HCM Control Delay (s)	13.4	-	-	-	19.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 4: Atlanta Highway (US Route 78) & Single-Family Driveway

Existing  
 AM

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	0	1301	1945	0	0	1
Future Vol, veh/h	0	1301	1945	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	0	1369	2047	0	0	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	2047	0	0 2595 1024
Stage 1	-	-	- 2047 -
Stage 2	-	-	- 548 -
Critical Hdwy	4.1	-	- 6.25 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	2.2	-	- 3.65 3.3
Pot Cap-1 Maneuver	279	-	- 31 236
Stage 1	-	-	- 87 -
Stage 2	-	-	- 516 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	279	-	- 31 236
Mov Cap-2 Maneuver	-	-	- 74 -
Stage 1	-	-	- 87 -
Stage 2	-	-	- 516 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	279	-	-	-	236
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	0	-	-	-	20.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	2	1300	1943	3	1	1
Future Vol, veh/h	2	1300	1943	3	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	2	1368	2045	3	1	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	2048	0	0 2598 1024
Stage 1	-	-	- 2047 -
Stage 2	-	-	- 551 -
Critical Hdwy	4.1	-	- 6.25 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	2.2	-	- 3.65 3.3
Pot Cap-1 Maneuver	278	-	- 31 236
Stage 1	-	-	- 87 -
Stage 2	-	-	- 514 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	278	-	- 30 236
Mov Cap-2 Maneuver	-	-	- 72 -
Stage 1	-	-	- 84 -
Stage 2	-	-	- 514 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	38.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	278	-	-	-	110
HCM Lane V/C Ratio	0.008	-	-	-	0.02
HCM Control Delay (s)	18.1	0.2	-	-	38.4
HCM Lane LOS	C	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	334	352	0
Future Vol, veh/h	0	1	0	334	352	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	91	91	92
Heavy Vehicles, %	0	0	0	2	5	0
Mvmt Flow	0	1	0	367	387	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	754	387	387	0	-	0
Stage 1	387	-	-	-	-	-
Stage 2	367	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	380	665	1183	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	380	665	1183	-	-	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	705	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1183	-	665	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	10.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	0	18	46	0	0	0
Future Vol, veh/h	0	18	46	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	91	91	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	20	51	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	51	0	-	0	71 51
Stage 1	-	-	-	-	51 -
Stage 2	-	-	-	-	20 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1568	-	-	-	938 1023
Stage 1	-	-	-	-	977 -
Stage 2	-	-	-	-	1008 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1568	-	-	-	938 1023
Mov Cap-2 Maneuver	-	-	-	-	938 -
Stage 1	-	-	-	-	977 -
Stage 2	-	-	-	-	1008 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1568	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Existing  
PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	1102	709	150	1042	74	479	190	49	86	246	74
Future Volume (vph)	127	1102	709	150	1042	74	479	190	49	86	246	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.969				0.965
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3592	1538	1769	3470	1552	2889	1883	0	1823	1834	0
Flt Permitted	0.124			0.114			0.950			0.603		
Satd. Flow (perm)	237	3592	1538	212	3470	1552	2889	1883	0	1157	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			511			122		9			8	
Link Speed (mph)		45			45			35				35
Link Distance (ft)		392			683			398				312
Travel Time (s)		5.9			10.3			7.8				6.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	1%	3%	3%	20%	0%	0%	0%	1%	1%
Adj. Flow (vph)	134	1160	746	158	1097	78	504	200	52	91	259	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	1160	746	158	1097	78	504	252	0	91	337	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	73.0	73.0	5.0	72.3	72.3	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	80.7	80.7	12.9	80.0	80.0	11.9	12.9		12.9	12.9	
Total Split (s)	19.0	83.0	83.0	16.0	80.0	80.0	31.0	71.0		40.0	40.0	
Total Split (%)	11.2%	48.8%	48.8%	9.4%	47.1%	47.1%	18.2%	41.8%		23.5%	23.5%	
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	86.6	75.3	75.3	83.2	73.6	73.6	24.1	62.8		31.8	31.8	
Actuated g/C Ratio	0.51	0.44	0.44	0.49	0.43	0.43	0.14	0.37		0.19	0.19	
v/c Ratio	0.61	0.73	0.77	0.84	0.73	0.11	1.23	0.36		0.42	0.97	
Control Delay	31.7	42.3	17.7	59.4	43.8	0.9	181.1	39.2		67.7	105.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	31.7	42.3	17.7	59.4	43.8	0.9	181.1	39.2		67.7	105.8	
LOS	C	D	B	E	D	A	F	D		E	F	
Approach Delay		32.6			43.1			133.8			97.7	

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Existing  
PM

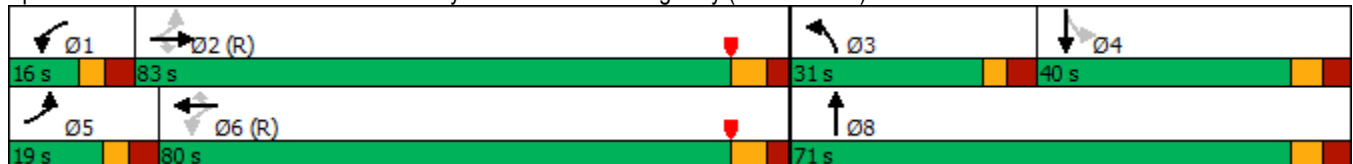


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			F			F		
Queue Length 50th (ft)	73	555	240	87	537	0	~355	196		90	369	
Queue Length 95th (ft)	113	641	436	#210	625	6	#478	278		154	#575	
Internal Link Dist (ft)		312			603			318			232	
Turn Bay Length (ft)	135			200			295			120		
Base Capacity (vph)	231	1591	965	187	1502	741	409	704		218	352	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.58	0.73	0.77	0.84	0.73	0.11	1.23	0.36		0.42	0.96	

Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 130 (76%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.23  
 Intersection Signal Delay: 58.6  
 Intersection LOS: E  
 Intersection Capacity Utilization 125.0%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 2: Lee Byrd Road & Old Zion Cemetery Road

Existing  
 PM

**Intersection**

Int Delay, s/veh 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	3	18	31	21	28	17	294	84	24	358	38
Future Vol, veh/h	19	3	18	31	21	28	17	294	84	24	358	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	6	-	-	2	-	-	1	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	21	3	20	34	23	30	18	320	91	26	389	41

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	890	909	410	875	884	366	430	0	0	411	0	0
Stage 1	462	462	-	402	402	-	-	-	-	-	-	-
Stage 2	428	447	-	473	482	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	8.3	7.7	6.8	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	271	270	646	221	223	798	1140	-	-	1171	-	-
Stage 1	584	568	-	697	623	-	-	-	-	-	-	-
Stage 2	690	606	-	492	474	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	230	257	646	204	212	798	1140	-	-	1171	-	-
Mov Cap-2 Maneuver	230	257	-	204	212	-	-	-	-	-	-	-
Stage 1	572	552	-	682	610	-	-	-	-	-	-	-
Stage 2	625	594	-	461	460	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.7		23.5		0.4		0.5	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1140	-	-	327	280	1171	-	-
HCM Lane V/C Ratio	0.016	-	-	0.133	0.311	0.022	-	-
HCM Control Delay (s)	8.2	0	-	17.7	23.5	8.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	1.3	0.1	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 3: Atlanta Highway (US Route 78) & Old Zion Cemetery Road

Existing  
PM

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑↑	↑↑		↗	
Traffic Vol, veh/h	19	1938	1574	21	0	76
Future Vol, veh/h	19	1938	1574	21	0	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	95	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	21	2040	1657	22	0	83

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1679	0	-	0	2526 840
Stage 1	-	-	-	-	1668 -
Stage 2	-	-	-	-	858 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	*650	-	-	-	*392 *433
Stage 1	-	-	-	-	*392 -
Stage 2	-	-	-	-	*353 -
Platoon blocked, %	1	-	-	-	1 1
Mov Cap-1 Maneuver	*650	-	-	-	*379 *433
Mov Cap-2 Maneuver	-	-	-	-	*346 -
Stage 1	-	-	-	-	*379 -
Stage 2	-	-	-	-	*353 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	* 650	-	-	-	433
HCM Lane V/C Ratio	0.032	-	-	-	0.191
HCM Control Delay (s)	10.7	-	-	-	15.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 4: Atlanta Highway (US Route 78) & Single-Family Driveway

Existing  
PM

**Intersection**

Int Delay, s/veh 0

**Movement** EBL EBT WBT WBR SBL SBR

Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	0	1957	1649	1	0	1
Future Vol, veh/h	0	1957	1649	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	0	2060	1736	1	0	1

**Major/Minor** Major1 Major2 Minor2

Conflicting Flow All	1737	0	-	0	2561	869
Stage 1	-	-	-	-	1737	-
Stage 2	-	-	-	-	824	-
Critical Hdwy	4.1	-	-	-	6.25	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	3.65	3.3
Pot Cap-1 Maneuver	367	-	-	-	32	299
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	368	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	367	-	-	-	32	299
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	128	-
Stage 2	-	-	-	-	368	-

**Approach** EB WB SB

HCM Control Delay, s	0	0	17.1
HCM LOS			C

**Minor Lane/Major Mvmt** EBL EBT WBT WBR SBLn1

Capacity (veh/h)	367	-	-	-	299
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	0	-	-	-	17.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	1	1954	1648	2	3	3
Future Vol, veh/h	1	1954	1648	2	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	1	2057	1735	2	3	3

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1737	0	0 2561 869
Stage 1	-	-	- 1736 -
Stage 2	-	-	- 825 -
Critical Hdwy	4.1	-	- 6.25 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	2.2	-	- 3.65 3.3
Pot Cap-1 Maneuver	367	-	- 32 299
Stage 1	-	-	- 128 -
Stage 2	-	-	- 368 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	367	-	- 32 299
Mov Cap-2 Maneuver	-	-	- 97 -
Stage 1	-	-	- 128 -
Stage 2	-	-	- 368 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	30.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	367	-	-	-	146
HCM Lane V/C Ratio	0.003	-	-	-	0.045
HCM Control Delay (s)	14.8	0	-	-	30.8
HCM Lane LOS	B	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	341	419	1
Future Vol, veh/h	0	1	0	341	419	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	1	0	371	455	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	827	456	456	0	-	0
Stage 1	456	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	344	609	1115	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	344	609	1115	-	-	-
Mov Cap-2 Maneuver	344	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1115	-	609	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	10.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	40	76	0	0	0
Future Vol, veh/h	0	40	76	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	43	83	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	83	0	-	0	126 83
Stage 1	-	-	-	-	83 -
Stage 2	-	-	-	-	43 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1527	-	-	-	874 982
Stage 1	-	-	-	-	945 -
Stage 2	-	-	-	-	985 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1527	-	-	-	874 982
Mov Cap-2 Maneuver	-	-	-	-	874 -
Stage 1	-	-	-	-	945 -
Stage 2	-	-	-	-	985 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔↔	↔		↔	↔	
Traffic Volume (vph)	74	808	443	144	1238	83	641	189	57	51	198	77
Future Volume (vph)	74	808	443	144	1238	83	641	189	57	51	198	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.965				0.958
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3455	1523	1718	3436	1480	3333	1847	0	1787	1785	0
Flt Permitted	0.075			0.225			0.950			0.599		
Satd. Flow (perm)	143	3455	1523	407	3436	1480	3333	1847	0	1127	1785	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			466			148		12			11	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		392			683			398			312	
Travel Time (s)		5.9			10.3			7.8			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	3%	4%	4%	8%	4%	2%	0%	2%	3%	3%
Adj. Flow (vph)	78	851	466	152	1303	87	675	199	60	54	208	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	851	466	152	1303	87	675	259	0	54	289	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	58.0	58.0	5.0	58.0	58.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	66.2	66.2	12.2	66.2	66.2	11.9	12.9		12.9	12.9	
Total Split (s)	17.0	68.0	68.0	17.0	68.0	68.0	35.0	55.0		20.0	20.0	
Total Split (%)	12.1%	48.6%	48.6%	12.1%	48.6%	48.6%	25.0%	39.3%		14.3%	14.3%	
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	69.3	60.6	60.6	71.9	61.9	61.9	28.1	47.1		12.1	12.1	
Actuated g/C Ratio	0.50	0.43	0.43	0.51	0.44	0.44	0.20	0.34		0.09	0.09	
v/c Ratio	0.46	0.57	0.50	0.51	0.86	0.12	1.01	0.41		0.56	1.76	
Control Delay	25.5	31.8	4.1	21.8	42.2	0.3	92.4	36.5		83.4	400.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	25.5	31.8	4.1	21.8	42.2	0.3	92.4	36.5		83.4	400.6	
LOS	C	C	A	C	D	A	F	D		F	F	
Approach Delay		22.2			37.8			76.9			350.7	

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

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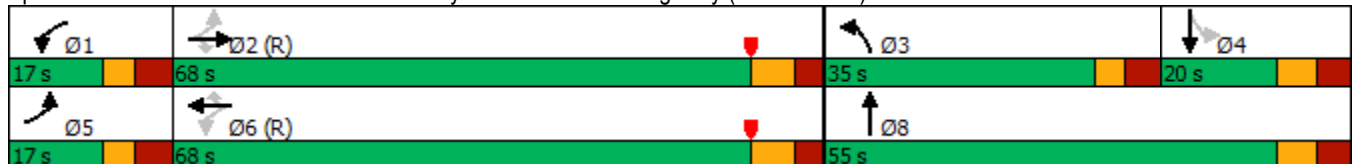


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			E			F		
Queue Length 50th (ft)	32	304	0	65	553	0	~324	173		48	~384	
Queue Length 95th (ft)	62	371	64	104	671	1	#456	255		#105	#574	
Internal Link Dist (ft)		312			603			318			232	
Turn Bay Length (ft)	135			200		265	295			120		
Base Capacity (vph)	189	1496	923	301	1520	737	668	629		97	164	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.41	0.57	0.50	0.50	0.86	0.12	1.01	0.41		0.56	1.76	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 85 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.76  
 Intersection Signal Delay: 66.8  
 Intersection LOS: E  
 Intersection Capacity Utilization 114.5%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 2: Lee Byrd Road & Old Zion Cemetery Road

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Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	12	23	4	9	9	328	36	32	296	34
Future Vol, veh/h	5	1	12	23	4	9	9	328	36	32	296	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	6	-	-	2	-	-	1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	3	0	5	0
Mvmt Flow	5	1	13	25	4	10	10	360	40	35	325	37

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	821	834	344	821	832	380	362	0	0	400	0	0
Stage 1	414	414	-	400	400	-	-	-	-	-	-	-
Stage 2	407	420	-	421	432	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	8.3	7.7	6.8	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	314	308	703	258	252	808	1208	-	-	1193	-	-
Stage 1	620	597	-	731	645	-	-	-	-	-	-	-
Stage 2	732	636	-	534	507	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	295	293	703	243	240	808	1208	-	-	1193	-	-
Mov Cap-2 Maneuver	295	293	-	243	240	-	-	-	-	-	-	-
Stage 1	613	575	-	723	638	-	-	-	-	-	-	-
Stage 2	710	629	-	504	488	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.8		19.1		0.2		0.7	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1208	-	-	481	294	1193	-	-
HCM Lane V/C Ratio	0.008	-	-	0.041	0.135	0.029	-	-
HCM Control Delay (s)	8	0	-	12.8	19.1	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑↑	↑↑		↘	
Traffic Vol, veh/h	9	1325	1947	9	0	47
Future Vol, veh/h	9	1325	1947	9	0	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	91	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	10	1395	2049	10	0	51

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	2059	0	-	0	2632 1030
Stage 1	-	-	-	-	2054 -
Stage 2	-	-	-	-	578 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	*439	-	-	-	*265 *293
Stage 1	-	-	-	-	*265 -
Stage 2	-	-	-	-	*497 -
Platoon blocked, %	1	-	-	-	1 1
Mov Cap-1 Maneuver	*439	-	-	-	*258 *293
Mov Cap-2 Maneuver	-	-	-	-	*235 -
Stage 1	-	-	-	-	*258 -
Stage 2	-	-	-	-	*497 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	*439	-	-	-	293
HCM Lane V/C Ratio	0.022	-	-	-	0.174
HCM Control Delay (s)	13.4	-	-	-	19.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	0	1334	1994	0	0	1
Future Vol, veh/h	0	1334	1994	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	0	1404	2099	0	0	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	2099	0	-	0	2661 1050
Stage 1	-	-	-	-	2099 -
Stage 2	-	-	-	-	562 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	266	-	-	-	28 227
Stage 1	-	-	-	-	81 -
Stage 2	-	-	-	-	507 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	266	-	-	-	28 227
Mov Cap-2 Maneuver	-	-	-	-	69 -
Stage 1	-	-	-	-	81 -
Stage 2	-	-	-	-	507 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	266	-	-	-	227
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	0	-	-	-	20.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	2	1333	1992	3	1	1
Future Vol, veh/h	2	1333	1992	3	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	2	1403	2097	3	1	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	2100	0	-	0	2664 1050
Stage 1	-	-	-	-	2099 -
Stage 2	-	-	-	-	565 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	266	-	-	-	28 227
Stage 1	-	-	-	-	81 -
Stage 2	-	-	-	-	505 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	266	-	-	-	27 227
Mov Cap-2 Maneuver	-	-	-	-	67 -
Stage 1	-	-	-	-	78 -
Stage 2	-	-	-	-	505 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	40.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	266	-	-	-	103
HCM Lane V/C Ratio	0.008	-	-	-	0.021
HCM Control Delay (s)	18.6	0.2	-	-	40.7
HCM Lane LOS	C	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	342	361	0
Future Vol, veh/h	0	1	0	342	361	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	91	91	92
Heavy Vehicles, %	0	0	0	2	5	0
Mvmt Flow	0	1	0	376	397	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	773	397	397	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	370	657	1173	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	370	657	1173	-	-	-
Mov Cap-2 Maneuver	370	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	699	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1173	-	657	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	0	18	47	0	0	0
Future Vol, veh/h	0	18	47	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	91	91	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	20	52	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	52	0	-	0	72 52
Stage 1	-	-	-	-	52 -
Stage 2	-	-	-	-	20 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1567	-	-	-	937 1021
Stage 1	-	-	-	-	976 -
Stage 2	-	-	-	-	1008 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1567	-	-	-	937 1021
Mov Cap-2 Maneuver	-	-	-	-	937 -
Stage 1	-	-	-	-	976 -
Stage 2	-	-	-	-	1008 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1567	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (vph)	130	1130	727	154	1068	76	491	195	50	88	252	76
Future Volume (vph)	130	1130	727	154	1068	76	491	195	50	88	252	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.969			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3592	1538	1769	3470	1552	2889	1883	0	1823	1834	0
Flt Permitted	0.113			0.105			0.950			0.600		
Satd. Flow (perm)	216	3592	1538	196	3470	1552	2889	1883	0	1151	1834	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			507			122		9			8	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		392			683			398			312	
Travel Time (s)		5.9			10.3			7.8			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	1%	3%	3%	20%	0%	0%	0%	1%	1%
Adj. Flow (vph)	137	1189	765	162	1124	80	517	205	53	93	265	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	1189	765	162	1124	80	517	258	0	93	345	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	73.0	73.0	5.0	72.3	72.3	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	81.2	81.2	12.2	80.0	80.0	11.9	12.9		12.9	12.9	
Total Split (s)	19.0	83.0	83.0	16.0	80.0	80.0	31.0	71.0		40.0	40.0	
Total Split (%)	11.2%	48.8%	48.8%	9.4%	47.1%	47.1%	18.2%	41.8%		23.5%	23.5%	
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	86.7	75.3	75.3	82.5	73.2	73.2	24.1	63.1		32.1	32.1	
Actuated g/C Ratio	0.51	0.44	0.44	0.49	0.43	0.43	0.14	0.37		0.19	0.19	
v/c Ratio	0.65	0.75	0.79	0.92	0.75	0.11	1.26	0.37		0.43	0.98	
Control Delay	34.4	43.1	19.6	75.1	44.9	1.1	192.4	39.3		67.9	108.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	34.4	43.1	19.6	75.1	44.9	1.1	192.4	39.3		67.9	108.7	
LOS	C	D	B	E	D	A	F	D		E	F	
Approach Delay		33.9			45.9			141.5			100.0	

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

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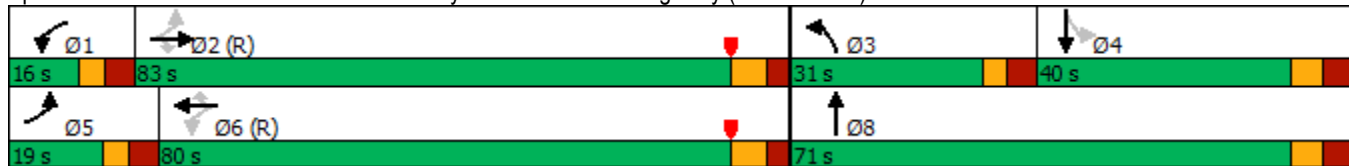


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			F			F		
Queue Length 50th (ft)	74	576	275	89	557	0	~371	202		93	380	
Queue Length 95th (ft)	115	664	482	#235	646	7	#493	285		157	#596	
Internal Link Dist (ft)		312			603			318			232	
Turn Bay Length (ft)	135			200			265			295		
Base Capacity (vph)	222	1591	963	176	1494	738	409	704		217	352	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.62	0.75	0.79	0.92	0.75	0.11	1.26	0.37		0.43	0.98	

Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 130 (76%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.26  
 Intersection Signal Delay: 61.5  
 Intersection LOS: E  
 Intersection Capacity Utilization 126.0%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 2: Lee Byrd Road & Old Zion Cemetery Road

No-Build  
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Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	3	18	32	22	29	17	301	86	25	367	39
Future Vol, veh/h	19	3	18	32	22	29	17	301	86	25	367	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	6	-	-	2	-	-	1	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	21	3	20	35	24	32	18	327	93	27	399	42

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	912	930	420	896	905	374	441	0	0	420	0	0
Stage 1	474	474	-	410	410	-	-	-	-	-	-	-
Stage 2	438	456	-	486	495	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	8.3	7.7	6.8	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	7.3	6.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	259	260	638	210	213	786	1130	-	-	1159	-	-
Stage 1	575	561	-	686	614	-	-	-	-	-	-	-
Stage 2	679	599	-	482	466	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	218	247	638	194	202	786	1130	-	-	1159	-	-
Mov Cap-2 Maneuver	218	247	-	194	202	-	-	-	-	-	-	-
Stage 1	563	544	-	671	601	-	-	-	-	-	-	-
Stage 2	613	587	-	450	452	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.3	25.2	0.3	0.5
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1130	-	-	314	267	1159	-
HCM Lane V/C Ratio	0.016	-	-	0.138	0.338	0.023	-
HCM Control Delay (s)	8.2	0	-	18.3	25.2	8.2	0
HCM Lane LOS	A	A	-	C	D	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.4	0.1	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑↑↑	↑↑		↗	
Traffic Vol, veh/h	19	1987	1614	21	0	78
Future Vol, veh/h	19	1987	1614	21	0	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	1	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	21	2092	1699	23	0	85

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1722	0	-	0	2590 861
Stage 1	-	-	-	-	1711 -
Stage 2	-	-	-	-	879 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	*623	-	-	-	*375 *415
Stage 1	-	-	-	-	*375 -
Stage 2	-	-	-	-	*344 -
Platoon blocked, %	1	-	-	-	1 1
Mov Cap-1 Maneuver	*623	-	-	-	*363 *415
Mov Cap-2 Maneuver	-	-	-	-	*331 -
Stage 1	-	-	-	-	*363 -
Stage 2	-	-	-	-	*344 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	* 623	-	-	-	415
HCM Lane V/C Ratio	0.033	-	-	-	0.204
HCM Control Delay (s)	11	-	-	-	15.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	0	2006	1691	1	0	1
Future Vol, veh/h	0	2006	1691	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	0	2112	1780	1	0	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1781	0	0 2626 891
Stage 1	-	-	- 1781 -
Stage 2	-	-	- 845 -
Critical Hdwy	4.1	-	- 6.25 6.9
Critical Hdwy Stg 1	-	-	- 5.8 -
Critical Hdwy Stg 2	-	-	- 6 -
Follow-up Hdwy	2.2	-	- 3.65 3.3
Pot Cap-1 Maneuver	353	-	- 30 289
Stage 1	-	-	- 121 -
Stage 2	-	-	- 359 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	353	-	- 30 289
Mov Cap-2 Maneuver	-	-	- 92 -
Stage 1	-	-	- 121 -
Stage 2	-	-	- 359 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	353	-	-	-	289
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	0	-	-	-	17.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0



**Intersection**

Int Delay, s/veh 0.1

**Movement** EBL EBT WBT WBR SBL SBR

Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	1	2003	1690	2	3	3
Future Vol, veh/h	1	2003	1690	2	3	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	95	95	92	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	1	2108	1779	2	3	3

**Major/Minor** Major1 Major2 Minor2

Conflicting Flow All	1781	0	-	0	2625	891
Stage 1	-	-	-	-	1780	-
Stage 2	-	-	-	-	845	-
Critical Hdwy	4.1	-	-	-	6.25	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	2.2	-	-	-	3.65	3.3
Pot Cap-1 Maneuver	353	-	-	-	30	289
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	359	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	353	-	-	-	30	289
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	359	-

**Approach** EB WB SB

HCM Control Delay, s	0	0	32
HCM LOS			D

**Minor Lane/Major Mvmt** EBL EBT WBT WBR SBLn1

Capacity (veh/h)	353	-	-	-	140
HCM Lane V/C Ratio	0.003	-	-	-	0.047
HCM Control Delay (s)	15.2	0	-	-	32
HCM Lane LOS	C	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	1	0	349	430	0
Future Vol, veh/h	0	1	0	349	430	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	1	0	379	467	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	846	467	467	0	-	0
Stage 1	467	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	335	600	1105	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	335	600	1105	-	-	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1105	-	600	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	0	40	78	0	0	0
Future Vol, veh/h	0	40	78	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	43	85	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	85	0	-	0	128 85
Stage 1	-	-	-	-	85 -
Stage 2	-	-	-	-	43 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1524	-	-	-	871 980
Stage 1	-	-	-	-	943 -
Stage 2	-	-	-	-	985 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1524	-	-	-	871 980
Mov Cap-2 Maneuver	-	-	-	-	871 -
Stage 1	-	-	-	-	943 -
Stage 2	-	-	-	-	985 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1524	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Build A  
 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	823	443	144	1251	92	641	193	57	50	202	77
Future Volume (vph)	83	823	443	144	1251	92	641	193	57	50	202	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.966			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3455	1523	1718	3436	1480	3333	1849	0	1787	1787	0
Flt Permitted	0.070			0.220			0.950			0.597		
Satd. Flow (perm)	134	3455	1523	398	3436	1480	3333	1849	0	1123	1787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			466			148		11			11	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		409			908			451			312	
Travel Time (s)		6.2			13.8			8.8			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	3%	4%	4%	8%	4%	2%	0%	2%	3%	3%
Adj. Flow (vph)	87	866	466	152	1317	97	675	203	60	53	213	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	866	466	152	1317	97	675	263	0	53	294	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	58.0	58.0	5.0	58.0	58.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	66.2	66.2	12.2	66.2	66.2	11.9	12.9		12.9	12.9	
Total Split (s)	17.0	68.0	68.0	17.0	68.0	68.0	35.0	55.0		20.0	20.0	
Total Split (%)	12.1%	48.6%	48.6%	12.1%	48.6%	48.6%	25.0%	39.3%		14.3%	14.3%	
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	69.6	60.6	60.6	71.6	61.7	61.7	28.1	47.1		12.1	12.1	
Actuated g/C Ratio	0.50	0.43	0.43	0.51	0.44	0.44	0.20	0.34		0.09	0.09	
v/c Ratio	0.52	0.58	0.50	0.52	0.87	0.13	1.01	0.42		0.55	1.79	
Control Delay	30.0	32.0	4.1	22.1	43.3	1.0	92.4	36.8		82.7	413.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	30.0	32.0	4.1	22.1	43.3	1.0	92.4	36.8		82.7	413.4	
LOS	C	C	A	C	D	A	F	D		F	F	
Approach Delay		22.7			38.6			76.8			362.8	

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Build A  
 AM

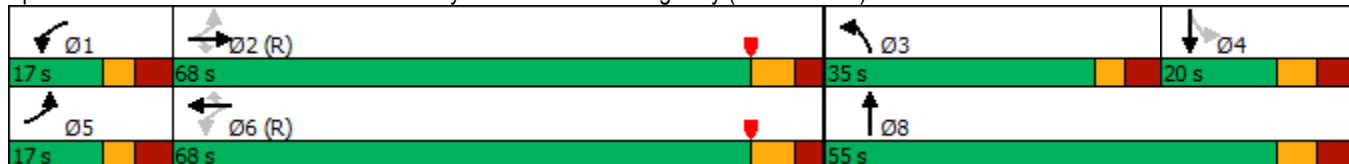


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			E			F		
Queue Length 50th (ft)	36	311	0	65	565	0	~324	177		47	~394	
Queue Length 95th (ft)	78	378	64	104	682	7	#456	259		#103	#584	
Internal Link Dist (ft)		329			828			371			232	
Turn Bay Length (ft)	135			200			265			120		
Base Capacity (vph)	185	1496	923	297	1513	734	668	629		97	164	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.47	0.58	0.50	0.51	0.87	0.13	1.01	0.42		0.55	1.79	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 85 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.79  
 Intersection Signal Delay: 68.1  
 Intersection LOS: E  
 Intersection Capacity Utilization 114.7%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	↗
Traffic Vol, veh/h	0	0	0	23	6	9	9	337	37	35	311	34
Future Vol, veh/h	0	0	0	23	6	9	9	337	37	35	311	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	75	-	0
Veh in Median Storage, #	2293760			-	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	6	-	-	2	-	-	1	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	2	3	0	5	0
Mvmt Flow	0	0	0	25	7	10	10	370	41	38	342	37

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	848	866	391
Stage 1	411	411	-
Stage 2	437	455	-
Critical Hdwy	7.6	7.7	6.8
Critical Hdwy Stg 1	6.6	6.7	-
Critical Hdwy Stg 2	6.6	6.7	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	252	220	620
Stage 1	587	522	-
Stage 2	567	492	-
Platoon blocked, %			
Mov Cap-1 Maneuver	239	0	620
Mov Cap-2 Maneuver	239	0	-
Stage 1	581	0	-
Stage 2	543	0	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0.2	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1191	-	-	289	1159	-
HCM Lane V/C Ratio	0.008	-	-	0.144	0.033	-
HCM Control Delay (s)	8	0	-	19.5	8.2	0
HCM Lane LOS	A	A	-	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0.5	0.1	-

**Intersection**

Int Delay, s/veh 0.4

**Movement** EBL EBT WBT WBR SBL SBR

Lane Configurations		↑↑↑	↑↑		↓	
Traffic Vol, veh/h	0	1349	1969	0	0	49
Future Vol, veh/h	0	1349	1969	0	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	91	91
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	0	1420	2073	0	0	54

**Major/Minor** Major1 Major2 Minor2

Conflicting Flow All	-	0	-	0	2641	1037
Stage 1	-	-	-	-	2073	-
Stage 2	-	-	-	-	568	-
Critical Hdwy	-	-	-	-	6.25	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	-	-	3.65	3.3
Pot Cap-1 Maneuver	0	-	-	0	29	232
Stage 1	0	-	-	0	84	-
Stage 2	0	-	-	0	503	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	29	232
Mov Cap-2 Maneuver	-	-	-	-	71	-
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	503	-

**Approach** EB WB SB

HCM Control Delay, s	0	0	25.1
HCM LOS			D

**Minor Lane/Major Mvmt** EBT WBT SBLn1

Capacity (veh/h)	-	-	232
HCM Lane V/C Ratio	-	-	0.232
HCM Control Delay (s)	-	-	25.1
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	0.9

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	29	1324	1974	44	25	42
Future Vol, veh/h	29	1324	1974	44	25	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	92	92
Heavy Vehicles, %	0	5	4	0	0	0
Mvmt Flow	31	1394	2078	46	27	46

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	2124	0	-	0	2721 1062
Stage 1	-	-	-	-	2101 -
Stage 2	-	-	-	-	620 -
Critical Hdwy	4.1	-	-	-	6.25 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	6 -
Follow-up Hdwy	2.2	-	-	-	3.65 3.3
Pot Cap-1 Maneuver	260	-	-	-	~ 26 223
Stage 1	-	-	-	-	81 -
Stage 2	-	-	-	-	473 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	260	-	-	-	~ 12 223
Mov Cap-2 Maneuver	-	-	-	-	33 -
Stage 1	-	-	-	-	38 -
Stage 2	-	-	-	-	473 -

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	214.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	260	-	-	-	71
HCM Lane V/C Ratio	0.117	-	-	-	1.026
HCM Control Delay (s)	20.7	3.4	-	-	214.6
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	5.3

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	11	8	338	369	9
Future Vol, veh/h	8	11	8	338	369	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	91	91	92
Heavy Vehicles, %	0	0	0	2	5	0
Mvmt Flow	9	12	9	371	405	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	799	410	415	0	-	0
Stage 1	410	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	357	646	1155	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	353	646	1155	-	-	-
Mov Cap-2 Maneuver	353	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	689	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1155	-	353	646	-	-
HCM Lane V/C Ratio	0.008	-	0.025	0.019	-	-
HCM Control Delay (s)	8.1	0	15.5	10.7	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-

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 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

Build A  
 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘↗	↗		↘	↗	
Traffic Volume (vph)	149	1138	727	154	1078	97	491	198	50	87	255	76
Future Volume (vph)	149	1138	727	154	1078	97	491	198	50	87	255	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.970				0.966
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3592	1538	1769	3470	1552	2889	1885	0	1823	1835	0
Flt Permitted	0.107			0.103			0.950			0.598		
Satd. Flow (perm)	204	3592	1538	192	3470	1552	2889	1885	0	1148	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			504			122		9			8	
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		409			908			451			312	
Travel Time (s)		6.2			13.8			8.8			6.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	1%	3%	3%	20%	0%	0%	0%	1%	1%
Adj. Flow (vph)	157	1198	765	162	1135	102	517	208	53	92	268	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	1198	765	162	1135	102	517	261	0	92	348	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	73.0	73.0	5.0	72.3	72.3	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	81.2	81.2	12.2	80.0	80.0	11.9	12.9		12.9	12.9	
Total Split (s)	19.0	83.0	83.0	16.0	80.0	80.0	31.0	71.0		40.0	40.0	
Total Split (%)	11.2%	48.8%	48.8%	9.4%	47.1%	47.1%	18.2%	41.8%		23.5%	23.5%	
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	87.1	75.3	75.3	82.1	72.8	72.8	24.1	63.1		32.1	32.1	
Actuated g/C Ratio	0.51	0.44	0.44	0.48	0.43	0.43	0.14	0.37		0.19	0.19	
v/c Ratio	0.74	0.75	0.80	0.93	0.76	0.14	1.26	0.37		0.43	0.99	
Control Delay	43.7	43.3	19.8	78.8	45.6	2.9	192.4	39.4		67.9	110.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	43.7	43.3	19.8	78.8	45.6	2.9	192.4	39.4		67.9	110.7	
LOS	D	D	B	E	D	A	F	D		E	F	
Approach Delay		34.9			46.4			141.1			101.7	

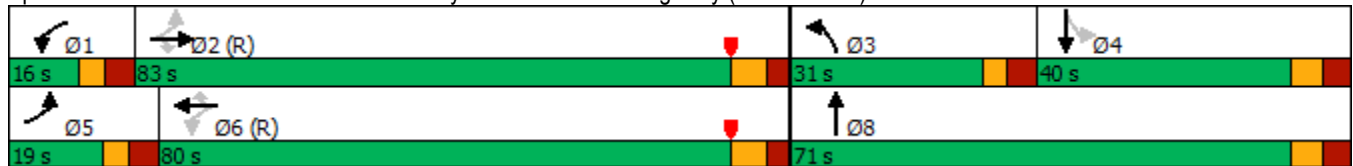


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			F			F		
Queue Length 50th (ft)	86	582	279	89	565	0	~371	204		92	384	
Queue Length 95th (ft)	#166	671	486	#239	655	25	#493	288		157	#602	
Internal Link Dist (ft)		329			828			371			232	
Turn Bay Length (ft)	135			200		265	295			120		
Base Capacity (vph)	216	1591	962	174	1484	734	409	705		216	352	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.73	0.75	0.80	0.93	0.76	0.14	1.26	0.37		0.43	0.99	

Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 130 (76%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.26  
 Intersection Signal Delay: 61.9  
 Intersection LOS: E  
 Intersection Capacity Utilization 126.2%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



**Intersection**

Int Delay, s/veh 2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	↗
Traffic Vol, veh/h	0	0	0	32	24	29	17	323	89	27	387	39
Future Vol, veh/h	0	0	0	32	24	29	17	323	89	27	387	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	75	-	0
Veh in Median Storage, #	-	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	6	-	-	2	-	-	1	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	4	0	1	0
Mvmt Flow	0	0	0	35	26	32	18	351	97	29	421	42

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	936	957	400
Stage 1	436	436	-
Stage 2	500	521	-
Critical Hdwy	7.6	7.7	6.8
Critical Hdwy Stg 1	6.6	6.7	-
Critical Hdwy Stg 2	6.6	6.7	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	217	189	612
Stage 1	567	504	-
Stage 2	519	450	-
Platoon blocked, %			
Mov Cap-1 Maneuver	205	0	612
Mov Cap-2 Maneuver	205	0	-
Stage 1	555	0	-
Stage 2	501	0	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0.3	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBRWBLn1	SBL	SBT	SBR
Capacity (veh/h)	1109	-	-	300	1123	-
HCM Lane V/C Ratio	0.017	-	-	0.308	0.026	-
HCM Control Delay (s)	8.3	0	-	22.3	8.3	0
HCM Lane LOS	A	A	-	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.1	-

**Intersection**

Int Delay, s/veh 0.5

**Movement** EBL EBT WBT WBR SBL SBR

Lane Configurations		↑↑↑	↑↑		↓	
Traffic Vol, veh/h	0	2014	1645	0	0	80
Future Vol, veh/h	0	2014	1645	0	0	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	0	2120	1732	0	0	87

**Major/Minor** Major1 Major2 Minor2

Conflicting Flow All	-	0	-	0	2580	866
Stage 1	-	-	-	-	1732	-
Stage 2	-	-	-	-	848	-
Critical Hdwy	-	-	-	-	6.25	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	6	-
Follow-up Hdwy	-	-	-	-	3.65	3.3
Pot Cap-1 Maneuver	0	-	-	0	32	301
Stage 1	0	-	-	0	129	-
Stage 2	0	-	-	0	358	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	32	301
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	358	-

**Approach** EB WB SB

HCM Control Delay, s	0	0	21.7
HCM LOS			C

**Minor Lane/Major Mvmt** EBT WBT SBLn1

Capacity (veh/h)	-	-	301
HCM Lane V/C Ratio	-	-	0.289
HCM Control Delay (s)	-	-	21.7
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.2

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	
Traffic Vol, veh/h	21	1997	1691	34	17	31
Future Vol, veh/h	21	1997	1691	34	17	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	92	92
Heavy Vehicles, %	0	1	3	0	0	0
Mvmt Flow	22	2102	1780	36	18	34

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1816	0	-	0	2683
Stage 1	-	-	-	-	1798
Stage 2	-	-	-	-	885
Critical Hdwy	4.1	-	-	-	6.25
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	6
Follow-up Hdwy	2.2	-	-	-	3.65
Pot Cap-1 Maneuver	342	-	-	-	27
Stage 1	-	-	-	-	118
Stage 2	-	-	-	-	342
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	342	-	-	-	27
Mov Cap-2 Maneuver	-	-	-	-	89
Stage 1	-	-	-	-	118
Stage 2	-	-	-	-	342

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	38
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	342	-	-	-	160
HCM Lane V/C Ratio	0.065	-	-	-	0.326
HCM Control Delay (s)	16.3	0	-	-	38
HCM Lane LOS	C	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	1.3

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	8	6	346	445	7
Future Vol, veh/h	6	8	6	346	445	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	60	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	7	9	7	376	484	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	878	488	492	0	-	0
Stage 1	488	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	321	584	1082	-	-	-
Stage 1	621	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	318	584	1082	-	-	-
Mov Cap-2 Maneuver	318	-	-	-	-	-
Stage 1	616	-	-	-	-	-
Stage 2	689	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1082	-	318	584	-	-
HCM Lane V/C Ratio	0.006	-	0.021	0.015	-	-
HCM Control Delay (s)	8.3	0	16.6	11.3	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0	-	-

SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	823	443	144	1251	92	641	193	57	50	202	77
Future Volume (vph)	83	823	443	144	1251	92	641	193	57	50	202	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.966				0.959
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3455	1523	1718	3436	1480	3333	1849	0	1787	1787	0
Flt Permitted	0.067			0.216			0.950			0.597		
Satd. Flow (perm)	128	3455	1523	391	3436	1480	3333	1849	0	1123	1787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			466			148			12			11
Link Speed (mph)		45			45			35				35
Link Distance (ft)		409			908			451				312
Travel Time (s)		6.2			13.8			8.8				6.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	3%	4%	4%	8%	4%	2%	0%	2%	3%	3%
Adj. Flow (vph)	87	866	466	152	1317	97	675	203	60	53	213	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	866	466	152	1317	97	675	263	0	53	294	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	5.0	58.0	58.0	5.0	58.0	58.0	5.0	5.0		5.0		5.0
Minimum Split (s)	12.2	67.0	67.0	12.2	67.0	67.0	11.9	12.9		12.9		12.9
Total Split (s)	17.0	67.0	67.0	17.0	67.0	67.0	35.0	56.0		21.0		21.0
Total Split (%)	12.1%	47.9%	47.9%	12.1%	47.9%	47.9%	25.0%	40.0%		15.0%		15.0%
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2		4.2
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7		3.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9		7.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag		Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes		Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None		None
Act Effct Green (s)	68.6	59.6	59.6	70.6	60.7	60.7	28.1	48.1		13.1		13.1
Actuated g/C Ratio	0.49	0.43	0.43	0.50	0.43	0.43	0.20	0.34		0.09		0.09
v/c Ratio	0.53	0.59	0.51	0.53	0.89	0.13	1.01	0.41		0.50		1.66
Control Delay	31.8	32.9	4.2	23.0	45.1	1.0	92.4	35.8		77.8		357.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	31.8	32.9	4.2	23.0	45.1	1.0	92.4	35.8		77.8		357.1
LOS	C	C	A	C	D	A	F	D		E		F
Approach Delay		23.4			40.2			76.5				314.4



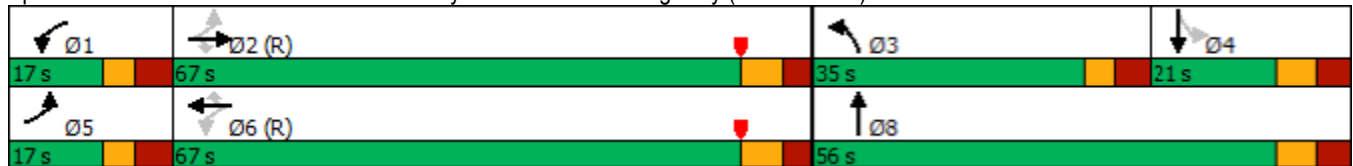


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	C			D			E			F		
Queue Length 50th (ft)	36	315	0	66	574	0	~324	174		47	~382	
Queue Length 95th (ft)	82	384	65	106	#694	7	#456	256		95	#571	
Internal Link Dist (ft)	329			828			371			232		
Turn Bay Length (ft)	135			200			265			120		
Base Capacity (vph)	181	1471	915	291	1488	725	668	643		105	177	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.48	0.59	0.51	0.52	0.89	0.13	1.01	0.41		0.50	1.66	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 85 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.66  
 Intersection Signal Delay: 64.9  
 Intersection LOS: E  
 Intersection Capacity Utilization 114.7%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



SEVS00002 Proposed Whataburger Restaurant - Loganville, GA  
 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘↗	↗		↘	↗	
Traffic Volume (vph)	149	1138	727	154	1078	97	491	198	50	87	255	76
Future Volume (vph)	149	1138	727	154	1078	97	491	198	50	87	255	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	12	12	13	12	12	12	12
Grade (%)		-1%			2%			2%				-2%
Storage Length (ft)	135		0	200		265	295		0	120		0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (ft)	1			1			1			100		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.970				0.966
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1814	3592	1538	1769	3470	1552	2889	1885	0	1823	1835	0
Flt Permitted	0.106			0.094			0.950			0.598		
Satd. Flow (perm)	202	3592	1538	175	3470	1552	2889	1885	0	1148	1835	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			496			122		9			8	
Link Speed (mph)		45			45			35				35
Link Distance (ft)		409			908			451				312
Travel Time (s)		6.2			13.8			8.8				6.1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	2%	1%	3%	3%	20%	0%	0%	0%	1%	1%
Adj. Flow (vph)	157	1198	765	162	1135	102	517	208	53	92	268	80
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	1198	765	162	1135	102	517	261	0	92	348	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases	2		2	6		6				4		
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	73.0	73.0	5.0	71.3	71.3	5.0	5.0		5.0	5.0	
Minimum Split (s)	12.2	81.0	81.0	12.2	79.0	79.0	11.9	12.9		12.9	12.9	
Total Split (s)	19.0	81.0	81.0	17.0	79.0	79.0	31.0	72.0		41.0	41.0	
Total Split (%)	11.2%	47.6%	47.6%	10.0%	46.5%	46.5%	18.2%	42.4%		24.1%	24.1%	
Yellow Time (s)	3.3	4.5	4.5	3.3	4.5	4.5	3.1	4.2		4.2	4.2	
All-Red Time (s)	3.9	3.2	3.2	3.9	3.2	3.2	3.8	3.7		3.7	3.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.2	7.7	7.7	7.2	7.7	7.7	6.9	7.9		7.9	7.9	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	85.2	73.3	73.3	82.6	72.0	72.0	24.1	63.8		32.8	32.8	
Actuated g/C Ratio	0.50	0.43	0.43	0.49	0.42	0.42	0.14	0.38		0.19	0.19	
v/c Ratio	0.75	0.77	0.81	0.91	0.77	0.14	1.26	0.37		0.42	0.97	
Control Delay	45.7	45.5	21.6	75.1	46.5	2.9	192.4	38.8		66.7	105.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	45.7	45.5	21.6	75.1	46.5	2.9	192.4	38.8		66.7	105.0	
LOS	D	D	C	E	D	A	F	D		E	F	
Approach Delay		36.9			46.7			140.9			97.0	

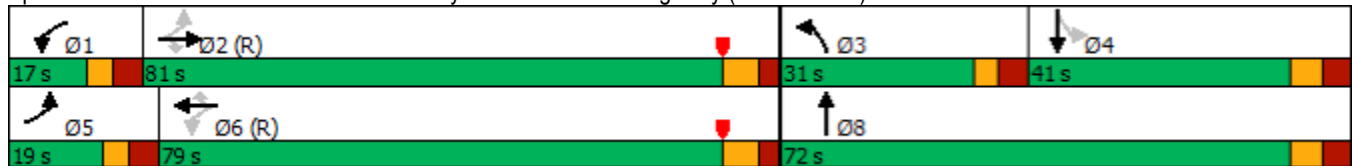


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D				D			F			F
Queue Length 50th (ft)	87	595	297	95	571	0	~371	202		91	381	
Queue Length 95th (ft)	#174	686	511	#247	663	25	#493	285		156	#590	
Internal Link Dist (ft)		329				828			371			232
Turn Bay Length (ft)	135			200		265	295			120		
Base Capacity (vph)	213	1548	945	179	1470	727	409	716		223	363	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.74	0.77	0.81	0.91	0.77	0.14	1.26	0.36		0.41	0.96	

Intersection Summary

Area Type: Other  
 Cycle Length: 170  
 Actuated Cycle Length: 170  
 Offset: 130 (76%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.26  
 Intersection Signal Delay: 62.4  
 Intersection LOS: E  
 Intersection Capacity Utilization 126.2%  
 ICU Level of Service H  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: State Route 81/Lee Byrd Road & Atlanta Highway (US Route 78)



## F | Level of Service Summary Tables



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**Proposed Whataburger Restaurant with Drive-Thru**  
**4764 Atlanta Highway (US Route 78)**  
**City of Loganville**  
**Walton County, Georgia**

**ATDE Project No. SEVS00002**

**Table 5: Level of Service/Dleay/95th Percentile Queue Comparison**

Intersection	Lane Group	Existing						No-Build						Build						Build w/ Mitigation					
		AM			PM			AM			PM			AM			PM			AM			PM		
		Delay	LOS	Q95th	Delay	LOS	Q95th	Delay	LOS	Q95th	Delay	LOS	Q95th	Delay	LOS	Q95th	Delay	LOS	Q95th	Delay	LOS	Q95th	Delay	LOS	Q95th
State Route 81, Lee Byrd Rd @Atlanta Highway (US-78)	EB: L	23.0	C	56'	31.7	C	113'	25.5	C	62'	34.4	C	115'	30.0	C	78'	43.7	D	166'	31.8	C	82'	45.7	D	174'
	T	31.3	C	358'	42.3	D	641'	31.8	C	371'	43.1	D	664'	32.0	C	378'	43.3	D	671'	32.9	C	384'	45.5	D	686'
	R	4.1	A	64'	17.7	B	436'	4.1	A	64'	19.6	B	482'	4.1	A	64'	19.8	B	486'	4.2	A	65'	21.6	C	511'
	WB: L	20.1	C	99'	59.4	E	210'	21.8	C	104'	75.1	E	235'	22.1	C	104'	78.8	E	239'	23.0	C	106'	75.1	E	247'
	T	40.8	D	646'	43.8	D	625'	42.2	D	671'	44.9	D	646'	43.3	D	682'	45.6	D	655'	45.1	D	694'	46.5	D	663'
	R	0.3	A	0'	0.9	A	6'	0.3	A	1'	1.1	A	7'	1.0	A	7'	2.9	A	25'	1.0	A	7'	2.9	A	25'
	NB: L	86.7	F	438'	181.1	F	478'	92.4	F	456'	192.4	F	493'	92.4	F	456'	192.4	F	493'	92.4	F	456'	192.4	F	493'
	TR	36.2	D	248'	39.2	D	278'	36.5	D	255'	39.3	D	285'	36.8	D	259'	39.4	D	288'	35.8	D	256'	38.8	D	285'
	SB: L	111.4	F	125'	67.7	E	154'	83.4	F	105'	67.9	E	157'	82.7	F	103'	67.9	E	157'	77.8	E	95'	66.7	E	156'
	TR	382.9	F	559'	105.8	F	575'	400.6	F	574'	108.7	F	596'	413.4	F	584'	110.7	F	602'	357.1	F	571'	105.0	F	590'
Overall		64.3	E		58.6	E		66.8	E		61.5	E		68.1	E		61.9	E		64.9	E		62.4	E	
Lee Byrd Rd @Old Zion Cemetery Rd	EB: LTR	12.6	B	2'	17.7	C	12'	12.8	B	2'	18.3	C	12'												
	WB: LTR	18.6	C	9'	23.5	C	30'	19.1	C	12'	25.2	D	32'	19.5	C	12'	22.3	C	30'						
	NB: LTR	8.0	A	0'	8.2	A	0'	8.0	A	0'	8.2	A	2'	8.0	A	0'	8.3	A	2'						
	SB: LT													8.2	A	2'	8.3	A	2'						
	LTR	8.1	A	2'	8.1	A	2'	8.1	A	2'	8.2	A	2'												
Overall		1.6	A		3.2	A		1.6	A		3.3	A		1.4	A		2.3	A							



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		AM		PM		Q95th		AM		PM		Q95th		AM		PM		Q95th		AM		PM		Q95th			
		Delay	LOS	Q95th Delay	LOS	Q95th	Delay	LOS	Q95th Delay	LOS	Q95th	Delay	LOS	Q95th Delay	LOS	Q95th	Delay	LOS	Q95th Delay	LOS	Q95th	Delay	LOS	Q95th Delay	LOS	Q95th	
Atlanta Highway (US-78) @Old Zion Cementery Rd	EB: L	13.4	B	2'	10.7	B	2'	13.4	B	2'	11.0	B	2'														
	SB: LR	19.8	C	14'	15.3	C	16'	19.9	C	14'	15.9	C	18'	25.1	D	21'	21.7	C	28'								
	Overall	0.3	A		0.4	A		0.3	A		0.4	A		0.4	A		0.5	A									
Atlanta Highway (US-78) @Single-Family Dwy	EB: LT	0.0	A	0'	0.0	A	0'	0.0	A	0'	0.0	A	0'														
	SB: LR	20.3	C	0'	17.1	C	0'	20.9	C	0'	17.5	C	0'														
	Overall	0.0	A		0.0	A		0.0	A		0.0	A															
Atlanta Highway (US-78) @Office Driveway	EB: LT	18.1	C	0'	14.8	B	0'	18.6	C	0'	15.2	C	0'														
	SB: LR	38.4	E	2'	30.8	D	2'	40.7	E	2'	32.0	D	2'														
	Overall	0.1	A		0.1	A		0.1	A		0.1	A															
Lee Byrd Rd @Single-Family Dwy	EB: LR	10.4	B	0'	10.9	B	0'	10.5	B	0'	11.0	B	0'														
	NB: LT	0.0	A	0'	0.0	A	0'	0.0	A	0'	0.0	A	0'														
	Overall	0.0	A		0.0	A		0.0	A		0.0	A															
Old Zion Cemetery Rd @Single-Family Dwy	EB: LT	0.0	A	0'	0.0	A	0'	0.0	A	0'	0.0	A	0'														
	Overall	0.0	A		0.0	A		0.0	A		0.0	A															



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		AM Delay	AM LOS	PM Q95th Delay	AM Delay	AM LOS	PM Q95th Delay	AM Delay	AM LOS	PM Q95th Delay	AM Delay	AM LOS	PM Q95th Delay			
Atlanta Highway (US-78) @Site Dwy	EB: LT							20.7	C	9'	16.3	C	5'			
	SB: LR							214.6	F	122'	38.0	E	30'			
	Overall							5.8	A		0.6	A				
Lee Byrd Rd @Northern Site Dwy	EB: L							15.5	C	2'	16.6	C	2'			
	R							10.7	B	2'	11.3	B	0'			
	NB: LT							8.1	A	0'	8.3	A	0'			
	Overall							0.4	A		0.3	A				