A TRAFFIC ANALYSIS REPORT

FOR

DEVELOPMENT OF REGIONAL IMPACT TOWNSHIP TUCKER DRI CITY OF TUCKER, DEKALB COUNTY, GEORGIA DRI NUMBER 2576

Prepared For:



ATLANTA REGIONAL COMMISSION



GEORGIA REGIONAL TRANSPORTATION AUTHORITY

AND

MACAULEY INVESTMENTS, LLC

Prepared By:

Richard J, Meehan, PE Lowe Engineers, LLC 990 Hammond Drive, Suite 900 Atlanta, Georgia 30328

June 24, 2016

1.0	1.1 1.2 1.3 1.4 1.5	Project Description Introduction Site Plan Review Site Access Bicycle and Pedestrian Facilities Transit Facilities	1 4 .6 .6
2.0	0.1	I raffic Analyses Methodology and Assumptions	.6
	2.1	Grown Rate	.0
	2.2 2.2	Traffic Data Collection	/7
	2.3	Andrysis Methouology	/ 0
	2.4		0
30		Trip Generation and Distribution	8
0.0	3.1	Gross Trin Ends Analysis	.0
	3.2	Net Trip Ends Analysis	9
	3.3	Trip Distribution and Assignment	10
4.0		Study Network	.13
	4.1	Study Network Determination	13
	4.2	Existing Facilities	. 13
	4.3	Identification of Programmed Projects	17
5.0		I raffic Analysis	18
	5.1	Existing Traffic	18
	5.2	Future No-Build 2022 Traffic	20
	5.3	Future Build 2012 Traffic	.23
60		Recommendations	20
0.0		גברחוווההותקווחבו	Z

Appendices

Δ	Land	llsa	and	Zonina	Man
А.	Lanu	USE	anu	ZUIIIIY	ινιαρ

- B. MARTA Bus Route Maps
- C. Historical ADT Volumes and Growth Analysis
- D. Existing Traffic Counts
- E. Trip Generation Analysis
- F. 7% Network Analysis
- G. Future Roadway Project Fact Sheets
- H. Existing (2016) Traffic Analysis Reports
- I. Future (2022) No-Build Traffic Analysis Reports
- J. Future (2022) No-Build With Improvements Traffic Analysis Reports
- K. Future (2022) Build Traffic Analysis Reports
- L. Future (2022) Build With Improvements Traffic Analysis Reports

List of Tables

Table 1:	Proposed Land Uses and Densities	. 1
Table 2:	Level of Service Characteristics	.7
Table 3:	Township Tucker Gross Trips	. 9
Table 4:	Township Tucker Net Trip Generation	.10
Table 5:	Existing Facility Characteristics	. 15
Table 6:	Programmed Projects	. 17
Table 7:	Existing (2016) Intersection Levels of Service	.18
Table 8:	Future (2022) No-Build Intersection Levels of Service	. 20
Table 9:	Future (2022) Build Intersection Levels of Service	.26

List of Figures

Figure 1:	Location Map	2
Figure 2:	Aerial	3
Figure 3:	Township Tucker Site Plan	5
Figure 4:	Trip Distribution – Residential Trips	11
Figure 5:	Trip Distribution – Non-Residential Trips	12
Figure 6:	Existing (2016) Intersection Configuration	16
Figure 7:	Existing (2016) Traffic Volumes	19
Figure 8:	Future (2022) No-Build Traffic Volumes	21
Figure 9:	Future (2022) No-Build Improved Intersection Configuration	22
Figure 10	: Township Tucker Projected Trip Distribution	24
Figure 11:	: Future (2022) Build Traffic Volumes	25
Figure 12:	: Future (2022) Build Improved Intersection Configuration	28

1.0 PROJECT DESCRIPTION

1.1 Introduction

This report presents the analysis of the anticipated traffic impacts from the proposed Tucker Township Development in the City of Tucker, DeKalb County, Georgia. The proposed development is a mixed use development located on a 90 Acre tract of land on the northeast corner of the intersection of Hugh Howell Road (SR 236) and Mountain Industrial Boulevard at the site of the former Sears.

This Traffic Analysis Report is being prepared as a result of an application for rezoning of the property. The project site is located in the Mountain Industrial Overlay District according to the DeKalb County GIS and is currently zoned as Industrial (M and M-2)) and Residential (R-150) land uses. The Future Land Use for the project site according to the DeKalb County GIS is Light Industrial. Maps showing the current zoning and land use of the area are provided in the Appendix. DeKalb County will be reviewing the zoning on behalf of the city of Tucker.

The approximate square footage of the proposed development is estimated to be 2,251,000 square feet. Because the proposed development exceeds the threshold of 500,000 gross square feet for multi-use developments in established suburbs, the development is a Development of Regional Impact (DRI) and subject to review by the Atlanta Regional Commission (ARC) and Georgia Regional Transportation Authority (GRTA).

The proposed mixed-use development will consist of residential, retail, office, day care, hotel, a movie studio, an amphitheater, and an urban farm. The project is expected to be 70% complete by 2019 (3 Years) and completely built out by 2022 (6 Years). The traffic analysis for the proposed development will be done only for the complete build out in 2022. A summary of the proposed land uses and densities is shown below in **Table 1**.

Table 1 Proposed Land Uses and Densities								
Residential								
Multi-Family Residential	616 Dwelling Units							
Townhomes	60 Dwelling Units							
Constant Care Retirement Community	360 Dwelling Units							
Park Cottages	20 Dwelling Units							
Retail								
Specialty Retail	91,000 Square Feet							
Grocery	22,000 Square Feet							
Office								
Movie Studio	450,000 Square Feet							
General Office	28,000 Square Feet							
Other								
Amphitheater	500 Seats							
Adult/Child Care	20,000 Square Feet							
Limited Services Hotel	140 Rooms							
Urban Farm								

A Location Map of the proposed development is provided in **Figure 1** and an Aerial Photo of the project site is provided in **Figure 2**.





1.2 Site Plan Review

The site is surrounded by Hugh Howell Road (SR 236) on the south, Mountain Industrial Boulevard and the Sears Outlet Store on the west, a church and a single family residential neighborhood on the east, and undeveloped land between Camp Creek and the CSX Railroad on the north. The project is expected to be 70% complete by 2019 (3 Years) and completely built out by 2022 (6 Years). The future build and no-build traffic analysis will be done only for the complete build out in 2022.

A small-scale copy of the site plan is provided in **Figure 3**. A full-size site plan consistent with GRTA's Site Plan Guidelines is also attached as part of the Review Package.

1.3 Site Access

The project site is currently served by six (6) full movement driveways along Hugh Howell Road (SR 236) and four (4) full movement driveways along Mountain Industrial Boulevard. All of these existing driveways will be closed as a result of the proposed development.

As shown on the site plan the project is proposed to have two (2) full movement driveways and one (1) full Movement service drive on Hugh Howell Road (SR 236) and one (1) full movement drive and one full movement service drive (1) on Mountain Industrial Boulevard. The site plan also shows a proposed inter-parcel access connection to the property to the east, currently a church to allow for shared parking for the church and the amphitheater.

Site Driveway #1 is located on Hugh Howell Road (SR 236) approximately 1390 feet east of the intersection with Mountain Industrial Boulevard and is aligned opposite and existing truck access driveway to a warehouse will allow full movement into the site.

Site Driveway #2 is located on Hugh Howell Road (SR 236) approximately 1970 feet east of the intersection with Mountain Industrial Boulevard and is aligned opposite Flintstone Drive and will allow full movement into the site at a proposed traffic signal.

Site Driveway #3 is a service driveway located on Hugh Howell Road (SR 236) approximately 2600 feet east of the intersection with Mountain Industrial Boulevard and is aligned opposite and existing driveway and will allow full access to the site.

Site Driveway #4 is located on Mountain Industrial Boulevard approximately 585 feet north of the intersection with Hugh Howell Road (SR 236) and is aligned opposite and existing truck access driveway to a warehouse will allow full movement into the site.

Site Driveway #5 is a service driveway located on Mountain Industrial Boulevard approximately 900 feet north of the intersection with Hugh Howell Road (SR 236) and will allow full access to the site.

Georgia DOT is the permitting agency for driveways along Hugh Howell Road (SR 236). DeKalb County is the permitting agency for the driveways along Mountain Industrial Boulevard.



1.4 Bicycle and Pedestrian Facilities

The proposed development is designed as an urban, walkable, mixed-use development. All interior roads within the development will have sidewalks, crosswalks, and pedestrian amenities to encourage walking. Additionally, sidewalks will be constructed along Hugh Howell Road (SR 236) and Mountain Industrial Boulevard along the entire property frontage.

The proposed projects will include development of a multi-use trail system through the northern portion of the property along Camp Creek. An interparcel trail connection will be provided to the adjacent property to the north where these trails are anticipated to connect to a larger regional trail network along Camp Creek and the Railroad line to the north of the project site.

1.5 Transit Facilities

The proposed site is serviced by three MARTA Bus Routes (75, 120, & 124) with service to both the MARTA East Rail Line (Avondale) and the MARTA Gold Rail Line (Doraville).

Route 120 runs along Mountain Industrial Boulevard and Hugh Howell Road south and west of the Project site to the Avondale Rail Station with an existing stop on the North side of Hugh Howell Road approximately 200' west of the intersection with Mountain industrial Blvd.

Route 75 runs from Tucker center area to Avondale Rail Station with an existing stop on the north side of Mountain Industrial approximately 2200' north of the Project Site along Mountain Industrial. This stop is also about 500' from where the proposed multi-use path crosses the northern boundary of the project site.

Route 124 runs from the Lawrenceville Highway/Hugh Howell Road Intersection to the Doraville Rail Station. The stop at this intersection is approximately 3200' from the project site.

The proposed site plan includes the addition of bus stop bays along Hugh Howell Road (SR 236) and Mountain Industrial Boulevard to facilitate enhanced bus service to the proposed development and the possible re-routing of the existing MARTA bus service to better serve the site.

2.0 TRAFFIC ANALYSIS METHODOLOGY AND ASSUMPTIONS

2.1 Growth Rate

Background traffic is defined as expected traffic on the roadway network in future year(s) absent the construction and opening of the proposed project. Based on analysis of traffic volumes on the roadways surrounding the project for the past 5 years from the Georgia DOT's Traffic Count Database and knowledge of the area a growth rate of 0.5% per year for 6 years along all roadways was agreed upon during the methodology meeting with GRTA staff. A breakdown of the growth analysis is provided in the Appendix.

There are no known other significant proposed developments in the area so no additional specific project trips were added to the background traffic.

2.2 Traffic Data Collection

Peak Hour turning movement counts were performed between 7:00-9:00 AM and 4:00-7:00 PM at 10 signalized intersections and 2 unsignalized intersections in the study network on May 11, 2016. Additionally, Twenty-four hour two-way counts were collected with speeds along Mountain Industrial Boulevard and Hugh Howell Road at the locations of the proposed site driveways. The morning and afternoon peak hours varied for the twelve intersections:

- Mountain Industrial Blvd @ US 78 EB Ramp (Signalized)
- Mountain Industrial Blvd @ US 78 EB Ramp (Signalized)
- Mountain Industrial Blvd @ Hugh Howell Rd (Signalized)
- Mountain Industrial Blvd @ Lawrenceville Hwy (Signalized)
- Hugh Howell Rd @ US29/Lawrenceville Hwy (Signalized)
- Hugh Howell Rd @ Flinstone Dr (Unsignalized)
- Hugh Howell Rd @ McCurdy Rd (Signalized)
- Hugh Howell Rd @ Rosser Rd (Unsignalized)
- Hugh Howell Rd @ Silver Hill Rd W (Signalized)
- Hugh Howell Rd @ Silver Hill Rd E (Signalized)
- US29/Lawrenceville Hwy @ Brockett Rd (Signalized)
- US29/Lawrenceville Hwy @ Main St (Signalized)

All raw traffic count data is included in the Appendix.

(AM Peak 7:30-8:30, PM Peak 4:45-5:45) (AM Peak 7:15-8:15, PM Peak 4:45-5:45) (AM Peak 7:15-8:15, PM Peak 4:30-5:30) (AM Peak 7:00-8:00, PM Peak 4:45-5:45) (AM Peak 7:00-8:00, PM Peak 5:00-6:00) (AM Peak 7:15-8:15, PM Peak 5:00-6:00) (AM Peak 7:15-8:15, PM Peak 5:00-6:00)

2.3 Analysis Methodology

The operating characteristic of a road segment or intersection in relation to its capacity is described by its Level of Service (LOS). The Highway Capacity Manual defines six levels of service, LOS A through LOS F, with A being the best and F being the worst as more particularly described in the **Table 2** below:

	Table 2 Level of Service Characteristics								
LOS	General Characteristics								
А	Nearly free-flow conditions; full freedom to maneuver within traffic stream								
В	Nearly free-flow conditions; with some restrictions on maneuverability								
С	Nearly free-flow conditions; with noticeable restrictions on maneuverability								
D	Declining speeds; increasing densities; restricted maneuverability								
E	At capacity; unstable flow; reasonable speeds; very little, if any, freedom to maneuver								
F	Unstable flow conditions; low speeds; significant queuing at constricted points								

Level of Service analyses was conducted at all intersections and site driveways within the study network using the Synchro Software, Version 8.0 developed by Trafficware Corporation.

Levels of Service for signalized intersections are reported for individual movements as well as for the intersection as a whole. One or more movements at an intersection may experience a low Level of Service, while the intersection as a whole may operate acceptably.

Levels of Service for unsignalized intersections, with stop control on the minor street only, are reported for the side street approaches. Low Levels of Service for side street approaches are not uncommon, as vehicles may experience delay in turning onto a major roadway.

A LOS analysis for segments was conducted using the simplified analysis developed by the Florida Department of Transportation.

2.3 Level of Service Standards

For the purposes of this traffic analysis, a Level of Service standard of D was assumed for all intersections and segments within the study network. If, however, an intersection or segment currently operates at LOS E or LOS F during an existing peak period, the LOS standard for that peak period becomes LOS E, consistent with GRTA's Letter of Understanding.

3.0 TRAFFIC GENERATION AND DISTRIBUTION

3.1 Gross Trip Ends Analysis

The latest edition of the ITE Trip Generation, 9th Edition, and the ITE Trip Generation Handbook, 3rd Edition were used for all land uses in this study. The following land uses were used for the proposed development:

- 150 Warehousing (Movie Studio)
- 710 General Office Building (Office)
- 826 Specialty Retail Center (Retail)
- 850 Supermarket (Grocery)
- 220 Apartment (Multi-Family)
- 230 Residential Condominium/Townhomes (Town Homes/Park Cottages)
- 255 Continuing Care Retirement Community,
- 441 Live Theater (Amphitheater)
- 565 Day Care Center
- 310 Hotel.

The Trafficware Trip Generation Software, Version 8.0 was used to calculate the trips generated by the proposed development. Gross trips generated by the proposed development are shown below in **Table 3**.

Table 3 Township Tucker Gross Trips											
Land Use	Daily Trips	AM	Peak H	lour	PM Peak Hour						
				Enter	Exit	Total	Enter	Exit	Total		
Movie Studio	150	450,000 SF	1,797	149	40	189	39	117	156		
Multi Family	220	616 Units	3,857	61	245	306	231	125	356		
Park Cottages	230	20 Units	159	2	12	14	11	5	16		
Town Homes	230	60 Units	412	6	28	34	27	13	40		
CCRC	255	360 Units	1,439	43	23	66	27	43	70		
LTD Services Hotel	310	140 Rooms	880	44	30	74	43	41	84		
Amphitheatre	441	500 Seats	N/A	N/A	N/A	N/A	5	5	10		
Adult/Child Care	565	20,000 SF	1,481	129	115	244	116	131	247		
Office	710	28,000 SF	499	61	8	69	19	91	110		
Retail	826	91,000 SF	3,931	N/A	N/A	N/A	106	134	240		
Grocery	850	22,000 SF	2,864	47	28	75	130	124	254		
Gross	Trips		17,319	542	529	1,071	754	829	1,583		

3.1 Net Trip Ends Analysis

The gross trips generated by the proposed development were reduced for both internal trip capture and alternate mode availability. Retail trips were further reduced due to the capture of pass-by trips from the existing roadway network. In accordance with GRTA Guidelines, the mixed-use reduction was applied first followed by the alternate mode reduction. The pass-by trip reduction was applied last.

The gross external vehicle trips from the proposed development were reduced due to the mixed-use interaction between the residential, office, and retail land uses. Rates for reduction for internal trip capture were done using the methodology **ITE Trip Generation Handbook**, **3rd Edition**. AM peak hour external trips were reduced by 9.0%, PM peak hour external trips were reduced by 31.0%, and Daily external trips were reduced by 29.3%. Detailed internal trip capture calculations are provided in the Appendix.

Due to the proximity to several bus routes with access to multiple rail lines and the increased pedestrian facilities and trail network, a 5% alternative modes reduction was agree upon during the methodology meeting with GRTA staff.

Pass-By trip reduction was done for the retail and grocery land uses using the methodology of the **ITE Trip Generation Handbook**, **3rd Edition** with a maximum reduction of 15% of the adjacent road traffic volume per GRTA requirements. For the proposed development, new PM and Daily retail trips, a 34% pass-by trip reduction was applied to the net retail trips, after reduction for internal capture and alternate mode.

The total net trips generated by the proposed development and used in the traffic analysis are shown below in Table 4.

Township Tu	Table 4 Township Tucker Net Trip Generation								
	Daily	Daily AM Peak Hour					lour		
	Trips	Enter	Exit	Total	Enter	Exit	Total		
Gross Trips	1,7319	542	529	1,071	754	829	1,583		
Residential Trips	5,867	112	308	420	296	186	482		
Mixed Use Reductions	-2,007	-3	-10	-13	-123	-59	-182		
Alternate Mode Reductions	-193	-5	-15	-20	-9	-6	-15		
Adjusted Residential Trips	3,667	104	283	387	164	121	285		
Office Trips	2,296	210	48	258	58	208	266		
Mixed Use Reductions	-511	-23	-14	-37	-18	-38	-56		
Alternate Mode Reductions	-89	-9	-2	-11	-2	-9	-11		
Adjusted Office Trips	1,696	178	32	210	38	161	199		
Retail/Other trips	9,156	220	173	393	400	435	835		
Mixed Use Reductions	-2,564	-22	-24	-46	-104	-148	-252		
Alternate Mode Reductions	-330	-10	-7	-17	-15	-14	-29		
Pass By Reductions	-2,129	0	0	0	-93	-93	-186		
Adjusted Retail/Other Trips	4,133	188	142	330	188	180	368		
Mixed-Use Reductions (Total)	-5,082	-48	-48	-96	-245	-245	-490		
Alternate Mode Reductions (Total)	-612	-24	-24	-48	-26	-29	-55		
Pass-By Reductions (Total)	-2,129	0	0	0	-93	-93	-186		
Net New Vehicle Trips	9,496	470	457	927	390	462	852		

The detailed trip generation analysis is provided in the Appendix.

3.3 Trip Distribution and Assignment

The proposed methodology for the distribution of new vehicle trips is based on the land uses within the project, a review of road facilities in the area, and US Census data and was agreed upon during the methodology meeting with GRTA Staff. The proposed trip distribution for new residential trips is shown in **Figure 4**. The proposed trip distribution for new non-residential trips is shown in **Figure 5**.





4.0 STUDY NETWORK

4.1 Study Network Determination

Based on the roadway network in the area of the project, the proposed residential and non-residential trip distribution and the gross trips generated by the proposed development, a total of thirty-one (31) roadway segments were analyzed under GRTA's 7% rule. This rule recommends that all intersections and segments which are impacted to the extent that the traffic from the proposed site is 7% or more of the Service Volume of the facility at a previously established LOS standard be considered for analysis. Based on the 7% rule, it was determined that nineteen (19) intersections in the roadway network are located within the limits of the 7% network. During the methodology meeting with GRTA Staff the study network was refined and it was agreed upon to analyze the twelve (12) intersections listed below as part of the DRI Traffic Study.

- 1. Mountain Industrial Boulevard at US 78 Eastbound On/Off Ramps (Signalized)
- 2. Mountain Industrial Boulevard at US 78 Westbound On/Off Ramps (Signalized)
- 3. Mountain Industrial Boulevard at Hugh Howell Road(SR 236) (Signalized)
- 4. Mountain Industrial Boulevard at Lawrenceville Highway (US 29/SR 8) (Signalized)
- 5. Hugh Howell Road(SR 236) at Lawrenceville Highway (US 29/SR 8) (Signalized)
- 6. Hugh Howell Road(SR 236) at Flintstone Drive/Site Drive #2 (Unsignalized)
- 7. Hugh Howell Road(SR 236) at McCurdy Road (Signalized)
- 8. Hugh Howell Road(SR 236) at Rosser Road (Unsignalized)
- 9. Hugh Howell Road(SR 236) at Silver Hill Road (West) (Signalized)
- 10. Lawrenceville Highway (US 29/SR 8) at Brockett Rd (Signalized)
- 11. Lawrenceville Highway (US 29/SR 8) at Main Street/Idlewood Road (Signalized)
- 12. Hugh Howell Road(SR 236) at Silver Hill Road (East) (Signalized)
- 13. All Site Driveways

The detailed calculations and figures used in identifying the study links and intersections according to GRTA's 7% rule are shown in the Appendix.

Each of the above listed intersections was analyzed for the 2016 Existing Condition, the 2022 No-Build Condition, and the 2022 Build Condition. The 2022 No-Build condition represents the existing traffic volumes grown at 0.5% per year for six years. The 2022 Build condition adds the projected net trips associated with the Township Tucker proposed development to the 2022 No-Build condition. Because all site driveways currently do not exist, all five site intersections were analyzed for the 2022 Build Condition only. Site Driveway #2 does align with the existing intersection of Hugh Howell Road (SR 236) with Flintstone Drive and the existing unsignalized intersection was evaluated in the 2016 Existing Condition and the 2022 No-Build Condition without the site drive included.

4.2 Existing Facilities

The primary roads in the area that serve the proposed Township Tucker Project are described as follows:

<u>Hugh Howell Road (SR 236)</u> runs from Lawrenceville Highway (US 29/SR 8) approximately 0.6 miles west of the proposed project site to the east/southeast for a distance of 4.2 miles to Stone Mountain Freeway (US 78/SR 10). Between Lawrenceville Highway (US 29/SR 8) and Mountain Industrial Boulevard, Hugh Howell Road (SR 236) is a 4-lane road divided by a flush median/center turn lane. East of Mountain Industrial Boulevard past the project site, the

road is an undivided 4-lane road with only a double yellow traffic stripe. East of the project site, Hugh Howell Road (SR 236) narrows to a 2-lane undivided road with left and right turn lanes at several intersections.

<u>Mountain Industrial Boulevard</u> runs from E Ponce De Leon Ave approximately 1.7 miles south of the proposed project site to the north crossing Stone Mountain Freeway (US 78/SR 10) and continuing north for a total distance of 3.5 miles to Lawrenceville Highway (US 29/SR 8). South of E. Ponce De Leon, the road continues with the name N. Hairston Road and north of Lawrenceville Highway (US 29/SR 8) the road continues with the name Jimmy Carter Boulevard. Mountain Industrial Boulevard for its entire length is a 4-lane divided road with either flush median/center turn lane or grassed/raised median. There is a short area of 6-lane road in the area of the interchange with Stone Mountain Freeway (US 78/SR 10).

<u>Lawrenceville Highway (US 29/SR 8)</u> runs from the City of Decatur to the west in an easterly/northeasterly direction, crossing I-285 and continuing through the Tucker area and continuing to the northeast to the City of Liburn and the City of Lawrenceville. The road through the Tucker area is primarily a 4-lane divided roadway with a flush median/center turn lane.

<u>Stone Mountain Freeway (US 78/SR 10)</u> runs from the City of Decatur to the west in an easterly/northeasterly direction, crossing I-285 and continuing through the Tucker area and continuing to the east to the City of Snellville and ultimately the City of Athens. The road through the Tucker area is a 6-lane divided limited access freeway with a median barrier. In the area of the proposed project, this road is accessed through an existing diamond interchange with Mountain Industrial Boulevard.

<u>Flintstone Drive</u> is a two-lane local road running south from a side street stop control intersection with Hugh Howell Road (SR 236) providing access to several industrial properties. The road connects to the west to Mountain Industrial Boulevard through Granite Drive.

<u>McCurdy Road and Stratmor Drive</u> are two-lane local roads running south and north respectively from a signalized intersection with Hugh Howell Road to provide access to the adjacent residential neighborhoods.

<u>Rosser Road</u> is a two-lane collector running northeast from a side street stop control intersection with Hugh Howell Road (SR 236) to Harmony Grove Road providing access to several residential neighborhoods and properties.

<u>Silver Hill Road (west)</u> is a two-lane local road running south from a signalized intersection with Hugh Howell Road (SR 236), crosses over Stone Mountain Freeway (US 78/SR 10) with no interchange, and ends at Main Street in Stone Mountain Village and provides access to several residential neighborhoods and properties.

<u>Silver Hill Road (east)</u> is a two-lane local road running east from a signalized intersection with Hugh Howell Road (SR 236) to Lilburn-Stone Mountain Road and provides access to several residential neighborhoods and properties and a school.

<u>Idlewood Road</u> is a 2/3-lane collector running south from a signalized intersection with Lawrenceville Highway (US 29/SR 8) crosses over Stone Mountain Freeway (US 78/SR 10) with no interchange, and ends at E Ponce De Leon Road and provides access to several residential neighborhoods and properties.

<u>Main Street</u> is a two-lane local road running north from a signalized intersection with Lawrenceville Highway (US 29/SR 8) to LaVista Road and provides access to the commercial properties in Tucker village.

Brockett Road is a two-lane collector road running from E Ponce De Leon Ave to the north crossing Stone Mountain Freeway (US 78/SR 10) with an interchange, crossing Lawrenceville Highway (US 29/SR 8) with a signalized intersection and ending at LaVista Road. North of LaVista Road the road continues with the name Henderson Road. The road provides access for several residential neighborhoods and properties along with several churches and a school.

The detailed characteristics of these and other roads in the area are shown in **Table 5**. The existing lane configuration and usage of the twelve (12) intersections analyzed in the analysis is shown in **Figure 6**.

Table 5 Existing Facility Characteristics										
Roadway	From	То	No. of Lanes	Speed Limit	Road Type and GDOT Functional Classification					
Mountain Industrial Blvd	S of US 78 Ramps	US 29/SR 8	4/5	45	2-Way Principal Arterial					
Hugh Howell Rd (SR 236)	US 29/SR 8	Mountain Industrial	4/5	45	2-Way Minor Arterial					
Hugh Howell Rd (SR 236)	Mountain Industrial	Mountain Creek Dr	4	45	2-Way Minor Arterial					
Hugh Howell Rd (SR 236)	Mountain Creek Dr	Stone Creek Dr	2/3	45	2-Way Minor Arterial					
Hugh Howell Rd (SR 236)	Stone Creek Dr	US 78	4/5	45	2-Way Minor Arterial					
Lawrenceville Hwy (US 29/SR 8)	Montreal Rd	E of Mountain Industrial	4/5	45	2-Way Minor Arterial					
Stone Mountain Freeway (US 78/SR 10)	Brocket Rd	Memorial Drive	6	65	2-way Freeway					
Flintstone Drive	Hugh Howell Rd (SR 236)	Granite Dr	2	25	2-way Local					
McCurdy Road	Hugh Howell Rd (SR 236)	South	2	25	2-way Local					
Stratmor Drive	Hugh Howell Rd (SR 236)	North	2	25	2-way Local					
Rosser Road	Hugh Howell Rd (SR 236)	Harmony Grove Rd	2	35	2-way Collector					
Silver Hill Road	Hugh Howell Rd (SR 236)	Main St (Stn Mtn)	2	45	2-way Local					
Silver Hill Road	Hugh Howell Rd (SR 236)	Lilburn-Stone Mountain Road	2	25	2-way Local					
Idlewood Rd	US 29/SR 8	E Ponce De Leon Rd	2/3	35	2-way Collector					
Main Street (Tucker)	US 29/SR 8	LaVista Rd	2	25	2-way Local					
Brockett Road	E Ponce De Leon	LaVista Rd	2	40/35	2-way Collector					



4.3 Identification of Programmed Projects

According to ARC's Transportation Improvement Program, Regional Transportation Improvement Program (Regions Plan), GDOT's Construction Work Program, the GA STIP, DeKalb County proposed SPLOST program, **Table 6** lists the projects are programmed or planned to be completed in the area of the proposed development by the respective years. Since none of these projects are currently under construction, and since none of these projects are planned to add capacity to the roadway network, none of these proposed improvements were included in the traffic analysis for the proposed development. Project fact sheets are provided in the Appendix.

				Table 6 Programmed Projects
#	Plan	Completion Date/Funding Year	Project ID	Description
1		2018	DK-424	US 29 (SCOTT BOULEVARD / LAWRENCEVILLE HIGHWAY) AND SR 236 (HUGH HOWELL ROAD) SIGNAL UPGRADES AT 9 LOCATIONS Signal upgrades on SR 8 (Scott Boulevard/Lawrenceville Highway) and SR 236 (Hugh Howell Road) in Gwinnett and DeKalb counties. Total corridor length on SR 8 is approximately 6.8 miles, with 7 signal upgrades: N Decatur Road, DeKalb Industrial Way, Colledge Road, Jimmy Carter Boulevard, Harmony Grove Road, Greenwood Drive, and Harbins Road. Total corridor length on SR 236 is approximately 1.3 miles, with 2 signal upgrades: McCurdy Road and Silver Hill Road.
2	ARC Regions Plan	2018	DK-412 CTP#6021	LAST MILE CONNECTIVITY - TUCKER PEDESTRIAN FACILTIES - PHASE II Sidewalks, ADA upgrades, crosswalks, on-street parking, sharrows, landscaping and lighting. The project will provide improvements along the following: 1st Avenue from Lynburn Drive to Fellowship Road; 2nd Street from RR Avenue to Fellowship Road; 4th Street from RR Avenue to Lavista Road; and Lynburn Drive from 1st Avenue to Burns Drive.
3		2018	DK-AR- BP067	LAST MILE CONNECTIVITY - DEKALB SIDEWALK PROGRAM: PHASE 2C - FLAT SHOALS, HENDERSON, AND SALEM ROADS This project will provide bicycle and pedestrian upgrades to public schools in the DeKalb County area. Provides continuous 5' wide ADA accessible sidewalks, with a 2' wide grass buffer, along at least one side of the street to a variety of corridors including Flat Shoals Road from Second Avenue to Candler Road (2.7 miles), Henderson Road from LaVista Road to Henderson Mill Road (2.0 miles), and Salem Road from Old Panola Road to Fannin Drive (0.6 mile).
4		Tier 2B	1391	Chamblee Tucker Road/LaVista Road/Fellowship Road Intersection Redesign
5		Tier 1 – GDOT	1736	Hugh Howell Road at Lawrenceville Highway Intersection Improvements
6	DeKalh	Tier 1	2063	Chamblee-Tucker Road, Road Diet – Phase 1 Road diet to include two through lanes and a center left-turn lane and bike lanes. Operational and pedestrian improvements will also be made at key locations along the corridor.
7	CTP	Tier 2B	2912	Mountain Industrial Boulevard Pedestrian Improvements Install sidewalks and improve pedestrian crossings along this corridor. Project assumes approximately 1.8 miles of minimal grading.
8		Tier 2B	2950	Lawrenceville Highway Pedestrian Improvements
9		Tier 2C	6028	Mountain Industrial Boulevard at Stone Mountain Parkway Intersection Lighting Improvements Add lighting to ramps and approaches at this interchange
10		TBD		Sidewalk Gaps and ADA Crosswalk upgrades
11	SPLOST	TBD		Idlewood Road Sidewalks from Tucker Middle Schools to Lawrenceville Highway
12		TBD		Fellowship Road Sidewalks from Lawrenceville Highway to Lavista Road

5.0 Traffic Analysis

5.1 Existing 2016 Traffic

An existing Level of Service (LOS) analysis was performed for the twelve (12) intersections in the approved study network listed in *Section 4.1* above. The existing (2016) AM and PM peak hour traffic volumes for these intersections are shown in **Figure 7**. These volumes and the existing intersection configurations were entered into Syncho 8.0 software and the existing analysis was performed. The results are displayed below in **Table 7**.

	Table 7 Township Tucker DRI Existing (2016) Intersection Levels of Service (delay in seconds)											
	Intersection	Control Contro				16) Ition PM	Existing Year With Improve			16) nts PM		
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay		
1	Mountain Industrial Blvd @ US 78 EB On/Off Ramps	Signalized	В	10.5	В	13.7						
2	Mountain Industrial Blvd @ US 78 WB On/Off Ramps	Signalized	С	34.1	В	14.3						
3	Mountain Industrial Blvd @ Hugh Howell Rd(SR 236)	Signalized	D	50.2	D	54.6						
4	Mountain Industrial Blvd @ Lawrenceville Hwy (US 29/SR 8)	Signalized	D	43.3	D	40.8						
5	Hugh Howell Rd(SR 236) @ Lawrenceville Hwy (US 29/SR 8)	Signalized	С	31.2	D	49.5						
6	Hugh Howell Rd(SR 236) @ Flintstone Dr/Site Drive #2	Side Street Stop Control	А	1.5	А	9.2						
7	Hugh Howell Rd(SR 236) @ McCurdy Rd	Signalized	В	15.9	В	11.6						
8	Hugh Howell Rd(SR 236) @ Rosser Rd	Side Street Stop Control	F	86.7	А	3.4	D	49.8	А	8.2		
9	Hugh Howell Rd(SR 236) @ Silver Hill Rd (West)	Signalized	А	8.4	В	12.6						
10	Lawrenceville Hwy(US 29/SR 8) @ Brockett Rd	Signalized	С	27.7	С	32.8						
11	Lawrenceville Hwy(US 29/SR 8) @ Main St/Idlewood Rd	Signalized	С	26.4	С	30.2						
12	Hugh Howell Rd(SR 236) @ Silver Hill Rd (East)	Signalized	А	7.5	А	4.0						

One intersection fails to meet the Level of Service Standard D: Hugh Howell Road (SR 236) at Rosser Road during the AM Peak Hour. The poor Level of Service is a result of a very heavy southbound right-turn volume from Rosser Road which is stop controlled, combining with a heavy westbound through volume on Hugh Howell Road (SR 236) which has operates free-flow with no traffic control. Due to the very low southbound left-turn volume from Rosser Road and having only a single lane westbound on Hugh Howell Road, adding additional lanes on Rosser Road will not improve the operation of the intersection in the AM Peak to a LOS E or higher. Analysis does show that signalization of the intersection will improve the AM Peak LOS of the intersection to a LOS D.



As a result of this intersection performing at an LOS F during the Existing (2016) AM Peak, the LOS Standard for this intersection in the AM Peak will be an LOS E in the analysis of the Future No-Build and Future Build conditions.

Summary Synchro 8.0 signalized and unsignalized intersection analysis reports for each intersection are provided in the Appendix.

5.2 Future 2016 No-Build Traffic

The existing traffic volumes were grown at a rate of 0.5% per year for six (6) years for all links in the study network. The Future (2022) No Build AM and PM peak hour traffic volumes for all intersections in the study network are shown in **Figure 8**. Using these volumes and the existing intersection configurations, an Level of Service (LOS) analysis was performed for the twelve (12) intersections using the Syncho 8.0 software. The results are displayed below in **Table 8**.

Table 8 Township Tucker DRI Future (2022) No-Build Intersection Levels of Service (delay in seconds)											
Future No-Build (2022) Future No-Build (2022)									022)		
	\777Intersection	Control	EXI	Isting Co	nfigura		V	/ith Impr	ovements		
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
1	Mountain Industrial Blvd @ US 78 EB On/Off Ramps	Signalized	А	9.6	В	14.3					
2	Mountain Industrial Blvd @ US 78 WB On/Off Ramps	Signalized	D	40.3	В	15.2					
3	Mountain Industrial Blvd @ Hugh Howell Rd(SR 236)	Signalized	D	54.2	Ε	57.5	D	54.0	D	38.5	
4	Mountain Industrial Blvd @ Lawrenceville Hwy (US 29/SR 8)	Signalized	D	49.9	D	43.2					
5	Hugh Howell Rd(SR 236) @ Lawrenceville Hwy (US 29/SR 8)	Signalized	С	31.7	D	54.3					
6	Hugh Howell Rd(SR 236) @ Flintstone Dr/Site Drive #2	Side Street Stop Control	А	1.5	В	11.7					
7	Hugh Howell Rd(SR 236) @ McCurdy Rd	Signalized	В	18.1	В	12.4					
8	Hugh Howell Rd(SR 236) @ Rosser Rd	Side Street Stop Control	F	100.4	А	3.5	Е	57.4	А	8.7	
9	Hugh Howell Rd(SR 236) @ Silver Hill Rd (West)	Signalized	А	8.7	В	14.0					
10	Lawrenceville Hwy(US 29/SR 8) @ Brockett Rd	Signalized	С	30.0	D	35.7					
11	Lawrenceville Hwy(US 29/SR 8) @ Main St/Idlewood Rd	Signalized	С	28.5	С	33.3					
12	Hugh Howell Rd(SR 236) @ Silver Hill Rd (East)	Signalized	А	7.5	А	4.0					

In addition to the intersection of Hugh Howell Road (SR 236) at Rosser Road, the addition of background traffic results in one additional intersection failing to meet the Level of Service Standard D: Mountain Industrial Boulevard at Hugh Howell Road (SR 236) during the PM Peak Hour.





Analysis shows that the following improvements are needed to the two intersections in order to meet the Level of Service Standard. The results for the Future No-Build Improvement scenario for these two intersections in shown in **Table 8** and **Figure 9**.

Mountain Industrial Boulevard at Hugh Howell Road (SR 236)

• Add eastbound right-turn lane to Hugh Howell Road (SR 236)

Hugh Howell Road (SR 236) at Rosser Road

• Signalize Intersection (Subject to approval by GDOT)

Summary Synchro 8.0 signalized and unsignalized intersection analysis reports for each intersection for the Future (2022) No-Build Condition, are provided in the Appendix.

5.3 Future 2016 Build Traffic

The projected trips from the proposed Township Tucker Development were added to the background traffic of the Future (2022) No-Build Scenario to determine the traffic volumes for the Future (2022) Build Scenario. The added AM and PM traffic volumes for each intersection resulting from the distribution of the projected trips from the proposed development are shown in **Figure 10**. The Future (202) Build AM and PM peak hour traffic volumes for all intersections in the study network are shown in **Figure 11**.

The following intersection improvements and configurations were utilized for the five proposed site driveways:

Hugh Howell Road (SR 236) at Site Drive #1

- Add eastbound left-turn lane in accordance with requirements of GDOT Driveway Manual
- Add westbound right-turn lane in accordance with requirements of GDOT Driveway Manual
- Site Driveway to consist of one (1) right-turn lane and one (1) left turn lane.
- Intersection controlled by side street stop control

Hugh Howell Road (SR 236) at Flintstone Drive/Site Drive #2

- Add eastbound left-turn lane in accordance with requirements of GDOT Driveway Manual
- Add westbound left-turn lane
- Add westbound right-turn lane in accordance with requirements of GDOT Driveway Manual
- Site Driveway to consist of one (1) shared though/right-turn lane and one (1) left turn lane.
- Intersection controlled by proposed traffic signal (subject to approval by GDOT)

Hugh Howell Road (SR 236) at Site Drive #3

- Add eastbound left-turn lane in accordance with requirements of GDOT Driveway Manual
- Add westbound right-turn lane in accordance with requirements of GDOT Driveway Manual
- Site Driveway to consist of one (1) shared left-turn/right-turn lane.
- Intersection controlled by side street stop control

Mountain Industrial Boulevard at Site Drive #4

- Add northbound right-turn lane
- Site Driveway to consist of one (1) right-turn lane and one (1) left turn lane.
- Intersection controlled by side street stop control





Mountain Industrial Boulevard) at Site Drive #5

- Add northbound right-turn lane
- Site Driveway to consist of one (1) shared left-turn/right-turn lane.
- Intersection controlled by side street stop control

Using these volumes and the intersection configurations, a Level of Service (LOS) analysis was performed for the twelve (12) intersections in the study network and the four new site access intersections using the Syncho 8.0 software. The results are displayed below in **Table 9**.

Table 9										
Township Tucker DRI										
(delay in seconds)										
Intersection		Control	Future Build (2022)				Future Build (2022)			
			Existing Configuration			With Improvements				
			LOS	Delay	LOS	Delav	LOS	Delay	LOS	Delav
1	Mountain Industrial Blvd @ US 78 EB On/Off Ramps	Signalized	В	13.2	В	19.7				
2	Mountain Industrial Blvd @ US 78 WB On/Off Ramps	Signalized	Е	68.7	С	26.4	С	29.7	С	20.9
3	Mountain Industrial Blvd @ Hugh Howell Rd(SR 236)	Signalized	Е	60.6	F	110.1	D	47.8	D	51.9
4	Mountain Industrial Blvd @ Lawrenceville Hwy (US 29/SR 8)	Signalized	D	53.8	D	50.1				
5	Hugh Howell Rd(SR 236) @ Lawrenceville Hwy (US 29/SR 8)	Signalized	С	31.7	D	52.3				
6	Hugh Howell Rd(SR 236) @ Flintstone Dr/Site Drive #2	Signalized	А	7.6	А	9.5				
7	Hugh Howell Rd(SR 236) @ McCurdy Rd	Signalized	В	18.7	В	13.3				
8	Hugh Howell Rd(SR 236) @ Rosser Rd	Side Street Stop Control	F	114.5	А	3.7	E	68.2	А	9.3
9	Hugh Howell Rd(SR 236) @ Silver Hill Rd (West)	Signalized	А	9.1	В	15.2				
10	Lawrenceville Hwy(US 29/SR 8) @ Brockett Rd	Signalized	С	27.7	D	38.9				
11	Lawrenceville Hwy(US 29/SR 8) @ Main St/Idlewood Rd	Signalized	С	29.7	D	36.6				
12	Hugh Howell Rd(SR 236) @ Silver Hill Rd (East)	Signalized	А	7.6	А	4.2				
13	Mountain Industrial Blvd @ Site Drive #4	Side Street Stop Control	А	14.5	А	14.3				
14	Mountain Industrial Blvd @ Site Drive #5	Side Street Stop Control	А	0.4	А	0.4				
15	Hugh Howell Rd(SR 236) @ Site Drive #1	Side Street Stop Control	А	2.3	A	1.7				
16	Hugh Howell Rd(SR 236) @ Site Drive #3	Side Street Stop Control	А	0.4	А	0.2				

In addition of the projected trips from the proposed development results in one additional time period and one addition intersection failing to meet the Level of Service Standard D: Mountain Industrial Boulevard at Hugh Howell Road (SR 236) fails to meet the Level of Service Standard in the AM Peak Hour in addition to the PM Peak Hour. The intersection of Mountain Industrial Boulevard and Stone Mountain Freeway (US 78/SR 10) Westbound Ramps fails to meet the Level of Service Standard in the AM Peak Hour.

Analysis shows that in addition to the improvements identified in the Future No-Build analysis, the following improvements are needed to the two intersections in order to meet the Level of Service Standard. The results for the Future Build Improvement scenario for these two intersections is shown in **Table 9**. The proposed improvements to these two intersections, along with the improvements for the proposed site driveways, is shown in **Figure 12**.

Mountain Industrial Boulevard at Hugh Howell Road (SR 236)

- Add westbound right-turn lane to Hugh Howell Road (SR 236)
- Add a second westbound left-turn lane to Hugh Howell Road (SR 236)
- Add northbound right-turn lane to Mountain Industrial Boulevard
- Add southbound right-turn lane to Mountain Industrial Boulevard

Mountain Industrial Boulevard at Stone Mountain Freeway (US 78/SR 10) Westbound Ramps

• Restripe westbound off ramp to one (1) shared left-turn/right turn lane and one (1) right turn lane.

Summary Synchro 8.0 signalized and unsignalized intersection analysis reports for each intersection for the Future (2022) Build Condition, are provided in the Appendix.



6.0 **RECOMMENDATIONS**

6.1 Future (2022) No-Build Recommendations

Based on the traffic analysis of the Future (2022) No-Build scenario with a background growth rate of 0.5% for six years from existing traffic conditions, the following improvements to the transportation network are recommended in order to maintain the Level of Service Standard for the intersections in the study network:

Mountain Industrial Boulevard at Hugh Howell Road (SR 236)

• Add eastbound right-turn lane to Hugh Howell Road (SR 236)

Hugh Howell Road (SR 236) at Rosser Road

• Signalize Intersection, if Warranted and subject to approval by GDOT

6.1 Future (2022) Build Recommendations

Based on the traffic analysis of the Future (2022) Build scenario with projected trips from the proposed Township Tucker Development added to the background traffic, the following improvements to the transportation network are recommended in order to maintain the Level of Service Standard for the intersections in the study network:

Mountain Industrial Boulevard at Hugh Howell Road (SR 236)

- Add westbound right-turn lane to Hugh Howell Road (SR 236)
- Add a second westbound left-turn lane to Hugh Howell Road (SR 236)
- Add northbound right-turn lane to Mountain Industrial Boulevard
- Add southbound right-turn lane to Mountain Industrial Boulevard

Mountain Industrial Boulevard at Stone Mountain Freeway (US 78/SR 10) Westbound Ramps

• Restripe westbound off ramp to one (1) shared left-turn/right turn lane and one (1) right turn lane.

6.1 Site Driveway Recommendations

The following intersection improvements and configurations recommended for the five proposed site driveways:

Hugh Howell Road (SR 236) at Site Drive #1

- Add eastbound left-turn lane in accordance with requirements of GDOT Driveway Manual
- Add westbound right-turn lane in accordance with requirements of GDOT Driveway Manual
- Site Driveway to consist of one (1) right-turn lane and one (1) left turn lane.
- Intersection controlled by side street stop control

Hugh Howell Road (SR 236) at Flintstone Drive/Site Drive #2

- Add eastbound left-turn lane in accordance with requirements of GDOT Driveway Manual
- Add westbound left-turn lane
- Add westbound right-turn lane in accordance with requirements of GDOT Driveway Manual
- Site Driveway to consist of one (1) shared though/right-turn lane and one (1) left turn lane.
- Intersection controlled by proposed traffic signal, if Warranted and subject to approval by GDOT

Hugh Howell Road (SR 236) at Site Drive #3

- Add eastbound left-turn lane in accordance with requirements of GDOT Driveway Manual
- Add westbound right-turn lane in accordance with requirements of GDOT Driveway Manual
- Site Driveway to consist of one (1) shared left-turn/right-turn lane.
- Intersection controlled by side street stop control

Mountain Industrial Boulevard at Site Drive #4

- Add northbound right-turn lane
- Site Driveway to consist of one (1) right-turn lane and one (1) left turn lane.
- Intersection controlled by side street stop control

Mountain Industrial Boulevard) at Site Drive #5

- Add northbound right-turn lane
- Site Driveway to consist of one (1) shared left-turn/right-turn lane.
- Intersection controlled by side street stop control

Appendix A Land Use and Zoning Map

<u>Appendix B</u> MARTA Bus Route Maps

Appendix C Historical ADT Volumes and Growth Analysis

<u>Appendix D</u> Existing Traffic Counts

<u>Appendix E</u> Trip Generation Analysis

<u>Appendix F</u> 7% Network Analysis

Appendix G Future Roadway Project Fact Sheets

<u>Appendix H</u> Existing (2016) Traffic Analysis Reports

<u>Appendix I</u> Future (2022) No-Build Traffic Analysis Reports

<u>Appendix J</u> Future (2022) No-Build With Improvements Traffic Analysis Reports

<u>Appendix K</u> Future (2022) Build Traffic Analysis Reports

<u>Appendix L</u> Future (2022) Build With Improvements Traffic Analysis Reports