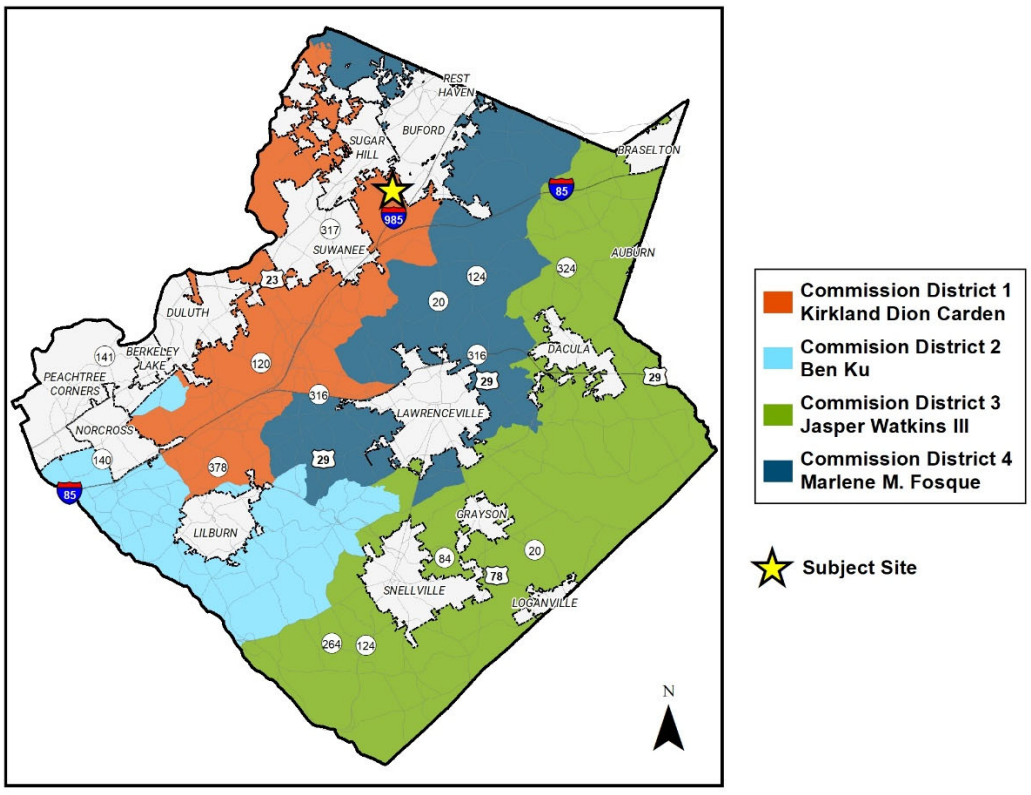
GWINNETT COUNTY
DEPARTMENT OF PLANNING AND DEVELOPMENT
446 West Crogan Street, Suite 300 | Lawrenceville, GA 30046-2440
678.518.6000
GwinnettCounty.com

PLANNING AND DEVELOPMENT DEPARTMENT
CASE REPORT

Case Number:	**RZM2022-00029**
Current Zoning:	**R-100** (Single-Family Residence District)
Request:	Rezoning to **RM-24** (Multi-Family Residence District)
Additional Request:	Buffer Reduction Waiver
Address:	1850 Satellite Boulevard
Map Number:	R7216 010
Site Area:	19.0
Units:	300
Proposed Development:	Apartments
Commission District:	District 1 – Commissioner Carden*
Character Area:	Established Neighborhoods

Staff Recommendation: **APPROVAL AS RM-13 WITH CONDITIONS**



*Commission District 4 effective January 1, 2023

Planning Commission Advertised Public Hearing Date: 7/6/2022
Board of Commissioners Advertised Public Hearing Date: 7/26/2022

Applicant:	Ken Wood 350 Research Court Peachtree Corners, GA 30092	**Owner:**	GVW Property Holdings, LLC 94 Peachtree Way NE Atlanta, GA 30305
Contact:	Ken Wood	**Phone:**	678.684.6206

Zoning History

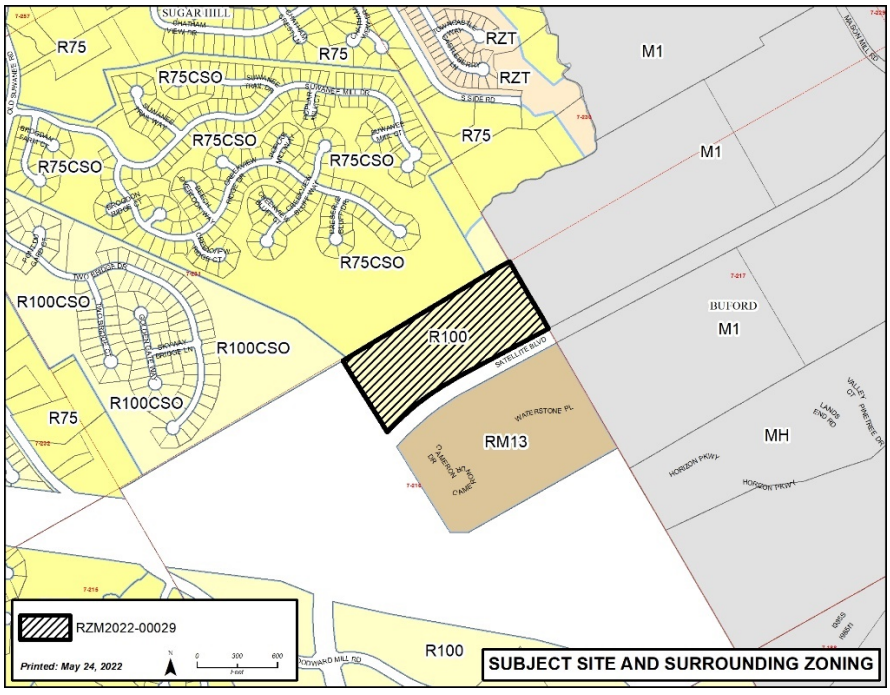
The subject property is zoned R-100 (Single-Family Residence District). No prior rezoning approvals are on record for this property.

Existing Site Condition

The subject site is a 19.0-acre parcel located on the west side of Satellite Boulevard, north of its intersection with Woodward Mill Road and 1.4 miles south of its intersection with Buford Drive. The property is undeveloped and heavily wooded. The topography slopes downward from south to north to a stream with associated buffers and approximately three acres of floodplain on the eastern portion of the property. Additionally, two 20-foot sanitary sewer easements transverse along the eastern side of the property. A sidewalk exists along the south side of Satellite Boulevard but not along the property frontage. The nearest Gwinnett County Transit stop is 1.8 miles from the site.

Surrounding Use and Zoning

The subject site is surrounded by single-family residential, multi-family residential, and warehouse uses, as well as undeveloped property reserved for future right of way of the Sugarloaf Parkway extension. The property borders the City of Buford to the east. The following is a summary of surrounding uses and zoning:



Location	Land Use	Zoning	Density
Proposed	Apartments	RM-24	18.73 units per acre
North	Single-Family Residential	R-75 CSO	2.52 units per acre
East	Industrial	M-1 (City of Buford)	N/A
South	Multi-Family Residential	RM-13	9.99 units per acre
West	Undeveloped Right of Way	N/A	N/A

Project Summary

The applicant requests rezoning of a 19.0-acre property zoned R-100 to RM-24 for apartments, including:

- 300 apartment units within four buildings, split with three, four, and five stories, yielding a net density of 18.73 units per acre.
- Building materials including brick, stone, and fiber-cement siding.
- Access provided via two entrances from Satellite Boulevard.
- A total of 8.18 acres (43 percent) of open space located along the northern and eastern property lines.
- An amenity area containing a pool toward the center and a dog park toward the north of the development.
- Parking provided through 241 surface spaces and a 286-space parking deck.
- A stormwater management facility along the northwest property line, within the 50-foot undisturbed zoning buffer.
- A trash compactor near the western property line.

Zoning and Development Standards

The applicant is requesting a rezoning to RM-24, Multi-Family Residence District. The following is a summary of applicable development standards from the Unified Development Ordinance (UDO):

Standard	Required	Proposed	Meets Standard?
Building Height	Maximum 65’	65’	YES
Front Yard Setback	Minimum 15’ (along Satellite Boulevard)	50’	YES
Side Yard Setback	Minimum 15’	15’	YES
Rear Yard Setback	Minimum 30’	30’	YES
Landscape Strip	Minimum 10’	10’	YES
Density	Maximum 24 units per acre	18.73 units per acre	YES
Common Area	20 percent	43 percent	YES
Parking	Minimum 450 spaces Maximum 900 spaces	527 spaces	YES
Zoning Buffer	50’ undisturbed adjacent to R-75 CSO	7’	NO*

*The applicant is requesting a buffer reduction.

Waiver Request

In addition to the rezoning request, the applicant is seeking a waiver from the following provision of Title III of the UDO:

1. Section 610-20. Minimum Buffer Requirements:
    A. Required buffers shall be provided in conformity [with] Table 610.1 "Table of Minimum Buffer Requirements".

    A 50' buffer is required between the new RM-24 development and the adjacent existing R-75 CSO zoned property.

A 50-foot natural and undisturbed permanent zoning buffer is required along the northern property line, adjacent to the existing R-75 CSO zoned property. The applicant is proposing to reduce the buffer from 50 feet to 7 feet to accommodate a proposed stormwater management facility.

Internal and External Agency Review

In addition to these Development Standards, the applicant must meet all other UDO requirements related to infrastructure improvements. Internal and external agency review comments are attached (Exhibit E). Standard site and infrastructure improvements will also be required related to transportation, stormwater, water, and sewer utilities. Recommended improvements not already required by the UDO have been added as staff recommended conditions.

Staff Analysis

Rezoning Request Analysis: According to the UDO, if a proposed amendment is for the rezoning of property the Department shall evaluate the request and make a recommendation with respect to the standards governing exercise of zoning power as defined in Section 270-20.5. After this evaluation, staff makes the following findings based on the standards from the UDO:

A. Whether a proposed zoning will permit a use that is suitable in view of the use and development of adjacent and nearby property.

The site is surrounded by residential and industrial uses. A single-family subdivision is to the north, and apartments are to the south across Satellite Boulevard. Warehouses are located to the east within the City of Buford. The proposed multi-family housing is suitable and compatible with the apartments across the street, although the proposed density of RM-24 zoning exceeds that of the surrounding area.

B. Whether a proposed rezoning will adversely affect the existing use or usability of adjacent or nearby property.

The existing use and usability of adjacent or nearby properties could be adversely impacted by the proposed density. The densities of the surrounding residential developments, including 9.99 units per acre for the apartments across Satellite Boulevard, are significantly lower than that which is proposed for the subject property. A multi-family development zoned RM-13 (Multi-

Family Residence District) would be more appropriate considering the density of the apartments to the south and the single-family residential subdivision to the north.

C. Whether the property to be affected by a proposed rezoning has a reasonable economic use as currently zoned.

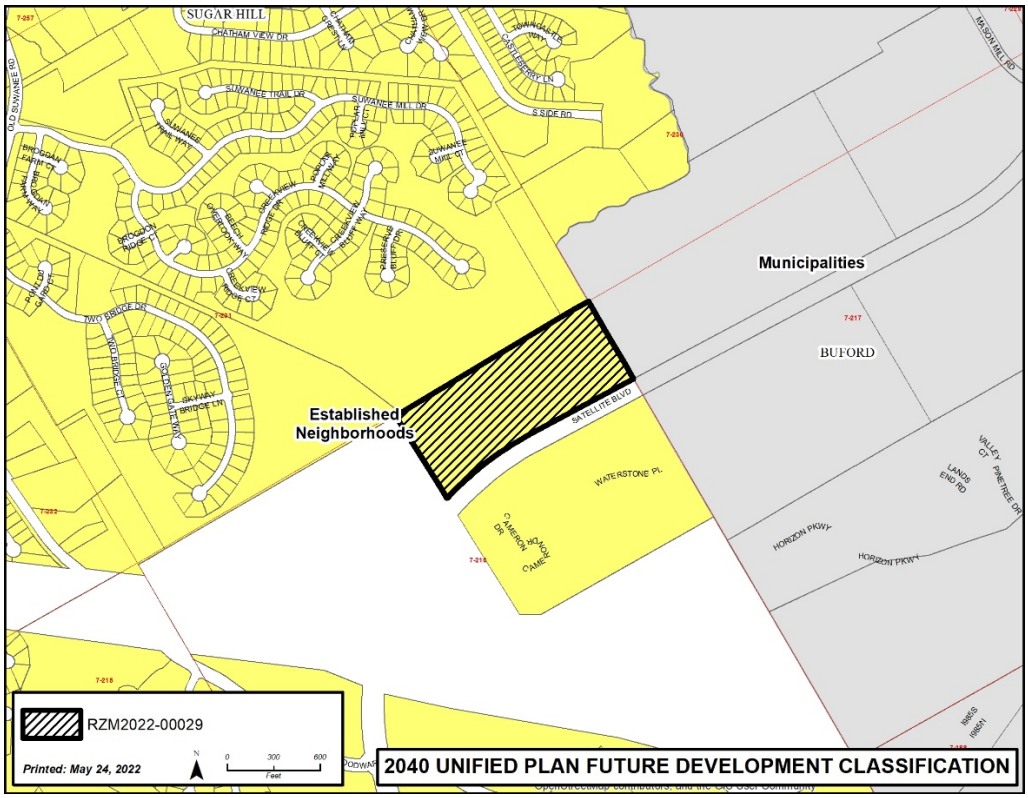
The property has a reasonable economic use as currently zoned.

D. Whether the proposed rezoning will result in a use which will or could cause an excessive or burdensome use of existing streets, transportation facilities, utilities, or schools.

An increase in impacts on public facilities would be anticipated in the form of traffic, utility demand, and stormwater runoff; however, appropriate conditions, site development requirements, and planning would mitigate these impacts. An increased impact is anticipated on school enrollment. Agency review comments related to any potential improvements concerning this rezoning request are attached (Exhibit E).

E. Whether the proposed rezoning is in conformity with the policy and intent of the Unified Plan and Future Development Map.

The 2040 Unified Plan Future Development Map indicates the subject property is within the Established Neighborhoods Character Area. This designation promotes consistency in scale, architecture, and use of new development and residential infill with surrounding properties. Multi-family residential zoning is consistent with the surrounding area, although the density allowed under RM-24 zoning exceeds that of other developments in the area. Apartments zoned RM-13 would provide a more compatible development and conform with the policy and intent of the Unified Plan and Future Development Map.



F. Whether there are other existing or changing conditions affecting the use and development of the property which give supporting grounds for either approval or disapproval of the proposed rezoning.

A recent housing study conducted in partnership with Gwinnett County has identified the need for multi-family housing. Apartments would support nearby employment uses in Buford, Suwanee, and near the Mall of Georgia, providing grounds for the approval of multi-family residential zoning; however, the density and character of the surrounding area support an RM-13 designation rather than the requested RM-24.

Waiver Request Analysis: When considering waivers from Title III of the UDO, staff is required to review whether an undue hardship may result from strict compliance with the regulations and that approval would not adversely affect the general public welfare or nullify the intent of the Development Regulations. In addition, there must be a determination that there are unusual topographical or other exceptional conditions. Staff makes the following findings related to the waiver request:

The stream and sewer easements bisecting the property create an undue hardship and restrict location options for providing a stormwater management facility. Moreover, the requested buffer reduction waiver would not adversely affect the general public welfare or nullify the intent of the Development Regulations. A stream to the north of the subject property provides an additional natural and undisturbed area between the proposed development and the adjacent single-family residential lots in the subdivision.

Staff Recommendation

Based on the staff's evaluation of the request and the standards governing exercise of zoning power, the Department of Planning and Development recommends **APPROVAL WITH CONDITIONS** of the rezoning request.

In addition, staff recommends **APPROVAL** of the following waiver:

1. To reduce the required buffer along the R-75 CSO property line to the east from 50 feet to 7 feet.

Staff Recommended Conditions

Approval as **RM-13** (Multi-Family Residence District) for the development of a multi-family residential development, subject to the following conditions:

1. The proposed development shall be constructed in general conformance with Exhibit B: Site Plan dated received May 19, 2022, Exhibit C: Building Elevations dated received May 5, 2022, with revisions required by conditions of approval as reviewed and approved by the Department of Planning and Development.
2. Uses on the site shall be limited to multifamily dwellings with a maximum density of 13 units per acre and accessory uses and structures.
3. The minimum heated floor area per dwelling unit shall be 600 square feet. Efficiency units shall be prohibited, and the complex shall be limited to a maximum of 10 percent of units as three bedrooms or larger.

4. Buildings shall be constructed to the standards of the Design Category 3. Building elevations shall be submitted for review and approval by the Department of Planning and Development prior to the issuance of a development permit.

5. To promote internal pedestrian connectivity between buildings and throughout the site, the applicant shall provide a pedestrian circulation plan for the site, subject to the review and approval of the Department of Planning and Development.

6. All grassed areas shall be sodded.

7. Stormwater BMP facilities shall be screened from view of adjoining properties and rights of way by decorative fencing and/or landscaping in compliance with the Gwinnett County Stormwater Management Manual.

8. Amenity areas shall consist of, at minimum, a common area including a swimming pool, clubhouse, and fitness center. The design and location of all common areas shall be subject to the review and approval of the Department of Planning and Development.

9. Buildings located along the right of way shall have direct pedestrian access to the external sidewalk.

10. All road frontages shall be landscaped by the developer and maintained by the property management company. Entrances shall include a decorative masonry entrance feature. Landscape and entrance feature plans shall be subject to review and approval by the Department of Planning and Development.

11. The developer shall amend the traffic impact study to include a signal warrant analysis at the proposed full access entrance offset with Waterstone Place.

12. The developer shall provide a turnaround and include a minimum of 30 feet of stacking space between the gate and the right of way at all gated entrances.

13. The developer shall either align the right-in/right-out entrance with the existing median cut or modify the existing median cut to align with the proposed right-in/right-out entrance.

Exhibits:

A. Site Visit Photo
B. Site Plan
C. Building Elevations
D. Letter of Intent and Applicant's Response to Standards
E. Internal and External Agency Review Comments
F. Traffic Impact Study
G. Maps

Exhibit A: Site Visit Photo

View from Satellite Boulevard

Exhibit B: Site Plan

[attached]

SITE DATA:	
TOTAL SITE AREA	18.99 ACRES
ZONING	
EXISTING ZONING	R-100
PROPOSED ZONING	RM-24
ZONING JURISDICTION	GWINNETT COUNTY, GEORGIA
RM24 SETBACK REQUIREMENTS	
FRONT PROPERTY SETBACK	50 FEET (SATELLITE BLVD./MAJOR THOROUGHFARE)
FRONT SETBACK	15 FEET
SIDE SETBACK	15 FEET
REAR SETBACK	30 FEET
UNDISTURBED ZONING BUFFER	50 FEET (AGAINST R75CSO ZONED PROPERTY)
LANDSCAPE STRIP	10 FEET (ADJACENT TO STREET ROW)
MAX. BUILDING HEIGHT	65 FEET
PROPOSED SETBACK REQUIREMENTS	
FRONT PROPERTY SETBACK	50 FEET (SATELLITE BLVD./MAJOR THOROUGHFARE)
FRONT SETBACK	15 FEET
SIDE SETBACK	15 FEET
REAR SETBACK	30 FEET
UNDISTURBED ZONING BUFFER	50 FEET (AGAINST R75CSO ZONED PROPERTY)
LANDSCAPE STRIP	10 FEET (ADJACENT TO STREET ROW)
MAX. BUILDING HEIGHT	65 FEET

SITE DATA:	
TOTAL SITE AREA	18.99 ACRES
USE CALCULATIONS	
TOTAL SITE AREA	18.99 ACRES
FLOOD HAZARD ESMT.	1.48 ACRES (2.97 AC x 50%)
TOTAL NET LAND AREA	16.02 ACRES (18.99 AC - 2.97 AC)
RECREATIONAL AMENITY STANDARDS	
MULTI-FAMILY APARTMENTS	300 UNITS
GROSS SITE DENSITY PROVIDED	15.79 UPA
NET SITE DENSITY PROVIDED	16.73 UPA
MAX. NET SITE DENSITY ALLOWED	24.0 UPA
RM24 OPEN SPACE CALCULATIONS	
MIN. OPEN SPACE REQUIRED	3.8 ACRES (20% OF TOTAL SITE AREA)
OPEN SPACE PROVIDED	8.18 ACRES (43% OF TOTAL SITE AREA)
MULTI-FAMILY PARKING REQUIREMENTS	
MIN. PARKING SPACES REQUIRED	450 SPACES (1.5 SPI DWELLING UNIT)
MAX. PARKING SPACES ALLOWED	900 SPACES (3 SPI DWELLING UNIT)
TOTAL PARKING PROVIDED	527 SPACES (1.7 SPI DWELLING UNIT)

GWINNETT COUNTY
PLANNING AND DEVELOPMENT
RECEIVED
May 19, 2022

A BUFFER REDUCTION WAIVER IS REQUESTED TO ALLOW THE STORMWATER MANAGEMENT INTO THE UNDISTURBED ZONING BUFFER

BUILDINGS NOT ALLOWED TO BE WITHIN ZONE OF INFLUENCE OF SANITARY SEWER

ALL PORTIONS OF BUILDING SHALL BE ACCESSIBLE BY FIRE DEPARTMENT

10' MULTI-USE TRAIL

120' PUBLIC R/W
SATELLITE BOULEVARD
D.B. 24933, P. 249

SITE LOCATION MAP
NOT TO SCALE

FEMA FIRM MAP
NOT TO SCALE

24 HOUR CONTACT:
HEATH HAWKINS

GEORGIA811
www.Georgia811.com
Know what's below. Call before you dig.

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Planners & Engineers Collaborative+
LAND PLANNING + LANDSCAPE ARCHITECTURE + CIVIL ENGINEERING
ARBORISTS + SURVEYING & CONSTRUCTION + WATER RESOURCES
350 RESEARCH COURT STE 200
PEACHTREE CORNERS, GA 30092

PROJECT
1850 SATTELITE
A MASTER PLANNED RESIDENTIAL DEVELOPMENT
AT
1850 SATTELITE BOULEVARD
GWINNETT COUNTY JURISDICTION

FOR
THIRD LAKE DEVELOPMENT

MUNICIPALITY PROJECT #

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	5/18/2022	SL	REVISIONS PER STAFF COMMENTS

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.
GEORGIA REGISTERED No. 34393 PROFESSIONAL ENGINEER KENNETH J WOOD
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000059389 EXP. 10/28/2021

CONCEPTUAL MASTER PLAN

0 30 60 120 180

SCALE: 1" = 60'
DATE: 03/21/2022
PROJECT: 22057.00

Z1
SHEET

360 STUDIO | PEC+ Planners & Engineers Collaborative+

SATELLITE BOULEVARD
GWINNETT COUNTY, GA

SITE RENDERING

Exhibit C: Building Elevations

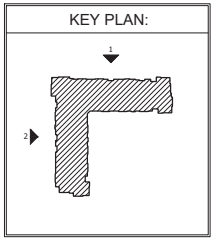
[attached]

GWINNETT COUNTY
PLANNING AND DEVELOPMENT

RECEIVED

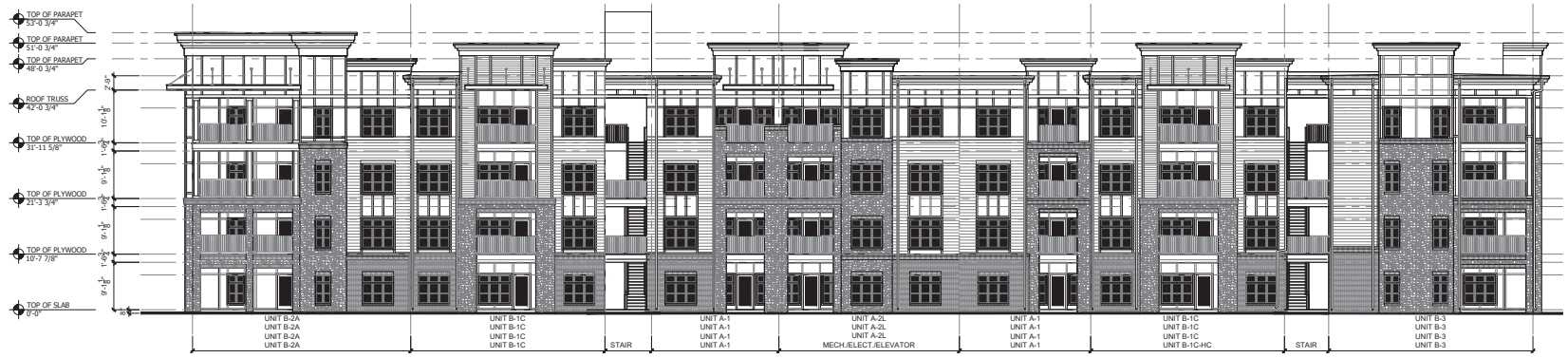
May 5, 2022

KEY PLAN:



ELEVATION KEYNOTES:

1	CANOPY - SEE DETAIL 5/A8-14
2	T.P.O. RUBBER ROOFING (SLOPE: 1/4" OVER 1'-0" MIN.)
3	ALUM. GUTTER AT LOW ROOF
4	HARDIE FIBER CEMENT 6" LAP SIDING AND 4" EXPOSURE
5	FIBER CEMENT TRIM
6	CEMENT FIBER PANELS W/ 1x4 CEMENT FIBER BATTENS
7	STONE
8	BRICK
9	BRICK SOLDIER
10	CORNICE - SEE DETAIL 1/A8-14
11	RAILING AT BALCONY
12	ROOFTOP ACCESS STAIR - SEE SECTION 1/A6-15
13	VINYL WINDOWS
14	42" HIGH 2X6 KNEE WALL W/ FAUX STONE CAP
15	ALUM. DOWNSPOUT
	INSTALL SOLID BLOCKING AT ALL CABLES AND BRACKETS. SEE STRUCTURAL.



1 A5-2A BUILDING 3000 EXTERIOR ELEVATION
3/32" = 1'-0"

2 A5-2A BUILDING 3000 EXTERIOR ELEVATION
3/32" = 1'-0"

gla
GLA-ATL, LLC
WWW.GLAATL.COM

RELEASE DATES:

REV	# DATE	DESCRIPTION

STAMP:

CLIENT:
THIRD LAKE DEVELOPMENT

PROJECT:
Satellite BLVD

DRAWING TITLE:
BUILDING CONCEPT ELEVATIONS

DRAWN BY:

SCALE: AS NOTED | DATE: 4/29/2022

PROJECT NUMBER: -

DRAWING NUMBER:
A5-2A

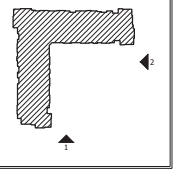
NOT FOR CONSTRUCTION

GWINNETT COUNTY
PLANNING AND DEVELOPMENT

RECEIVED

May 5, 2022

KEY PLAN:



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3	ALUM. GUTTER AT LOW ROOF
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5	FIBER CEMENT TRIM
6	CEMENT FIBER PANELS W/ 1x4 CEMENT FIBER BATTENS
7	STONE
8	BRICK
9	BRICK SOLDIER
10	CORNICE - SEE DETAIL 1/A8-14
11	RAILING AT BALCONY
12	ROOFTOP ACCESS STAIR - SEE SECTION 1/A6-15
13	VINYL WINDOWS
14	42" HIGH 2X6 KNEE WALL W/ FAUX STONE CAP
15	ALUM. DOWNSPOUT
	INSTALL SOLID BLOCKING AT ALL CABLES AND BRACKETS. SEE STRUCTURAL

1 A5-2B BUILDING 2000 EXTERIOR ELEVATION
3/32" = 1'-0"

2 A5-2B BUILDING 2000 EXTERIOR ELEVATION
3/32" = 1'-0"

gla
GLA-ATL, LLC
WWW.GLAATL.COM

RELEASE DATES:

REV	#	DATE	DESCRIPTION

STAMP:

CLIENT:
THIRD LAKE DEVELOPMENT

PROJECT:
Satellite BLVD

DRAWING TITLE:
BUILDING CONCEP ELEVATIONS

DRAWN BY:

SCALE: AS NOTED
DATE: 4/29/2022

PROJECT NUMBER:

DRAWING NUMBER:
A5-2B

NOT FOR CONSTRUCTION

Exhibit D: Letter of Intent and Applicant's Response to Standards

[attached]

5/18/2022

Re: **Letter of Intent (Revised)**
Satellite Boulevard Rezoning (+/-18.99 acres)
PEC+ Project No. 22057.00

Dear Community Development officials,

This rezoning application is being submitted on behalf of the developer and applicant. This application proposes to rezone the approximately 19-acre property located on the north side of Satellite Boulevard from R-100 to RM-24. This rezoning would facilitate the development of a new 300-unit multi-family apartment community.

Existing Conditions:
The uses surrounding the property include:

- North: single-family detached homes
- East: Light industrial complexes
- South: Waterstone Apartments
- West: Undeveloped land and single-family detached homes

As it currently exists, the subject property is located on the north side of Satellite Boulevard across from the intersection with Waterstone Place. The tract is undeveloped with two 20-foot sanitary sewer easements running along the eastern side of the property. There is also a floodplain that falls in between the easements.

Proposed Development
The proposed development consists of 300 multi-family units (apartments). The units will be split between four different buildings located throughout the property. Due to the almost 1.5 acres of floodplain, there will be a net density of 18.73 units per acre which assists in supporting the Workplace Centers and Innovation Districts located within a three-mile radius of the site. The creation of development in this area will provide a live-work environment for future residents with lower commute times and quality housing.

Although the request is to rezone this property to RM-24, the gross density of 15.79 units per acre shows a closer relationship to the RM-13 zoning district. In essence, this will have a similar impact to the neighboring properties in relation to traffic and school, along with the overall feel of the development.

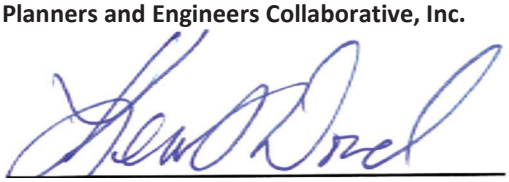
The proposed development would be accessed from Satellite Boulevard opposite Waterstone Place, with no vehicular access to the surrounding neighborhoods. There will be a secondary access slightly farther west along Satellite Boulevard. There will be a bark park and a little over eight acres of open space provided within the community. A pool and amenity area will also be located centrally to the built site. The proposed buildings would be buffered from the surrounding development by the substantial natural features (vegetation and streams) existing on site along the property lines. There is a stormwater facility proposed on the site that would collect runoff during significant rain events.

As previously mentioned, the location of the floodplain removes almost 6 acres of land from the site, so that all developable land and necessary facilities have been pushed to the northern and western property lines. A buffer reduction waiver is therefore requested to decrease the undisturbed zoning buffer from 50’ to 7’ along where the facility is proposed. The R-75 residential development to the north has over 450’ of undisturbed open space between the nearest single-family detached lot and this site’s property line. The nearest proposed multi-family building is also lies almost 70’ from the property line; the development is not anticipated to impact existing homeowners to the north. Due to the existing land constraints and the open space to the north, the location and size of the stormwater facility is deemed the best possible fit for the site, mitigating runoff into Suwanee Creek which runs above the northern property line and through the eastern side of the site.

350 Research Ct, Ste. 200, Peachtree Corners, Georgia 30092 ■ 48 Atlanta Street, Marietta, Georgia 30060
Main: (770) 451-2741 ■ Fax: (770) 451-3915
www.pecatl.com

The applicant and owner respectfully request that the Gwinnett County Board of Commissioners, Planning Commission and Planning Staff approve and support the Applicant's rezoning request to allow for the rezoning of this property from R-100 to RM-24. This would facilitate the development of a new, 300-unit multi-family apartment community that would contribute to the advancement of the purpose and intent of the Gwinnett County comprehensive plan. The developer and their representatives welcome the opportunity to meet with all interested parties and representatives.

Sincerely,
Planners and Engineers Collaborative, Inc.



REZONING APPLICANT'S RESPONSE

STANDARDS GOVERNING THE EXERCISE OF THE ZONING POWER

PURSUANT TO REQUIREMENTS OF THE UNIFIED DEVELOPMENT ORDINANCE, THE BOARD OF COMMISSIONERS FINDS THAT THE FOLLOWING STANDARDS ARE RELEVANT IN BALANCING THE INTEREST IN PROMOTING THE PUBLIC HEALTH, SAFETY, MORALITY OR GENERAL WELFARE AGAINST THE RIGHT TO THE UNRESTRICTED USE OF PROPERTY AND SHALL GOVERN THE EXERCISE OF THE ZONING POWER.

PLEASE RESPOND TO THE FOLLOWING STANDARDS IN THE SPACE PROVIDED OR USE AN ATTACHMENT AS NECESSARY:

(A) WHETHER A PROPOSED REZONING WILL PERMIT A USE THAT IS SUITABLE IN VIEW OF THE USE AND DEVELOPMENT OF ADJACENT AND NEARBY PROPERTY:

SEE ATTACHED

(B) WHETHER A PROPOSED REZONING WILL ADVERSELY AFFECT THE EXISTING USE OR USABILITY OF ADJACENT OR NEARBY PROPERTY:

SEE ATTACHED

(C) WHETHER THE PROPERTY TO BE AFFECTED BY A PROPOSED REZONING HAS REASONABLE ECONOMIC USE AS CURRENTLY ZONED:

SEE ATTACHED

(D) WHETHER THE PROPOSED REZONING WILL RESULT IN A USE WHICH WILL OR COULD CAUSE AN EXCESSIVE OR BURDENSOME USE OF EXISTING STREETS, TRANSPORTATION FACILITIES, UTILITIES, OR SCHOOLS:

SEE ATTACHED

(E) WHETHER THE PROPOSED REZONING IS IN CONFORMITY WITH THE POLICY AND INTENT OF THE LAND USE PLAN:

SEE ATTACHED

(F) WHETHER THERE ARE OTHER EXISTING OR CHANGING CONDITIONS AFFECTING THE USE AND DEVELOPMENT OF THE PROPERTY WHICH GIVE SUPPORTING GROUNDS FOR EITHER APPROVAL OR DISAPPROVAL OF THE PROPOSED REZONING:

SEE ATTACHED

5/5/2022

Re: **Zoning Standards Analysis**
Satellite Boulevard Rezoning (+/-18.99 acres)
PEC+ Project No. 22057.00

Dear Community Development officials,

Please see below the responses to the Standards Governing the Exercise of the Zoning Power:

The following standards and factors are found to be relevant to the exercise of the county's zoning powers and shall govern the review of all proposed amendments to the official zoning map:

A. Whether a proposed rezoning will permit a use that is suitable in view of the use and development of adjacent and nearby property:
The proposed rezoning will permit a use that is suitable in view of the use and development of adjacent and nearby properties. The proposal is a new, new 300-unit multi-family apartment community located on the north side of Satellite Boulevard across from the intersection with Waterstone Place. Given the site's location along a major thoroughfare (Satellite Boulevard) and its vicinity to light industrial uses, the proposed land use of high-density residential apartments is reasonable at this location. The proposal also matches the land use of the apartment complex on the southside of Satellite Boulevard and acts as a buffer and transitional point between the single-family residences to the west and north. The proposal would maintain all stream buffers, and would have access only onto Satellite Boulevard, so as not to disturb the properties to the north. Nearby properties will not be affected by the proposal.

B. Whether a proposed rezoning will adversely affect the existing use or usability of adjacent or nearby property:
The zoning proposal will not adversely affect the existing use or usability of adjacent or nearby properties. Most of the nearby properties are already developed into residential uses with large amounts of open space buffering the site's property line or light industrial uses, such as warehousing. The proposal includes measures to ensure compatibility to have as few effects on neighboring properties as possible, including 50' transitional buffers along adjoining lot lines, and keeping the stream buffer and floodplain areas undisturbed.

C. Whether the property to be affected by the zoning proposal has a reasonable economic use as currently zoned.
The proposal loses much of its economic use because of factors that are outside of the applicant's control. Almost half of the property is undevelopable due to the two sanitary sewer easements and the floodplain on the eastern side of the site. Under its current zoning designation, R-100, is limited in its development potential. Although the request is to rezone the property to RM-24, the density is closer to RM-13 which will allow the site to be effectively and efficiently designed to provide a far more reasonable economic use without causing strain to the nearby infrastructure and facilities.

D. Whether the proposed rezoning will result in a use which will or could cause an excessive or burdensome use of existing streets, transportation facilities, utilities, or schools:
The proposed rezoning will not result in a use which will or could cause an excessive or burdensome use of existing streets, transportation facilities, utilities, or schools. The multi-family units are targeted toward younger families, young professionals, and older persons looking to downsize. Due to this diverse market, it is not anticipated that the development will cause an excessive burden on nearby schools. Utilities on-site are being explored by the development team; the developer will make upgrades (if any) to facilitate the development. The site plan includes a master stormwater pond to collect runoff from significant rain events, so nearby properties will not experience flooding from this site.

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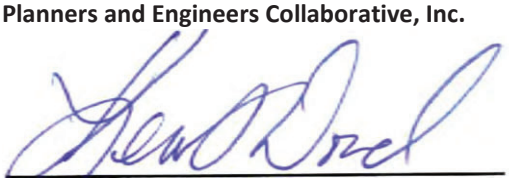
Main: (770) 451-2741 ■ Fax: (770) 451-3915
www.pecatl.com

E. Whether the proposed rezoning is in conformity with the policy and intent of the land use plan:
The proposed rezoning is in conformity with the policy and intent of the comprehensive plan. The Plan identifies the site as part of the 'Established Neighborhoods' character area, but it is also directly on the cusp of Workplace Centers and Innovation Districts designations. The proposed use would support the workplace centers and nearby innovation districts, which contribute to the overall health of the two regional activity centers that are just down the road from the site.

F. Whether there are other existing or changing conditions affecting the use and development of the property which give supporting grounds for either approval or disapproval of the proposed rezoning:
The site should be rezoned to facilitate the proposed development for several reasons, but perhaps the most compelling is the site's location. The area surrounding the site has become a major activity center in Gwinnett County, and is only going to continue to grow as the County itself grows. This plan is a forward-thinking proposal that will provide additional high-quality housing in an area that will support a growing population and economic development.

Sincerely,
Planners and Engineers Collaborative, Inc.



Kenneth J. Wood, P.E., LEED AP
President

For the Firm

kjw/ht/dp

Exhibit E: Internal and External Agency Review Comments

[attached]

TRC Meeting Date:	6.15.22
Department/Agency Name:	Transportation
Reviewer Name:	Brent Hodges
Reviewer Title:	Construction Manager 1
Reviewer Email Address:	Brent.Hodges@gwinnettcounty.com
Case Number:	RZM2022-00029
Case Address:	1850 Satellite Boulevard

	Comments:	**X**	**YES**		**NO**
1	Satellite Boulevard is a major arterial. ADT = 8,231.				
2	1.8 miles to nearest transit facility (#2334754) Buford Park and Ride.				
3	Provide sight distance certification for ALL driveways/streets connecting to classified roads in accordance with sections 900-40.6 and 900-50.7 of the Unified Development Ordinance (UDO).				
4	The Traffic Impact Study (TIS) indicates (275) dwelling units; however, the rezoning package indicates (300) units. Please clarify the appropriate dwelling amount.				
5	Recommend the applicant modify the trip distribution on the TIS to show more project traffic on Satellite Boulevard heading north to I-985.				
6					
7					

	Recommended Zoning Conditions:	**X**	**YES**		**NO**
1	The Developer shall amend the Traffic Impact Study (TIS) to include a signal warrant analysis at the proposed full access entrance offset with Waterstone Place.				
2	Developer shall provide a turnaround and include a minimum of 30’ of stacking space between the gate and the right-of-way at all gated entrances.				
3	Developer shall either align the right-in/right-out entrance with the existing median cut or modify the existing median cut to align with the proposed right-in/right-out entrance.				
4					
5					
6					
7					

Note: Attach additional pages, if needed

Revised 7/26/2021

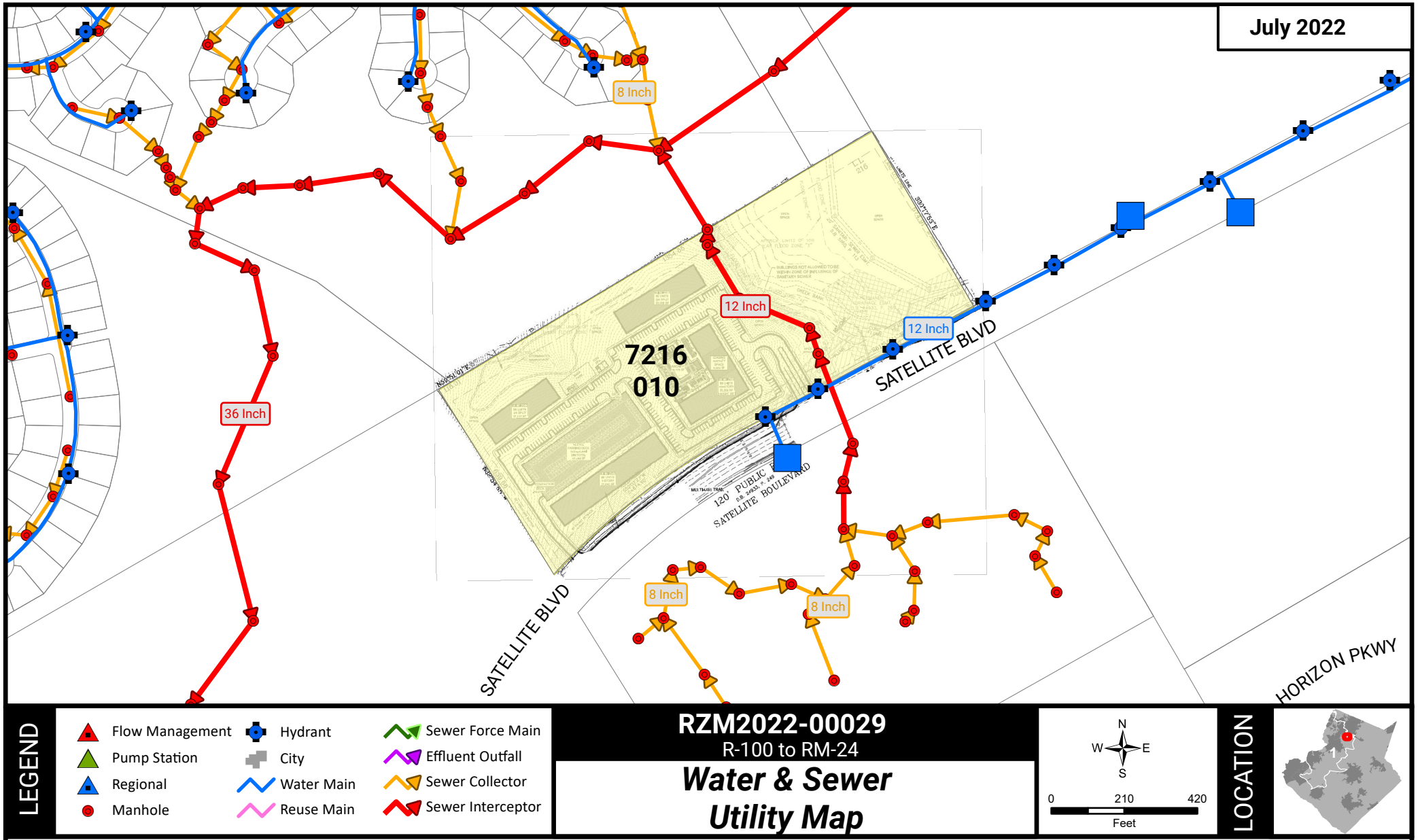
TRC Meeting Date:	June 15, 2022
Department/Agency Name:	DWR
Reviewer Name:	Mike Pappas
Reviewer Title:	GIS Planning Manager
Reviewer Email Address:	Michael.Pappas@gwinnettcounty.com
Case Number:	RZM2022-00029
Case Address:	1850 Satellite Boulevard

	Comments:	**X**	**YES**		**NO**
1	Water: The development may connect to an existing 12-inch water main located on the north right-of-way of Satellite Boulevard.				
2	Water: The existing 12-inch water main will need to be extended approximately 775 feet across the frontage of the development.				
3	Sewer: A Sewer Capacity Certification is currently under review to confirm capacity.				
4	Sewer: Pending available sewer capacity, proposed development may connect to an existing 12-inch sanitary sewer main located on the subject parcel.				
5					
6					
7					

	Recommended Zoning Conditions:		**YES**	**X**	**NO**
1					
2					
3					
4					
5					
6					
7					

Note: Attach additional pages, if needed

Revised 7/26/2021



LEGEND

- Flow Management
- Pump Station
- Regional
- Manhole
- Hydrant
- City
- Water Main
- Reuse Main
- Sewer Force Main
- Effluent Outfall
- Sewer Collector
- Sewer Interceptor

RZM2022-00029
R-100 to RM-24

Water & Sewer Utility Map

N
W E
S

0 210 420
Feet

LOCATION

Water Comments: The development may connect to an existing 12-inch water main located on the north right-of-way of Satellite Boulevard. The existing 12-inch water main will need to be extended approximately 775 feet across the frontage of the development.

Sewer Comments: A Sewer Capacity Certification is currently under review to confirm capacity. Pending available sewer capacity, proposed development may connect to an existing 12-inch sanitary sewer main located on the subject parcel.

Water Availability: Water demands imposed by the proposed development may require upsizing or extensions of existing water mains in order to meet Gwinnett County Standards and fire flow demands. Any cost associated with such required improvements will be the responsibility of the development. Current Gwinnett County Standards require a minimum of 12" pipe size for commercial developments and a minimum of 8" pipe size for residential developments. Additionally, connection to a minimum of 12" and 8" mains are required for commercial and residential developments, respectively. It is the responsibility of the developer's engineer to confirm pressure and volumes are available for the development.

Sewer Availability: A Sewer Capacity Certification must be obtained from Gwinnett County to confirm the existing system can serve the development. Sewer demands imposed by the proposed development may require upsizing and/or extensions of existing sewer mains, and/or upsizing of an existing pump station, and/or installation of a new pump station. Any cost associated with such required improvements will be the responsibility of the development. The developer shall provide easements for future sewer connection to all locations designated by Gwinnett County during plan review.

Water and Sewer Design and Construction Requirements: Extensions of the water and/or sanitary sewer systems within the subject development must conform to this department's policies, Gwinnett County's ordinances, and the Water Main and Sanitary Sewer Design and Construction Standards and Specifications, dated April 5th, 2016. Subsequent to design, construction, inspection, and final acceptance of the required utilities, service would then become available under the applicable utility permit rate schedules.

Private Road Developments: Any development with private roads must comply with the Standard Policy Requirement for the Installation of Water and Sanitary Sewer Mains within Private Developments. This policy stipulates minimum easement requirements and location of public mains and appurtenances, among other requirements.

Exhibit F: Traffic Impact Study

[attached]

TRAFFIC IMPACT STUDY
FOR
RESIDENTIAL DEVELOPMENT AT
1850 SATELLITE BOULEVARD

GWINNETT COUNTY, GEORGIA

Prepared for:

Third Lake Development, LLC
1600 E. 8th Avenue
Suite A132
Tampa, FL 33605

Prepared By:

A&R Engineering Inc.
2160 Kingston Court, Suite O
Marietta, GA 30067
Tel: (770) 690-9255 Fax: (770) 690-9210
www.areng.com

May 05, 2022
A & R Project # 22-081

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1.0 INTRODUCTION

The purpose of this study is to determine the traffic impact from the proposed residential development at 1850 Satellite Boulevard in Gwinnett County, Georgia. The traffic analysis evaluates the current operations and future conditions with the traffic generated by the development. The proposed development will consist of 275 units of Multifamily Housing.

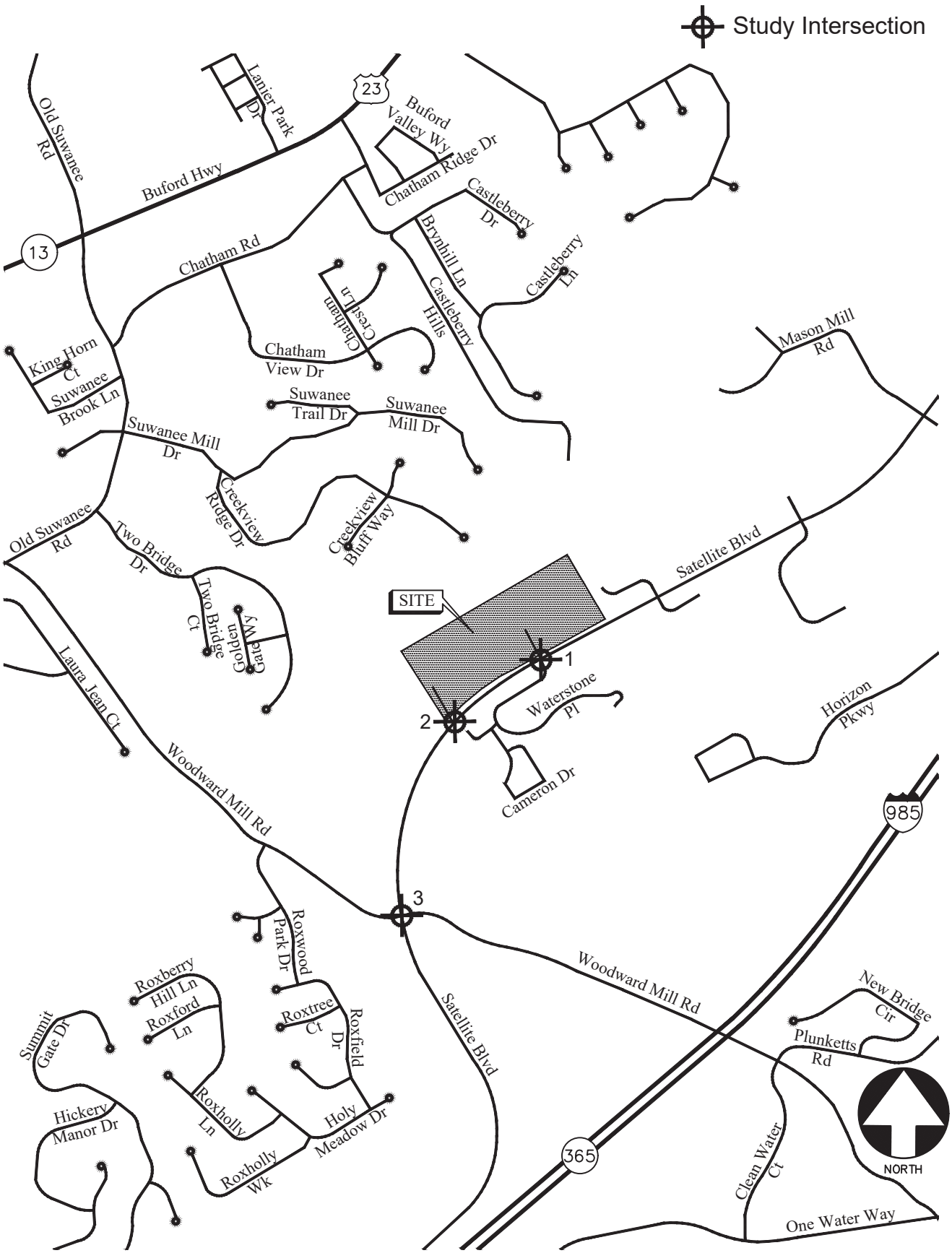
The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on Satellite Boulevard aligns with Waterstone Place
- Site Driveway 2: Right-in/right-out driveway on Satellite Boulevard (south of the existing median break)

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

- Satellite Boulevard at Waterstone Place
- Satellite Boulevard at Median Opening (south of Waterstone Place)
- Satellite Boulevard at Woodward Mill Road

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the development and the surrounding roadway network is shown in Figure 1.



LOCATION MAP FIGURE 1

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2.0 EXISTING FACILITIES / CONDITIONS

2.1 Roadway Facilities

The following is a brief description of each of the roadway facilities located in proximity to the site:

2.1.1 Satellite Boulevard

Satellite Boulevard is a north-south, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. Georgia Department of Transportation (GDOT) traffic counts (Station ID's 135-6725 & 135-6727) indicate that the daily traffic volume on Satellite Boulevard in 2019 was 10,900 vehicles per day Southwest of Sudderth Road and 13,000 vehicles per day Northeast of Saw Mill Ct. GDOT classifies Satellite Boulevard as an Urban Minor Arterial roadway.

2.1.2 Woodward Mill Road

Woodward Mill Road is an east-west, two-lane, undivided roadway and posted with a speed limit of 35 mph.

3.0 STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

3.1 Unsignalized Intersections

For unsignalized intersections controlled by a stop sign on minor streets, the level-of-service (LOS) for motor vehicles with controlled movements is determined by the computed control delay according to the thresholds stated in Table 1 below. LOS is determined for each minor street movement (or shared movement), as well as major street left turns. LOS is not defined for the intersection as a whole or for major street approaches. The LOS of any controlled movement which experiences a volume to capacity ratio greater than 1 is designated as "F" regardless of the control delay.

Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross the main road without experiencing long total delays.

TABLE 1 – LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

*The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection.

Source: Highway Capacity Manual, 6th edition, Exhibit 20-2 *LOS Criteria: Motorized Vehicle Mode*

3.2 Signalized Intersections

According to HCM procedures, LOS can be calculated for the entire intersection, each intersection approach, and each lane group. HCM uses control delay alone to characterize LOS for the entire intersection or an approach. Control delay per vehicle is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Both control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. A volume-to-capacity ratio of 1.0 or more for a lane group indicates failure from capacity perspective. Therefore, such a lane group is assigned LOS F regardless of the amount of control delay.

Table 2 below summarizes the LOS criteria from HCM for motorized vehicles at signalized intersection.

TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)*	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

*For approach-based and intersection wide assessments, LOS is defined solely by control delay

Source: Highway Capacity Manual, 6th edition, Exhibit 19-8 *LOS Criteria: Motorized Vehicle Mode*

LOS A is typically assigned when the volume-to-capacity (v/c) ratio is low and either progression is exceptionally favorable, or the cycle length is very short. LOS B is typically assigned when the v/c ratio is low and either progression is highly favorable, or the cycle length is short. However, more vehicles are stopped than with LOS A. LOS C is typically assigned when progression is favorable, or the cycle length is moderate. Individual *cycle failures* (one or more queued vehicles are not able to depart because of insufficient capacity during the cycle) may begin to appear at this level. Many vehicles still pass through the intersection without stopping, but the number of vehicles stopping is significant. LOS D is typically assigned when the v/c ratio is high and either progression is ineffective, or the cycle length is long. There are many vehicle-stops and individual cycle failures are noticeable. LOS E is typically assigned when the v/c ratio is high, progression is very poor, the cycle length is long, and individual cycle failures are frequent. LOS F is typically assigned when the v/c ratio is very high, progression is very poor, the cycle length is long, and most cycles fail to clear the queue.

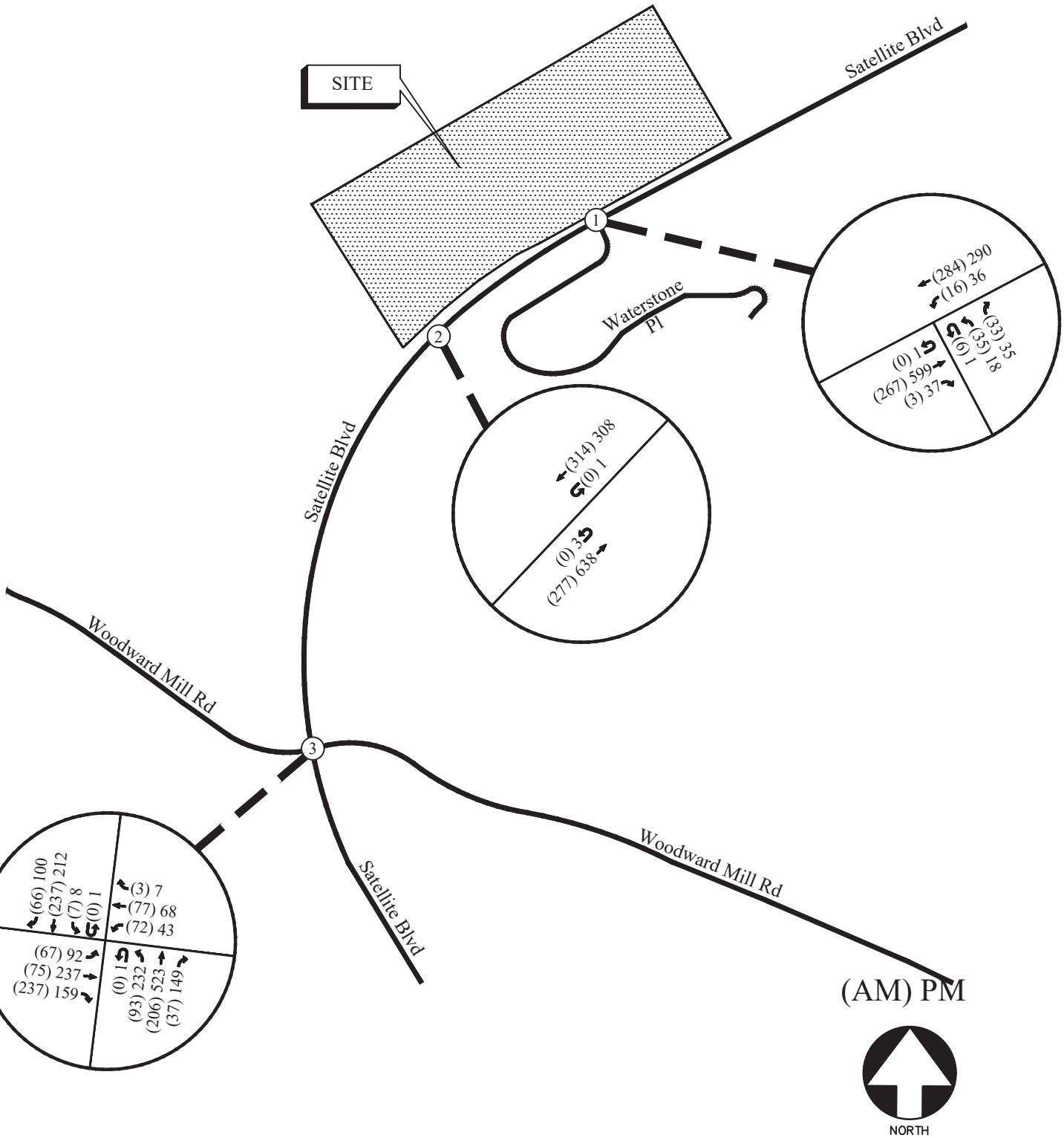
4.0 EXISTING 2022 TRAFFIC ANALYSIS

4.1 Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

- Satellite Boulevard at Waterstone Place
- Satellite Boulevard at Median Opening
- Satellite Boulevard at Woodward Mill Road

Turning movement counts were collected by National Data & Surveying Services on Wednesday, April 27, 2022. Heavy trucks and buses were included separately in the counts. All turning movement counts were recorded during the AM and PM peak hours between 7:00am to 9:00am and 4:00pm to 6:00pm, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.



EXISTING WEEKDAY PEAK-HOUR VOLUMES FIGURE 2

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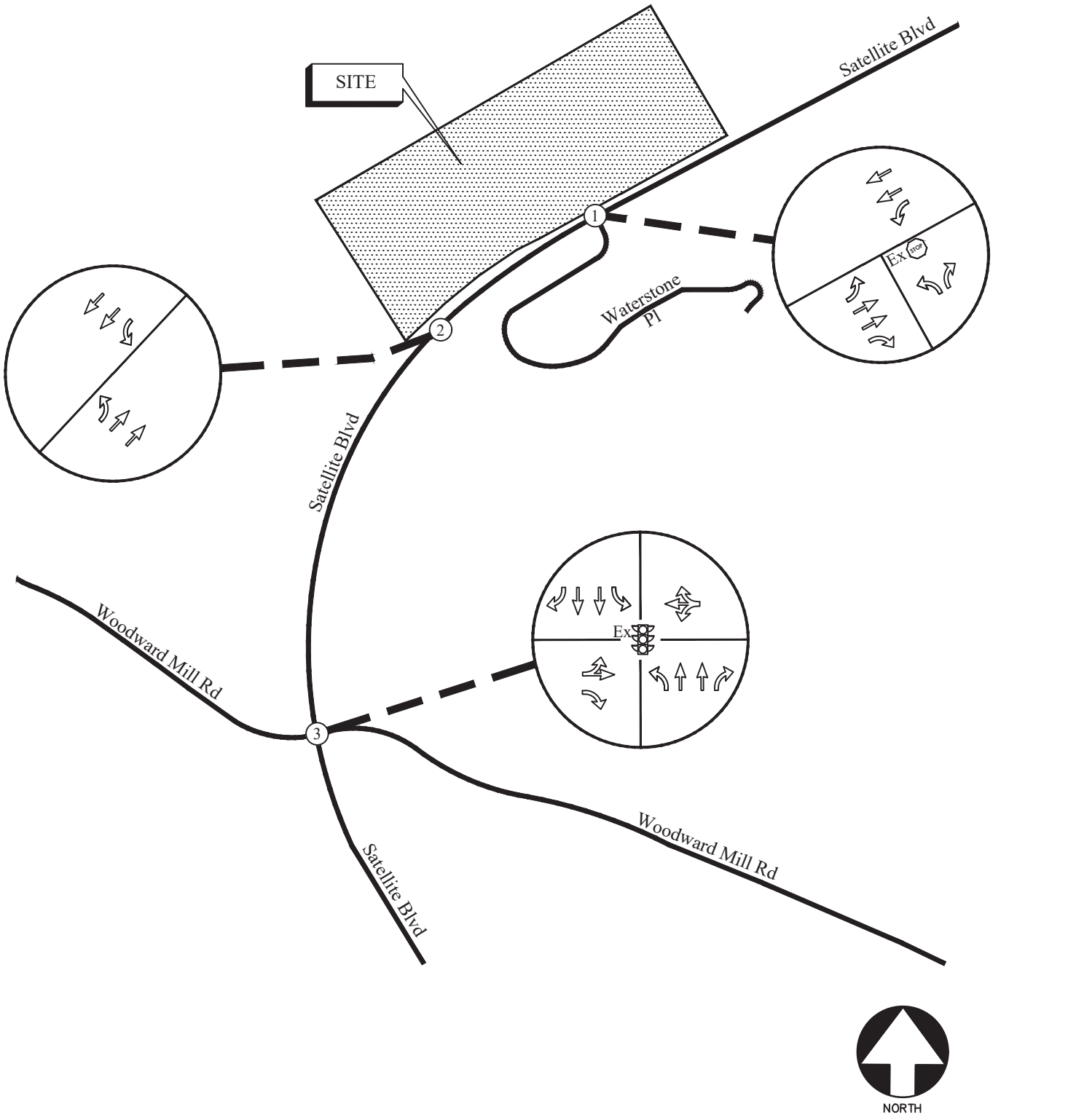
4.2 Existing Traffic Operations

Existing 2022 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS

	Intersection	Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	**Satellite Boulevard @ Waterstone Place**			
	-Westbound Approach (Waterstone Place)	Stop Controlled on WB Approach	B (11.2)	B (13.6)
	-Northbound U-turn		A (0.0)	A (8.9)
	-Southbound Left		A (7.9)	A (9.2)
2	**Satellite Boulevard @ Median Opening**			
	-Northbound U-turn	-	A (0.0)	A (9.1)
	-Southbound U-turn		A (0.0)	B (11.8)
3	**Satellite Boulevard @ Woodward Mill Road**		**B (11.0)**	**B (14.0)**
	-Eastbound Approach		B (16.7)	B (19.0)
	-Westbound Approach	Signalized	B (17.0)	B (15.3)
	-Northbound Approach		A (6.9)	B (11.3)
	-Southbound Approach		A (9.1)	B (15.1)

The results of existing traffic operations analysis indicate that the signalized intersection is operating at overall level of service "B" or better in both the AM and PM peak hours. Un-signalized intersections approaches are operating at level-of-service "B" or better in both the AM and PM peak hours. The existing traffic control and lane geometry for the intersections are shown in Figure 3.



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 3

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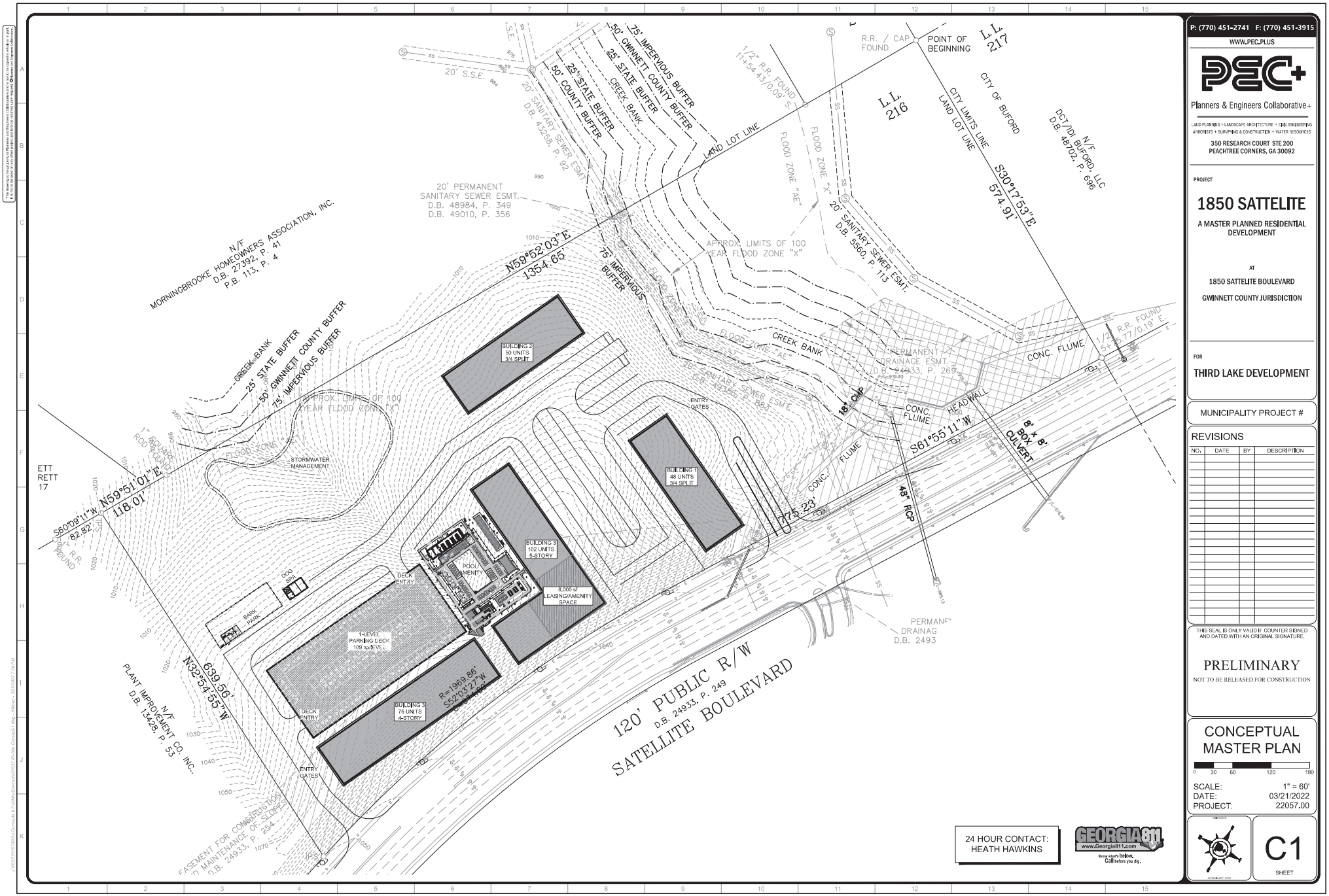
5.0 PROPOSED DEVELOPMENT

The proposed residential development will consist of 275 units of Multifamily Housing (Mid-Rise). Site Driveway 1 will be a full access driveway on Satellite Boulevard that will align with Waterstone Place. Site Driveway 2 will be a right-in/right-out driveway that will be located south of the existing median break. An overlay of the site plan and driveway locations are shown in the graphic below.

A site plan is shown in Figure 4.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PROJECT
1850 SATTELITE
A MASTER PLANNED RESIDENTIAL DEVELOPMENT
AT
1850 SATTELITE BOULEVARD
GWINNETT COUNTY JURISDICTION
FOR
THIRD LAKE DEVELOPMENT
MUNICIPALITY PROJECT #
REVISIONS
NO. DATE BY DESCRIPTION
THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.
PRELIMINARY
NOT TO BE RELEASED FOR CONSTRUCTION
CONCEPTUAL MASTER PLAN
0 30 60 120 180
SCALE: 1" = 60'
DATE: 03/21/2022
PROJECT: 22057.00
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L.L. 216
L.L. 217
CITY OF BUFORD
POINT OF BEGINNING
R.R. / CAP FOUND
LAND LOT LINE
CITY LIMITS LINE
S30°17'53"E 574.91'
N/F DCT/ID BUFORD, LLC D.B. 46702, P. 696
20' S.S.E.
20' SANITARY SEWER ESMT. D.B. 43258, P. 92
50' COUNTY BUFFER
25' STATE BUFFER
50' GWINNETT COUNTY BUFFER
75' IMPERVIOUS BUFFER
CREEK BANK
FLOOD ZONE "AE"
FLOOD ZONE "X"
20' SANITARY SEWER ESMT. D.B. 2560, P. 113
20' PERMANENT SANITARY SEWER ESMT. D.B. 48984, P. 349 D.B. 49010, P. 356
APPROX. LIMITS OF 100 YEAR FLOOD ZONE "X"
N/F MORNINGBROOKE HOMEOWNERS ASSOCIATION, INC. D.B. 27392, P. 41 P.B. 113, P. 4
N59°52'03"E 1354.65'
BUILDING 2 50 UNITS 3/4 SPLIT
BUILDING 1 48 UNITS 3/4 SPLIT
BUILDING 3 102 UNITS 4-STORY
BUILDING 3 75 UNITS 4-STORY
8,000 sf LEASING/AMENITY SPACE
POOL/ AMENITY
DECK ENTRY
ENTRY GATES
DOG PARK
BARK PARK
1-LEVEL PARKING DECK 109 SPACES
STORMWATER MANAGEMENT
PERMANENT DRAINAGE ESMT. D.B. 24933, P. 269
CONC. FLUME
HEAD WALL
18" CMP
8' x 8' BOX CULVERT
S61°55'11"W 775.23'
48" RCP
PERMANENT DRAINAG D.B. 2493
ETT RETT 17
S60°09'11"W 82.82'
N59°51'01"E 118.01'
1" ROD FOUND
1/2" RR FOUND
N32°54'55"W 639.56'
PLANT IMPROVEMENT CO. D.B. 13426, P. 53
EASEMENT FOR CONSTRUCTION AND MAINTENANCE OF SLOPES D.B. 24933, P. 254
120' PUBLIC R/W
SATELLITE BOULEVARD
D.B. 24933, P. 249

5.1 Trip Generation

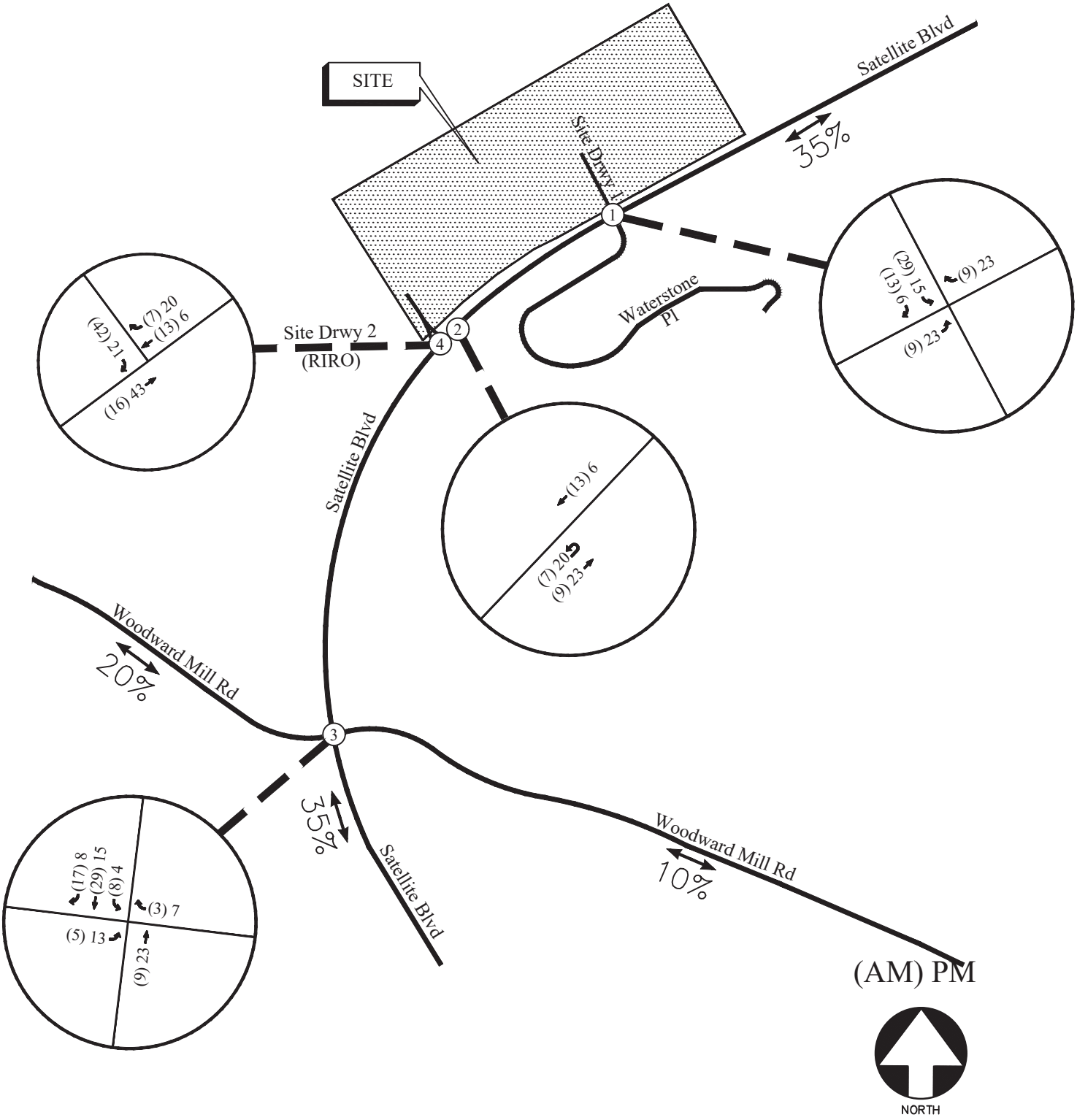
Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Use: Multifamily Housing (Mid-Rise) - Not Close to Rail Transit. The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	275 units	25	84	109	66	42	108	1,265

5.2 Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 5, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the site are shown in Figure 5.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

FIGURE 5

A&R Engineering Inc.

6.0 FUTURE 2024 TRAFFIC ANALYSIS

The future 2024 traffic operations are analyzed for the "Build" and "No-Build" conditions.

6.1 Future "No-Build" Conditions

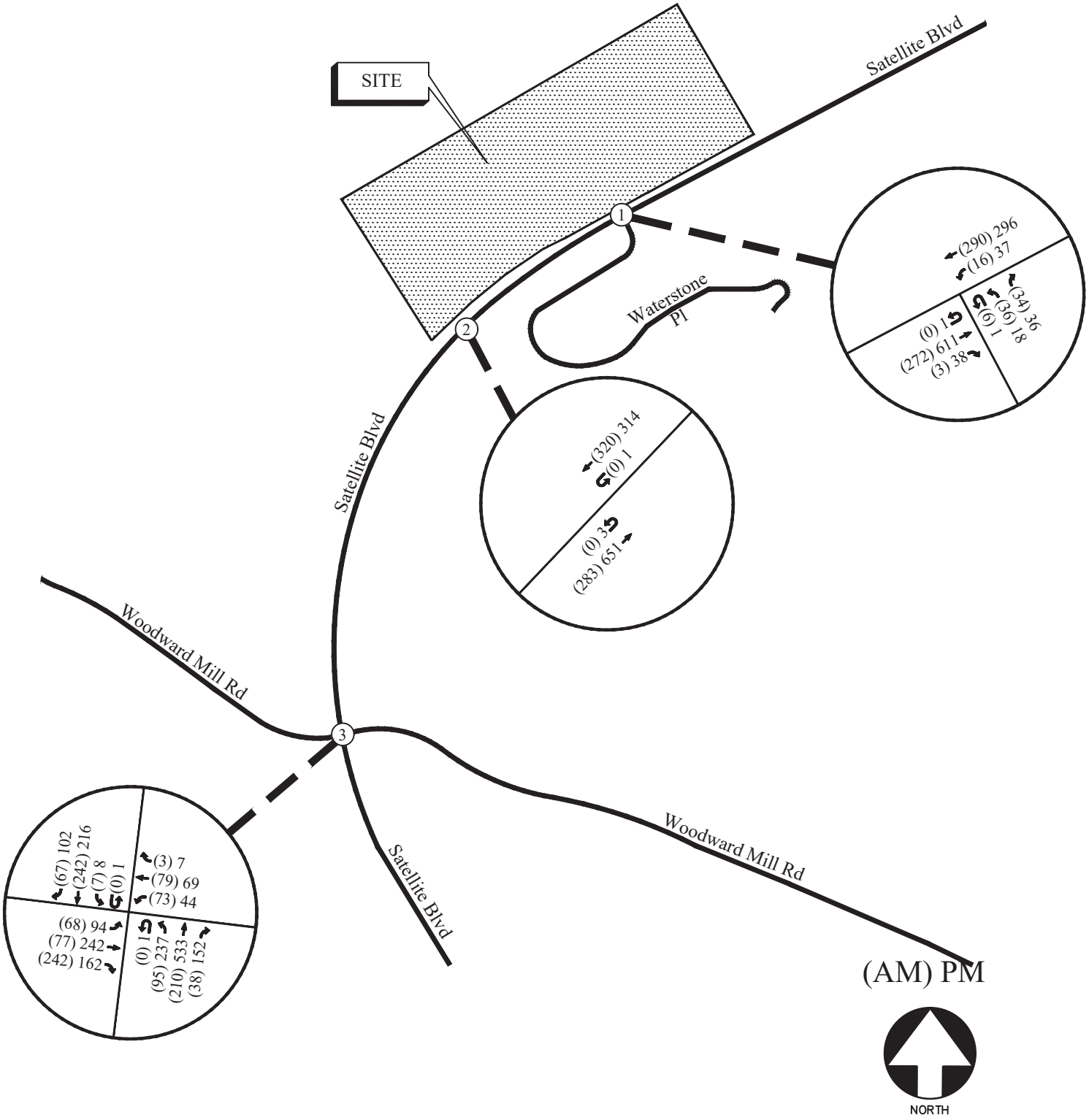
The "No-Build" (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future "No-Build" volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of through traffic.

6.1.1 Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three years revealed growth of approximately 1% in the area. This growth factor was applied to the existing traffic volumes between collector and arterial roadways to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future "No-Build" volumes on the roadway are shown in Figure 6.

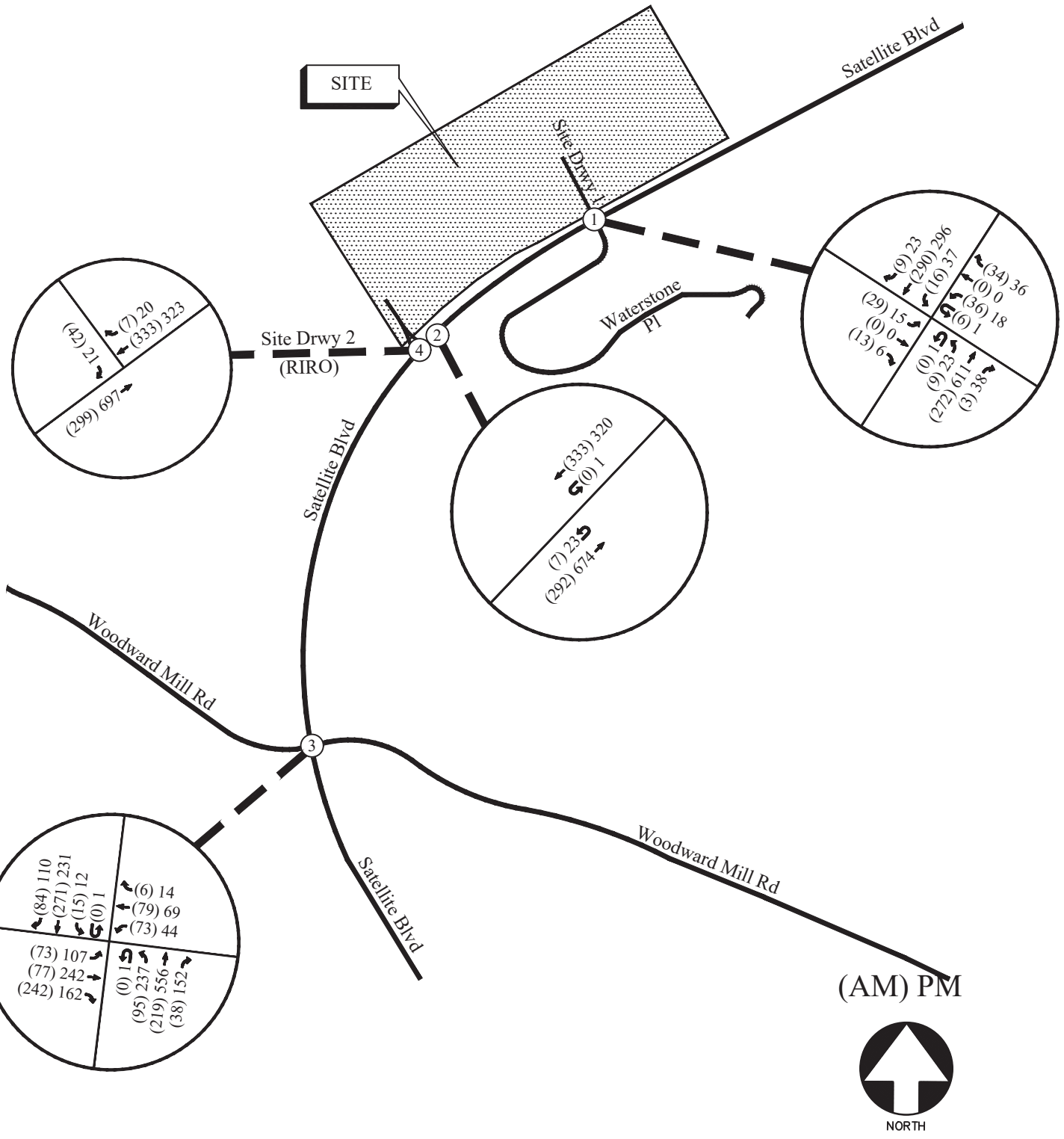
6.2 Future "Build" Conditions

The "Build" or development conditions include the estimated background traffic from the "No-Build" conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figure 5) were added to base traffic volumes (Figure 6) to calculate the future traffic volumes after the construction of the development. These total future "Build" traffic volumes are shown in Figure 7.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 6

A&R Engineering Inc.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 7

A&R Engineering Inc.

6.3 Auxiliary Lane Analysis

Included below are analyses for left-turn lanes and deceleration lanes for all site driveways per GDOT standards. The analyses below are based off the trip distribution included in Section 5.2. According to the trip distribution, the 24-hour two-way volume entering and exiting the site is 1,265 vehicles.

6.3.1.1 Left Turn Lane Analysis

For four lane roadways with AADT's more than 10,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 250 left-turning vehicles a day. The projected left-turn volumes per day for each driveway is included in Table 5.

TABLE 5 – GDOT REQUIREMENTS FOR LEFT TURN LANES

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
Satellite Boulevard @ Waterstone Place / Site Driveway 1	35%	221 (Total trips) ÷ 2 × 0.35 = (1265) ÷ 2 x 0.35 = 221	45 mph / 4-Lane / > 10,000	250	Yes

A left-turn lane is present at Site Driveway 1. Site Driveway 2 is a right-in/right-out and was not considered in this analysis.

6.3.1.2 Deceleration Turn Lane Analysis

For two lane roadways with AADT's more than 10,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic right-turn movements threshold to warrant a deceleration lane is 75 right turning vehicles a day. The projected right-turn volumes per day for each driveway is included in Table 6.

TABLE 6 – GDOT REQUIREMENTS FOR DECELERATION LANES

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
Satellite Boulevard @ Waterstone Place / Site Driveway 1	35%	221 (Total trips) ÷ 2 × 0.35 = (1265) ÷ 2 x 0.35 = 221	45 mph / 4-Lane / > 10,000	75	Yes
Satellite Boulevard @ Site Driveway 2 (RIRO)	30%	190 (Total trips) ÷ 2 × 0.3 = (1265) ÷ 2 x 0.3 =190	45 mph / 4-Lane / > 10,000	75	No

A deceleration is warranted at Site Driveway 1 per GDOT standards. Site Driveway 2 does not require a deceleration lane per GDOT standards. However, given the type of roadway, number of lanes, and speed limit, it is recommended that a deceleration lane be provided at Site Driveway 2.

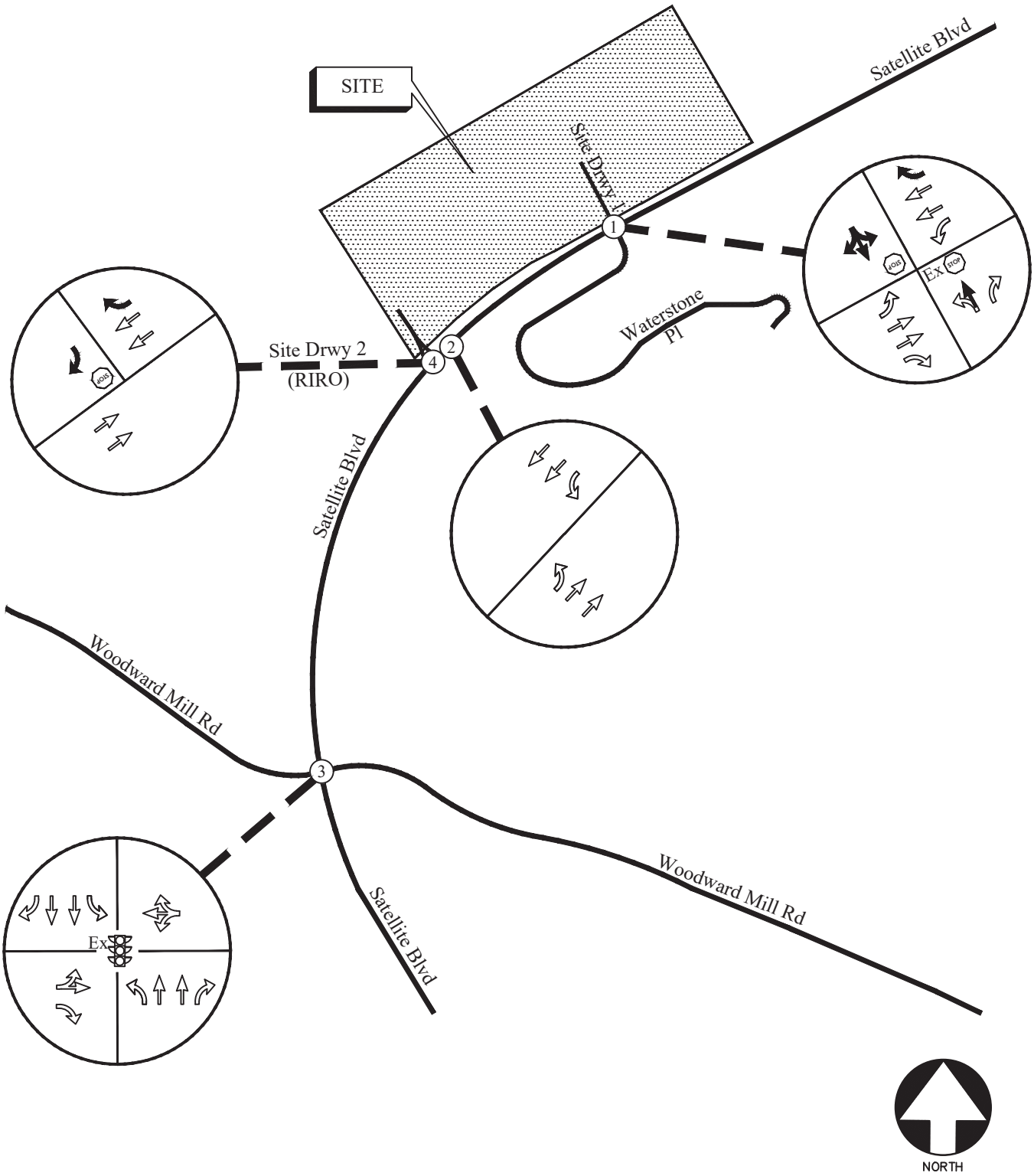
6.3.2 Future Traffic Operations

The future "No-Build" and "Build" traffic operations were analyzed using the volumes in Figure 6 and Figure 7, respectively. The results of the future traffic operations analysis are shown below in Table 7.

TABLE 7 – FUTURE INTERSECTION OPERATIONS

	Intersection	Future Condition: LOS (Delay)			
		NO-BUILD		BUILD	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**Satellite Boulevard @ Waterstone Place / Site Driveway 1**				
	-Eastbound Approach	-	-	B (13.2)	C (17.2)
	-Westbound Approach	B (11.3)	B (13.7)	B (12.0)	C (15.4)
	-Northbound U-turn/Left	A (0.0)	A (9.0)	A (8.0)	A (8.1)
	-Southbound Left	A (7.9)	A (9.3)	A (7.9)	A (9.3)
2	**Satellite Boulevard @ Median Opening**				
	-Northbound U-turn	A (0.0)	A (9.1)	A (8.3)	A (8.2)
	-Southbound U-turn	A (0.0)	B (12.0)	A (0.0)	B (12.2)
3	**Satellite Boulevard @ Woodward Mill Road**	**B (11.1)**	**B (14.2)**	**B (11.1)**	**B (14.7)**
	-Eastbound Approach	B (16.7)	B (19.1)	B (16.9)	B (19.2)
	-Westbound Approach	B (17.0)	B (15.3)	B (17.0)	B (15.1)
	-Northbound Approach	A (7.0)	B (11.5)	A (7.2)	B (12.2)
	-Southbound Approach	A (9.2)	B (15.4)	A (9.2)	B (16.0)
4	**Satellite Boulevard @ Site Driveway 2 (RIRO)**				
	-Eastbound Approach	-	-	A (9.5)	A (9.4)

The results of future traffic operations analysis indicate that the signalized intersection will operate at overall level of service "B" or better in both the AM and PM peak hours and un-signalized intersections approaches will operate at level-of-service "C" or better in both the AM and PM peak hours. Recommendations on traffic control and lane geometry are shown in Figure 8.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 8

A&R Engineering Inc.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed residential development at 1850 Satellite Boulevard in Gwinnett County, Georgia. The development will consist of 275 units of Multifamily Housing (Mid-Rise) - Not Close to Rail Transit.

The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on Satellite Boulevard aligns with Waterstone Place
- Site Driveway 2: Right-in/right-out driveway on Satellite Boulevard (south of the existing median break)

Existing and future operations after completion of the project were analyzed at the intersections of:

- Satellite Boulevard at Waterstone Place / Site Driveway 1
- Satellite Boulevard at Median Opening (south of Waterstone Place)
- Satellite Boulevard at Woodward Mill Road
- Satellite Boulevard at Site Driveway 2 (RIRO)

The analysis included the evaluation of Future operations for “No-Build” and “Build” conditions, both of which account for increases in annual growth of through traffic The results of future traffic operations analysis indicate that the signalized intersection will operate at overall level of service “B” or better in both the AM and PM peak hours and un-signalized intersections approaches will operate at level-of-service “C” or better in both the AM and PM peak hours. The differences between the “No-Build” and “Build” condition level-of-service analyses are insignificant.

7.1 Recommendations

The following access configuration is recommended for the proposed site driveway intersections.

- Site Driveway 1: Full access driveway on Satellite Boulevard aligns with Waterstone Place
    - One entering and one exiting lane
    - Stop-sign controlled on the proposed driveway approach
    - Addition of a deceleration lane for entering traffic

- Site Driveway 2: Right-in/right-out driveway on Satellite Boulevard
    - One entering and one exiting lane
    - Stop-sign controlled on the proposed driveway approach
    - Addition of a deceleration lane for entering traffic

Appendix

EXISTING INTERSECTION TRAFFIC COUNTS

National Data & Surveying Services Intersection Turning Movement Count

Location: Satellite Blvd & Waterstone Pl
City: Buford
Control: 1-Way Stop (WB)

Project ID: 22-180087-001
Date: 4/27/2022

Data - Total

NS/EW Streets:	Satellite Blvd				Satellite Blvd				Waterstone Pl				Waterstone Pl				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	51	5	0	0	40	0	0	0	0	0	0	8	0	9	0	113
7:15 AM	0	51	1	0	3	66	0	0	0	0	0	0	7	0	9	1	138
7:30 AM	0	63	0	0	2	67	0	0	0	0	0	0	8	0	9	6	155
7:45 AM	0	72	2	0	4	84	0	0	0	0	0	0	10	0	10	0	182
8:00 AM	0	69	1	0	3	70	0	0	0	0	0	0	7	0	7	0	157
8:15 AM	0	63	0	0	7	63	0	0	0	0	0	0	10	0	7	0	150
8:30 AM	0	64	6	1	5	63	0	0	0	0	0	0	5	0	8	2	154
8:45 AM	0	39	3	0	2	60	0	0	0	0	0	0	4	0	7	1	116
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	472	18	1	26	513	0	0	0	0	0	0	59	0	66	10	1165
APPROACH %'s :	0.00%	96.13%	3.67%	0.20%	4.82%	95.18%	0.00%	0.00%					43.70%	0.00%	48.89%	7.41%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	267	3	0	16	284	0	0	0	0	0	0	35	0	33	6	644
PEAK HR FACTOR :	0.000	0.927	0.375	0.000	0.571	0.845	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.825	0.250	0.885
		0.912				0.852								0.804			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	98	9	0	7	70	0	0	0	0	0	0	4	0	3	0	191
4:15 PM	0	128	11	0	5	64	0	0	0	0	0	0	6	0	8	0	222
4:30 PM	0	154	14	0	10	52	0	0	0	0	0	0	5	0	8	0	243
4:45 PM	0	144	5	0	4	62	0	0	0	0	0	0	7	0	7	0	229
5:00 PM	0	153	7	1	11	83	0	0	0	0	0	0	4	0	8	1	268
5:15 PM	0	148	11	0	11	93	0	0	0	0	0	0	2	0	12	0	277
5:30 PM	0	138	7	0	9	62	0	0	0	0	0	0	5	0	12	0	233
5:45 PM	0	111	6	0	8	63	0	0	0	0	0	0	4	0	8	0	200
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1074	70	1	65	549	0	0	0	0	0	0	37	0	66	1	1863
APPROACH %'s :	0.00%	93.80%	6.11%	0.09%	10.59%	89.41%	0.00%	0.00%					35.58%	0.00%	63.46%	0.96%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	599	37	1	36	290	0	0	0	0	0	0	18	0	35	1	1017
PEAK HR FACTOR :	0.000	0.972	0.661	0.250	0.818	0.780	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.000	0.729	0.250	0.918
		0.948				0.784								0.964			

Prepared by National Data & Surveying Services

Satellite Blvd & Waterstone Pl

Peak Hour Turning Movement Count

ID: 22-180087-001
City: Buford

Day: Wednesday
Date: 4/27/2022

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Satellite Blvd)

AM	0	284	16	0	300	AM
NOON	0	0	0	0	0	NOON
PM	0	290	36	0	634	PM

EASTBOUND (Waterstone Pl)

AM	NOON	PM		
0	0	0		
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
AM	NOON	PM		

WESTBOUND (Waterstone Pl)

PM	NOON	AM		
35	0	33	1	
0	0	0	0	
18	0	35	1	
1	0	6	0	
74	0	25		
PM	NOON	AM		

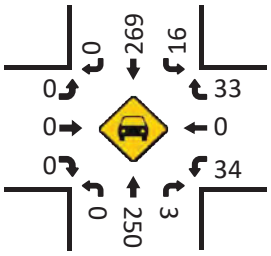
NORTHBOUND (Satellite Blvd)

PM	309	1	0	599	37	PM
NOON	0	0	0	0	0	NOON
AM	319	0	0	267	3	AM

CONTROL: 1-Way Stop (WB)

TEV	644 AM	0 NOON	1017 PM
PHF	0.88		0.92

Cars (AM)



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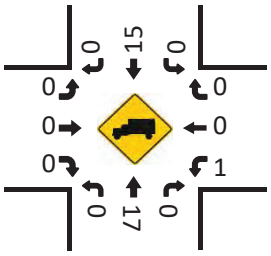

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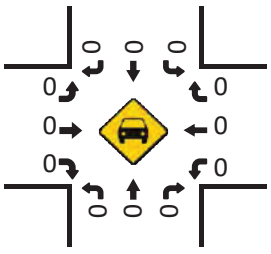

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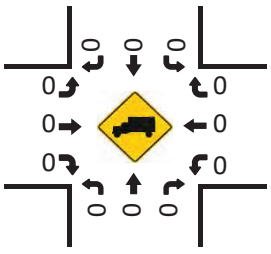
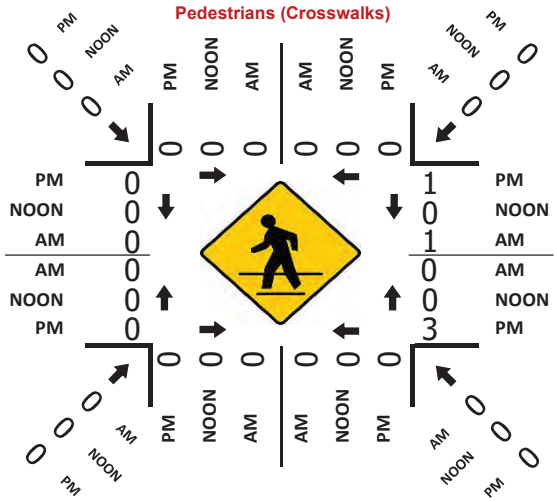


Pedestrians (Crosswalks)



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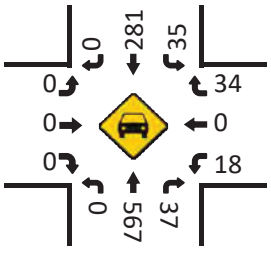

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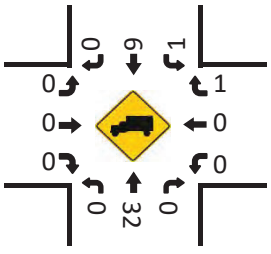


National Data & Surveying Services Intersection Turning Movement Count

Location: Satellite Blvd Median Opening & S/O Waterstone Homes Dwy
City: Buford
Control: No Control

Project ID: 22-180087-002
Date: 4/27/2022

Data - Total

NS/EW Streets:	Satellite Blvd Median Opening				Satellite Blvd Median Opening				S/O Waterstone Homes Dwy				S/O Waterstone Homes Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	56	0	0	0	47	0	0	0	0	0	0	0	0	0	0	103
7:15 AM	0	55	0	0	0	73	0	0	0	0	0	0	0	0	0	0	128
7:30 AM	0	61	0	0	0	75	0	0	0	0	0	0	0	0	0	0	136
7:45 AM	0	73	0	0	0	93	0	0	0	0	0	0	0	0	0	0	166
8:00 AM	0	72	0	0	0	77	0	0	0	0	0	0	0	0	0	0	149
8:15 AM	0	62	0	0	0	75	0	0	0	0	0	0	0	0	0	0	137
8:30 AM	0	70	0	0	0	69	0	0	0	0	0	0	0	0	0	0	139
8:45 AM	0	42	0	0	0	64	0	0	0	0	0	0	0	0	0	0	106
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	491	0	0	0	573	0	0	0	0	0	0	0	0	0	0	1064
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	0	277	0	0	0	314	0	0	0	0	0	0	0	0	0	0	591
PEAK HR FACTOR :	0.000	0.949	0.000	0.000	0.000	0.844	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.890
		0.949				0.844											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	115	0	0	0	75	0	0	0	0	0	0	0	0	0	0	190
4:15 PM	0	132	0	0	0	70	0	0	0	0	0	0	0	0	0	0	202
4:30 PM	0	166	0	1	0	55	0	1	0	0	0	0	0	0	0	0	223
4:45 PM	0	152	0	0	0	68	0	0	0	0	0	0	0	0	0	0	220
5:00 PM	0	166	0	1	0	90	0	0	0	0	0	0	0	0	0	0	257
5:15 PM	0	154	0	1	0	95	0	0	0	0	0	0	0	0	0	0	250
5:30 PM	0	142	0	0	0	67	0	0	0	0	0	0	0	0	0	0	209
5:45 PM	0	119	0	0	0	67	0	0	0	0	0	0	0	0	0	0	186
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1146	0	3	0	587	0	1	0	0	0	0	0	0	0	0	1737
APPROACH %'s :	0.00%	99.74%	0.00%	0.26%	0.00%	99.83%	0.00%	0.17%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	638	0	3	0	308	0	1	0	0	0	0	0	0	0	0	950
PEAK HR FACTOR :	0.000	0.961	0.000	0.750	0.000	0.811	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.924
		0.960				0.813											

Satellite Blvd Median Opening & S/O Waterstone Homes Dwy

Peak Hour Turning Movement Count

ID: 22-180087-002
City: Buford

Day: Wednesday
Date: 4/27/2022

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Satellite Blvd Median Opening)

AM	0	314	0	0	277	AM
NOON	0	0	0	0	0	NOON
PM	0	308	0	1	639	PM

0 2 1 0

EASTBOUND (S/O Waterstone Homes Dwy)

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

AM NOON PM

WESTBOUND (S/O Waterstone Homes Dwy)

PM	NOON	AM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

PM NOON AM

CONTROL

No Control

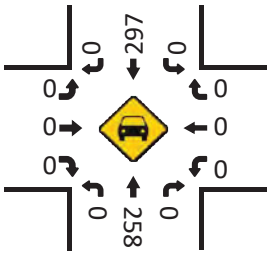
TEV	591 AM	0 NOON	950 PM
PHF	0.89		0.92

0 1 2 0

NORTHBOUND (Satellite Blvd Median Opening)

PM	311	3	0	638	0 PM
NOON	0	0	0	0	0 NOON
AM	314	0	0	277	0 AM

Cars (AM)



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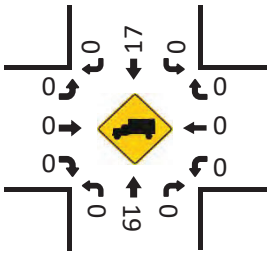
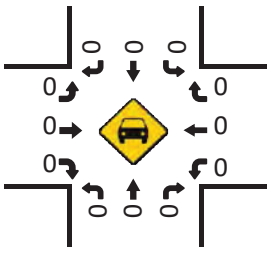


Cars (NOON)



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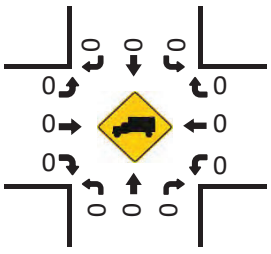
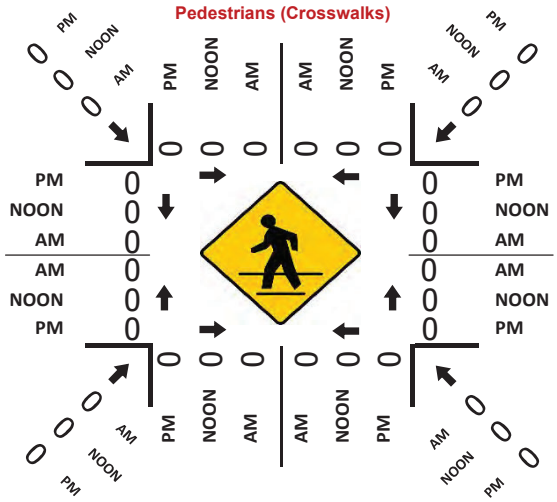
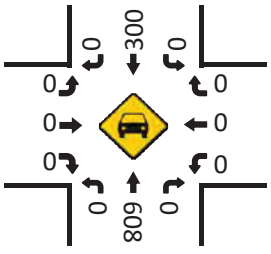


Pedestrians (Crosswalks)



Cars (PM)



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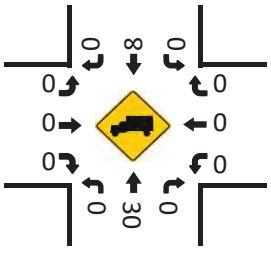


National Data & Surveying Services Intersection Turning Movement Count

Location: Satellite Blvd & Woodward Mill Rd
City: Buford
Control: Signalized

Project ID: 22-180087-003
Date: 4/27/2022

Data - Total

NS/EW Streets:	Satellite Blvd				Satellite Blvd				Woodward Mill Rd				Woodward Mill Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	16	42	6	0	2	32	13	0	15	24	37	0	12	11	1	0	211
7:15 AM	24	40	10	0	0	60	13	0	12	11	35	0	20	15	3	0	243
7:30 AM	26	48	7	0	1	59	14	0	15	7	44	0	7	15	0	0	243
7:45 AM	27	60	8	0	2	71	21	0	12	18	52	0	23	19	0	0	313
8:00 AM	29	48	11	0	1	51	21	0	22	22	66	0	18	24	1	0	314
8:15 AM	19	44	3	0	4	64	11	0	23	14	64	0	14	20	1	0	281
8:30 AM	18	54	15	0	0	51	13	0	10	21	55	0	17	14	1	0	269
8:45 AM	21	28	11	0	1	56	9	1	11	11	35	0	7	18	1	0	210
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	180	364	71	0	11	444	115	1	120	128	388	0	118	136	8	0	2084
APPROACH %'s :	29.27%	59.19%	11.54%	0.00%	1.93%	77.76%	20.14%	0.18%	18.87%	20.13%	61.01%	0.00%	45.04%	51.91%	3.05%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	93	206	37	0	7	237	66	0	67	75	237	0	72	77	3	0	1177
PEAK HR FACTOR :	0.802	0.858	0.617	0.000	0.438	0.835	0.786	0.000	0.728	0.852	0.898	0.000	0.783	0.802	0.750	0.000	0.937
	0.884				0.824				0.861				0.884				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	47	104	32	0	2	53	22	0	17	40	30	0	11	16	2	0	376
4:15 PM	37	104	32	0	1	45	19	0	18	48	28	0	17	15	2	0	366
4:30 PM	56	153	35	1	2	47	11	0	13	49	32	0	10	11	3	0	423
4:45 PM	56	130	29	0	2	40	21	1	18	57	29	0	11	15	1	0	410
5:00 PM	64	146	51	0	2	64	27	0	26	60	36	0	14	17	2	0	509
5:15 PM	54	122	34	0	3	60	31	0	25	60	52	0	10	20	3	0	474
5:30 PM	58	125	35	1	1	48	21	0	23	60	42	0	8	16	1	0	439
5:45 PM	59	92	40	0	4	48	12	0	17	54	41	0	8	13	1	0	389
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	431	976	288	2	17	405	164	1	157	428	290	0	89	123	15	0	3386
APPROACH %'s :	25.40%	57.51%	16.97%	0.12%	2.90%	68.99%	27.94%	0.17%	17.94%	48.91%	33.14%	0.00%	39.21%	54.19%	6.61%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	232	523	149	1	8	212	100	1	92	237	159	0	43	68	7	0	1832
PEAK HR FACTOR :	0.906	0.896	0.730	0.250	0.667	0.828	0.806	0.250	0.885	0.988	0.764	0.000	0.768	0.850	0.583	0.000	0.900
	0.867				0.854				0.891				0.894				

Prepared by National Data & Surveying Services

Satellite Blvd & Woodward Mill Rd

Peak Hour Turning Movement Count

ID: 22-180087-003
City: Buford

Day: Wednesday
Date: 4/27/2022

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Satellite Blvd)

AM	66	237	7	0	276	AM
NOON	0	0	0	0	0	NOON
PM	100	212	8	1	623	PM
	1	2	1	0		

EASTBOUND (Woodward Mill Rd)

AM	NOON	PM	
236	0	400	
0	0	0	0
67	0	92	0
75	0	237	1
237	0	159	1
AM	NOON	PM	

CONTROL

Signalized

TEV	1177 AM	0 NOON	1832 PM
PHF	0.94		0.90

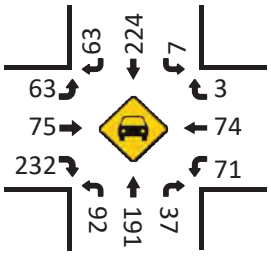
WESTBOUND (Woodward Mill Rd)

PM	NOON	AM	
7	0	3	1
68	0	77	1
43	0	72	0
0	0	0	0
394	0	119	
PM	NOON	AM	

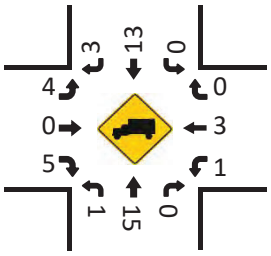
NORTHBOUND (Satellite Blvd)

PM	415	1	232	523	149	PM
NOON	0	0	0	0	0	NOON
AM	546	0	93	206	37	AM
		0	1	2	1	

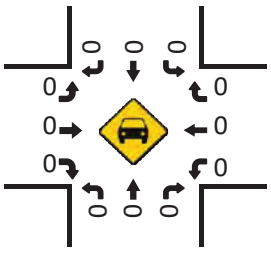
Cars (AM)



HT (AM)



Cars (NOON)



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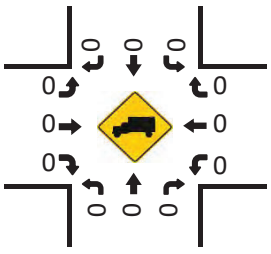
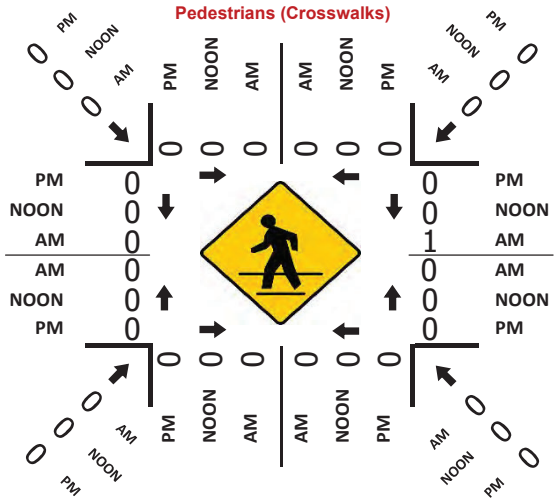
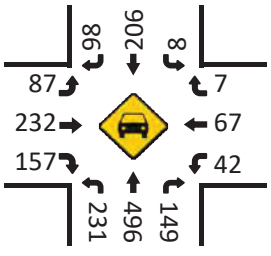


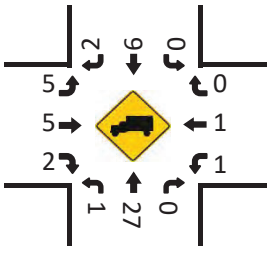
Pedestrians (Crosswalks)



Cars (PM)



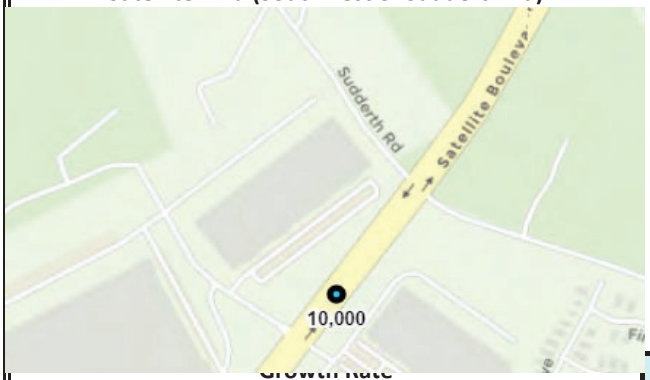
HT (PM)

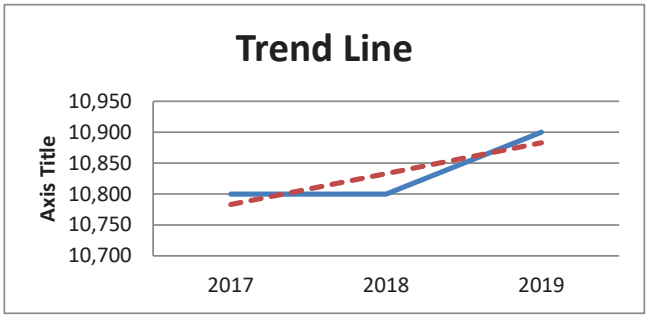


LINEAR REGRESSION OF DAILY TRAFFIC

Location	Growth Rate	R Squared	Station ID	Route	2017	2018	2019
Satellite Blvd (Southwest of Suc	0.5%	0.75	135-6725	00200100	10,800	10,800	10,900
Satellite Blvd (Northeast of Saw	1.2%	0.96	135-6727	00200100	12,700	12,900	13,000
Weighted Average	**0.8%**	1.00	Sum of Count Stations =		23,500	23,700	23,900

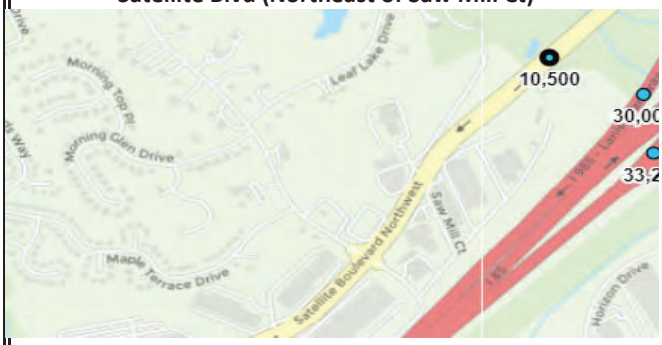
Location	Traffic Counter	RCLINK	2017	2018	2019
Satellite Blvd (Southwest of Sudderth Rd)	135-6725	00200100	10,800	10,800	10,900

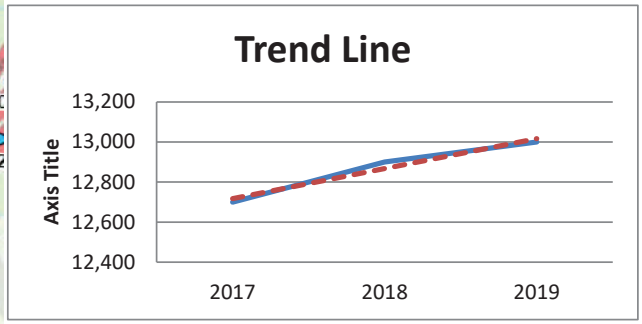




Growth Rate	0.5%	**Intercept**	-90,067	**Slope**	50.00
Trend Line			10,783	10,833	10,883

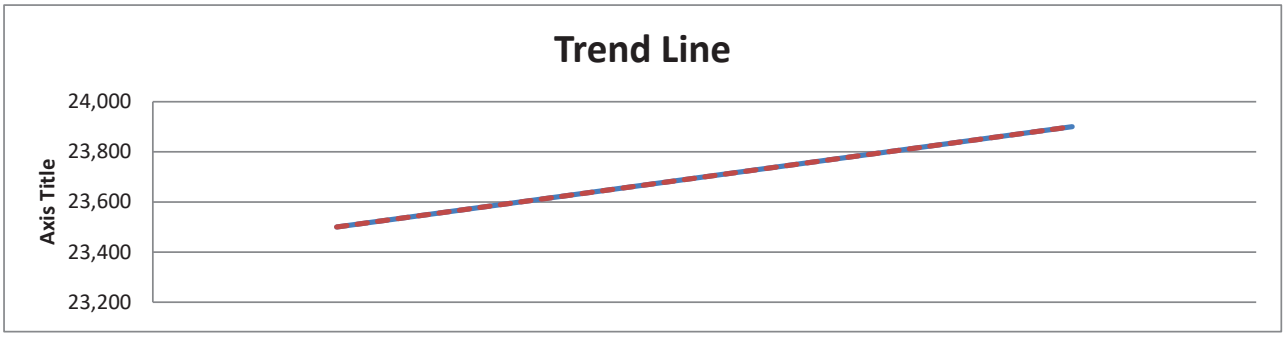
Location	Traffic Counter	RCLINK	2017	2018	2019
Satellite Blvd (Northeast of Saw Mill Ct)	135-6727	00200100	12,700	12,900	13,000





Growth Rate	1.2%	**Intercept**	-289,833	**Slope**	150.00
Trend Line			12,717	12,867	13,017

Weighted Average	2017	2018	2019
Sum of Count Stations	23,500	23,700	23,900



Growth Rate	0.8%	**Intercept**	-379,900	**Slope**	200.00
Trend Line			23,500	23,700	23,900

EXISTING INTERSECTION ANALYSIS

Intersection	
Int Delay, s/veh	1.5

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	6	35	33	0	267	3	16	284
Future Vol, veh/h	6	35	33	0	267	3	16	284
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	6	0	0	5
Mvmt Flow	7	40	38	0	303	3	18	323

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	501	152	323	0	0	306	0
Stage 1	0	303	-	-	-	-	-	-
Stage 2	0	198	-	-	-	-	-	-
Critical Hdwy	-	6.86	6.9	6.4	-	-	4.1	-
Critical Hdwy Stg 1	-	5.86	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.86	-	-	-	-	-	-
Follow-up Hdwy	-	3.53	3.3	2.5	-	-	2.2	-
Pot Cap-1 Maneuver	0	497	873	905	-	-	1266	-
Stage 1	0	720	-	-	-	-	-	-
Stage 2	0	813	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	490	873	905	-	-	1266	-
Mov Cap-2 Maneuver	0	490	-	-	-	-	-	-
Stage 1	0	720	-	-	-	-	-	-
Stage 2	0	802	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	905	-	-	490	873	1266	-
HCM Lane V/C Ratio	-	-	-	0.081	0.043	0.014	-
HCM Control Delay (s)	0	-	-	13	9.3	7.9	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	277	0	0	0	314	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	277	0	0	0	314	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	7	0	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	0	0	311	0	0	0	353	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	509	664	177	488	664	156	353	-	0	-	311	-	-	0
Stage 1	353	353	-	311	311	-	-	-	-	-	-	-	-	-
Stage 2	156	311	-	177	353	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	452	384	842	467	384	868	867	0	-	0	921	0	-	0
Stage 1	642	634	-	680	662	-	-	0	-	0	-	0	-	0
Stage 2	836	662	-	813	634	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	452	384	842	467	384	868	867	-	-	-	921	-	-	-
Mov Cap-2 Maneuver	452	384	-	467	384	-	-	-	-	-	-	-	-	-
Stage 1	642	634	-	680	662	-	-	-	-	-	-	-	-	-
Stage 2	836	662	-	813	634	-	-	-	-	-	-	-	-	-

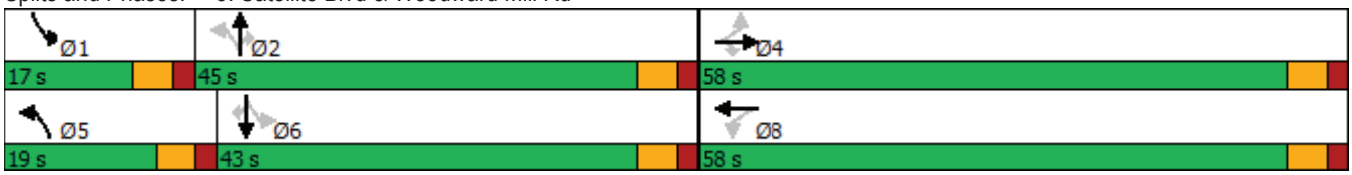
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	867	-	-	-	921	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	0	-
HCM Lane LOS	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	67	75	237	72	77	93	206	37	7	237	66
Future Volume (vph)	67	75	237	72	77	93	206	37	7	237	66
Lane Group Flow (vph)	0	151	252	0	162	99	219	39	7	252	70
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	19.0	45.0	45.0	17.0	43.0	43.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	48.3%	15.8%	37.5%	37.5%	14.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.44	0.45		0.49	0.16	0.13	0.05	0.01	0.23	0.13
Control Delay		21.6	5.8		23.0	6.6	8.6	1.9	6.7	15.1	5.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.6	5.8		23.0	6.6	8.6	1.9	6.7	15.1	5.5
Queue Length 50th (ft)		39	0		42	12	13	0	1	28	0
Queue Length 95th (ft)		84	44		91	34	49	8	6	62	23
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1475	1559		1404	732	2736	1323	740	2681	1215
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.10	0.16		0.12	0.14	0.08	0.03	0.01	0.09	0.06

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 48.3
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	75	237	72	77	3	93	206	37	7	237	66
Future Volume (veh/h)	67	75	237	72	77	3	93	206	37	7	237	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1870	1885	1841	1900	1885	1796	1900	1900	1826	1826
Adj Flow Rate, veh/h	71	80	0	77	82	0	99	219	0	7	252	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	2	1	4	0	1	7	0	0	5	5
Cap, veh/h	233	159		234	147		682	1496		623	1267	
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.44	0.00	0.01	0.37	0.00
Sat Flow, veh/h	689	1053	1585	692	976	0	1795	3413	1610	1810	3469	1547
Grp Volume(v), veh/h	151	0	0	159	0	0	99	219	0	7	252	0
Grp Sat Flow(s),veh/h/ln	1742	0	1585	1668	0	0	1795	1706	1610	1810	1735	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	1.3	1.6	0.0	0.1	2.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	3.4	0.0	0.0	1.3	1.6	0.0	0.1	2.0	0.0
Prop In Lane	0.47		1.00	0.48		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	0		382	0		682	1496		623	1267	
V/C Ratio(X)	0.39	0.00		0.42	0.00		0.15	0.15		0.01	0.20	
Avail Cap(c_a), veh/h	2179	0		2107	0		1124	3282		1113	3167	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	0.0	16.2	0.0	0.0	6.7	6.9	0.0	8.1	8.9	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.2	0.0	0.0	0.3	0.4	0.0	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	0.0	17.0	0.0	0.0	6.8	7.0	0.0	8.1	9.1	0.0
LnGrp LOS	B	A		B	A		A	A		A	A	
Approach Vol, veh/h		151	A		159	A		318	A		259	A
Approach Delay, s/veh		16.7			17.0			6.9			9.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	23.5		11.7	8.9	20.5		11.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	11.5	39.5		52.5	13.5	37.5		52.5				
Max Q Clear Time (g_c+I1), s	2.1	3.6		5.1	3.3	4.0		5.4				
Green Ext Time (p_c), s	0.0	2.6		0.9	0.1	2.9		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	1	18	35	1	599	37	36	290
Future Vol, veh/h	1	18	35	1	599	37	36	290
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	5	0	3	3
Mvmt Flow	1	20	38	1	651	40	39	315

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	889	326	315	0	0	691	0
Stage 1	0	653	-	-	-	-	-	-
Stage 2	0	236	-	-	-	-	-	-
Critical Hdwy	-	6.8	6.96	6.4	-	-	4.16	-
Critical Hdwy Stg 1	-	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.8	-	-	-	-	-	-
Follow-up Hdwy	-	3.5	3.33	2.5	-	-	2.23	-
Pot Cap-1 Maneuver	0	287	667	916	-	-	893	-
Stage 1	0	485	-	-	-	-	-	-
Stage 2	0	787	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	274	667	916	-	-	893	-
Mov Cap-2 Maneuver	0	274	-	-	-	-	-	-
Stage 1	0	485	-	-	-	-	-	-
Stage 2	0	752	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	916	-	-	274	667	893	-
HCM Lane V/C Ratio	0.001	-	-	0.071	0.057	0.044	-
HCM Control Delay (s)	8.9	-	-	19.1	10.7	9.2	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	3	0	638	0	1	0	308	0
Future Vol, veh/h	0	0	0	0	0	0	3	0	638	0	1	0	308	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	5	0	0	0	3	0
Mvmt Flow	0	0	0	0	0	0	3	0	693	0	1	0	335	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	690	1036	168	869	1036	347	335	-	0	-	693	-	-	0
Stage 1	337	337	-	699	699	-	-	-	-	-	-	-	-	-
Stage 2	353	699	-	170	337	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	335	233	853	249	233	655	890	0	-	0	529	0	-	0
Stage 1	656	645	-	401	445	-	-	0	-	0	-	0	-	0
Stage 2	642	445	-	821	645	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	334	232	853	248	232	655	890	-	-	-	529	-	-	-
Mov Cap-2 Maneuver	334	232	-	248	232	-	-	-	-	-	-	-	-	-
Stage 1	654	644	-	400	444	-	-	-	-	-	-	-	-	-
Stage 2	640	444	-	819	644	-	-	-	-	-	-	-	-	-

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

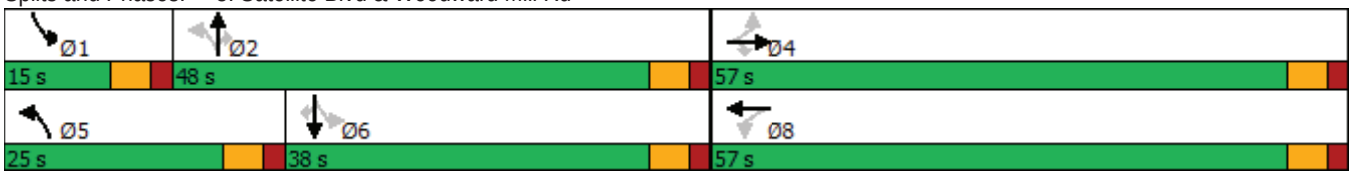
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	890	-	-	-	529	-
HCM Lane V/C Ratio	0.004	-	-	-	0.002	-
HCM Control Delay (s)	9.1	-	0	0	11.8	-
HCM Lane LOS	A	-	A	A	B	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	92	237	159	43	68	233	523	149	9	212	100
Future Volume (vph)	92	237	159	43	68	233	523	149	9	212	100
Lane Group Flow (vph)	0	365	177	0	132	259	581	166	10	236	111
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	57.0	57.0	57.0	57.0	57.0	25.0	48.0	48.0	15.0	38.0	38.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	20.8%	40.0%	40.0%	12.5%	31.7%	31.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.72	0.29		0.35	0.39	0.34	0.19	0.03	0.29	0.24
Control Delay		30.5	4.5		21.3	12.5	13.6	3.9	12.6	25.6	6.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.5	4.5		21.3	12.5	13.6	3.9	12.6	25.6	6.5
Queue Length 50th (ft)		132	0		40	55	66	1	2	42	0
Queue Length 95th (ft)		258	40		96	138	184	42	11	95	36
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1233	1262		909	736	2166	1077	446	1688	826
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.14		0.15	0.35	0.27	0.15	0.02	0.14	0.13

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 69.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	237	159	43	68	7	233	523	149	9	212	100
Future Volume (veh/h)	92	237	159	43	68	7	233	523	149	9	212	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1885	1870	1870	1900	1900	1826	1900	1900	1856	1870
Adj Flow Rate, veh/h	102	263	0	48	76	0	259	581	0	10	236	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	2	1	2	2	0	0	5	0	0	3	2
Cap, veh/h	194	364		217	303		647	1400		395	988	
Arrive On Green	0.28	0.28	0.00	0.28	0.28	0.00	0.14	0.40	0.00	0.01	0.28	0.00
Sat Flow, veh/h	390	1322	1598	449	1101	0	1810	3469	1610	1810	3526	1585
Grp Volume(v), veh/h	365	0	0	124	0	0	259	581	0	10	236	0
Grp Sat Flow(s),veh/h/ln	1712	0	1598	1550	0	0	1810	1735	1610	1810	1763	1585
Q Serve(g_s), s	7.6	0.0	0.0	0.0	0.0	0.0	4.9	6.4	0.0	0.2	2.8	0.0
Cycle Q Clear(g_c), s	10.4	0.0	0.0	2.8	0.0	0.0	4.9	6.4	0.0	0.2	2.8	0.0
Prop In Lane	0.28		1.00	0.39		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	0		520	0		647	1400		395	988	
V/C Ratio(X)	0.65	0.00		0.24	0.00		0.40	0.42		0.03	0.24	
Avail Cap(c_a), veh/h	1708	0		1538	0		1059	2753		693	2140	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	15.1	0.0	0.0	9.6	11.4	0.0	13.5	14.9	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	1.0	0.0	0.0	1.4	1.9	0.0	0.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	0.0	0.0	15.3	0.0	0.0	10.0	11.9	0.0	13.5	15.1	0.0
LnGrp LOS	B	A		B	A		B	B		B	B	
Approach Vol, veh/h		365	A		124	A		840	A		246	A
Approach Delay, s/veh		19.0			15.3			11.3			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	27.1		20.3	12.8	20.5		20.3				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5	19.5	32.5		51.5				
Max Q Clear Time (g_c+I1), s	2.2	8.4		12.4	6.9	4.8		4.8				
Green Ext Time (p_c), s	0.0	7.7		2.4	0.6	2.6		0.8				

Intersection Summary		
HCM 6th Ctrl Delay		14.0
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

FUTURE "NO-BUILD" INTERSECTION ANALYSIS

Intersection	
Int Delay, s/veh	1.5

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	6	36	34	0	272	3	16	290
Future Vol, veh/h	6	36	34	0	272	3	16	290
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	6	0	0	5
Mvmt Flow	7	41	39	0	309	3	18	330

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	510	155	330	0	0	312	0
Stage 1	0	309	-	-	-	-	-	-
Stage 2	0	201	-	-	-	-	-	-
Critical Hdwy	-	6.86	6.9	6.4	-	-	4.1	-
Critical Hdwy Stg 1	-	5.86	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.86	-	-	-	-	-	-
Follow-up Hdwy	-	3.53	3.3	2.5	-	-	2.2	-
Pot Cap-1 Maneuver	0	490	869	896	-	-	1260	-
Stage 1	0	715	-	-	-	-	-	-
Stage 2	0	810	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	483	869	896	-	-	1260	-
Mov Cap-2 Maneuver	0	483	-	-	-	-	-	-
Stage 1	0	715	-	-	-	-	-	-
Stage 2	0	799	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	896	-	-	483	869	1260	-
HCM Lane V/C Ratio	-	-	-	0.085	0.044	0.014	-
HCM Control Delay (s)	0	-	-	13.1	9.3	7.9	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	283	0	0	0	320	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	283	0	0	0	320	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	7	0	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	0	0	318	0	0	0	360	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	519	678	180	498	678	159	360	-	0	-	318	-	-	0
Stage 1	360	360	-	318	318	-	-	-	-	-	-	-	-	-
Stage 2	159	318	-	180	360	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	444	377	838	460	377	864	858	0	-	0	912	0	-	0
Stage 1	636	630	-	673	657	-	-	0	-	0	-	0	-	0
Stage 2	833	657	-	810	630	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	444	377	838	460	377	864	858	-	-	-	912	-	-	-
Mov Cap-2 Maneuver	444	377	-	460	377	-	-	-	-	-	-	-	-	-
Stage 1	636	630	-	673	657	-	-	-	-	-	-	-	-	-
Stage 2	833	657	-	810	630	-	-	-	-	-	-	-	-	-

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

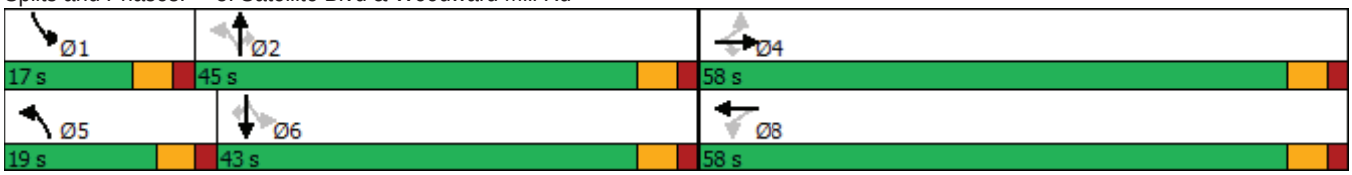
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	858	-	-	-	912	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	0	-
HCM Lane LOS	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	68	77	242	73	79	95	210	38	7	242	67
Future Volume (vph)	68	77	242	73	79	95	210	38	7	242	67
Lane Group Flow (vph)	0	154	257	0	165	101	223	40	7	257	71
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	19.0	45.0	45.0	17.0	43.0	43.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	48.3%	15.8%	37.5%	37.5%	14.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.44	0.46		0.50	0.17	0.13	0.05	0.01	0.23	0.13
Control Delay		21.7	5.7		23.0	6.7	8.6	1.9	6.7	15.2	5.6
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.7	5.7		23.0	6.7	8.6	1.9	6.7	15.2	5.6
Queue Length 50th (ft)		40	0		43	12	13	0	1	29	0
Queue Length 95th (ft)		86	44		92	35	50	9	6	63	24
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1469	1556		1403	728	2726	1319	736	2672	1211
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.10	0.17		0.12	0.14	0.08	0.03	0.01	0.10	0.06

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 48.5
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	77	242	73	79	3	95	210	38	7	242	67
Future Volume (veh/h)	68	77	242	73	79	3	95	210	38	7	242	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1870	1885	1841	1900	1885	1796	1900	1900	1826	1826
Adj Flow Rate, veh/h	72	82	0	78	84	0	101	223	0	7	257	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	2	1	4	0	1	7	0	0	5	5
Cap, veh/h	233	162		234	150		678	1494		619	1262	
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.44	0.00	0.01	0.36	0.00
Sat Flow, veh/h	685	1058	1585	687	982	0	1795	3413	1610	1810	3469	1547
Grp Volume(v), veh/h	154	0	0	162	0	0	101	223	0	7	257	0
Grp Sat Flow(s),veh/h/ln	1742	0	1585	1669	0	0	1795	1706	1610	1810	1735	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	1.4	1.6	0.0	0.1	2.1	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	3.5	0.0	0.0	1.4	1.6	0.0	0.1	2.1	0.0
Prop In Lane	0.47		1.00	0.48		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	394	0		384	0		678	1494		619	1262	
V/C Ratio(X)	0.39	0.00		0.42	0.00		0.15	0.15		0.01	0.20	
Avail Cap(c_a), veh/h	2172	0		2099	0		1117	3270		1107	3155	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	0.0	16.2	0.0	0.0	6.7	7.0	0.0	8.1	9.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.3	0.0	0.0	0.3	0.4	0.0	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	0.0	17.0	0.0	0.0	6.8	7.1	0.0	8.1	9.2	0.0
LnGrp LOS	B	A		B	A		A	A		A	A	
Approach Vol, veh/h		154	A		162	A		324	A		264	A
Approach Delay, s/veh		16.7			17.0			7.0			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	23.5		11.8	8.9	20.5		11.8				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	11.5	39.5		52.5	13.5	37.5		52.5				
Max Q Clear Time (g_c+I1), s	2.1	3.6		5.1	3.4	4.1		5.5				
Green Ext Time (p_c), s	0.0	2.6		0.9	0.1	3.0		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	1	18	36	1	611	38	37	296
Future Vol, veh/h	1	18	36	1	611	38	37	296
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	5	0	3	3
Mvmt Flow	1	20	39	1	664	41	40	322

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	907	332	322	0	0	705	0
Stage 1	0	666	-	-	-	-	-	-
Stage 2	0	241	-	-	-	-	-	-
Critical Hdwy	-	6.8	6.96	6.4	-	-	4.16	-
Critical Hdwy Stg 1	-	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.8	-	-	-	-	-	-
Follow-up Hdwy	-	3.5	3.33	2.5	-	-	2.23	-
Pot Cap-1 Maneuver	0	279	661	907	-	-	882	-
Stage 1	0	478	-	-	-	-	-	-
Stage 2	0	783	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	266	661	907	-	-	882	-
Mov Cap-2 Maneuver	0	266	-	-	-	-	-	-
Stage 1	0	478	-	-	-	-	-	-
Stage 2	0	748	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	907	-	-	266	661	882	-
HCM Lane V/C Ratio	0.001	-	-	0.074	0.059	0.046	-
HCM Control Delay (s)	9	-	-	19.6	10.8	9.3	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	3	0	651	0	1	0	314	0
Future Vol, veh/h	0	0	0	0	0	0	3	0	651	0	1	0	314	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	5	0	0	0	3	0
Mvmt Flow	0	0	0	0	0	0	3	0	708	0	1	0	341	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	703	1057	171	887	1057	354	341	-	0	-	708	-	-	0
Stage 1	343	343	-	714	714	-	-	-	-	-	-	-	-	-
Stage 2	360	714	-	173	343	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	328	227	849	242	227	648	882	0	-	0	518	0	-	0
Stage 1	651	641	-	393	438	-	-	0	-	0	-	0	-	0
Stage 2	636	438	-	818	641	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	327	226	849	241	226	648	882	-	-	-	518	-	-	-
Mov Cap-2 Maneuver	327	226	-	241	226	-	-	-	-	-	-	-	-	-
Stage 1	649	640	-	392	437	-	-	-	-	-	-	-	-	-
Stage 2	634	437	-	816	640	-	-	-	-	-	-	-	-	-

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

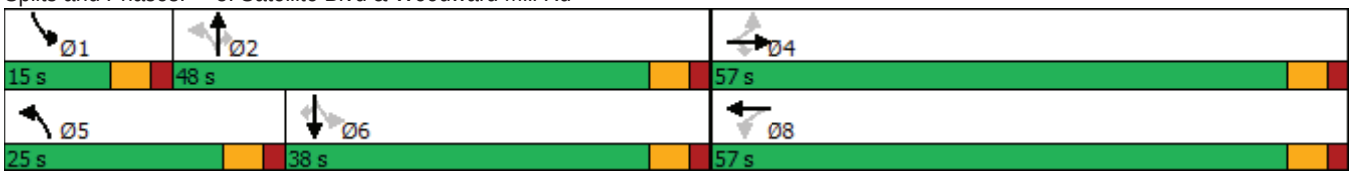
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	882	-	-	-	518	-
HCM Lane V/C Ratio	0.004	-	-	-	0.002	-
HCM Control Delay (s)	9.1	-	0	0	12	-
HCM Lane LOS	A	-	A	A	B	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	94	242	162	44	69	238	533	152	9	216	102
Future Volume (vph)	94	242	162	44	69	238	533	152	9	216	102
Lane Group Flow (vph)	0	373	180	0	134	264	592	169	10	240	113
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	57.0	57.0	57.0	57.0	57.0	25.0	48.0	48.0	15.0	38.0	38.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	20.8%	40.0%	40.0%	12.5%	31.7%	31.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.73	0.29		0.36	0.40	0.35	0.19	0.03	0.29	0.24
Control Delay		31.0	4.5		21.6	12.9	13.8	4.0	12.8	26.0	6.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.0	4.5		21.6	12.9	13.8	4.0	12.8	26.0	6.7
Queue Length 50th (ft)		136	1		42	57	69	2	2	44	0
Queue Length 95th (ft)		267	41		99	143	191	44	11	97	37
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1217	1250		879	731	2142	1067	440	1670	818
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.31	0.14		0.15	0.36	0.28	0.16	0.02	0.14	0.14

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 70.6
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	242	162	44	69	7	238	533	152	9	216	102
Future Volume (veh/h)	94	242	162	44	69	7	238	533	152	9	216	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1885	1870	1870	1900	1900	1826	1900	1900	1856	1870
Adj Flow Rate, veh/h	104	269	0	49	77	0	264	592	0	10	240	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	2	1	2	2	0	0	5	0	0	3	2
Cap, veh/h	195	370		218	303		643	1396		388	976	
Arrive On Green	0.28	0.28	0.00	0.28	0.28	0.00	0.14	0.40	0.00	0.01	0.28	0.00
Sat Flow, veh/h	392	1320	1598	448	1083	0	1810	3469	1610	1810	3526	1585
Grp Volume(v), veh/h	373	0	0	126	0	0	264	592	0	10	240	0
Grp Sat Flow(s),veh/h/ln	1712	0	1598	1531	0	0	1810	1735	1610	1810	1763	1585
Q Serve(g_s), s	7.9	0.0	0.0	0.0	0.0	0.0	5.1	6.7	0.0	0.2	2.9	0.0
Cycle Q Clear(g_c), s	10.7	0.0	0.0	2.8	0.0	0.0	5.1	6.7	0.0	0.2	2.9	0.0
Prop In Lane	0.28		1.00	0.39		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	564	0		521	0		643	1396		388	976	
V/C Ratio(X)	0.66	0.00		0.24	0.00		0.41	0.42		0.03	0.25	
Avail Cap(c_a), veh/h	1689	0		1512	0		1044	2722		682	2115	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	0.0	0.0	15.1	0.0	0.0	9.8	11.7	0.0	13.7	15.2	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	1.1	0.0	0.0	1.5	2.0	0.0	0.1	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	0.0	0.0	15.3	0.0	0.0	10.2	12.1	0.0	13.8	15.5	0.0
LnGrp LOS	B	A		B	A		B	B		B	B	
Approach Vol, veh/h		373	A		126	A		856	A		250	A
Approach Delay, s/veh		19.1			15.3			11.5			15.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	27.3		20.7	13.0	20.5		20.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5	19.5	32.5		51.5				
Max Q Clear Time (g_c+I1), s	2.2	8.7		12.7	7.1	4.9		4.8				
Green Ext Time (p_c), s	0.0	7.8		2.4	0.6	2.6		0.8				

Intersection Summary		
HCM 6th Ctrl Delay		14.2
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

FUTURE "BUILD" INTERSECTION ANALYSIS

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	29	0	13	6	36	0	34	9	272	3	16	290	9
Future Vol, veh/h	29	0	13	6	36	0	34	9	272	3	16	290	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	235	-	205	260	-	175
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	88	92	88	92	88	88	88	88	92
Heavy Vehicles, %	0	0	0	0	3	0	0	0	6	0	0	5	0
Mvmt Flow	32	0	14	7	41	0	39	10	309	3	18	330	10

Major/Minor	Minor2			Minor1				Major1			Major2		
Conflicting Flow All	541	698	165	0	530	705	155	340	0	0	312	0	0
Stage 1	366	366	-	0	329	329	-	-	-	-	-	-	-
Stage 2	175	332	-	0	201	376	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	7.56	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	6.56	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	6.56	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	3.53	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	429	367	857	0	430	363	869	1230	-	-	1260	-	-
Stage 1	631	626	-	0	655	650	-	-	-	-	-	-	-
Stage 2	816	648	-	0	779	620	-	-	-	-	-	-	-
Platoon blocked, %				-					-	-		-	-
Mov Cap-1 Maneuver	403	359	857	0	416	355	869	1230	-	-	1260	-	-
Mov Cap-2 Maneuver	403	359	-	0	416	355	-	-	-	-	-	-	-
Stage 1	626	617	-	0	650	645	-	-	-	-	-	-	-
Stage 2	773	643	-	0	755	611	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	12	0.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1230	-	-	482	416	869	1260	-	-
HCM Lane V/C Ratio	0.008	-	-	0.095	0.098	0.044	0.014	-	-
HCM Control Delay (s)	8	-	-	13.2	14.6	9.3	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	7	0	292	0	0	0	333	0
Future Vol, veh/h	0	0	0	0	0	0	7	0	292	0	0	0	333	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	0	-	-	-	245	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	7	0	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	8	0	328	0	0	0	374	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	554	718	187	494	718	164	273	-	0	-	328	-	-	0
Stage 1	374	374	-	344	344	-	-	-	-	-	-	-	-	-
Stage 2	180	344	-	150	374	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	6.95	6.5	6.9	5.6	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.7	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.65	4	3.3	2.3	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	442	357	705	483	357	858	1115	0	-	0	899	0	-	0
Stage 1	555	621	-	628	640	-	-	0	-	0	-	0	-	0
Stage 2	780	640	-	804	621	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	440	355	705	481	355	858	1115	-	-	-	899	-	-	-
Mov Cap-2 Maneuver	440	355	-	481	355	-	-	-	-	-	-	-	-	-
Stage 1	551	621	-	624	636	-	-	-	-	-	-	-	-	-
Stage 2	774	636	-	804	621	-	-	-	-	-	-	-	-	-

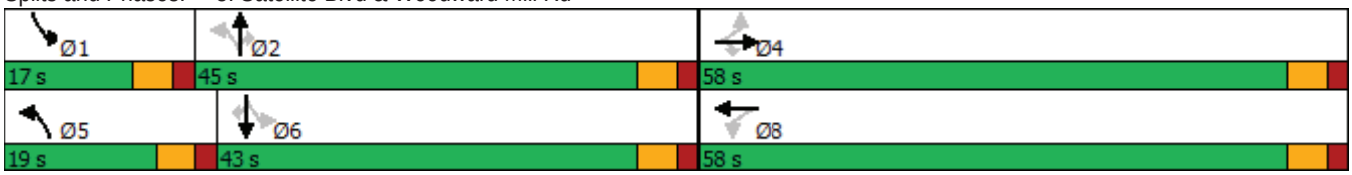
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0.2	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	1115	-	-	-	899	-
HCM Lane V/C Ratio	0.007	-	-	-	-	-
HCM Control Delay (s)	8.3	-	0	0	0	-
HCM Lane LOS	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	73	77	242	73	79	95	219	38	15	271	84
Future Volume (vph)	73	77	242	73	79	95	219	38	15	271	84
Lane Group Flow (vph)	0	160	257	0	168	101	233	40	16	288	89
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	19.0	45.0	45.0	17.0	43.0	43.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	48.3%	15.8%	37.5%	37.5%	14.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.46	0.45		0.50	0.17	0.14	0.05	0.03	0.26	0.16
Control Delay		22.4	5.7		23.2	6.8	8.8	1.9	6.9	15.4	5.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		22.4	5.7		23.2	6.8	8.8	1.9	6.9	15.4	5.4
Queue Length 50th (ft)		42	0		44	12	14	0	2	33	0
Queue Length 95th (ft)		93	45		97	36	53	8	9	71	27
Internal Link Dist (ft)		809			866		1400			1879	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1434	1543		1385	720	2698	1306	730	2645	1204
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.11	0.17		0.12	0.14	0.09	0.03	0.02	0.11	0.07

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 49.2
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	77	242	73	79	6	95	219	38	15	271	84
Future Volume (veh/h)	73	77	242	73	79	6	95	219	38	15	271	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1870	1885	1841	1900	1885	1796	1900	1900	1826	1826
Adj Flow Rate, veh/h	78	82	0	78	84	0	101	233	0	16	288	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	2	1	4	0	1	7	0	0	5	5
Cap, veh/h	241	153		235	150		661	1457		636	1263	
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.43	0.00	0.02	0.36	0.00
Sat Flow, veh/h	730	1005	1585	691	985	0	1795	3413	1610	1810	3469	1547
Grp Volume(v), veh/h	160	0	0	162	0	0	101	233	0	16	288	0
Grp Sat Flow(s),veh/h/ln	1735	0	1585	1675	0	0	1795	1706	1610	1810	1735	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	1.4	1.7	0.0	0.2	2.4	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	3.5	0.0	0.0	1.4	1.7	0.0	0.2	2.4	0.0
Prop In Lane	0.49		1.00	0.48		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	395	0		385	0		661	1457		636	1263	
V/C Ratio(X)	0.41	0.00		0.42	0.00		0.15	0.16		0.03	0.23	
Avail Cap(c_a), veh/h	2160	0		2101	0		1100	3271		1104	3157	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.2	0.0	0.0	16.3	0.0	0.0	6.7	7.3	0.0	7.9	9.1	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.3	0.0	0.0	0.3	0.4	0.0	0.1	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	0.0	0.0	17.0	0.0	0.0	6.9	7.4	0.0	7.9	9.3	0.0
LnGrp LOS	B	A		B	A		A	A		A	A	
Approach Vol, veh/h		160	A		162	A		334	A		304	A
Approach Delay, s/veh		16.9			17.0			7.2			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	23.1		11.8	8.9	20.5		11.8				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	11.5	39.5		52.5	13.5	37.5		52.5				
Max Q Clear Time (g_c+I1), s	2.2	3.7		5.3	3.4	4.4		5.5				
Green Ext Time (p_c), s	0.0	2.7		1.0	0.1	3.4		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	42	0	299	333	7
Future Vol, veh/h	0	42	0	299	333	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	-	0	200	-	-	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	7	5	0
Mvmt Flow	0	46	0	325	362	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	181	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	837	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	837	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	837	-
HCM Lane V/C Ratio	-	0.055	-
HCM Control Delay (s)	-	9.5	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	15	0	6	1	18	0	36	1	23	611	38	37	296	23
Future Vol, veh/h	15	0	6	1	18	0	36	1	23	611	38	37	296	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	235	-	205	260	-	175
Veh in Median Storage, #	-	0	-	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	3	0	0	5	0	3	3	0
Mvmt Flow	16	0	7	1	20	0	39	1	25	664	41	40	322	25

Major/Minor	Minor2			Minor1				Major1				Major2		
Conflicting Flow All	786	1159	161	0	957	1143	332	322	347	0	0	705	0	0
Stage 1	402	402	-	0	716	716	-	-	-	-	-	-	-	-
Stage 2	384	757	-	0	241	427	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	7.5	6.5	6.96	6.4	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	3.5	4	3.33	2.5	2.2	-	-	2.23	-	-
Pot Cap-1 Maneuver	286	197	862	0	215	202	661	907	1223	-	-	882	-	-
Stage 1	601	604	-	0	392	437	-	-	-	-	-	-	-	-
Stage 2	616	419	-	0	747	589	-	-	-	-	-	-	-	-
Platoon blocked, %				-						-	-		-	-
Mov Cap-1 Maneuver	255	184	862	0	203	189	661	1205	1205	-	-	882	-	-
Mov Cap-2 Maneuver	255	184	-	0	203	189	-	-	-	-	-	-	-	-
Stage 1	588	577	-	0	383	427	-	-	-	-	-	-	-	-
Stage 2	567	410	-	0	708	562	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	15.4	0.3	1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1205	-	-	319	203	661	882	-	-
HCM Lane V/C Ratio	0.022	-	-	0.072	0.096	0.059	0.046	-	-
HCM Control Delay (s)	8.1	-	-	17.2	24.6	10.8	9.3	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	23	0	674	0	1	0	320	0
Future Vol, veh/h	0	0	0	0	0	0	23	0	674	0	1	0	320	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	0	-	-	-	245	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	5	0	0	0	3	0
Mvmt Flow	0	0	0	0	0	0	25	0	733	0	1	0	348	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	767	1133	174	924	1133	367	254	-	0	-	733	-	-	0
Stage 1	350	350	-	783	783	-	-	-	-	-	-	-	-	-
Stage 2	417	783	-	141	350	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	6.95	6.5	6.9	5.6	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.7	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.65	4	3.3	2.3	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	323	205	719	255	205	636	1142	0	-	0	499	0	-	0
Stage 1	576	636	-	348	407	-	-	0	-	0	-	0	-	0
Stage 2	570	407	-	814	636	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	317	200	719	250	200	636	1142	-	-	-	499	-	-	-
Mov Cap-2 Maneuver	317	200	-	250	200	-	-	-	-	-	-	-	-	-
Stage 1	563	635	-	340	398	-	-	-	-	-	-	-	-	-
Stage 2	558	398	-	812	635	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0.3	0
HCM LOS	A	A		

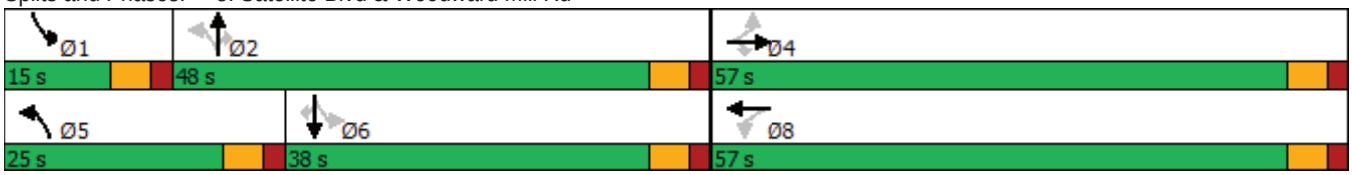
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	1142	-	-	-	499	-
HCM Lane V/C Ratio	0.022	-	-	-	0.002	-
HCM Control Delay (s)	8.2	-	0	0	12.2	-
HCM Lane LOS	A	-	A	A	B	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	107	242	162	44	69	238	556	152	13	231	110
Future Volume (vph)	107	242	162	44	69	238	556	152	13	231	110
Lane Group Flow (vph)	0	388	180	0	142	264	618	169	14	257	122
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	57.0	57.0	57.0	57.0	57.0	25.0	48.0	48.0	15.0	38.0	38.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	20.8%	40.0%	40.0%	12.5%	31.7%	31.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.75	0.28		0.36	0.41	0.37	0.19	0.04	0.32	0.26
Control Delay		31.9	4.9		21.1	13.9	14.9	4.5	13.5	26.8	7.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.9	4.9		21.1	13.9	14.9	4.5	13.5	26.8	7.5
Queue Length 50th (ft)		145	3		43	60	76	3	3	48	0
Queue Length 95th (ft)		296	45		106	153	211	48	m15	110	46
Internal Link Dist (ft)		809			866		1400			1879	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1156	1215		858	713	2076	1036	428	1618	797
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.34	0.15		0.17	0.37	0.30	0.16	0.03	0.16	0.15

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 73.5
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
m Volume for 95th percentile ueue is metered by upstream signal.

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	242	162	44	69	14	238	556	152	13	231	110
Future Volume (veh/h)	107	242	162	44	69	14	238	556	152	13	231	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1885	1870	1870	1900	1900	1826	1900	1900	1856	1870
Adj Flow Rate, veh/h	119	269	0	49	77	0	264	618	0	14	257	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	2	1	2	2	0	0	5	0	0	3	2
Cap, veh/h	214	364		221	309		626	1363		376	958	
Arrive On Green	0.29	0.29	0.00	0.29	0.29	0.00	0.14	0.39	0.00	0.02	0.27	0.00
Sat Flow, veh/h	444	1251	1598	447	1062	0	1810	3469	1610	1810	3526	1585
Grp Volume(v), veh/h	388	0	0	126	0	0	264	618	0	14	257	0
Grp Sat Flow(s),veh/h/ln	1695	0	1598	1510	0	0	1810	1735	1610	1810	1763	1585
Q Serve(g_s), s	8.7	0.0	0.0	0.0	0.0	0.0	5.2	7.3	0.0	0.3	3.2	0.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	2.8	0.0	0.0	5.2	7.3	0.0	0.3	3.2	0.0
Prop In Lane	0.31		1.00	0.39		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	578	0		529	0		626	1363		376	958	
V/C Ratio(X)	0.67	0.00		0.24	0.00		0.42	0.45		0.04	0.27	
Avail Cap(c_a), veh/h	1644	0		1478	0		1014	2671		656	2076	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	0.0	0.0	14.9	0.0	0.0	10.2	12.4	0.0	14.1	15.8	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.2	0.0	0.0	0.5	0.5	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	1.1	0.0	0.0	1.6	2.3	0.0	0.1	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	0.0	15.1	0.0	0.0	10.7	12.9	0.0	14.1	16.1	0.0
LnGrp LOS	B	A		B	A		B	B		B	B	
Approach Vol, veh/h		388	A		126	A		882	A		271	A
Approach Delay, s/veh		19.2			15.1			12.2			16.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	27.2		21.5	13.2	20.5		21.5				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5	19.5	32.5		51.5				
Max Q Clear Time (g_c+I1), s	2.3	9.3		13.5	7.2	5.2		4.8				
Green Ext Time (p_c), s	0.0	8.2		2.6	0.6	2.8		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	0	697	323	20
Future Vol, veh/h	0	21	0	697	323	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	-	0	200	-	-	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	5	3	0
Mvmt Flow	0	23	0	758	351	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	176	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	843	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	843	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	843	-
HCM Lane V/C Ratio	-	0.027	-
HCM Control Delay (s)	-	9.4	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

TRAFFIC VOLUME WORKSHEETS

22-081 Residential Development at 1850 Satellite Boulevard, Gwinnett County

Traffic Volumes

A&R Engineering
May 2022

1. Satellite @ Waterstone Pl

A.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 1 **Eastbound**					Waterstone Place **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	267	3	270	0	16	284	0	300	0	0	0	0	0	6	35	0	33	74
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	272	3	275	0	16	290	0	306	0	0	0	0	0	6	36	0	34	76
Total New Trips:	0	9	0	0	9	0	0	0	9	9	0	29	0	13	42	0	0	0	0	0
Future 2024 Traffic Volumes:	0	9	272	3	284	0	16	290	9	315	0	29	0	13	42	6	36	0	34	76

P.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 1 **Eastbound**					Waterstone Place **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	1	0	599	37	637	0	36	290	0	326	0	0	0	0	0	1	18	0	35	54
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	1	0	611	38	650	0	37	296	0	333	0	0	0	0	0	1	18	0	36	55
Total New Trips:	0	23	0	0	23	0	0	0	23	23	0	15	0	6	21	0	0	0	0	0
Future 2024 Traffic Volumes:	1	23	611	38	673	0	37	296	23	356	0	15	0	6	21	1	18	0	36	55

2. Satellite @ Median Opening

A.M. Peak Hour

	Satellite Boulevard Median Opening **Northbound**					Satellite Boulevard Median Opening **Southbound**					South of Waterstone Homes **Eastbound**					South of Waterstone Homes **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	277	0	277	0	0	314	0	314	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	283	0	283	0	0	320	0	320	0	0	0	0	0	0	0	0	0	0
Total New Trips:	7	0	9	0	16	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	7	0	292	0	299	0	0	333	0	333	0	0	0	0	0	0	0	0	0	0

P.M. Peak Hour

	Satellite Boulevard Median Opening **Northbound**					Satellite Boulevard Median Opening **Southbound**					South of Waterstone Homes **Eastbound**					South of Waterstone Homes **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	3	0	638	0	641	1	0	308	0	309	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	3	0	651	0	654	1	0	314	0	315	0	0	0	0	0	0	0	0	0	0
Total New Trips:	20	0	23	0	43	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	23	0	674	0	697	1	0	320	0	321	0	0	0	0	0	0	0	0	0	0

22-081 Residential Development at 1850 Satellite Boulevard, Gwinnett County

Traffic Volumes

A&R Engineering
May 2022

3. Satellite @ Woodward Mill Rd

A.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Woodward Mill Road **Eastbound**					Woodward Mill Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	93	206	37	336	0	7	237	66	310	0	67	75	237	379	0	72	77	3	152
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	95	210	38	343	0	7	242	67	316	0	68	77	242	387	0	73	79	3	155
Total New Trips:	0	0	9	0	9	0	8	29	17	54	0	5	0	0	5	0	0	0	3	3
Future 2024 Traffic Volumes:	0	95	219	38	352	0	15	271	84	370	0	73	77	242	392	0	73	79	6	158

P.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Woodward Mill Road **Eastbound**					Woodward Mill Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	1	232	523	149	905	1	8	212	100	321	0	92	237	159	488	0	43	68	7	118
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	1	237	533	152	923	1	8	216	102	327	0	94	242	162	498	0	44	69	7	120
Total New Trips:	0	0	23	0	23	0	4	15	8	27	0	13	0	0	13	0	0	0	7	7
Future 2024 Traffic Volumes:	1	237	556	152	946	1	12	231	110	354	0	107	242	162	511	0	44	69	14	127

4. Satellite @ RIRO Drwy 2

A.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 2 (RIRO) **Eastbound**					- **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	277	0	277	0	0	314	0	314	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	283	0	283	0	0	320	0	320	0	0	0	0	0	0	0	0	0	0
Total New Trips:	0	0	16	0	16	0	0	13	7	20	0	0	0	42	42	0	0	0	0	0
Future 2024 Traffic Volumes:	0	0	299	0	299	0	0	333	7	340	0	0	0	42	42	0	0	0	0	0

P.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 2 (RIRO) **Eastbound**					- **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	641	0	641	0	0	311	0	311	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	654	0	654	0	0	317	0	317	0	0	0	0	0	0	0	0	0	0
Total New Trips:	0	0	43	0	43	0	0	6	20	26	0	0	0	21	21	0	0	0	0	0
Future 2024 Traffic Volumes:	0	0	697	0	697	0	0	323	20	343	0	0	0	21	21	0	0	0	0	0

Exhibit G: Maps

[attached]


SATELLITE BLVD
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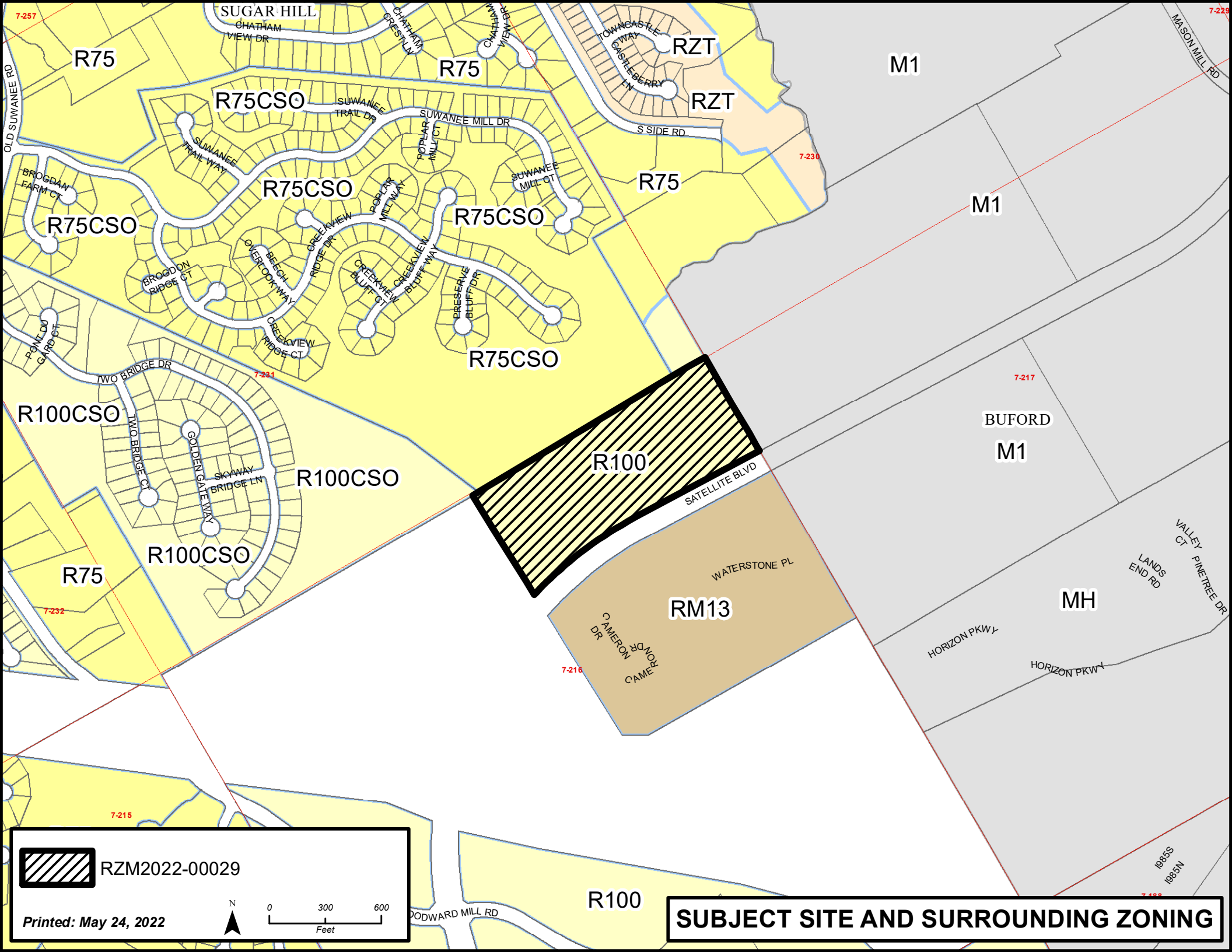
CAMERON DR
RZM2022-00029
Printed: May 24, 2022
N
0
100
200
Feet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CHATHAM MEWS
TOWNCASTLE WAY
CASTLEBERRY LN
MASON MILL RD
OLD SUWANEE RD
SUWANEE TRAIL DR
SUWANEE MILL DR
SUWANEE TRAIL WAY
POPLAR MILL CT
S SIDE RD
BROGDAN FARM CT
POPLAR MILL WAY
SUWANEE MILL CT
BEECH OVERLOOK WAY
CREEKVIEW RIDGE DR
BROGDON RIDGE CT
CREEKVIEW BLUFF CT
CREEKVIEW BLUFF WAY
PRESERVE BLUFF DR
CREEKVIEW RIDGE CT
PONT DU GARD CT
TWO BRIDGE DR
TWO BRIDGE CT
GOLDEN GATEWAY
SKYWAY BRIDGE LN
SATELLITE BLVD
WATERSTONE PL
CAMERON RON DR
CAMERON DR
HORIZON PKWY
LANDS END RD
VALLEY CT
PINETREE DR
BUFORD
R75
R75CSO
R100
R100CSO
RZT
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MH
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Printed: May 24, 2022
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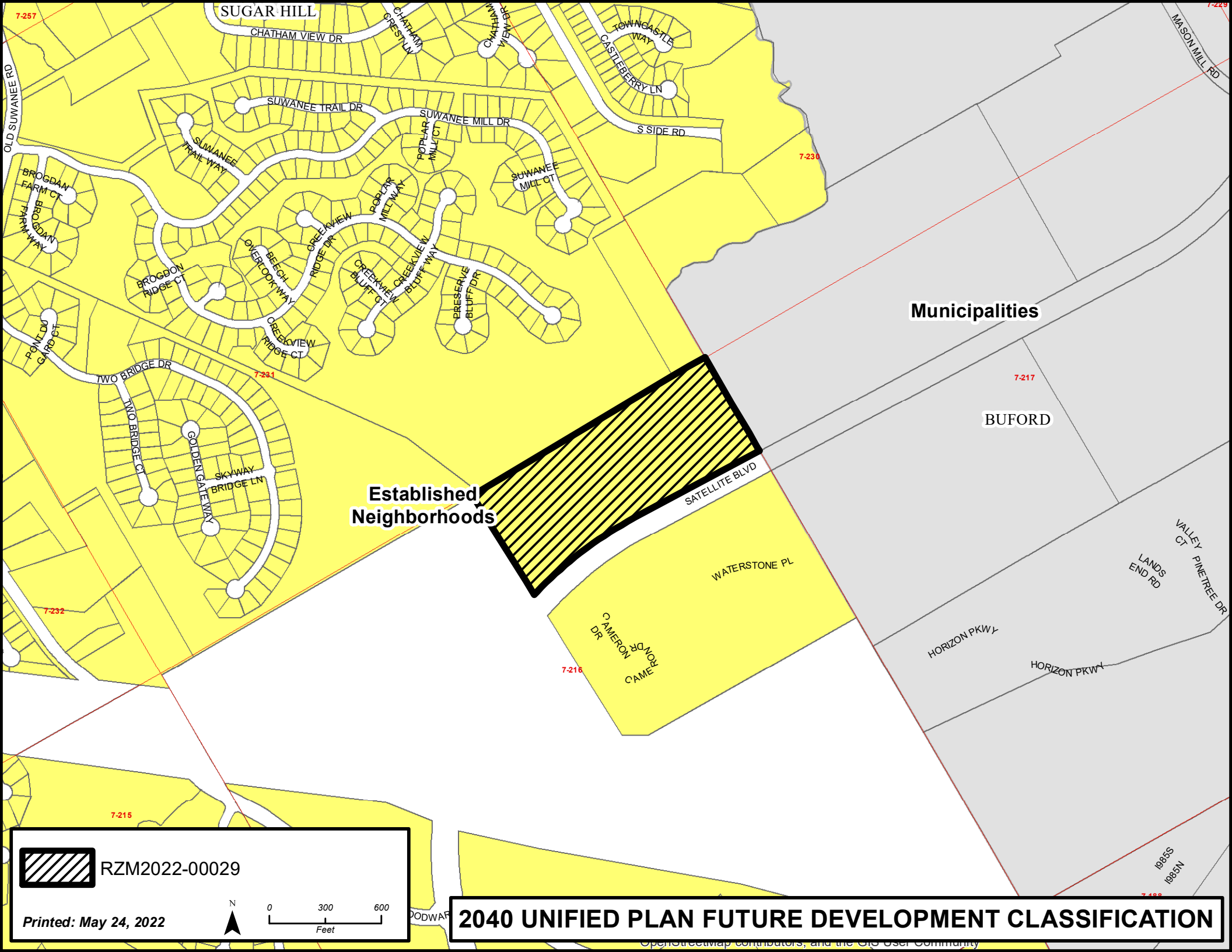
600
Feet
SUBJECT SITE AND SURROUNDING ZONING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CHATHAM VIEW DR
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CHATHAM RIDGE
TOWNCASTLE WAY
CASTLEBERRY LN
S SIDE RD
MASON MILL RD
OLD SUWANEE RD
SUWANEE TRAIL DR
SUWANEE MILL DR
SUWANEE TRAIL WAY
POPLAR MILL CT
SUWANEE MILL CT
BROGDAN FARM CT
BROGDAN FARM WAY
POPLAR MILL WAY
CREEKVIEW RIDGE DR
BEECH OVERLOOK WAY
BROGDON RIDGE CT
CREEKVIEW BLUFF CT
CREEKVIEW BLUFF WAY
PRESERVE BLUFF DR
CREEKVIEW RIDGE CT
PONT DU GARD CT
TWO BRIDGE DR
TWO BRIDGE CT
GOLDEN GATEWAY
SKYWAY BRIDGE LN
Municipalities
BUFORD
Established Neighborhoods
SATELLITE BLVD
WATERSTONE PL
CAMERON RON DR
HORIZON PKWY
HORIZON PKWY
LANDS END RD
VALLEY CT
PINETREE DR
I985S
I985N
7-257
7-230
7-229
7-231
7-217
7-232
7-216
7-215
RZM2022-00029
Printed: May 24, 2022
N
0
300
600
Feet
2040 UNIFIED PLAN FUTURE DEVELOPMENT CLASSIFICATION
OpenStreetMap contributors, and the GIS User Community

REZONING APPLICATION

AN APPLICATION TO AMEND THE OFFICIAL ZONING MAP OF GWINNETT COUNTY, GA.

APPLICANT INFORMATION	PROPERTY OWNER INFORMATION*
NAME: Ken Wood	NAME: GVW Property HOldings LLC
ADDRESS: 350 Research Court	ADDRESS: 94 Peachtree Way NE
CITY: Peachtree Corners	CITY: Atlanta
STATE: GA ZIP: 30092	STATE: GA ZIP: 30305
PHONE: 678-684-6206	PHONE:
EMAIL: ken@pec.plus	EMAIL:

CONTACT PERSON: Ken Wood; Sonia Linton PHONE: 678-684-6206; 614-961-7630

CONTACT'S E-MAIL: ken@pec.plus; slinton@pec.plus

APPLICANT IS THE:

☒ OWNER'S AGENT ☐ PROPERTY OWNER ☐ CONTRACT PURCHASER

PRESENT ZONING DISTRICTS(S): R100 REQUESTED ZONING DISTRICT: RM-24

PARCEL NUMBER(S): 7216 010 ACREAGE: 19.0

ADDRESS OF PROPERTY: 1850 Satellite Boulevard, Buford, GA 30518

PROPOSED DEVELOPMENT: Multi-Family Residential

RESIDENTIAL DEVELOPMENT	NON-RESIDENTIAL DEVELOPMENT
No. of Lots/Dwelling Units 300 units	No. of Buildings/Lots:
Dwelling Unit Size (Sq. Ft.): 600 sq. ft. min.	Total Building Sq. Ft.
Gross Density: 15.79 du/acre	Density:
Net Density: 18.73 du/acre	

PLEASE ATTACH A LETTER OF INTENT EXPLAINING WHAT IS PROPOSED

REZONING APPLICANT'S RESPONSE

STANDARDS GOVERNING THE EXERCISE OF THE ZONING POWER

PURSUANT TO REQUIREMENTS OF THE UNIFIED DEVELOPMENT ORDINANCE, THE BOARD OF COMMISSIONERS FINDS THAT THE FOLLOWING STANDARDS ARE RELEVANT IN BALANCING THE INTEREST IN PROMOTING THE PUBLIC HEALTH, SAFETY, MORALITY OR GENERAL WELFARE AGAINST THE RIGHT TO THE UNRESTRICTED USE OF PROPERTY AND SHALL GOVERN THE EXERCISE OF THE ZONING POWER.

PLEASE RESPOND TO THE FOLLOWING STANDARDS IN THE SPACE PROVIDED OR USE AN ATTACHMENT AS NECESSARY:

(A) WHETHER A PROPOSED REZONING WILL PERMIT A USE THAT IS SUITABLE IN VIEW OF THE USE AND DEVELOPMENT OF ADJACENT AND NEARBY PROPERTY:

SEE ATTACHED

(B) WHETHER A PROPOSED REZONING WILL ADVERSELY AFFECT THE EXISTING USE OR USABILITY OF ADJACENT OR NEARBY PROPERTY:

SEE ATTACHED

(C) WHETHER THE PROPERTY TO BE AFFECTED BY A PROPOSED REZONING HAS REASONABLE ECONOMIC USE AS CURRENTLY ZONED:

SEE ATTACHED

(D) WHETHER THE PROPOSED REZONING WILL RESULT IN A USE WHICH WILL OR COULD CAUSE AN EXCESSIVE OR BURDENSOME USE OF EXISTING STREETS, TRANSPORTATION FACILITIES, UTILITIES, OR SCHOOLS:

SEE ATTACHED

(E) WHETHER THE PROPOSED REZONING IS IN CONFORMITY WITH THE POLICY AND INTENT OF THE LAND USE PLAN:

SEE ATTACHED

(F) WHETHER THERE ARE OTHER EXISTING OR CHANGING CONDITIONS AFFECTING THE USE AND DEVELOPMENT OF THE PROPERTY WHICH GIVE SUPPORTING GROUNDS FOR EITHER APPROVAL OR DISAPPROVAL OF THE PROPOSED REZONING:

SEE ATTACHED

5/5/2022

Re: **Zoning Standards Analysis**
Satellite Boulevard Rezoning (+/-18.99 acres)
PEC+ Project No. 22057.00

Dear Community Development officials,

Please see below the responses to the Standards Governing the Exercise of the Zoning Power:

The following standards and factors are found to be relevant to the exercise of the county's zoning powers and shall govern the review of all proposed amendments to the official zoning map:

A. Whether a proposed rezoning will permit a use that is suitable in view of the use and development of adjacent and nearby property:
The proposed rezoning will permit a use that is suitable in view of the use and development of adjacent and nearby properties. The proposal is a new, new 300-unit multi-family apartment community located on the north side of Satellite Boulevard across from the intersection with Waterstone Place. Given the site's location along a major thoroughfare (Satellite Boulevard) and its vicinity to light industrial uses, the proposed land use of high-density residential apartments is reasonable at this location. The proposal also matches the land use of the apartment complex on the southside of Satellite Boulevard and acts as a buffer and transitional point between the single-family residences to the west and north. The proposal would maintain all stream buffers, and would have access only onto Satellite Boulevard, so as not to disturb the properties to the north. Nearby properties will not be affected by the proposal.

B. Whether a proposed rezoning will adversely affect the existing use or usability of adjacent or nearby property:
The zoning proposal will not adversely affect the existing use or usability of adjacent or nearby properties. Most of the nearby properties are already developed into residential uses with large amounts of open space buffering the site's property line or light industrial uses, such as warehousing. The proposal includes measures to ensure compatibility to have as few effects on neighboring properties as possible, including 50' transitional buffers along adjoining lot lines, and keeping the stream buffer and floodplain areas undisturbed.

C. Whether the property to be affected by the zoning proposal has a reasonable economic use as currently zoned.
The proposal loses much of its economic use because of factors that are outside of the applicant's control. Almost half of the property is undevelopable due to the two sanitary sewer easements and the floodplain on the eastern side of the site. Under its current zoning designation, R-100, is limited in its development potential. Although the request is to rezone the property to RM-24, the density is closer to RM-13 which will allow the site to be effectively and efficiently designed to provide a far more reasonable economic use without causing strain to the nearby infrastructure and facilities.

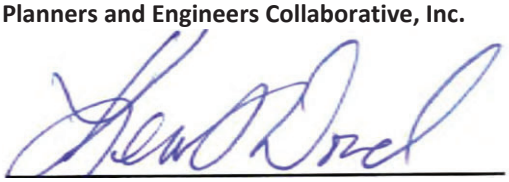
D. Whether the proposed rezoning will result in a use which will or could cause an excessive or burdensome use of existing streets, transportation facilities, utilities, or schools:
The proposed rezoning will not result in a use which will or could cause an excessive or burdensome use of existing streets, transportation facilities, utilities, or schools. The multi-family units are targeted toward younger families, young professionals, and older persons looking to downsize. Due to this diverse market, it is not anticipated that the development will cause an excessive burden on nearby schools. Utilities on-site are being explored by the development team; the developer will make upgrades (if any) to facilitate the development. The site plan includes a master stormwater pond to collect runoff from significant rain events, so nearby properties will not experience flooding from this site.

350 Research Ct, Ste. 200, Peachtree Corners, Georgia 30092 ■ 48 Atlanta Street, Marietta, Georgia 30060
Main: (770) 451-2741 ■ Fax: (770) 451-3915
www.pecatl.com

E. Whether the proposed rezoning is in conformity with the policy and intent of the land use plan:
The proposed rezoning is in conformity with the policy and intent of the comprehensive plan. The Plan identifies the site as part of the 'Established Neighborhoods' character area, but it is also directly on the cusp of Workplace Centers and Innovation Districts designations. The proposed use would support the workplace centers and nearby innovation districts, which contribute to the overall health of the two regional activity centers that are just down the road from the site.

F. Whether there are other existing or changing conditions affecting the use and development of the property which give supporting grounds for either approval or disapproval of the proposed rezoning:
The site should be rezoned to facilitate the proposed development for several reasons, but perhaps the most compelling is the site's location. The area surrounding the site has become a major activity center in Gwinnett County, and is only going to continue to grow as the County itself grows. This plan is a forward-thinking proposal that will provide additional high-quality housing in an area that will support a growing population and economic development.

Sincerely,
Planners and Engineers Collaborative, Inc.



Kenneth J. Wood, P.E., LEED AP
President

For the Firm

kjw/ht/dp

PEC+ | Planners & Engineers Collaborative+

GWINNETT COUNTY
PLANNING AND DEVELOPMENT
RECEIVED
May 18, 2022

5/18/2022

Re: **Letter of Intent (Revised)**
Satellite Boulevard Rezoning (+/-18.99 acres)
PEC+ Project No. 22057.00

Dear Community Development officials,

This rezoning application is being submitted on behalf of the developer and applicant. This application proposes to rezone the approximately 19-acre property located on the north side of Satellite Boulevard from R-100 to RM-24. This rezoning would facilitate the development of a new 300-unit multi-family apartment community.

Existing Conditions:
The uses surrounding the property include:

- North: single-family detached homes
- East: Light industrial complexes
- South: Waterstone Apartments
- West: Undeveloped land and single-family detached homes

As it currently exists, the subject property is located on the north side of Satellite Boulevard across from the intersection with Waterstone Place. The tract is undeveloped with two 20-foot sanitary sewer easements running along the eastern side of the property. There is also a floodplain that falls in between the easements.

Proposed Development
The proposed development consists of 300 multi-family units (apartments). The units will be split between four different buildings located throughout the property. Due to the almost 1.5 acres of floodplain, there will be a net density of 18.73 units per acre which assists in supporting the Workplace Centers and Innovation Districts located within a three-mile radius of the site. The creation of development in this area will provide a live-work environment for future residents with lower commute times and quality housing.

Although the request is to rezone this property to RM-24, the gross density of 15.79 units per acre shows a closer relationship to the RM-13 zoning district. In essence, this will have a similar impact to the neighboring properties in relation to traffic and school, along with the overall feel of the development.

The proposed development would be accessed from Satellite Boulevard opposite Waterstone Place, with no vehicular access to the surrounding neighborhoods. There will be a secondary access slightly farther west along Satellite Boulevard. There will be a bark park and a little over eight acres of open space provided within the community. A pool and amenity area will also be located centrally to the built site. The proposed buildings would be buffered from the surrounding development by the substantial natural features (vegetation and streams) existing on site along the property lines. There is a stormwater facility proposed on the site that would collect runoff during significant rain events.

As previously mentioned, the location of the floodplain removes almost 6 acres of land from the site, so that all developable land and necessary facilities have been pushed to the northern and western property lines. A buffer reduction waiver is therefore requested to decrease the undisturbed zoning buffer from 50’ to 7’ along where the facility is proposed. The R-75 residential development to the north has over 450’ of undisturbed open space between the nearest single-family detached lot and this site’s property line. The nearest proposed multi-family building is also lies almost 70’ from the property line; the development is not anticipated to impact existing homeowners to the north. Due to the existing land constraints and the open space to the north, the location and size of the stormwater facility is deemed the best possible fit for the site, mitigating runoff into Suwanee Creek which runs above the northern property line and through the eastern side of the site.

350 Research Ct, Ste. 200, Peachtree Corners, Georgia 30092 ■ 48 Atlanta Street, Marietta, Georgia 30060
Main: (770) 451-2741 ■ Fax: (770) 451-3915
www.pecatl.com

Project No. 22057.00
5/18/2022

The applicant and owner respectfully request that the Gwinnett County Board of Commissioners, Planning Commission and Planning Staff approve and support the Applicant's rezoning request to allow for the rezoning of this property from R-100 to RM-24. This would facilitate the development of a new, 300-unit multi-family apartment community that would contribute to the advancement of the purpose and intent of the Gwinnett County comprehensive plan. The developer and their representatives welcome the opportunity to meet with all interested parties and representatives.

Sincerely,
Planners and Engineers Collaborative, Inc.

REZONING APPLICANT'S CERTIFICATION

THE UNDERSIGNED BELOW IS AUTHORIZED TO MAKE THIS APPLICATION. THE UNDERSIGNED IS AWARE THAT NO APPLICATION OR REAPPLICATION AFFECTING THE SAME LAND SHALL BE ACTED UPON WITHIN 12 MONTHS FROM THE DATE OF LAST ACTION BY THE BOARD OF COMMISSIONERS UNLESS WAIVED BY THE BOARD OF COMMISSIONERS. IN NO CASE SHALL AN APPLICATION OR REAPPLICATION BE ACTED UPON IN LESS THAN SIX (6) MONTHS FROM THE DATE OF LAST ACTION BY THE BOARD OF COMMISSIONERS.

Signature of Applicant — Date: 5/3/22

Kenneth J. Wood - President and Principal, PEC+

Type or Print Name and Title

Signature of Notary Public — Date: 5/3/2022 — Notary Seal

J PHON
NOTARY PUBLIC
My Commission Expires
03-28-2026
GWINNETT COUNTY, GEORGIA

REZONING PROPERTY OWNER'S CERTIFICATION

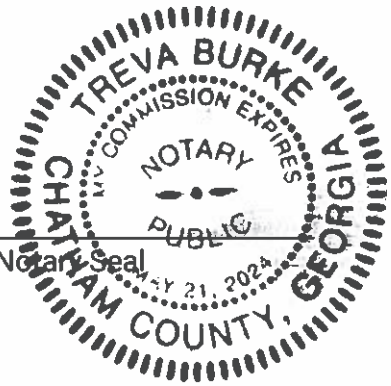
THE UNDERSIGNED BELOW, OR AS ATTACHED, IS THE OWNER OF THE PROPERTY CONSIDERED IN THIS APPLICATION. THE UNDERSIGNED IS AWARE THAT NO APPLICATION OR REAPPLICATION AFFECTING THE SAME LAND SHALL BE ACTED UPON WITHIN 12 MONTHS FROM THE DATE OF LAST ACTION BY THE BOARD OF COMMISSIONERS UNLESS WAIVED BY THE BOARD OF COMMISSIONERS. IN NO CASE SHALL AN APPLICATION OR REAPPLICATION BE ACTED UPON IN LESS THAN SIX (6) MONTHS FROM THE DATE OF LAST ACTION BY THE BOARD OF COMMISSIONERS.

Signature of Property Owner — 4/21/22 — Date

G. Vincent West Owner

Type or Print Name and Title

Signature of Notary Public — 4/22/2022 — Date



Notary Seal

CONFLICT OF INTEREST CERTIFICATION FOR REZONING

The undersigned below, making application for a Rezoning, has complied with the Official Code of Georgia Section 36-67A-1, et. seq, Conflict of Interest in Zoning Actions, and has submitted or attached the required information on the forms provided.

SIGNATURE OF APPLICANT	DATE	TYPE OR PRINT NAME AND TITLE
	5/3/22	Kenneth Wood

SIGNATURE OF APPLICANT'S ATTORNEY OR REPRESENTATIVE	DATE	TYPE OR PRINT NAME AND TITLE
		Kenneth J. Wood - Principal & President, PEC+

SIGNATURE OF NOTARY PUBLIC	DATE	NOTARY SEAL
	5/3/2022	

DISCLOSURE OF CAMPAIGN CONTRIBUTIONS

Have you, within the two years immediately preceding the filing of this application, made campaign contributions aggregating $250.00 or more to a member of the Board of Commissioners or a member of the Gwinnett County Planning Commission?

☐ YES ☒ NO

Kenneth J. Wood
YOUR NAME

If the answer is yes, please complete the following section:

NAME AND OFFICAL POSITION OF GOVERNMENT OFFICIAL	CONTRIBUTIONS (List all which aggregate to $250 or More)	DATE CONTRIBUTION WAS MADE (Within last two years)

Attach additional sheets if necessary to disclose or describe all contributions.

CONFLICT OF INTEREST CERTIFICATION FOR REZONING

The undersigned below, making application for a Rezoning, has complied with the Official Code of Georgia Section 36-67A-1, et. seq, Conflict of Interest in Zoning Actions, and has submitted or attached the required information on the forms provided.

[signature]	04/29/2022	HEATH HAWKINS / SENIOR MANAGING DIRECTOR
SIGNATURE OF APPLICANT	DATE	TYPE OR PRINT NAME AND TITLE

SIGNATURE OF APPLICANT'S ATTORNEY OR REPRESENTATIVE	DATE	TYPE OR PRINT NAME AND TITLE

[signature]	4/29/2022	NOTARY SEAL
SIGNATURE OF NOTARY PUBLIC	DATE	

SAGE LAUDERDALE NOTARY PUBLIC MONROE COUNTY, GEORGIA

DISCLOSURE OF CAMPAIGN CONTRIBUTIONS

Have you, within the two years immediately preceding the filing of this application, made campaign contributions aggregating $250.00 or more to a member of the Board of Commissioners or a member of the Gwinnett County Planning Commission?

☐ YES ☒ NO HEATH HAWKINS
YOUR NAME

If the answer is yes, please complete the following section:

NAME AND OFFICAL POSITION OF GOVERNMENT OFFICIAL	CONTRIBUTIONS (List all which aggregate to $250 or More)	DATE CONTRIBUTION WAS MADE (Within last two years)

Attach additional sheets if necessary to disclose or describe all contributions.

VERIFICATION OF CURRENT PAID PROPERTY TAXES FOR REZONING

THE UNDERSIGNED BELOW IS AUTHORIZED TO MAKE THIS APPLICATION. THE UNDERSIGNED CERTIFIES THAT ALL GWINNETT COUNTY PROPERTY TAXES BILLED TO DATE FOR THE PARCEL LISTED BELOW HAVE BEEN PAID IN FULL TO THE TAX COMMISSIONER OF GWINNETT COUNTY, GEORGIA. IN NO CASE SHALL AN APPLICATION OR REAPPLICATION FOR REZONING BE PROCESSED WITHOUT SUCH PROPERTY VERIFICATION.

***Note**: **A SEPARATE VERIFICATION FORM MUST BE COMPLETED FOR EACH TAX PARCEL INCLUDED IN THE REZONING REQUEST.**

PARCEL I.D. NUMBER: 7 - 216 - 010
(Map Reference Number) District Land Lot Parcel

Signature of Applicant — Date: 4/21/22

Kenneth J. Wood - President & Principal, PEC+
Type or Print Name and Title

*****PLEASE TAKE THIS FORM TO THE TAX COMMISSIONERS OFFICE AT THE GWINNETT JUSTICE AND ADMINISTRATION CENTER, 75 LANGLEY DRIVE, FOR THEIR APPROVAL BELOW.*****

TAX COMMISSIONERS USE ONLY

(PAYMENT OF ALL PROPERTY TAXES BILLED TO DATE FOR THE ABOVE REFERENCED PARCEL HAVE BEEN VERIFIED AS PAID CURRENT AND CONFIRMED BY THE SIGNATURE BELOW)

Chris Nelson
NAME

Senior Tax Services Associate
TITLE

April 22, 2022
DATE

LEGAL DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND lying and being in Land Lot 216 of the 7th District, Gwinnett County, Georgia and being more particularly described as follows:

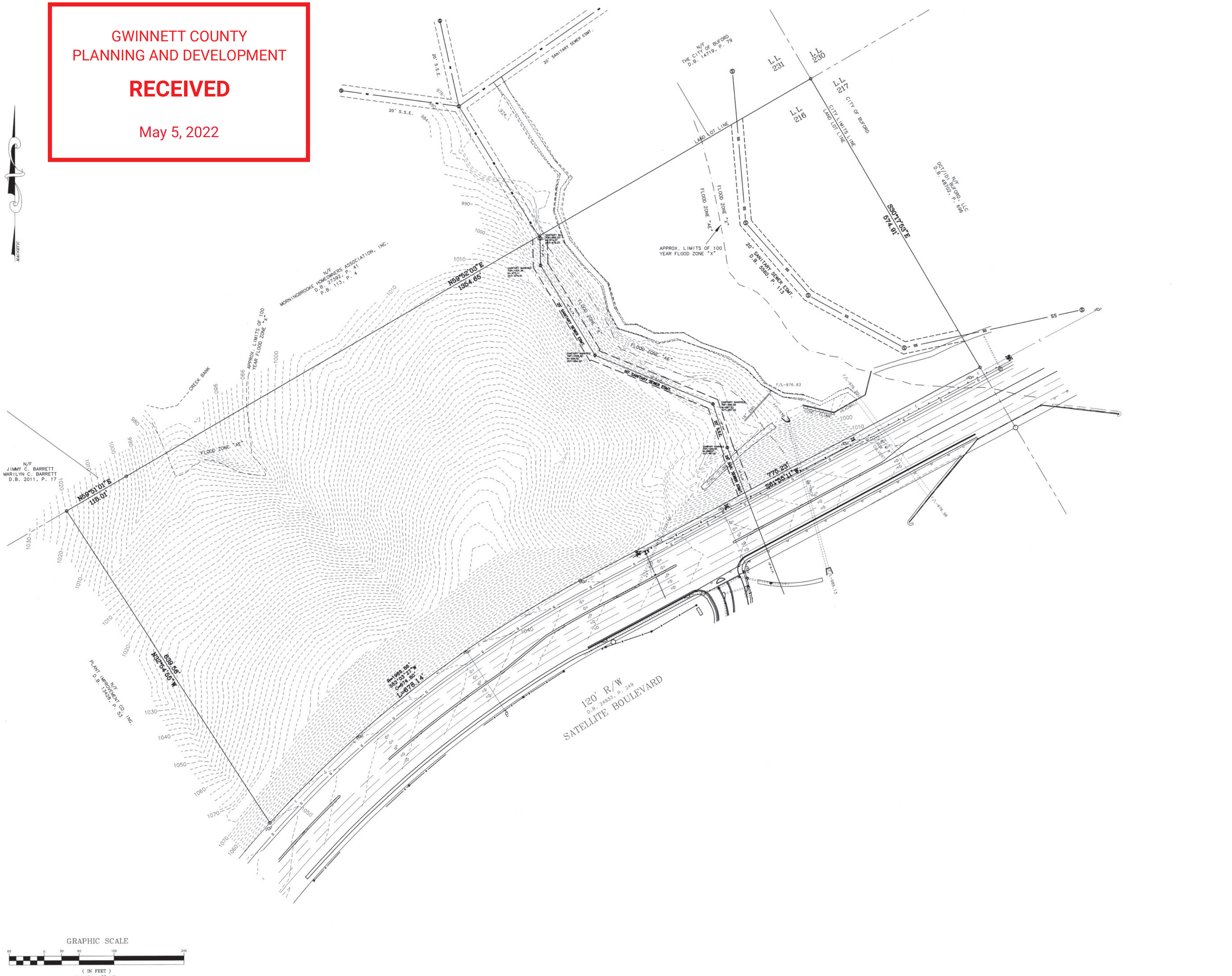
Beginning at the Land Lot corner common to Land Lots 216, 217, 230 & 231; thence along the Land Lot line common to Land Lots 216 & 217 South 30 degrees 17 minutes 53 seconds East a distance of 574.91 feet to a point on the Northwesterly right-of-way line of Satellite Boulevard (120' R/W); thence along said right of-way line South 61 degrees 55 minutes 11 seconds West a distance of 775.23 feet to a point; thence 678.14 feet along an arc of a curve to the left, said curve having a radius of 1,969.86 feet and a chord bearing and distance of South 52 degrees 3 minutes 27 seconds West 674.80 feet to a point; thence North 32 degrees 54 minutes 55 seconds West a distance of 639.56 feet to a point; thence North 59 degrees 51 minutes 1 second East a distance of 118.01 feet to a point; thence North 59 degrees 52 minutes 3 seconds East a distance of 1,354.65 feet to a point and the POINT OF BEGINNING.

Said tract containing 18.995 acres.

GWINNETT COUNTY
PLANNING AND DEVELOPMENT

RECEIVED

May 5, 2022



PLAT OF TOPOGRAPHIC SURVEY FOR

DAVIS DEVELOPMENT

AREA = 18.995 ACRES

LOCATED IN
LAND LOT 216, 7TH DISTRICT,
GWINNETT COUNTY, GEORGIA

DATE 01/13/13 DRAWN BY CDJ
SCALE 1" = 60' CHECKED BY WCR

DATE	DESCRIPTION	BY
	REVISIONS	

CARLTON RAKESTRAW & ASSOCIATES

REGISTERED LAND SURVEYORS

2203 CHARLES HARDY PARKWAY
DALLAS, GEORGIA 30157
770 - 443 - 2200
FAX - 770-443-2300

CRA, INC. LAND SURVEYOR FIRM LICENSE NO. LSF000458

SUBJECT PROPERTY LIES WITHIN AN AREAS DESIGNATED AS ZONES "AE" & "X" ON COMMUNITY PANEL 13135C0025F OF THE FLOOD INSURANCE RATE MAPS FOR GWINNETT COUNTY PREPARED BY F.E.M.A. DATED SEPTEMBER 29, 2006
THE LIMITS OF 100 YEAR FLOOD ZONE "AE" SHOWN WAS SCALED FROM COMMUNITY PANEL 13135C0025F OF THE FLOOD INSURANCE RATE MAPS FOR GWINNETT COUNTY, GEORGIA.

TECHNICAL DATA
TRAVERSE PRECISION – 1'/43,666'
ANGLE ADJUSTMENT – 00"/ANGLE
TRAVERSE ADJUSTMENT – COMPASS
PLAT PRECISION – 1'/322,262'
EQUIPMENT – SOKKIA SET 2-100
IPS – 1/2" RE. ROD SET
R.R. – REINFORCING ROD
UTILITY POLE
OVERHEAD UTILITY
FIRE HYDRANT –
WATER VALVE –
GUARD RAIL –
GAS LINE –
SANITARY MANHOLE –
SANITARY SEWER –
STORM JUNCTION BOX –

PROJECT NO.
13-003

PLOT FILE – 13-003TP

SITE DATA:	
TOTAL SITE AREA	18.99 ACRES
ZONING	
EXISTING ZONING	R-100
PROPOSED ZONING	RM-24
ZONING JURISDICTION	GWINNETT COUNTY, GEORGIA
MAIN SETBACK REQUIREMENTS	
FRONT PROPERTY SETBACK	50 FEET (SATELLITE BLVD./MAJOR THOROUGHFARE)
FRONT SETBACK	15 FEET
SIDE SETBACK	15 FEET
REAR SETBACK	30 FEET
UNDISTURBED ZONING BUFFER	50 FEET (AGAINST R75CSO ZONED PROPERTY)
LANDSCAPE STRIP	10 FEET (ADJACENT TO STREET ROW)
MAX. BUILDING HEIGHT	65 FEET
PROPOSED SETBACK REQUIREMENTS	
FRONT PROPERTY SETBACK	50 FEET (SATELLITE BLVD./MAJOR THOROUGHFARE)
FRONT SETBACK	15 FEET
SIDE SETBACK	15 FEET
REAR SETBACK	30 FEET
UNDISTURBED ZONING BUFFER	50 FEET (AGAINST R75CSO ZONED PROPERTY)
LANDSCAPE STRIP	10 FEET (ADJACENT TO STREET ROW)
MAX. BUILDING HEIGHT	65 FEET

SITE DATA:	
TOTAL SITE AREA	18.99 ACRES
USE CALCULATIONS	
TOTAL SITE AREA	18.99 ACRES
FLOOD HAZARD ESMT.	1.48 ACRES (2.97 AC x 50%)
TOTAL NET LAND AREA	16.02 ACRES (18.99 AC - 2.97 AC)
RECOMMENDED DEVELOPMENT STANDARDS	
MULTI-FAMILY APARTMENTS	300 UNITS
GROSS SITE DENSITY PROVIDED	15.79 UPA
NET SITE DENSITY PROVIDED	18.73 UPA
MAX. NET SITE DENSITY ALLOWED	24.0 UPA
MIN. OPEN SPACE CALCULATIONS	
MIN. OPEN SPACE REQUIRED	3.8 ACRES (20% OF TOTAL SITE AREA)
OPEN SPACE PROVIDED	8.18 ACRES (43% OF TOTAL SITE AREA)
MULTI-FAMILY PARKING REQUIREMENTS	
MIN. PARKING SPACES REQUIRED	450 SPACES (1.5 SPI DWELLING UNIT)
MAX. PARKING SPACES ALLOWED	900 SPACES (3 SPI DWELLING UNIT)
TOTAL PARKING PROVIDED	527 SPACES (1.7 SPI DWELLING UNIT)

GWINNETT COUNTY
PLANNING AND DEVELOPMENT
RECEIVED
May 19, 2022

A BUFFER REDUCTION WAIVER IS REQUESTED TO ALLOW THE STORMWATER MANAGEMENT INTO THE UNDISTURBED ZONING BUFFER

BUILDINGS NOT ALLOWED TO BE WITHIN ZONE OF INFLUENCE OF SANITARY SEWER

ALL PORTIONS OF BUILDING SHALL BE ACCESSIBLE BY FIRE DEPARTMENT

24 HOUR CONTACT:
HEATH HAWKINS

GEORGIA811
www.Georgia811.com
Know what's below. Call before you dig.

SITE LOCATION MAP
NOT TO SCALE

FEMA FIRM MAP
NOT TO SCALE

P: (770) 451-2741 F: (770) 451-3915
WWW.PEC.PLUS
Planners & Engineers Collaborative+
LAND PLANNING + LANDSCAPE ARCHITECTURE + CIVIL ENGINEERING
ARBORISTS + SURVEYING & CONSTRUCTION + WATER RESOURCES
350 RESEARCH COURT STE 200
PEACHTREE CORNERS, GA 30092

PROJECT

1850 SATTELITE

A MASTER PLANNED RESIDENTIAL DEVELOPMENT

AT

1850 SATTELITE BOULEVARD

GWINNETT COUNTY JURISDICTION

FOR

THIRD LAKE DEVELOPMENT

MUNICIPALITY PROJECT #

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	5/18/2022	SL	REVISIONS PER STAFF COMMENTS

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 34393 PROFESSIONAL ENGINEER KENNETH J WOOD

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000059389 EXP. 10/28/2021

CONCEPTUAL MASTER PLAN

0 30 60 120 180

SCALE: 1" = 60'
DATE: 03/21/2022
PROJECT: 22057.00

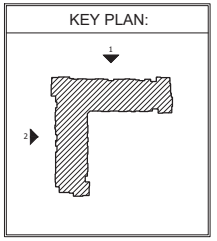
Z1
SHEET

GWINNETT COUNTY
PLANNING AND DEVELOPMENT

RECEIVED

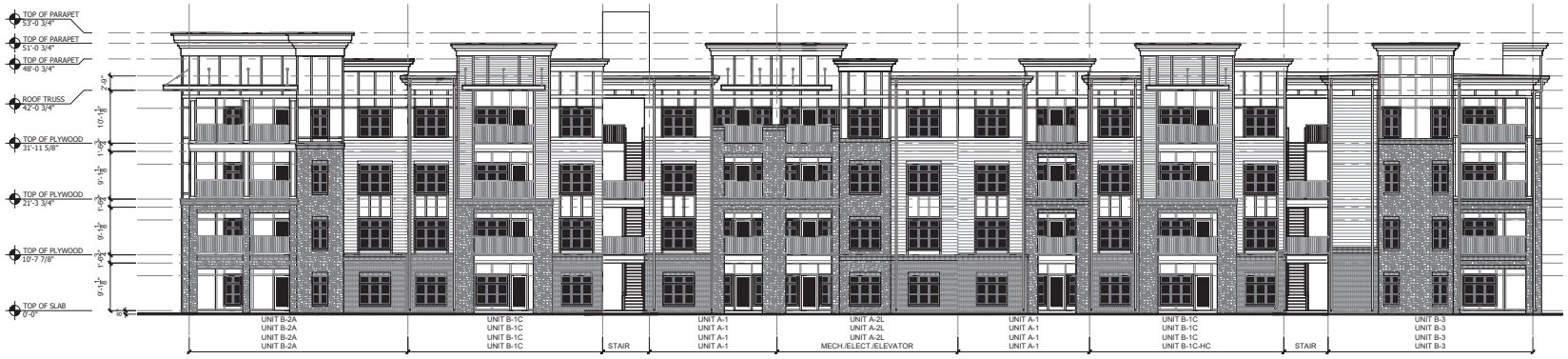
May 5, 2022

KEY PLAN:



ELEVATION KEYNOTES:

1	CANOPY - SEE DETAIL 5/A8-14
2	T.P.O. RUBBER ROOFING (SLOPE: 1/4" OVER 1'-0" MIN.)
3	ALUM. GUTTER AT LOW ROOF
4	HARDIE FIBER CEMENT 6" LAP SIDING AND 4" EXPOSURE
5	FIBER CEMENT TRIM
6	CEMENT FIBER PANELS W/ 1x4 CEMENT FIBER BATTENS
7	STONE
8	BRICK
9	BRICK SOLDIER
10	CORNICE - SEE DETAIL 1/A8-14
11	RAILING AT BALCONY
12	ROOFTOP ACCESS STAIR - SEE SECTION 1/A6-15
13	VINYL WINDOWS
14	42" HIGH 2X6 KNEE WALL W/ FAUX STONE CAP
15	ALUM. DOWNSPOUT
	INSTALL SOLID BLOCKING AT ALL CABLES AND BRACKETS. SEE STRUCTURAL.



1 A5-2A BUILDING 3000 EXTERIOR ELEVATION
3/32" = 1'-0"

2 A5-2A BUILDING 3000 EXTERIOR ELEVATION
3/32" = 1'-0"

gla

GLA-ATL, LLC

WWW.GLAATL.COM

RELEASE DATES:

REV #	DATE	DESCRIPTION

STAMP:

CLIENT:
THIRD LAKE DEVELOPMENT

PROJECT:
Satellite BLVD

DRAWING TITLE:
BUILDING CONCEPT ELEVATIONS

DRAWN BY:

SCALE: AS NOTED
DATE: 4/29/2022

PROJECT NUMBER: -

DRAWING NUMBER:
A5-2A

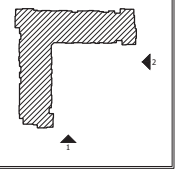
NOT FOR CONSTRUCTION

GWINNETT COUNTY
PLANNING AND DEVELOPMENT

RECEIVED

May 5, 2022

KEY PLAN:



ELEVATION KEYNOTES:

1	CANOPY - SEE DETAIL 5/A8-14
2	T.P.O. RUBBER ROOFING (SLOPE: 1/4" OVER 1'-0" MIN.)
3	ALUM. GUTTER AT LOW ROOF
4	HARDIE FIBER CEMENT 6" LAP SIDING AND 4" EXPOSURE
5	FIBER CEMENT TRIM
6	CEMENT FIBER PANELS W/ 1x4 CEMENT FIBER BATTENS
7	STONE
8	BRICK
9	BRICK SOLDIER
10	CORNICE - SEE DETAIL 1/A8-14
11	RAILING AT BALCONY
12	ROOFTOP ACCESS STAIR - SEE SECTION 1/A6-15
13	VINYL WINDOWS
14	42" HIGH 2X6 KNEE WALL W/ FAUX STONE CAP
15	ALUM. DOWNSPOUT
	INSTALL SOLID BLOCKING AT ALL CABLES AND BRACKETS. SEE STRUCTURAL.

1 A5-2B BUILDING 2000 EXTERIOR ELEVATION
3/32" = 1'-0"

2 A5-2B BUILDING 2000 EXTERIOR ELEVATION
3/32" = 1'-0"

gla
GLA-ATL, LLC
WWW.GLAATL.COM

RELEASE DATES:

REV #	DATE	DESCRIPTION

STAMP:

CLIENT:
THIRD LAKE DEVELOPMENT

PROJECT:
Satellite BLVD

DRAWING TITLE:
BUILDING CONCEP ELEVATIONS

DRAWN BY:

SCALE: AS NOTED
DATE: 4/29/2022

PROJECT NUMBER:

DRAWING NUMBER:
A5-2B

NOT FOR CONSTRUCTION

GWINNETT COUNTY
PLANNING AND DEVELOPMENT

RECEIVED

May 5, 2022

360 STUDIO | PEC+ Planners & Engineers Collaborative+

SATELLITE BOULEVARD

GWINNETT COUNTY, GA

SITE RENDERING

TRAFFIC IMPACT STUDY
FOR
RESIDENTIAL DEVELOPMENT AT
1850 SATELLITE BOULEVARD

GWINNETT COUNTY, GEORGIA

Prepared for:

Third Lake Development, LLC
1600 E. 8th Avenue
Suite A132
Tampa, FL 33605

Prepared By:

A&R Engineering Inc.
2160 Kingston Court, Suite O
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www.areng.com

May 05, 2022
A & R Project # 22-081

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1.0 INTRODUCTION

The purpose of this study is to determine the traffic impact from the proposed residential development at 1850 Satellite Boulevard in Gwinnett County, Georgia. The traffic analysis evaluates the current operations and future conditions with the traffic generated by the development. The proposed development will consist of 275 units of Multifamily Housing.

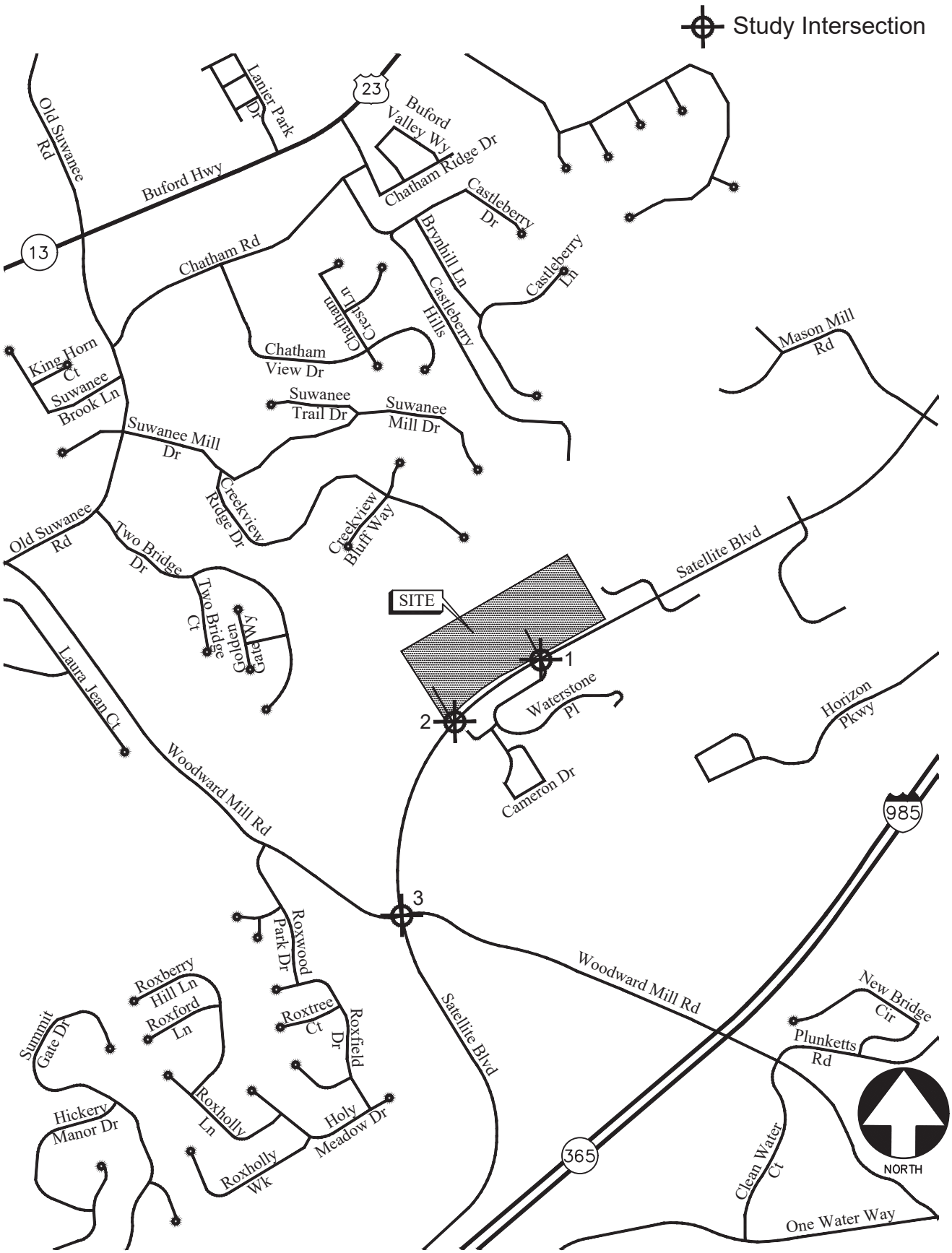
The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on Satellite Boulevard aligns with Waterstone Place
- Site Driveway 2: Right-in/right-out driveway on Satellite Boulevard (south of the existing median break)

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

- Satellite Boulevard at Waterstone Place
- Satellite Boulevard at Median Opening (south of Waterstone Place)
- Satellite Boulevard at Woodward Mill Road

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the development and the surrounding roadway network is shown in Figure 1.



LOCATION MAP FIGURE 1

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2.0 EXISTING FACILITIES / CONDITIONS

2.1 Roadway Facilities

The following is a brief description of each of the roadway facilities located in proximity to the site:

2.1.1 Satellite Boulevard

Satellite Boulevard is a north-south, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. Georgia Department of Transportation (GDOT) traffic counts (Station ID's 135-6725 & 135-6727) indicate that the daily traffic volume on Satellite Boulevard in 2019 was 10,900 vehicles per day Southwest of Sudderth Road and 13,000 vehicles per day Northeast of Saw Mill Ct. GDOT classifies Satellite Boulevard as an Urban Minor Arterial roadway.

2.1.2 Woodward Mill Road

Woodward Mill Road is an east-west, two-lane, undivided roadway and posted with a speed limit of 35 mph.

3.0 STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

3.1 Unsignalized Intersections

For unsignalized intersections controlled by a stop sign on minor streets, the level-of-service (LOS) for motor vehicles with controlled movements is determined by the computed control delay according to the thresholds stated in Table 1 below. LOS is determined for each minor street movement (or shared movement), as well as major street left turns. LOS is not defined for the intersection as a whole or for major street approaches. The LOS of any controlled movement which experiences a volume to capacity ratio greater than 1 is designated as "F" regardless of the control delay.

Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross the main road without experiencing long total delays.

TABLE 1 – LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

*The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection.

Source: Highway Capacity Manual, 6th edition, Exhibit 20-2 *LOS Criteria: Motorized Vehicle Mode*

3.2 Signalized Intersections

According to HCM procedures, LOS can be calculated for the entire intersection, each intersection approach, and each lane group. HCM uses control delay alone to characterize LOS for the entire intersection or an approach. Control delay per vehicle is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Both control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. A volume-to-capacity ratio of 1.0 or more for a lane group indicates failure from capacity perspective. Therefore, such a lane group is assigned LOS F regardless of the amount of control delay.

Table 2 below summarizes the LOS criteria from HCM for motorized vehicles at signalized intersection.

TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)*	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

*For approach-based and intersection wide assessments, LOS is defined solely by control delay

Source: Highway Capacity Manual, 6th edition, Exhibit 19-8 *LOS Criteria: Motorized Vehicle Mode*

LOS A is typically assigned when the volume-to-capacity (v/c) ratio is low and either progression is exceptionally favorable, or the cycle length is very short. LOS B is typically assigned when the v/c ratio is low and either progression is highly favorable, or the cycle length is short. However, more vehicles are stopped than with LOS A. LOS C is typically assigned when progression is favorable, or the cycle length is moderate. Individual *cycle failures* (one or more queued vehicles are not able to depart because of insufficient capacity during the cycle) may begin to appear at this level. Many vehicles still pass through the intersection without stopping, but the number of vehicles stopping is significant. LOS D is typically assigned when the v/c ratio is high and either progression is ineffective, or the cycle length is long. There are many vehicle-stops and individual cycle failures are noticeable. LOS E is typically assigned when the v/c ratio is high, progression is very poor, the cycle length is long, and individual cycle failures are frequent. LOS F is typically assigned when the v/c ratio is very high, progression is very poor, the cycle length is long, and most cycles fail to clear the queue.

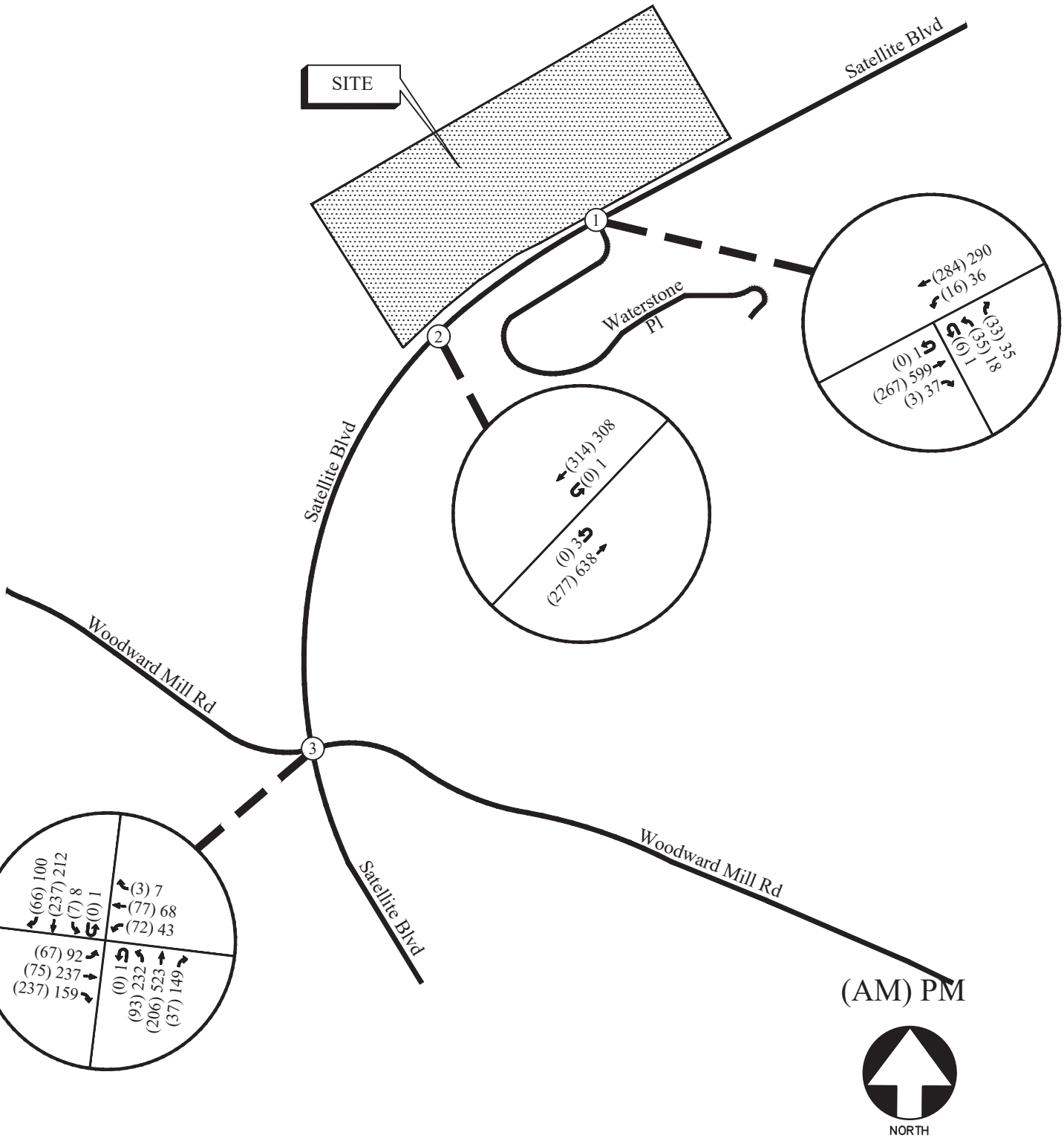
4.0 EXISTING 2022 TRAFFIC ANALYSIS

4.1 Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

- Satellite Boulevard at Waterstone Place
- Satellite Boulevard at Median Opening
- Satellite Boulevard at Woodward Mill Road

Turning movement counts were collected by National Data & Surveying Services on Wednesday, April 27, 2022. Heavy trucks and buses were included separately in the counts. All turning movement counts were recorded during the AM and PM peak hours between 7:00am to 9:00am and 4:00pm to 6:00pm, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.



EXISTING WEEKDAY PEAK-HOUR VOLUMES FIGURE 2

A&R Engineering Inc.

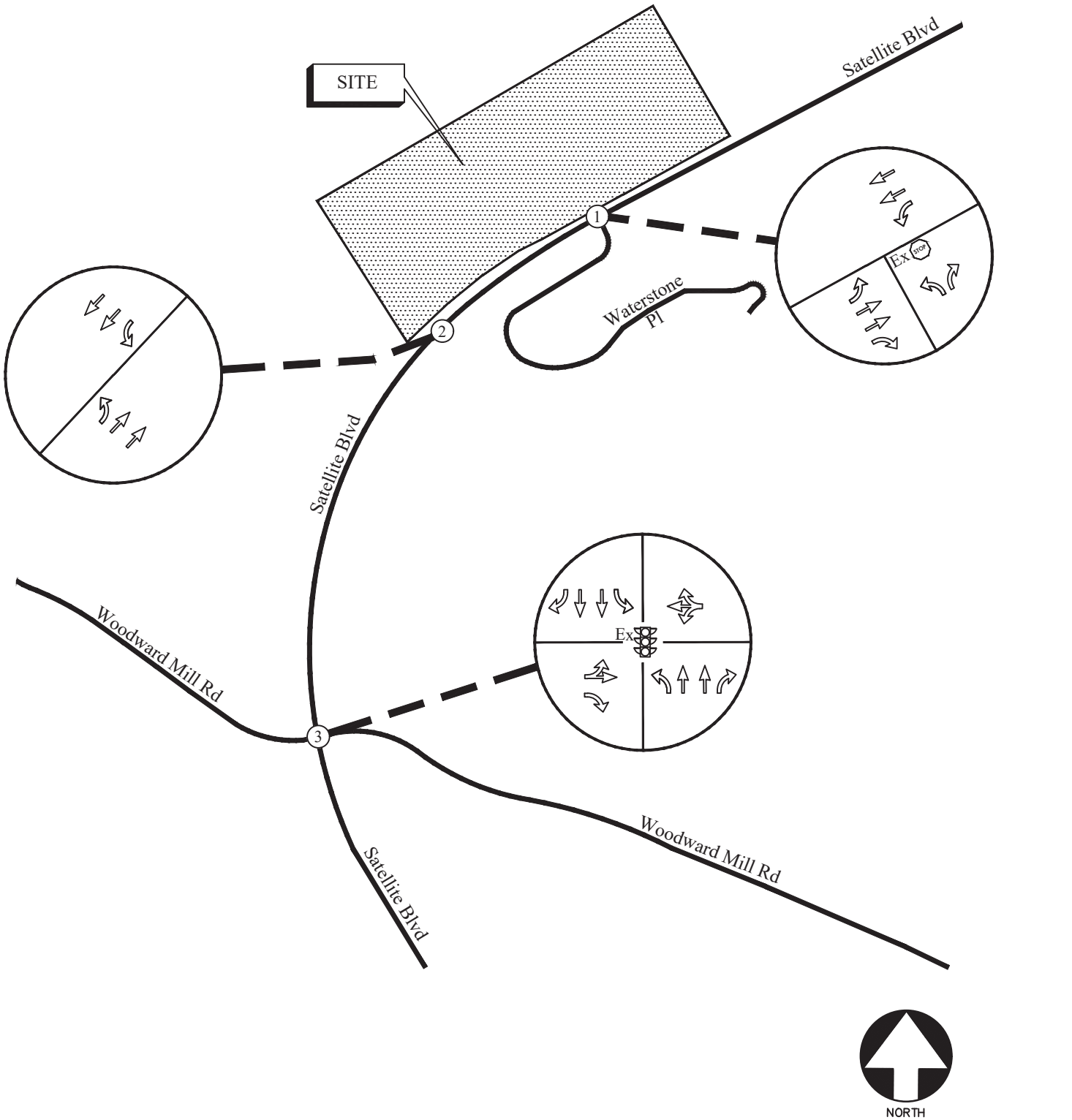
4.2 Existing Traffic Operations

Existing 2022 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS

Intersection		Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	**Satellite Boulevard @ Waterstone Place**			
	-Westbound Approach (Waterstone Place)	Stop Controlled on WB Approach	B (11.2)	B (13.6)
	-Northbound U-turn		A (0.0)	A (8.9)
	-Southbound Left		A (7.9)	A (9.2)
2	**Satellite Boulevard @ Median Opening**			
	-Northbound U-turn	-	A (0.0)	A (9.1)
	-Southbound U-turn		A (0.0)	B (11.8)
3	**Satellite Boulevard @ Woodward Mill Road**		**B (11.0)**	**B (14.0)**
	-Eastbound Approach		B (16.7)	B (19.0)
	-Westbound Approach	Signalized	B (17.0)	B (15.3)
	-Northbound Approach		A (6.9)	B (11.3)
	-Southbound Approach		A (9.1)	B (15.1)

The results of existing traffic operations analysis indicate that the signalized intersection is operating at overall level of service "B" or better in both the AM and PM peak hours. Un-signalized intersections approaches are operating at level-of-service "B" or better in both the AM and PM peak hours. The existing traffic control and lane geometry for the intersections are shown in Figure 3.



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 3

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5.0 PROPOSED DEVELOPMENT

The proposed residential development will consist of 275 units of Multifamily Housing (Mid-Rise). Site Driveway 1 will be a full access driveway on Satellite Boulevard that will align with Waterstone Place. Site Driveway 2 will be a right-in/right-out driveway that will be located south of the existing median break. An overlay of the site plan and driveway locations are shown in the graphic below.

A site plan is shown in Figure 4.

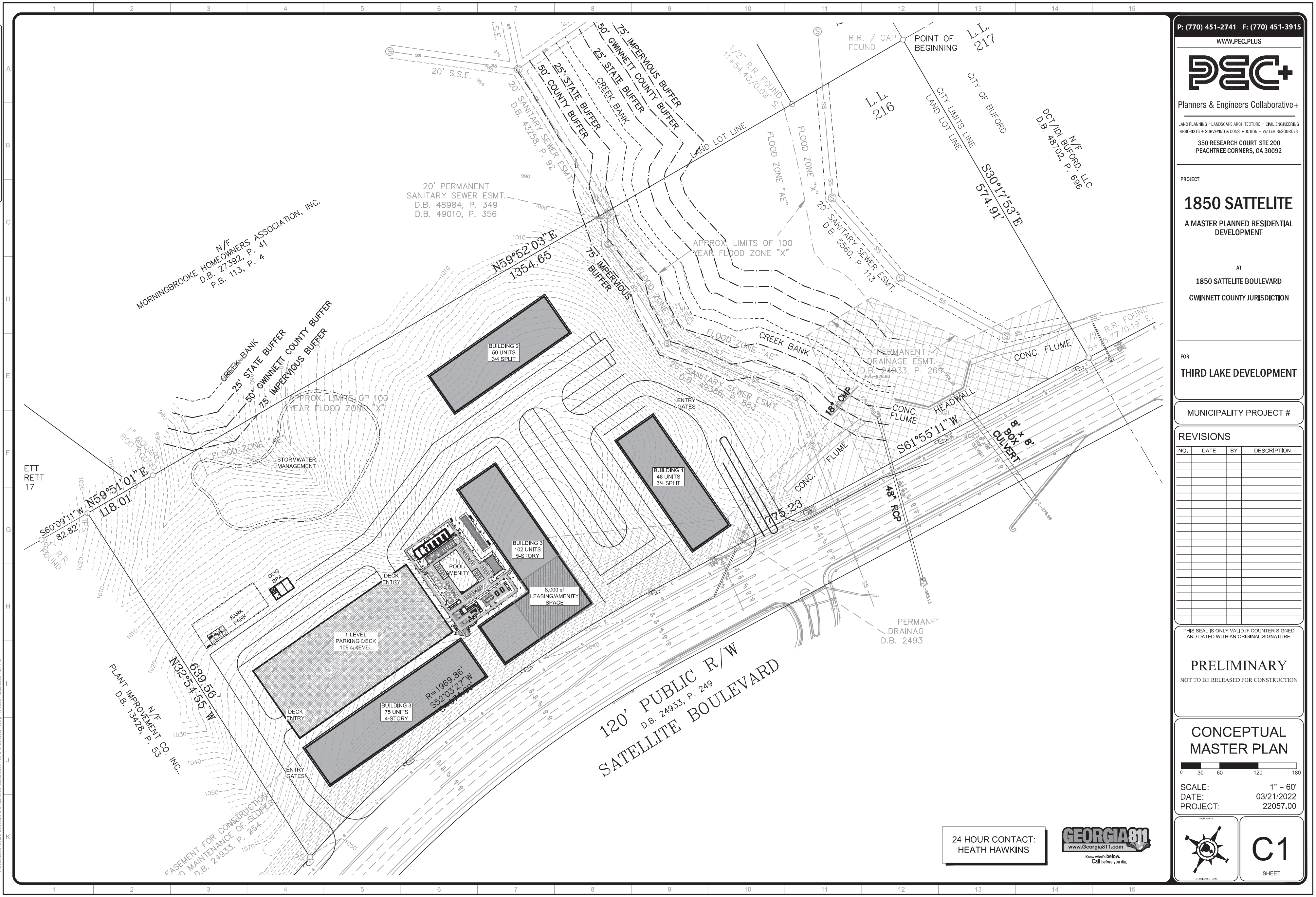


Figure 4 - Site Plan

5.1 Trip Generation

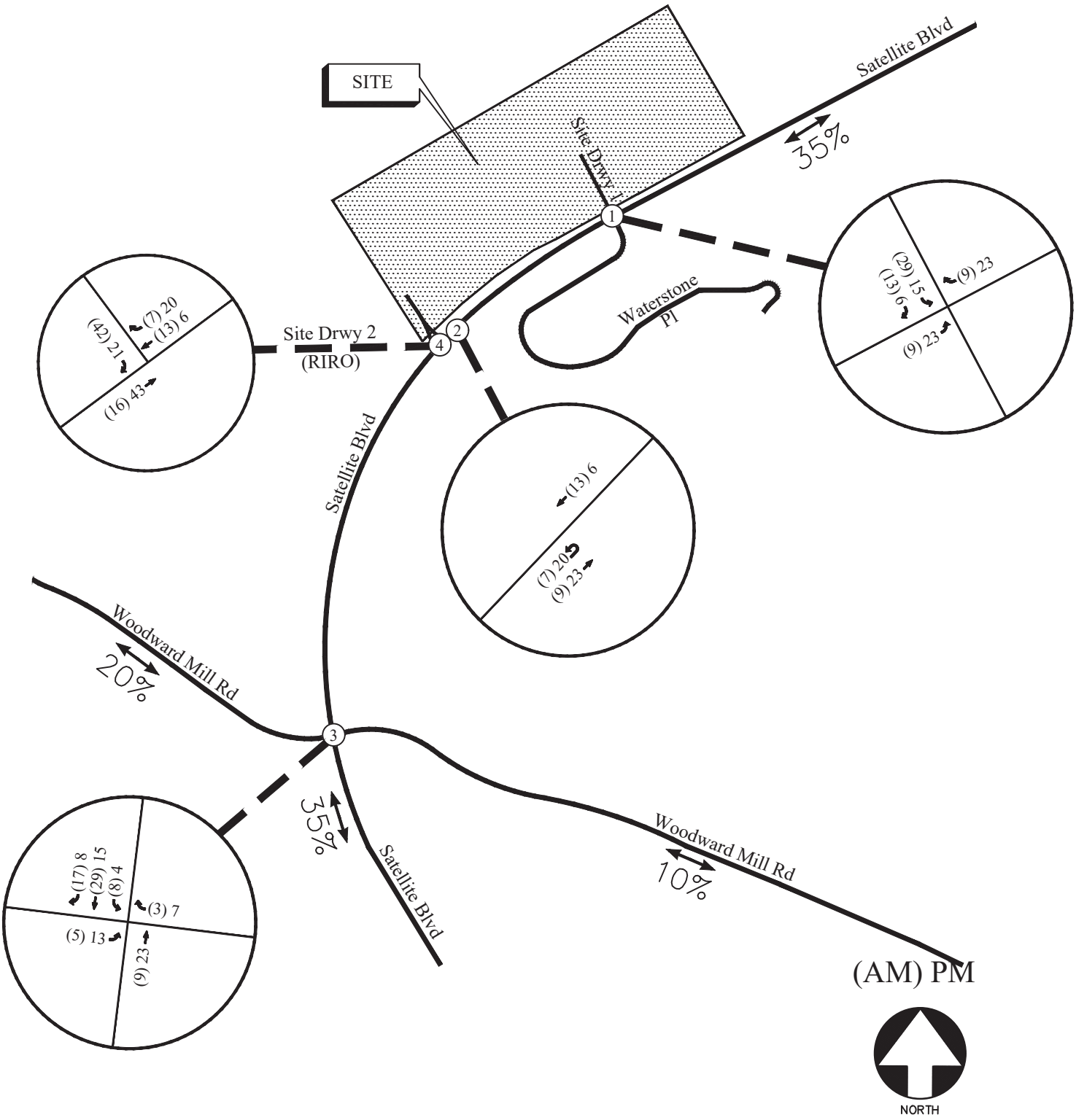
Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Use: Multifamily Housing (Mid-Rise) - Not Close to Rail Transit. The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	275 units	25	84	109	66	42	108	1,265

5.2 Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 5, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the site are shown in Figure 5.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

FIGURE 5

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6.0 FUTURE 2024 TRAFFIC ANALYSIS

The future 2024 traffic operations are analyzed for the "Build" and "No-Build" conditions.

6.1 Future "No-Build" Conditions

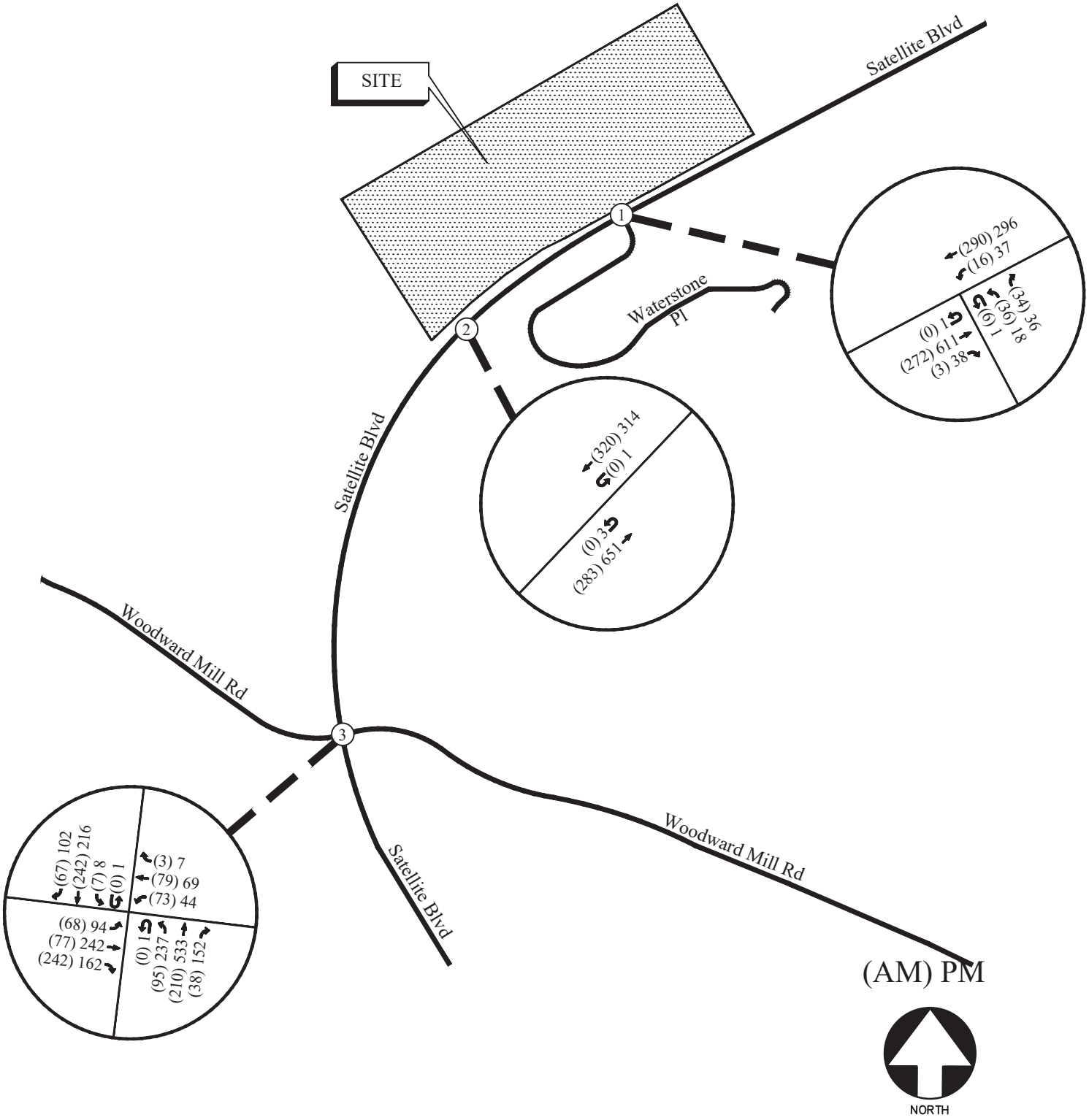
The "No-Build" (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future "No-Build" volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of through traffic.

6.1.1 Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three years revealed growth of approximately 1% in the area. This growth factor was applied to the existing traffic volumes between collector and arterial roadways to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future "No-Build" volumes on the roadway are shown in Figure 6.

6.2 Future "Build" Conditions

The "Build" or development conditions include the estimated background traffic from the "No-Build" conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figure 5) were added to base traffic volumes (Figure 6) to calculate the future traffic volumes after the construction of the development. These total future "Build" traffic volumes are shown in Figure 7.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 6

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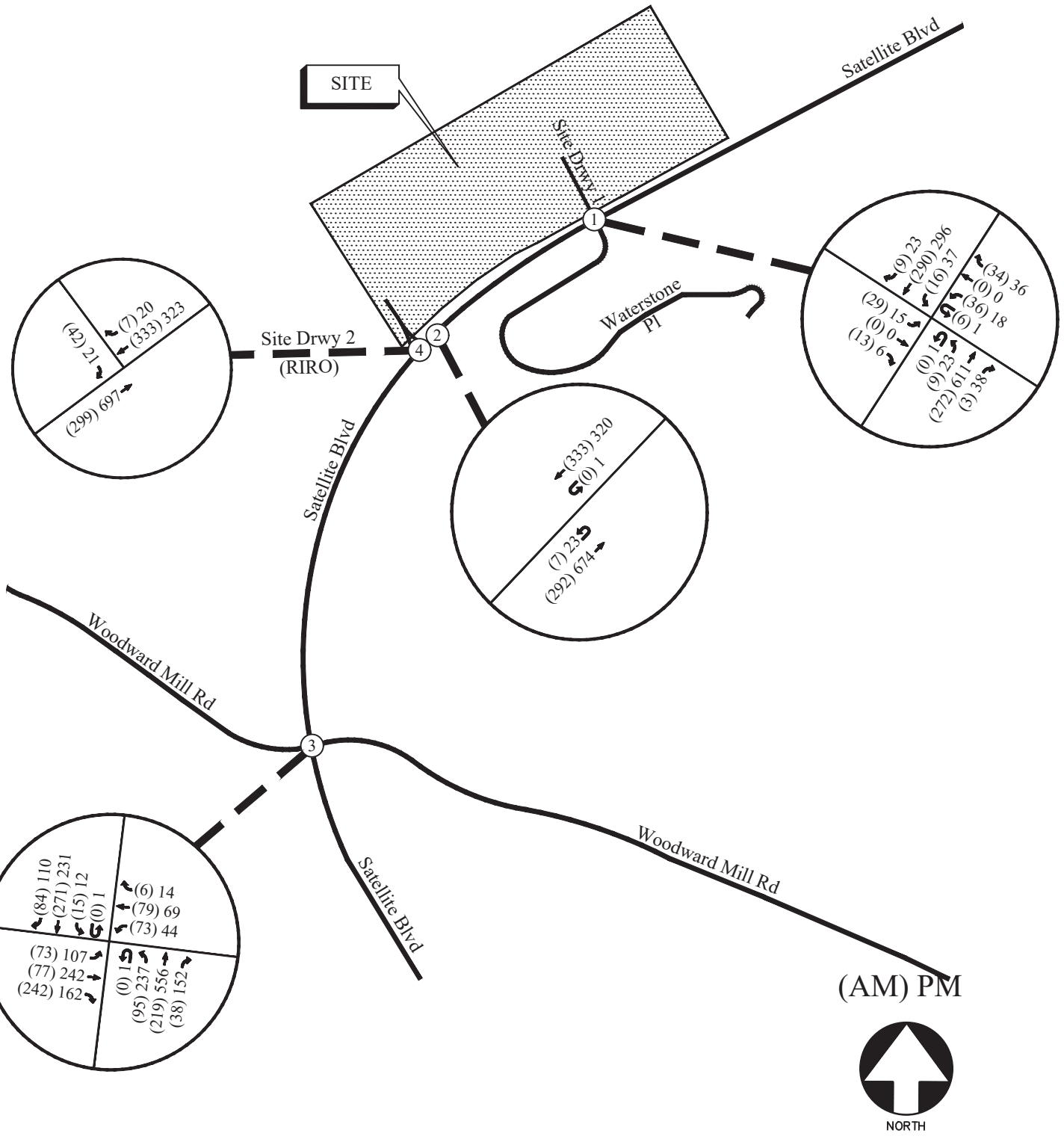


FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 7

A&R Engineering Inc.

6.3 Auxiliary Lane Analysis

Included below are analyses for left-turn lanes and deceleration lanes for all site driveways per GDOT standards. The analyses below are based off the trip distribution included in Section 5.2. According to the trip distribution, the 24-hour two-way volume entering and exiting the site is 1,265 vehicles.

6.3.1.1 Left Turn Lane Analysis

For four lane roadways with AADT's more than 10,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 250 left-turning vehicles a day. The projected left-turn volumes per day for each driveway is included in Table 5.

TABLE 5 – GDOT REQUIREMENTS FOR LEFT TURN LANES

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
Satellite Boulevard @ Waterstone Place / Site Driveway 1	35%	221 (Total trips) ÷ 2 × 0.35 = (1265) ÷ 2 x 0.35 = 221	45 mph / 4-Lane / > 10,000	250	Yes

A left-turn lane is present at Site Driveway 1. Site Driveway 2 is a right-in/right-out and was not considered in this analysis.

6.3.1.2 Deceleration Turn Lane Analysis

For two lane roadways with AADT's more than 10,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic right-turn movements threshold to warrant a deceleration lane is 75 right turning vehicles a day. The projected right-turn volumes per day for each driveway is included in Table 6.

TABLE 6 – GDOT REQUIREMENTS FOR DECELERATION LANES

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
Satellite Boulevard @ Waterstone Place / Site Driveway 1	35%	221 (Total trips) ÷ 2 × 0.35 = (1265) ÷ 2 x 0.35 = 221	45 mph / 4-Lane / > 10,000	75	Yes
Satellite Boulevard @ Site Driveway 2 (RIRO)	30%	190 (Total trips) ÷ 2 × 0.3 = (1265) ÷ 2 x 0.3 =190	45 mph / 4-Lane / > 10,000	75	No

A deceleration is warranted at Site Driveway 1 per GDOT standards. Site Driveway 2 does not require a deceleration lane per GDOT standards. However, given the type of roadway, number of lanes, and speed limit, it is recommended that a deceleration lane be provided at Site Driveway 2.

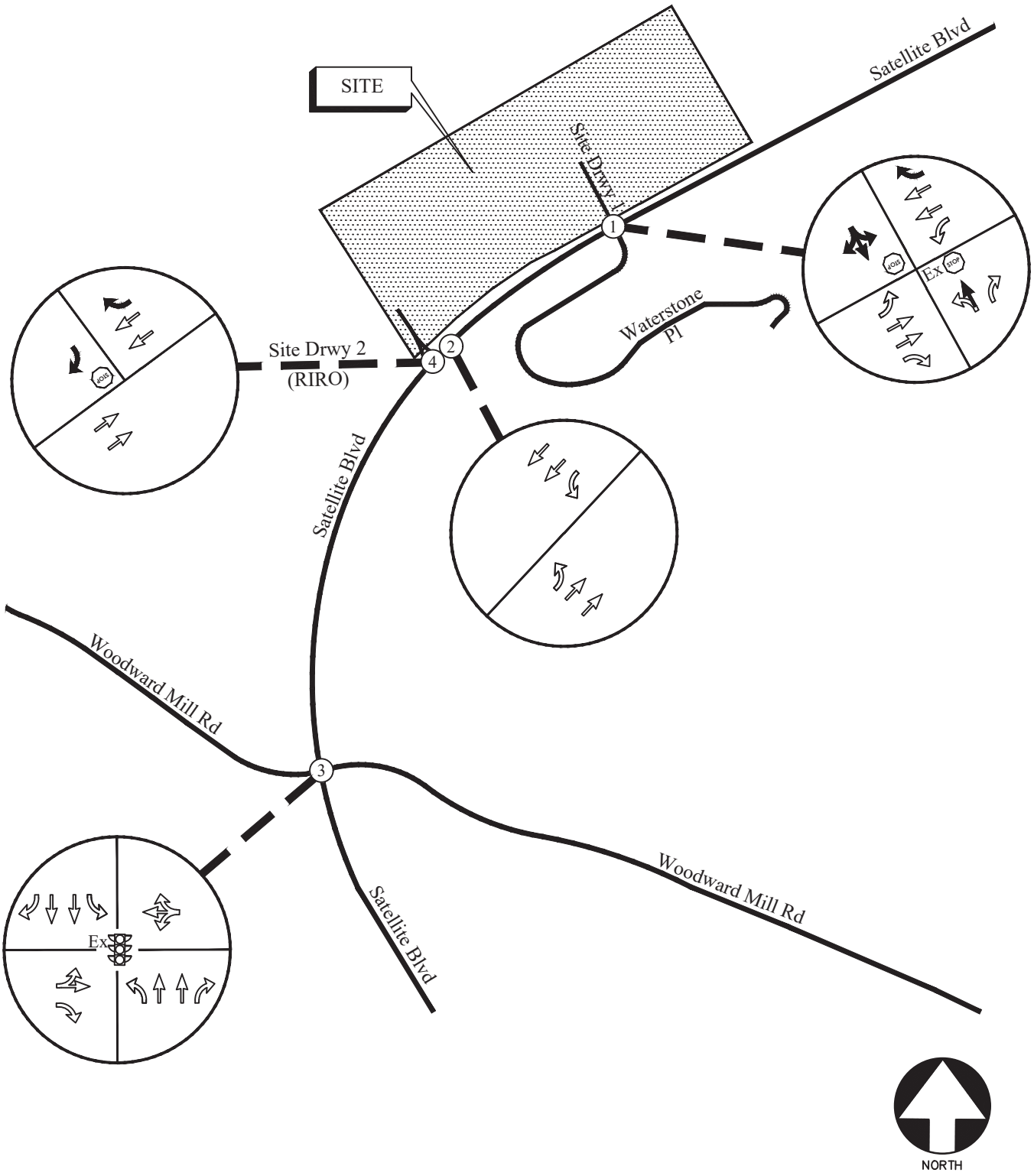
6.3.2 Future Traffic Operations

The future "No-Build" and "Build" traffic operations were analyzed using the volumes in Figure 6 and Figure 7, respectively. The results of the future traffic operations analysis are shown below in Table 7.

TABLE 7 – FUTURE INTERSECTION OPERATIONS

	Intersection	Future Condition: LOS (Delay)			
		NO-BUILD		BUILD	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**Satellite Boulevard @ Waterstone Place / Site Driveway 1**				
	-Eastbound Approach	-	-	B (13.2)	C (17.2)
	-Westbound Approach	B (11.3)	B (13.7)	B (12.0)	C (15.4)
	-Northbound U-turn/Left	A (0.0)	A (9.0)	A (8.0)	A (8.1)
	-Southbound Left	A (7.9)	A (9.3)	A (7.9)	A (9.3)
2	**Satellite Boulevard @ Median Opening**				
	-Northbound U-turn	A (0.0)	A (9.1)	A (8.3)	A (8.2)
	-Southbound U-turn	A (0.0)	B (12.0)	A (0.0)	B (12.2)
3	**Satellite Boulevard @ Woodward Mill Road**	**B (11.1)**	**B (14.2)**	**B (11.1)**	**B (14.7)**
	-Eastbound Approach	B (16.7)	B (19.1)	B (16.9)	B (19.2)
	-Westbound Approach	B (17.0)	B (15.3)	B (17.0)	B (15.1)
	-Northbound Approach	A (7.0)	B (11.5)	A (7.2)	B (12.2)
	-Southbound Approach	A (9.2)	B (15.4)	A (9.2)	B (16.0)
4	**Satellite Boulevard @ Site Driveway 2 (RIRO)**				
	-Eastbound Approach	-	-	A (9.5)	A (9.4)

The results of future traffic operations analysis indicate that the signalized intersection will operate at overall level of service "B" or better in both the AM and PM peak hours and un-signalized intersections approaches will operate at level-of-service "C" or better in both the AM and PM peak hours. Recommendations on traffic control and lane geometry are shown in Figure 8.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 8

A&R Engineering Inc.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed residential development at 1850 Satellite Boulevard in Gwinnett County, Georgia. The development will consist of 275 units of Multifamily Housing (Mid-Rise) - Not Close to Rail Transit.

The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on Satellite Boulevard aligns with Waterstone Place
- Site Driveway 2: Right-in/right-out driveway on Satellite Boulevard (south of the existing median break)

Existing and future operations after completion of the project were analyzed at the intersections of:

- Satellite Boulevard at Waterstone Place / Site Driveway 1
- Satellite Boulevard at Median Opening (south of Waterstone Place)
- Satellite Boulevard at Woodward Mill Road
- Satellite Boulevard at Site Driveway 2 (RIRO)

The analysis included the evaluation of Future operations for “No-Build” and “Build” conditions, both of which account for increases in annual growth of through traffic The results of future traffic operations analysis indicate that the signalized intersection will operate at overall level of service “B” or better in both the AM and PM peak hours and un-signalized intersections approaches will operate at level-of-service “C” or better in both the AM and PM peak hours. The differences between the “No-Build” and “Build” condition level-of-service analyses are insignificant.

7.1 Recommendations

The following access configuration is recommended for the proposed site driveway intersections.

- Site Driveway 1: Full access driveway on Satellite Boulevard aligns with Waterstone Place
    - One entering and one exiting lane
    - Stop-sign controlled on the proposed driveway approach
    - Addition of a deceleration lane for entering traffic

- Site Driveway 2: Right-in/right-out driveway on Satellite Boulevard
    - One entering and one exiting lane
    - Stop-sign controlled on the proposed driveway approach
    - Addition of a deceleration lane for entering traffic

Appendix

EXISTING INTERSECTION TRAFFIC COUNTS

National Data & Surveying Services Intersection Turning Movement Count

Location: Satellite Blvd & Waterstone Pl
City: Buford
Control: 1-Way Stop (WB)

Project ID: 22-180087-001
Date: 4/27/2022

Data - Total

NS/EW Streets:	Satellite Blvd				Satellite Blvd				Waterstone Pl				Waterstone Pl				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	51	5	0	0	40	0	0	0	0	0	0	8	0	9	0	113
7:15 AM	0	51	1	0	3	66	0	0	0	0	0	0	7	0	9	1	138
7:30 AM	0	63	0	0	2	67	0	0	0	0	0	0	8	0	9	6	155
7:45 AM	0	72	2	0	4	84	0	0	0	0	0	0	10	0	10	0	182
8:00 AM	0	69	1	0	3	70	0	0	0	0	0	0	7	0	7	0	157
8:15 AM	0	63	0	0	7	63	0	0	0	0	0	0	10	0	7	0	150
8:30 AM	0	64	6	1	5	63	0	0	0	0	0	0	5	0	8	2	154
8:45 AM	0	39	3	0	2	60	0	0	0	0	0	0	4	0	7	1	116
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	472	18	1	26	513	0	0	0	0	0	0	59	0	66	10	1165
APPROACH %'s :	0.00%	96.13%	3.67%	0.20%	4.82%	95.18%	0.00%	0.00%					43.70%	0.00%	48.89%	7.41%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	267	3	0	16	284	0	0	0	0	0	0	35	0	33	6	644
PEAK HR FACTOR :	0.000	0.927	0.375	0.000	0.571	0.845	0.000	0.000	0.000	0.000	0.000	0.000	0.875	0.000	0.825	0.250	0.885
		0.912				0.852								0.804			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	98	9	0	7	70	0	0	0	0	0	0	4	0	3	0	191
4:15 PM	0	128	11	0	5	64	0	0	0	0	0	0	6	0	8	0	222
4:30 PM	0	154	14	0	10	52	0	0	0	0	0	0	5	0	8	0	243
4:45 PM	0	144	5	0	4	62	0	0	0	0	0	0	7	0	7	0	229
5:00 PM	0	153	7	1	11	83	0	0	0	0	0	0	4	0	8	1	268
5:15 PM	0	148	11	0	11	93	0	0	0	0	0	0	2	0	12	0	277
5:30 PM	0	138	7	0	9	62	0	0	0	0	0	0	5	0	12	0	233
5:45 PM	0	111	6	0	8	63	0	0	0	0	0	0	4	0	8	0	200
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1074	70	1	65	549	0	0	0	0	0	0	37	0	66	1	1863
APPROACH %'s :	0.00%	93.80%	6.11%	0.09%	10.59%	89.41%	0.00%	0.00%					35.58%	0.00%	63.46%	0.96%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	599	37	1	36	290	0	0	0	0	0	0	18	0	35	1	1017
PEAK HR FACTOR :	0.000	0.972	0.661	0.250	0.818	0.780	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.000	0.729	0.250	0.918
		0.948				0.784								0.964			

Prepared by National Data & Surveying Services

Satellite Blvd & Waterstone Pl

Peak Hour Turning Movement Count

ID: 22-180087-001
City: Buford

Day: Wednesday
Date: 4/27/2022

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 04:30 PM - 05:30 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

CONTROL

1-Way Stop (WB)

	AM	NOON	PM
TEV	644	0	1017
PHF	0.88		0.92

SOUTHBOUND

	Left	Thru	Right	U-Turn	
AM	0	284	16	0	300 AM
NOON	0	0	0	0	0 NOON
PM	0	290	36	0	634 PM

EASTBOUND (Waterstone Pl)

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	0 AM
NOON	0	0	0	0	0 NOON
PM	0	0	0	0	0 PM

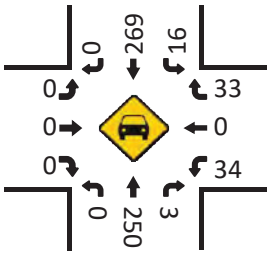
WESTBOUND (Waterstone Pl)

	Left	Thru	Right	U-Turn	
PM	35	0	33	1	1 PM
NOON	0	0	0	0	0 NOON
AM	18	0	35	1	1 AM
	1	0	6	0	0
	74	0	25		

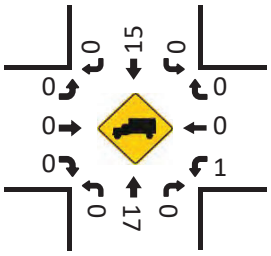
NORTHBOUND (Satellite Blvd)

	Left	Thru	Right	U-Turn	
PM	309	1	0	599	37 PM
NOON	0	0	0	0	0 NOON
AM	319	0	0	267	3 AM

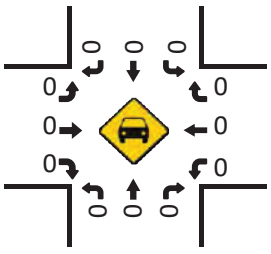
Cars (AM)



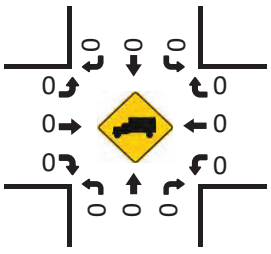
HT (AM)



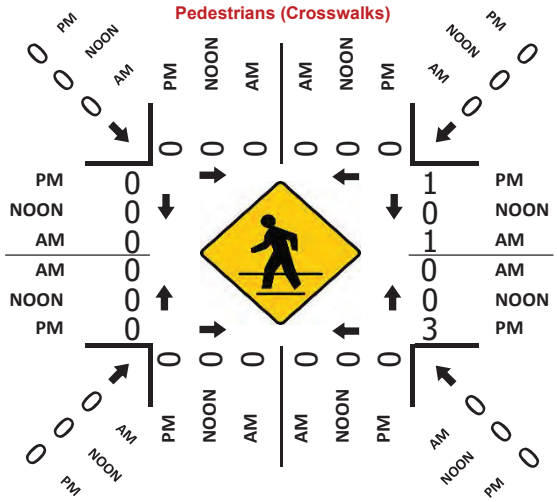
Cars (NOON)



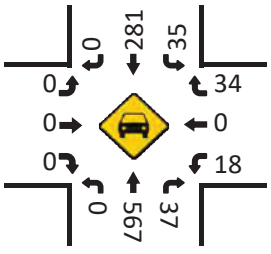
HT (NOON)



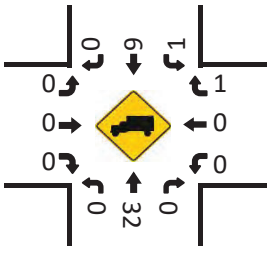
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Satellite Blvd Median Opening & S/O Waterstone Homes Dwy
City: Buford
Control: No Control

Project ID: 22-180087-002
Date: 4/27/2022

Data - Total

NS/EW Streets:	Satellite Blvd Median Opening				Satellite Blvd Median Opening				S/O Waterstone Homes Dwy				S/O Waterstone Homes Dwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	56	0	0	0	47	0	0	0	0	0	0	0	0	0	0	103
7:15 AM	0	55	0	0	0	73	0	0	0	0	0	0	0	0	0	0	128
7:30 AM	0	61	0	0	0	75	0	0	0	0	0	0	0	0	0	0	136
7:45 AM	0	73	0	0	0	93	0	0	0	0	0	0	0	0	0	0	166
8:00 AM	0	72	0	0	0	77	0	0	0	0	0	0	0	0	0	0	149
8:15 AM	0	62	0	0	0	75	0	0	0	0	0	0	0	0	0	0	137
8:30 AM	0	70	0	0	0	69	0	0	0	0	0	0	0	0	0	0	139
8:45 AM	0	42	0	0	0	64	0	0	0	0	0	0	0	0	0	0	106
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	491	0	0	0	573	0	0	0	0	0	0	0	0	0	0	1064
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	**07:45 AM - 08:45 AM**																TOTAL
PEAK HR VOL :	0	277	0	0	0	314	0	0	0	0	0	0	0	0	0	0	591
PEAK HR FACTOR :	0.000	0.949	0.000	0.000	0.000	0.844	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.890
		0.949				0.844											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	115	0	0	0	75	0	0	0	0	0	0	0	0	0	0	190
4:15 PM	0	132	0	0	0	70	0	0	0	0	0	0	0	0	0	0	202
4:30 PM	0	166	0	1	0	55	0	1	0	0	0	0	0	0	0	0	223
4:45 PM	0	152	0	0	0	68	0	0	0	0	0	0	0	0	0	0	220
5:00 PM	0	166	0	1	0	90	0	0	0	0	0	0	0	0	0	0	257
5:15 PM	0	154	0	1	0	95	0	0	0	0	0	0	0	0	0	0	250
5:30 PM	0	142	0	0	0	67	0	0	0	0	0	0	0	0	0	0	209
5:45 PM	0	119	0	0	0	67	0	0	0	0	0	0	0	0	0	0	186
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1146	0	3	0	587	0	1	0	0	0	0	0	0	0	0	1737
APPROACH %'s :	0.00%	99.74%	0.00%	0.26%	0.00%	99.83%	0.00%	0.17%									
PEAK HR :	**04:30 PM - 05:30 PM**																TOTAL
PEAK HR VOL :	0	638	0	3	0	308	0	1	0	0	0	0	0	0	0	0	950
PEAK HR FACTOR :	0.000	0.961	0.000	0.750	0.000	0.811	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.924
		0.960				0.813											

Prepared by National Data & Surveying Services

Satellite Blvd Median Opening & S/O Waterstone Homes Dwy

Peak Hour Turning Movement Count

ID: 22-180087-002
City: Buford

Day: Wednesday
Date: 4/27/2022

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND — Satellite Blvd Median Opening

AM	0	314	0	0	277	AM
NOON	0	0	0	0	0	NOON
PM	0	308	0	1	639	PM

0 2 1 0

EASTBOUND — S/O Waterstone Homes Dwy

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

CONTROL

No Control

TEV	591 AM	0 NOON	950 PM
PHF	0.89		0.92

WESTBOUND — S/O Waterstone Homes Dwy

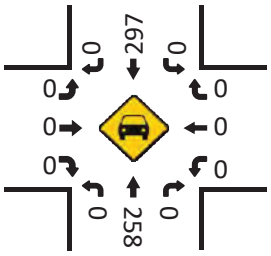
PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

NORTHBOUND — Satellite Blvd Median Opening

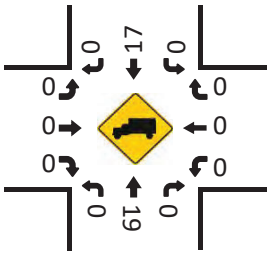
0 1 2 0

PM	311	3	0	638	0	PM
NOON	0	0	0	0	0	NOON
AM	314	0	0	277	0	AM

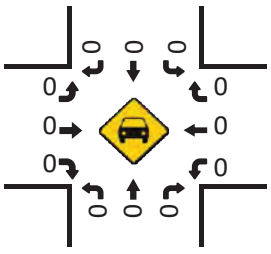
Cars (AM)



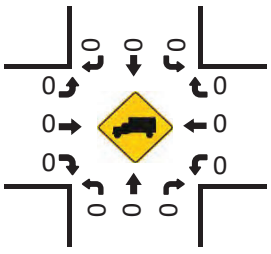
HT (AM)



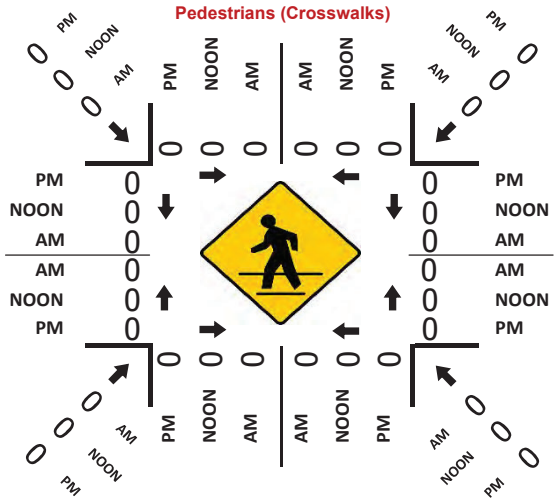
Cars (NOON)



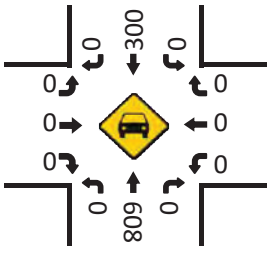
HT (NOON)



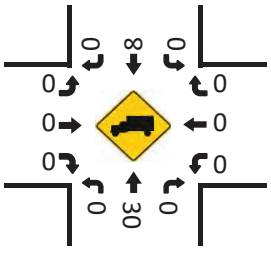
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Satellite Blvd & Woodward Mill Rd
City: Buford
Control: Signalized

Project ID: 22-180087-003
Date: 4/27/2022

Data - Total

NS/EW Streets:	Satellite Blvd				Satellite Blvd				Woodward Mill Rd				Woodward Mill Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	16	42	6	0	2	32	13	0	15	24	37	0	12	11	1	0	211
7:15 AM	24	40	10	0	0	60	13	0	12	11	35	0	20	15	3	0	243
7:30 AM	26	48	7	0	1	59	14	0	15	7	44	0	7	15	0	0	243
7:45 AM	27	60	8	0	2	71	21	0	12	18	52	0	23	19	0	0	313
8:00 AM	29	48	11	0	1	51	21	0	22	22	66	0	18	24	1	0	314
8:15 AM	19	44	3	0	4	64	11	0	23	14	64	0	14	20	1	0	281
8:30 AM	18	54	15	0	0	51	13	0	10	21	55	0	17	14	1	0	269
8:45 AM	21	28	11	0	1	56	9	1	11	11	35	0	7	18	1	0	210
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	180	364	71	0	11	444	115	1	120	128	388	0	118	136	8	0	2084
APPROACH %'s :	29.27%	59.19%	11.54%	0.00%	1.93%	77.76%	20.14%	0.18%	18.87%	20.13%	61.01%	0.00%	45.04%	51.91%	3.05%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	93	206	37	0	7	237	66	0	67	75	237	0	72	77	3	0	1177
PEAK HR FACTOR :	0.802	0.858	0.617	0.000	0.438	0.835	0.786	0.000	0.728	0.852	0.898	0.000	0.783	0.802	0.750	0.000	0.937
	0.884				0.824				0.861				0.884				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	0	1	1	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	47	104	32	0	2	53	22	0	17	40	30	0	11	16	2	0	376
4:15 PM	37	104	32	0	1	45	19	0	18	48	28	0	17	15	2	0	366
4:30 PM	56	153	35	1	2	47	11	0	13	49	32	0	10	11	3	0	423
4:45 PM	56	130	29	0	2	40	21	1	18	57	29	0	11	15	1	0	410
5:00 PM	64	146	51	0	2	64	27	0	26	60	36	0	14	17	2	0	509
5:15 PM	54	122	34	0	3	60	31	0	25	60	52	0	10	20	3	0	474
5:30 PM	58	125	35	1	1	48	21	0	23	60	42	0	8	16	1	0	439
5:45 PM	59	92	40	0	4	48	12	0	17	54	41	0	8	13	1	0	389
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	431	976	288	2	17	405	164	1	157	428	290	0	89	123	15	0	3386
APPROACH %'s :	25.40%	57.51%	16.97%	0.12%	2.90%	68.99%	27.94%	0.17%	17.94%	48.91%	33.14%	0.00%	39.21%	54.19%	6.61%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	232	523	149	1	8	212	100	1	92	237	159	0	43	68	7	0	1832
PEAK HR FACTOR :	0.906	0.896	0.730	0.250	0.667	0.828	0.806	0.250	0.885	0.988	0.764	0.000	0.768	0.850	0.583	0.000	0.900
	0.867				0.854				0.891				0.894				

Prepared by National Data & Surveying Services

Satellite Blvd & Woodward Mill Rd

Peak Hour Turning Movement Count

ID: 22-180087-003
City: Buford

Day: Wednesday
Date: 4/27/2022

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Satellite Blvd)

AM	66	237	7	0	276	AM
NOON	0	0	0	0	0	NOON
PM	100	212	8	1	623	PM
	1	2	1	0		

EASTBOUND (Woodward Mill Rd)

AM	NOON	PM	
236	0	400	
0	0	0	0
67	0	92	0
75	0	237	1
237	0	159	1
AM	NOON	PM	

CONTROL

Signalized

TEV	1177 AM	0 NOON	1832 PM
PHF	0.94		0.90

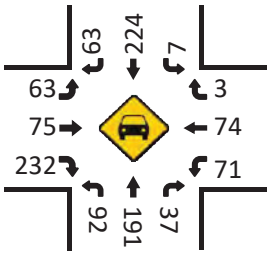
WESTBOUND (Woodward Mill Rd)

PM	NOON	AM	
7	0	3	1
68	0	77	1
43	0	72	0
0	0	0	0
394	0	119	
PM	NOON	AM	

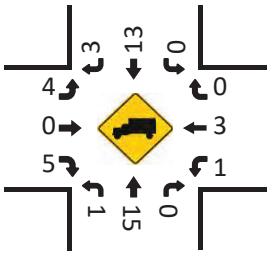
NORTHBOUND (Satellite Blvd)

PM	415	1	232	523	149	PM
NOON	0	0	0	0	0	NOON
AM	546	0	93	206	37	AM
		0	1	2	1	

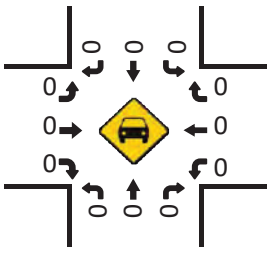
Cars (AM)



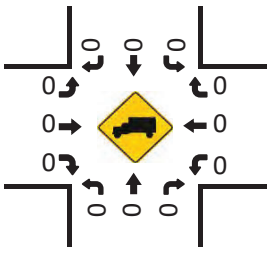
HT (AM)



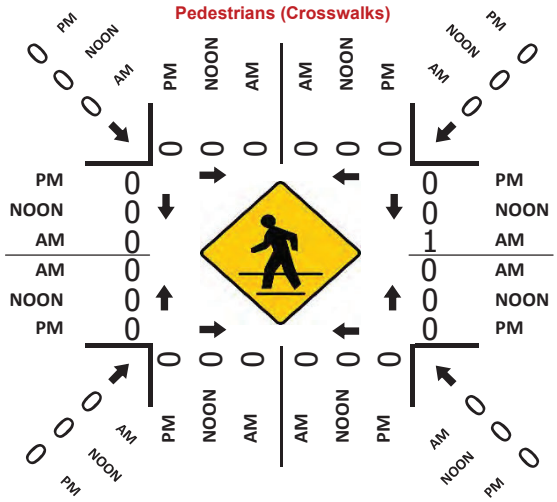
Cars (NOON)



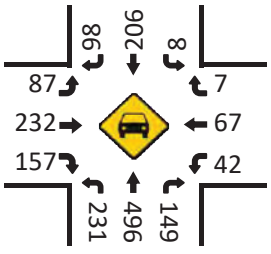
HT (NOON)



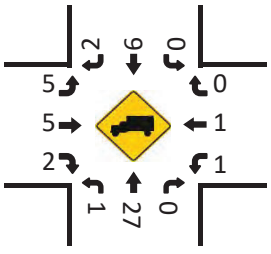
Pedestrians (Crosswalks)



Cars (PM)



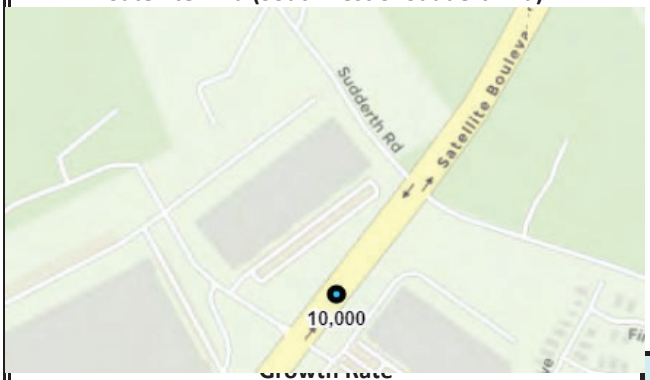
HT (PM)

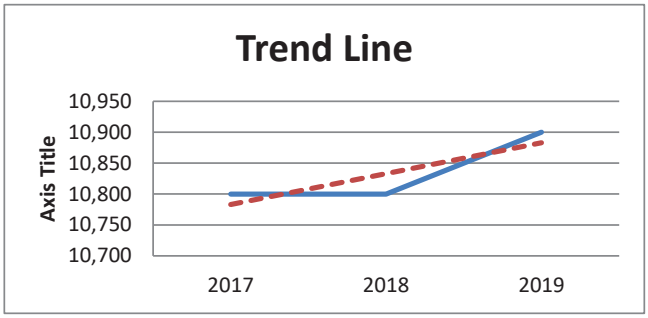


LINEAR REGRESSION OF DAILY TRAFFIC

Location	Growth Rate	R Squared	Station ID	Route	2017	2018	2019
Satellite Blvd (Southwest of Suc	0.5%	0.75	135-6725	00200100	10,800	10,800	10,900
Satellite Blvd (Northeast of Saw	1.2%	0.96	135-6727	00200100	12,700	12,900	13,000
Weighted Average	**0.8%**	1.00	Sum of Count Stations =		23,500	23,700	23,900

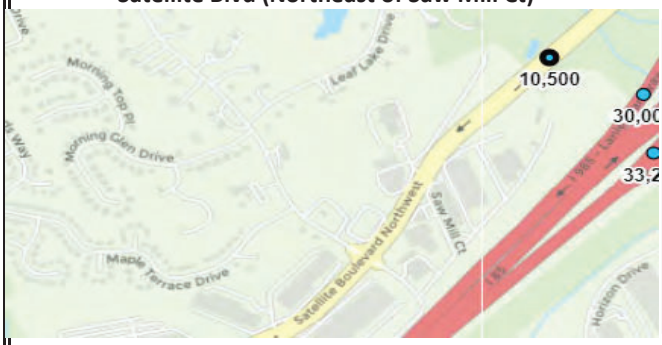
Location	Traffic Counter	RCLINK	2017	2018	2019
Satellite Blvd (Southwest of Sudderth Rd)	135-6725	00200100	10,800	10,800	10,900

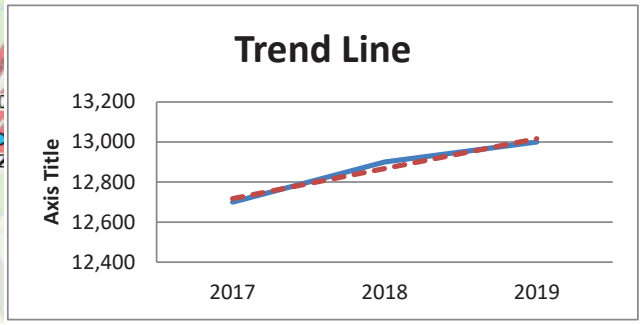




Growth Rate	0.5%	Intercept	-90,067	Slope	50.00
Trend Line			10,783	10,833	10,883

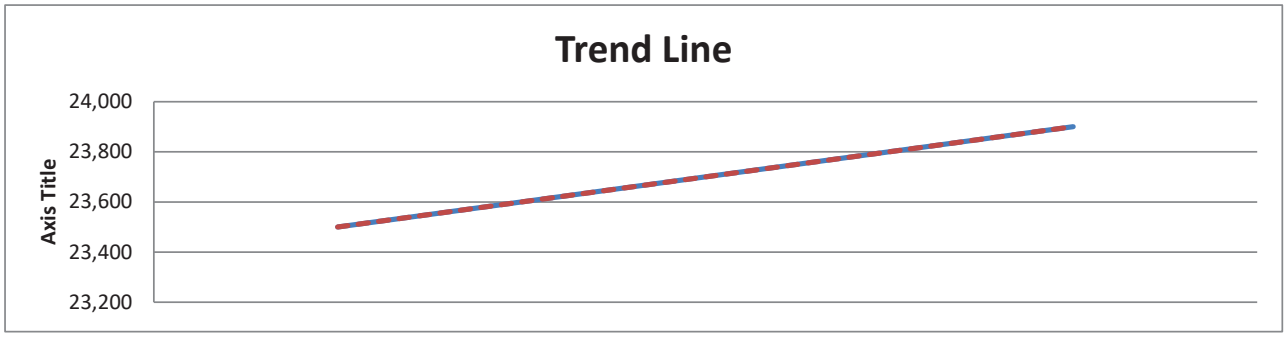
Location	Traffic Counter	RCLINK	2017	2018	2019
Satellite Blvd (Northeast of Saw Mill Ct)	135-6727	00200100	12,700	12,900	13,000





Growth Rate	1.2%	Intercept	-289,833	Slope	150.00
Trend Line			12,717	12,867	13,017

Weighted Average	2017	2018	2019
Sum of Count Stations	23,500	23,700	23,900



Growth Rate	0.8%	Intercept	-379,900	Slope	200.00
Trend Line			23,500	23,700	23,900

EXISTING INTERSECTION ANALYSIS

Intersection	
Int Delay, s/veh	1.5

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	6	35	33	0	267	3	16	284
Future Vol, veh/h	6	35	33	0	267	3	16	284
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	6	0	0	5
Mvmt Flow	7	40	38	0	303	3	18	323

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	501	152	323	0	0	306	0
Stage 1	0	303	-	-	-	-	-	-
Stage 2	0	198	-	-	-	-	-	-
Critical Hdwy	-	6.86	6.9	6.4	-	-	4.1	-
Critical Hdwy Stg 1	-	5.86	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.86	-	-	-	-	-	-
Follow-up Hdwy	-	3.53	3.3	2.5	-	-	2.2	-
Pot Cap-1 Maneuver	0	497	873	905	-	-	1266	-
Stage 1	0	720	-	-	-	-	-	-
Stage 2	0	813	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	490	873	905	-	-	1266	-
Mov Cap-2 Maneuver	0	490	-	-	-	-	-	-
Stage 1	0	720	-	-	-	-	-	-
Stage 2	0	802	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	905	-	-	490	873	1266	-
HCM Lane V/C Ratio	-	-	-	0.081	0.043	0.014	-
HCM Control Delay (s)	0	-	-	13	9.3	7.9	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	277	0	0	0	314	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	277	0	0	0	314	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	7	0	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	0	0	311	0	0	0	353	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	509	664	177	488	664	156	353	-	0	-	311	-	-	0
Stage 1	353	353	-	311	311	-	-	-	-	-	-	-	-	-
Stage 2	156	311	-	177	353	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	452	384	842	467	384	868	867	0	-	0	921	0	-	0
Stage 1	642	634	-	680	662	-	-	0	-	0	-	0	-	0
Stage 2	836	662	-	813	634	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	452	384	842	467	384	868	867	-	-	-	921	-	-	-
Mov Cap-2 Maneuver	452	384	-	467	384	-	-	-	-	-	-	-	-	-
Stage 1	642	634	-	680	662	-	-	-	-	-	-	-	-	-
Stage 2	836	662	-	813	634	-	-	-	-	-	-	-	-	-

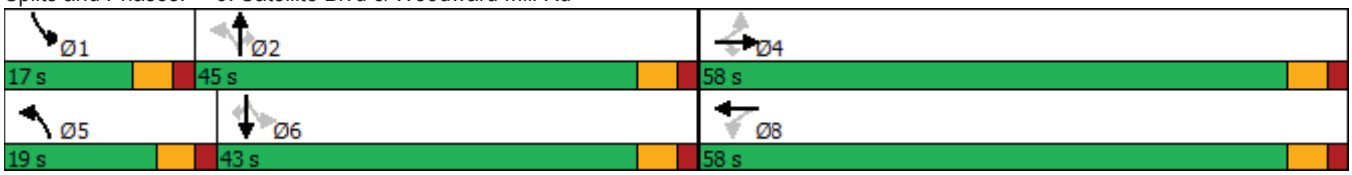
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	867	-	-	-	921	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	0	-
HCM Lane LOS	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	67	75	237	72	77	93	206	37	7	237	66
Future Volume (vph)	67	75	237	72	77	93	206	37	7	237	66
Lane Group Flow (vph)	0	151	252	0	162	99	219	39	7	252	70
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	19.0	45.0	45.0	17.0	43.0	43.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	48.3%	15.8%	37.5%	37.5%	14.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.44	0.45		0.49	0.16	0.13	0.05	0.01	0.23	0.13
Control Delay		21.6	5.8		23.0	6.6	8.6	1.9	6.7	15.1	5.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.6	5.8		23.0	6.6	8.6	1.9	6.7	15.1	5.5
Queue Length 50th (ft)		39	0		42	12	13	0	1	28	0
Queue Length 95th (ft)		84	44		91	34	49	8	6	62	23
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1475	1559		1404	732	2736	1323	740	2681	1215
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.10	0.16		0.12	0.14	0.08	0.03	0.01	0.09	0.06

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 48.3
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	75	237	72	77	3	93	206	37	7	237	66
Future Volume (veh/h)	67	75	237	72	77	3	93	206	37	7	237	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1870	1885	1841	1900	1885	1796	1900	1900	1826	1826
Adj Flow Rate, veh/h	71	80	0	77	82	0	99	219	0	7	252	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	2	1	4	0	1	7	0	0	5	5
Cap, veh/h	233	159		234	147		682	1496		623	1267	
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.44	0.00	0.01	0.37	0.00
Sat Flow, veh/h	689	1053	1585	692	976	0	1795	3413	1610	1810	3469	1547
Grp Volume(v), veh/h	151	0	0	159	0	0	99	219	0	7	252	0
Grp Sat Flow(s),veh/h/ln	1742	0	1585	1668	0	0	1795	1706	1610	1810	1735	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	1.3	1.6	0.0	0.1	2.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	3.4	0.0	0.0	1.3	1.6	0.0	0.1	2.0	0.0
Prop In Lane	0.47		1.00	0.48		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	0		382	0		682	1496		623	1267	
V/C Ratio(X)	0.39	0.00		0.42	0.00		0.15	0.15		0.01	0.20	
Avail Cap(c_a), veh/h	2179	0		2107	0		1124	3282		1113	3167	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	0.0	16.2	0.0	0.0	6.7	6.9	0.0	8.1	8.9	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.2	0.0	0.0	0.3	0.4	0.0	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	0.0	17.0	0.0	0.0	6.8	7.0	0.0	8.1	9.1	0.0
LnGrp LOS	B	A		B	A		A	A		A	A	
Approach Vol, veh/h		151	A		159	A		318	A		259	A
Approach Delay, s/veh		16.7			17.0			6.9			9.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	23.5		11.7	8.9	20.5		11.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	11.5	39.5		52.5	13.5	37.5		52.5				
Max Q Clear Time (g_c+I1), s	2.1	3.6		5.1	3.3	4.0		5.4				
Green Ext Time (p_c), s	0.0	2.6		0.9	0.1	2.9		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	1	18	35	1	599	37	36	290
Future Vol, veh/h	1	18	35	1	599	37	36	290
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	5	0	3	3
Mvmt Flow	1	20	38	1	651	40	39	315

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	889	326	315	0	0	691	0
Stage 1	0	653	-	-	-	-	-	-
Stage 2	0	236	-	-	-	-	-	-
Critical Hdwy	-	6.8	6.96	6.4	-	-	4.16	-
Critical Hdwy Stg 1	-	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.8	-	-	-	-	-	-
Follow-up Hdwy	-	3.5	3.33	2.5	-	-	2.23	-
Pot Cap-1 Maneuver	0	287	667	916	-	-	893	-
Stage 1	0	485	-	-	-	-	-	-
Stage 2	0	787	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	274	667	916	-	-	893	-
Mov Cap-2 Maneuver	0	274	-	-	-	-	-	-
Stage 1	0	485	-	-	-	-	-	-
Stage 2	0	752	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	916	-	-	274	667	893	-
HCM Lane V/C Ratio	0.001	-	-	0.071	0.057	0.044	-
HCM Control Delay (s)	8.9	-	-	19.1	10.7	9.2	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	3	0	638	0	1	0	308	0
Future Vol, veh/h	0	0	0	0	0	0	3	0	638	0	1	0	308	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	5	0	0	0	3	0
Mvmt Flow	0	0	0	0	0	0	3	0	693	0	1	0	335	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	690	1036	168	869	1036	347	335	-	0	-	693	-	-	0
Stage 1	337	337	-	699	699	-	-	-	-	-	-	-	-	-
Stage 2	353	699	-	170	337	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	335	233	853	249	233	655	890	0	-	0	529	0	-	0
Stage 1	656	645	-	401	445	-	-	0	-	0	-	0	-	0
Stage 2	642	445	-	821	645	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	334	232	853	248	232	655	890	-	-	-	529	-	-	-
Mov Cap-2 Maneuver	334	232	-	248	232	-	-	-	-	-	-	-	-	-
Stage 1	654	644	-	400	444	-	-	-	-	-	-	-	-	-
Stage 2	640	444	-	819	644	-	-	-	-	-	-	-	-	-

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

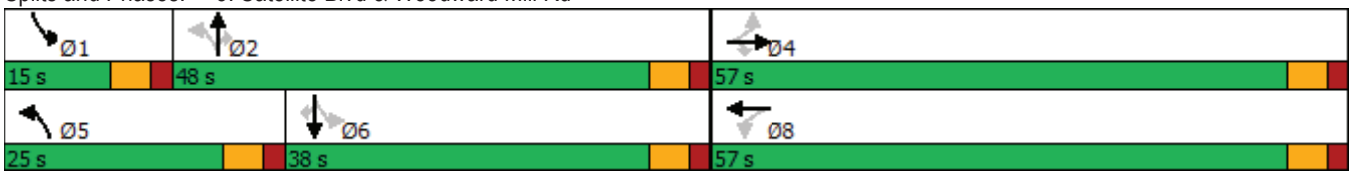
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	890	-	-	-	529	-
HCM Lane V/C Ratio	0.004	-	-	-	0.002	-
HCM Control Delay (s)	9.1	-	0	0	11.8	-
HCM Lane LOS	A	-	A	A	B	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	92	237	159	43	68	233	523	149	9	212	100
Future Volume (vph)	92	237	159	43	68	233	523	149	9	212	100
Lane Group Flow (vph)	0	365	177	0	132	259	581	166	10	236	111
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	57.0	57.0	57.0	57.0	57.0	25.0	48.0	48.0	15.0	38.0	38.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	20.8%	40.0%	40.0%	12.5%	31.7%	31.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.72	0.29		0.35	0.39	0.34	0.19	0.03	0.29	0.24
Control Delay		30.5	4.5		21.3	12.5	13.6	3.9	12.6	25.6	6.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.5	4.5		21.3	12.5	13.6	3.9	12.6	25.6	6.5
Queue Length 50th (ft)		132	0		40	55	66	1	2	42	0
Queue Length 95th (ft)		258	40		96	138	184	42	11	95	36
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1233	1262		909	736	2166	1077	446	1688	826
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.14		0.15	0.35	0.27	0.15	0.02	0.14	0.13

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 69.8
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	237	159	43	68	7	233	523	149	9	212	100
Future Volume (veh/h)	92	237	159	43	68	7	233	523	149	9	212	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1885	1870	1870	1900	1900	1826	1900	1900	1856	1870
Adj Flow Rate, veh/h	102	263	0	48	76	0	259	581	0	10	236	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	2	1	2	2	0	0	5	0	0	3	2
Cap, veh/h	194	364		217	303		647	1400		395	988	
Arrive On Green	0.28	0.28	0.00	0.28	0.28	0.00	0.14	0.40	0.00	0.01	0.28	0.00
Sat Flow, veh/h	390	1322	1598	449	1101	0	1810	3469	1610	1810	3526	1585
Grp Volume(v), veh/h	365	0	0	124	0	0	259	581	0	10	236	0
Grp Sat Flow(s),veh/h/ln	1712	0	1598	1550	0	0	1810	1735	1610	1810	1763	1585
Q Serve(g_s), s	7.6	0.0	0.0	0.0	0.0	0.0	4.9	6.4	0.0	0.2	2.8	0.0
Cycle Q Clear(g_c), s	10.4	0.0	0.0	2.8	0.0	0.0	4.9	6.4	0.0	0.2	2.8	0.0
Prop In Lane	0.28		1.00	0.39		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	0		520	0		647	1400		395	988	
V/C Ratio(X)	0.65	0.00		0.24	0.00		0.40	0.42		0.03	0.24	
Avail Cap(c_a), veh/h	1708	0		1538	0		1059	2753		693	2140	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	15.1	0.0	0.0	9.6	11.4	0.0	13.5	14.9	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	1.0	0.0	0.0	1.4	1.9	0.0	0.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	0.0	0.0	15.3	0.0	0.0	10.0	11.9	0.0	13.5	15.1	0.0
LnGrp LOS	B	A		B	A		B	B		B	B	
Approach Vol, veh/h		365	A		124	A		840	A		246	A
Approach Delay, s/veh		19.0			15.3			11.3			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	27.1		20.3	12.8	20.5		20.3				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5	19.5	32.5		51.5				
Max Q Clear Time (g_c+I1), s	2.2	8.4		12.4	6.9	4.8		4.8				
Green Ext Time (p_c), s	0.0	7.7		2.4	0.6	2.6		0.8				

Intersection Summary		
HCM 6th Ctrl Delay		14.0
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

FUTURE "NO-BUILD" INTERSECTION ANALYSIS

Intersection	
Int Delay, s/veh	1.5

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	6	36	34	0	272	3	16	290
Future Vol, veh/h	6	36	34	0	272	3	16	290
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	88	88	88	88	88	88	88
Heavy Vehicles, %	0	3	0	0	6	0	0	5
Mvmt Flow	7	41	39	0	309	3	18	330

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	510	155	330	0	0	312	0
Stage 1	0	309	-	-	-	-	-	-
Stage 2	0	201	-	-	-	-	-	-
Critical Hdwy	-	6.86	6.9	6.4	-	-	4.1	-
Critical Hdwy Stg 1	-	5.86	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.86	-	-	-	-	-	-
Follow-up Hdwy	-	3.53	3.3	2.5	-	-	2.2	-
Pot Cap-1 Maneuver	0	490	869	896	-	-	1260	-
Stage 1	0	715	-	-	-	-	-	-
Stage 2	0	810	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	483	869	896	-	-	1260	-
Mov Cap-2 Maneuver	0	483	-	-	-	-	-	-
Stage 1	0	715	-	-	-	-	-	-
Stage 2	0	799	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	896	-	-	483	869	1260	-
HCM Lane V/C Ratio	-	-	-	0.085	0.044	0.014	-
HCM Control Delay (s)	0	-	-	13.1	9.3	7.9	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	283	0	0	0	320	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	283	0	0	0	320	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	7	0	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	0	0	318	0	0	0	360	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	519	678	180	498	678	159	360	-	0	-	318	-	-	0
Stage 1	360	360	-	318	318	-	-	-	-	-	-	-	-	-
Stage 2	159	318	-	180	360	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	444	377	838	460	377	864	858	0	-	0	912	0	-	0
Stage 1	636	630	-	673	657	-	-	0	-	0	-	0	-	0
Stage 2	833	657	-	810	630	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	444	377	838	460	377	864	858	-	-	-	912	-	-	-
Mov Cap-2 Maneuver	444	377	-	460	377	-	-	-	-	-	-	-	-	-
Stage 1	636	630	-	673	657	-	-	-	-	-	-	-	-	-
Stage 2	833	657	-	810	630	-	-	-	-	-	-	-	-	-

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

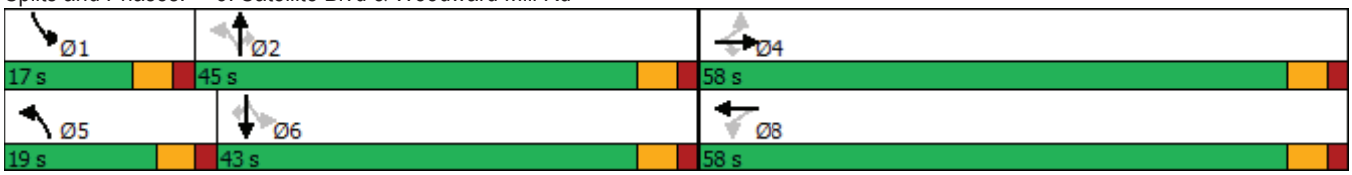
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	858	-	-	-	912	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	0	-
HCM Lane LOS	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	68	77	242	73	79	95	210	38	7	242	67
Future Volume (vph)	68	77	242	73	79	95	210	38	7	242	67
Lane Group Flow (vph)	0	154	257	0	165	101	223	40	7	257	71
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	19.0	45.0	45.0	17.0	43.0	43.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	48.3%	15.8%	37.5%	37.5%	14.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.44	0.46		0.50	0.17	0.13	0.05	0.01	0.23	0.13
Control Delay		21.7	5.7		23.0	6.7	8.6	1.9	6.7	15.2	5.6
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		21.7	5.7		23.0	6.7	8.6	1.9	6.7	15.2	5.6
Queue Length 50th (ft)		40	0		43	12	13	0	1	29	0
Queue Length 95th (ft)		86	44		92	35	50	9	6	63	24
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1469	1556		1403	728	2726	1319	736	2672	1211
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.10	0.17		0.12	0.14	0.08	0.03	0.01	0.10	0.06

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 48.5
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	77	242	73	79	3	95	210	38	7	242	67
Future Volume (veh/h)	68	77	242	73	79	3	95	210	38	7	242	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1870	1885	1841	1900	1885	1796	1900	1900	1826	1826
Adj Flow Rate, veh/h	72	82	0	78	84	0	101	223	0	7	257	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	2	1	4	0	1	7	0	0	5	5
Cap, veh/h	233	162		234	150		678	1494		619	1262	
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.44	0.00	0.01	0.36	0.00
Sat Flow, veh/h	685	1058	1585	687	982	0	1795	3413	1610	1810	3469	1547
Grp Volume(v), veh/h	154	0	0	162	0	0	101	223	0	7	257	0
Grp Sat Flow(s),veh/h/ln	1742	0	1585	1669	0	0	1795	1706	1610	1810	1735	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	1.4	1.6	0.0	0.1	2.1	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	3.5	0.0	0.0	1.4	1.6	0.0	0.1	2.1	0.0
Prop In Lane	0.47		1.00	0.48		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	394	0		384	0		678	1494		619	1262	
V/C Ratio(X)	0.39	0.00		0.42	0.00		0.15	0.15		0.01	0.20	
Avail Cap(c_a), veh/h	2172	0		2099	0		1117	3270		1107	3155	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.1	0.0	0.0	16.2	0.0	0.0	6.7	7.0	0.0	8.1	9.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.3	0.0	0.0	0.3	0.4	0.0	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	0.0	17.0	0.0	0.0	6.8	7.1	0.0	8.1	9.2	0.0
LnGrp LOS	B	A		B	A		A	A		A	A	
Approach Vol, veh/h		154	A		162	A		324	A		264	A
Approach Delay, s/veh		16.7			17.0			7.0			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	23.5		11.8	8.9	20.5		11.8				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	11.5	39.5		52.5	13.5	37.5		52.5				
Max Q Clear Time (g_c+I1), s	2.1	3.6		5.1	3.4	4.1		5.5				
Green Ext Time (p_c), s	0.0	2.6		0.9	0.1	3.0		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Vol, veh/h	1	18	36	1	611	38	37	296
Future Vol, veh/h	1	18	36	1	611	38	37	296
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	0	50	235	-	205	260	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0
Grade, %	-	0	-	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	3	0	5	0	3	3
Mvmt Flow	1	20	39	1	664	41	40	322

Major/Minor	Minor1			Major1			Major2	
Conflicting Flow All	0	907	332	322	0	0	705	0
Stage 1	0	666	-	-	-	-	-	-
Stage 2	0	241	-	-	-	-	-	-
Critical Hdwy	-	6.8	6.96	6.4	-	-	4.16	-
Critical Hdwy Stg 1	-	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.8	-	-	-	-	-	-
Follow-up Hdwy	-	3.5	3.33	2.5	-	-	2.23	-
Pot Cap-1 Maneuver	0	279	661	907	-	-	882	-
Stage 1	0	478	-	-	-	-	-	-
Stage 2	0	783	-	-	-	-	-	-
Platoon blocked, %	-				-	-		-
Mov Cap-1 Maneuver	0	266	661	907	-	-	882	-
Mov Cap-2 Maneuver	0	266	-	-	-	-	-	-
Stage 1	0	478	-	-	-	-	-	-
Stage 2	0	748	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBU	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	907	-	-	266	661	882	-
HCM Lane V/C Ratio	0.001	-	-	0.074	0.059	0.046	-
HCM Control Delay (s)	9	-	-	19.6	10.8	9.3	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	3	0	651	0	1	0	314	0
Future Vol, veh/h	0	0	0	0	0	0	3	0	651	0	1	0	314	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	190	-	-	-	245	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	5	0	0	0	3	0
Mvmt Flow	0	0	0	0	0	0	3	0	708	0	1	0	341	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	703	1057	171	887	1057	354	341	-	0	-	708	-	-	0
Stage 1	343	343	-	714	714	-	-	-	-	-	-	-	-	-
Stage 2	360	714	-	173	343	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	6.4	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.5	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	328	227	849	242	227	648	882	0	-	0	518	0	-	0
Stage 1	651	641	-	393	438	-	-	0	-	0	-	0	-	0
Stage 2	636	438	-	818	641	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	327	226	849	241	226	648	882	-	-	-	518	-	-	-
Mov Cap-2 Maneuver	327	226	-	241	226	-	-	-	-	-	-	-	-	-
Stage 1	649	640	-	392	437	-	-	-	-	-	-	-	-	-
Stage 2	634	437	-	816	640	-	-	-	-	-	-	-	-	-

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

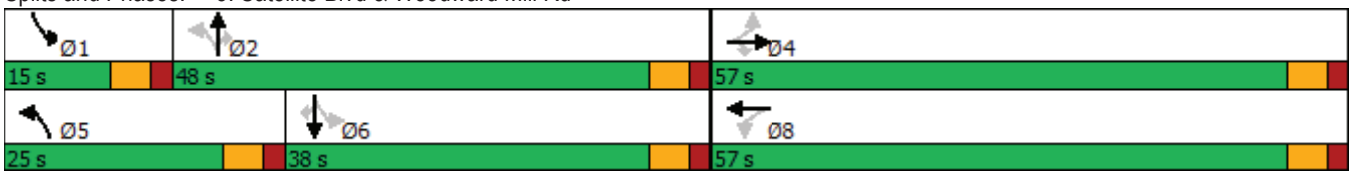
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	882	-	-	-	518	-
HCM Lane V/C Ratio	0.004	-	-	-	0.002	-
HCM Control Delay (s)	9.1	-	0	0	12	-
HCM Lane LOS	A	-	A	A	B	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	94	242	162	44	69	238	533	152	9	216	102
Future Volume (vph)	94	242	162	44	69	238	533	152	9	216	102
Lane Group Flow (vph)	0	373	180	0	134	264	592	169	10	240	113
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	57.0	57.0	57.0	57.0	57.0	25.0	48.0	48.0	15.0	38.0	38.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	20.8%	40.0%	40.0%	12.5%	31.7%	31.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.73	0.29		0.36	0.40	0.35	0.19	0.03	0.29	0.24
Control Delay		31.0	4.5		21.6	12.9	13.8	4.0	12.8	26.0	6.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.0	4.5		21.6	12.9	13.8	4.0	12.8	26.0	6.7
Queue Length 50th (ft)		136	1		42	57	69	2	2	44	0
Queue Length 95th (ft)		267	41		99	143	191	44	11	97	37
Internal Link Dist (ft)		809			866		1400			1993	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1217	1250		879	731	2142	1067	440	1670	818
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.31	0.14		0.15	0.36	0.28	0.16	0.02	0.14	0.14

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 70.6
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	242	162	44	69	7	238	533	152	9	216	102
Future Volume (veh/h)	94	242	162	44	69	7	238	533	152	9	216	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1885	1870	1870	1900	1900	1826	1900	1900	1856	1870
Adj Flow Rate, veh/h	104	269	0	49	77	0	264	592	0	10	240	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	2	1	2	2	0	0	5	0	0	3	2
Cap, veh/h	195	370		218	303		643	1396		388	976	
Arrive On Green	0.28	0.28	0.00	0.28	0.28	0.00	0.14	0.40	0.00	0.01	0.28	0.00
Sat Flow, veh/h	392	1320	1598	448	1083	0	1810	3469	1610	1810	3526	1585
Grp Volume(v), veh/h	373	0	0	126	0	0	264	592	0	10	240	0
Grp Sat Flow(s),veh/h/ln	1712	0	1598	1531	0	0	1810	1735	1610	1810	1763	1585
Q Serve(g_s), s	7.9	0.0	0.0	0.0	0.0	0.0	5.1	6.7	0.0	0.2	2.9	0.0
Cycle Q Clear(g_c), s	10.7	0.0	0.0	2.8	0.0	0.0	5.1	6.7	0.0	0.2	2.9	0.0
Prop In Lane	0.28		1.00	0.39		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	564	0		521	0		643	1396		388	976	
V/C Ratio(X)	0.66	0.00		0.24	0.00		0.41	0.42		0.03	0.25	
Avail Cap(c_a), veh/h	1689	0		1512	0		1044	2722		682	2115	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	0.0	0.0	15.1	0.0	0.0	9.8	11.7	0.0	13.7	15.2	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	0.0	0.4	0.4	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	1.1	0.0	0.0	1.5	2.0	0.0	0.1	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	0.0	0.0	15.3	0.0	0.0	10.2	12.1	0.0	13.8	15.5	0.0
LnGrp LOS	B	A		B	A		B	B		B	B	
Approach Vol, veh/h		373	A		126	A		856	A		250	A
Approach Delay, s/veh		19.1			15.3			11.5			15.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	27.3		20.7	13.0	20.5		20.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5	19.5	32.5		51.5				
Max Q Clear Time (g_c+I1), s	2.2	8.7		12.7	7.1	4.9		4.8				
Green Ext Time (p_c), s	0.0	7.8		2.4	0.6	2.6		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		14.2	
HCM 6th LOS		B	

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

FUTURE "BUILD" INTERSECTION ANALYSIS

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	29	0	13	6	36	0	34	9	272	3	16	290	9
Future Vol, veh/h	29	0	13	6	36	0	34	9	272	3	16	290	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	235	-	205	260	-	175
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	88	92	88	92	88	88	88	88	92
Heavy Vehicles, %	0	0	0	0	3	0	0	0	6	0	0	5	0
Mvmt Flow	32	0	14	7	41	0	39	10	309	3	18	330	10

Major/Minor	Minor2			Minor1				Major1			Major2		
Conflicting Flow All	541	698	165	0	530	705	155	340	0	0	312	0	0
Stage 1	366	366	-	0	329	329	-	-	-	-	-	-	-
Stage 2	175	332	-	0	201	376	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	7.56	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	6.56	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	6.56	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	3.53	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	429	367	857	0	430	363	869	1230	-	-	1260	-	-
Stage 1	631	626	-	0	655	650	-	-	-	-	-	-	-
Stage 2	816	648	-	0	779	620	-	-	-	-	-	-	-
Platoon blocked, %				-					-	-		-	-
Mov Cap-1 Maneuver	403	359	857	0	416	355	869	1230	-	-	1260	-	-
Mov Cap-2 Maneuver	403	359	-	0	416	355	-	-	-	-	-	-	-
Stage 1	626	617	-	0	650	645	-	-	-	-	-	-	-
Stage 2	773	643	-	0	755	611	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	12	0.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1230	-	-	482	416	869	1260	-	-
HCM Lane V/C Ratio	0.008	-	-	0.095	0.098	0.044	0.014	-	-
HCM Control Delay (s)	8	-	-	13.2	14.6	9.3	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	7	0	292	0	0	0	333	0
Future Vol, veh/h	0	0	0	0	0	0	7	0	292	0	0	0	333	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	0	-	-	-	245	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	7	0	0	0	5	0
Mvmt Flow	0	0	0	0	0	0	8	0	328	0	0	0	374	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	554	718	187	494	718	164	273	-	0	-	328	-	-	0
Stage 1	374	374	-	344	344	-	-	-	-	-	-	-	-	-
Stage 2	180	344	-	150	374	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	6.95	6.5	6.9	5.6	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.7	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.65	4	3.3	2.3	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	442	357	705	483	357	858	1115	0	-	0	899	0	-	0
Stage 1	555	621	-	628	640	-	-	0	-	0	-	0	-	0
Stage 2	780	640	-	804	621	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	440	355	705	481	355	858	1115	-	-	-	899	-	-	-
Mov Cap-2 Maneuver	440	355	-	481	355	-	-	-	-	-	-	-	-	-
Stage 1	551	621	-	624	636	-	-	-	-	-	-	-	-	-
Stage 2	774	636	-	804	621	-	-	-	-	-	-	-	-	-

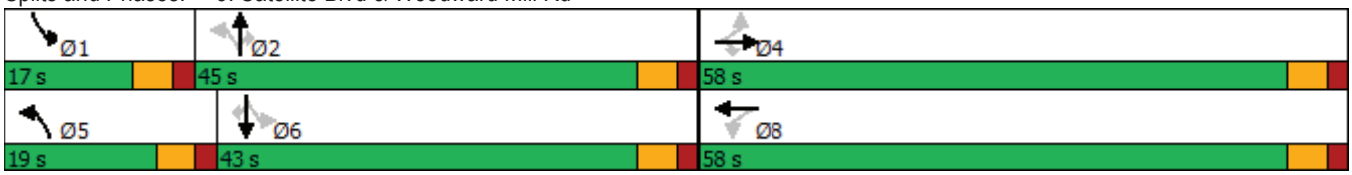
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0.2	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	1115	-	-	-	899	-
HCM Lane V/C Ratio	0.007	-	-	-	-	-
HCM Control Delay (s)	8.3	-	0	0	0	-
HCM Lane LOS	A	-	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	73	77	242	73	79	95	219	38	15	271	84
Future Volume (vph)	73	77	242	73	79	95	219	38	15	271	84
Lane Group Flow (vph)	0	160	257	0	168	101	233	40	16	288	89
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	19.0	45.0	45.0	17.0	43.0	43.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	48.3%	15.8%	37.5%	37.5%	14.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.46	0.45		0.50	0.17	0.14	0.05	0.03	0.26	0.16
Control Delay		22.4	5.7		23.2	6.8	8.8	1.9	6.9	15.4	5.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		22.4	5.7		23.2	6.8	8.8	1.9	6.9	15.4	5.4
Queue Length 50th (ft)		42	0		44	12	14	0	2	33	0
Queue Length 95th (ft)		93	45		97	36	53	8	9	71	27
Internal Link Dist (ft)		809			866		1400			1879	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1434	1543		1385	720	2698	1306	730	2645	1204
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.11	0.17		0.12	0.14	0.09	0.03	0.02	0.11	0.07

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 49.2
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	77	242	73	79	6	95	219	38	15	271	84
Future Volume (veh/h)	73	77	242	73	79	6	95	219	38	15	271	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1870	1885	1841	1900	1885	1796	1900	1900	1826	1826
Adj Flow Rate, veh/h	78	82	0	78	84	0	101	233	0	16	288	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	6	0	2	1	4	0	1	7	0	0	5	5
Cap, veh/h	241	153		235	150		661	1457		636	1263	
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.43	0.00	0.02	0.36	0.00
Sat Flow, veh/h	730	1005	1585	691	985	0	1795	3413	1610	1810	3469	1547
Grp Volume(v), veh/h	160	0	0	162	0	0	101	233	0	16	288	0
Grp Sat Flow(s),veh/h/ln	1735	0	1585	1675	0	0	1795	1706	1610	1810	1735	1547
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	1.4	1.7	0.0	0.2	2.4	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	3.5	0.0	0.0	1.4	1.7	0.0	0.2	2.4	0.0
Prop In Lane	0.49		1.00	0.48		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	395	0		385	0		661	1457		636	1263	
V/C Ratio(X)	0.41	0.00		0.42	0.00		0.15	0.16		0.03	0.23	
Avail Cap(c_a), veh/h	2160	0		2101	0		1100	3271		1104	3157	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.2	0.0	0.0	16.3	0.0	0.0	6.7	7.3	0.0	7.9	9.1	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.3	0.0	0.0	0.3	0.4	0.0	0.1	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	0.0	0.0	17.0	0.0	0.0	6.9	7.4	0.0	7.9	9.3	0.0
LnGrp LOS	B	A		B	A		A	A		A	A	
Approach Vol, veh/h		160	A		162	A		334	A		304	A
Approach Delay, s/veh		16.9			17.0			7.2			9.2	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	23.1		11.8	8.9	20.5		11.8				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	11.5	39.5		52.5	13.5	37.5		52.5				
Max Q Clear Time (g_c+I1), s	2.2	3.7		5.3	3.4	4.4		5.5				
Green Ext Time (p_c), s	0.0	2.7		1.0	0.1	3.4		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	42	0	299	333	7
Future Vol, veh/h	0	42	0	299	333	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	-	0	200	-	-	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	7	5	0
Mvmt Flow	0	46	0	325	362	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	181	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	837	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	837	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	837	-
HCM Lane V/C Ratio	-	0.055	-
HCM Control Delay (s)	-	9.5	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	15	0	6	1	18	0	36	1	23	611	38	37	296	23
Future Vol, veh/h	15	0	6	1	18	0	36	1	23	611	38	37	296	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	235	-	205	260	-	175
Veh in Median Storage, #	-	0	-	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	3	0	0	5	0	3	3	0
Mvmt Flow	16	0	7	1	20	0	39	1	25	664	41	40	322	25

Major/Minor	Minor2			Minor1				Major1				Major2		
Conflicting Flow All	786	1159	161	0	957	1143	332	322	347	0	0	705	0	0
Stage 1	402	402	-	0	716	716	-	-	-	-	-	-	-	-
Stage 2	384	757	-	0	241	427	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	7.5	6.5	6.96	6.4	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	3.5	4	3.33	2.5	2.2	-	-	2.23	-	-
Pot Cap-1 Maneuver	286	197	862	0	215	202	661	907	1223	-	-	882	-	-
Stage 1	601	604	-	0	392	437	-	-	-	-	-	-	-	-
Stage 2	616	419	-	0	747	589	-	-	-	-	-	-	-	-
Platoon blocked, %				-						-	-		-	-
Mov Cap-1 Maneuver	255	184	862	0	203	189	661	1205	1205	-	-	882	-	-
Mov Cap-2 Maneuver	255	184	-	0	203	189	-	-	-	-	-	-	-	-
Stage 1	588	577	-	0	383	427	-	-	-	-	-	-	-	-
Stage 2	567	410	-	0	708	562	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	15.4	0.3	1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1205	-	-	319	203	661	882	-	-
HCM Lane V/C Ratio	0.022	-	-	0.072	0.096	0.059	0.046	-	-
HCM Control Delay (s)	8.1	-	-	17.2	24.6	10.8	9.3	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	0	0	0	0	0	0	23	0	674	0	1	0	320	0
Future Vol, veh/h	0	0	0	0	0	0	23	0	674	0	1	0	320	0
Conflicting Peds, #/hr	0	0	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	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	0	-	-	-	245	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	5	0	0	0	3	0
Mvmt Flow	0	0	0	0	0	0	25	0	733	0	1	0	348	0

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	767	1133	174	924	1133	367	254	-	0	-	733	-	-	0
Stage 1	350	350	-	783	783	-	-	-	-	-	-	-	-	-
Stage 2	417	783	-	141	350	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.5	7.1	6.95	6.5	6.9	5.6	-	-	-	6.4	-	-	-
Critical Hdwy Stg 1	7.3	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.7	5.5	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.65	4	3.9	3.65	4	3.3	2.3	-	-	-	2.5	-	-	-
Pot Cap-1 Maneuver	323	205	719	255	205	636	1142	0	-	0	499	0	-	0
Stage 1	576	636	-	348	407	-	-	0	-	0	-	0	-	0
Stage 2	570	407	-	814	636	-	-	0	-	0	-	0	-	0
Platoon blocked, %									-				-	
Mov Cap-1 Maneuver	317	200	719	250	200	636	1142	-	-	-	499	-	-	-
Mov Cap-2 Maneuver	317	200	-	250	200	-	-	-	-	-	-	-	-	-
Stage 1	563	635	-	340	398	-	-	-	-	-	-	-	-	-
Stage 2	558	398	-	812	635	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0.3	0
HCM LOS	A	A		

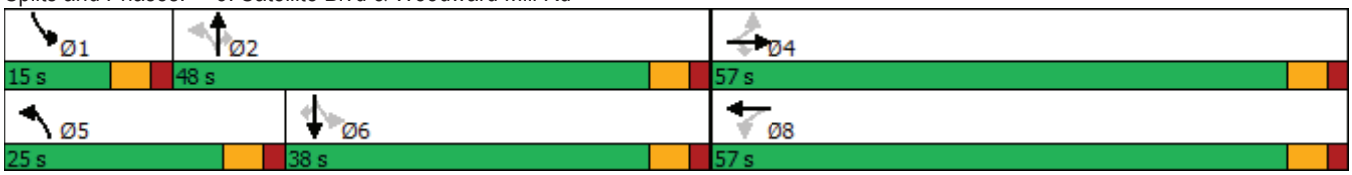
Minor Lane/Major Mvmt	NBU	NBT	EBLn1	WBLn1	SBU	SBT
Capacity (veh/h)	1142	-	-	-	499	-
HCM Lane V/C Ratio	0.022	-	-	-	0.002	-
HCM Control Delay (s)	8.2	-	0	0	12.2	-
HCM Lane LOS	A	-	A	A	B	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	107	242	162	44	69	238	556	152	13	231	110
Future Volume (vph)	107	242	162	44	69	238	556	152	13	231	110
Lane Group Flow (vph)	0	388	180	0	142	264	618	169	14	257	122
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8	5	2		1	6	
Permitted Phases	4		4	8		2		2	6		6
Detector Phase	4	4	4	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	44.5	44.5	44.5	31.5	31.5	15.0	27.5	27.5	15.0	32.5	32.5
Total Split (s)	57.0	57.0	57.0	57.0	57.0	25.0	48.0	48.0	15.0	38.0	38.0
Total Split (%)	47.5%	47.5%	47.5%	47.5%	47.5%	20.8%	40.0%	40.0%	12.5%	31.7%	31.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	None	Min	Min
v/c Ratio		0.75	0.28		0.36	0.41	0.37	0.19	0.04	0.32	0.26
Control Delay		31.9	4.9		21.1	13.9	14.9	4.5	13.5	26.8	7.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		31.9	4.9		21.1	13.9	14.9	4.5	13.5	26.8	7.5
Queue Length 50th (ft)		145	3		43	60	76	3	3	48	0
Queue Length 95th (ft)		296	45		106	153	211	48	m15	110	46
Internal Link Dist (ft)		809			866		1400			1879	
Turn Bay Length (ft)			150			150		135	155		140
Base Capacity (vph)		1156	1215		858	713	2076	1036	428	1618	797
Starvation Cap Reductn		0	0		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0		0	0	0	0	0	0	0
Storage Cap Reductn		0	0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.34	0.15		0.17	0.37	0.30	0.16	0.03	0.16	0.15

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 73.5
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
m Volume for 95th percentile ueue is metered by upstream signal.

Splits and Phases: 3: Satellite Blvd & Woodward Mill Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	242	162	44	69	14	238	556	152	13	231	110
Future Volume (veh/h)	107	242	162	44	69	14	238	556	152	13	231	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1870	1885	1870	1870	1900	1900	1826	1900	1900	1856	1870
Adj Flow Rate, veh/h	119	269	0	49	77	0	264	618	0	14	257	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	5	2	1	2	2	0	0	5	0	0	3	2
Cap, veh/h	214	364		221	309		626	1363		376	958	
Arrive On Green	0.29	0.29	0.00	0.29	0.29	0.00	0.14	0.39	0.00	0.02	0.27	0.00
Sat Flow, veh/h	444	1251	1598	447	1062	0	1810	3469	1610	1810	3526	1585
Grp Volume(v), veh/h	388	0	0	126	0	0	264	618	0	14	257	0
Grp Sat Flow(s),veh/h/ln	1695	0	1598	1510	0	0	1810	1735	1610	1810	1763	1585
Q Serve(g_s), s	8.7	0.0	0.0	0.0	0.0	0.0	5.2	7.3	0.0	0.3	3.2	0.0
Cycle Q Clear(g_c), s	11.5	0.0	0.0	2.8	0.0	0.0	5.2	7.3	0.0	0.3	3.2	0.0
Prop In Lane	0.31		1.00	0.39		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	578	0		529	0		626	1363		376	958	
V/C Ratio(X)	0.67	0.00		0.24	0.00		0.42	0.45		0.04	0.27	
Avail Cap(c_a), veh/h	1644	0		1478	0		1014	2671		656	2076	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	0.0	0.0	14.9	0.0	0.0	10.2	12.4	0.0	14.1	15.8	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.2	0.0	0.0	0.5	0.5	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	1.1	0.0	0.0	1.6	2.3	0.0	0.1	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	0.0	15.1	0.0	0.0	10.7	12.9	0.0	14.1	16.1	0.0
LnGrp LOS	B	A		B	A		B	B		B	B	
Approach Vol, veh/h		388	A		126	A		882	A		271	A
Approach Delay, s/veh		19.2			15.1			12.2			16.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	27.2		21.5	13.2	20.5		21.5				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5	19.5	32.5		51.5				
Max Q Clear Time (g_c+I1), s	2.3	9.3		13.5	7.2	5.2		4.8				
Green Ext Time (p_c), s	0.0	8.2		2.6	0.6	2.8		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		14.7	
HCM 6th LOS		B	

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	0	697	323	20
Future Vol, veh/h	0	21	0	697	323	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Free
Storage Length	-	0	200	-	-	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	5	3	0
Mvmt Flow	0	23	0	758	351	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	176	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	843	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	843	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	843	-
HCM Lane V/C Ratio	-	0.027	-
HCM Control Delay (s)	-	9.4	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

TRAFFIC VOLUME WORKSHEETS

22-081 Residential Development at 1850 Satellite Boulevard, Gwinnett County

Traffic Volumes

A&R Engineering
May 2022

1. Satellite @ Waterstone Pl

A.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 1 **Eastbound**					Waterstone Place **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	267	3	270	0	16	284	0	300	0	0	0	0	0	6	35	0	33	74
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	272	3	275	0	16	290	0	306	0	0	0	0	0	6	36	0	34	76
Total New Trips:	0	9	0	0	9	0	0	0	9	9	0	29	0	13	42	0	0	0	0	0
Future 2024 Traffic Volumes:	0	9	272	3	284	0	16	290	9	315	0	29	0	13	42	6	36	0	34	76

P.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 1 **Eastbound**					Waterstone Place **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	1	0	599	37	637	0	36	290	0	326	0	0	0	0	0	1	18	0	35	54
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	1	0	611	38	650	0	37	296	0	333	0	0	0	0	0	1	18	0	36	55
Total New Trips:	0	23	0	0	23	0	0	0	23	23	0	15	0	6	21	0	0	0	0	0
Future 2024 Traffic Volumes:	1	23	611	38	673	0	37	296	23	356	0	15	0	6	21	1	18	0	36	55

22-081 Residential Development at 1850 Satellite Boulevard, Gwinnett County

Traffic Volumes

A&R Engineering
May 2022

2. Satellite @ Median Opening

A.M. Peak Hour

	Satellite Boulevard Median Opening **Northbound**					Satellite Boulevard Median Opening **Southbound**					South of Waterstone Homes **Eastbound**					South of Waterstone Homes **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	277	0	277	0	0	314	0	314	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	283	0	283	0	0	320	0	320	0	0	0	0	0	0	0	0	0	0
Total New Trips:	7	0	9	0	16	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	7	0	292	0	299	0	0	333	0	333	0	0	0	0	0	0	0	0	0	0

P.M. Peak Hour

	Satellite Boulevard Median Opening **Northbound**					Satellite Boulevard Median Opening **Southbound**					South of Waterstone Homes **Eastbound**					South of Waterstone Homes **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	3	0	638	0	641	1	0	308	0	309	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	3	0	651	0	654	1	0	314	0	315	0	0	0	0	0	0	0	0	0	0
Total New Trips:	20	0	23	0	43	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0
Future 2024 Traffic Volumes:	23	0	674	0	697	1	0	320	0	321	0	0	0	0	0	0	0	0	0	0

22-081 Residential Development at 1850 Satellite Boulevard, Gwinnett County
Traffic Volumes

A&R Engineering
May 2022

3. Satellite @ Woodward Mill Rd

A.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Woodward Mill Road **Eastbound**					Woodward Mill Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	93	206	37	336	0	7	237	66	310	0	67	75	237	379	0	72	77	3	152
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	95	210	38	343	0	7	242	67	316	0	68	77	242	387	0	73	79	3	155
Total New Trips:	0	0	9	0	9	0	8	29	17	54	0	5	0	0	5	0	0	0	3	3
Future 2024 Traffic Volumes:	0	95	219	38	352	0	15	271	84	370	0	73	77	242	392	0	73	79	6	158

P.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Woodward Mill Road **Eastbound**					Woodward Mill Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	1	232	523	149	905	1	8	212	100	321	0	92	237	159	488	0	43	68	7	118
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	1	237	533	152	923	1	8	216	102	327	0	94	242	162	498	0	44	69	7	120
Total New Trips:	0	0	23	0	23	0	4	15	8	27	0	13	0	0	13	0	0	0	7	7
Future 2024 Traffic Volumes:	1	237	556	152	946	1	12	231	110	354	0	107	242	162	511	0	44	69	14	127

22-081 Residential Development at 1850 Satellite Boulevard, Gwinnett County
Traffic Volumes

A&R Engineering
May 2022

4. Satellite @ RIRO Drwy 2

A.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 2 (RIRO) **Eastbound**					- **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	277	0	277	0	0	314	0	314	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	283	0	283	0	0	320	0	320	0	0	0	0	0	0	0	0	0	0
Total New Trips:	0	0	16	0	16	0	0	13	7	20	0	0	0	42	42	0	0	0	0	0
Future 2024 Traffic Volumes:	0	0	299	0	299	0	0	333	7	340	0	0	0	42	42	0	0	0	0	0

P.M. Peak Hour

	Satellite Boulevard **Northbound**					Satellite Boulevard **Southbound**					Site Driveway 2 (RIRO) **Eastbound**					- **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2022 Traffic Counts:	0	0	641	0	641	0	0	311	0	311	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	654	0	654	0	0	317	0	317	0	0	0	0	0	0	0	0	0	0
Total New Trips:	0	0	43	0	43	0	0	6	20	26	0	0	0	21	21	0	0	0	0	0
Future 2024 Traffic Volumes:	0	0	697	0	697	0	0	323	20	343	0	0	0	21	21	0	0	0	0	0