

ACTION DENYING REZONE REQUEST

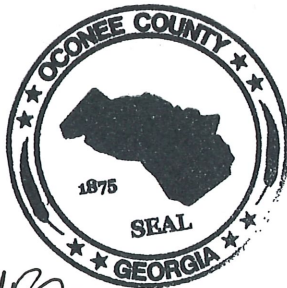
APPLICATION SUBMITTED BY: JPC Design and Construction, LLC

APPLICATION SUBMISSION DATE: March 16, 2020

RE: Request for rezoning of a ±32.079-acre tract of land located at the southwest corner of US Highway 78 and Mars Hill Road in the 240th G.M.D., Oconee County, Georgia, (tax parcel no. B-02-046, B-02-046A, B-02-046B, B-02-046C, and B-02-061) from B-2 (Highway Business District) to B-2 (Highway Business District) with modifications to rezone no.7702.

After consideration and a motion and second, the Oconee County Board of Commissioners does hereby deny the above-referenced request for rezoning.

This 7th day of July, 2020.



ATTEST:

Kathy Hayes
Kathy Hayes
Clerk, Board of Commissioners

OCONEE COUNTY BOARD OF COMMISSIONERS

BY: _____

John Daniell
John Daniell, Chairman

Mark Thomas
Mark Thomas, Member

Chuck Horton (By: Kathy Hayes)
Chuck Horton, Member

Vacant, Member

Mark Saxon
Mark Saxon, Member

Kathy Hayes

From: Chuck Horton
Sent: Monday, July 6, 2020 11:54 AM
To: Kathy Hayes
Subject: Sighting of documents

To whom it might concern. Because of my recent surgery and the inability of going to the courthouse I give permission for the county clerk, Kathy Hayes to sign county documents for me.

Respectfully
Chuck Horton

Sent from my iPad



**Planning Department
Oconee County, Georgia
STAFF REPORT**

REZONE CASE #: P20-0030

DATE: June 1, 2020

STAFF REPORT BY: Grace B. Tuschak, Senior Planner

APPLICANT NAME: JPC Design and Construction, LLC

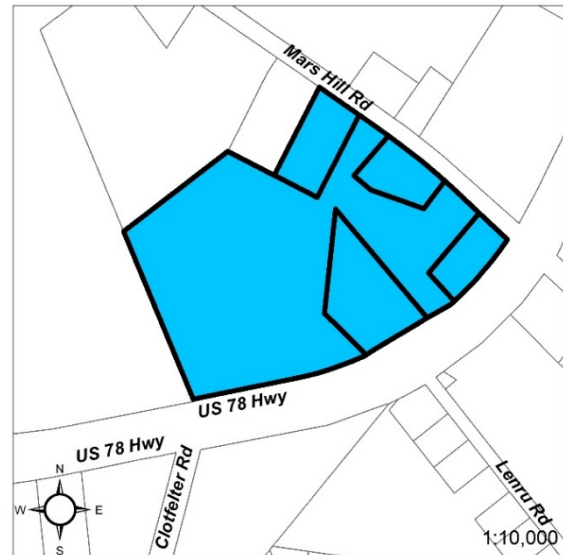
PROPERTY OWNER: William B. Jones

LOCATION: Southwest corner of US Highway 78 and Mars Hill Road

PARCEL SIZE: ± 32.079 acres

EXISTING ZONING: B-2 (Highway Business District)

EXISTING LAND USE: Undeveloped agricultural land, single-family residential, retail establishments, and gas station



FUTURE DEVELOPMENT MAP CHARACTER AREA DESIGNATION: Technology Gateway

ACTION REQUESTED: Rezone from B-2 to B-2 with modifications to rezone no. 7702

REQUEST SUMMARY: The property owner is petitioning for a rezone modification to rezone no. 7702 in order to remove condition no seven which eliminates proposed site driveway three

STAFF RECOMMENDATION: Staff recommends denial of the present request.

DATE OF SCHEDULED HEARINGS

PLANNING COMMISSION: June 15, 2020

BOARD OF COMMISSIONERS: July 7, 2020

ATTACHMENTS:

- Application
- Zoning Impact Analysis
- Narrative
- Aerial Imagery
- Plat of Survey
- Concept Plan
- Representative Photos
- Figure 5 from Traffic Study Submitted 1/31/2019
- Signed resolution for rezone #7702

PROPOSED MODIFICATION DESCRIPTION

- The applicant is requesting that condition #7 of rezone no. 7702 be removed. This condition reads as follows: “The developer shall eliminate Site Driveway 3 (depicted in Figure 5 of the traffic impact analysis submitted on 01/31/2019 and attached hereto) and install an internal connection via Site Driveway 2 (depicted in Figure 5 of the traffic impact analysis submitted on 01/31/2019) for access to Phase 1 of the development.”
- The applicant proposes to install site driveway 3 as shown on the associated concept plan
- Approval of a preliminary site plan/preliminary plat and site development plans are currently on hold pending the current rezone modification request

COMMENTS FROM OTHER DEPARTMENTS & AGENCIES

OCONEE COUNTY WATER RESOURCES DEPARTMENT

- Recommended condition: The owner, all at owner’s expense, shall construct the improvements required by the County for public water and public waste water services for subject property and shall convey same to the County, free of all liens. Said improvements shall include all on-site improvements and such off-site improvements as are required by the County to provide service to subject property.

OCONEE COUNTY PUBLIC WORKS DEPARTMENT

- Public Works maintains its recommendation to eliminate Site Driveway 3 due to its close proximity to the intersection of Mars Hill Road and US 78/SR 10/Monroe Highway. An internal connection should be made to Site Driveway 2 for access. Public Works recommends implementation of the other improvements proposed in the Traffic Impact Study.
- The consultant submitted a right turn analysis (contained in the Traffic Study) which concluded that a right turn lane was not warranted. Even though the study showed that right turn lanes are not warranted, deceleration lanes and acceleration tapers are required per the UDC.

FIRE DEPARTMENT

- No comments

NOTE: For reference purposes, the background information & findings of fact section of the staff report for rezone #7702 is included below:

BACKGROUND INFORMATION & FINDINGS OF FACT

HISTORY

- Tax parcel no. B-02-46, B-02-046A, B-02-046B, B-02-046C have been zoned A-1 since the original adoption of the zoning map in 1968.
- Tax parcel no. B-02-061 have been zoned B-2 since the original adoption of the zoning map in 1968.
- A retail building and gas station were constructed on the B-2 zoned parcel in 1959.
- The majority of the subject site has been used for hay production for the past 20 years.
- The two single-family residences on the subject property were built in 1956 and 1972.

SITE VISIT DESCRIPTION

- Three businesses are currently in operation on the B-2 zoned portion of the site: a convenience store and gas station with fueling stations, a florist, and a beauty salon.
- Two single-family residences and various outbuildings currently exist on the A-1 zoned portion of the site.
- The subject site is mainly open pastureland, with a heavily wooded area along the northern property line.

SURROUNDING LAND USE AND ZONING

	EXISTING LAND USES	EXISTING ZONING
NORTH	Single-family residences on wooded tracts	A-1 (Agricultural District)
SOUTH	Single-family residences Retail establishments Undeveloped pastureland	A-1 (Agricultural District) B-1 (General Business District)
EAST	Single-family residences Undeveloped pastureland	A-1 (Agricultural District) I (Industrial District)
WEST	Undeveloped pastureland	A-1 (Agricultural District)

PROPOSED PROJECT DESCRIPTION

The applicant proposes to convert the entirety of the subject site into a commercial development with a total of 173,400 square feet of retail, office, hotel, and restaurant space.

- Phase I of the development is proposed to include the following, to be completed in 2019:
 - Demolition of the existing retail building and gas station
 - Construction of a 7,200 sq. ft. convenience store, a gas station with 20 fueling positions, and a 2,800 sq. ft. Burger King with a drive through lane
- Phase II is proposed to include construction of the following, to be completed by 2022:
 - One 68,000 sq. ft. big box anchor store
 - Two 12,000 sq. ft. retail stores
 - One 5,000 sq. ft. commercial office and institutional building
 - One 50,400 sq. ft. hotel with 200-rooms
 - Five retail/commercial fast food restaurants, 3000-3500 sq. ft. each
- The total estimated value of the project at completion is \$75,000,000
- The applicant intends to own and operate the convenience store, gas station, and Burger King proposed for Phase I. Future ownership of outparcels proposed for Phase II is yet to be determined.

PROPOSED TRAFFIC PROJECTIONS

According to a traffic impact study conducted by A&R Engineering, Inc., the proposed development is projected to have the following traffic impacts:

- 19,939 ADT; 1474 A.M. and 1762 P.M. peak hour trips.
- With daily pass-by trip reductions factored: 11,835 ADT; 920 A.M. and 974 P.M. peak hour trips.
- Source: ITE Trip Generation Manual, 10th Edition; ITE Land Uses: 310-Hotel, 710- General Office Building, 820 - Shopping Center, 850 – Supermarket, 933 – Fast Food Restaurant without Drive-Through Window, 934 –Fast-Food Restaurant with Drive-Through Window, and 960 – Super Convenience Market/Gas Station.
- Staff notes that the applicant, in a later submission dated 02/27/19, amended the present rezone request to decrease the total square footage of the proposed development. However, estimated traffic counts shown above do not reflect this change to the request.

PUBLIC FACILITIES

Water:

- The Oconee County Water Resources Department has indicated in a water and sewer availability letter dated 01/22/2019 that sufficient potable water is available to serve the proposed development.

Sewer:

- The Oconee County Water Resources Department has indicated in a water and sewer availability letter dated 01/22/2019 that wastewater treatment/sewer collection and transmission capacity is currently available for the proposed development.

Roads:

- The existing retail building and gas station on tax parcel no. B-02-061 are currently accessed from US Highway 78 and from Mars Hill Road.
- Parcel no. B-02-046A and parcel no. B-02-046 are currently accessed from US Highway 78.
- Parcel no. B-02-046C and B-02-046B are currently accessed from Mars Hill Road.
- Three entrances are proposed on Mars Hill Road and two right in/right out entrances on US Highway 78. One entrance (site entrance 3) is requested by OC Public Works Department to be removed.

- The proposed development will require deceleration lanes at each entrance in compliance with UDC Article 10.

ENVIRONMENTAL

- No state waters or jurisdictional wetlands are located on the site.
- No 100-year flood plains are located on the site.

COMMENTS FROM OTHER DEPARTMENTS & AGENCIES

GEORGIA DEPARTMENT OF TRANSPORTATION

- This rezone request will require GDOT coordination. We will provide more specific and in-depth comments when the layout is submitted to us for review.

OCONEE COUNTY PUBLIC WORKS DEPARTMENT

- Public Works recommends eliminating Site Driveway 3 due to its close proximity to the intersection of Mars Hill Road and US 78/SR 10/Monroe Highway. An internal connection should be made to Site Driveway 2 for access. Public Works recommends implementation of the other improvements proposed in the Traffic Impact Study.
- The consultant submitted a right turn analysis (contained in the Traffic Study) which concluded that a right turn lane was not warranted. Even though the study showed that right turn lanes are not warranted, deceleration lanes and acceleration tapers are required per the UDC.

NOTE: For reference purposes, the analysis section of the staff report for rezone #7702 is included below. Conditions have not significantly changed since the approval of rezone #7702 and the below analysis remains applicable to the present request.

STAFF ANALYSIS

THE ANALYSIS OF THE APPLICATION IS MADE BASED UPON THE “STANDARDS FOR REZONING CONSIDERATION” AS SET FORTH IN SECTION 1207.01 OF THE *OCONEE COUNTY UNIFIED DEVELOPMENT CODE*.

A. How does the current request compare to the existing uses and zoning of nearby properties?

Lots surrounding the subject site are primarily zoned A-1, B-2, and I. The existing uses surrounding the subject site are primarily agricultural and single-family residential, with the exception of several properties in commercial use to the south of the subject property, including a bank and several small retail establishments. Additional compatible uses exist in the general vicinity of the subject property, including a convenience store and gas station, veterinary hospital, and numerous other commercial properties along US Hwy 78 and GA SR 316. Staff believes that the present request is compatible with the vicinal pattern of transitioning land use from low-density residential and agricultural uses to commercial use.

B. To what extent are property values diminished by the particular zoning restrictions of the current zoning category?

The majority of the subject site is currently zoned agricultural and is being used for its intended purpose. However, given the location of the property at a commercial node, it is reasonable to believe that it would be more valuable as a commercial property than an agricultural property.

C. To what extent does the destruction of the property values of the individual property owner promote the health, safety, or general welfare of the public with consideration to:

i. Population density and effect on community facilities such as streets, schools, water and sewer?

County officials have indicated that existing county water capacity, sewer treatment capacity, and emergency services should be adequate for the proposed development. The current request should not have any significant impact on the local school district and local population densities should not be adversely impacted.

ii. **Environmental impact?**

No known environmental areas exist on the site; staff does not anticipate any significant adverse environmental impacts.

iii. **Effect on adjoining property values?**

Incompatible land use buffers required by the UDC should be sufficient to protect adjoining properties from any adverse effects of the proposed development. The current request is in keeping with the ongoing commercialization of the general vicinity surrounding the subject property; therefore, new commercial development should not impair vicinal property values.

D. What is the relative gain to the public in maintaining the current zoning category, as compared to the hardship imposed upon the current property owner?

Should the present request be denied, the portions of the subject site zoned A-1 could not be developed for commercial purposes, and the scale of the development would have to be restricted to the 1.5-acre parcel that is currently zoned B-2. Conversely, by maintaining the current zoning restrictions, usage of nearby County roads and demands for County services such as water, sewer, fire suppression, and emergency services would not be additionally burdened by new commercial development.

E. What is the length of time that the property has been vacant as currently zoned, considered in the context of land development in the area of the vicinity of the property?

The subject property is not currently vacant and appears to be actively used for agricultural, residential, and commercial uses. Therefore this question is not applicable.

F. Is the proposed use consistent with the stated purpose of the zoning district that is being requested?

The B-2 (Highway Business District) is intended to serve those business activities generally oriented to the highways. Convenience stores with fuel pumps, commercial offices, and retail uses are common in this district and staff believes that the proposed development is consistent with the stated purpose of the zoning district.

G. How does this request conform with or diverge from established land use patterns?

The proposed development is consistent with transitioning land use in the vicinity of the subject property. Commercial and industrial uses continue to advance from the commercial node at GA-SR 316 and US-Hwy 78, and limited development has occurred at Mars Hill Road and US Hwy 78 over the last several decades. To the south of the subject property across US Hwy 78, a commercial bank was constructed in 1983, a small retail building was constructed in 2006, and a convenience store with fuel pumps were constructed in 2012. The Comprehensive Plan encourages this transition of land use from low intensity residential and agricultural uses to commercial and industrial uses through the designation of this area as a Technology Gateway Character Area (see below). Furthermore, it is reasonable to believe that the surrounding area could experience substantial commercial, professional, and/or industrial growth at some point in the future due the location of the subject property near the intersection of two arterial roadways.

H. How does this request conform with or diverge from the Future Land Use Map or the goals and objectives of the Comprehensive Plan?

The 2040 Future Development Map designates the subject tracts with the character area "Technology Gateway." The 2040 Comprehensive Plan describes this character area as an area intended for professional office buildings, research facilities, and light industrial development. The 2040 Comprehensive Plan also states that in the Technology Gateway Area, "retail and residential uses are appropriate secondary uses that complement these employment centers... Redevelopment of low-density residential uses to employment-based uses are anticipated as the area develops." Staff believes that this request conforms to the Future Land Use Map and the goals and objectives set forth for the Technology Gateway character area.

I. What is the availability of adequate sites for the proposed use in districts that permit such use?

There are several other large vacant sites zoned B-2 along US Hwy 78. However, due to the prevalence of existing conditional zoning, it is unlikely that other properties exist in the county that would permit such use as proposed.

J. Is the site suitable for the proposed use relative to the requirements set forth in the Unified Development Code (off-street parking, setbacks, buffer zones, open space, etc.)?

The concept plan appears to be compliant with the requirements set forth in the UDC. Staff believes that the site is suitable for the proposed use relative to the requirements set forth in the UDC.

STAFF RECOMMENDATION & CONDITIONAL REQUIREMENTS

Based on comments from the Oconee County Public Works Department, staff holds that conditions previously approved under rezone #7702 should remain in place and recommends denial of this rezone modification request. Should the present request be approved, staff recommends it be subject to the following conditions to be fulfilled at the expense of the owner/developer:

1. Development design and structures shall meet or exceed the standards indicated on the concept plan, narrative, representative architectural sketches, and other documents submitted with the zoning application and attached hereto. This condition shall not construe approval of any standard that is not in conformity with the Unified Development Code.
2. At least 80 percent of exterior wall surfaces of all buildings and structures are to be designed to incorporate one or more of the following finish materials: brick veneer, stone veneer; natural wood siding or cement-board siding (such as hardy-plank). The remaining 20 percent of each wall may be stucco. Metal siding on any building is strictly prohibited.
3. Gas station canopy support columns shall be entirely covered in brick and/or stone.
4. Any allowed freestanding signs shall only be permitted as ground (monument) signs and shall not exceed twenty feet in height. Pole signs are prohibited.
5. Illuminated and LED signage shall comply with Article 7 of the UDC.
6. All vegetative screening, landscaping, and buffers shall meet the design standards as set forth in Article 8 of the Unified Development Code, except that all required landscape strips shall contain one tree per 25 lineal feet of landscape strip. Said trees shall be a mixture of evergreen and deciduous trees, and of species that will attain a normal height at maturity of more than 40 feet.
7. All site lighting shall consist solely of full cutoff luminaires as defined in the Unified Development Code.
8. Parking lot lighting structures shall not exceed twenty feet in height.
9. Service areas and dumpsters shall be visually screened from public view by a six-foot masonry wall with façade materials matching the exterior of the principal structure with black painted metal/steel enclosure doors. Enclosure doors made of wood or chain link are prohibited.
10. The following uses, allowed by right in B-2 zoning district, shall not be allowed on the subject property:

TABLE OF DISALLOWED USES	
RV (Recreational Vehicle) Parks	Pawnshop or Loan Brokers, other than Mortgage Loan Brokers
Automotive Repair and Maintenance, except Car Washes	Car Washes
Automotive Parts, Accessories, and Tire Stores	Family Planning Centers
General Automotive Repair	Automotive Transmission Repair
Automotive Exhaust System Repair	Automotive Body, Paint and Interior Repair and Maintenance
Automotive Glass Replacement Shops	Automotive Oil Change and Lubrication Shops
Tractor and Other Farm Equipment Repairs and Maintenance	Home and Garden Equipment Repair and Maintenance
Home Appliance Repair and Maintenance	Automobile Commercial Parking Lots and Garages
Passenger Car Rental and Leasing	Truck, Utility Trailer and RV (Recreational Vehicle) Rental and Leasing
General Equipment and Tool Rental Centers	Construction, Transportation, Mining and Forestry Machinery and Equipment Rental and Leasing
Construction Contractors, Builders and Developers, with outdoor storage	Adult Entertainment
Taxidermists	Radio and Television Broadcasting Stations
Used Car Dealers	Archery or Shooting Ranges
Motorcycle Dealers	New Car Dealers
All Other Motor Vehicle Dealers	Recreational Vehicle Dealers
Lumber Yards	Boat Dealers
Truck Stops and Other Gasoline Stations	Auction Houses

General Freight Trucking, Local	School and Employee Bus Transportation
General Freight Trucking, Long-Distance	Motion Picture Theaters (except Drive-Ins)
Community Food and Housing, and Emergency and Other Relief Services	Motion Picture Theaters, Drive-In
Taxi and Limousine Service	Shuttle Services, Vanpools and Other Ground Passenger Transportation
Charter Bus Industry	Fraternal Lodges, VFWs, Ethnic Associations and Other Civic and Social Organizations
Scenic and Sightseeing Transportation	Outpatient Mental Health and Substance Abuse Centers
Specialized Freight (except Used Goods) Trucking, Local	General Medical and Surgical Hospitals
Private Schools: Junior Colleges	Private Schools: Colleges and Universities
Private Schools: Kindergarten, Elementary and Secondary	Private Schools: Religious Exempt Nonpublic Post-Secondary Institutions



OCONEE COUNTY ZONING CHANGE APPLICATION

Requested Action:

- ☐ Rezoning from: _____ to _____ ☒ Change in Conditions of Approval for Case #: 7702
- ☐ Special Use Approval for: _____ in the _____ Zoning District

Applicant

Name: JPC Design and Construction LLC

Address: 264 Alabama Blvd.
(No P.O. Boxes)
P.O. Box 710
Jackson, GA 30233

Telephone: 770-775-2386

Email: mhorne@jonespetroleum.com

Applicant is (check one): ☐ the Property Owner ☒ Not the Property Owner (attach Property Owner's Authorization)

Applicant's Certification: I hereby certify that the information contained in and attached to this application is true and correct.

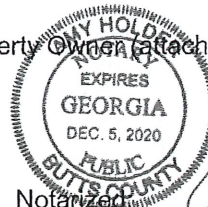
Signature: [Signature] Date: 2/11/20 Notarized: [Signature]

Property Owner

Name: William B. Jones

Address: 264 Alabama Blvd.
(No P.O. Boxes)
Jackson, GA 30233

Telephone: 770-775-2386 - office main



AA
3/12/20

Property

Location: Southwest intersection of US Hwy 78
and Mars Hill Rd.
(Physical Description)

Tax Parcel Number: B02 046, B02 046A, B02 046 B, B02 046 C, B02 046
see prop. owner authorization

Size (Acres): 32.079 Current Zoning: B-2

Future Development Map—Character Area Designation: Technology Gateway

Use

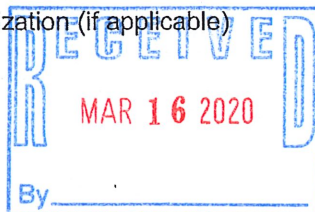
Current Use: Commercial, residential / ag.

Proposed Use: Commercial

AA
3/12/20

Attachments (check all that apply)

- ☒ Property Owner's Authorization (if applicable)
- ☐ Application Fee
- ☒ Warranty Deeds
- ☒ Typed Legal Description
- ☒ Plat of Survey 1
- ☒ Disclosures (Interest & Campaign Contributions)
- ☒ Zoning Impact Analysis



- ☒ Narrative (Detailed Description of the Request)
- ☒ Concept Plan Steven R.
- ☐ Attachments to the Concept Plan:
- ☒ Water and/or Sewer Capacity Letter from OCUD Teamwork
- ☒ Representative Architecture/Photographs
- ☒ Proof all property taxes paid in full
- ☐ Other Attachments: _____

For Oconee County Staff Use Only

Application Date Received: _____ Date Accepted: _____

DRI Transmitted to RDC ☐ Date: _____ ☐ N/A

Date Submitted: _____ ☐ Findings Complete

Posted: _____ Ad: _____ Ad: _____

Application Withdrawn ☐ Date: _____

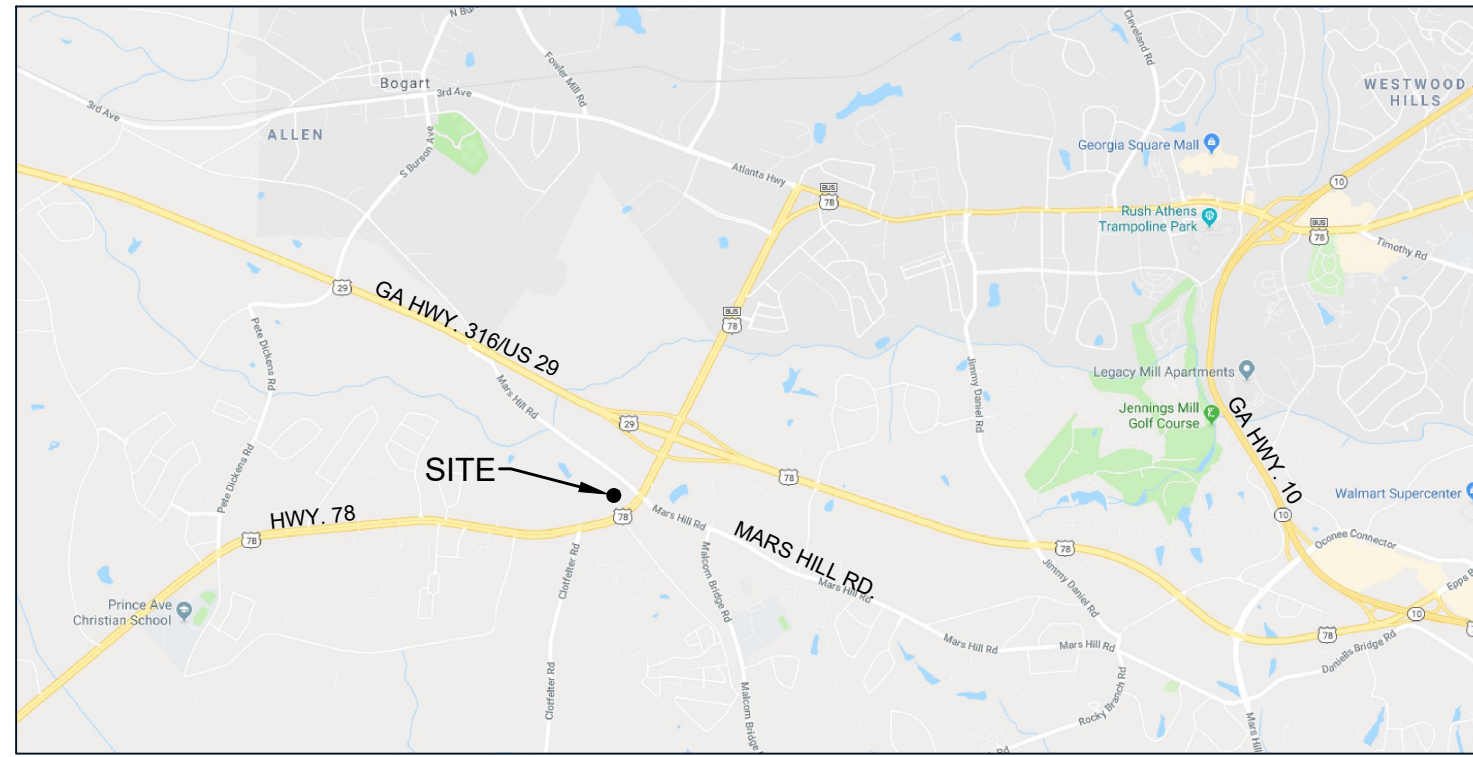
APPLICATION NUMBER _____

Action Planning Commission Date: _____

☐ Approval ☐ With Conditions ☐ Denial

Board of Commissioners Date: _____

☐ Approved ☐ With Conditions ☐ Denied



LEGEND

EXISTING

PROPOSED

CONTOUR LINE

SANITARY SEWER LINE

SS MANHOLE

SS CLEANOUT

STORM DRAIN LINE

STORM DRAINAGE INLETS

WATER LINE

WOODS LINE

FENCE LINE

WATER VALVE

WATER METER

FIRE DEPARTMENT CONNECTION

FIRE HYDRANT

TELEPHONE PEDESTAL

TELEPHONE MANHOLE

SIGN

TREE (SIZE AND TYPE NOTED)

REINFORCED CONCRETE PIPE

CORRUGATED METAL PIPE

HIGH DENSITY POLYETHYLENE PIPE

LIGHT POLE

ELECTRIC BOX

TELEVISION PEDESTAL

SPOT ELEVATION

BENCHMARK

ASPHALT PAVING

CURB AND GUTTER

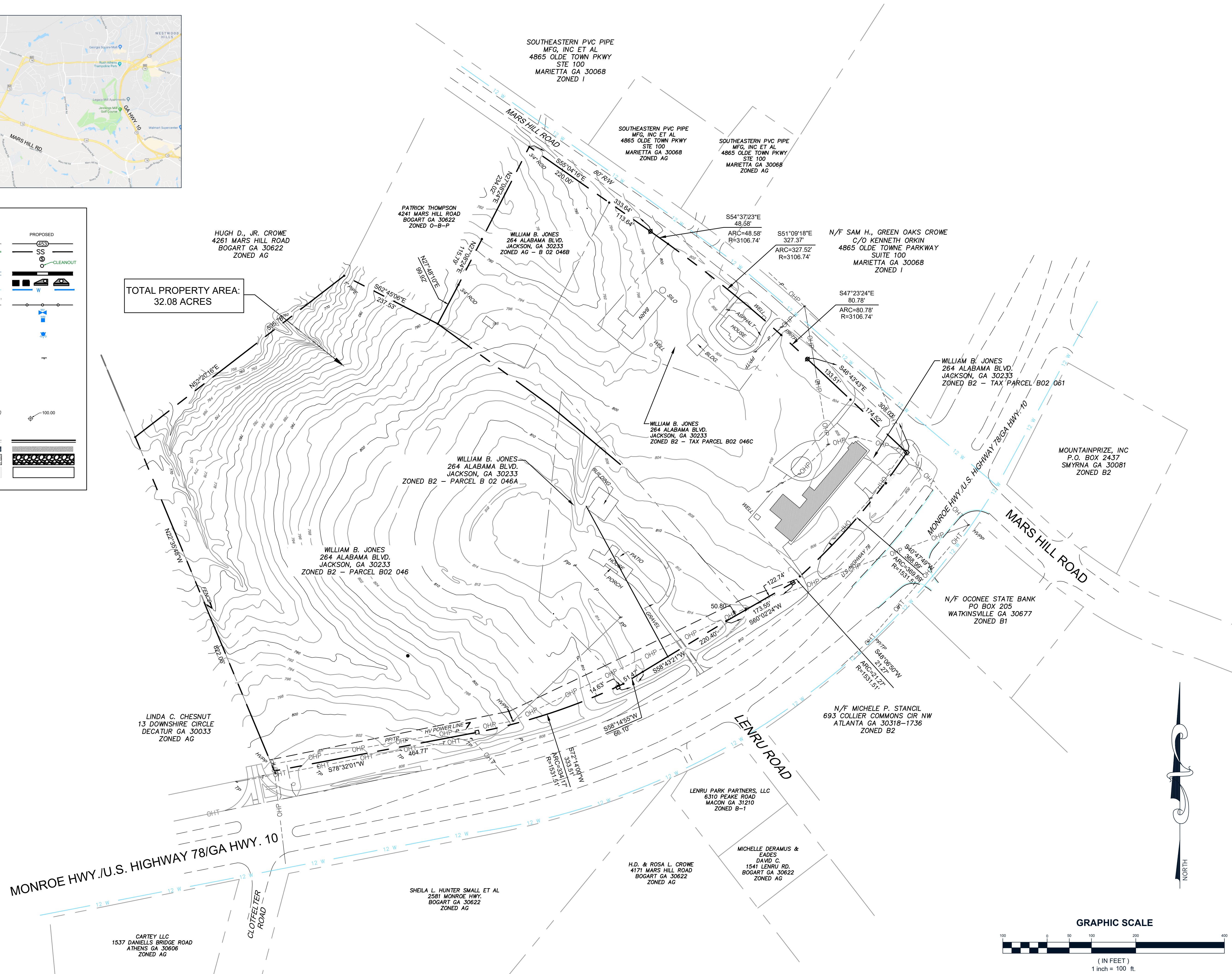
SIDEWALK

GRAVEL

BUILDING

100.00

100.00



JONES PETROLEUM BOGART RETAIL CENTER
MONROE HWY. (US 78/GA 10) AT MARS HILL ROAD
240TH GMD, OCONEE COUNTY
FOR
JPC DESIGN AND CONSTRUCTION, LLC

ROWLAND
ENGINEERING

3312 Northside Drive, Ste. A100
Macon, GA 31210
www.rowland-engineering.com
(478) 621-1500 office
steven@rowland-engineering.com

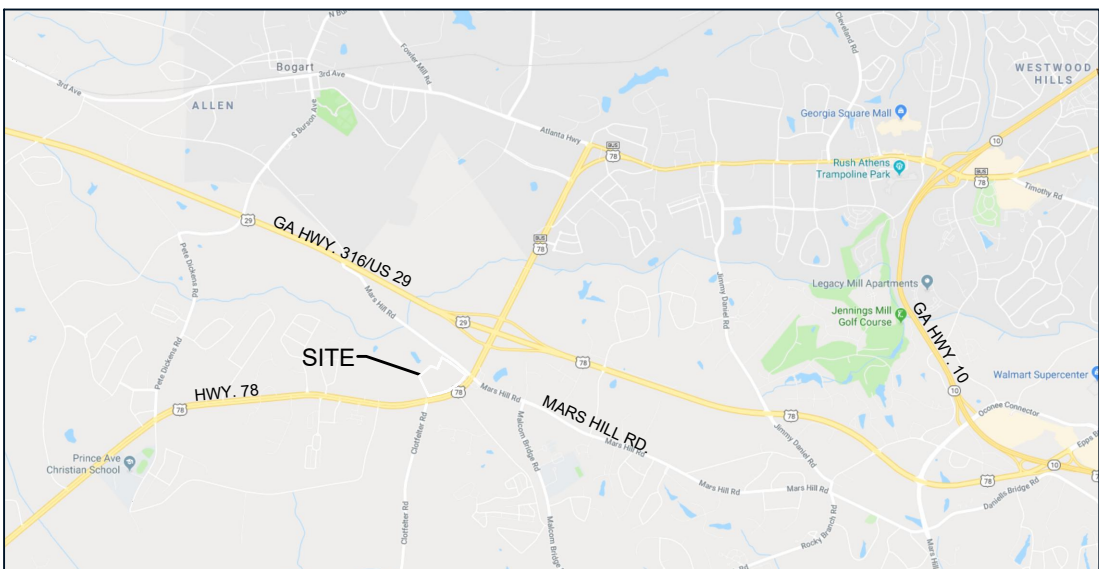
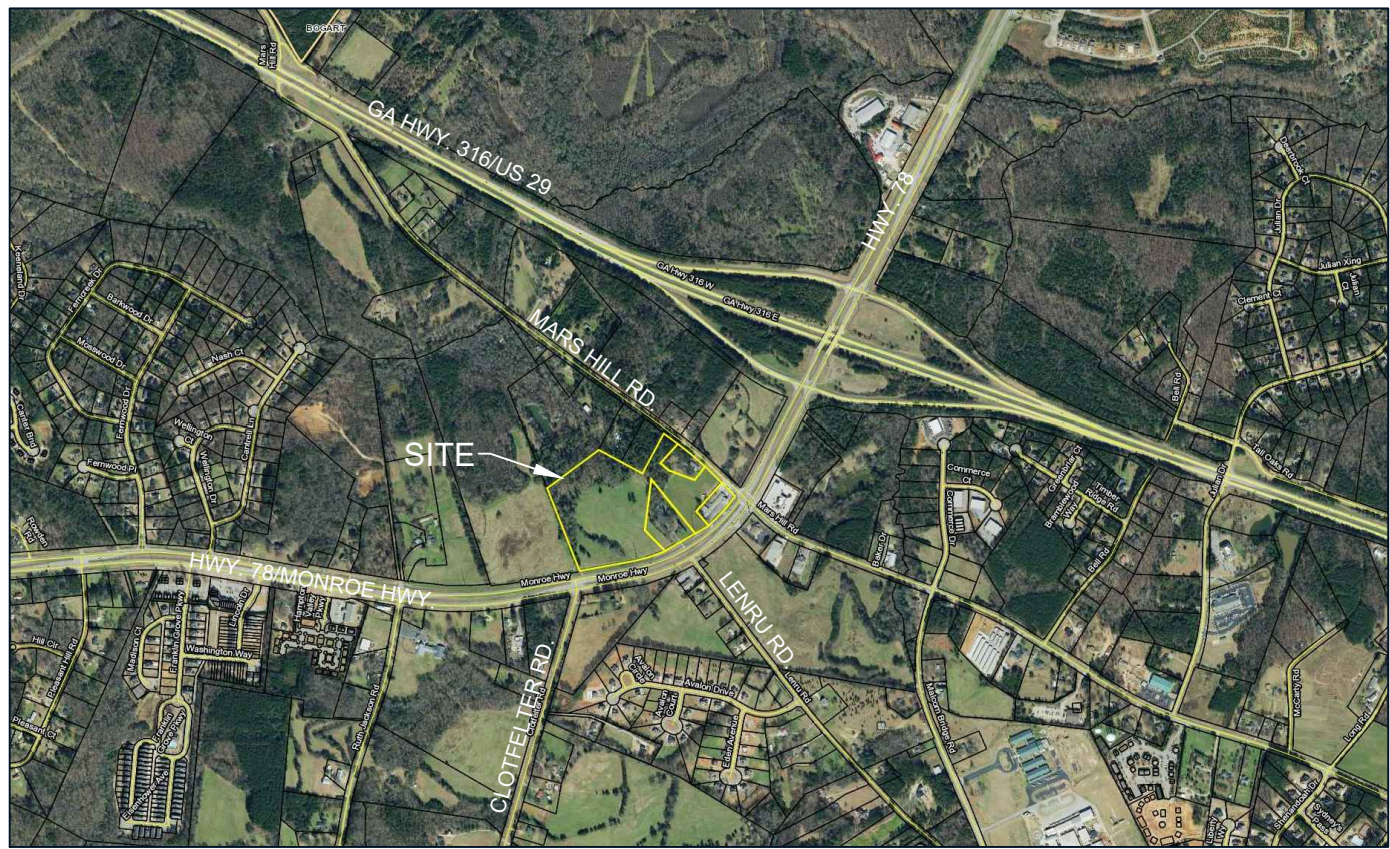
DATE: 03-12-2020

PROJ NO:

THIS SEAL IS VALID ONLY IF SIGNED AND DATED BY THE LICENSED PROFESSIONAL ENGINEER.

ZONING MODIFICATION
EXISTING CONDITIONS

1 of 3



DEVELOPMENT DATA:

CURRENT OWNER: WILLIAM B. JONES
264 ALABAMA BLVD.
JACKSON, GA 30233
(770) 775-2386

DEVELOPER/
APPLICANT: JPC DESIGN AND
CONSTRUCTION, LLC
P.O. BOX 710
JACKSON, GA 30233
(770) 775-2386

AREA: 32.08 ACRES

TOTAL PROJECT
DENSITY: 4.00

PHASE I
DENSITY: 2.45

ZONING: B-2

BLDG. SETBACKS: 20' FRONT (FROM MAJOR THOROUGHFARE)
15' FRONT (FROM MINOR STREET)
10' SIDE AND 10' REAR

TAX PARCELS: B02 061 - ZONED B-2
B02 046 - ZONED B-2
B02 046A - ZONED B-2
B02 046B - ZONED B-2
B02 046C - ZONED B-2

EXISTING BLDG: ±12,100 SF CONVENIENCE STORE AND
RETAIL SHOPS ON PARCEL B02 061
(TO BE REMOVED)

IMPERVIOUS AREA: 13.6 ACRES OF PARKING/DRIVEWAYS
4.0 ACRES OF BUILDINGS/SIDEWALKS
17.6 ACRES TOTAL = 55% OF TOTAL SITE
AREA

DEVELOPMENT
SCHEDULE: PHASE 1 - TO BE CONSTRUCTED
IN 2020 UPON ZONING AND DEVELOPMENT
PLAN APPROVAL.
ROADWAY IMPROVEMENTS SHOWN ON
MARS HILL ROAD, AT THE PROPOSED
PHASE 1 ENTRANCES AND TWO
RIGHT-IN/RIGHT-OUT ENTRANCES ON HWY.
78 ARE TO BE CONSTRUCTED DURING
PHASE 1 DEVELOPMENT

PROPOSED USE: PHASE 1 OF THE DEVELOPMENT INCLUDES
THE CONSTRUCTION OF A COMBINATION
BURGER KING/CONVENIENCE STORE,
WHICH WILL REPLACE THE EXISTING BP
CONVENIENCE STORE AT 2430 MONROE
HWY. PHASE 1 OF CONSTRUCTION ALSO
INCLUDES THE PROPOSED ENTRANCE
ROADS, WATER MAINS, SANITARY SEWER
MAINS AND STORMWATER
INFRASTRUCTURE TO SERVE
SUBSEQUENT PHASES OF THE
DEVELOPMENT.

PUBLIC WATER AND SANITARY SEWER TO BE PROVIDED BY
OCONEE COUNTY UTILITY DEPT.

BOUNDARY AND TOPOGRAPHIC SURVEY BY:
BEN McELROY & ASSOCIATES, INC.
140 MILL CENTER BLVD.
ATHENS, GA 30606
SOURCE OF TOPOGRAPHIC DATA IS GROUND-RUN FIELD SURVEY

THIS SITE DOES NOT CONTAIN A FLOOD HAZARD ZONE PER FEMA
FLOOD MAP 13219C0045D, DATED 9-2-2009.

STORMWATER MANAGEMENT SHALL BE IN ACCORDANCE WITH COUNTY,
STATE, AND AOTHER APPROPRIATE ORDINANCES AND REGULATIONS IN
EFFECT AT THE TIME OF CONSTRUCTION PLAN APPROVAL.

TOTAL PROPERTY AREA:
32.08 ACRES

50' INCOMPATIBLE ZONING
BUFFER (AGAINST AG WITH
RESIDENTIAL COMPONENT)

15' INCOMPATIBLE ZONING
BUFFER (AGAINST AG WITH
NO RESIDENTIAL
COMPONENT)

MONROE HWY./U.S. HIGHWAY 78/GA HWY. 10

CARTEY LLC
1537 DANIELLS BRIDGE ROAD
ATHENS, GA 30606
ZONED AG

SHEILA L. HUNTER SMALL ET AL
2581 MONROE HWY.
BOGART GA 30622
ZONED AG

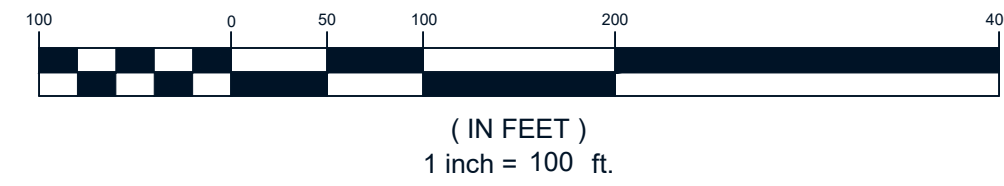
H.D. & ROSA L. CROWE
4171 MARS HILL ROAD
BOGART GA 30622
ZONED AG

MICHELLE DERAMUS &
EADES
1541 LENRU RD.
BOGART GA 30622
ZONED AG

LENRU PARK PARTNERS, LLC
6310 PEAKE ROAD
MACON, GA 31210
ZONED B-1

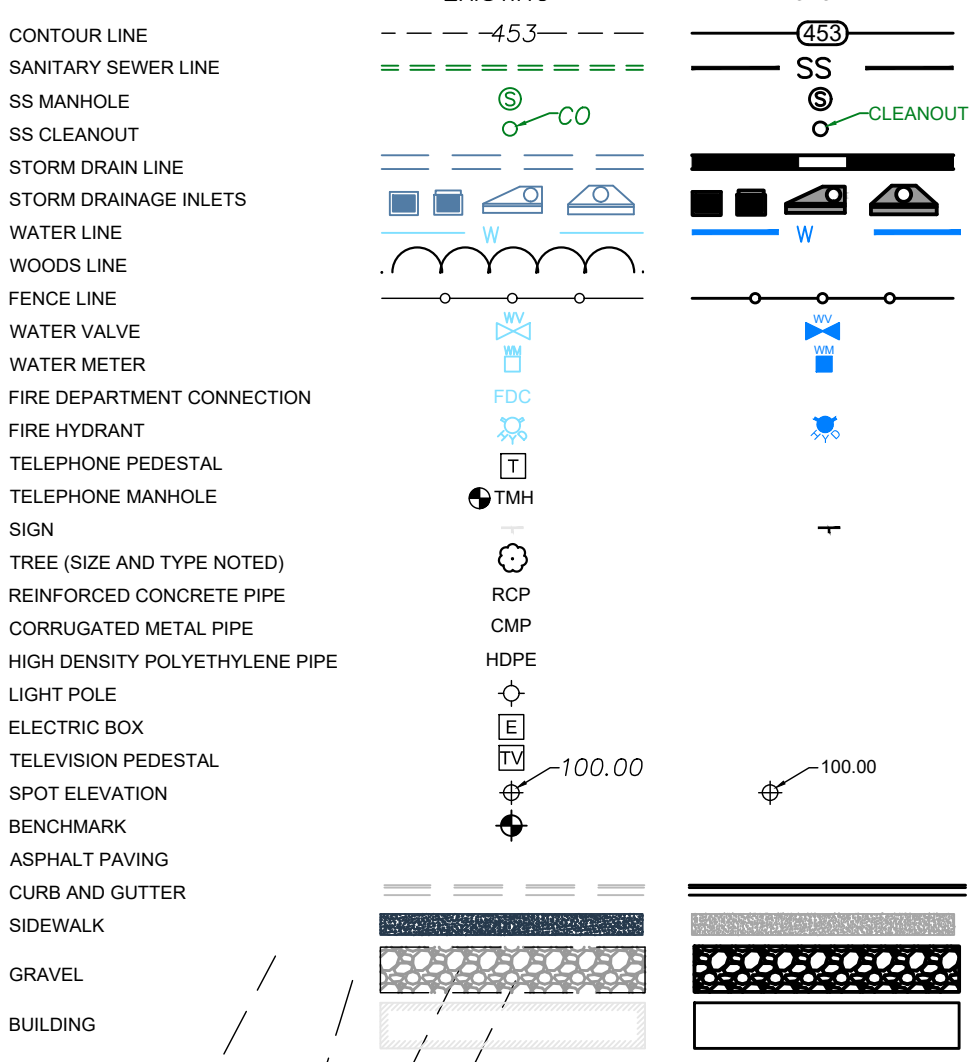
Parcel	Parcel Area (Acres)	Proposed Use	Building Area (S.F.)
Parcel 1	2.00	Office/Institutional	5,000
Parcel 2	1.22	Retail/Quick-Serve Restaurant	3,000
Parcel 3	1.47	Retail/Quick-Serve Restaurant	3,000
Parcel 4	1.88	Retail/Quick-Serve Restaurant	3,500
Parcel 5	1.23	Retail/Quick-Serve Restaurant	3,500
Parcel 6	1.66	Retail/Quick-Serve Restaurant	3,000
Parcel 7	4.15	Convenience Store/Fast Food - 12 mpd's	11,200
Parcel 8	1.24	Office/Retail	12,000
Parcel 9	1.19	Office/Retail	12,000
Parcel 10	3.59	4-Story Hotel (200 Rooms)	50,400
Parcel 11	12.45	Big Box / Retail	68,000
TOTAL ACRES	32.08		TOTAL 174,600

GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

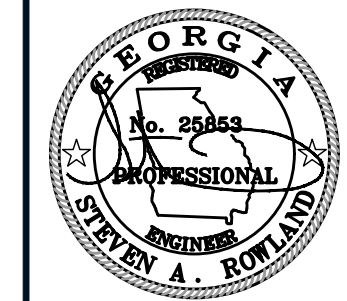
LEGEND



JONES PETROLEUM BOGART RETAIL CENTER
MONROE HWY. (US 78/GA 10) AT MARS HILL ROAD
240TH GMD, OCONEE COUNTY, GA
FOR
JPC DESIGN AND CONSTRUCTION, LLC

ROWLAND
ENGINEERING
3312 Northside Drive, Ste. A 100
Macon, GA 31210
steven@rowland-engineering.com
www.rowland-engineering.com
(478) 621-7500 office

DATE: 05-04-2020
PROJ NO:



ZONING MODIFICATION
CONCEPT PLAN

DOCH 000255
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:491-493
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY



REAL ESTATE TRANSFER TAX
PAID: \$0.00

-----Space Above This Line for Recorder's Use ~~BT-61-108-2019-000038~~

After recording, please return to:
Byrd Garland
Attorney at Law
117 Brookwood Avenue
Jackson, GA 30233

7/20/18 0111

QUIT CLAIM DEED

THIS INDENTURE, made this **10th** day of **January**, in the year of our Lord **Two Thousand Nineteen** (2019) between

(i) **HUGH D. CROWE, JR.**, (ii) **CAROL ELAINE CROWE CARRACO**, (iii) **WILLIAM S. CROWE**, (iv) **MARY H. CROWE**, and (v) **WILLIAM S. CROWE and HUGH D. CROWE, JR.** IN THEIR REPRESENTATIVE CAPACITIES AS CO-EXECUTORS OF THE ESTATE OF **ROSA LEE CROWE, DECEASED**

as Grantor, and

WILLIAM B. JONES

as Grantee.

In this deed, wherever the context so requires, the masculine gender includes feminine and/or neuter and the singular number includes the plural. Wherever herein a verb, pronoun or other part of speech is used in the singular, and there be more than one Grantor or Grantee, said singular part of speech shall be deemed to read as the plural, and each Grantor shall always be jointly and severally liable for the performance of every promise and agreement made herein. Wherever herein Grantor or Grantee is used, the same shall be considered to mean as well, the heirs, executors, administrators, successors, representatives and assigns of the same.

WITNESSETH, That the said Grantor, in consideration of ONE DOLLAR (\$1.00), receipt of which is hereby acknowledged, has bargained and sold, and by these presents doth remise, release and forever quit claim to the said Grantee, its successors and assigns, all the right, title and interest, claim or demand the said Grantor has or may have had in and to the following described property, to wit:

EK=1462 PG=492

All that tract or parcel of land, situate, lying and being in the 240th District, G.M., Oconee County, Georgia; and being more particularly described on Exhibit "A" attached hereto and made a part hereof.

with all the rights, members and appurtenances to said bargained property in anywise appertaining or belonging; To have and to hold the said property to the said Grantee its successors and assigns so that neither the said Grantor nor its successors and assigns nor any other person or persons claiming under it shall at any time hereafter, by any way or means, have claim or demand any right, title or interest in or to the aforesaid property or its appurtenances or any part thereof.

In Witness Whereof, said Grantor have hereunto set their hands, affixed their seals and delivered these presents, the date first above written.

Hugh D Crowe Jr (SEAL)
HUGH D. CROWE, JR.

Carol Elaine Crowe Carraco (SEAL)
CAROL ELAINE CROWE CARRACO

William S Crowe (SEAL)
WILLIAM S. CROWE

Mary H Crowe (SEAL)
MARY H. CROWE

William S Crowe (SEAL)
WILLIAM S. CROWE in his representative capacity as Co-Executor under the Last Will and Testament of Rosa Lee Crowe, deceased

Hugh D Crowe Jr (SEAL)
HUGH D. CROWE, JR. in his representative capacity as Co-Executor under the Last Will and Testament of Rosa Lee Crowe, deceased

Signed, sealed and delivered in the presence of:

[Signature]
Unofficial Witness

[Signature]
NOTARY PUBLIC

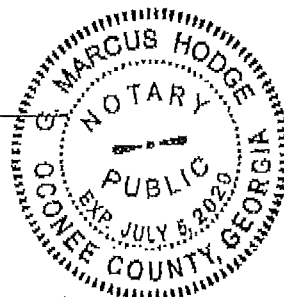


EXHIBIT A**BK=1462 PG=493**

All that tract or parcel of land lying in and being part of the 240th GMD, Oconee County, Georgia, containing 32.079 acres, and being more particularly described as follows:

BEGINNING at a right of way (R/W) post found at the intersection of the southwesterly R/W line of Mars Hill Road (80 foot wide R/W) and the northwesterly R/W line of U.S. Highway 78 (R/W width varies), run thence along said R/W line of U.S. Highway 78 the following courses and distances: (i) an arc measurement of 369.89 feet around a curve having clockwise rotation and a radius of 1531.51 feet, the chord measurement thereof being South 40 degrees 47 minutes 49 seconds West 368.99 feet to a ½ inch reinforcing rod (RR), (ii) an arc measurement of 21.27 feet around a curve having clockwise rotation and a radius of 1531.51 feet, the chord measurement thereof being South 48 degrees 06 minutes 50 seconds West 21.27 feet to a R/W post, (iii) South 60 degrees 02 minutes 24 seconds West 122.74 feet to a ½ inch RR, (iv) South 60 degrees 02 minutes 24 seconds West 50.80 feet to a 5/8 inch RR, (v) South 58 degrees 43 minutes 21 seconds West 220.40 feet to a ½ inch RR, (vi) South 58 degrees 14 minutes 55 seconds West 51.47 feet to a ½ inch RR, (vii) South 58 degrees 14 minutes 55 seconds West 14.63 feet to a R/W post, (viii) an arc measurement of 334.17 feet around a curve having clockwise rotation and a radius of 1531.51 feet, the chord measurement thereof being South 72 degrees 14 minutes 00 seconds West 333.51 feet to a R/W post, and (ix) South 78 degrees 32 minutes 01 second West 464.77 feet to a ½ inch RR; leaving said R/W line, run thence North 22 degrees 35 minutes 48 seconds West 822.06 feet along property of Linda D. Chesnut to a ½ inch RR; thence North 52 degrees 20 minutes 16 seconds East 595.78 feet along property of Hugh D. Crowe, Jr. to a 1 inch pipe; run thence along property of Winamin LLC the following courses and distances: (i) South 62 degrees 45 minutes 06 seconds East 237.53 feet to a ½ inch RR, (ii) North 27 degrees 48 minutes 10 seconds East 99.92 feet to a ¾ inch rod; (iii) North 27 degrees 08 minutes 24 seconds East 115.79 feet to a ½ inch RR, and (iv) North 27 degrees 08 minutes 24 seconds East 234.02 feet to a ¾ inch rod situated on the southwesterly R/W line of Mars Hill Road; run thence along said R/W line of Mars Hill Road the following courses and distances: (i) South 55 degrees 04 minutes 16 seconds East 220.00 feet to a ½ inch RR; (ii) South 55 degrees 04 minutes 16 seconds East 113.64 feet to a point; (iii) an arc measurement of 48.58 feet around a curve having clockwise rotation and a radius of 3106.74 feet, the chord measurement thereof being South 54 degrees 37 minutes 23 seconds East 48.58 feet to a ½ inch RR, (iv) an arc measurement of 327.52 feet around a curve having clockwise rotation and a radius of 3106.74 feet, the chord measurement thereof being South 51 degrees 09 minutes 18 seconds East 327.37 feet to a ½ inch RR, (v) an arc measurement of 80.78 feet around a curve having clockwise rotation and a radius of 3106.74 feet, the chord measurement thereof being South 47 degrees 23 minutes 24 seconds East 80.78 feet to a point, (vi) South 46 degrees 43 minutes 43 seconds East 133.51 feet to a ½ inch RR, and (vii) South 46 degrees 43 minutes 43 seconds East 174.52 feet to the POINT OF BEGINNING.

All directions recited herein are referenced to Grid North, Georgia West Zone.

The above described property being more particularly shown and described on that certain plat of survey by Ben McLeroy, Registered Land Surveyor #1184 dated August 20, 2015.

DOCH 000256
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:494-496
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY



REAL ESTATE TRANSFER TAX
PAID: \$0.00

FT-61 108-2019-000039

-----Space Above This Line for Recorder's Use-----

After recording, please return to:
Byrd Garland
Attorney at Law
117 Brookwood Avenue
Jackson, GA 30233

712018-0111

QUIT CLAIM DEED

THIS INDENTURE, made this 10th day of January, in the year of our Lord Two Thousand Nineteen (2019) between

HUGH D. CROWE, JR., CAROL ELAINE CROWE CARRACO and WILLIAM S. CROWE

as Grantor, and

WILLIAM B. JONES

as Grantee.

In this deed, wherever the context so requires, the masculine gender includes feminine and/or neuter and the singular number includes the plural. Wherever herein a verb, pronoun or other part of speech is used in the singular, and there be more than one Grantor or Grantee, said singular part of speech shall be deemed to read as the plural, and each Grantor shall always be jointly and severally liable for the performance of every promise and agreement made herein. Wherever herein Grantor or Grantee is used, the same shall be considered to mean as well, the heirs, executors, administrators, successors, representatives and assigns of the same.

WITNESSETH, That the said Grantor, in consideration of ONE DOLLAR (\$1.00), receipt of which is hereby acknowledged, has bargained and sold, and by these presents doth remise, release and forever quit claim to the said Grantee, its successors and assigns, all the right, title and interest, claim or demand the said Grantor has or may have had in and to the following described property, to wit:

BK=1462 PG=495

ALL those tracts or parcels of land, situate, lying and being in the 240th District, G.M., Oconee County, Georgia, and being more particularly described on Exhibit "A" attached hereto and made a part hereof.

ATTENTION is called to the fact that H.D. Crowe also known as H. Dorsey Crowe owned a one-half undivided interest in the within described property at the time of his death which occurred on March 1, 2002. H. Dorsey Crowe died testate whose Will was probated in solemn form on April 4, 2002, in the Office of the Probate Court, Oconee County, Georgia. In said Will, H. Dorsey Crowe devised his interest in the within described property to his spouse, Rosa Lee Crowe. At the time of her death on February 26, 2009, Rosa Lee Crowe owned fee simple title to the within described property. The Grantor herein, same being Hugh D. Crowe, Jr., Carol Elaine Crowe Carraco and William S. Crowe, are the sole surviving heirs of their father, H. Dorsey Crowe and their mother, Rosa Lee Crowe.

with all the rights, members and appurtenances to said bargained property in anywise appertaining or belonging; To have and to hold the said property to the said Grantee its successors and assigns so that neither the said Grantor nor its successors and assigns nor any other person or persons claiming under it shall at any time hereafter, by any way or means, have claim or demand any right, title or interest in or to the aforesaid property or its appurtenances or any part thereof.

In Witness Whereof, said Grantor have hereunto set their hands, affixed their seals and delivered these presents, the date first above written.

Hugh D Crowe Jr (SEAL)
HUGH D. CROWE, JR.

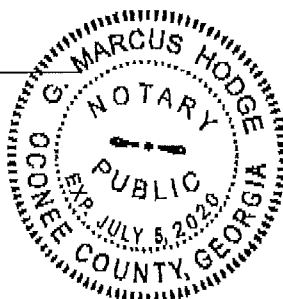
Carol Elaine Crowe Carraco (SEAL)
CAROL ELAINE CROWE CARRACO

William S. Crowe (SEAL)
WILLIAM S. CROWE

Signed, sealed and delivered in
the presence of:

[Signature]
Unofficial Witness

[Signature]
NOTARY PUBLIC



BK=1462 PG=496

EXHIBIT "A"

PARCEL ONE:

ALL THAT TRACT OR PARCEL OF LAND WITH IMPROVEMENTS THEREON, CONTAINING 23.245 ACRES MORE OR LESS, BEING MORE DESCRIBED AS TRACT 1 (REV.) IN ACCORDANCE WITH THAT CERTAIN PLAT OF SURVEY PREPARED FOR HUGH DORSEY CROWE ESTATE AND PREPARED BY BEN MCCLEROY, DATED JULY 5, 2002, AND RECORDED IN PLAT BOOK 37, PAGE 173, OFFICE OF THE CLERK, OCONEE COUNTY SUPERIOR COURT. SAID PLAT AND ALL ITS DESCRIPTIVE DATA ARE INCORPORATED HEREIN BY REFERENCE TO SAME.

PARCEL TWO:

ALL THAT LOT OR PARCEL OF LAND, WITH IMPROVEMENTS THEREON, CONTAINING 1.5 ACRES, MORE OR LESS, SITUATE, LYING AND BEING ON MONROE HIGHWAY (US 78) AND ON MARS HILL ROAD, SAME BEING A CORNER LOT, IN THE 240TH DISTRICT, OCONEE COUNTY, GEORGIA; SAID PROPERTY BEING BOUNDED BY SAID ROADS AND TRACT 1 (23.245 ACRES) HEREIN; THE IMPROVEMENTS ON SAID PROPERTY BEING KNOWN AS D & L SHOPPING CENTER, SAID PARCEL BEING DESIGNATED TAX PARCEL #B-02-61 ACCORDING TO THE PRESENT SYSTEM OF NUMBERING TAX PARCELS IN OCONEE COUNTY AND IS SHOWN AS TRACT 2, DATED JULY 5, 2002 IN PLAT RECORDED AT PLAT BOOK 37, PAGE 173, REFERENCED ABOVE.

PARCEL THREE:

ALL THAT TRACT OR PARCEL OF LAND CONTAINING 1.659 ACRES, MORE OR LESS, SITUATE AND LYING AND BEING ON MARS HILL ROAD, IN THE 240TH DISTRICT, OCONEE COUNTY GEORGIA AND BEING SHOWN AS TRACT 6 ON PLAT OF SURVEY MADE FOR HUGH DORSEY CROWE ESTATE AND PREPARED BY BEN MCCLEROY, DATED JULY 5, 2002 AND RECORDED IN PLAT BOOK 37, PAGE 173, AND BEING DESIGNATED TAX PARCEL # B 02 046C ACCORDING TO THE PRESENT SYSTEM OF NUMBERING TAX PARCELS IN OCONEE COUNTY, GEORGIA.

DOC# 000257
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:497-499
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY



REAL ESTATE TRANSFER TAX
PAID: \$207.10

PT-61 108-2019-000040

-----Space Above This Line for Recorder's Use-----

After recording, please return to:
Byrd Garland

Attorney at Law
117 Brookwood Avenue
Jackson, GA 30233

7/20/18-2/11

STATE OF GEORGIA
COUNTY OF OCONEE

WARRANTY DEED

THIS INDENTURE, made and entered into this 10th day of January, in the year of our Lord Two
Thousand Nineteen (2019) between

CAROL ELAINE CROWE CARRACO

of the County of Warren, State of Kentucky, as Grantor, and

WILLIAM B. JONES

of County of Butts, State of Georgia, as Grantee.

In this deed, wherever the context so requires, the masculine gender includes feminine and/or neuter and the singular number includes the plural. Wherever herein a verb, pronoun or other part of speech is used in the singular, and there be more than one Grantor or Grantee, said singular part of speech shall be deemed to read as the plural, and each Grantor shall always be jointly and severally liable for the performance of every promise and agreement made herein. Wherever herein Grantor or Grantee is used, the same shall be considered to mean as well, the heirs, executors, administrators, successors, representatives and assigns of the same.

WITNESSETH, that the said Grantor, for and in consideration of the sum of **TEN DOLLARS (\$10.00)**
AND OTHER GOOD AND VALUABLE CONSIDERATIONS, in hand paid, at and before the sealing and
delivery of these presents, the receipt whereof is hereby acknowledged, has granted, bargained, sold,
aliened, conveyed and confirmed, and by these presents does grant, bargain, sell, alien, convey and confirm
unto the said Grantee, the following described property, to wit:

BK:1462 PG:498

ALL THAT TRACT OR PARCEL OF LAND, TOGETHER WITH ALL IMPROVEMENTS THEREON, SITUATE, LYING AND BEING IN THE 240TH DISTRICT, G.M., OCONEE COUNTY, GEORGIA, AND BEING SHOWN AND DESIGNATED AS TRACT 4, CONTAINING 2.178 ACRES, ON PLAT ENTITLED, "RECOMBINATION PLAT FOR HUGH DORSEY CROWE ESTATE", BY BEN MCLEROY & ASSOCIATES, BEN MCLEROY, REGISTERED SURVEYOR, DATED JULY 5, 2002, RECORDED IN PLAT BOOK 37, PAGE 173, IN THE OFFICE OF THE CLERK OF THE SUPERIOR COURT OF OCONEE COUNTY, GEORGIA.

TO HAVE AND TO HOLD the said described property, with all and singular, the rights, members and appurtenances thereunto appertaining, to the only proper use, benefit and behoof of the said Grantee, his heirs, executors, administrators, successors and assigns, forever, in **FEE SIMPLE**.

AND THE SAID GRANTOR will warrant and will forever defend the right and title to the above described property unto the said Grantee, his heirs, executors, administrators, successors and assigns, against the lawful claims of all persons whomsoever; subject however to those certain permitted exceptions set forth on Exhibit "A" attached hereto and made a part hereof.

IN WITNESS WHEREOF, the Grantor has hereunto set her hand, affixed her seal, and delivered these presents the day and year first above written.

Signed, sealed and delivered,
in the presence of:

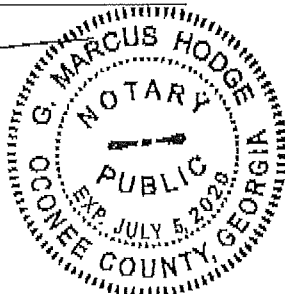
Unofficial Witness

NOTARY PUBLIC

[Notary Seal]

CAROL ELAINE CROWE CARRACO

(Seal)




EK=1462 PG=499

EXHIBIT "A"

[Permitted Exceptions]

1. All taxes for the year 2019 and subsequent years.
2. Facts which would be disclosed by a comprehensive survey of the Land.
3. Rights of other landowners to the uninterrupted use of any creek or stream crossing the Land.

DOCH 000258
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:500-503
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY



REAL ESTATE TRANSFER TAX
PAID: \$2510.60

-----Space Above This Line for Recorder's Use-----

PT-61 108-2019-000041

After recording, please return to:

Byrd Garland

Attorney at Law

117 Brookwood Avenue

Jackson, GA 30233

712.018.0111

GEORGIA

OCONEE COUNTY

EXECUTOR'S DEED

THIS INDENTURE, made and entered into this 10th day of January, 2019, between **WILLIAM S. CROWE and HUGH D. CROWE, JR. IN THEIR REPRESENTATIVE CAPACITIES AS CO-EXECUTORS UNDER THE LAST WILL AND TESTAMENT OF ROSA LEE CROWE, DECEASED, LATE OF OCONEE COUNTY, GEORGIA**, collectively as Party of the First Part and Grantor, and **WILLIAM B. JONES**, as Party of the Second Part and Grantee;

WITNESSETH:

The Last Will and Testament of Rosa Lee Crowe, late of Oconee County, Georgia, deceased, was probated in solemn form on March 31, 2009, in the Probate Court, Oconee County, Georgia; and

Under and by virtue of Item Fourteen, the said Party of the First Part are authorized to sell, exchange or otherwise dispose of certain property acquired under said Will at private or public sale, said Will having been recorded in the Office of the Probate Judge, Oconee Georgia; and

The said Party of the First Part, in their capacities as Co-Executors under the Last Will and Testament of Rosa Lee Crowe, deceased, depose and swear that they have not assented to a devise of the

BK:1462 PG:501

hereinafter described property, said property remaining in their hands for administration; they have now determined that all debts, estate taxes and claims against the Estate have been fully paid or arrangements have been made for such payment.

NOW THEREFORE, Party of the First Part, under and by virtue of and pursuant to the power of sale conferred unto them under Item Fourteen of the Will of said ROSA LEE CROWE, deceased, and for and in consideration of the sum of TWO MILLION FIVE HUNDRED TEN THOUSAND FIVE HUNDRED ELEVEN AND 90/100 DOLLARS (\$2,510,511.90) and other valuable considerations, in hand paid at and before the sealing and delivery of these presents, the receipt whereof is hereby acknowledged, have granted, bargained, sold, aliened, conveyed and confirmed, and by these presents do grant, bargain, sell, alien, convey and confirm unto the said Party of the Second Part, his successors and assigns, the following described property, to wit:

TRACT ONE:

ALL THAT TRACT OR PARCEL OF LAND WITH IMPROVEMENTS THEREON, CONTAINING 23.245 ACRES MORE OR LESS, BEING MORE DESCRIBED AS TRACT 1(REV.) IN ACCORDANCE WITH THAT CERTAIN PLAT OF SURVEY PREPARED FOR HUGH DORSEY CROWE ESTATE AND PREPARED BY BEN MCCLEROY, DATED JULY 5, 2002, AND RECORDED IN PLAT BOOK 37, PAGE 173, OFFICE OF THE CLERK, OCONEE COUNTY SUPERIOR COURT. SAID PLAT AND ALL ITS DESCRIPTIVE DATA ARE INCORPORATED HEREIN BY REFERENCE TO SAME.

TRACT TWO:

ALL THAT LOT OR PARCEL OF LAND, WITH IMPROVEMENTS THEREON, CONTAINING 1.5 ACRES, MORE OR LESS, SITUATE, LYING AND BEING ON MONROE HIGHWAY (US 78) AND ON MARS HILL ROAD, SAME BEING A CORNER LOT, IN THE 240TH DISTRICT, OCONEE COUNTY, GEORGIA; SAID PROPERTY BEING BOUNDED BY SAID ROADS AND TRACT 1 (23.245 ACRES) HEREIN; THE IMPROVEMENTS ON SAID PROPERTY BEING KNOWN AS D & L SHOPPING CENTER, SAID PARCEL BEING DESIGNATED TAX PARCEL #B-02-61 ACCORDING TO THE PRESENT SYSTEM OF NUMBERING TAX PARCELS IN OCONEE COUNTY AND IS SHOWN AS TRACT 2, DATED JULY 5, 2002 IN PLAT RECORDED AT PLAT BOOK 37, PAGE 173, REFERENCED ABOVE.

TRACT THREE:

ALL THAT TRACT OR PARCEL OF LAND CONTAINING 1.659 ACRES, MORE OR LESS, SITUATE AND LYING AND BEING ON MARS HILL ROAD, IN THE 240TH DISTRICT, OCONEE COUNTY GEORGIA AND BEING SHOWN AS TRACT 6 ON PLAT OF SURVEY

BK=1462 FG=502

MADE FOR HUGH DORSEY CROWE ESTATE AND PREPARED BY BEN MCCLEROY,
DATED JULY 5, 2002 AND RECORDED IN PLAT BOOK 37, PAGE 173, AND BEING
DESIGNATED TAX PARCEL # B 02 046C ACCORDING TO THE PRESENT SYSTEM OF
NUMBERING TAX PARCELS IN OCONEE COUNTY, GEORGIA.

TO HAVE AND TO HOLD the said described property with all and singular the rights, members
and appurtenances thereunto appertaining, to the only proper use, benefit and behoof of the said Party of
the Second Part, his successors and assigns, in fee simple, subject however to those certain permitted
exceptions set forth on Exhibit "A" attached hereto and made a part hereof.

IN WITNESS WHEREOF, the said Party of the First Part have hereunto set their hands, affixed
their seals and delivered these presents the day and year first above written.

William S. Crowe

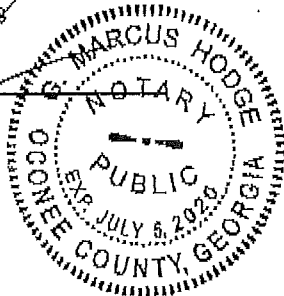
(SEAL)

**WILLIAM S. CROWE IN HIS REPRESENTATIVE
CAPACITY AS CO-EXECUTOR UNDER THE LAST
WILL AND TESTAMENT OF ROSA LEE CROWE,
DECEASED, LATE OF OCONEE COUNTY,
GEORGIA**

Signed, sealed and delivered
in the presence of:

[Signature]
Unofficial Witness

[Signature]
Notary Public



Hugh D. Crowe Jr.

(SEAL)

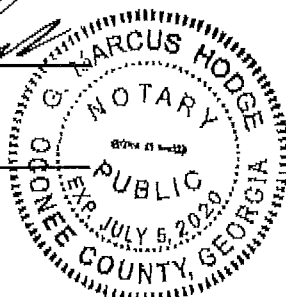
**HUGH D. CROWE, JR. IN HIS REPRESENTATIVE
CAPACITY AS CO-EXECUTOR UNDER THE LAST
WILL AND TESTAMENT OF ROSA LEE CROWE,
DECEASED, LATE OF OCONEE COUNTY,
GEORGIA**

Signed, sealed and delivered
in the presence of:

[Signature]
Unofficial Witness

[Signature]
Notary Public

(00634031.17001159-000008)



BK=1462 PG=503

EXHIBIT "A"

[Permitted Exceptions]

1. All taxes for the year 2019 and subsequent years.
2. Facts which would be disclosed by a comprehensive survey of the Land.
3. Rights or claims of parties in possession.
4. Rights of other landowners to the uninterrupted use of any creek or stream crossing the Land.
5. Right of Way Deed between H.D. Crowe and Oconee County, Georgia dated April 10th, 1994 and recorded in Deed Book 64, page 49, Oconee County, Georgia records.
6. Pole Line Easement between Georgia Transmission Company and Walton Electric Membership dated May 6, 2008 and recorded in Deed Book 979, pages 594-597, Oconee County, Georgia records.
7. Easement Agreement between D & L Shopping Center and Oconee County dated August 13, 2001 and recorded in Deed Book 571, page 200, Oconee County, Georgia records.
8. Right of Way Deed between H.D. Crowe and Department of Transportation dated May 4, 1977 and recorded in Deed Book 25, page 708, Oconee County, Georgia records

DOCH 000257
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:504-507
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY



REAL ESTATE TRANSFER TAX
PAID: \$532.50

PT-61 108-2019-000042

-----Space Above This Line for Recorder's Use-----

After recording, please return to:
Byrd Garland

Attorney at Law
117 Brookwood Avenue
Jackson, GA 30233

7/20/18 011

STATE OF GEORGIA
COUNTY OF OCONEE

WARRANTY DEED

THIS INDENTURE, made and entered into this **10th** day of **January**, in the year of our Lord **Two Thousand Nineteen (2019)** between

WILLIAM S. CROWE and MARY H. CROWE

of the County of Newton, State of Georgia, as Grantor, and

WILLIAM B. JONES

of County of Butts, State of Georgia, as Grantee.

In this deed, wherever the context so requires, the masculine gender includes feminine and/or neuter and the singular number includes the plural. Wherever herein a verb, pronoun or other part of speech is used in the singular, and there be more than one Grantor or Grantee, said singular part of speech shall be deemed to read as the plural, and each Grantor shall always be jointly and severally liable for the performance of every promise and agreement made herein. Wherever herein Grantor or Grantee is used, the same shall be considered to mean as well, the heirs, executors, administrators, successors, representatives and assigns of the same.

WITNESSETH, that the said Grantor, for and in consideration of the sum of **TEN DOLLARS (\$10.00)** **AND OTHER GOOD AND VALUABLE CONSIDERATIONS**, in hand paid, at and before the sealing and delivery of these presents, the receipt whereof is hereby acknowledged, has granted, bargained, sold, aliened, conveyed and confirmed, and by these presents does grant, bargain, sell, alien, convey and confirm unto the said Grantee, the following described property, to wit:

BK=1462 PG=505

ALL THAT TRACT OR PARCEL OF LAND, TOGETHER WITH ALL IMPROVEMENTS THEREON, CONTAINING 3.496 ACRES, MORE OR LESS IN THE AGGREGATE, SITUATE, LYING AND BEING ON THE NORTHWESTERLY SIDE OF U.S. HIGHWAY 78 (A/K/A MONROE HIGHWAY) IN THE 240TH G.M.D., OCONEE COUNTY, GEORGIA, AND BEING SHOWN AND DESIGNATED AS "WILLIAM S. CROWE", PARCEL AND AS "TRACT 7, 1.432 ACRES" PARCEL ACCORDING TO THAT CERTAIN PLAT OF SURVEY ENTITLED "RECOMBINATION & SUBDIVISION PLAT FOR: HUGH DORSEY CROWE ESTATE", DATED JULY 5, 2002, PREPARED BY BEN MCCLEROY & ASSOCIATES, INC., CERTIFIED BY BEN MCCLEROY, GEORGIA REGISTERED LAND SURVEYOR NO. 1184, AND RECORDED IN PLAT BOOK 36, PAGE 463, IN THE OFFICE OF THE CLERK OF THE SUPERIOR COURT OF OCONEE COUNTY, GEORGIA, WHICH PLAT IS INCORPORATED HEREIN BY REFERENCE. THIS BEING THE SAME PROPERTY DESCRIBED IN THE FOLLOWING THREE DEEDS: (1) WARRANTY DEED DATED JULY 20, 1998, FROM H.D. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 444, PAGE 141, (ii) WARRANTY DEED DATED NOVEMBER 8, 2001, FROM H.D. CROWE AND ROSA L. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 566, PAGE 26, AND (iii) DEED OF GIFT DATED FEBRUARY 6, 2007, FROM ROSALEE W. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 913, PAGE 440, ALL IN SAID CLERK'S OFFICE.

TO HAVE AND TO HOLD the said described property, with all and singular, the rights, members and appurtenances thereunto appertaining, to the only proper use, benefit and behoof of the said Grantee, his heirs, executors, administrators, successors and assigns, forever, in **FEE SIMPLE**.

AND THE SAID GRANTOR will warrant and will forever defend the right and title to the above described property unto the said Grantee, his heirs, executors, administrators, successors and assigns, against the lawful claims of all persons whomsoever; subject however to those certain permitted exceptions set forth on Exhibit "A" attached hereto and made a part hereof.

EK:1462 PG:506

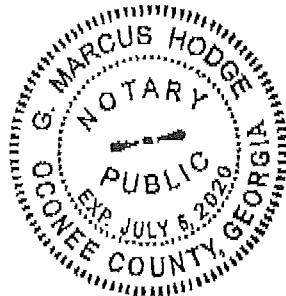
IN WITNESS WHEREOF, the Grantor have hereunto set their hands, affixed their seals, and delivered these presents the day and year first above written.

Signed, sealed and delivered
in the presence of:

Unofficial Witness

NOTARY PUBLIC

[Notary Seal]



WILLIAM S. CROWE

MARY H. CROWE

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EXHIBIT "A"

[Permitted Exceptions]

1. All taxes for the year 2019 and subsequent years.
2. Facts which would be disclosed by a comprehensive survey of the Land.
3. Rights of other landowners to the uninterrupted use of any creek or stream crossing the Land.
4. Easement for Right of Way between Georgia Transmission Corporation and Walton Electric Membership dated October 30, 2006 and recorded in Deed Book 908, page 510-512, Oconee County, Georgia records.
5. Pole Line Easement between Georgia Transmission Corporation and Walton Electric Membership Corporation dated May 22, 2008 and recorded in Deed Book 985, pages 708-710, Oconee County, Georgia records.
6. Consent to Easement between Georgia Transmission Corporation and Walton Electric Membership Corporation dated May 22, 2008 and recorded in Deed Book 985, pages 711-714, Oconee County, Georgia records.
7. Right of Way Deed between William S. Crowe and Department of Transportation dated April 7th and recorded in Deed Book 25, page 321, Oconee County, Georgia records.

DOCH 000260
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:508-520
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY

LENDER NMLS#419258
BANK NMLS #1033555

-----Space Above This Line for Recorder's Use-----

After recording, please return to:
Byrd Garland
Attorney at Law
117 Brookwood Avenue
Jackson, GA 30233
1/20/19 0111

DEED TO SECURE DEBT AND SECURITY AGREEMENT

THIS DEED, made this 10th day of January, 2019, by and between **WILLIAM B. JONES** (the "Grantor"), and **FIRST AMERICAN BANK AND TRUST COMPANY**, a state banking institution whose mailing address is 300 College Avenue, Athens, Georgia 30601 (the "Grantee");

WITNESSETH:

WHEREAS, Grantor is justly indebted to Grantee in the sum of **ONE MILLION EIGHT HUNDRED FIFTY THOUSAND AND 00/100 DOLLARS** (\$1,850,000.00)(the "Loan") in lawful money of the United States of America, and has agreed to pay the same, with interest thereon, according to the terms of a certain Note given by Grantor to Grantee to evidence the Loan, bearing even date herewith, having a final maturity date of **DECEMBER 10, 2021**, such note, as the same may be amended, renewed, replaced, or extended from time to time, being incorporated herein by this reference (as amended, renewed, replaced, or extended, the "Note");

NOW, THEREFORE, in consideration of the premises and of the sum hereinabove set forth, Grantor has granted, bargained, sold, and conveyed, and by these presents does grant, bargain, sell, and convey, unto Grantee the following described property, to wit:

ALL those tracts or parcels of land, together with all improvements thereon, situate, lying and being in Oconee County, Georgia, and being more particularly described on Exhibit "A" attached hereto and made a part hereof.

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TOGETHER with all buildings, structures, and other improvements now or hereafter located on said property, or any part and parcel thereof; and

TOGETHER with all rights, title, and interest of Grantor in and to the minerals, flowers, shrubs, crops, trees, timber, and other emblements now or hereafter on said property or above the same or any part or parcel thereof; and

TOGETHER with all and singular the tenements, hereditaments, easements, and appurtenances thereunto belonging or in any wise appertaining, and the reversion or reversions, remainder and remainders, rents, issues, and profits thereof; and also all the estate, right, title, interest, claim, and demand whatsoever of Grantor of, in, and to the same and of, in, and to every part and parcel thereof; and

TOGETHER with any and all rents which are now due or may hereafter become due by reason of the renting, leasing, and bailment of the property, the improvements thereon, and Equipment; and

TOGETHER with any and all awards or payments, including interest thereon, and the right to receive the same, as a result of (a) the exercise of the right of eminent domain, (b) the alteration of the grade of any street, or (c) any other injury to, taking of, or decrease in the value of, the property, to the extent of all amounts which may be secured by this deed at the date of receipt of any such award or payment by Grantee and of the reasonable attorneys' fees, costs, and disbursements incurred by Grantee in connection with the collection of such award or payment.

TO HAVE AND TO HOLD all the aforesaid property, property rights, contract rights, Equipment, and claims (all of which are collectively referred to herein as the "Premises") to the use, benefit, and behoof of Grantee, forever, in FEE SIMPLE.

Grantor warrants that Grantor has good title to the Premises, and is lawfully seized and possessed of the Premises and every part thereof, and has the right to convey same; that the Premises are unencumbered except as may be expressly provided in Exhibit "B" attached hereto and by this reference made a part hereof; and Grantor will forever warrant and defend the title to the Premises unto Grantee against the claims of all persons whomsoever.

By execution hereof by the Grantor and acceptance hereof by the Grantee, the parties hereto hereby affirmatively state that they intend to create and establish a perpetual or indefinite security interest in favor of Grantee in the Premises conveyed hereby pursuant to O.C.G.A. § 44-14-80(a)(1) or § 44-14-80(a)(2), as applicable, and agree that title to the Premises conveyed hereby shall not revert to Grantor until the expiration of the longest period of time permitted under whichever of said subsections as shall be applicable to this conveyance, or if later, the date determined in accordance with O.C.G.A. § 44-14-80(b) or § 44-14-80(c), as applicable, if any portion or all of the indebtedness secured hereby is extended or renewed.

This instrument is a deed and security agreement passing legal title pursuant to the laws of the State of Georgia governing loan or security deed and security agreements and is not a mortgage.

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This deed is made and intended to secure the payment of the indebtedness of Grantor to Grantee evidenced by the Note in accordance with the terms thereof, together with any and all other indebtedness now owing or which may hereafter be owing by Grantor to Grantee, however and whenever incurred, whether direct or indirect, absolute, contingent, or otherwise, and all renewal or renewals and extension or extensions of the Note or other indebtedness, either in whole or in part (all of which are collectively referred to herein as the "Secured Indebtedness").

Grantor covenants and agrees as follows:

1. Payment of Secured Indebtedness. Grantor shall pay to Grantee the Secured Indebtedness with interest thereon as in the Note and this deed provided.

2. Taxes and Insurance Premiums. Grantor shall pay, when due and payable, (a) all taxes, assessments, general or special, and other charges levied on, or assessed, placed, or made against the Premises, this instrument, or the Secured Indebtedness or any interest of Grantee in the Premises or the obligations secured hereby; (b) premiums on policies of fire and other hazard insurance covering the Premises, as required in Article 3 herein; (c) premiums on all collaterally pledged life insurance policies, if any; (d) premiums for mortgage insurance, if this deed and the Note are so insured; and (e) ground rents or other lease rentals, if any, payable by Grantor. Grantor shall promptly deliver to Grantee receipts showing payment in full of all of the above items. Upon notification from Grantee, Grantor shall pay to Grantee, together with and in addition to the payments of principal and interest payable under the terms of the Note secured hereby, on the installment paying dates of the Note, until said Note is fully paid or until notification from Grantee to the contrary, an amount reasonably sufficient (as estimated by Grantee) to provide Grantee with funds to pay said taxes, assessments, insurance premiums, rents, and other charges next due so that Grantee will have sufficient funds on hand to pay same thirty (30) days before the date on which they become past due. In no event shall Grantee be liable for any interest on any amount paid to it as herein required, and the money so received may be held and commingled with its own funds, pending payment or application thereof as herein provided. Grantor shall furnish to Grantee, at least thirty (30) days before the date on which the same will become past due, an official statement of the amount of said taxes, assessments, insurance premiums, and rents next due, and Grantee shall pay said charges to the extent of the then unused credit therefor as and when they become severally due and payable. An official receipt therefor shall be conclusive evidence of such payment and of the validity of such charges. Grantee may, at its option, pay any of these charges when payable, either before or after they become past due, without notice, or make advances therefor in excess of the then amount of credit for said charges. The excess amount advanced shall become part of the Secured Indebtedness, shall bear interest at the rate of interest specified in the Note from date of advancement, and shall be immediately due and payable to Grantee upon demand by Grantee. Grantee may apply credits held by it for the above charges, or any part thereof, on account of any delinquent installments of principal or interest or any other payments maturing or due under this instrument, and the amount of credit existing at any time shall be reduced by the amount thereof paid or applied as herein provided. The amount of the existing credit hereunder at the time of any transfer of the Premises shall, without assignment thereof, inure to the benefit of the successor owner of the Premises and shall be applied under and subject to all of the provisions hereof. Upon payment in full of the Secured Indebtedness, the amount of any unused credit shall be paid over to the person entitled to receive it.

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3. Insurance Requirements; Damage and Destruction.

(a) Grantor shall keep the Premises insured for the benefit of Grantee against loss or damage by fire, lightning, windstorm, hail, collapse, explosion, malicious mischief, riot, riot attending a strike, civil commotion, aircraft, vehicles, and smoke and such other hazards as Grantee may from time to time require, all in amounts approved by Grantee not exceeding 100% of full insurable value (replacement value); all insurance herein provided for shall be in form and written by companies approved by Grantee; and, regardless of the types or amounts of insurance required and approved by Grantee, Grantor shall assign and deliver to Grantee, as collateral and further security for the payment of the Secured Indebtedness, all policies of insurance which insure against any loss or damage to the Premises, with loss payable to Grantee, without contribution by Grantee, pursuant to the New York Standard or other mortgagee clause satisfactory to Grantee. If Grantee, by reason of such insurance, receives any money for loss or damage, such amount may, at the option of Grantee, be retained and applied by Grantee toward payment of the Secured Indebtedness, or be paid over, wholly or in part, to Grantor for the repair or replacement of the Premises or any part thereof, or for any other purpose or object satisfactory to Grantee, but Grantee shall not be obligated to see to the proper application of any amount paid over to Grantor.

(b) Not less than ten (10) days prior to the expiration date of each policy of insurance required of Grantor pursuant to this Article 3, and of each policy of insurance held as additional collateral to secure Secured Indebtedness, Grantor shall deliver to Grantee a renewal policy or policies marked "premium paid" or accompanied by other evidence of payment satisfactory to Grantee.

(c) In the event of a foreclosure of this deed, the purchaser of the Premises shall succeed to all the rights of Grantor, including any right to unearned premiums, in and to all policies of insurance assigned and delivered to Grantee, with respect to all property conveyed and to be conveyed by this deed, pursuant to the provisions of this Article 3.

4. Maintenance of Premises. Grantor shall maintain the Premises in good condition and repair, shall not commit or suffer any waste to the Premises, and shall comply with, or cause to be complied with, all restrictive covenants, statutes, ordinances, and requirements of any governmental authority relating to the Premises and the use thereof or any part thereof. Grantor shall promptly repair, restore, replace, or rebuild any part of the Premises, now or hereafter encumbered by this deed, which may be affected by any proceeding of the character referred to in Article 6 herein. No part of the Premises, including, but not limited to, any building, structure, parking lot, driveway, landscape scheme, timber or other ground improvement, equipment or other property, now or hereafter conveyed as security by or pursuant to this deed, shall be removed, demolished, or materially altered without the prior written consent of Grantee. Grantor shall complete, within a reasonable time, and pay for any building, structure, or other improvement at any time in the process of construction on the property herein conveyed. Grantor shall not initiate, join in, or consent to any change in any private restrictive covenant, zoning ordinance, or other public or private restrictions limiting or defining the uses which may be made of the Premises or any part thereof. Grantee and any persons authorized by Grantee

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shall have the right to enter and inspect the Premises at all reasonable times, and access thereto shall be permitted for that purpose.

5. Further Assurances. Grantor shall execute and deliver (and pay the costs of preparation and recording thereof) to Grantee and to any subsequent holder from time to time, upon demand, any further instrument or instruments, including, but not limited to, security deeds, security agreements, financing statements, assignments, and renewal and substitution notes, so as to reaffirm, to correct, and to perfect the evidence of the obligation hereby secured and the legal security title of Grantee to all or any part of the Premises intended to be hereby conveyed, whether now conveyed, later substituted for, or acquired subsequent to the date of this deed and extensions or modifications thereof. Grantor, upon request, made either personally or by mail, shall certify by a writing, duly acknowledged, to Grantee or to any proposed assignee of this deed, the amount of principal and interest then owing on the Secured Indebtedness and whether or not any offsets or defenses exist against the Secured Indebtedness, within six (6) days in case the request is made personally, or within ten (10) days after the mailing of such request in case the request is made by mail.

6. Condemnation. Notwithstanding any taking of any property herein conveyed or agreed to be conveyed, by eminent domain, alteration of the grade of any street, or other injury to, or decrease in value of, the Premises by any public or quasi-public authority or corporation, Grantor shall continue to pay principal and interest on the Secured Indebtedness, and any reduction in the Secured Indebtedness resulting from the application by Grantee of any award or payment for such taking, alterations, injury, or decrease in value of the Premises, as hereinafter set forth, shall be deemed to take effect only on the date of such receipt; and said award or payment may, at the option of Grantee, be retained and applied by Grantee toward payment of the Secured Indebtedness, or be paid over, wholly or in part, to Grantor for the purpose of altering, restoring or rebuilding any part of the Premises which may have been altered, damaged, or destroyed as a result of any such taking, alteration of grade, or other injury to the Premises, or for any other purpose or object satisfactory to Grantee, but Grantee shall not be obligated to see to the application of any amount paid over to Grantor. If, prior to the receipt by Grantee of such award or payment, the Premises shall have been sold on foreclosure of this deed, Grantee shall have the right to receive said award or payment to the extent of any deficiency found to be due upon such sale, with legal interest thereon, whether or not a deficiency judgment on this deed shall have been sought or recovered or denied, and of the counsel fees, costs, and disbursements incurred by Grantee in connection with the collection of such award or payment.

7. Information Regarding the Premises. Grantor shall deliver to Grantee, at any time within thirty (30) days after notice and demand by Grantee, but not more frequently than once per month, (a) a statement in such reasonable detail as Grantee may request, certified by Grantor, of the leases relating to the Premises, and (b) a statement in such reasonable detail as Grantee may request, certified by a certified public accountant or, at the option of Grantee, by the Grantor, of the income from and expenses of any one or more of the following: (i) the conduct of any business on the Premises, (ii) the operation of the Premises, or (iii) the leasing of the Premises or any part thereof, for the last twelve (12) month calendar period prior to the giving of such notice, and, on demand, Grantor shall furnish to Grantee executed counterparts of any such leases and convenient facilities for the audit and verification of any such statement.

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8. Events of Default. Each of the following events shall constitute an "Event of Default" under this deed:

(a) should Grantor fail to pay the Secured Indebtedness or any part thereof, when and as the same shall become due and payable;

(b) should any warranty or representation of Grantor herein contained or contained in any instrument, transfer, certificate, statement, conveyance, assignment, or loan agreement given with respect to the Secured Indebtedness prove untrue or misleading in any material respect;

(c) should the Premises be subject to actual or threatened waste, or any part thereof be removed, demolished, or materially altered so that the value of the Premises be diminished, except as provided for in Article 6 herein;

(d) should any federal tax lien or claim of lien for labor or material be filed of record against Grantor or against the Premises and not be removed by payment or bond within thirty (30) days from date of recording;

(e) should a third party successfully assert the priority of a lien, security interest, or security deed over that of this deed;

(f) should Grantor make any assignment for the benefit of creditors, or should a receiver, liquidator, or trustee of Grantor or of any of Grantor's properties be appointed, or should any petition for the bankruptcy, reorganization, or arrangement of Grantor, pursuant to the federal Bankruptcy Act or any similar statute, be filed, or should Grantor be adjudicated as bankrupt or insolvent, or should Grantor in any proceeding admit its insolvency or inability to pay its debts as they fall due or should Grantor, if a corporation, be liquidated or dissolved or its articles of incorporation expire or be revoked, or, if a limited liability company, partnership or business association, be dissolved or partitioned, or, if a trust, be terminated or expire;

(g) should Grantor fail to keep, observe, perform, carry out, and execute in every particular the covenants, agreements, obligations, and conditions set out in this deed, the Note, or any other document or instrument securing or given with respect to the Secured Indebtedness, or should a default or event of default occur under the Note or any such other document or instrument;

(h) should any event occur under any instrument, deed, or agreement, given or made by Grantor to or with any third party, which would authorize the acceleration of any debt to any such third party the acceleration of which would materially affect Grantor's ability to pay when due any amounts owed to Grantee;

(i) should there occur any sale, transfer, encumbering, or change in management of the Premises or any portion thereof; or

(j) should there occur any change in the legal or equitable ownership of a controlling interest in Grantor, or any change in the management of Grantor, if in Grantee's sole judgment

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such change materially and adversely affects the ability of Grantor to perform Grantor's obligations under this deed.

9. Remedies. Upon occurrence of an Event of Default, Grantee may do any one or more of the following:

(a) enter upon and take possession of the Premises without the appointment of a receiver, or an application therefor, employ a managing agent of the Premises and let the same, either in its own name, or in the name of Grantor, and receive the rents, incomes, issues, and profits of the Premises and apply the same, after payment of all necessary charges and expenses, on account of the Secured Indebtedness, and Grantor will transfer and assign to Grantee, in form satisfactory to Grantee, Grantor's lessor interest in any lease now or hereafter affecting the whole or any part of the Premises;

(b) pay any sums in any form or manner deemed expedient by Grantee to protect the security of this instrument or to cure any Event of Default other than payment of interest or principal on Secured Indebtedness; make any payment hereby authorized to be made according to any bill, statement, or estimate furnished or procured from the appropriate public officer or the party claiming payment without inquiry into the accuracy or validity thereof, and the receipt of any such public officer or party in the hands of Grantee shall be conclusive evidence of the validity and amount of items so paid, in which event the amounts so paid, with interest thereon from the date of such payment at the rate of interest specified in the Note shall be added to and become a part of the Secured Indebtedness and be immediately due and payable to Grantee; and Grantee shall be subrogated to any encumbrance, lien, claim, or demand, and to all the rights and securities for the payment thereof, paid or discharged with the principal sum secured hereby or by Grantee under the provisions hereof, and any such subrogation rights shall be additional and cumulative security to this instrument;

(c) declare the entire Secured Indebtedness immediately due, payable, and collectible, subject to any notice provisions as provided herein, regardless of maturity, and, in that event, the entire Secured Indebtedness shall become immediately due, payable, and collectible;

(d) sell and dispose of the Premises at public auction, at the usual place for conducting sales at the courthouse in the county where the Premises or any part thereof may be, to the highest bidder for cash, first advertising the time, terms, and place of such sale by publishing a notice thereof once a week for four (4) consecutive weeks (without regard to the actual number of days) in a newspaper in which sheriff's advertisements are published in said county, all other notice being hereby waived by Grantor; and Grantee may thereupon execute and deliver to the purchaser at said sale a sufficient conveyance of the Premises in fee simple, which conveyance may contain recitals as to the happening of the default upon which the execution of the power of sale, herein granted, depends, and said recitals shall be presumptive evidence that all preliminary acts prerequisite to said sale and deed were in all things duly complied with; and Grantee, its agents, representatives, successors, or assigns, may bid and purchase at such sale; and Grantor hereby constitutes and appoints Grantee or its assigns, agent and attorney-in-fact to make such recitals, sale, and conveyance, and all of the acts of such attorney-in-fact are hereby ratified, and Grantor agrees that such recitals shall be binding and conclusive upon Grantor and that the conveyance to be made by Grantee, or its assigns (and in

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the event of a deed in lieu of foreclosure, then as to such conveyance) shall be effectual to bar all right, title, and interest, equity of redemption, including all statutory redemption, homestead, dower, curtesy, and all other exemptions of Grantor, or its successors in interest, in and to said Premises; and Grantee, or its assigns, shall collect the proceeds of such sale, reserving therefrom all unpaid Secured Indebtedness with interest then due thereon, and all amounts advanced by Grantee for taxes, assessments, fire insurance premiums, and other charges, with interest at the rate of interest specified in the Note thereon from date of payment, together with all costs and charges for advertising, and commissions for selling the Premises, and fifteen percent (15%) of the aggregate amount due, as attorneys' fees and pay over any surplus to Grantor (in the event of deficiency, Grantor shall immediately on demand from Grantee pay over to Grantee, or its nominee, such deficiency); and, in case of a sale, as herein provided, Grantor or any person in possession under Grantor shall then become and be tenants holding over, and shall forthwith deliver possession to the purchaser at such sale, or be summarily dispossessed in accordance with the provisions of law applicable to tenants holding over; the power and agency hereby granted are coupled with an interest and are irrevocable by death or otherwise, and are in addition to any and all other remedies which Grantee may have at law or in equity; or

(e) exercise all rights and remedies available to a secured party under the Uniform Commercial Code, as enacted in the State of Georgia.

Grantee, in any action to foreclose this deed, or upon the occurrence of any Event of Default, shall be at liberty to apply for the appointment of a receiver of the rents and profits or of the Premises, or both, without notice, and shall be entitled to the appointment of such a receiver as a matter of right, without consideration of the value of the Premises as security for the amounts due Grantee, or the solvency of any person or corporation liable for the payment of such amounts.

In case of any sale under this deed by virtue of the exercise of the power herein granted, or pursuant to any order in any judicial proceedings or otherwise, at the election of Grantee the Premises or any part thereof may be sold in one parcel and as an entirety, or in such parcels, manner, or order as Grantee in its sole discretion may elect, and one or more exercises of the powers herein granted shall not extinguish or exhaust the power unless the entire Premises are sold or the Secured Indebtedness is paid in full.

10. Time of the Essence. Grantor agrees that where, by the terms of the conveyance made herein, or the Note secured hereby, a day is named or a time fixed for the payment of any sum of money or the performance of any agreement, the time stated enters into the consideration and is of the essence of the whole contract.

11. Sale or Transfer of Premises. Without limiting the generality of paragraph (i) in Article 8 hereof, the sale, conveyance, transfer, or encumbrance of all or any part of or interest in the Premises shall constitute an Event of Default. Grantee may, but shall not be required, in its sole and absolute discretion, consent to any such sale or transfer.

12. Exercise of Remedies No Bar to Subsequent Exercise. Grantee shall have the right from time to time to sue for any sums, whether interest, principal, or any installment of either or both, taxes, penalties, or any other sums required to be paid under the terms of this

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deed, as the same become due, without regard to whether or not all of the Secured Indebtedness shall be due on demand, and without prejudice to the right of Grantee thereafter to enforce any appropriate remedy against Grantor, including an action of foreclosure, or any other action, for a default or defaults by Grantor existing at the time such earlier action was commenced.

13. Remedies Cumulative. The rights of Grantee, granted and arising under the clauses and covenants contained in this deed and the Note, shall be separate, distinct, and cumulative of other powers and rights herein granted and all other rights which Grantee may have in law or equity, and none of them shall be in exclusion of the others; all of them are cumulative to the remedies for collection of indebtedness, enforcement of rights under security deeds, and preservation of security as provided at law. No act of Grantee shall be construed as an election to proceed under any one provision herein or under the Note to the exclusion of any other provision, or an election of remedies to the bar of any other remedy allowed at law or in equity, anything herein or otherwise to the contrary notwithstanding.

14. Notices. Every provision for notice and demand or request shall be deemed fulfilled by written notice and demand or request personally served on one or more of the persons who shall at the time hold the record title to the Premises, or on their heirs or successors, or mailed by depositing it in any post office station or letter box, enclosed in a postpaid envelope (a) addressed to such person or persons, or their heirs or successors, at his, their, or its address last known to Grantee or (b) addressed to the street address of the Premises hereby conveyed.

15. No Waiver of Future Compliance. Any indulgence or departure at any time by Grantee from any of the provisions hereof, or of any obligation hereby secured, shall not modify the same or relate to the future or waive future compliance therewith by Grantor.

16. Miscellaneous. The words "Grantor" and "Grantee", whenever used herein shall include all heirs, executors, administrators, legal representatives, successors, and assigns of the parties hereto, and all those holding under either of them, and the pronouns used herein shall include, when appropriate, either gender and both singular and plural, and the word "Note" shall also include one or more notes and the grammatical construction of sentences shall conform thereto. If more than one party shall execute this deed, the term "Grantor" shall mean all parties signing, and each of them, and each agreement, obligation, and Secured Indebtedness of Grantor shall be and mean the several as well as joint undertaking of each of them.

17. Special Waivers. GRANTOR EXPRESSLY: (a) ACKNOWLEDGES THE RIGHT TO ACCELERATE THE DEBT AND THE POWER OF ATTORNEY GIVEN IN THIS DEED TO SECURE DEBT TO GRANTEE TO SELL THE PREMISES BY NONJUDICIAL FORECLOSURE UPON DEFAULT BY GRANTOR WITHOUT ANY JUDICIAL HEARING AND WITHOUT ANY NOTICE OTHER THAN SUCH NOTICE AS IS SPECIFICALLY REQUIRED TO BE GIVEN UNDER THE PROVISIONS OF THIS DEED TO SECURE DEBT; (b) WAIVES ANY AND ALL RIGHTS WHICH GRANTOR MAY HAVE UNDER THE FIFTH AND FOURTEENTH AMENDMENTS TO THE CONSTITUTION OF THE UNITED STATES OF AMERICA, THE VARIOUS PROVISIONS OF THE CONSTITUTION FOR THE SEVERAL STATES, OR BY REASON OF ANY OTHER APPLICABLE LAW, TO NOTICE AND TO JUDICIAL HEARING PRIOR TO THE EXERCISE BY GRANTEE OF ANY RIGHT OR REMEDY PROVIDED TO GRANTEE,

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EXCEPT SUCH NOTICE AS IS SPECIFICALLY REQUIRED TO BE PROVIDED IN THIS DEED TO SECURE DEBT; (c) ACKNOWLEDGES THAT GRANTOR HAS READ THIS DEED TO SECURE DEBT, AND ANY AND ALL QUESTIONS REGARDING THE LEGAL EFFECT OF THIS DEED TO SECURE DEBT AND ITS PROVISIONS HAVE BEEN EXPLAINED FULLY TO GRANTOR, AND GRANTOR HAS BEEN AFFORDED AN OPPORTUNITY TO CONSULT WITH COUNSEL OF GRANTOR'S CHOICE PRIOR TO EXECUTING SAID DEED TO SECURE DEBT; (d) ACKNOWLEDGES THAT ALL WAIVERS OF THE AFORESAID RIGHTS OF GRANTOR HAVE BEEN MADE KNOWINGLY, INTENTIONALLY, AND WILLINGLY BY GRANTOR; AND (e) AGREES THAT GRANTOR'S RIGHT TO NOTICE SHALL BE LIMITED TO THOSE RIGHTS TO NOTICE PROVIDED BY THIS DEED TO SECURE DEBT AND NO OTHER.

Initials



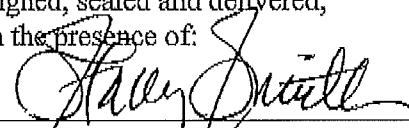
18. Subrogation. Grantor and Grantee agree that Grantee shall be subrogated to the claims and liens of all parties whose claims and liens against the Premises are discharged or paid with the proceeds of the Note secured hereby.

IN WITNESS WHEREOF, this deed has been duly executed, sealed and delivered by Grantor the day and year first above written.

GRANTOR:

 (SEAL)
WILLIAM B. JONES

Signed, sealed and delivered,
in the presence of:


Unofficial Witness


Notary Public

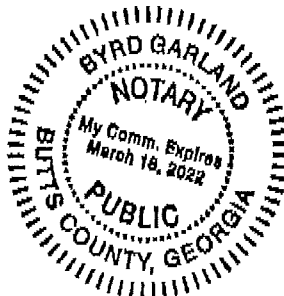


Exhibit "A"

BK:1462 PG:518

[Legal Description]

TRACT ONE:

ALL THAT TRACT OR PARCEL OF LAND, TOGETHER WITH ALL IMPROVEMENTS THEREON, SITUATE, LYING AND BEING IN THE 240TH DISTRICT, G.M., OCONEE COUNTY, GEORGIA, AND BEING SHOWN AND DESIGNATED AS TRACT 4, CONTAINING 2.178 ACRES, ON PLAT ENTITLED, "RECOMBINATION PLAT FOR HUGH DORSEY CROWE ESTATE", BY BEN MCCLEROY & ASSOCIATES, BEN MCCLEROY, REGISTERED SURVEYOR, DATED JULY 5, 2002, RECORDED IN PLAT BOOK 37, PAGE 173, IN THE OFFICE OF THE CLERK OF THE SUPERIOR COURT OF OCONEE COUNTY, GEORGIA.

TRACT TWO:Parcel One:

ALL THAT TRACT OR PARCEL OF LAND WITH IMPROVEMENTS THEREON, CONTAINING 23.245 ACRES MORE OR LESS, BEING MORE DESCRIBED AS TRACT 1(REV.) IN ACCORDANCE WITH THAT CERTAIN PLAT OF SURVEY PREPARED FOR HUGH DORSEY CROWE ESTATE AND PREPARED BY BEN MCCLEROY, DATED JULY 5, 2002, AND RECORDED IN PLAT BOOK 37, PAGE 173, OFFICE OF THE CLERK, OCONEE COUNTY SUPERIOR COURT. SAID PLAT AND ALL ITS DESCRIPTIVE DATA ARE INCORPORATED HEREIN BY REFERENCE TO SAME.

Parcel Two:

ALL THAT LOT OR PARCEL OF LAND, WITH IMPROVEMENTS THEREON, CONTAINING 1.5 ACRES, MORE OR LESS, SITUATE, LYING AND BEING ON MONROE HIGHWAY (US 78) AND ON MARS HILL ROAD, SAME BEING A CORNER LOT, IN THE 240TH DISTRICT, OCONEE COUNTY, GEORGIA; SAID PROPERTY BEING BOUNDED BY SAID ROADS AND TRACT 1 (23.245 ACRES) HEREIN; THE IMPROVEMENTS ON SAID PROPERTY BEING KNOWN AS D & L SHOPPING CENTER, SAID PARCEL BEING DESIGNATED TAX PARCEL #B-02-61 ACCORDING TO THE PRESENT SYSTEM OF NUMBERING TAX PARCELS IN OCONEE COUNTY AND IS SHOWN AS TRACT 2, DATED JULY 5, 2002 IN PLAT RECORDED AT PLAT BOOK 37, PAGE 173, REFERENCED ABOVE.

Parcel Three:

ALL THAT TRACT OR PARCEL OF LAND CONTAINING 1.659 ACRES, MORE OR LESS, SITUATE AND LYING AND BEING ON MARS HILL ROAD, IN THE 240TH DISTRICT, OCONEE COUNTY GEORGIA AND BEING SHOWN AS TRACT 6 ON PLAT OF SURVEY MADE FOR HUGH DORSEY CROWE ESTATE AND PREPARED BY BEN MCCLEROY, DATED JULY 5, 2002 AND RECORDED IN PLAT BOOK 37, PAGE 173, AND BEING DESIGNATED TAX PARCEL # B 02 046C ACCORDING TO THE PRESENT SYSTEM OF NUMBERING TAX PARCELS IN OCONEE COUNTY, GEORGIA.

TRACT THREE:

ALL THAT TRACT OR PARCEL OF LAND, TOGETHER WITH ALL IMPROVEMENTS THEREON, CONTAINING 3.496 ACRES, MORE OR LESS IN THE AGGREGATE, SITUATE, LYING AND BEING ON THE NORTHWESTERLY SIDE OF U.S. HIGHWAY 78 (A/K/A MONROE

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HIGHWAY) IN THE 240TH G.M.D., OCONEE COUNTY, GEORGIA, AND BEING SHOWN AND DESIGNATED AS "WILLIAM S. CROWE", PARCEL AND AS "TRACT 7, 1.432 ACRES" PARCEL ACCORDING TO THAT CERTAIN PLAT OF SURVEY ENTITLED "RECOMBINATION & SUBDIVISION PLAT FOR: HUGH DORSEY CROWE ESTATE", DATED JULY 5, 2002, PREPARED BY BEN MCLEROY & ASSOCIATES, INC., CERTIFIED BY BEN MCLEROY, GEORGIA REGISTERED LAND SURVEYOR NO. 1184, AND RECORDED IN PLAT BOOK 36, PAGE 463, IN THE OFFICE OF THE CLERK OF THE SUPERIOR COURT OF OCONEE COUNTY, GEORGIA, WHICH PLAT IS INCORPORATED HEREIN BY REFERENCE. THIS BEING THE SAME PROPERTY DESCRIBED IN THE FOLLOWING THREE DEEDS: (i) WARRANTY DEED DATED JULY 20, 1998, FROM H.D. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 444, PAGE 141, (ii) WARRANTY DEED DATED NOVEMBER 8, 2001, FROM H.D. CROWE AND ROSA L. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 566, PAGE 26, AND (iii) DEED OF GIFT DATED FEBRUARY 6, 2007, FROM ROSALEE W. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 913, PAGE 440, ALL IN SAID CLERK'S OFFICE.

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EXHIBIT "B"

[Permitted Exceptions]

1. All taxes for the year 2019 and subsequent years.
2. Facts which would be disclosed by a comprehensive survey of the Land.
3. Rights of other landowners to the uninterrupted use of any creek or stream crossing the Land.
4. Rights or claims of parties in possession.
5. Right of Way Deed between H.D. Crowe and Oconee County, Georgia dated April 10th, 1994 and recorded in Deed Book 64, page 49, Oconee County, Georgia records.
6. Pole Line Easement between Georgia Transmission Company and Walton Electric Membership dated May 6, 2008 and recorded in Deed Book 979, pages 594-597, Oconee County, Georgia records.
7. Easement Agreement between D & L Shopping Center and Oconee County dated August 13, 2001 and recorded in Deed Book 571, page 200, Oconee County, Georgia records.
8. Right of Way Deed between H.D. Crowe and Department of Transportation dated May 4, 1977 and recorded in Deed Book 25, page 708, Oconee County, Georgia records
9. Easement for Right of Way between Georgia Transmission Corporation and Walton Electric Membership dated October 30, 2006 and recorded in Deed Book 908, page 510-512, Oconee County, Georgia records.
10. Pole Line Easement between Georgia Transmission Corporation and Walton Electric Membership Corporation dated May 22, 2008 and recorded in Deed Book 985, pages 708-710, Oconee County, Georgia records.
11. Consent to Easement between Georgia Transmission Corporation and Walton Electric Membership Corporation dated May 22, 2008 and recorded in Deed Book 985, pages 711-714, Oconee County, Georgia records.
12. Right of Way Deed between William S. Crowe and Department of Transportation dated April 7th and recorded in Deed Book 25, page 321, Oconee County, Georgia records.

DOCH 000261
FILED IN OFFICE
1/14/2019 02:40 PM
BK:1462 PG:521-531
ANGELA ELDER-JOHNSON
CLERK OF SUPERIOR
COURT
OCONEE COUNTY

-----Space Above This Line for Recorder's Use-----

After recording, please return to:
Byrd Garland
Attorney at Law
117 Brookwood Avenue
Jackson, GA 30233

7/20/18 011

ASSIGNMENT OF LEASES AND RENTS

THIS ASSIGNMENT, made and entered into this 10th day of January, 2019, between **WILLIAM B. JONES**, 265 Alabama Blvd., Jackson, Georgia 30233 (hereinafter referred to as "Borrower"), and **First American Bank and Trust Company**, 300 College Avenue, Athens, Georgia 30601 (hereinafter referred to as "Lender");

WITNESSETH:

THAT FOR AND IN CONSIDERATION of the sum of Ten and No/100ths Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency whereof are hereby acknowledged, and in order to secure the indebtedness and other obligations of Borrower hereinafter set forth, Borrower does hereby grant, transfer and assign to Lender, its successors, successors-in-title and assigns, all of Borrower's right, title and interest in, to and under all of those certain leases, occupancy, and rental agreements more particularly described in Exhibit "B" attached hereto and by this reference made a part hereof, including any and all extensions, renewals and modifications thereof and guarantees of the performance or obligations of any tenants or lessees thereunder (said leases and agreements are hereinafter referred to collectively as the "Leases", which Leases cover all or portions of certain property located in Oconee County, Georgia more particularly described in Exhibit "A" attached hereto and by this reference made a part hereof (hereinafter referred to as the "Premises"); together with all of Borrower's right, title and interest in and to all rents, issues and profits from the Leases and from the Premises.

TO HAVE AND TO HOLD unto Lender, its successors and assigns forever, subject to and upon the terms and conditions set forth herein.

BK:1462 PG:522

This Assignment is made for the purpose of securing (a) the full and prompt payment of all sums when due, whether by acceleration or otherwise, with such interest as may accrue thereon, either before or after maturity thereof, under certain promissory note dated January 10, 2019, made by Borrower to the order of Lender in the principal face amount of ONE MILLION EIGHT HUNDRED FIFTY THOUSAND AND NO/00 (\$1,850,000.00) DOLLARS (hereinafter referred to as the "Note"), together with any renewals, modifications, consolidations and extensions thereof, (b) the full and prompt payment and performance of any and all obligations of Borrower to Lender under the terms of the deed to secure debt and related security agreements dated of even (late herewith and securing the indebtedness evidenced by the Note (hereinafter referred to collectively as the "Security Instruments") and (c) the full and prompt payment and performance of any and all other obligations of Borrower to Lender under any other instruments now or hereafter evidencing, securing, or otherwise relating to the indebtedness evidenced by the Note (the Security Instruments and said other instruments are hereinafter referred to collectively as the "Loan Documents", and said indebtedness is hereinafter referred to as the "Indebtedness").

ARTICLE I

WARRANTIES AND COVENANTS

1.01

Warranties of Borrower. Borrower hereby warrants and represents as follows:

- (a) Borrower is the sole holder of the landlord's interest under the Leases, is entitled to receive the rents, issues and profits from the Leases and from the Premises, and has good right to sell, assign, transfer and set over the same and to grant to and confer upon Lender the rights, interests, powers, and authorities herein granted and conferred;
- (b) There is no assignment having priority over this Assignment of any of the rights of Borrower under any of the Leases or with respect to any of said rents, issues or profits;
- (c) Borrower has neither done any act nor omitted to do any act which might prevent Lender from, or limit Lender in, acting under any of the provisions of this Assignment.
- (d) Neither the execution and delivery of this Assignment or any of the Leases, the performance of each and every covenant of Borrower under this Assignment and the Leases, nor the meeting of each and every condition contained in this Assignment, conflicts with, or constitutes a breach or default under any agreement, indenture or other instrument to which Borrower is a party, or any law, ordinance, administrative regulation or court decree which is applicable to Borrower;
- (e) No action has been brought or, so far as is known to Borrower, is threatened, which would interfere in any way with the right of Borrower to execute this Assignment and perform all of Borrower's obligations contained in this Assignment and in the Leases.

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1.02

Covenants of Borrower. Borrower hereby Covenants and agrees as follows:

- (a) Borrower shall (i) fulfill, perform and observe each and every condition and covenant of landlord or lessor contained in each of the Leases; (ii) give prompt notice to Lender of any claim of default arising under any lease having a term in excess of 90 days; (iii) at no cost or expense to Lender, enforce, short of termination, the performance and observance of each and every covenant and condition of each of the Leases to be performed or observed by any Tenant having a lease term in excess of ninety (90) days; and (iv) appear in and defend any action arising out of, or in any manner connected with, any of the Leases, or the obligations or liabilities of Borrower as the landlord thereunder, or of the Tenant or any guarantor thereunder;
- (b) Borrower shall not, without the prior written consent of Lender, (i) lease the entire property; (ii) waive or release Tenants from the performance or observance by the Tenants of any obligation or condition of any Leases having terms in excess of 90 days; or (iii) assign its interest in, to or under the Leases or the rents, issues and profits from the Leases and from the Premises to any person or entity other than Lender;
- (c) Borrower shall take no action which will cause or permit the estate of the Tenant under any of the Leases to merge with the interest of Borrower in the Premises or any portion thereof;
- (d) Borrower shall protect, indemnify and save harmless Lender from and against all liabilities, obligations, claims, damages, penalties, causes of action, costs and expenses (including, without limitation, attorneys' fees and expenses) imposed upon or incurred by Lender by reason of this Agreement and any claim or demand whatsoever which may be asserted against Lender by reason of any alleged obligation or undertaking to be performed or discharged by Lender under this Assignment. In the event Lender incurs any liability, loss or damage by reason of this Assignment, or in the defense of any claim or demand arising out of or in connection with this Assignment, the amount of such liability, loss or damage shall be added to the Indebtedness, shall bear interest at the interest rate specified in the Note from the date incurred until paid and shall be payable on demand.
- (e) Borrower shall authorize and direct, and does hereby authorize and direct each and every present and future Tenant of the whole or any part of the Premises to pay all the rental to Lender upon receipt of written demand from Lender to so pay the same.

Covenants of Lender. Lender covenants and agrees with Borrower as follows:

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(a) Although this Assignment constitutes a present and current assignment of all rents, issues and profits from the Premises, so long as there shall exist no Event of Default, as defined in Paragraph 2.01, below, on the part of Borrower, Lender shall not demand that such rents, issues and profits be paid directly to Lender, and Borrower shall have the right to collect all such rents, issues and profits from the Premises (including, but not by way of limitation, all rental payments under the Leases); and

(b) Upon the payment in full of the Indebtedness, as evidenced by the recording or filing of an instrument of satisfaction or full release of the Security Instruments without the recording of another security instrument in favor of Lender affecting the Premises, this Assignment shall be terminated and released of record by Lender and shall thereupon be of no further force or effect.

ARTICLE 11

DEFAULT

2.01

Event of Default. The term, "Event of Default", wherever used in this Assignment, shall mean any one or more of the following events:

- (a) The occurrence of any "default" or "event of default" under any of the Loan Documents;
- (b) The failure by Borrower duly and fully to comply with any covenant, condition or agreement of this Assignment; or
- (c) The breach of any warranty by Borrower contained in this Assignment.

2.02

Remedies. Upon the occurrence of any Event of Default, Lender may, at its option, after giving such notice or demand as may be required by this Assignment or other Loan Documents exercise any or all of the following remedies:

- (a) Declare any part or all of the Indebtedness to be due and payable, whereupon the same shall become immediately due and payable;
- (b) Perform any and all obligations of Borrower under any or all of the Leases or this Assignment and exercise any and all rights of Borrower herein or therein as fully as Borrower could do, including without limiting the generality of the foregoing: enforcing, modifying, extending or terminating any or all of the Leases; collecting, modifying, compromising, waiving or increasing any or all of the rents payable thereunder; and obtaining new tenants and entering into new leases on the Premises on any terms and conditions deemed

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desirable by Lender, and, to the extent Lender shall incur any costs in connection with the performance of any such obligations of Borrower, including costs of litigation, then all such costs shall become a part of the Indebtedness, shall bear interest from the incurring thereof at the interest rate specified in the Note, and shall be due and payable on demand;

(c) In Borrower's or Lender's name, institute any legal or equitable action which Lender in its sole discretion deems desirable to collect and receive any or all of the rents, issues and profits assigned herein;

(d) Collect the rents, issues and profits and any other sums due under the Leases and with respect to the Premises, and apply the same in such order as Lender in its sole discretion may elect against (i) all costs and expenses, including reasonable attorneys' fees incurred in connection with the operation of the Premises, the performance of Borrower's obligations under the Leases and collection of the rents thereunder; (ii) all the costs and expenses, including reasonable attorneys' fees for the collection of any or all of the Indebtedness, including all costs, expenses and attorneys' fees incurred in seeking to realize on or to protect or preserve Lender's interest in any other collateral securing any or all of the Indebtedness; and (iii) any or all unpaid principal and interest on the Indebtedness.

Lender shall have full right to exercise any or all of the foregoing remedies without regard to the adequacy of security for any or all of the Indebtedness, and with or without the commencement of any legal or equitable action or the appointment of any receiver or trustee, and shall have full right to enter upon, take possession of, use and operate all or any portion of the Premises which Lender in its sole discretion deems desirable to effectuate any or all of the foregoing remedies.

ARTICLE III

GENERAL PROVISIONS

3.01

Successors and Assigns. This Assignment shall inure to the benefit of and be binding upon Borrower and Lender and their respective heirs, executors, legal representatives, successors and assigns. Whenever a reference is made in this Assignment to "Borrower" or "Lender", such reference shall be deemed to include a reference to the heirs, executors, legal representatives, successors and assigns of Borrower or Lender.

3.02

Severability. If any provision of this Assignment or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this Assignment and the application of such provisions to other persons or circumstances shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

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3.03

Applicable Law. This Assignment shall be interpreted, construed and enforced according to the laws of the State of Georgia.

3.04

No Third Party Beneficiaries. This Assignment is made solely for the benefit of Lender and its assigns. No Tenant under any of the Leases nor any other person shall have standing to bring any action against Lender as the result of this Assignment, or to assume that Lender will exercise any remedies provided herein, and no person other than Lender shall under any circumstances be deemed to be a beneficiary of any provision of this Assignment.

3.05

Cumulative Remedies. The remedies herein provided shall be in addition to and not in substitution for the rights and remedies vested in Lender in any of the Loan Documents or in law or equity, all of which rights and remedies are specifically reserved by Lender. The remedies herein provided or otherwise available to Lender shall be cumulative and may be exercised concurrently. The failure to exercise any of the remedies herein provided shall not constitute a waiver thereof, nor shall use of any of the remedies herein provided prevent the subsequent or concurrent resort to any other remedy or remedies. It is intended that this clause be broadly construed so that all remedies herein provided or otherwise available to Lender shall continue and be each and all available to Lender until the Indebtedness shall have been paid in full.

3.06

Cross-Default. An Event of Default by Borrower under this Assignment shall constitute an Event of Default under all other Loan Documents.

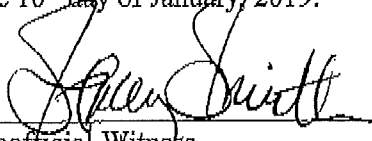
3.07


The provisions of this Assignment shall extend and be applicable to all renewals, amendments, extensions, consolidations and modifications of the Loan Documents and the Leases, and any and all references herein to the Loan Documents or the Leases shall be deemed to include any such renewals, amendments, extensions, consolidations or modifications thereof.


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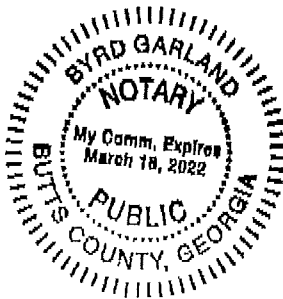
IN WITNESS WHEREOF, Borrower and Lender have executed this Assignment under seal, as of the date first above written.

Signed, sealed and delivered on
the 10th day of January, 2019.


Unofficial Witness


Notary Public

 (SEAL)
WILLIAM B. JONES



[Signatures continued on following page]

BK#1462 PG#528

Signed, sealed and delivered on
the 10th day of January, 2019.

[Signature]
Unofficial Witness

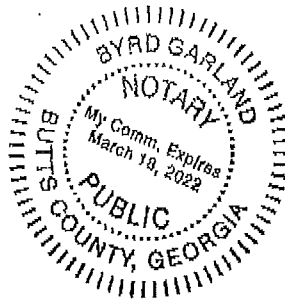
[Signature]
Notary Public

First American Bank and Trust Company

By: *Jeff Miller* (SEAL)

Name: *Jeff Miller*

Title: *V.P. Commercial*



EK=1462 PG=529

EXHIBIT "A"**TRACT ONE:**

ALL THAT TRACT OR PARCEL OF LAND, TOGETHER WITH ALL IMPROVEMENTS THEREON, SITUATE, LYING AND BEING IN THE 240TH DISTRICT, G.M., OCONEE COUNTY, GEORGIA, AND BEING SHOWN AND DESIGNATED AS TRACT 4, CONTAINING 2.178 ACRES, ON PLAT ENTITLED, "RECOMBINATION PLAT FOR HUGH DORSEY CROWE ESTATE", BY BEN MCCLEROY & ASSOCIATES, BEN MCCLEROY, REGISTERED SURVEYOR, DATED JULY 5, 2002, RECORDED IN PLAT BOOK 37, PAGE 173, IN THE OFFICE OF THE CLERK OF THE SUPERIOR COURT OF OCONEE COUNTY, GEORGIA.

TRACT TWO:**Parcel One:**

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Parcel Two:

ALL THAT LOT OR PARCEL OF LAND, WITH IMPROVEMENTS THEREON, CONTAINING 1.5 ACRES, MORE OR LESS, SITUATE, LYING AND BEING ON MONROE HIGHWAY (US 78) AND ON MARS HILL ROAD, SAME BEING A CORNER LOT, IN THE 240TH DISTRICT, OCONEE COUNTY, GEORGIA; SAID PROPERTY BEING BOUNDED BY SAID ROADS AND TRACT 1 (23.245 ACRES) HEREIN; THE IMPROVEMENTS ON SAID PROPERTY BEING KNOWN AS D & L SHOPPING CENTER, SAID PARCEL BEING DESIGNATED TAX PARCEL #B-02-61 ACCORDING TO THE PRESENT SYSTEM OF NUMBERING TAX PARCELS IN OCONEE COUNTY AND IS SHOWN AS TRACT 2, DATED JULY 5, 2002 IN PLAT RECORDED AT PLAT BOOK 37, PAGE 173, REFERENCED ABOVE.

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TRACT THREE:

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REGISTERED LAND SURVEYOR NO. 1184, AND RECORDED IN PLAT BOOK 36, PAGE 463, IN THE OFFICE OF THE CLERK OF THE SUPERIOR COURT OF OCONEE COUNTY, GEORGIA, WHICH PLAT IS INCORPORATED HEREIN BY REFERENCE. THIS BEING THE SAME PROPERTY DESCRIBED IN THE FOLLOWING THREE DEEDS: (i) WARRANTY DEED DATED JULY 20, 1998, FROM H.D. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 444, PAGE 141, (ii) WARRANTY DEED DATED NOVEMBER 8, 2001, FROM H.D. CROWE AND ROSA L. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 566, PAGE 26, AND (iii) DEED OF GIFT DATED FEBRUARY 6, 2007, FROM ROSALEE W. CROWE TO WILLIAM S. CROWE RECORDED IN DEED BOOK 913, PAGE 440, ALL IN SAID CLERK'S OFFICE.

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EXHIBIT "B"

All leases, rentals, and occupancy agreements now or hereafter affecting any part or parts of the property described on Exhibit A, to include lease(s) of the entire property.

DISCLOSURE OF INTEREST
APPLICATION FOR REZONING
OCONEE COUNTY, GEORGIA

To the best of my knowledge, no local government official, including members of the Planning Commission and members of the Board of the Commissions, has a property interest in any real property affected by a rezoning action or has a financial interest in any business entity which has a property interest, or has a member of his/her family having such an interest.

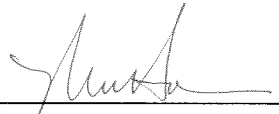
Signature of owner



Date

2-11-20


Signature of Applicant

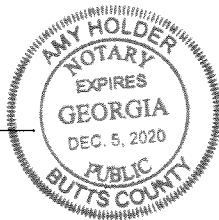


Date

2-11-20

Signature of Notary Public





Date

2/11/20

PROPERTY OWNER'S
DISCLOSURE OF CAMPAIGN CONTRIBUTIONS
APPLICATION FOR REZONING

Pursuant to section 36-67A-1 et seq. of the Georgia Code Annotated, adopted by the Georgia General Assembly, effective July 1, 1986, the following disclosure is mandatory. When any applicant for rezoning action has made, within two years immediately preceding the filing of that applicant's application for the rezoning action, campaign contributions aggregating \$250.00 or more to a local government official, it shall be the duty of the applicant and the agent representing the applicant to file a disclosure report with the governing authority of the respective local government.

Any applicant for rezoning action knowingly failing to make any disclosure as required by Code Section 36-67 A-1 et seq. shall be guilty of a misdemeanor.

- A. Name of local government official to whom the campaign contribution or gift was made (or N/A if not applicable):

N/A

- B. The dollar amount of each campaign contribution made by the applicant to the local government official during the two years immediately preceding the filing of the application for the rezoning action and the date of each such contribution (or N/A if not applicable):

Amount: N/A

Date of contribution: N/A

- C. Enumeration and description of each gift having a value of \$250.00 or more made by the applicant to the local government official during the two years immediately preceding the filing of this application for rezoning (or N/A if not applicable).

N/A

Signature of owner: WTS

Date: 2-11-20

Signature of applicant: [Signature]

Date: 2-11-20

Signature of Notary Public: Amy Held

Date: 2/11/20





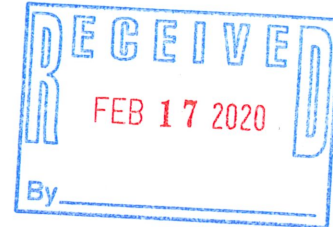
Oconee County Utility Department

Board of Commissioners

John Daniell, Chairman
Mark Thomas, Post 1
Chuck Horton, Post 2
W. E. "Bubber" Wilkes, Post 3
Mark Saxon, Post 4

February 17, 2020

JPC Design and Construction, LLC
Mr. Michal Horne
P.O. Box 710
Jackson, GA 30233



Re: Tax Parcels: B02 046, 046A, 046B, 046C, and B02-061

Dear Mr. Horne,

Based on your request for water and sewer capacity proposed in the Water and Sewer Extension Application we offer the Letter of Availability as follows.

Water & Wastewater Capacity

Regarding *potable water*, potable water is available for domestic and irrigation purposes. Please provide the anticipated flow for both purposes. We note that an estimate of fire flow is not requested or provided. Our development files may contain nearby tests, if needed.

Regarding *wastewater treatment / sewer collection and transmission capacity*, we advise that the current calculated sewer treatment capacity of 1,920 gpd (calculated per the development data provided) is currently available at the Oconee County Wastewater Treatment Facilities. Prior to purchase of capacity the usage needs will be re-evaluated and capacity required may increase.

Availability

- The availability of water and sewer at the rezone phase *does not guarantee connection*.
- Unforeseen drought conditions or wastewater treatment capacity limitations may affect or delay the issuance of permits or connections to the water and sewer systems.
- Availability is also subject to obtaining a satisfactory technical review of the applicable water and/or sewer extension application package during the construction plan review.

This Water and Sewer Availability Letter expires 1 year from the date of issuance.

Costs and Fees

All costs associated with this project for connecting to the existing water distribution system or sewer collection system is the responsibility of the Developer / Owner. Costs may include the following:

- Additional fire hydrants as requested by Fire Department
- Relocation of buried infrastructure to avoid road widening (ingress / egress lanes)
- Offsite gravity sewer extensions
- Private screening facilities to prevent future sewer blockage
- Upgrades of transmission facilities such as pumping stations
- Contributions to operation and maintenance costs such as odor control facilities,
- Other improvements as identified in the current Water and Sewer Improvement Plan.

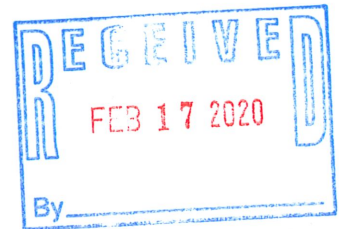
Payment of fees associated with a new connection must be received in compliance with the Water and Wastewater Systems Ordinance, as revised.

Please give us a call if further discussion or clarification is needed.

Sincerely,



Tim Durham
Director



Cc: Gabriel Quintas, Oconee County Planning Department

JPC Design and Construction, LLC

264 Alabama Boulevard

P.O. 710

Jackson, Georgia 30233

2/28/20

Mr. Guy Herring, Director

Oconee County Planning and Code Enforcement Department

1291 Greensboro Highway

Watkinsville, Georgia 30677

RE: Zoning Narrative for JPC Design and Construction LLC, 32.079 acres at US Hwy. 78 and Mars Hill Road, Oconee County, Georgia. Tax Parcel numbers: B 02 061, B 02 046, B 02 046A, B 02 046B, B 02 046C. ***Originally submitted 2/26/19. Section added at end addressing the rezone modification request.***

Mr. Herring,

Please accept this Zoning Narrative on behalf of JPC Design and Construction, LLC. We are requesting rezoning from A-1 and B-2 to B-2 on 32.079 acres located at the southwest intersection of US Hwy. 78 and Mars Hill Road. The properties current use is mixed, with a commercial retail center with a convenience store and gas at the intersection, single family residential, and agricultural. Adjacent zoning to the property is A-1, B-1, and B-2. Adjacent land uses are agricultural and single family residential. Property across US Hwy. 78 are a mix of commercial and single family residential zoning and land uses.

We are asking for the entire 32.079 acres to be rezoned to B-2 for a commercial retail development. Including 11 outparcels and approximately 12 buildings. Included in our application is a concept plan. The plan has a big box retail anchor store (68,000 sq ft) with adjacent retail stores and outparcels (2 at 12,000 sq ft each). There is a future hotel site (50,400 sq ft and 200 rooms), commercial office and institutional outparcel (5,000 sq ft), and commercial retail/fast food outparcels along Hwy 78 (five total at 3,000 to 3,500 sq ft each). There is an existing 12,100 sf existing store at the intersection of Hwy 78 and Mars Hill Road that will be demolished to make way for a new 10,000 sf +/- building. This new store will include a convenience store with 7,200 sf. and a Burger King with 2,800 sf. There will be 10 fueling MPD's with 20 fueling positions. The convenience store and Burger King site will have a total of 101 parking spaces (this

includes the fueling positions), and a drive thru lane for the Burger King. This new store will significantly upgrade the existing store there now.

The total square footage of the commercial retail is 173,400 square feet (or 132,000 square feet and a 200 room hotel site).

Phase 1 of the development will include the corner lot with convenience store and Burger King. This is slated for completion in 2019. Phase 2 of the development will include all other outparcels and will have a buildout of 2020-2022. All outparcel building values are proposed and estimated as follows as shown on the Concept Plan:

Outparcel 1, office and institutional: \$2,000,000

Outparcel 2, Retail/Restaurant: \$1,500,000

Outparcel 3, Retail/Restaurant: \$1,200,000

Outparcel 4, Retail/Restaurant: \$1,200,000

Outparcel 5, Retail/Restaurant: \$900,000

Outparcel 6, Retail/Restaurant: 1,100,000

Outparcel 7, Convenience Store/Fast Food: \$2,950,000

Outparcel 8, Office/Retail: \$2,500,000

Outparcel 9, Office/Retail: \$2,500,000

Outparcel 10, Hotel: \$7,500,000

Outparcel 11, Big Box/Retail: \$15,000,000

Total Estimated Building Value: \$38,350,000

There will be three entrances on Mars Hill Road, and two right in/right out on US Hwy 78. There is an existing traffic signal at the intersection of US 78 and Mars Hill Road. Existing estimated traffic counts on US Hwy 78/SR 10 (Monroe Hwy) according to A&R Engineering traffic study are: 20,400 vehicles per day west of Trotters Walk and 18,100 vehicles per day northeast of University Pkwy. On Mars Hill Rd. there are 4,920 vehicles per day.

Proposed trip generation for the entire project, which has a minimum 4 year build out, is 19,939 total trips arriving and departing from the site. Note that new external trip generation with reductions for mixed use and pass by trips is less at 11,835 total. Applicant would also note that Phase 1 of the development will only include the fast food with drive through and super convenience market/gas station component, which only adds 7,671 total trips. A complete traffic study has been completed by A&R Engineering, Inc. and is included in this application.

The project will have curb and gutter and sidewalks where Oconee County requires them. Also, buffers adjacent to residential property will be provided per the Oconee County Unified Development Code. Buffers to all side and rear property lines that are 1 or 2 family residential will have a 50' Buffer. Per Table 8.1 in Section 806. Buffers; Where Required. Landscaping will meet or exceed Oconee County standards.

There are currently no professional Landscape plans for the entire project, but landscape renderings will be provided by JPC Design and Construction.

There should be no impact to the school system since this request is commercial in nature. Water is available along Mars Hill Road, and sewer is available at the intersection of US Hwy 78 and Mars Hill Rd. Oconee County Water and Sewer has provided a letter to that effect. Estimated gallons of water per day is as follows: Convenience store/Burger King 1,333 GPD, Hotel 2,833 GPD, Big Box Retail 2,500 GPD, 8 outparcels 1,166 GPD, or a total of 19,994 GPD.

All other utilities which will serve the building are: electric, gas, phone/internet, and garbage pickup. Storm water drainage will conform to Oconee County Ordinances. Likely an above ground master storm water detention pond will be constructed to the rear of the site that will serve the entire property, since topography lends itself to that. Site engineering is underway, but final design is not complete.

The building facades will consist of masonry materials, Block, Brick, Stone, Glass, and Metal framing. Gas canopies will have column masonry matching the building. Signage will be internally lit. Example building and signage renderings will be available upon request by staff. Colors and imagery will conform to County standards.

Jones Petroleum, Inc. and CSI, Inc. will own and operate the initial convenience store and Burger King at the intersection of Hwy 78 and Mars Hill Road in the Phase 1 of the project. Both companies are owned by Mr. William B. Jones. All grounds and open space areas will be maintained by the owner and/or commercial HOA. Remaining outparcels in Phase 2 of the project are TBD as far as future ownership.

Finally, the total estimated value of the project at completion is \$ 75 million.

We thank you for your consideration in this matter.

We are requesting a Change in Zoning Conditions of approval of case number 7702. We submitted a separate Zoning Narrative explaining the details of the case to Oconee County Planning and Code Enforcement dated February 13, 2020. We are asking that Zoning Condition number 7 from the original Zoning approval be removed in its entirety. The condition states:

7. The developer shall eliminate Site Driveway 3 (depicted in Figure 5 of the traffic impact analysis submitted on 01/31/2019 and attached hereto) and install an internal connection via Site Driveway 2 (depicted in Figure 5 of the traffic impact analysis submitted on 01/31/2019) for access to Phase 1 of the development.

The Revised Traffic Impact Study by A&R Engineering Inc. dated February 24, 2020 for the Bogart Tract Mixed-Use Development by JPC Design and Construction, LLC, states that the Reconfiguration of Driveway #3, shifting it to the north on Mars Hill Road as a Full Access Driveway is recommended in both Scenario 1 and 2 in the analysis. Scenario 1 is a phased development of the property, and Scenario 2 is a Full development of the property. Both are Recommended for approval in the final report in the Conclusion of the Revised Traffic Impact Study Section 7.0 pg. 33. We respectfully thank you for your consideration in this request.

Respectfully,

A handwritten signature in black ink, appearing to read 'Mike Horne', with a long horizontal flourish extending to the right.

Mike Horne, Project Manager

JPC Design and Construction, LLC

Jones Petroleum, Inc.

**REVISED TRAFFIC IMPACT STUDY
FOR
BOGART TRACT MIXED-USE DEVELOPMENT

OCONEE COUNTY, GEORGIA
FOR TWO SCENARIOS**



Prepared for:

***JPC Design & Construction, LLC.
P.O. Box 710
Jackson, GA 30233***

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

March 13, 2019
A & R Project # 18-168

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1.0 INTRODUCTION

The purpose of this revision to the original study dated January 21, 2018 is to include the following two scenarios:

Scenario 1: Phase I – Convenience Store and 3,000 SF Fast Food Restaurant

Phase II – Rest of the Development

Scenario 2: Full Development with an additional full access driveway on US 78 (Monroe Highway)

This revised traffic study will determine the traffic impact that will result from the proposed Bogart Tract mixed-use development if it were to be developed in phases I and II and also if it were to be developed in full with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road. The proposed development is located in the northwest corner of the intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road in the Oconee County, Georgia. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The proposed development when constructed will consist of:

- Supermarket: 75,000 sf
- Fast-Food Restaurants: 16,000 sf (Total)
- Hotel: 200 Rooms
- Office Space: 17,000 sf (Total)
- Retail Space: 12,000 sf
- Convenience Store with Gas Station: 20 Vehicle Fueling Positions



The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
- Site Driveway 3: Right-in/Right-out driveway (southern) on Mars Hill Road
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
- Site Driveway 6: Full Access Driveway on US 78/SR 10 (Monroe Highway) – Scenario 2.

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:

- US 78/SR 10 (Monroe Highway) at Mars Hill Road
- US 78/SR 10 (Monroe Highway) at Clotfelter 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

A&R Engineering Inc.

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 US 78/SR 10 (Monroe Highway)

US 78/SR 10 (Monroe Highway) is a four-lane, median-divided roadway with a posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID's 2190107 & 2190109) indicate that the daily traffic volume on US 78/SR 10 (Monroe Highway) is 20,400 vehicles per day west of Trotters Walk and 18,100 vehicles per day northeast of University Parkway. GDOT classifies US 78/SR 10 (Monroe Highway) as an Urban Principal Arterial - Other roadway.

2.1.2 Mars Hill Road

Mars Hill Road is a two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. To the south of US 78/SR 10 (Monroe Highway), Mars Hill Road is posted with a speed limit of 35 mph. GDOT traffic counts (Station ID's 2190212 & 2190161) indicate that the daily traffic volume on Mars Hill Road is 4,920 vehicles per day southeast of US 78 and 760 vehicles per day north of University Parkway. GDOT classifies Mars Hill Road as an Urban Minor Arterial roadway near US 78 and as an Urban Minor Collector roadway north of University Parkway.

2.1.3 Clotfelter Road

Clotfelter Road is a two-lane, undivided roadway with a posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID 2198041) indicate that the daily traffic volume on Clotfelter Road is 1,750 vehicles per day south of Leyon Roberts Drive. GDOT classifies Clotfelter Road as an Urban Minor Collector roadway.

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, 2010 edition (HCM 2010). Synchro software, which utilizes the HCM methodology, was used for the analysis. If HCM 2010 is unable to report results for any reason, HCM 2000 will be used for that intersection. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

3.1 Unsignalized Intersections

For unsignalized intersections at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on the average controlled delay incurred at the intersection. Controlled delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled 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 safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

TABLE 1 — LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
Level-of-service	Average Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: 2010 Highway Capacity Manual

3.2 Signalized Intersections

For signalized intersections, it is necessary to evaluate both capacity and level-of-service in order to evaluate the overall operation of the intersection. The capacity analysis of an intersection is performed by comparing the volume of traffic using the various lane groups at the intersection to the capacity of those lane groups. This results in a volume/capacity (v/c) ratio for each lane group. A v/c ratio greater than 1.0 indicates that the volume of traffic has exceeded the capacity available, resulting in a temporary excess of demand. Although the capacity of the entire intersection is not defined, a

composite v/c ratio for the sum of the critical lane groups within the intersection is computed. This composite v/c ratio is an indication of the overall intersection sufficiency.

Level-of-service for a signalized intersection is defined in terms of average controlled delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for signalized intersections, based on average controlled delay, are shown in Table 2. Level-of-service “A” indicates operations with very low controlled delay, while level-of-service “F” describes operations with extremely high average controlled delay. Level-of-service “E” is typically considered to be the limit of acceptable delay, and level-of-service “F” is considered unacceptable by most drivers.

TABLE 2 — LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS	
Level-of-service	Average Control Delay (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Source: 2010 Highway Capacity Manual

4.0 EXISTING TRAFFIC ANALYSIS

4.1 Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

- US 78/SR 10 (Monroe Highway) at Mars Hill Road
- US 78/SR 10 (Monroe Highway) at Clotfelter Road

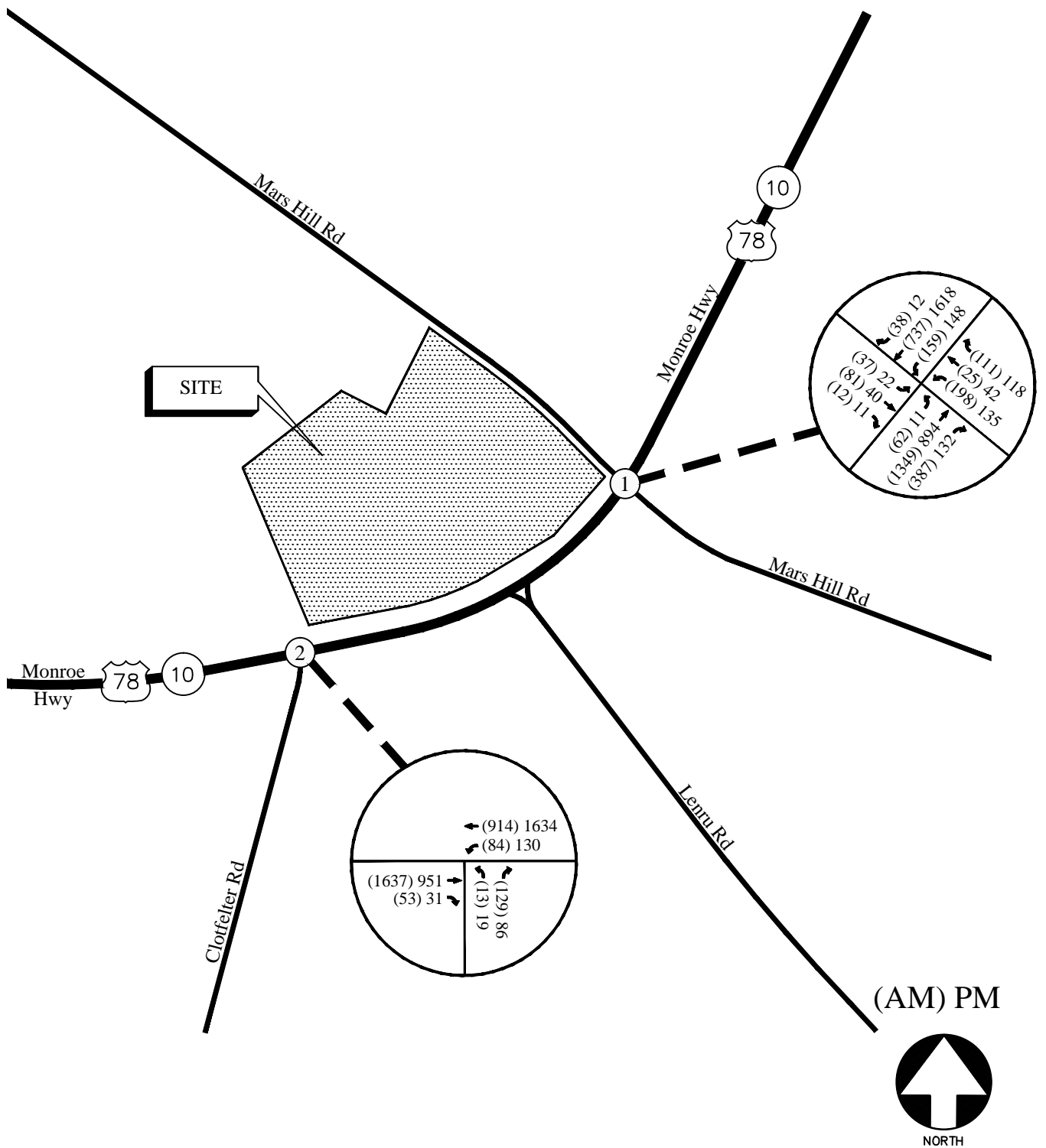
Turning movement counts were collected on Tuesday, December 4, 2018. All turning movement counts were recorded during the AM and PM peak hours between 7:00am to 9:00am and 4:00pm to 6:00pm, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.d

4.2 Existing Traffic Operations

Existing traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3. The existing traffic control and lane geometry for the intersections are shown in Figure 3.

TABLE 3 — EXISTING INTERSECTION OPERATIONS				
Intersection		Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	<u>US 78/SR 10 (Monroe Hwy) @ Mars Hill Rd</u>	Signalized	<u>C (30.8)</u>	<u>B (17.9)</u>
	-Eastbound Approach		C (25.8)	B (11.8)
	-Westbound Approach		C (20.5)	B (10.5)
	-Northbound Approach		E (61.0)	E (63.2)
	-Southbound Approach		E (77.1)	E (79.6)
2	<u>US 78/SR 10 (Monroe Hwy) @ Clotfelter Rd</u>	Stop Controlled on NB Approach		
	-Westbound Left		D (26.0)	B (12.0)
	-Northbound Approach		F (109.4)	C (23.1)




The results of the existing conditions analysis indicate that the signalized intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. The stop-controlled northbound (Clotfelter Road) approach to the intersection of US 78/SR 10 (Monroe Highway) at Clotfelter Road is operating at level-of-service “F” in the AM peak hour. These areas are addressed in the Future Traffic Operations section.

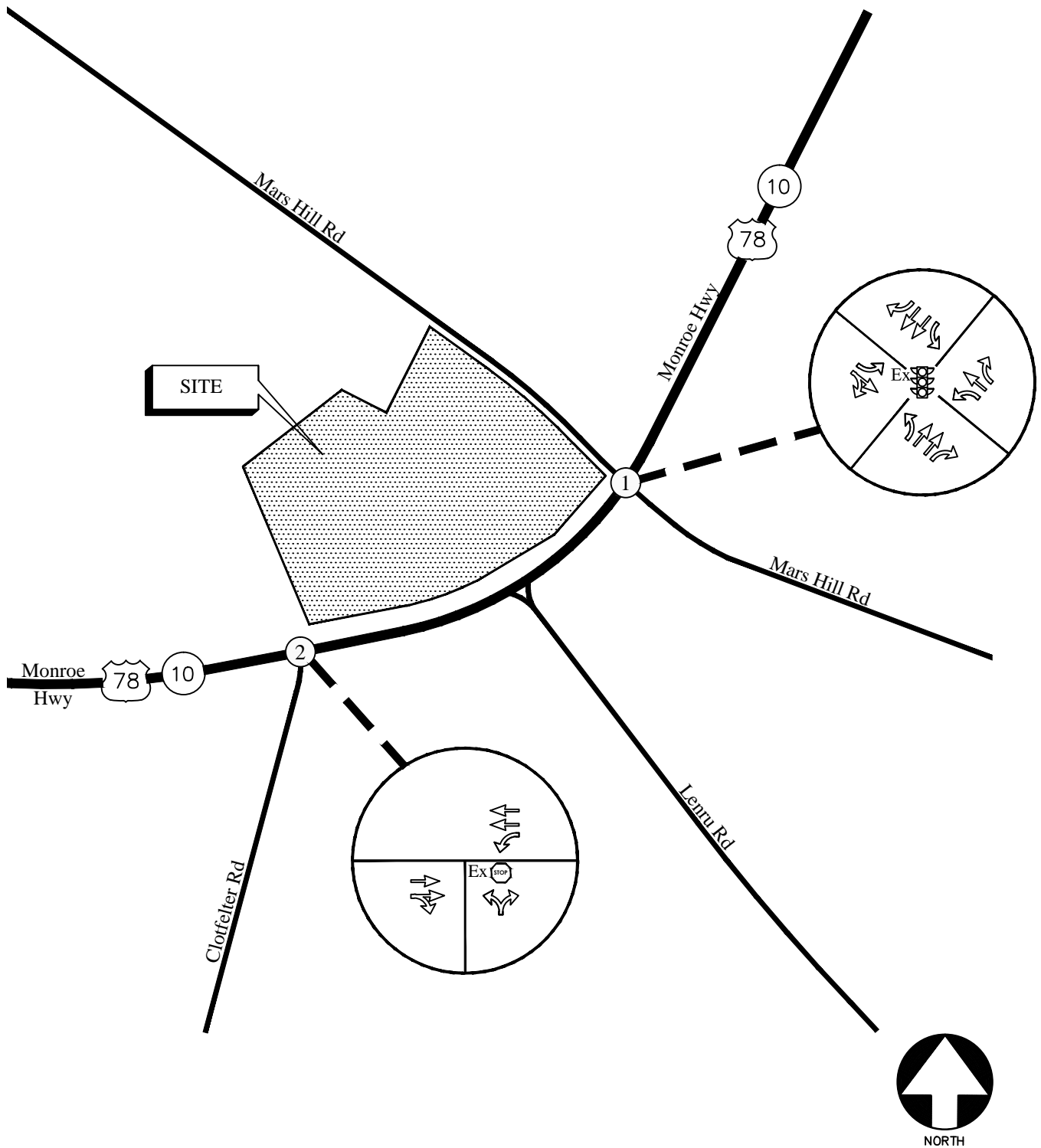


EXISTING WEEKDAY PEAK-HOUR VOLUMES

FIGURE 2
A&R Engineering Inc.

LEGEND

- Ex  Existing Signed Approach
-  Existing Lane Geometry
- Ex  Existing Traffic Signal



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

A&R Engineering Inc.

5.0 PROPOSED DEVELOPMENT

The proposed Bogart Tract mixed-use site will be located in the northwest corner of the intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road in Oconee County, Georgia. A site plan is shown in Figure 4. The development will consist of:

SCENARIO 1:

Phase I:

- Fast-Food Restaurants: 3,000 sf
- Convenience Store with Gas Station: 20 Vehicle Fueling Positions

Phase II:

- Supermarket: 75,000 sf
- Fast-Food Restaurants: 13,000 sf
- Hotel: 200 Rooms
- Office Space: 17,000 sf
- Retail Space: 12,000 sf

The development proposes access at the following locations in Scenario 1:

SCENARIO 1:

Phase I:

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
- Site Driveway 3: Right-in/Right-out driveway (southern) on Mars Hill Road
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)

Phase II:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
- Site Driveway 3: Right-in/Right-out driveway (southern) on Mars Hill Road
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)

SCENARIO 2:

This scenario will evaluate the impacts of the entire development with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road.

In addition to the driveways proposed in Scenario 1, the development proposes one more full access driveway as follows in Scenario 2:

- Site Driveway 6: Full-access driveway on US 78/SR 10 (Monroe Highway) – Scenario 2.

5.1 Trip Generation

Trip generation estimates for the project were based on the rates and equations published in the 10th 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 Uses: 310 – Hotel, 710 – General Office Building, 820 – Shopping Center, 850 – Supermarket, 933 – Fast-Food Restaurant without Drive-Through Window, 934 – Fast-Food Restaurant with Drive-Through Window and 960 – Super Convenience Market/Gas Station. Due to the nature of the development, pass-by and mixed-use reductions have been applied per ITE standards. For land-use 933 Fast Food Restaurant without Drive Through, pass-by rate of land-use 820 Shopping Center was used. The calculated trip generation for Phase I of the proposed development is shown in Table 4 and the total trips for the entire development for Phases I and II are shown in Table 5.

TABLE 4— TRIP GENERATION — PHASE I								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hr
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 934 – Fast-Food Restaurant with Drive-Through Window	3,000 sf	61	61	121	51	47	98	1,413
Pass-by Trips (49%) 50%		-30	-29	-59	-26	-24	-50	-500
ITE 960 – Super Convenience Market/Gas Station	20 Fueling Positions	281	281	562	230	229	459	4,610
Pass-by Trips (62%) 56%		-174	-174	-348	-129	-128	-257	-2,570
Total Trips (without Reductions)		342	341	683	281	276	557	6,023
New External Trips (with Reductions)		138	138	276	124	124	250	2,953

* Daily pass-by reduction estimated to be least of the applied PM peak hour pass-by rate or ten times the PM pass-by volume.

TABLE 5— TRIP GENERATION — PHASE I & II

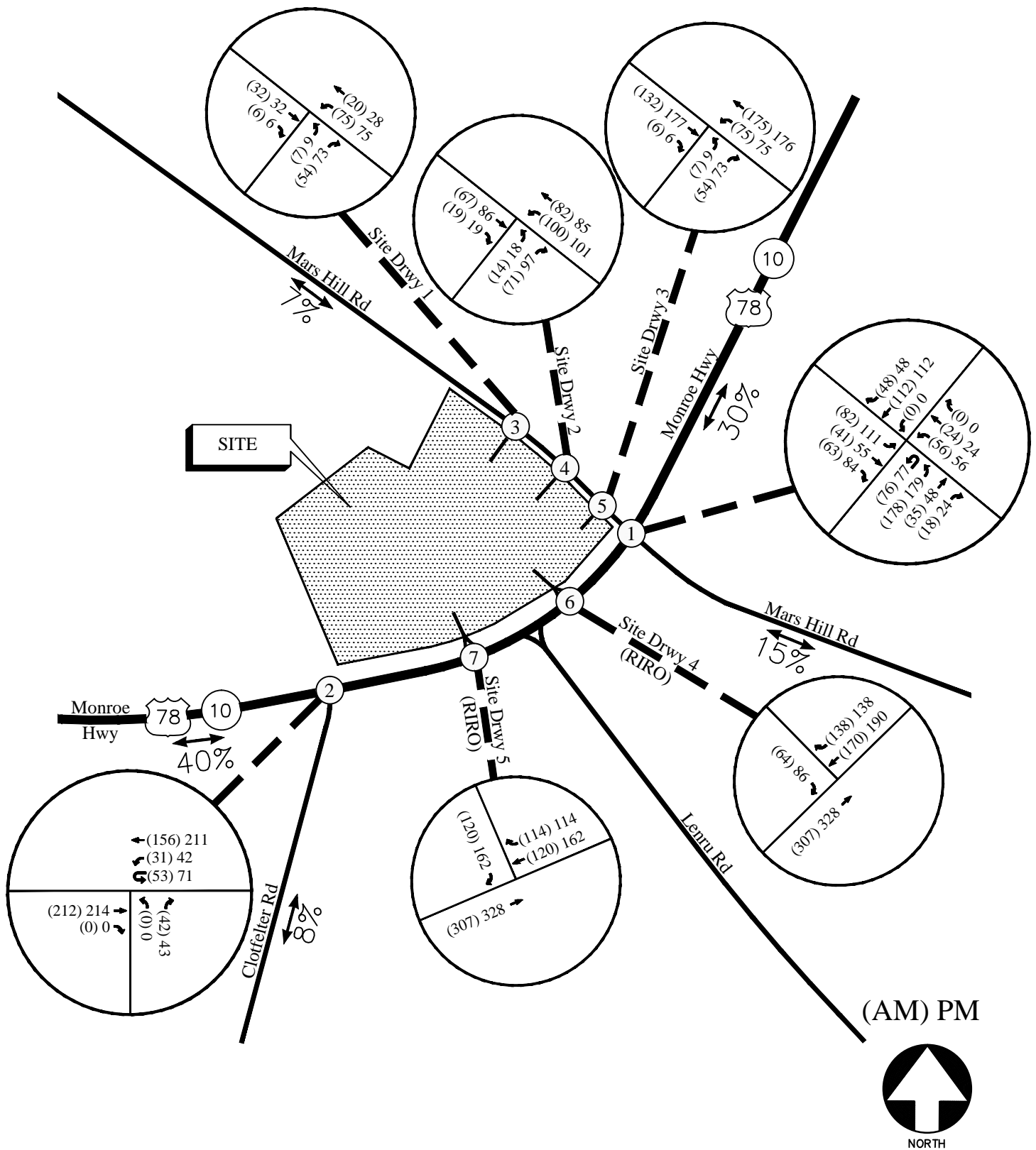
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hr
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 310 – Hotel	200 Rooms	56	39	95	63	61	124	1,831
Mixed-Use Reduction		-17	-21	-38	-20	-32	-52	-652
ITE 710 – General Office Building	17,000 sf	17	3	20	3	17	20	166
Mixed-Use Reduction		-5	-1	-6	-1	-4	-5	-32
ITE 820 – Shopping Center	12,000 sf	7	4	11	22	24	46	453
Mixed-Use Reduction		-1	-1	-2	-1	-1	-2	-17
Pass-by Trips (0%) 34%		0	0	0	-7	-8	-15	-150
ITE 850 – Supermarket	75,000 sf	172	115	287	322	310	632	6,529
Mixed-Use Reduction		-8	-8	-16	-13	-8	-21	-247
Pass-by Trips (0%) 36%		0	0	0	-111	-109	-220	-2,200
ITE 933 – Fast-Food Restaurant without Drive-Through Window	9,500 sf	143	95	238	135	134	269	3,289
Mixed-Use Reduction		-4	-4	-8	-7	-4	-11	-125
Pass-by Trips (0%) 34%		0	0	0	-44	-44	-88	-880
ITE 934 – Fast-Food Restaurant with Drive-Through Window	6,500 sf	133	128	261	110	102	212	3,061
Mixed-Use Reduction		-4	-4	-8	-6	-4	-10	-116
Pass-by Trips (49%) 50%		-63	-61	-124	-52	-49	-101	-1,010
ITE 960 – Super Convenience Market/Gas Station	20 Fueling Positions	281	281	562	230	229	459	4,610
Mixed-Use Reduction		-5	-5	-10	-9	-4	-13	-175
Pass-by Trips (62%) 56%		-171	-171	-342	-124	-126	-250	-2,500
Total Trips (without Reductions)		809	665	1,474	885	877	1,762	19,939
New External Trips (with Reductions)		531	389	920	490	484	974	11,835

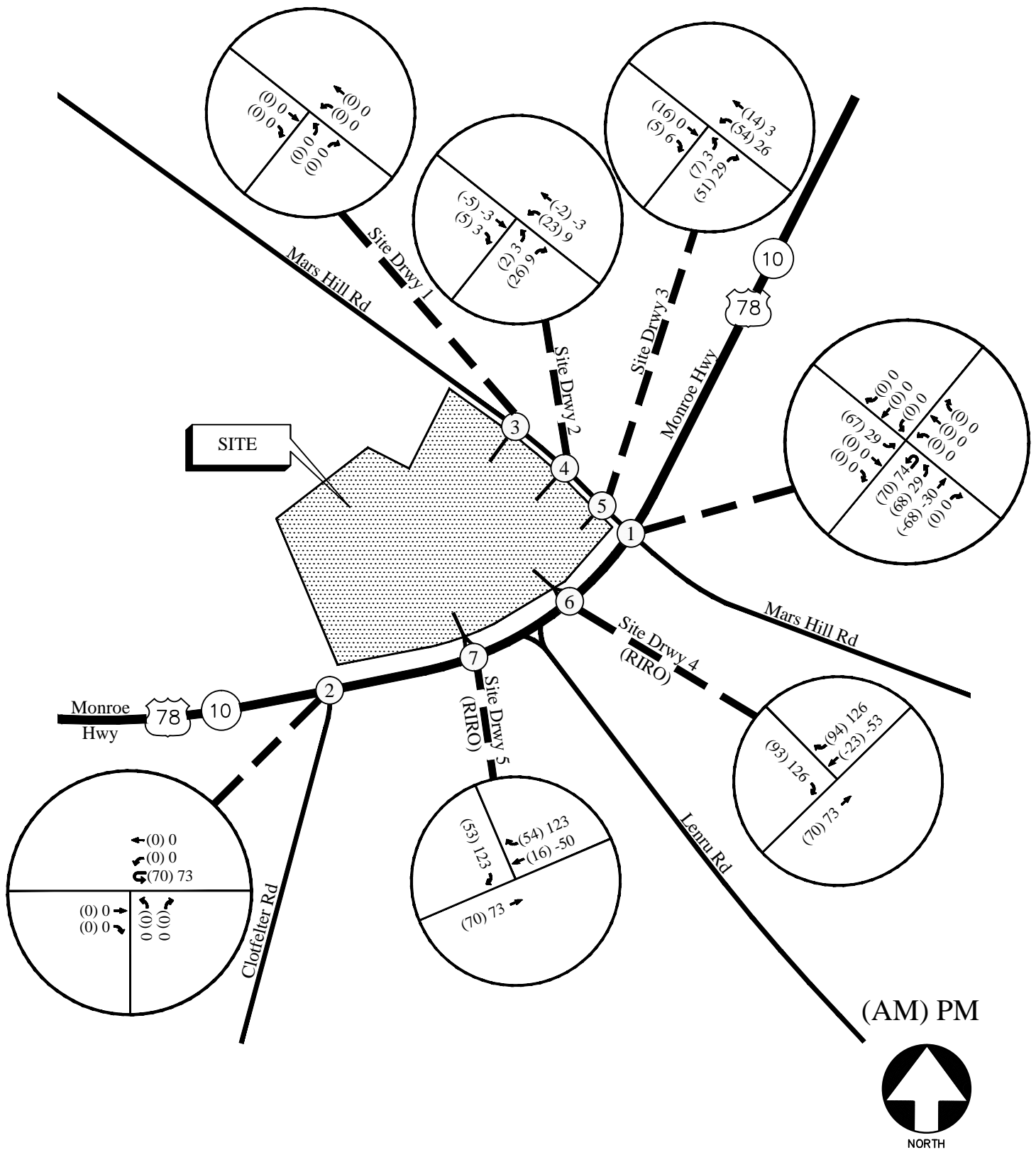
* Daily pass-by reduction estimated to be least of the applied PM peak hour pass-by rate or ten times the PM pass-by volume.

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 entire site are shown in Figure 5. Pass-by volumes have also been distributed based on existing travel patterns and are shown in Figure 6.







SITE PEAK HOUR PASS-BY VOLUMES

FIGURE 6
A&R Engineering Inc.

6.0 FUTURE TRAFFIC ANALYSIS

The future traffic operations are analyzed for the “Build” and “No-Build” conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic.

Improvements that are identified as “System Improvements” address deficiencies that are found within the existing road network prior to any impacts from the proposed development’s added traffic. Improvements that are identified as “Site Improvements” address further impacts that are a result of the proposed development’s added traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

6.1 Future “No-Build” Conditions

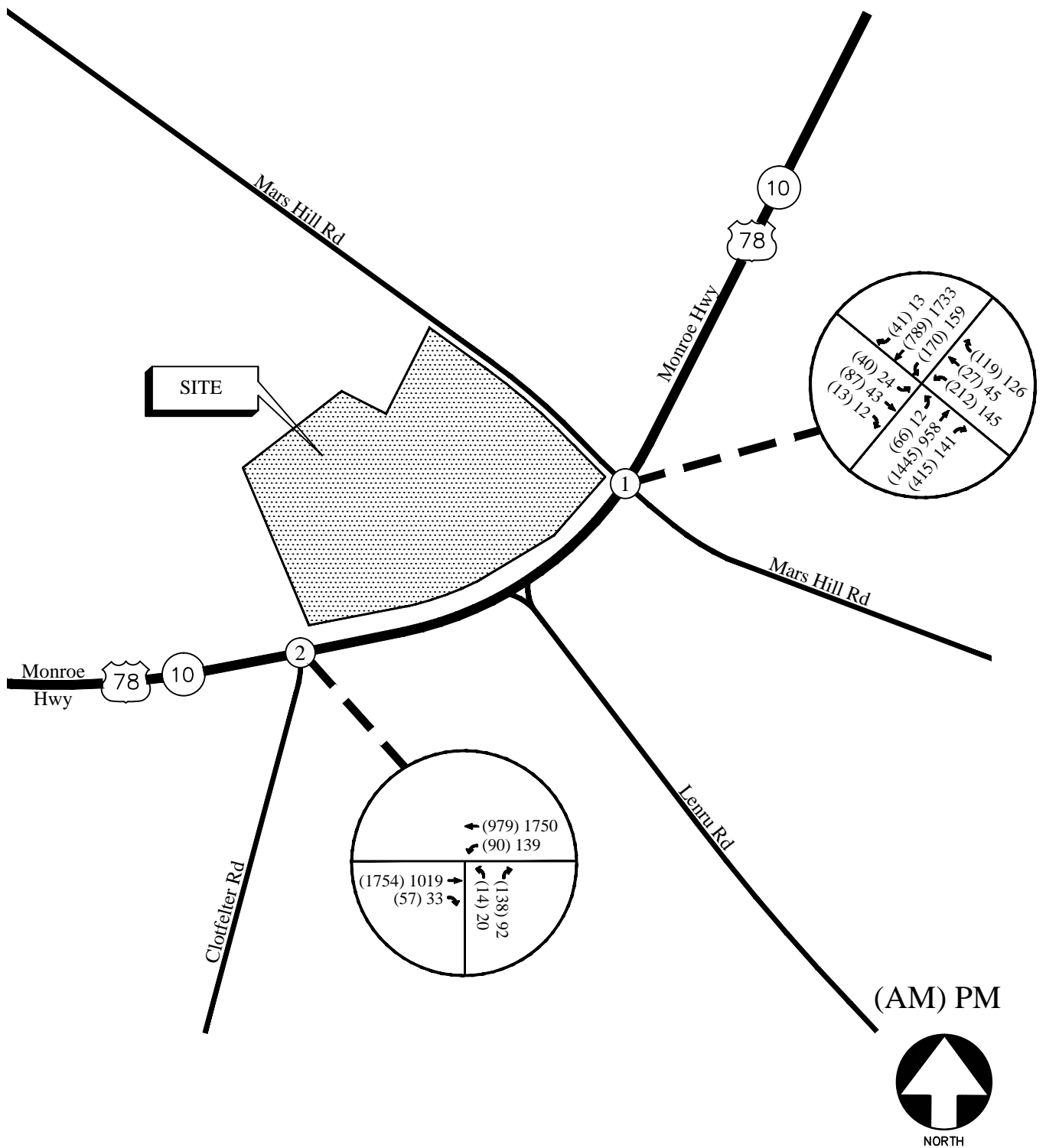
The “No-Build” (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future “No-Build” volumes consist of the existing 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 five years revealed no consistent positive growth of through traffic; therefore, a growth rate of 3.5% was used in the analysis. This growth factor was applied to the existing traffic volumes between collector and arterial roadways in order 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 7.

6.1.2 Future “No-Build” Traffic Operations

The future “No-Build” traffic operations were analyzed using the volumes in Figure 7 and the results are shown in Table 5.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 7
A&R Engineering Inc.

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) and pass-by volumes (Figure 6) were added to base traffic volumes (Figure 7) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes (Figure 8) were used to evaluate the “Build” condition, which includes the projected site traffic. The results of the “Build” operations analyses with the recommended site access configuration are shown in Table 5.

6.2.1 Site Access Configuration

We have analyzed two scenarios of the development. Scenario 1 is a phased construction in two phases; Phase I and Phase II. Scenario 2 is a full construction with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road. Site access configuration for different scenarios is given below as proposed in the site plan:

SCENARIO 1.

Phase I:

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is proposed to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a shared left / right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are proposed to be made from northbound through lane.
 - Entering right-turn movements are proposed to be made from southbound through lane.
- Site Driveway 3: Right-in/Right-out driveway (southern) on Mars Hill Road
 - This driveway is proposed to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the eastbound approach.
 - Entering right-turn movements are proposed to be made from the southbound through lane.
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is proposed to consist of one entering and one exiting lane. The southbound (driveway) approach is proposed to have only one right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is proposed to be constructed for entering traffic.

SCENARIO 1.

Phase 2:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
 - This driveway is proposed to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a shared left / right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are proposed to be made from northbound through lane.
 - Entering right-turn movements are proposed to be made from the southbound through lane.
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is proposed to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a shared left / right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are proposed to be made from northbound through lane.
 - Entering right-turn movements are proposed to be made from southbound through lane.
- Site Driveway 3: Right-in/Right-out driveway (southern) on Mars Hill Road
 - This driveway is proposed to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the eastbound approach.
 - Entering right-turn movements are proposed to be made from the southbound through lane.
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is proposed to consist of one entering and one exiting lane. The southbound (driveway) approach is proposed to have only one right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is proposed to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is proposed to consist of one entering and one exiting lane. The southbound (driveway) approach is proposed to have only one right-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is proposed to be constructed for entering traffic.

SCENARIO 2.

In this scenario, in addition to the five driveways as proposed in Scenario I, Phase II, the following additional full access driveway is proposed:

- Site Driveway 6: Full Access driveway on US 78/SR 10 (Monroe Highway) across from Clotfelter Road – Scenario 2.
 - This driveway is proposed to consist of one entering and two exiting lanes. The southbound (driveway) approach is proposed to have one dedicated right-turn lane and a shared through / left-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the southbound approach.
 - Entering left-turn movements are proposed to be made from eastbound left-turn lane.
 - A deceleration lane is proposed to be constructed for entering right-turn movements.

6.2.2 Future “Build” Traffic Operations

The “Build” conditions are evaluated to determine effectiveness of the recommended system and site improvements. Results of “No-Build” and “Phase I- Build” operations are shown in Table 6 below and “Phase II – Build with Improvements” and “Scenario 2 – Build with Improvements in Table 7. Recommendations on traffic control and lane geometry are shown graphically in Figure 9. The results of the analyses, including the recommended improvements, are discussed in detail in Section 6.2.3.

TABLE 6 – FUTURE “NO-BUILD” & “PHASE I-BUILD” INTERSECTION OPERATIONS					
Intersection		Future Condition: LOS (Delay)			
		NO BUILD		PHASE – I BUILD	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>US 78/SR 10 (Monroe Hwy) @ Mars Hill Rd</u>	<u>D (35.2)</u>	<u>B (19.1)</u>	<u>D (35.2)</u>	<u>C (25.4)</u>
	-Eastbound Approach	C (29.8)	B (12.8)	C (30.0)	C (28.5)
	-Westbound Approach	C (27.1)	B (11.9)	C (22.1)	B (13.5)
	-Northbound Approach	E (64.7)	E (63.7)	E (74.8)	E (55.9)
	-Southbound Approach	E (76.5)	E (79.3)	E (67.9)	E (75.2)
2	<u>US 78/SR 10 (Monroe Hwy) @ Clotfelter Rd</u>				
	-Westbound Left	D (33.2)	B (12.7)	F (105.7)	C (19.5)
	-Northbound Approach	F (191.7)	D (27.3)	F (103.2)	D (25.2)
3	<u>Mars Hill Rd @ Site Drwy 2 (M)</u>				
	-Eastbound Approach	-	-	B (10.9)	A (9.5)
	-Northbound Left			A (7.8)	A (7.5)
4	<u>Mars Hill Rd @ Site Drwy 3 (S)</u>				
	-Eastbound Approach	-	-	B (10.1)	A (9.2)
5	<u>US 78/SR 10 @ Site Drwy 4 (E. RIRO)</u>				
	-Southbound Approach	-	-	C (17.5)	E (43.0)

*Delay exceeds 300 seconds.

TABLE 7 — FUTURE “PHASE II —BUILD WITH IMP” & “SCENARIO 2 — BUILD WITH IMP”

Intersection		Future Condition: LOS (Delay)			
		PHASE II – Build with Improvements		SCENARIO 2 – Build with Improvements	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>US 78/SR 10 (Monroe Hwy) @ Mars Hill Rd</u>	<u>D (51.8)</u>	<u>E (57.0)</u>	<u>D (43.8)</u>	<u>D (39.5)</u>
	-Eastbound Approach	D (46.6)	C (32.0)	D (42.7)	C (24.1)
	-Westbound Approach	D (48.0)	E (68.4)	C (33.5)	D (41.2)
	-Northbound Approach	E (72.6)	E (77.7)	E (61.2)	E (62.9)
	-Southbound Approach	E (70.1)	E (70.7)	E (67.8)	E (69.4)
2	<u>US 78/SR 10 (Monroe Hwy) @ Clotfelter Rd (Drwy # 6)</u>				
	-Westbound Left	F (*)	E (41.0)	F (175.4)	C (17.0)
	-Eastbound Left	-	-	A (10.0)	B (14.9)
	-Northbound Approach	F (*)	F (*)	-	C (20.4)
	-Southbound Approach	-	-	B (11.0)	F (*)
3	<u>Mars Hill Rd @ Site Drwy 1 (N)</u>				
	-Eastbound Approach	B (10.8)	A (9.9)	B (10.9)	A (9.7)
4	<u>Mars Hill Rd @ Site Drwy 2 (M)</u>				
	-Eastbound Approach	C (16.1)	B (12.2)	B (12.4)	B (10.6)
5	<u>Mars Hill Rd @ Site Drwy 3 (S)</u>				
	-Eastbound Approach	B (11.5)	B (10.6)	B (10.3)	B (9.8)
6	<u>US 78/SR 10 @ Site Drwy 4 (E. RIRO)</u>				
	-Southbound Approach	D (30.8)	F (296)	C (18.4)	F (81.4)
7	<u>US 78 (Monroe Hwy) @ Drwy 5 (W. RIRO)</u>				
	-Southbound Approach	C (19.6)	F (224.3)	C (18.1)	F (81.4)

*Delay exceeds 300 seconds.

6.2.3 Recommendations for Site Improvements

A detailed information on recommended improvements at each intersection is given below:

SCENARIO 1:

Phase I:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I, the intersection will operate at levels-of-service “D” and “C” in AM and PM peak hours, respectively after following improvements have been implemented.

- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”. The southbound approach meets GDOT’s Left-Turn Phasing product rule Peak Hour Volume criteria in AM peak hour.

Site Driveway 3 (Southern) @ Mars Hill Road

- Convert this driveway from full access to a Right-in/Right-out driveway.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a northbound left-turn lane for entering traffic.

Phase II:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I and Phase II, the intersection will operate at levels-of-service “D” and “E” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Add an additional eastbound left-turn/U-turn lane.
- Add a second receiving lane on Mars Hill Road extending up to the proposed Driveway 1 (Northern) and dropping as a northbound left-turn lane at the driveway.
- Construct a southbound right-turn lane on Mars Hill Road for right-turning movement.
- Change the eastbound left-turn signal phasing from “Permissive” to “Protected”.
- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

Site Driveway 3 (Southern) @ Mars Hill Road

- Convert this driveway from full access to a Right-in/Right-out driveway.
- Construct a deceleration lane for right-turning movement and continue it up to the intersection of Mars Hill Road at US 78 (Monroe Highway) as a right-turn-lane at that intersection.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.
- To continue the additional northbound receiving lane from the intersection of Mars Hill Road at US 78 (Monroe Highway) up to the northern driveway and drop it there as a northbound left-turn lane at the northern driveway.

SCENARIO 2:

This scenario will evaluate the impacts of the entire development with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road.

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road will be operating at an overall level-of-service “D” in the AM peak hour and “C” in the PM peak hour after the Phase II development is completed and recommended improvements therein have been implemented in scenario I. In scenario 2, after the full projected is completed, the intersection will operate at levels-of-service “D” and “D” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Change the eastbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

Site Driveway 3 (Southern) @ Mars Hill Road

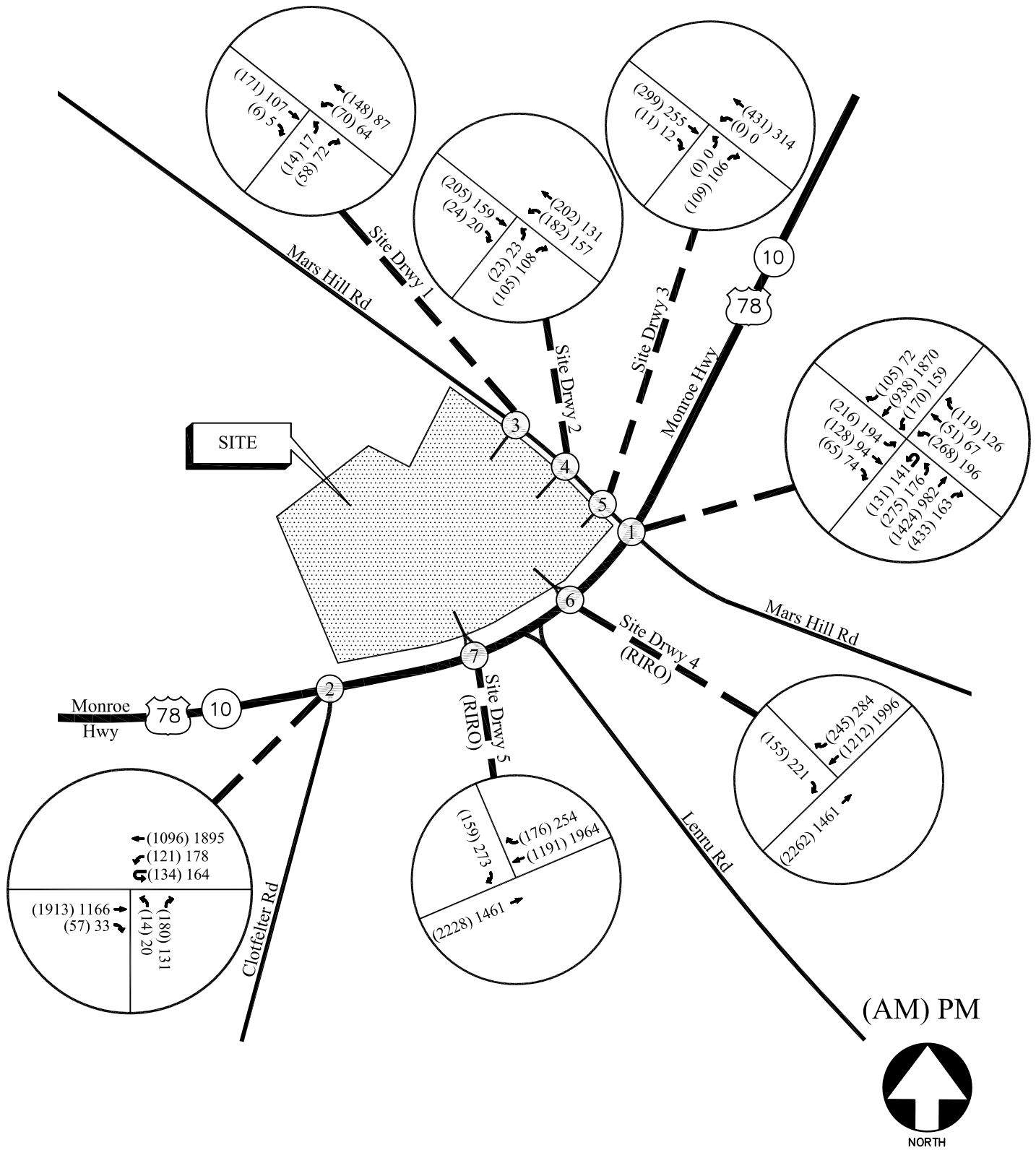
- Convert this driveway from full access to a Right-in/Right-out driveway.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.

US 78/SR 10 (Monroe Highway) @ Clotfelter Road/Full-Access Site Driveway # 6

- Construct a westbound deceleration lane for entering right-turning movement.
- The intersection will potentially meet signal warrants for installation of a traffic signal after the development is completed. Signal warrants will be even stronger when the neighboring land (which will be sharing the driveway) is also developed. It is recommended to perform a signal warrant study to see if signal warrants are met.

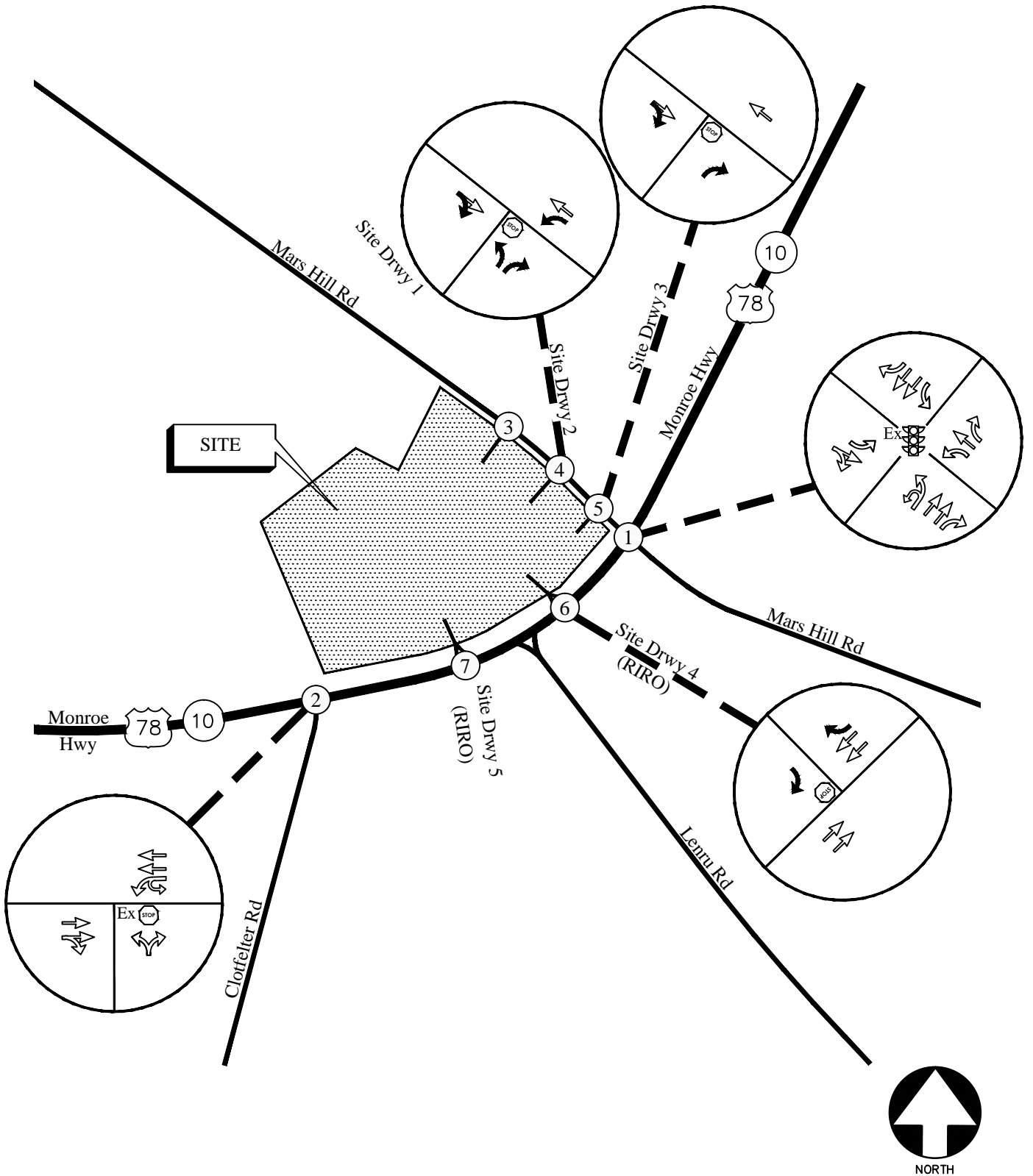


FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES
(Scenario 1 - Phase I & Phase II)

FIGURE 8
A&R Engineering Inc.

LEGEND

- | | | | |
|----|--------------------------|---|--------------------------|
| Ex | Existing Signed Approach | | Proposed Signed Approach |
| | Existing Lane Geometry | | Proposed Lane Geometry |
| Ex | Existing Traffic Signal | * | System Improvement |

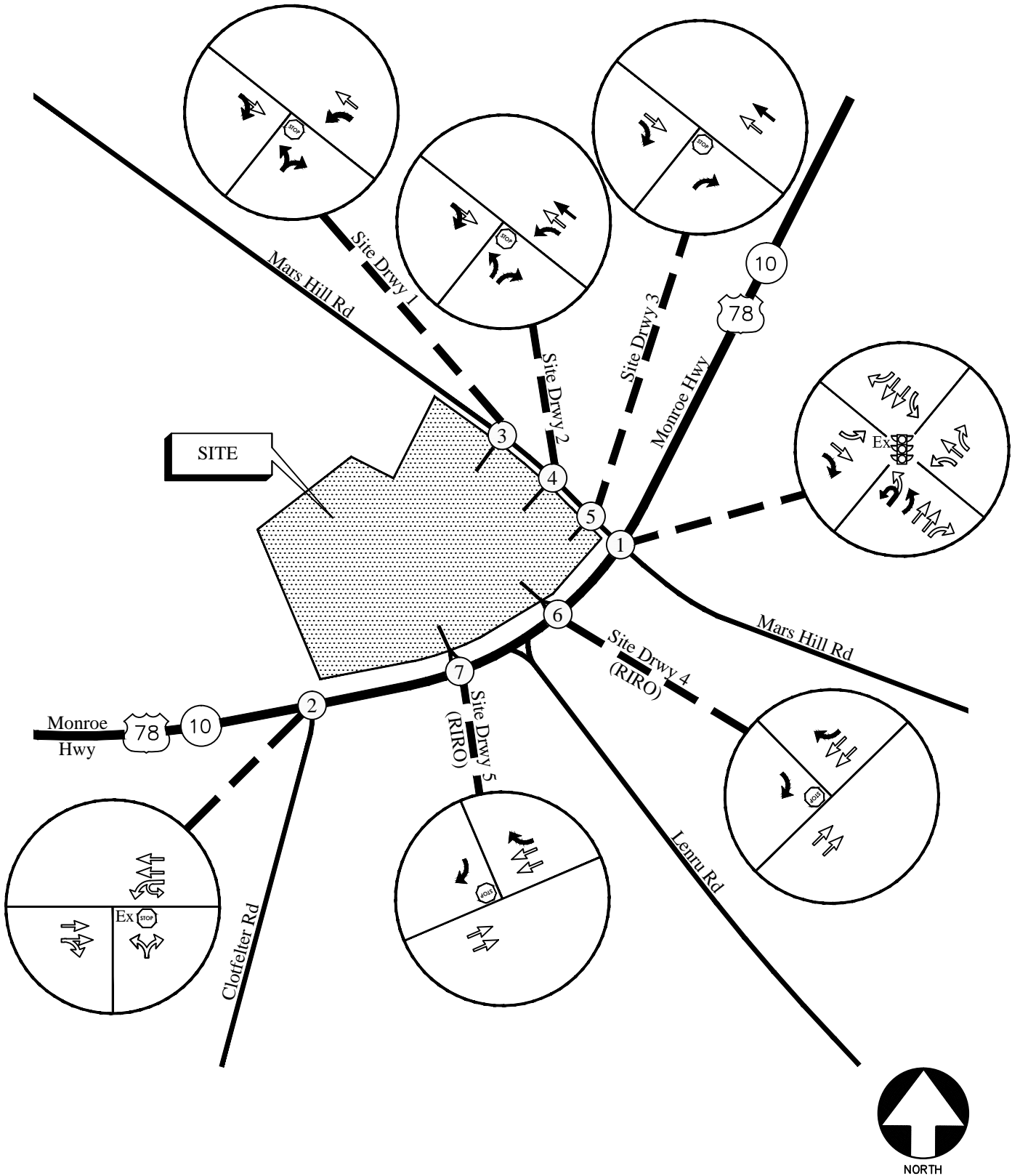


FUTURE TRAFFIC CONTROL & LANE GEOMETRY
(Scenario I - PHASE I)

FIGURE 9
A&R Engineering Inc.

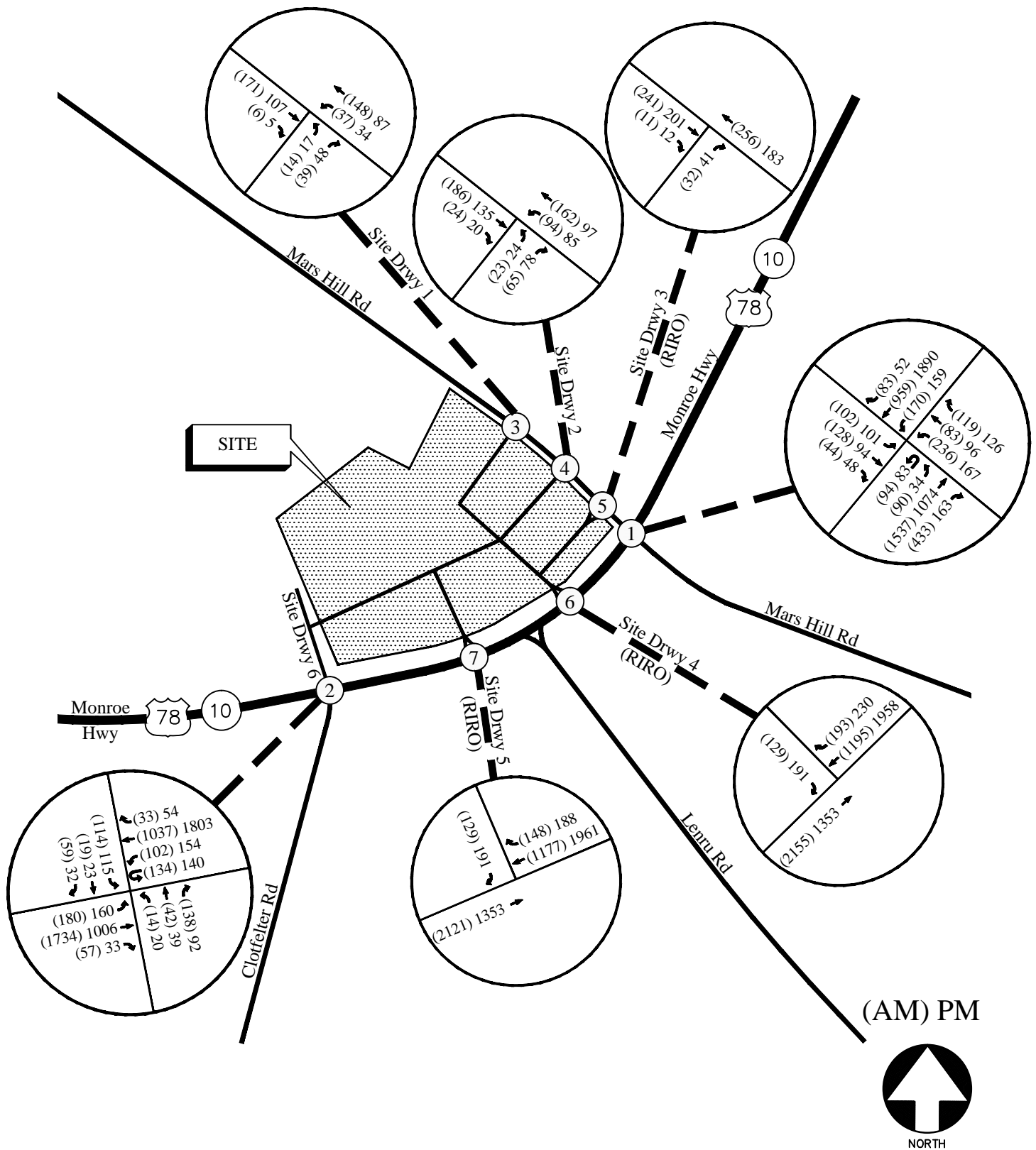
LEGEND

- | | | | |
|----|--------------------------|---|--------------------------|
| Ex | Existing Signed Approach | | Proposed Signed Approach |
| | Existing Lane Geometry | | Proposed Lane Geometry |
| Ex | Existing Traffic Signal | * | System Improvement |



FUTURE TRAFFIC CONTROL & LANE GEOMETRY
(Scenario I - PHASE I & II)







FIGURE 10
A&R Engineering Inc.

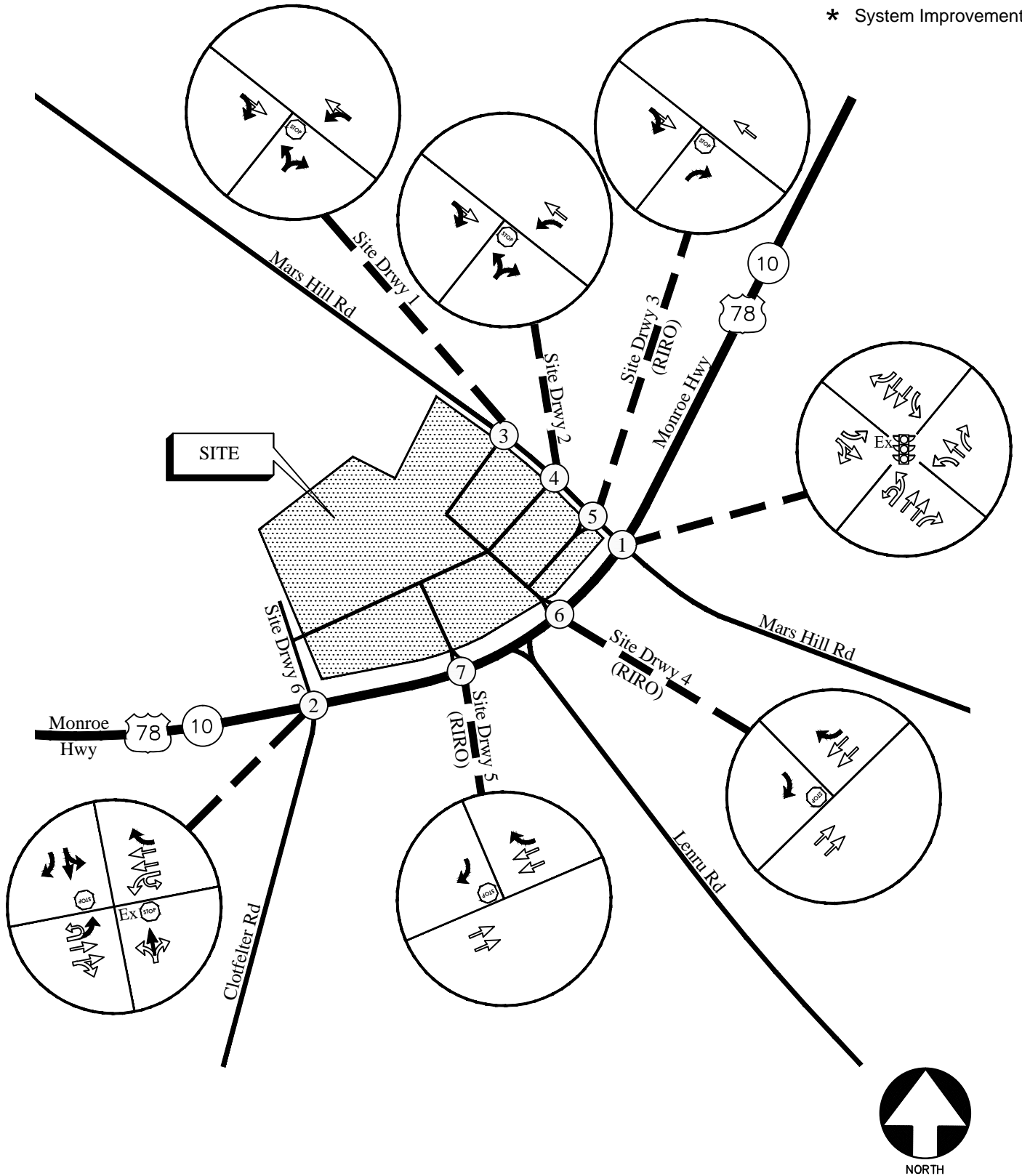


FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES
(SCENARIO 2)

FIGURE 11
A&R Engineering Inc.

LEGEND

- | | | | |
|--|--------------------------|---|--------------------------|
| Ex  | Existing Signed Approach |  | Proposed Signed Approach |
|  | Existing Lane Geometry |  | Proposed Lane Geometry |
| Ex  | Existing Traffic Signal |  | Proposed Traffic Signal |
| | | * | System Improvement |



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY
(SCENARIO 2)

FIGURE 12
A&R Engineering Inc.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this revision to the original study dated January 21, 2018 is to include the following two scenarios:

Scenario 1: Phase I – Convenience Store and 3,000 SF Fast Food Restaurant

Phase II – Rest of the Development

Scenario 2: Full Development with an additional full access driveway on US 78 (Monroe Highway)

This revised traffic study will determine the traffic impact that will result from the proposed Bogart Tract mixed-use development if it were to be developed in phases I and II and also if it were to be developed in full with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road. The proposed development is located in the northwest corner of the intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road in the Oconee County, Georgia. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The proposed development when constructed will consist of:

- Supermarket: 75,000 sf
- Fast-Food Restaurants: 16,000 sf (Total)
- Hotel: 200 Rooms
- Office Space: 17,000 sf (Total)
- Retail Space: 12,000 sf
- Convenience Store with Gas Station: 20 Vehicle Fueling Positions

The development proposes three full-access driveways on Mars Hill Road and two right-in/right-out driveways on US 78/SR 10 (Monroe Highway). An additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road is proposed in scenario 2. Existing and future operations after completion of the project were analyzed at the intersections of:

- US 78/SR 10 (Monroe Highway) at Mars Hill Road
- US 78/SR 10 (Monroe Highway) at Clotfelter Road

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 the analysis are listed below:

7.1 Site Access Configuration

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

Scenario 1 – Phase I

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left/right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A left-turn lane is recommended to be installed for entering left-turn movements.
 - Entering right-turn movements are recommended to be made from southbound through lane. A deceleration lane is not warranted (See Appendix for Analysis)
- Site Driveway 3: Southern Driveway on Mars Hill Road
 - It is recommended that this proposed full access driveway be converted into a Right-in/Right-out driveway.
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering right-turn movements are recommended to be made from southbound through lane. A deceleration lane is not warranted (See Appendix for Analysis)
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.

Scenario 1 – Phases I & II

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left/right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are recommended to be made from the recommended additional receiving lane on Mars Hill Road which gets dropped as a left-turn lane. See attached concept plan.
 - Entering right-turn movements are recommended to be made from the southbound through lane. A deceleration lane is not warranted (See Appendix for analysis)

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left/right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A left-turn lane is recommended to be installed for entering left-turn movements. See attached concept plan.
 - Entering right-turn movements are recommended to be made from southbound through lane. A deceleration lane is not warranted (See Appendix for Analysis)
- Site Driveway 3: Southern Driveway on Mars Hill Road
 - It is recommended that this proposed full access driveway be converted into a Right-in/Right-out driveway.
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - It is recommended that a southbound right-turn lane be constructed for entering right-turn movements. It is also recommended that this right-turn lane be extended up to the intersection of Mars Hill Road @ US 78 (Monroe Highway).
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.

Scenario 2 – With Additional Full Access Driveway on US78/SR 10

In scenario 2, in addition to the five driveways as proposed in Scenario I, Phase I & II, a full access driveway is proposed on US78/SR 10 (Monroe Highway) across from Clotfelter Road:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left/right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are recommended to be made from the existing northbound through lane. A dedicated left-turn lane is not warranted (See Appendix).
 - Entering right-turn movements are recommended to be made from the southbound through lane. A deceleration lane is not warranted (See Appendix for analysis)
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left/right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A left-turn lane is recommended to be installed for entering left-turn movements. See attached concept plan.
 - Entering right-turn movements are recommended to be made from southbound through lane. A deceleration lane is not warranted (See Appendix for Analysis)
- Site Driveway 3: Southern Driveway on Mars Hill Road
 - It is recommended that this proposed full access driveway be converted into a Right-in/Right-out driveway.
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is proposed to have a right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering right-turn movements are recommended to be made from the southbound through lane. A deceleration lane is not warranted (See Appendix for analysis).
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.

- The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
- A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 6: Full Access driveway on US 78/SR 10 (Monroe Highway) across from Clotfelter Road – Scenario 2.
 - This driveway is recommended to consist of one entering and two exiting lanes. The southbound (driveway) approach is proposed to have one dedicated right-turn lane and a shared through / left-turn lane for exiting traffic.
 - The intersection is proposed to be un-signalized with a STOP sign on the southbound approach.
 - Entering left-turn movements are proposed to be made from eastbound left-turn lane.
 - A deceleration lane is proposed to be constructed for entering right-turn movements.

7.2 Recommendations for Site Improvements

A detailed information on recommended improvements at each intersection is given below:

SCENARIO 1:

Phase I:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I, the intersection will operate at levels-of-service “D” and “C” in AM and PM peak hours, respectively after following improvements have been implemented.

- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”. The southbound approach meets GDOT’s Left-Turn Phasing product rule Peak Hour Volume criteria in AM peak hour.

Site Driveway 3 (Southern) @ Mars Hill Road

- Convert this driveway from full access to a Right-in/Right-out driveway.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a northbound left-turn lane for entering traffic.

Phase II:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I and Phase II, the intersection will operate at levels-of-service “D” and “E” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Add an additional eastbound left-turn/U-turn lane.

- Add a second receiving lane on Mars Hill Road extending up to the proposed Driveway 1 (Northern) and dropping as a northbound left-turn lane at the driveway.
- Construct a southbound right-turn lane on Mars Hill Road for right-turning movement.
- Change the eastbound left-turn signal phasing from “Permissive” to “Protective”.
- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

Site Driveway 3 (Southern) @ Mars Hill Road

- Convert this driveway from full access to a Right-in/Right-out driveway.
- Construct a deceleration lane for right-turning movement and continue it up to the intersection of Mars Hill Road at US 78 (Monroe Highway) as a right-turn-lane at that intersection.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.
- Continue the additional northbound receiving lane from the intersection of Mars Hill Road at US 78 (Monroe Highway) up to the northern driveway and drop it there as a northbound left-turn lane at the northern driveway.

SCENARIO 2:

This scenario will evaluate the impacts of the entire development with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road.

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road will be operating at an overall level-of-service “D” in the AM peak hour and “C” in the PM peak hour after the Phase II development is completed and recommended improvements therein have been implemented in scenario I. In scenario 2, after the full projected is completed, the intersection will operate at levels-of-service “D” and “D” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Change the eastbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.
- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

Site Driveway 3 (Southern) @ Mars Hill Road

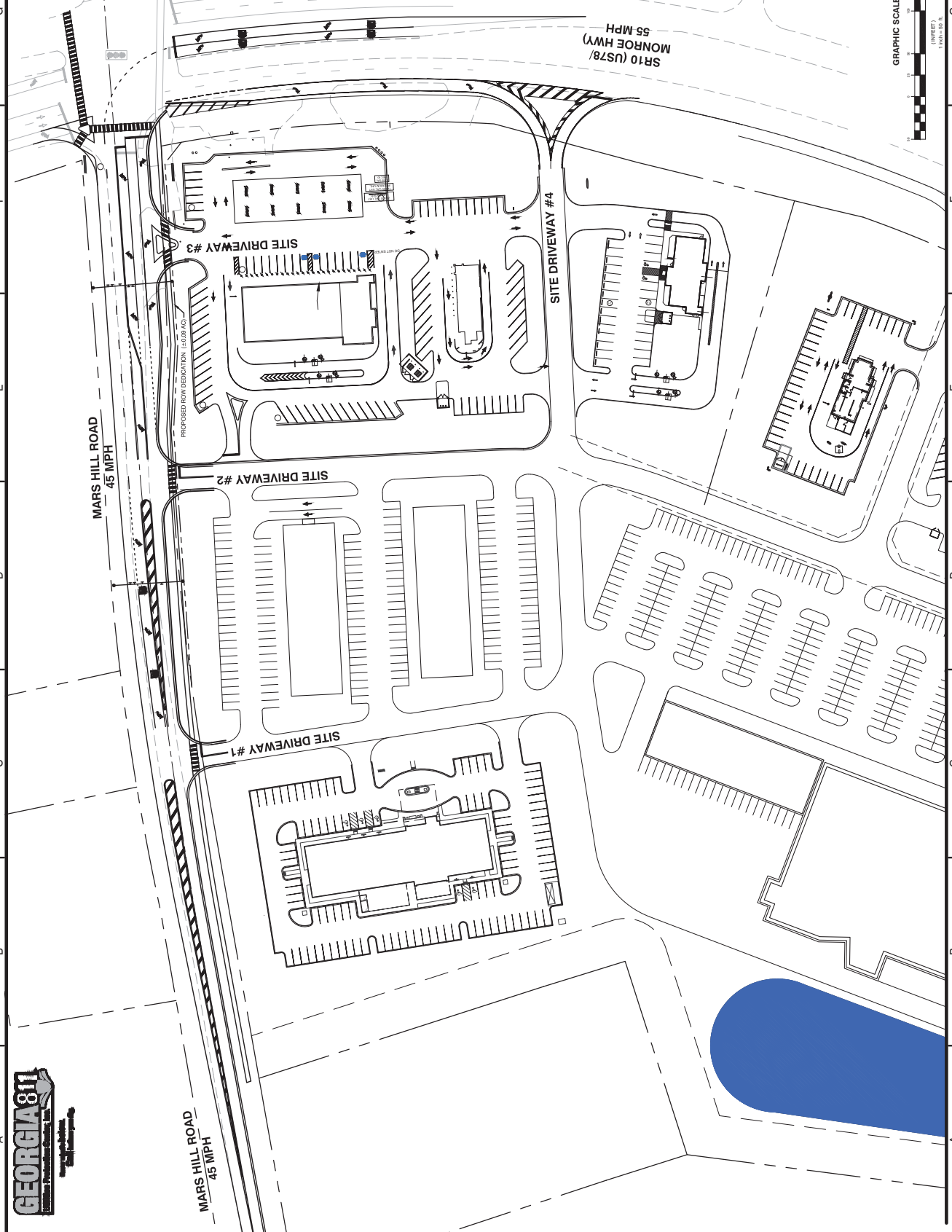
- Convert this driveway from full access to a Right-in/Right-out driveway.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.

US 78/SR 10 (Monroe Highway) @ Clotfelter Road/Full-Access Site Driveway 6

- Construct a westbound deceleration lane for entering right-turning movement.
- The intersection will potentially meet signal warrants for installation of a traffic signal after the development is completed. Signal warrants will be even stronger when the neighboring land (which will be sharing the driveway) is also developed. It is recommended to perform a signal warrant analysis to see if signal warrants are met.





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Atlanta, Georgia 30329
Tel: (770) 400-0000
www.aandeng.com
aandeng@aandeng.com

REVISIONS	
No.	DESCRIPTION
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

NOT RELEASED FOR
CONSTRUCTION

PREPARED FOR
JPC DESIGN AND
CONSTRUCTION
PO BOX 710
JACKSONVILLE, GA
32203

CONCEPT PLAN
MARS HILL ROAD IMPROVEMENTS
JP BOGART TRACT
ROW IMPROVEMENTS
WEST CORNER OF SR10/US78 AND MARS HILL ROAD
OCONEE COUNTY, GA

24 HOUR CONTACT	
LL	DATE
CAO	DATE
ASST PROJECT #	18-108
SHEET NO. 01 OF 01	

CP-01

Appendix

Existing Intersection Traffic Counts	
Existing Intersection Analysis.....	
AASHTO LEFT-TURN LANE ANALYSIS	
NCHRP 457 Right Turn Lane Analysis	
Future “No-Build” Intersection Analysis	
Future “Build” Intersection Analysis (With Improvements)	
Traffic Volume Worksheets	

EXISTING INTERSECTION TRAFFIC COUNTS

A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data
US 78/SR 10 (Monroe Hwy) @
Mars Hill Rd
7-9 am | 4-6 pm

File Name : 20180315
Site Code : 20180315
Start Date : 12/4/2018
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Mars Hill Road Northbound				Mars Hill Road Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	20	2	11	33	5	8	2	15	9	218	36	263	38	123	6	167	478
07:15 AM	39	5	26	70	9	15	1	25	16	275	72	363	41	166	16	223	681
07:30 AM	42	4	28	74	5	27	4	36	23	351	148	522	42	202	8	252	884
07:45 AM	63	12	31	106	17	17	4	38	11	389	94	494	40	196	7	243	881
Total	164	23	96	283	36	67	11	114	59	1233	350	1642	161	687	37	885	2924
08:00 AM	54	4	26	84	6	22	3	31	12	334	73	419	36	173	7	216	750
08:15 AM	18	3	18	39	5	5	5	15	4	292	44	340	34	161	6	201	595
08:30 AM	36	3	13	52	5	7	2	14	5	268	45	318	31	134	7	172	556
08:45 AM	18	5	9	32	2	6	2	10	3	245	43	291	29	128	7	164	497
Total	126	15	66	207	18	40	12	70	24	1139	205	1368	130	596	27	753	2398
*** BREAK ***																	
04:00 PM	68	8	28	104	6	10	2	18	2	188	39	229	28	267	3	298	649
04:15 PM	56	12	32	100	5	12	1	18	3	203	43	249	32	286	5	323	690
04:30 PM	39	14	29	82	4	9	3	16	2	212	35	249	37	299	4	340	687
04:45 PM	42	13	27	82	6	13	2	21	1	200	41	242	39	342	3	384	729
Total	205	47	116	368	21	44	8	73	8	803	158	969	136	1194	15	1345	2755
05:00 PM	38	11	31	80	7	12	2	21	2	204	34	240	41	391	2	434	775
05:15 PM	35	10	25	70	5	8	4	17	4	225	36	265	38	424	5	467	819
05:30 PM	33	9	33	75	6	11	2	19	2	241	33	276	36	421	3	460	830
05:45 PM	29	12	29	70	4	9	3	16	3	224	29	256	33	382	2	417	759
Total	135	42	118	295	22	40	11	73	11	894	132	1037	148	1618	12	1778	3183
Grand Total	630	127	396	1153	97	191	42	330	102	4069	845	5016	575	4095	91	4761	11260
Apprch %	54.6	11	34.3		29.4	57.9	12.7		2	81.1	16.8		12.1	86	1.9		
Total %	5.6	1.1	3.5	10.2	0.9	1.7	0.4	2.9	0.9	36.1	7.5	44.5	5.1	36.4	0.8	42.3	

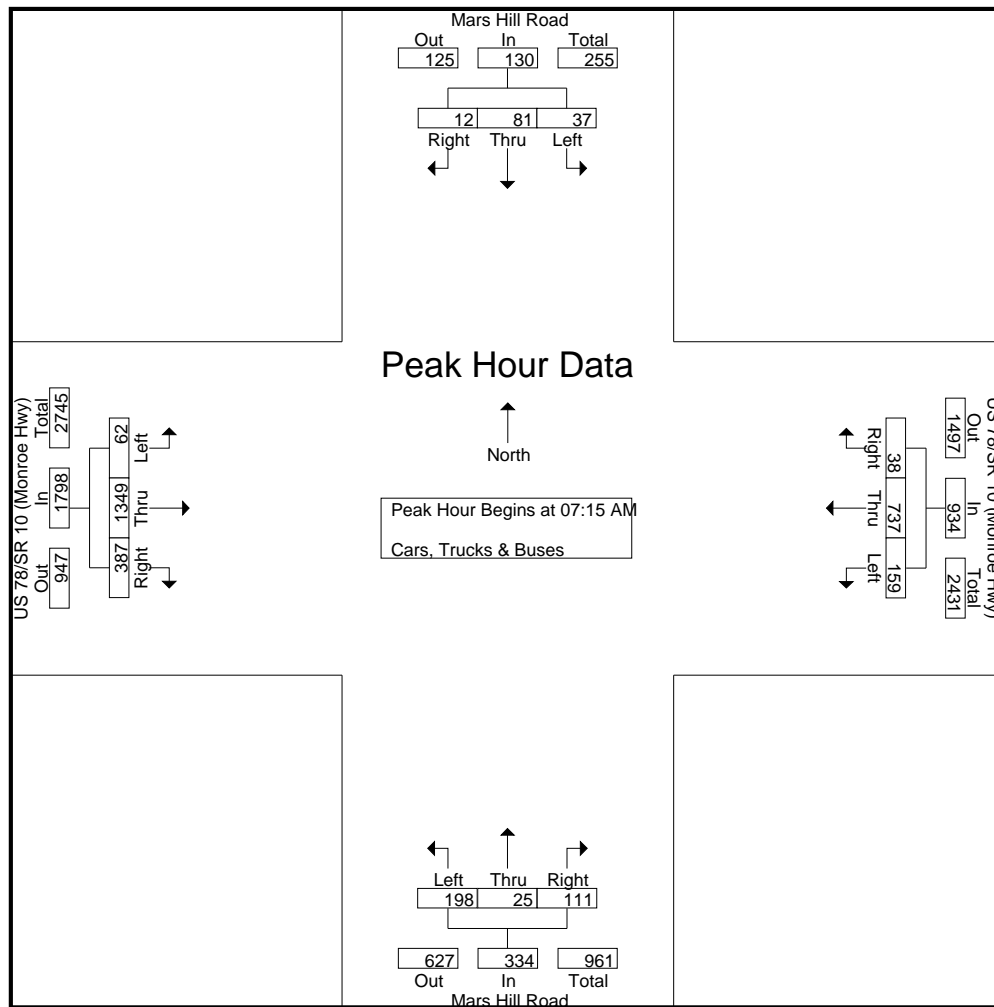
A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data
US 78/SR 10 (Monroe Hwy) @
Mars Hill Rd
7-9 am | 4-6 pm

File Name : 20180315
Site Code : 20180315
Start Date : 12/4/2018
Page No : 2

	Mars Hill Road Northbound				Mars Hill Road Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	39	5	26	70	9	15	1	25	16	275	72	363	41	166	16	223	681
07:30 AM	42	4	28	74	5	27	4	36	23	351	148	522	42	202	8	252	884
07:45 AM	63	12	31	106	17	17	4	38	11	389	94	494	40	196	7	243	881
08:00 AM	54	4	26	84	6	22	3	31	12	334	73	419	36	173	7	216	750
Total Volume	198	25	111	334	37	81	12	130	62	1349	387	1798	159	737	38	934	3196
% App. Total	59.3	7.5	33.2		28.5	62.3	9.2		3.4	75	21.5		17	78.9	4.1		
PHF	.786	.521	.895	.788	.544	.750	.750	.855	.674	.867	.654	.861	.946	.912	.594	.927	.904



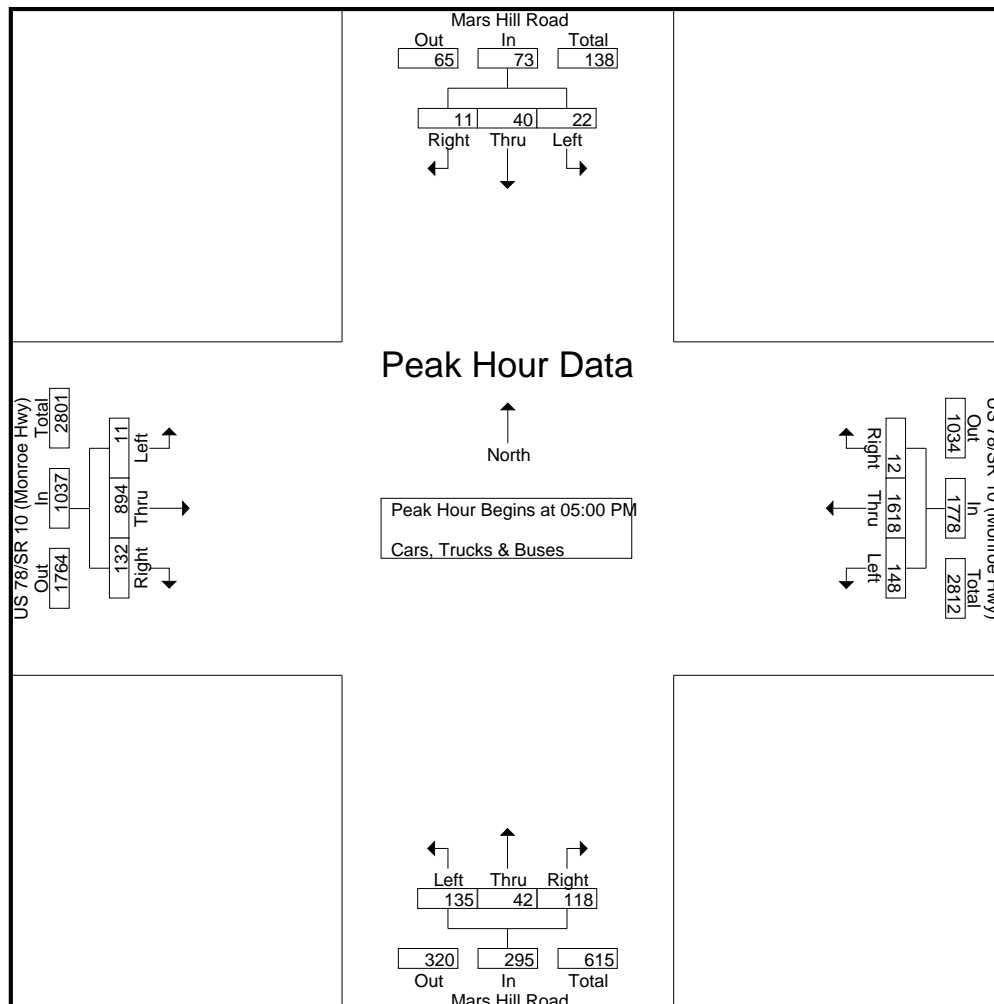
A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data
US 78/SR 10 (Monroe Hwy) @
Mars Hill Rd
7-9 am | 4-6 pm

File Name : 20180315
Site Code : 20180315
Start Date : 12/4/2018
Page No : 3

	Mars Hill Road Northbound				Mars Hill Road Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	38	11	31	80	7	12	2	21	2	204	34	240	41	391	2	434	775
05:15 PM	35	10	25	70	5	8	4	17	4	225	36	265	38	424	5	467	819
05:30 PM	33	9	33	75	6	11	2	19	2	241	33	276	36	421	3	460	830
05:45 PM	29	12	29	70	4	9	3	16	3	224	29	256	33	382	2	417	759
Total Volume	135	42	118	295	22	40	11	73	11	894	132	1037	148	1618	12	1778	3183
% App. Total	45.8	14.2	40		30.1	54.8	15.1		1.1	86.2	12.7		8.3	91	0.7		
PHF	.888	.875	.894	.922	.786	.833	.688	.869	.688	.927	.917	.939	.902	.954	.600	.952	.959



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TMC Data
US 78/SR 10 (Monroe Hwy) @
Clotfelter Rd
7-9 am | 4-6 pm

File Name : 20180316
Site Code : 20180316
Start Date : 12/4/2018
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Clotfelter Rd Northbound				Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	16	18	0	0	0	0	0	235	11	246	9	140	0	149	413
07:15 AM	3	0	17	20	0	0	0	0	0	345	19	364	12	213	0	225	609
07:30 AM	6	0	33	39	0	0	0	0	0	452	10	462	18	217	0	235	736
07:45 AM	3	0	46	49	0	0	0	0	0	463	11	474	21	269	0	290	813
Total	14	0	112	126	0	0	0	0	0	1495	51	1546	60	839	0	899	2571
08:00 AM	1	0	33	34	0	0	0	0	0	377	13	390	33	215	0	248	672
08:15 AM	6	0	23	29	0	0	0	0	0	283	6	289	20	168	0	188	506
08:30 AM	0	0	23	23	0	0	0	0	0	277	3	280	25	153	0	178	481
08:45 AM	3	0	33	36	0	0	0	0	0	249	1	250	10	146	0	156	442
Total	10	0	112	122	0	0	0	0	0	1186	23	1209	88	682	0	770	2101
*** BREAK ***																	
04:00 PM	5	0	17	22	0	0	0	0	0	212	8	220	28	287	0	315	557
04:15 PM	3	0	17	20	0	0	0	0	0	232	4	236	25	305	0	330	586
04:30 PM	8	0	22	30	0	0	0	0	0	227	8	235	20	321	0	341	606
04:45 PM	6	0	19	25	0	0	0	0	0	223	8	231	21	365	0	386	642
Total	22	0	75	97	0	0	0	0	0	894	28	922	94	1278	0	1372	2391
05:00 PM	4	0	11	15	0	0	0	0	0	229	5	234	36	395	0	431	680
05:15 PM	8	0	25	33	0	0	0	0	0	240	6	246	30	433	0	463	742
05:30 PM	5	0	27	32	0	0	0	0	0	249	10	259	27	429	0	456	747
05:45 PM	2	0	23	25	0	0	0	0	0	233	10	243	37	377	0	414	682
Total	19	0	86	105	0	0	0	0	0	951	31	982	130	1634	0	1764	2851
Grand Total	65	0	385	450	0	0	0	0	0	4526	133	4659	372	4433	0	4805	9914
Apprch %	14.4	0	85.6		0	0	0		0	97.1	2.9		7.7	92.3	0		
Total %	0.7	0	3.9	4.5	0	0	0	0	0	45.7	1.3	47	3.8	44.7	0	48.5	

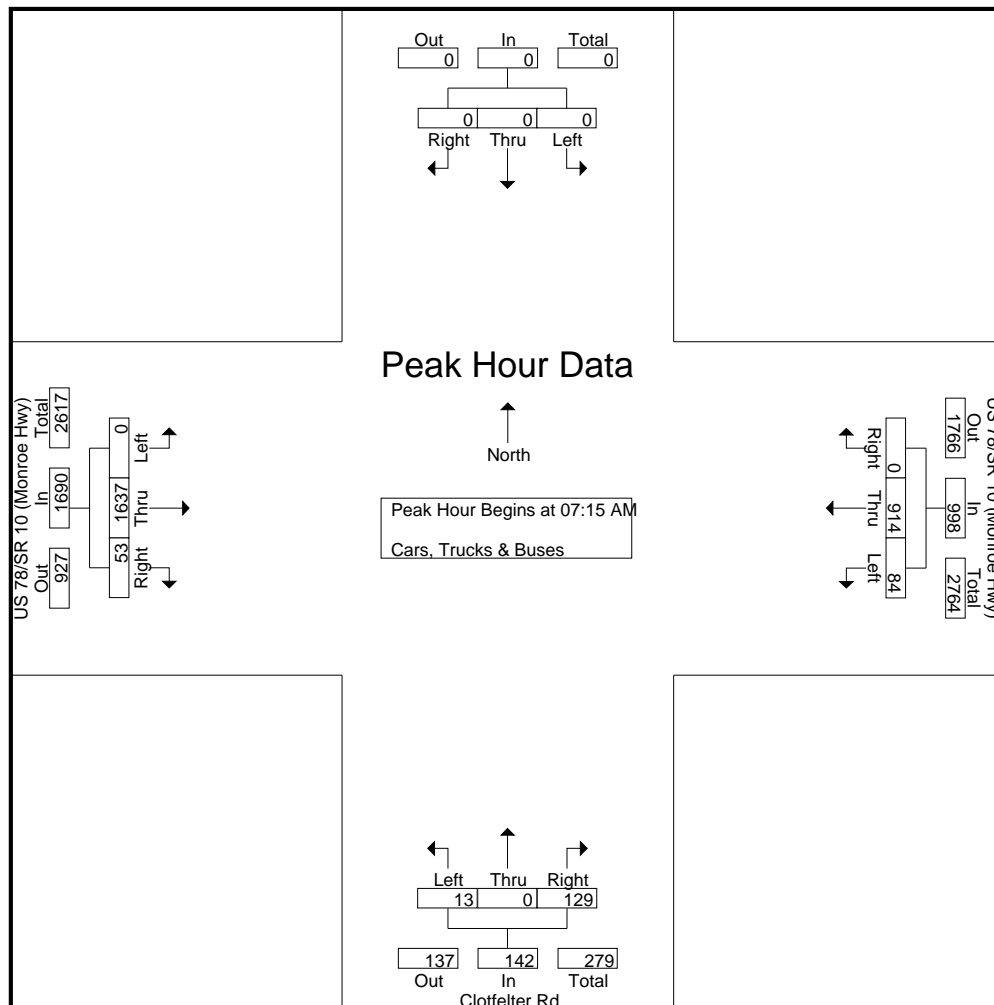
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TMC Data
US 78/SR 10 (Monroe Hwy) @
Clotfelter Rd
7-9 am | 4-6 pm

File Name : 20180316
Site Code : 20180316
Start Date : 12/4/2018
Page No : 2

	Clotfelter Rd Northbound				Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	3	0	17	20	0	0	0	0	0	345	19	364	12	213	0	225	609
07:30 AM	6	0	33	39	0	0	0	0	0	452	10	462	18	217	0	235	736
07:45 AM	3	0	46	49	0	0	0	0	0	463	11	474	21	269	0	290	813
08:00 AM	1	0	33	34	0	0	0	0	0	377	13	390	33	215	0	248	672
Total Volume	13	0	129	142	0	0	0	0	0	1637	53	1690	84	914	0	998	2830
% App. Total	9.2	0	90.8		0	0	0		0	96.9	3.1		8.4	91.6	0		
PHF	.542	.000	.701	.724	.000	.000	.000	.000	.000	.884	.697	.891	.636	.849	.000	.860	.870



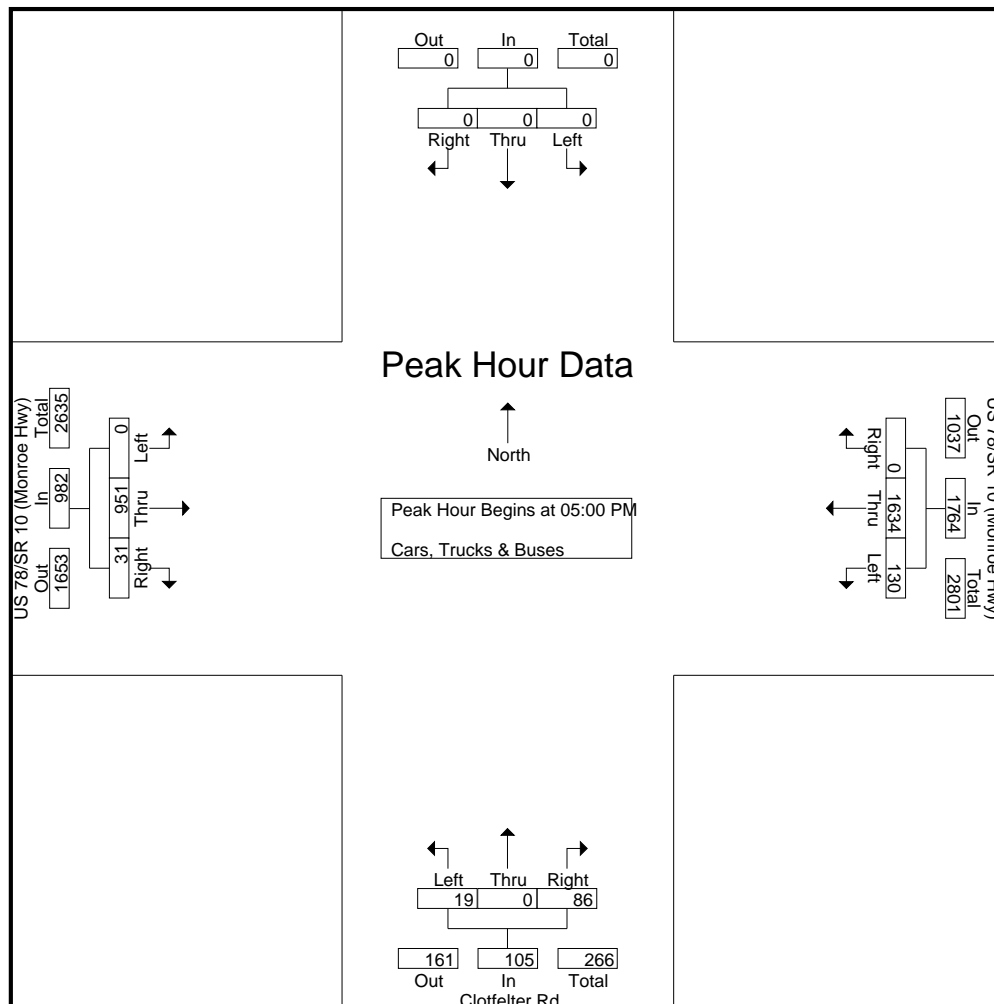
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TMC Data
US 78/SR 10 (Monroe Hwy) @
Clotfelter Rd
7-9 am | 4-6 pm

File Name : 20180316
Site Code : 20180316
Start Date : 12/4/2018
Page No : 3

	Clotfelter Rd Northbound				Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	4	0	11	15	0	0	0	0	0	229	5	234	36	395	0	431	680
05:15 PM	8	0	25	33	0	0	0	0	0	240	6	246	30	433	0	463	742
05:30 PM	5	0	27	32	0	0	0	0	0	249	10	259	27	429	0	456	747
05:45 PM	2	0	23	25	0	0	0	0	0	233	10	243	37	377	0	414	682
Total Volume	19	0	86	105	0	0	0	0	0	951	31	982	130	1634	0	1764	2851
% App. Total	18.1	0	81.9		0	0	0		0	96.8	3.2		7.4	92.6	0		
PHF	.594	.000	.796	.795	.000	.000	.000	.000	.000	.955	.775	.948	.878	.943	.000	.952	.954

























EXISTING INTERSECTION ANALYSIS

Timings

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing AM

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	62	1349	387	159	737	38	198	25	111	37	81
Future Volume (vph)	62	1349	387	159	737	38	198	25	111	37	81
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	59.0	59.0	59.0	15.0	74.0	74.0	27.0	86.0	86.0	59.0	59.0
Total Split (%)	36.9%	36.9%	36.9%	9.4%	46.3%	46.3%	16.9%	53.8%	53.8%	36.9%	36.9%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160

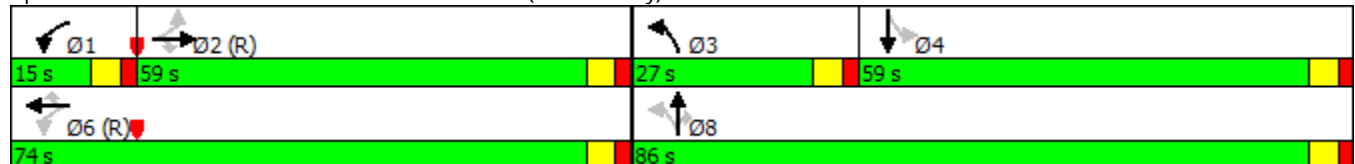
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

























Control Type: Actuated-Coordinated

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing AM
03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	1349	387	159	737	38	198	25	111	37	81	12
Future Volume (veh/h)	62	1349	387	159	737	38	198	25	111	37	81	12
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	93	1551	595	167	810	64	251	48	123	69	108	16
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.67	0.87	0.65	0.95	0.91	0.59	0.79	0.52	0.90	0.54	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	410	2082	931	188	2389	1069	310	477	406	151	139	21
Arrive On Green	0.59	0.59	0.59	0.05	0.68	0.68	0.13	0.26	0.26	0.09	0.09	0.09
Sat Flow, veh/h	632	3539	1583	1774	3539	1583	1774	1863	1583	1209	1586	235
Grp Volume(v), veh/h	93	1551	595	167	810	64	251	48	123	69	0	124
Grp Sat Flow(s),veh/h/ln	632	1770	1583	1774	1770	1583	1774	1863	1583	1209	0	1821
Q Serve(g_s), s	11.6	51.4	39.7	6.3	15.4	2.2	20.2	3.1	10.0	8.8	0.0	10.7
Cycle Q Clear(g_c), s	13.2	51.4	39.7	6.3	15.4	2.2	20.2	3.1	10.0	8.8	0.0	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	410	2082	931	188	2389	1069	310	477	406	151	0	159
V/C Ratio(X)	0.23	0.74	0.64	0.89	0.34	0.06	0.81	0.10	0.30	0.46	0.00	0.78
Avail Cap(c_a), veh/h	410	2082	931	200	2389	1069	310	937	797	449	0	609
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	24.1	21.7	35.3	11.0	8.8	55.3	45.4	48.0	70.7	0.0	71.5
Incr Delay (d2), s/veh	1.3	2.5	3.3	34.2	0.4	0.1	14.9	0.1	0.4	2.2	0.0	8.0
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(95%),veh/ln	3.9	34.0	25.0	14.0	12.2	1.8	16.6	2.9	7.9	5.5	0.0	9.6
LnGrp Delay(d),s/veh	17.9	26.6	25.1	69.4	11.3	8.9	70.2	45.5	48.4	72.8	0.0	79.4
LnGrp LOS	B	C	C	E	B	A	E	D	D	E		E
Approach Vol, veh/h	2239				1041				422			
Approach Delay, s/veh	25.8				20.5				61.0			
Approach LOS	C				C				E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	6		8					
Phs Duration (G+Y+Rc), s	13.9	99.6	27.0	19.5	113.5		46.5					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5		5.5					
Max Green Setting (Gmax), s	9.5	53.5	21.5	53.5	68.5		80.5					
Max Q Clear Time (g_c+I1), s	8.3	53.4	22.2	12.7	17.4		12.0					
Green Ext Time (p_c), s	0.1	0.1	0.0	1.3	50.9		1.3					
Intersection Summary												
HCM 2010 Ctrl Delay	30.8											
HCM 2010 LOS	C											
Notes												

Intersection						
Int Delay, s/veh	7.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1637	53	84	914	13	129
Future Vol, veh/h	1637	53	84	914	13	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1860	76	131	1075	24	184

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1936	0	2698	968
Stage 1	-	-	-	-	1898	-
Stage 2	-	-	-	-	800	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	300	-	~ 17	254
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	403	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	300	-	~ 10	254
Mov Cap-2 Maneuver	-	-	-	-	88	-
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	227	-


Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	109.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	209	-	-	300	-
HCM Lane V/C Ratio	0.997	-	-	0.438	-
HCM Control Delay (s)	109.4	-	-	26	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	8.8	-	-	2.1	-

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

Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

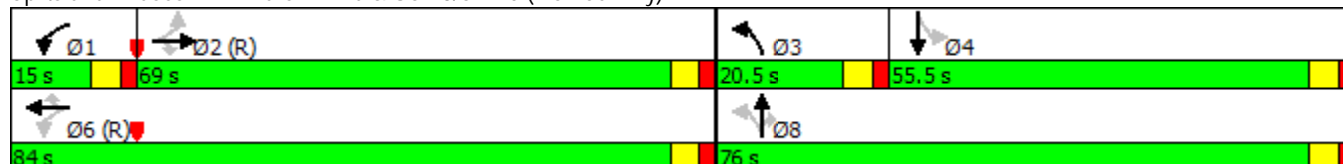
Existing PM
03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	11	894	132	148	1618	12	135	42	118	22	40
Future Volume (vph)	11	894	132	148	1618	12	135	42	118	22	40
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	69.0	69.0	69.0	15.0	84.0	84.0	20.5	76.0	76.0	55.5	55.5
Total Split (%)	43.1%	43.1%	43.1%	9.4%	52.5%	52.5%	12.8%	47.5%	47.5%	34.7%	34.7%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

























Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 145
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing PM
03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	894	132	148	1618	12	135	42	118	22	40	11
Future Volume (veh/h)	11	894	132	148	1618	12	135	42	118	22	40	11
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	16	961	143	164	1703	20	152	48	133	28	48	16
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	2394	1071	400	2660	1190	232	335	285	110	72	24
Arrive On Green	0.68	0.68	0.68	0.04	0.75	0.75	0.09	0.18	0.18	0.05	0.05	0.05
Sat Flow, veh/h	281	3539	1583	1774	3539	1583	1774	1863	1583	1198	1338	446
Grp Volume(v), veh/h	16	961	143	164	1703	20	152	48	133	28	0	64
Grp Sat Flow(s),veh/h/ln	281	1770	1583	1774	1770	1583	1774	1863	1583	1198	0	1784
Q Serve(g_s), s	4.6	19.3	5.1	4.4	36.9	0.5	12.6	3.5	12.0	3.6	0.0	5.6
Cycle Q Clear(g_c), s	29.5	19.3	5.1	4.4	36.9	0.5	12.6	3.5	12.0	3.6	0.0	5.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	191	2394	1071	400	2660	1190	232	335	285	110	0	96
V/C Ratio(X)	0.08	0.40	0.13	0.41	0.64	0.02	0.65	0.14	0.47	0.26	0.00	0.66
Avail Cap(c_a), veh/h	191	2394	1071	433	2660	1190	236	821	698	419	0	558
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.5	11.5	9.2	8.5	9.5	5.0	62.3	55.2	58.8	73.3	0.0	74.3
Incr Delay (d2), s/veh	0.9	0.5	0.3	0.7	1.2	0.0	6.2	0.2	1.2	1.2	0.0	7.6
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(95%),veh/ln	0.7	14.6	4.1	3.9	25.2	0.4	10.8	3.2	9.2	2.2	0.0	5.4
LnGrp Delay(d),s/veh	20.3	12.0	9.5	9.2	10.7	5.0	68.5	55.4	60.0	74.5	0.0	81.9
LnGrp LOS	C	B	A	A	B	A	E	E	E	E		F
Approach Vol, veh/h	1120				1887				333			
Approach Delay, s/veh	11.8				10.5				63.2			
Approach LOS	B				B				E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	6			8				
Phs Duration (G+Y+Rc), s	12.0	113.7	20.1	14.1	125.7			34.3				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5			5.5				
Max Green Setting (Gmax), s	9.5	63.5	15.0	50.0	78.5			70.5				
Max Q Clear Time (g_c+I1), s	6.4	31.5	14.6	7.6	38.9			14.0				
Green Ext Time (p_c), s	0.1	32.0	0.0	1.0	39.6			1.0				
Intersection Summary												
HCM 2010 Ctrl Delay	17.9											
HCM 2010 LOS	B											

Intersection

Int Delay, s/veh 1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	
Traffic Vol, veh/h	951	31	130	1634	19	86
Future Vol, veh/h	951	31	130	1634	19	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	78	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1001	40	148	1738	32	108

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1041
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	664
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	664
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	23.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	336	-	-	664	-
HCM Lane V/C Ratio	0.416	-	-	0.222	-
HCM Control Delay (s)	23.1	-	-	12	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	2	-	-	0.8	-

Notes

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

AASHTO LEFT-TURN LANE ANALYSIS

LEFT TURN LANE ANALYSIS per AASHTO standards

The following left turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are not located on State Routes.

7.3 Methodology

M.D. Harmelink utilized a probabilistic model to establish left turn lane warrants for two-lane and four-lane highways at unsignalized T-intersections. These warrants are the basis for AASHTO guidelines for justifying a left-turn lane at an unsignalized intersection. The warrants developed are in the form of sets of different volume combinations, specifically, the advancing volume, the percentage of left-turns in the advancing volume, and the opposing volume. These warrants are based on maximum allowable probabilities that one or more through vehicles are present in the queue formed by the left-turning vehicles that is waiting for a suitable gap. The warrants, as summarized by AASHTO, were developed for the approach speeds of 40, 50 and 60 mph and left turn volumes that are 5%, 10%, 20%, and 30% of the advancing stream.

AASHTO THRESHOLDS (EXHIBIT 9-75, PG 685), 40 MPH				
Opposing Volumes	Advancing Volumes (by left turn %)			
	5%	10.0%	20.0%	30.0%
100	720	515	390	340
200	640	470	350	305
400	510	380	275	245
600	410	305	225	200
800	330	240	180	160

An interpolation of the thresholds is needed for other volumes and percentages that are not in the AASHTO table for left turn percentages that are not represented in the table.

7.4 Results

A graphic of the peak hour turning movements for the site, as they relate to the AASHTO criteria are provided in the following figures.

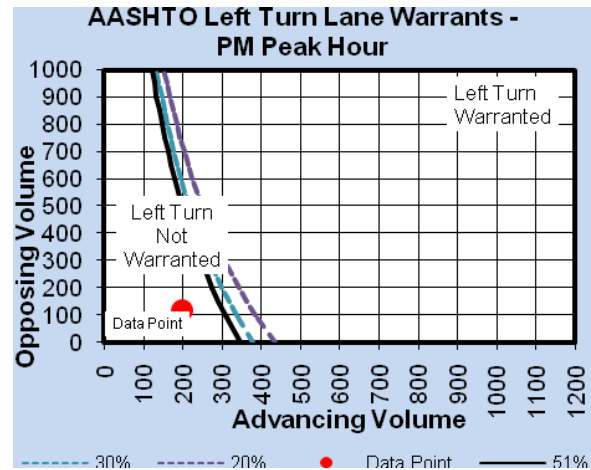
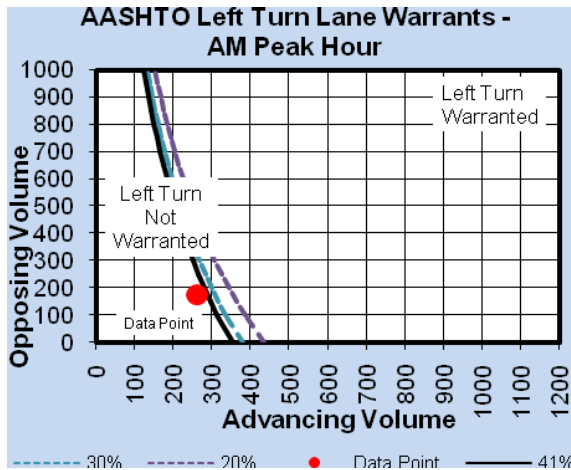


Figure 1 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 1 (N) Scenario 1 & 2

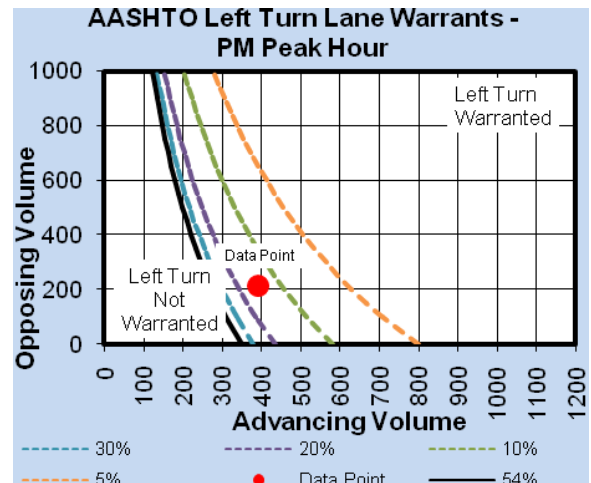
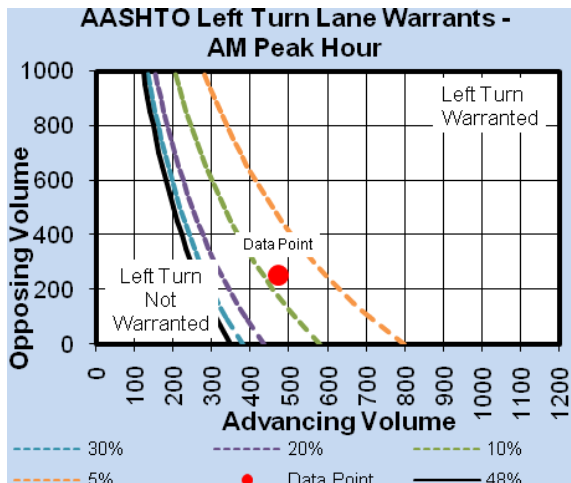


Figure 2 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Drwy 2 (M) – Scenario1 Phase II



Figure 3 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Drwy 2 (M) Scenario 1 Phase I

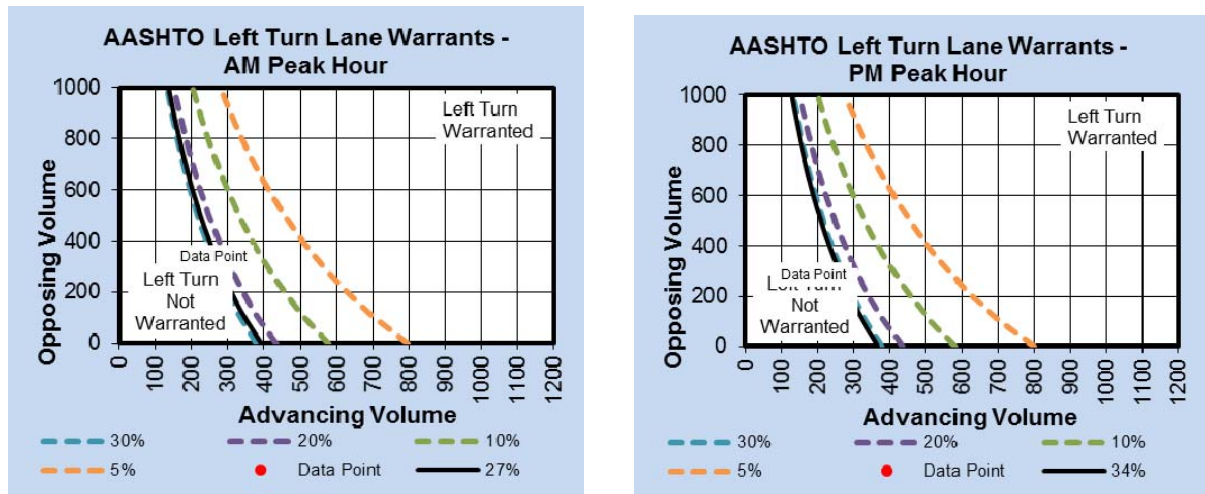


Figure 4 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 2 (M) - Scenario 2

7.5 Findings

The results of the analysis show that a left-turn lane is required at Site Driveway 2 (middle) only in Scenario 1 Phase II.

NCHRP 457 RIGHT TURN LANE ANALYSIS

RIGHT TURN LANE ANALYSIS per NCHRP 457 guidelines

The following right turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are not located on State Routes.

7.6 Methodology

Guidelines for determining when to provide a right-turn bay on the major road of a two-way stop-controlled intersection are provided in Hasan, T. and Stokes, R.W. "Guidelines for Right-Turn Treatments at Unsignalized Intersections and Driveways on Rural Highways" (Transportation Research Record 1579). These guidelines were based on an evaluation of the operating and collisions costs associated with the right turn maneuver relative to the cost of construction. The operating costs included those of road-user fuel and delay. Separate guidelines were developed for two-lane and four-lane roadways, which are found in the NCHRP Report 457 "Evaluating Intersection Improvements: An Engineering Study Guide".

7.7 Results

An evaluation of site traffic in relation to these guidelines is shown graphically in the following figures.

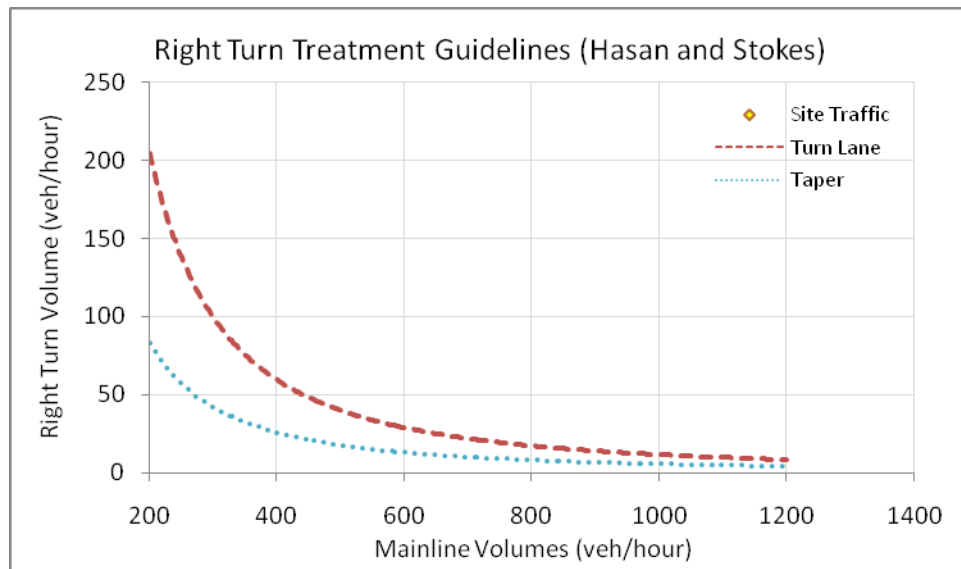


Figure 1 – NCHRP 457 Right Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 1 (N)

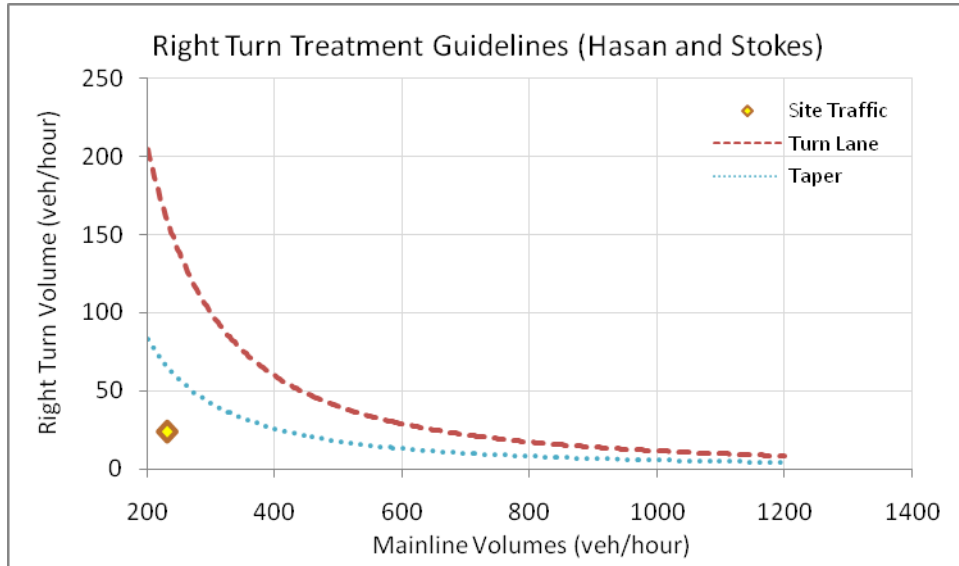


Figure 2 – NCHRP 457 Right Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 2 (M)

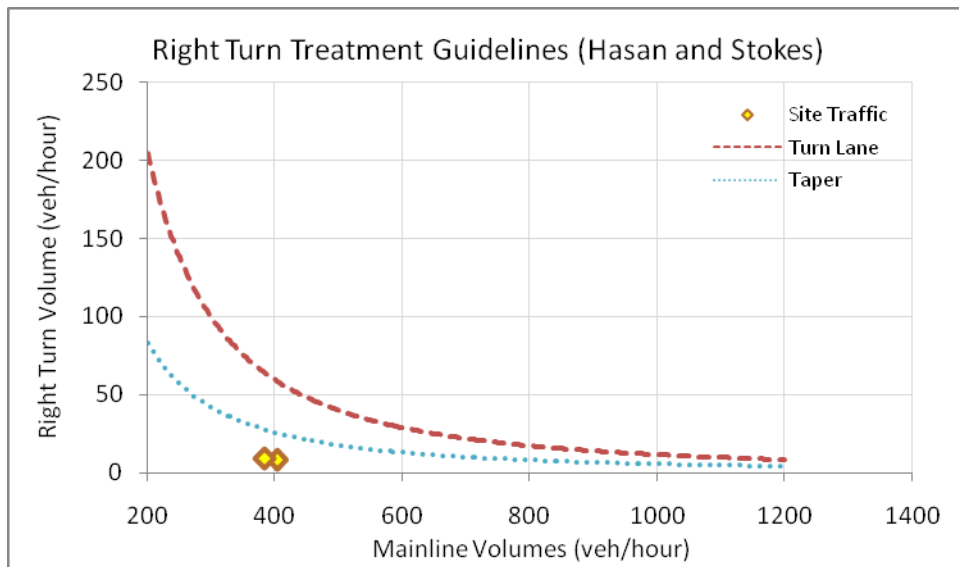


Figure 3 – NCHRP 457 Right Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 3 (S)

7.8 Findings

The low volumes and speeds on the roadway would lessen the need for deceleration outside of the through lane. Therefore, unless stopping sight distance (430 feet for 45 mph) is obstructed on the southbound approach, a right turn lane is not warranted on the mainline at all the three site driveways on Mars Hill Road using the criteria in the NCHRP Report 457.

RIGHT TURN LANE ANALYSIS **per GDOT standards**

The following right turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are located on State Routes.

GDOT standards require the installation of a deceleration lane on state routes at no cost to the department when traffic entering the development meets or exceeds the values shown in the following table.

GDOT REQUIREMENTS FOR DECELERATION LANES					
Site Driveway	Right Turn Traffic (% Total Entering)	Right Turn Volume (veh/day)	Roadway Speed / # Lanes	GDOT Threshold (veh/day)	Requirement
US 78/SR 10 (Monroe Hwy) @ Site Drwy 4 (E. RIRO)	18.7%	1,189	55 mph / 4-Lane	50	Warranted
US 78/SR 10 (Monroe Hwy) @ Site Drwy 5 (W. RIRO)	14.2%	903	55 mph / 4-Lane	50	Warranted

7.9 Findings

Based on the number of projected daily right turns the two proposed right-in/right-out driveways on US 78/SR 10 (Monroe Highway) will meet the GDOT requirements for construction of a deceleration lane.























**FUTURE “NO-BUILD” INTERSECTION
ANALYSIS**

Timings

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future 2020 No-Build AM

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	66	1445	415	170	789	41	212	27	119	40	87
Future Volume (vph)	66	1445	415	170	789	41	212	27	119	40	87
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	59.0	59.0	59.0	15.0	74.0	74.0	27.0	86.0	86.0	59.0	59.0
Total Split (%)	36.9%	36.9%	36.9%	9.4%	46.3%	46.3%	16.9%	53.8%	53.8%	36.9%	36.9%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160

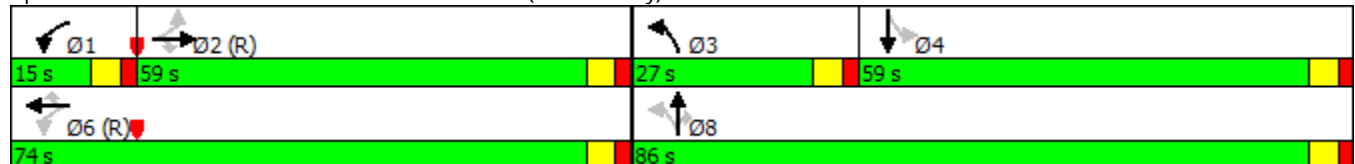
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future 2020 No-Build AM

03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	1445	415	170	789	41	212	27	119	40	87	13
Future Volume (veh/h)	66	1445	415	170	789	41	212	27	119	40	87	13
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	99	1661	638	179	867	69	268	52	132	74	116	17
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.67	0.87	0.65	0.95	0.91	0.59	0.79	0.52	0.90	0.54	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	380	2038	912	182	2370	1060	310	487	414	156	148	22
Arrive On Green	0.58	0.58	0.58	0.06	0.67	0.67	0.13	0.26	0.26	0.09	0.09	0.09
Sat Flow, veh/h	596	3539	1583	1774	3539	1583	1774	1863	1583	1195	1589	233
Grp Volume(v), veh/h	99	1661	638	179	867	69	268	52	132	74	0	133
Grp Sat Flow(s),veh/h/ln	596	1770	1583	1774	1770	1583	1774	1863	1583	1195	0	1822
Q Serve(g_s), s	13.9	60.0	45.8	9.2	17.2	2.4	21.5	3.4	10.7	9.6	0.0	11.4
Cycle Q Clear(g_c), s	16.1	60.0	45.8	9.2	17.2	2.4	21.5	3.4	10.7	9.6	0.0	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	380	2038	912	182	2370	1060	310	487	414	156	0	169
V/C Ratio(X)	0.26	0.81	0.70	0.98	0.37	0.07	0.86	0.11	0.32	0.47	0.00	0.79
Avail Cap(c_a), veh/h	380	2038	912	182	2370	1060	310	937	797	445	0	609
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.4	27.1	24.1	46.0	11.6	9.1	55.3	44.9	47.6	70.2	0.0	71.0
Incr Delay (d2), s/veh	1.7	3.7	4.5	61.0	0.4	0.1	21.4	0.1	0.4	2.2	0.0	7.8
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(95%),veh/ln	4.4	39.4	28.7	16.4	13.2	2.0	18.2	3.2	8.3	5.9	0.0	10.2
LnGrp Delay(d),s/veh	20.0	30.8	28.6	107.0	12.0	9.2	76.7	45.0	48.0	72.4	0.0	78.8
LnGrp LOS	C	C	C	F	B	A	E	D	D	E		E
Approach Vol, veh/h	2398			1115			452			207		
Approach Delay, s/veh	29.8			27.1			64.7			76.5		
Approach LOS	C			C			E			E		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	15.0	97.6	27.0	20.4		112.6		47.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	53.5	21.5	53.5		68.5		80.5				
Max Q Clear Time (g_c+I1), s	11.2	62.0	23.5	13.4		19.2		12.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.4		49.2		1.4				
Intersection Summary												
HCM 2010 Ctrl Delay	35.2											
HCM 2010 LOS	D											

Intersection						
Int Delay, s/veh	13.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	1754	57	90	979	14	138
Future Vol, veh/h	1754	57	90	979	14	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1993	81	141	1152	26	197

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	2075
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	264
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	264
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	191.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	182	-	-	264	-
HCM Lane V/C Ratio	1.226	-	-	0.533	-
HCM Control Delay (s)	191.7	-	-	33.2	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	12.1	-	-	2.9	-























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

Timings

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future 2020 No-Build PM

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	12	958	141	159	1733	13	145	45	126	24	43
Future Volume (vph)	12	958	141	159	1733	13	145	45	126	24	43
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	69.0	69.0	69.0	15.0	84.0	84.0	20.5	76.0	76.0	55.5	55.5
Total Split (%)	43.1%	43.1%	43.1%	9.4%	52.5%	52.5%	12.8%	47.5%	47.5%	34.7%	34.7%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160

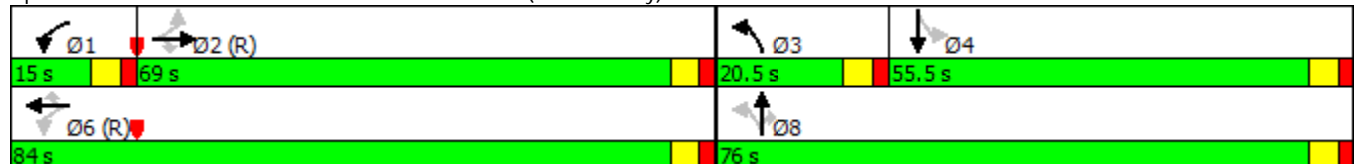
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future 2020 No-Build PM

03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	958	141	159	1733	13	145	45	126	24	43	12
Future Volume (veh/h)	12	958	141	159	1733	13	145	45	126	24	43	12
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	17	1030	153	177	1824	22	163	51	142	30	52	17
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	2363	1057	373	2640	1181	237	345	293	113	77	25
Arrive On Green	0.67	0.67	0.67	0.04	0.75	0.75	0.09	0.19	0.19	0.06	0.06	0.06
Sat Flow, veh/h	249	3539	1583	1774	3539	1583	1774	1863	1583	1185	1345	440
Grp Volume(v), veh/h	17	1030	153	177	1824	22	163	51	142	30	0	69
Grp Sat Flow(s),veh/h/ln	249	1770	1583	1774	1770	1583	1774	1863	1583	1185	0	1785
Q Serve(g_s), s	6.1	21.8	5.7	4.9	43.2	0.6	13.5	3.7	12.8	3.9	0.0	6.1
Cycle Q Clear(g_c), s	36.8	21.8	5.7	4.9	43.2	0.6	13.5	3.7	12.8	3.9	0.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	164	2363	1057	373	2640	1181	237	345	293	113	0	102
V/C Ratio(X)	0.10	0.44	0.14	0.47	0.69	0.02	0.69	0.15	0.48	0.27	0.00	0.68
Avail Cap(c_a), veh/h	164	2363	1057	401	2640	1181	237	821	698	415	0	558
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	12.5	9.8	9.6	10.7	5.2	61.9	54.6	58.3	73.0	0.0	74.0
Incr Delay (d2), s/veh	1.3	0.6	0.3	0.9	1.5	0.0	8.1	0.2	1.2	1.2	0.0	7.6
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(95%),veh/ln	0.9	16.2	4.6	4.4	28.9	0.5	11.5	3.5	9.7	2.4	0.0	5.8
LnGrp Delay(d),s/veh	24.9	13.0	10.1	10.5	12.2	5.3	70.0	54.8	59.6	74.2	0.0	81.6
LnGrp LOS	C	B	B	B	B	A	E	D	E	E		F
Approach Vol, veh/h	1200				2023				356			
Approach Delay, s/veh	12.8				11.9				63.7			
Approach LOS	B				B				E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.5	112.3	20.5	14.6		124.9		35.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	63.5	15.0	50.0		78.5		70.5				
Max Q Clear Time (g_c+I1), s	6.9	38.8	15.5	8.1		45.2		14.8				
Green Ext Time (p_c), s	0.1	24.6	0.0	1.1		33.2		1.1				
Intersection Summary												
HCM 2010 Ctrl Delay	19.1											
HCM 2010 LOS	B											

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	
Traffic Vol, veh/h	1019	33	139	1750	20	92
Future Vol, veh/h	1019	33	139	1750	20	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	78	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1073	42	158	1862	34	115
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1115	0	2341	557
Stage 1	-	-	-	-	1094	-
Stage 2	-	-	-	-	1247	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	622	-	~ 30	474
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	234	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	622	-	~ 22	474
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	175	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1		27.3		
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	307	-	-	622	-	
HCM Lane V/C Ratio	0.485	-	-	0.254	-	
HCM Control Delay (s)	27.3	-	-	12.7	-	
HCM Lane LOS	D	-	-	B	-	
HCM 95th %tile Q(veh)	2.5	-	-	1	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						























**FUTURE “BUILD” INTERSECTION ANALYSIS
(WITH IMPROVEMENTS)**

Timings

Future Build 2019 AM (Sc 1 - Phase I)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	237	1357	401	165	807	50	222	30	115	132	105
Future Volume (vph)	237	1357	401	165	807	50	222	30	115	132	105
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	70.0	70.0	70.0	15.0	85.0	85.0	19.5	75.0	75.0	55.5	55.5
Total Split (%)	43.8%	43.8%	43.8%	9.4%	53.1%	53.1%	12.2%	46.9%	46.9%	34.7%	34.7%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160

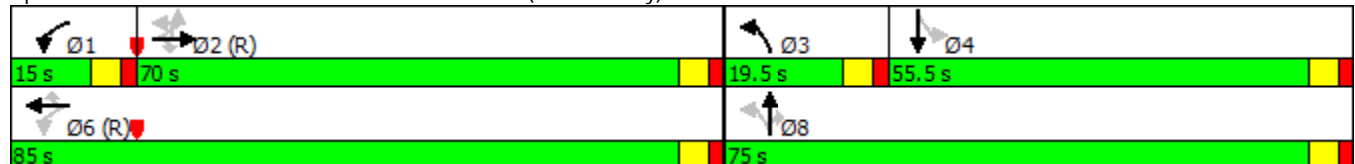
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)







HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2019 AM (Sc 1 - Phase I)

03/13/2019




																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	237	1357	401	165	807	50	222	30	115	132	105	28				
Future Volume (veh/h)	237	1357	401	165	807	50	222	30	115	132	105	28				
Number	5	2	12	1	6	16	3	8	18	7	4	14				
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				
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900				
Adj Flow Rate, veh/h	279	1475	617	179	877	59	261	40	128	155	124	33				
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0				
Peak Hour Factor	0.85	0.92	0.65	0.92	0.92	0.85	0.85	0.75	0.90	0.85	0.85	0.85				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	372	2012	900	199	2339	1047	282	503	428	225	211	56				
Arrive On Green	0.57	0.57	0.57	0.06	0.66	0.66	0.09	0.27	0.27	0.15	0.15	0.15				
Sat Flow, veh/h	596	3539	1583	1774	3539	1583	1774	1863	1583	1212	1419	378				
Grp Volume(v), veh/h	279	1475	617	179	877	59	261	40	128	155	0	157				
Grp Sat Flow(s),veh/h/ln	596	1770	1583	1774	1770	1583	1774	1863	1583	1212	0	1796				
Q Serve(g_s), s	63.5	49.3	44.1	7.3	17.9	2.1	14.0	2.6	10.3	20.0	0.0	13.1				
Cycle Q Clear(g_c), s	66.6	49.3	44.1	7.3	17.9	2.1	14.0	2.6	10.3	20.0	0.0	13.1				
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21				
Lane Grp Cap(c), veh/h	372	2012	900	199	2339	1047	282	503	428	225	0	267				
V/C Ratio(X)	0.75	0.73	0.69	0.90	0.37	0.06	0.93	0.08	0.30	0.69	0.00	0.59				
Avail Cap(c_a), veh/h	372	2012	900	201	2339	1047	282	809	688	424	0	561				
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00				
Uniform Delay (d), s/veh	30.6	25.5	24.4	35.6	12.2	9.6	58.8	43.5	46.3	66.5	0.0	63.6				
Incr Delay (d2), s/veh	13.0	2.4	4.2	36.8	0.5	0.1	34.4	0.1	0.4	3.7	0.0	2.1				
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(95%),veh/ln	17.3	32.8	27.6	15.0	13.7	1.7	18.1	2.4	8.0	11.3	0.0	10.9				
LnGrp Delay(d),s/veh	43.5	27.9	28.6	72.4	12.7	9.7	93.3	43.6	46.7	70.3	0.0	65.6				
LnGrp LOS	D	C	C	E	B	A	F	D	D	E		E				
Approach Vol, veh/h	2371				1115				429							
Approach Delay, s/veh	30.0				22.1				74.8							
Approach LOS	C				C				E							
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2	3	4			6	8								
Phs Duration (G+Y+Rc), s	14.8	96.5	19.5	29.2			111.3	48.7								
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5			5.5	5.5								
Max Green Setting (Gmax), s	9.5	64.5	14.0	50.0			79.5	69.5								
Max Q Clear Time (g_c+I1), s	9.3	68.6	16.0	22.0			19.9	12.3								
Green Ext Time (p_c), s	0.0	0.0	0.0	1.8			59.5	1.8								
Intersection Summary																
HCM 2010 Ctrl Delay	35.2															
HCM 2010 LOS	D															
Notes																

Intersection						
Int Delay, s/veh	14.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1735	55	179	987	13	145
Future Vol, veh/h	1735	55	179	987	13	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1972	79	280	1161	24	207
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2050	0	3151	1025
Stage 1	-	-	-	-	2011	-
Stage 2	-	-	-	-	1140	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	~ 270	-	~ 8	232
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	267	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	~ 270	-	0	232
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	0	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		20.5		103.2	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	232	-	-	~ 270	-	
HCM Lane V/C Ratio	0.997	-	-	1.036	-	
HCM Control Delay (s)	103.2	-	-	105.7	-	
HCM Lane LOS	F	-	-	F	-	
HCM 95th %tile Q(veh)	9.3	-	-	10.9	-	
Notes						
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	54	83	121	138	7
Future Vol, veh/h	18	54	83	121	138	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	59	90	233	184	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	601	188	192	0	-	0
Stage 1	188	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	463	854	1381	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	433	854	1381	-	-	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.9	2.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1381	-	687	-	-	
HCM Lane V/C Ratio	0.065	-	0.114	-	-	
HCM Control Delay (s)	7.8	-	10.9	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-	

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	84	0	204	181	11
Future Vol, veh/h	0	84	0	204	181	11
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	0	392	241	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 241	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.318	- -	- -
Pot Cap-1 Maneuver	0 798	0 -	- 0
Stage 1	0 -	0 -	- 0
Stage 2	0 -	0 -	- 0
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 798	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 798	-
HCM Lane V/C Ratio	- 0.114	-
HCM Control Delay (s)	- 10.1	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.4	-

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1994	982	241	0	185
Future Vol, veh/h	0	1994	982	241	0	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2292	1079	262	0	201

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

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























Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	486
HCM Lane V/C Ratio	-	-	0.414
HCM Control Delay (s)	-	-	17.5
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	2

Timings

Future Build 2019 PM (Sc 1 - Phase I)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	114	909	137	153	1715	22	140	62	122	88	60
Future Volume (vph)	114	909	137	153	1715	22	140	62	122	88	60
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	74.5	74.5	74.5	15.0	89.5	89.5	15.0	70.5	70.5	55.5	55.5
Total Split (%)	46.6%	46.6%	46.6%	9.4%	55.9%	55.9%	9.4%	44.1%	44.1%	34.7%	34.7%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160










Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)




























				
Ø1	Ø2 (R)		Ø3	Ø4
15 s	74.5 s		15 s	55.5 s
				
Ø6 (R)			Ø8	
89.5 s			70.5 s	

HCM Signalized Intersection Capacity Analysis

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2019 PM (Sc 1 - Phase I)




03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (vph)	114	909	137	153	1715	22	140	62	122	88	60	11
Future Volume (vph)	114	909	137	153	1715	22	140	62	122	88	60	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1817	
Flt Permitted	0.09	1.00	1.00	0.23	1.00	1.00	0.51	1.00	1.00	0.71	1.00	
Satd. Flow (perm)	169	3539	1583	426	3539	1583	944	1863	1583	1329	1817	
Peak-hour factor, PHF	0.94	0.93	0.92	0.90	0.95	0.60	0.92	0.92	0.89	0.85	0.90	0.82
Adj. Flow (vph)	121	977	149	170	1805	37	152	67	137	104	67	13
RTOR Reduction (vph)	0	0	41	0	0	10	0	0	109	0	5	0
Lane Group Flow (vph)	121	977	108	170	1805	27	152	67	28	104	75	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		
Actuated Green, G (s)	101.4	101.4	101.4	116.0	116.0	116.0	33.0	33.0	33.0	18.0	18.0	
Effective Green, g (s)	101.4	101.4	101.4	116.0	116.0	116.0	33.0	33.0	33.0	18.0	18.0	
Actuated g/C Ratio	0.63	0.63	0.63	0.72	0.72	0.72	0.21	0.21	0.21	0.11	0.11	
Clearance Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	107	2242	1003	385	2565	1147	243	384	326	149	204	
v/s Ratio Prot		0.28		0.03	c0.51		c0.04	0.04			0.04	
v/s Ratio Perm	c0.72		0.07	0.29		0.02	c0.09		0.02	0.08		
v/c Ratio	1.13	0.44	0.11	0.44	0.70	0.02	0.63	0.17	0.09	0.70	0.37	
Uniform Delay, d1	29.3	14.8	11.5	9.2	12.4	6.2	56.6	52.3	51.3	68.4	65.7	
Progression Factor	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	126.5	0.6	0.2	0.8	1.6	0.0	5.0	0.2	0.1	13.3	1.1	
Delay (s)	155.7	15.4	11.7	10.0	14.0	6.2	61.5	52.5	51.4	81.7	66.8	
Level of Service	F	B	B	A	B	A	E	D	D	F	E	
Approach Delay (s)		28.5			13.5			55.9			75.2	
Approach LOS		C			B			E			E	
Intersection Summary												
HCM 2000 Control Delay	25.4			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	1.03											
Actuated Cycle Length (s)	160.0			Sum of lost time (s)			22.0					
Intersection Capacity Utilization	88.1%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

Intersection							
Int Delay, s/veh	2.4						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↓	↑↑	↓	
Traffic Vol, veh/h	1022	32	39	145	1728	20	99
Future Vol, veh/h	1022	32	39	145	1728	20	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	-	0	2	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	78	92	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1076	41	42	165	1838	34	124
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	1116	1117	0	2429	558
Stage 1	-	-	-	-	-	1096	-
Stage 2	-	-	-	-	-	1333	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	280	621	-	~ 27	473
Stage 1	-	-	-	-	-	282	-
Stage 2	-	-	-	-	-	211	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	453	453	-	~ 27	473
Mov Cap-2 Maneuver	-	-	-	-	-	160	-
Stage 1	-	-	-	-	-	282	-
Stage 2	-	-	-	-	-	211	-
Approach	EB		WB		NB		
HCM Control Delay, s	0		2		25.2		
HCM LOS	D						
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	333	-	-	453	-		
HCM Lane V/C Ratio	0.473	-	-	0.457	-		
HCM Control Delay (s)	25.2	-	-	19.5	-		
HCM Lane LOS	D	-	-	C	-		
HCM 95th %tile Q(veh)	2.4	-	-	2.3	-		
Notes							
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	38	67	64	78	6
Future Vol, veh/h	12	38	67	64	78	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	41	73	73	94	7




Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	315	97	100
Stage 1	97	-	-
Stage 2	218	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	678	959	1493
Stage 1	927	-	-
Stage 2	818	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	643	959	1493
Mov Cap-2 Maneuver	643	-	-
Stage 1	927	-	-
Stage 2	776	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	3.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1493	-	858	-	-
HCM Lane V/C Ratio	0.049	-	0.063	-	-
HCM Control Delay (s)	7.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	51	0	131	110	7
Future Vol, veh/h	0	51	0	131	110	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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	55	0	149	133	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 133	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.318	- -	- -
Pot Cap-1 Maneuver	0 916	0 -	- 0
Stage 1	0 -	0 -	- 0
Stage 2	0 -	0 -	- 0
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 916	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 916	-
HCM Lane V/C Ratio	- 0.061	-
HCM Control Delay (s)	- 9.2	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.2	-

Intersection

Int Delay, s/veh 2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1159	1733	201	0	176
Future Vol, veh/h	0	1159	1733	201	0	176
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1246	1824	218	0	191

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	43
HCM LOS			E

























Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	276
HCM Lane V/C Ratio	-	-	0.693
HCM Control Delay (s)	-	-	43
HCM Lane LOS	-	-	E
HCM 95th %tile Q(veh)	-	-	4.7

Timings

Future Build 2022 AM (Sc 1 - Phases I & II)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

03/13/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	411	1552	463	182	999	102	285	51	127	192	133	67
Future Volume (vph)	411	1552	463	182	999	102	285	51	127	192	133	67
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5	55.5
Total Split (s)	29.0	69.0	69.0	16.0	56.0	56.0	29.5	57.5	57.5	17.5	45.5	45.5
Total Split (%)	18.1%	43.1%	43.1%	10.0%	35.0%	35.0%	18.4%	35.9%	35.9%	10.9%	28.4%	28.4%
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	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	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	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	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None

Intersection Summary

Cycle Length: 160

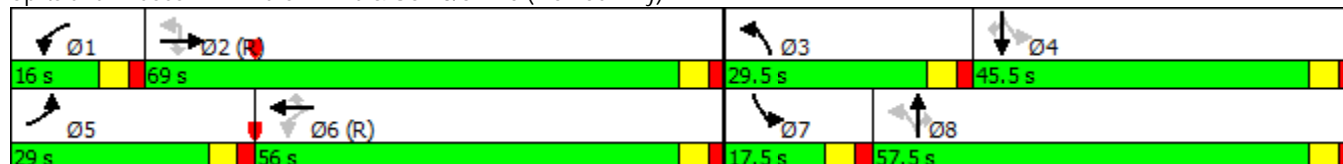
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTU and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2022 AM (Sc 1 - Phases I & II)

03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	411	1552	463	182	999	102	285	51	127	192	133	67
Future Volume (veh/h)	411	1552	463	182	999	102	285	51	127	192	133	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	447	1687	503	192	1098	173	310	55	141	209	177	89
Adj No. of Lanes	2	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.95	0.91	0.59	0.92	0.92	0.90	0.92	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	1881	842	180	1612	721	336	354	301	314	215	183
Arrive On Green	0.14	0.53	0.53	0.07	0.46	0.46	0.15	0.19	0.19	0.08	0.12	0.12
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	447	1687	503	192	1098	173	310	55	141	209	177	89
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	20.5	68.3	34.9	10.5	39.2	10.7	24.0	3.9	12.7	12.0	14.9	8.4
Cycle Q Clear(g_c), s	20.5	68.3	34.9	10.5	39.2	10.7	24.0	3.9	12.7	12.0	14.9	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	488	1881	842	180	1612	721	336	354	301	314	215	183
V/C Ratio(X)	0.92	0.90	0.60	1.07	0.68	0.24	0.92	0.16	0.47	0.66	0.82	0.49
Avail Cap(c_a), veh/h	505	1881	842	180	1612	721	336	605	515	314	466	396
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.7	33.5	25.7	44.9	34.4	26.6	52.0	54.0	57.6	59.9	69.2	66.3
Incr Delay (d2), s/veh	21.0	7.2	3.1	85.7	2.3	0.8	30.2	0.2	1.1	5.2	7.7	2.0
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(95%),veh/ln	16.7	44.9	22.5	22.0	26.8	8.4	21.0	3.7	9.6	13.4	12.8	6.8
LnGrp Delay(d),s/veh	88.7	40.7	28.8	130.6	36.8	27.4	82.2	54.3	58.7	65.1	76.9	68.4
LnGrp LOS	F	D	C	F	D	C	F	D	E	E	E	E
Approach Vol, veh/h	2637			1463				506			475	
Approach Delay, s/veh	46.6			48.0				72.6			70.1	
Approach LOS	D			D				E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	90.6	29.5	23.9	28.2	78.4	17.5	35.9				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	10.5	63.5	24.0	40.0	23.5	50.5	12.0	52.0				
Max Q Clear Time (g_c+I1), s	12.5	70.3	26.0	16.9	22.5	41.2	14.0	14.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.2	9.3	0.0	1.7				
Intersection Summary												
HCM 2010 Ctrl Delay	51.8											
HCM 2010 LOS	D											
Notes												

Intersection						
Int Delay, s/veh	89.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑↑	↑↑	↑↑	
Traffic Vol, veh/h	2036	61	289	1165	15	190
Future Vol, veh/h	2036	61	289	1165	15	190
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2314	87	452	1371	28	271

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2401	0	3945	1200
Stage 1	-	-	-	-	2357	-
Stage 2	-	-	-	-	1588	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	~ 196	-	~ 1	~ 177
Stage 1	-	-	-	-	57	-
Stage 2	-	-	-	-	312	-
Platoon blocked, %	-	-	-	-	1	-
Mov Cap-1 Maneuver	-	-	~ 196	-	0	~ 177
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	57	-
Stage 2	-	-	-	-	0	-




Approach	EB	WB	NB
HCM Control Delay, s	0	158.8	\$ 379.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	177	-	-	~ 196	-
HCM Lane V/C Ratio	1.69	-	-	2.304	-
HCM Control Delay (s)	\$ 379.7	-	-	\$ 641	-
HCM Lane LOS	F	-	-	F	-
HCM 95th %tile Q(veh)	20.7	-	-	36.6	-

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

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	53	58	161	180	6
Future Vol, veh/h	10	53	58	161	180	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	58	63	310	240	7





Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	679	243	247
Stage 1	243	-	-
Stage 2	436	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	417	796	1319
Stage 1	797	-	-
Stage 2	652	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	393	796	1319
Mov Cap-2 Maneuver	393	-	-
Stage 1	797	-	-
Stage 2	614	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1319	-	685	-	-
HCM Lane V/C Ratio	0.048	-	0.1	-	-
HCM Control Delay (s)	7.9	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection

Int Delay, s/veh 4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	106	201	192	211	22
Future Vol, veh/h	28	106	201	192	211	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	115	218	369	281	24




Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1099	293	305
Stage 1	293	-	-
Stage 2	806	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	235	746	1256
Stage 1	757	-	-
Stage 2	439	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	194	746	1256
Mov Cap-2 Maneuver	194	-	-
Stage 1	757	-	-
Stage 2	363	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	3.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1256	-	468	-	-
HCM Lane V/C Ratio	0.174	-	0.311	-	-
HCM Control Delay (s)	8.5	-	16.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.6	-	1.3	-	-

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	84	0	392	306	11
Future Vol, veh/h	0	84	0	392	306	11
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	91	0	754	408	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 408	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.23	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.319	- -	- -
Pot Cap-1 Maneuver	0 642	0 -	- 0
Stage 1	0 -	0 -	- 0
Stage 2	0 -	0 -	- 0
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 642	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 642	-
HCM Lane V/C Ratio	- 0.142	-
HCM Control Delay (s)	- 11.5	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.5	-

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2425	1251	328	0	238
Future Vol, veh/h	0	2425	1251	328	0	238
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2787	1375	357	0	259

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

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	389
HCM Lane V/C Ratio	-	-	0.665
HCM Control Delay (s)	-	-	30.8
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	4.6

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2389	1349	140	0	104
Future Vol, veh/h	0	2389	1349	140	0	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2746	1482	152	0	113

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	-	0	-	0	-	741
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	0	359
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	-	359
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19.6
HCM LOS			C

























Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	359
HCM Lane V/C Ratio	-	-	0.315
HCM Control Delay (s)	-	-	19.6
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.3

Timings

Future Build 2022 PM (Sc 1 - Phases I & II)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

03/13/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	1073	178	170	1998	67	208	68	135	171	92	75
Future Volume (vph)	318	1073	178	170	1998	67	208	68	135	171	92	75
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5	55.5
Total Split (s)	25.0	71.0	71.0	32.0	78.0	78.0	21.5	39.0	39.0	18.0	35.5	35.5
Total Split (%)	15.6%	44.4%	44.4%	20.0%	48.8%	48.8%	13.4%	24.4%	24.4%	11.3%	22.2%	22.2%
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	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	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	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	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None

Intersection Summary

Cycle Length: 160











Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTU and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

				
32 s	71 s	21.5 s	35.5 s	
				
25 s	78 s	18 s	39 s	




HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2022 PM (Sc 1 - Phases I & II)

03/13/2019






												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	318	1073	178	170	1998	67	208	68	135	171	92	75
Future Volume (veh/h)	318	1073	178	170	1998	67	208	68	135	171	92	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	335	1129	193	170	2103	67	226	74	152	186	100	82
Adj No. of Lanes	2	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.92	1.00	0.95	1.00	0.92	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	379	2172	972	323	1980	886	272	213	181	273	173	147
Arrive On Green	0.11	0.61	0.61	0.06	0.56	0.56	0.10	0.11	0.11	0.08	0.09	0.09
Sat Flow, veh/h	3442	3539	1583	1774	3539	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	335	1129	193	170	2103	67	226	74	152	186	100	82
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1774	1770	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	15.4	28.9	8.6	6.5	89.5	3.1	16.0	5.9	15.0	12.5	8.2	7.9
Cycle Q Clear(g_c), s	15.4	28.9	8.6	6.5	89.5	3.1	16.0	5.9	15.0	12.5	8.2	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	379	2172	972	323	1980	886	272	213	181	273	173	147
V/C Ratio(X)	0.88	0.52	0.20	0.53	1.06	0.08	0.83	0.35	0.84	0.68	0.58	0.56
Avail Cap(c_a), veh/h	419	2172	972	518	1980	886	272	390	332	273	349	297
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.2	17.5	13.6	15.3	35.2	16.2	61.4	65.3	69.4	62.1	69.6	69.4
Incr Delay (d2), s/veh	18.2	0.9	0.5	1.3	39.0	0.2	19.2	1.0	9.8	6.7	3.0	3.3
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(95%),veh/ln	13.0	20.6	7.0	5.9	97.5	2.5	15.8	5.5	11.4	12.6	7.8	6.5
LnGrp Delay(d),s/veh	88.4	18.4	14.0	16.6	74.3	16.4	80.5	66.3	79.1	68.8	72.6	72.7
LnGrp LOS	F	B	B	B	F	B	F	E	E	E	E	E
Approach Vol, veh/h		1657			2340			452			368	
Approach Delay, s/veh		32.0			68.4			77.7			70.7	
Approach LOS		C			E			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.5	103.7	21.5	20.3	23.1	95.0	18.0	23.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	26.5	65.5	16.0	30.0	19.5	72.5	12.5	33.5				
Max Q Clear Time (g_c+I1), s	8.5	30.9	18.0	10.2	17.4	91.5	14.5	17.0				
Green Ext Time (p_c), s	0.4	34.5	0.0	1.4	0.3	0.0	0.0	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			57.0									
HCM 2010 LOS			E									
Notes												

Intersection						
Int Delay, s/veh	21.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑↑	↑↑	↑↑	
Traffic Vol, veh/h	1237	36	381	2019	22	138
Future Vol, veh/h	1237	36	381	2019	22	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	78	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1302	46	433	2148	37	173
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1348	0	3265	674
Stage 1	-	-	-	-	1325	-
Stage 2	-	-	-	-	1940	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	507	-	*~ 0	397
Stage 1	-	-	-	-	*213	-
Stage 2	-	-	-	-	*250	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	507	-	*0	397
Mov Cap-2 Maneuver	-	-	-	-	*~ 33	-
Stage 1	-	-	-	-	*213	-
Stage 2	-	-	-	-	*~ 36	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		6.9		\$ 346.5	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	134	-	-	507	-	
HCM Lane V/C Ratio	1.566	-	-	0.854	-	
HCM Control Delay (s)	\$ 346.5	-	-	41	-	
HCM Lane LOS	F	-	-	E	-	
HCM 95th %tile Q(veh)	14.8	-	-	8.9	-	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	78	58	95	111	7
Future Vol, veh/h	15	78	58	95	111	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	85	63	108	134	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	372	138	141	0	-	0
Stage 1	138	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	629	910	1442	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	600	910	1442	-	-	-
Mov Cap-2 Maneuver	600	-	-	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.9	2.8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1442	-	840	-	-	
HCM Lane V/C Ratio	0.044	-	0.12	-	-	
HCM Control Delay (s)	7.6	0	9.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	

Intersection

Int Delay, s/veh 4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	115	162	126	166	23
Future Vol, veh/h	27	115	162	126	166	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	125	176	143	200	25





Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	708	213	225
Stage 1	213	-	-
Stage 2	495	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	401	827	1344
Stage 1	823	-	-
Stage 2	613	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	348	827	1344
Mov Cap-2 Maneuver	348	-	-
Stage 1	823	-	-
Stage 2	533	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	4.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1344	-	655	-	-
HCM Lane V/C Ratio	0.131	-	0.236	-	-
HCM Control Delay (s)	8.1	-	12.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.9	-	-

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	289	274	7
Future Vol, veh/h	0	65	0	289	274	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	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	71	0	328	330	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 330	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.23	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.319	- -	- -
Pot Cap-1 Maneuver	0 711	0 -	- 0
Stage 1	0 -	0 -	- 0
Stage 2	0 -	0 -	- 0
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 711	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 711	-
HCM Lane V/C Ratio	- 0.099	-
HCM Control Delay (s)	- 10.6	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.3	-

Intersection

Int Delay, s/veh 21.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1568	2100	346	0	285
Future Vol, veh/h	0	1568	2100	346	0	285
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1686	2211	376	0	310

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 1105
Stage 1	-	-	- -
Stage 2	-	-	- -
Critical Hdwy	-	-	- 6.94
Critical Hdwy Stg 1	-	-	- -
Critical Hdwy Stg 2	-	-	- -
Follow-up Hdwy	-	-	- 3.32
Pot Cap-1 Maneuver	0	-	0 ~ 205
Stage 1	0	-	0 -
Stage 2	0	-	0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- ~ 205
Mov Cap-2 Maneuver	-	-	- -
Stage 1	-	-	- -
Stage 2	-	-	- -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	296.2
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	205
HCM Lane V/C Ratio	-	-	1.511
HCM Control Delay (s)	-	-	296.2
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	19.2

Notes

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

Intersection

Int Delay, s/veh 13.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1568	2160	226	0	239
Future Vol, veh/h	0	1568	2160	226	0	239
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1686	2274	246	0	260

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 1137
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	- 6.94
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	- 3.32
Pot Cap-1 Maneuver	0	-	0 ~ 196
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- ~ 196
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	224.3
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	196
HCM Lane V/C Ratio	-	-	1.325
HCM Control Delay (s)	-	-	224.3
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	14.6























Notes

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

Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 2)

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	184	1537	433	170	959	83	236	83	119	102	128
Future Volume (vph)	184	1537	433	170	959	83	236	83	119	102	128
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5
Total Split (s)	26.0	59.0	59.0	23.0	56.0	56.0	27.0	57.5	57.5	20.5	51.0
Total Split (%)	16.3%	36.9%	36.9%	14.4%	35.0%	35.0%	16.9%	35.9%	35.9%	12.8%	31.9%
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	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	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160

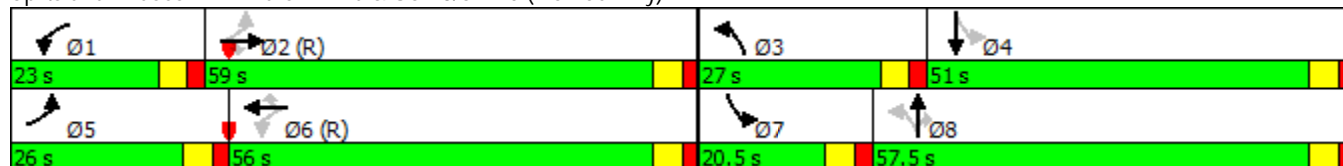
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)











HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 2)




03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	1537	433	170	959	83	236	83	119	102	128	44
Future Volume (veh/h)	184	1537	433	170	959	83	236	83	119	102	128	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	200	1671	471	179	1054	141	257	98	132	120	171	52
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.91	0.59	0.92	0.85	0.90	0.85	0.75	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	1783	798	201	1827	817	307	386	328	334	198	60
Arrive On Green	0.07	0.50	0.50	0.08	0.52	0.52	0.13	0.21	0.21	0.07	0.14	0.14
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	1774	1372	417
Grp Volume(v), veh/h	200	1671	471	179	1054	141	257	98	132	120	0	223
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1789
Q Serve(g_s), s	8.7	71.0	33.6	10.9	32.8	7.6	19.3	7.0	11.5	9.1	0.0	19.5
Cycle Q Clear(g_c), s	8.7	71.0	33.6	10.9	32.8	7.6	19.3	7.0	11.5	9.1	0.0	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	313	1783	798	201	1827	817	307	386	328	334	0	258
V/C Ratio(X)	0.64	0.94	0.59	0.89	0.58	0.17	0.84	0.25	0.40	0.36	0.00	0.87
Avail Cap(c_a), veh/h	417	1783	798	250	1827	817	309	605	515	376	0	509
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	37.3	28.0	49.6	26.7	20.6	49.0	53.1	54.8	53.0	0.0	67.0
Incr Delay (d2), s/veh	2.2	10.9	3.2	26.4	1.3	0.5	18.0	0.3	0.8	0.7	0.0	8.5
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(95%),veh/ln	7.9	47.3	21.8	14.3	22.9	6.1	16.3	6.6	8.8	8.0	0.0	15.5
LnGrp Delay(d),s/veh	23.8	48.2	31.2	76.0	28.0	21.0	67.0	53.4	55.6	53.7	0.0	75.4
LnGrp LOS	C	D	C	E	C	C	E	D	E	D		E
Approach Vol, veh/h		2342			1374			487			343	
Approach Delay, s/veh		42.7			33.5			61.2			67.8	
Approach LOS		D			C			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.5	86.1	26.8	28.6	16.6	88.1	16.7	38.7				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	17.5	53.5	21.5	45.5	20.5	50.5	15.0	52.0				
Max Q Clear Time (g_c+I1), s	12.9	73.0	21.3	21.5	10.7	34.8	11.1	13.5				
Green Ext Time (p_c), s	0.2	0.0	0.0	1.6	0.4	15.7	0.1	1.6				
Intersection Summary												
HCM 2010 Ctrl Delay			43.8									
HCM 2010 LOS			D									
Notes												

Intersection												
Int Delay, s/veh	15.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	180	1734	57	236	1037	33	14	42	138	114	19	59
Future Vol, veh/h	180	1734	57	236	1037	33	14	42	138	114	19	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	365	-	-	385	-	200	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	80	64	85	92	54	92	70	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	196	1885	71	369	1220	36	26	46	197	124	21	64
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1220	0	0	1956	0	0	3670	4270	978	3315	4305	610
Stage 1	-	-	-	-	-	-	2312	2312	-	1958	1958	-
Stage 2	-	-	-	-	-	-	1358	1958	-	1357	2347	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	919	-	-	~ 294	-	-	~ 1	~ 1	250	~ 1	0	*663
Stage 1	-	-	-	-	-	-	39	71	-	~ 105	141	-
Stage 2	-	-	-	-	-	-	409	141	-	157	68	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	919	-	-	~ 294	-	-	-	0	250	-	0	*663
Mov Cap-2 Maneuver	-	-	-	-	-	-	28	48	-	~ 73	0	-
Stage 1	-	-	-	-	-	-	31	56	-	~ 82	0	-
Stage 2	-	-	-	-	-	-	-	0	-	~ 5	53	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			39.8								
HCM LOS							-			-		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	-	919	-	-	~ 294	-	-	-	663			
HCM Lane V/C Ratio	-	0.213	-	-	1.254	-	-	-	0.097			
HCM Control Delay (s)	-	10	-	-	175.4	-	-	-	11			
HCM Lane LOS	-	A	-	-	F	-	-	-	B			
HCM 95th %tile Q(veh)	-	0.8	-	-	17.3	-	-	-	0.3			
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	39	37	148	171	6
Future Vol, veh/h	14	39	37	148	171	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	42	40	285	228	7






Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	596	231	235
Stage 1	231	-	-
Stage 2	365	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	466	808	1332
Stage 1	807	-	-
Stage 2	702	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	449	808	1332
Mov Cap-2 Maneuver	449	-	-
Stage 1	807	-	-
Stage 2	677	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1332	-	667	-	-
HCM Lane V/C Ratio	0.03	-	0.086	-	-
HCM Control Delay (s)	7.8	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	23	65	94	162	186	24
Future Vol, veh/h	23	65	94	162	186	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	71	102	312	248	26




Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	777	261	274
Stage 1	261	-	-
Stage 2	516	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	365	778	1289
Stage 1	783	-	-
Stage 2	599	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	336	778	1289
Mov Cap-2 Maneuver	336	-	-
Stage 1	783	-	-
Stage 2	552	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1289	-	579	-	-
HCM Lane V/C Ratio	0.079	-	0.165	-	-
HCM Control Delay (s)	8	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	32	0	256	241	11
Future Vol, veh/h	0	32	0	256	241	11
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	35	0	492	321	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 321	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.318	- -	- -
Pot Cap-1 Maneuver	0 720	0 -	- 0
Stage 1	0 -	0 -	- 0
Stage 2	0 -	0 -	- 0
Platoon blocked, %		- -	
Mov Cap-1 Maneuver	- 720	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 720	-
HCM Lane V/C Ratio	- 0.048	-
HCM Control Delay (s)	- 10.3	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.2	-

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2155	1195	193	0	129
Future Vol, veh/h	0	2155	1195	193	0	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2477	1313	210	0	140

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	407
HCM Lane V/C Ratio	-	-	0.345
HCM Control Delay (s)	-	-	18.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.5

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2121	1177	147	0	129
Future Vol, veh/h	0	2121	1177	147	0	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2438	1293	160	0	140

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 647
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 414
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 414
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.1
HCM LOS			C























Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	414
HCM Lane V/C Ratio	-	-	0.339
HCM Control Delay (s)	-	-	18.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.5

Timings

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 2)

03/13/2019

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	117	1074	163	159	1890	52	167	96	126	101	94
Future Volume (vph)	117	1074	163	159	1890	52	167	96	126	101	94
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5
Total Split (s)	26.0	67.0	67.0	15.0	56.0	56.0	27.0	57.5	57.5	20.5	51.0
Total Split (%)	16.3%	41.9%	41.9%	9.4%	35.0%	35.0%	16.9%	35.9%	35.9%	12.8%	31.9%
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	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	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?											
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 160

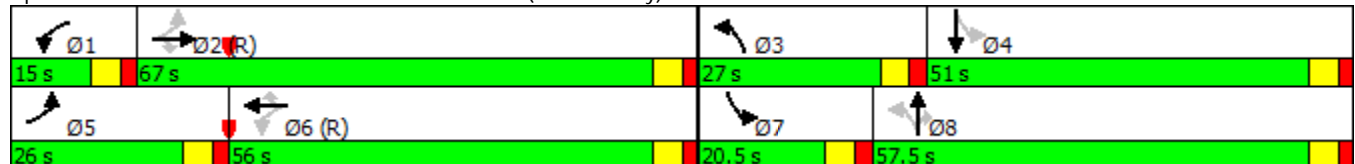
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

























Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)











HCM 2010 Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 2)




03/13/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	1074	163	159	1890	52	167	96	126	101	94	48
Future Volume (veh/h)	117	1074	163	159	1890	52	167	96	126	101	94	48
Number	5	2	12	1	6	16	3	8	18	7	4	14
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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	138	1155	177	177	1989	87	182	104	142	119	111	59
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	0
Peak Hour Factor	0.85	0.93	0.92	0.90	0.95	0.60	0.92	0.92	0.89	0.85	0.85	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	2091	935	300	2067	925	253	275	234	281	133	71
Arrive On Green	0.06	0.59	0.59	0.05	0.58	0.58	0.10	0.15	0.15	0.07	0.12	0.12
Sat Flow, veh/h	1774	3539	1583	1774	3539	1583	1774	1863	1583	1774	1146	609
Grp Volume(v), veh/h	138	1155	177	177	1989	87	182	104	142	119	0	170
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1583	1774	1863	1583	1774	0	1755
Q Serve(g_s), s	7.3	31.7	8.2	6.4	85.4	3.9	14.1	8.1	13.4	9.3	0.0	15.2
Cycle Q Clear(g_c), s	7.3	31.7	8.2	6.4	85.4	3.9	14.1	8.1	13.4	9.3	0.0	15.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	161	2091	935	300	2067	925	253	275	234	281	0	204
V/C Ratio(X)	0.86	0.55	0.19	0.59	0.96	0.09	0.72	0.38	0.61	0.42	0.00	0.83
Avail Cap(c_a), veh/h	282	2091	935	311	2067	925	310	605	515	321	0	499
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.7	19.9	15.1	16.9	31.6	14.6	54.1	61.6	63.9	56.6	0.0	69.2
Incr Delay (d2), s/veh	12.2	1.1	0.4	2.8	12.7	0.2	6.2	0.9	2.5	1.0	0.0	8.5
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(95%),veh/ln	10.8	22.2	6.7	6.0	56.1	3.1	11.7	7.6	10.1	8.2	0.0	12.4
LnGrp Delay(d),s/veh	61.9	20.9	15.5	19.6	44.3	14.8	60.3	62.4	66.4	57.7	0.0	77.6
LnGrp LOS	E	C	B	B	D	B	E	E	E	E		E
Approach Vol, veh/h		1470			2253			428			289	
Approach Delay, s/veh		24.1			41.2			62.9			69.4	
Approach LOS		C			D			E			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	100.0	21.9	24.1	15.0	99.0	16.9	29.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	61.5	21.5	45.5	20.5	50.5	15.0	52.0				
Max Q Clear Time (g_c+I1), s	8.4	33.7	16.1	17.2	9.3	87.4	11.3	15.4				
Green Ext Time (p_c), s	0.1	27.7	0.3	1.5	0.3	0.0	0.1	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay			39.5									
HCM 2010 LOS			D									
Notes												

Intersection												
Int Delay, s/veh	126.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	1006	33	294	1803	54	20	39	92	115	23	92
Future Vol, veh/h	160	1006	33	294	1803	54	20	39	92	115	23	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	365	-	-	385	-	200	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	78	88	94	92	59	92	80	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	1059	42	334	1918	59	34	42	115	125	25	100
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1918	0	0	1101	0	0	3068	4014	551	3484	4035	959
Stage 1	-	-	-	-	-	-	1428	1428	-	2586	2586	-
Stage 2	-	-	-	-	-	-	1640	2586	-	898	1449	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	*538	-	-	630	-	-	*~ 1	0	478	0	0	*359
Stage 1	-	-	-	-	-	-	*142	199	-	~ 30	46	-
Stage 2	-	-	-	-	-	-	*339	46	-	301	194	-
Platoon blocked, %	1	-	-	-	-	-	1	1	-	1	1	1
Mov Cap-1 Maneuver	*538	-	-	630	-	-	*0	0	478	0	0	*359
Mov Cap-2 Maneuver	-	-	-	-	-	-	*194	1102	-	~ 20	~ 23	-
Stage 1	-	-	-	-	-	-	*96	135	-	~ 20	~ 22	-
Stage 2	-	-	-	-	-	-	-	~ 22	-	~ 106	131	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2			2.5			20.4			\$ 1990.4		
HCM LOS							C			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	422	* 538	-	-	630	-	-	20	359			
HCM Lane V/C Ratio	0.453	0.323	-	-	0.53	-	-	7.5	0.279			
HCM Control Delay (s)	20.4	14.9	-	-	17	-	-	\$ 3304.7	18.9			
HCM Lane LOS	C	B	-	-	C	-	-	F	C			
HCM 95th %tile Q(veh)	2.3	1.4	-	-	3.1	-	-	19.2	1.1			
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	48	34	87	107	5
Future Vol, veh/h	17	48	34	87	107	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	52	37	99	129	5






Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	305	132	134
Stage 1	132	-	-
Stage 2	173	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	687	917	1451
Stage 1	894	-	-
Stage 2	857	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	668	917	1451
Mov Cap-2 Maneuver	668	-	-
Stage 1	894	-	-
Stage 2	834	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	2.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1451	-	836	-	-
HCM Lane V/C Ratio	0.025	-	0.085	-	-
HCM Control Delay (s)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	78	85	97	135	20
Future Vol, veh/h	24	78	85	97	135	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	85	92	110	163	22




Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	469	174	184
Stage 1	174	-	-
Stage 2	295	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	553	869	1391
Stage 1	856	-	-
Stage 2	755	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	516	869	1391
Mov Cap-2 Maneuver	516	-	-
Stage 1	856	-	-
Stage 2	705	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1391	-	749	-	-
HCM Lane V/C Ratio	0.066	-	0.148	-	-
HCM Control Delay (s)	7.8	-	10.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	41	0	183	201	12
Future Vol, veh/h	0	41	0	183	201	12
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	0	208	242	13

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 242	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.318	- -	- -
Pot Cap-1 Maneuver	0 797	0 -	- 0
Stage 1	0 -	0 -	- 0
Stage 2	0 -	0 -	- 0
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 797	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 797	-
HCM Lane V/C Ratio	- 0.056	-
HCM Control Delay (s)	- 9.8	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.2	-

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1353	1958	230	0	191
Future Vol, veh/h	0	1353	1958	230	0	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1455	2061	250	0	208

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1031
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 230
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 230
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	81.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	230
HCM Lane V/C Ratio	-	-	0.903
HCM Control Delay (s)	-	-	81.4
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	7.5

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1353	1961	188	0	191
Future Vol, veh/h	0	1353	1961	188	0	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1455	2064	204	0	208

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 1032
Stage 1	-	-	- -
Stage 2	-	-	- -
Critical Hdwy	-	-	- 6.94
Critical Hdwy Stg 1	-	-	- -
Critical Hdwy Stg 2	-	-	- -
Follow-up Hdwy	-	-	- 3.32
Pot Cap-1 Maneuver	0	-	0 0 230
Stage 1	0	-	0 0 -
Stage 2	0	-	0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- 230
Mov Cap-2 Maneuver	-	-	- -
Stage 1	-	-	- -
Stage 2	-	-	- -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	81.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	230
HCM Lane V/C Ratio	-	-	0.903
HCM Control Delay (s)	-	-	81.4
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	7.5

T R A F F I C V O L U M E W O R K S H E E T S

18-168 Bogart Tract Traffic Study
Traffic Volumes
Future Conditions

A&R Engineering
March 2019

1. US 78 @ Mars Hill
A.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	198	25	111	334	0	37	81	12	130	0	62	1349	387	1798	0	159	737	38	934
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build 2019 Volumes:	0	205	26	115	346	0	38	84	12	134	0	64	1396	401	1861	0	165	763	39	967
No-Build 2020 Volumes:	0	212	27	119	358	0	40	87	13	140	0	66	1445	415	1926	0	170	789	41	1000
No-Build 2022 Volumes:	0	227	29	127	383	0	42	93	14	149	0	71	1548	444	2063	0	182	846	44	1072
New Trips (Scenario1, Phase I):	0	0	21	0	21	0	55	21	0	76	31	21	0	0	52	0	0	44	11	55
Pass-by Trips (Scenario1, Phase I):	0	0	0	0	0	0	39	0	0	39	82	39	-39	0	82	0	0	0	0	0
New Trips (Scenario1, Phase II):	0	41	18	0	59	0	50	19	37	106	44	103	50	19	216	0	0	109	47	156
Pass-by Trips (Scenario1, Phase II):	0	0	0	0	0	0	6	0	0	6	14	6	-7	0	13	0	0	0	0	0
New Trips (Scenario 2):	0	24	56	0	80	0	62	41	31	134	24	24	93	18	159	0	0	170	42	212
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	70	0	-1	0	69	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	205	47	115	367	0	132	105	12	249	113	124	1357	401	1995	0	165	807	50	1022
Future 2022 Volumes (Scenario 1, Phases I + II):	0	268	68	127	463	0	192	133	51	376	171	240	1552	463	2426	0	182	999	102	1283
Future 2020 Volumes (Scenario 2):	0	236	83	119	438	0	102	128	44	274	94	90	1537	433	2154	0	170	959	83	1212

P.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	135	42	118	295	0	22	40	11	73	0	11	894	132	1037	0	148	1618	12	1778
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	140	43	122	305	0	23	41	11	75	0	11	925	137	1073	0	153	1675	12	1840
No-Build 2020 Volumes:	0	145	45	126	316	0	24	43	12	79	0	12	958	141	1111	0	159	1733	13	1905
No-Build 2022 Volumes:	0	155	48	135	338	0	25	46	13	84	0	13	1026	151	1190	0	170	1857	14	2041
New Trips (Scenario1, Phase I):	0	0	19	0	19	0	50	19	0	69	29	19	0	0	48	0	0	40	10	50
Pass-by Trips (Scenario1, Phase I):	0	0	0	0	0	0	15	0	0	15	39	16	-16	0	39	0	0	0	0	0
New Trips (Scenario1, Phase II):	0	38	16	0	54	0	72	27	48	147	41	96	72	27	236	0	0	101	43	144
Pass-by Trips (Scenario1, Phase II):	0	0	0	0	0	0	9	0	0	9	56	9	-9	0	56	0	0	0	0	0
New Trips (Scenario 2):	0	22	51	0	73	0	77	51	36	164	22	22	116	22	182	0	0	157	39	196
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	61	0	0	0	61	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	140	62	122	324	0	88	60	11	159	68	46	909	137	1160	0	153	1715	22	1890
Future 2022 Volumes (Scenario 1, Phases I + II):	0	193	83	135	411	0	171	92	61	324	165	153	1073	178	1569	0	170	1998	67	2235
Future 2020 Volumes (Scenario 2):	0	167	96	126	389	0	101	94	48	243	83	34	1074	163	1354	0	159	1890	52	2101

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Traffic Volumes
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A&R Engineering
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2. US 78 @ Clotfelter
A.M. Peak Hour

Condition	Clotfelter Road Northbound					Site Driveway 6 Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	13	0	129	142	0	0	0	0	0	0	0	1637	53	1690	0	84	914	0	998
Existing 2018 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	13	0	134	147	0	0	0	0	0	0	0	1694	55	1749	0	87	946	0	1033
No-Build 2020 Volumes:	0	14	0	138	152	0	0	0	0	0	0	0	1754	57	1811	0	90	979	0	1069
No-Build 2022 Volumes:	0	15	0	148	163	0	0	0	0	0	0	0	1878	61	1939	0	96	1049	0	1145
New Trips (Scenario1, Phase I):	0	0	0	11	11	0	0	0	0	0	0	0	41	0	41	0	11	41	0	52
Pass-by Trips (Scenario1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	0	0	0	81
New Trips (Scenario1, Phase II):	0	0	0	31	31	0	0	0	0	0	0	0	117	0	117	68	20	75	0	163
Pass-by Trips (Scenario1, Phase II):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13
New Trips (Scenario2):	0	0	42	0	42	0	47	19	47	113	0	112	48	0	160	64	12	70	21	167
Pass-by Trips (Scenario2):	0	0	0	0	0	0	67	0	12	79	0	68	-68	0	0	70	0	-12	12	70
Future 2019 Volumes (Scenario 1, Phase I):	0	13	0	145	158	0	0	0	0	0	0	0	1735	55	1790	81	98	987	0	1166
Future 2022 Volumes (Scenario 1, Phases I + II):	0	15	0	190	205	0	0	0	0	0	0	0	2036	61	2097	162	127	1165	0	1454
Future 2020 Volumes (Scenario 2):	0	14	42	138	194	0	114	19	59	192	0	180	1734	57	1971	134	102	1037	33	1306

P.M. Peak Hour

Condition	Clotfelter Road Northbound					Site Driveway 6 Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	0	19	0	86	105	0	0	0	0	0	0	0	951	31	982	0	130	1634	0	1764
Existing 2018 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	20	0	89	109	0	0	0	0	0	0	0	984	32	1016	0	135	1691	0	1826
No-Build 2020 Volumes:	0	20	0	92	112	0	0	0	0	0	0	0	1019	33	1052	0	139	1750	0	1889
No-Build 2022 Volumes:	0	22	0	99	121	0	0	0	0	0	0	0	1091	36	1127	0	149	1875	0	2024
New Trips (Scenario1, Phase I):	0	0	0	10	10	0	0	0	0	0	0	0	38	0	38	0	10	37	0	47
Pass-by Trips (Scenario1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	0	0	0	39
New Trips (Scenario1, Phase II):	0	0	0	29	29	0	0	0	0	0	0	0	108	0	108	98	29	107	0	234
Pass-by Trips (Scenario1, Phase II):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	0	0	56
New Trips (Scenario2):	0	0	39	0	39	0	58	23	58	139	0	103	44	0	147	80	15	87	20	202
Pass-by Trips (Scenario2):	0	0	0	0	0	0	57	0	34	91	0	57	-57	0	0	60	0	-34	34	60
Future 2019 Volumes (Scenario 1, Phase I):	0	20	0	99	119	0	0	0	0	0	0	0	1022	32	1054	39	145	1728	0	1912
Future 2022 Volumes (Scenario 1, Phases I + II):	0	22	0	138	160	0	0	0	0	0	0	0	1237	36	1273	193	188	2019	0	2400
Future 2020 Volumes (Scenario 2):	0	20	39	92	151	0	115	23	92	230	0	160	1006	33	1199	140	154	1803	54	2151

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3. Mars Hill @ Drwy 1 (N)
A.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 1 (North) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	125	0	125	0	0	130	0	130	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	129	0	129	0	0	135	0	135	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	134	0	134	0	0	139	0	139	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	143	0	143	0	0	149	0	149	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase I):	0	0	10	0	10	0	0	10	0	10	0	0	0	0	0	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	51	9	0	60	0	0	22	5	27	0	9	0	46	55	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase II):	0	7	-1	0	6	0	0	-1	1	0	0	1	0	7	8	0	0	0	0	0
New Trips (Scenario 2):	0	37	14	0	51	0	0	32	6	38	0	14	0	39	53	0	0	0	0	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	0	139	0	139	0	0	145	0	145	0	0	0	0	0	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	58	161	0	219	0	0	180	6	186	0	10	0	53	63	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	37	148	0	185	0	0	171	6	177	0	14	0	39	53	0	0	0	0	0

P.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 1 (North) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	65	0	65	0	0	73	0	73	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	67	0	67	0	0	76	0	76	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	70	0	70	0	0	78	0	78	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	75	0	75	0	0	84	0	84	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase I):	0	0	9	0	9	0	0	9	0	9	0	0	0	0	0	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	47	13	0	60	0	0	20	5	25	0	13	0	67	80	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase II):	0	11	-2	0	9	0	0	-2	2	0	0	2	0	11	13	0	0	0	0	0
New Trips (Scenario 2):	0	34	17	0	51	0	0	29	5	34	0	17	0	48	65	0	0	0	0	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	0	76	0	76	0	0	85	0	85	0	0	0	0	0	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	58	95	0	153	0	0	111	7	118	0	15	0	78	93	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	34	87	0	121	0	0	107	5	112	0	17	0	48	65	0	0	0	0	0

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4. Mars Hill @ Drwy 2 (M)

A.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 2 (Middle) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	125	0	125	0	0	130	0	130	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	129	0	129	0	0	135	0	135	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	134	0	134	0	0	139	0	139	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	143	0	143	0	0	149	0	149	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario1, Phase I):	0	53	0	0	53	0	0	5	5	10	0	10	0	32	42	0	0	0	0	0
Pass-by Trips (Scenario1, Phase I):	0	23	-4	0	19	0	0	-2	2	0	0	8	0	22	30	0	0	0	0	0
New Trips (Scenario1, Phase II):	0	117	51	0	168	0	0	54	14	68	0	9	0	51	60	0	0	0	0	0
Pass-by Trips (Scenario1, Phase II):	0	1	6	0	7	0	0	5	1	6	0	1	0	1	2	0	0	0	0	0
New Trips (Scenario 2):	0	85	37	0	122	0	0	52	19	71	0	14	0	60	74	0	0	0	0	0
Pass-by Trips (Scenario 2):	0	9	-9	0	0	0	0	-5	5	0	0	9	0	5	14	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	76	125	0	201	0	0	138	7	145	0	18	0	54	72	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	194	196	0	390	0	0	211	22	233	0	28	0	106	134	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	94	162	0	256	0	0	186	24	210	0	23	0	65	88	0	0	0	0	0

P.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 2 (Middle) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	65	0	65	0	0	73	0	73	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	67	0	67	0	0	76	0	76	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	70	0	70	0	0	78	0	78	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	75	0	75	0	0	84	0	84	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario1, Phase I):	0	48	0	0	48	0	0	4	4	8	0	9	0	29	38	0	0	0	0	0
Pass-by Trips (Scenario1, Phase I):	0	19	-3	0	16	0	0	-2	2	0	0	3	0	9	12	0	0	0	0	0
New Trips (Scenario1, Phase II):	0	108	47	0	155	0	0	74	13	87	0	13	0	73	86	0	0	0	0	0
Pass-by Trips (Scenario1, Phase II):	0	2	7	0	9	0	0	6	4	10	0	2	0	4	6	0	0	0	0	0
New Trips (Scenario 2):	0	78	34	0	112	0	0	60	17	77	0	17	0	75	92	0	0	0	0	0
Pass-by Trips (Scenario 2):	0	7	-7	0	0	0	0	-3	3	0	0	7	0	3	10	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	67	64	0	131	0	0	78	6	84	0	12	0	38	50	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	177	126	0	303	0	0	166	23	189	0	27	0	115	142	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	85	97	0	182	0	0	135	20	155	0	24	0	78	102	0	0	0	0	0

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5. Mars Hill @ Drwy 3 (S. RIRO)

A.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 3 (South RIRO) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	125	0	125	0	0	130	0	130	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	129	0	129	0	0	135	0	135	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	134	0	134	0	0	139	0	139	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	143	0	143	0	0	149	0	149	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario1, Phase I):	0	0	53	0	53	0	0	32	5	37	0	0	0	44	44	0	0	0	0	0
Pass-by Trips (Scenario1, Phase I):	0	0	39	0	39	0	0	14	6	20	0	0	0	24	24	0	0	0	0	0
New Trips (Scenario1, Phase II):	0	0	168	0	168	0	0	105	0	105	0	0	0	0	0	0	0	0	0	0
Pass-by Trips (Scenario1, Phase II):	0	0	6	0	6	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario2):	0	0	122	0	122	0	0	107	6	113	0	0	0	27	27	0	0	0	0	0
Pass-by Trips (Scenario2):	0	0	0	0	0	0	0	-5	5	0	0	0	0	5	5	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	0	221	0	221	0	0	181	11	192	0	0	0	68	68	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	0	409	0	409	0	0	306	11	317	0	0	0	68	68	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	0	256	0	256	0	0	241	11	252	0	0	0	32	32	0	0	0	0	0

P.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 3 (South RIRO) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	65	0	65	0	0	73	0	73	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	67	0	67	0	0	76	0	76	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	70	0	70	0	0	78	0	78	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	75	0	75	0	0	84	0	84	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario1, Phase I):	0	0	48	0	48	0	0	29	4	33	0	0	0	40	40	0	0	0	0	0
Pass-by Trips (Scenario1, Phase I):	0	0	16	0	16	0	0	5	3	8	0	0	0	11	11	0	0	0	0	0
New Trips (Scenario1, Phase II):	0	0	156	0	156	0	0	147	0	147	0	0	0	0	0	0	0	0	0	0
Pass-by Trips (Scenario1, Phase II):	0	0	9	0	9	0	0	9	0	9	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario2):	0	0	113	0	113	0	0	130	5	135	0	0	0	34	34	0	0	0	0	0
Pass-by Trips (Scenario2):	0	0	0	0	0	0	0	-7	7	0	0	0	0	7	7	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	0	131	0	131	0	0	110	7	117	0	0	0	51	51	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	0	304	0	304	0	0	274	7	281	0	0	0	51	51	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	0	183	0	183	0	0	201	12	213	0	0	0	41	41	0	0	0	0	0

A.M. Peak Hour

[illegible]

P.M. Peak Hour

[illegible]

7. US 78 @ Drwy 5 (W. RIRO)
A.M. Peak Hour

-				Northbound				Site Driveway 5 (West RHO)				US 78/SR 10 (Monroe Highway)				US 78/SR 10 (Monroe Highway)			
				Southbound				Eastbound				Westbound							
U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
0	0	0	0	0	0	0	0	0	0	0	0	1766	0	1766	0	0	998	0	998
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
0	0	0	0	0	0	0	0	0	0	0	0	1828	0	1828	0	0	1033	0	1033
0	0	0	0	0	0	0	0	0	0	0	0	1892	0	1892	0	0	1069	0	1069
0	0	0	0	0	0	0	0	0	0	0	0	2027	0	2027	0	0	1145	0	1145
0	0	0	0	0	0	0	0	0	0	0	0	52	0	52	0	0	52	0	52
0	0	0	0	0	0	0	0	0	0	0	0	81	0	81	0	0	81	0	81
0	0	0	0	0	0	0	0	0	88	88	0	216	0	216	0	0	75	123	198
0	0	0	0	0	0	0	0	16	16	16	0	13	0	13	0	0	-4	17	13
0	0	0	0	0	0	0	0	62	62	62	0	159	0	159	0	0	106	79	185
0	0	0	0	0	0	0	0	67	67	67	0	70	0	70	0	0	2	68	70
0	0	0	0	0	0	0	0	0	0	0	0	1961	0	1961	0	0	1166	0	1166
0	0	0	0	0	0	0	0	104	104	104	0	2389	0	2389	0	0	1349	140	1489
0	0	0	0	0	0	0	0	129	129	129	0	2121	0	2121	0	0	1177	147	1324

P.M. Peak Hour

-										US 78/SR 10 (Monroe Highway)									
Northbound					Site Driveway 5 (West RIHO)					Eastbound					Westbound				
U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
0	0	0	0	0	0	0	0	0	0	0	0	1037	0	1037	0	0	1764	0	1764
3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
0	0	0	0	0	0	0	0	0	0	0	0	1073	0	1073	0	0	1826	0	1826
0	0	0	0	0	0	0	0	0	0	0	0	1111	0	1111	0	0	1890	0	1890
0	0	0	0	0	0	0	0	0	0	0	0	1190	0	1190	0	0	2024	0	2024
0	0	0	0	0	0	0	0	0	0	0	0	48	0	48	0	0	47	0	47
0	0	0	0	0	0	0	0	0	0	0	0	38	0	38	0	0	38	0	38
0	0	0	0	0	0	0	0	127	127	0	0	236	0	236	0	0	107	114	221
0	0	0	0	0	0	0	0	112	112	0	0	56	0	56	0	0	56	112	56
0	0	0	0	0	0	0	0	77	77	0	0	182	0	182	0	0	125	73	198
0	0	0	0	0	0	0	0	114	114	0	0	60	0	60	0	0	54	115	61
0	0	0	0	0	0	0	0	0	0	0	0	1159	0	1159	0	0	1911	0	1911
0	0	0	0	0	0	0	0	239	239	0	0	1568	0	1568	0	0	2160	226	2386
0	0	0	0	0	0	0	0	191	191	0	0	1353	0	1353	0	0	1961	188	2149



OCONEE COUNTY PROPERTY OWNER AUTHORIZATION
FOR APPLICATIONS

I swear that I am the owner of the property located at (Address or Physical Description):

32.079 Ac., southwest intersection of US Hwy. 78 and
Mars Hill Road

Tax Parcel #: Boz 046, Boz 046A, Boz 046B, Boz 046C, Boz 061

Which is the subject matter of the attached application, as shown in the records of Oconee County, Georgia.

I authorize the person identified below to act as applicant or agent in the pursuit of the requested action or consideration of this property.

Name of applicant or agent: JPC Design and Construction LLC

Address (No P.O. boxes): 264 Alabama Blvd.

City, State, & Zip Code: Jackson, GA 30233

Telephone Number: 770-775-2386

SIGNATURE OF OWNER OR MANAGING MEMBER:

NAME OF OWNER OR MANAGING MEMBER (PLEASE PRINT): William B. Jones

OFFICER POSITION OR MEMBER TITLE, IF APPLICABLE: owner

DATE: 3/12/2020

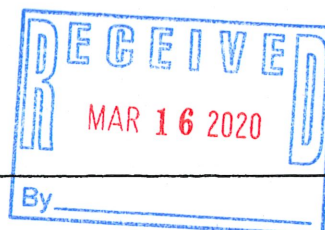
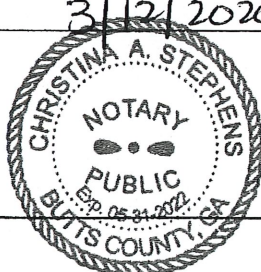
NOTARIZATION:

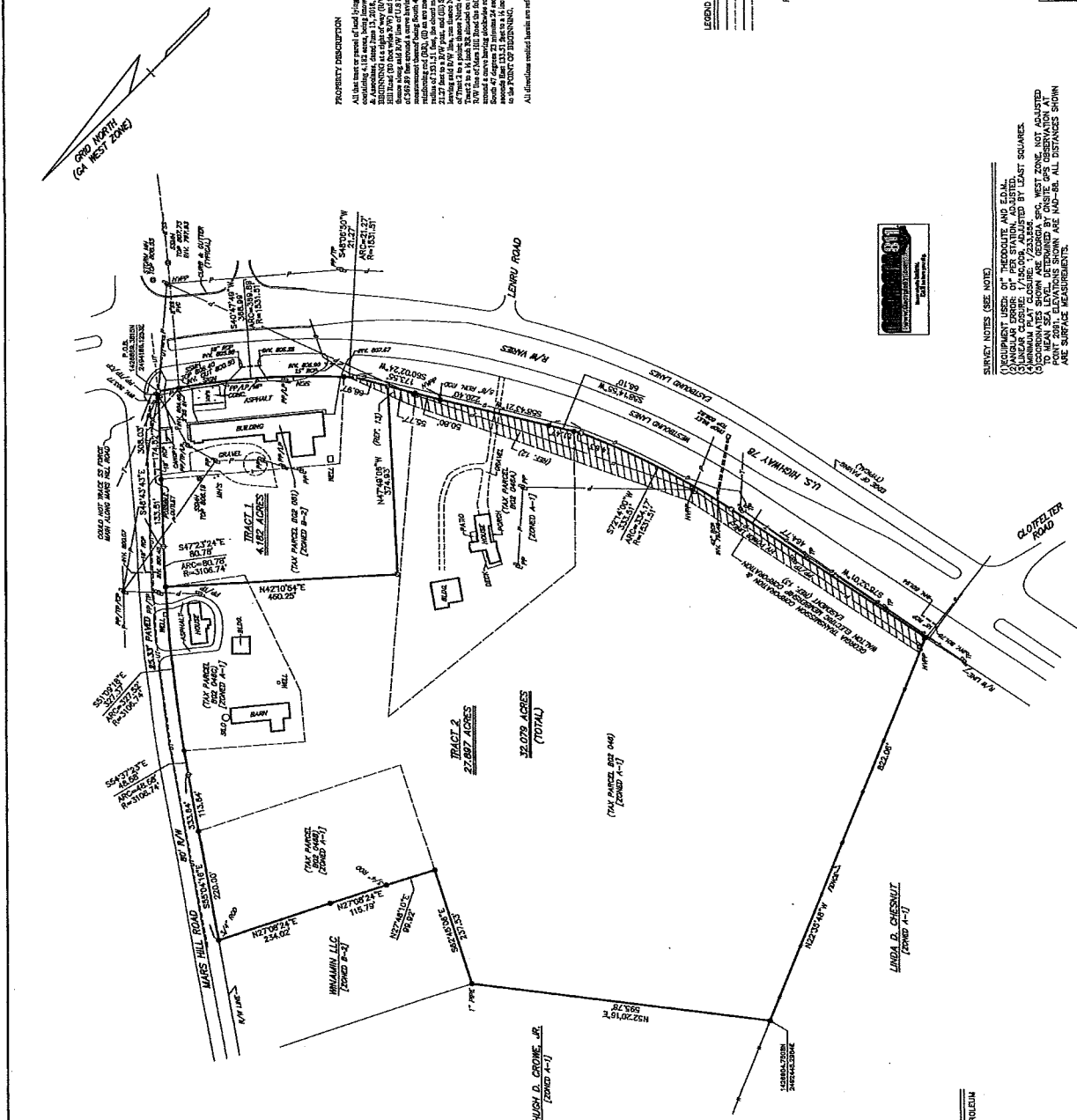
SWORN TO AND SUBSCRIBED BEFORE THIS 12th DAY OF March, 2020

NOTARY SIGNATURE: Christina A. Stephens

DATE: 3/12/2020

SEAL:





PROPERTY DISCRIPTION

[illegible]

All directions noted herein are referenced to Grid North, Georgia West Zone.

303

- | | |
|-------------|---------------------------------------|
| P | OVERHEAD POWER/TELEPHONE LINE |
| UT | UNDERGROUND TELEPHONE LINE |
| G | GAS LINE |
| SS | SANITARY SEWER LINE |
| | 1/2" REINFORCING ROD (OR NOTED) FOUND |
| | POINT ONLY |
| PP/TP/L/P/C | POWER/TELEPHONE/LIGHT/CABLE POLE |
| HVWP | HIGH VOLTAGE METAL POWER POLE |
| SSMH | SANITARY SEWER MANHOLE |
| MW | MONITORING WELL |
| RCP | REINFORCED CONCRETE PIPE |

REFERENCES

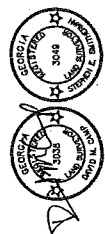
[illegible]

13

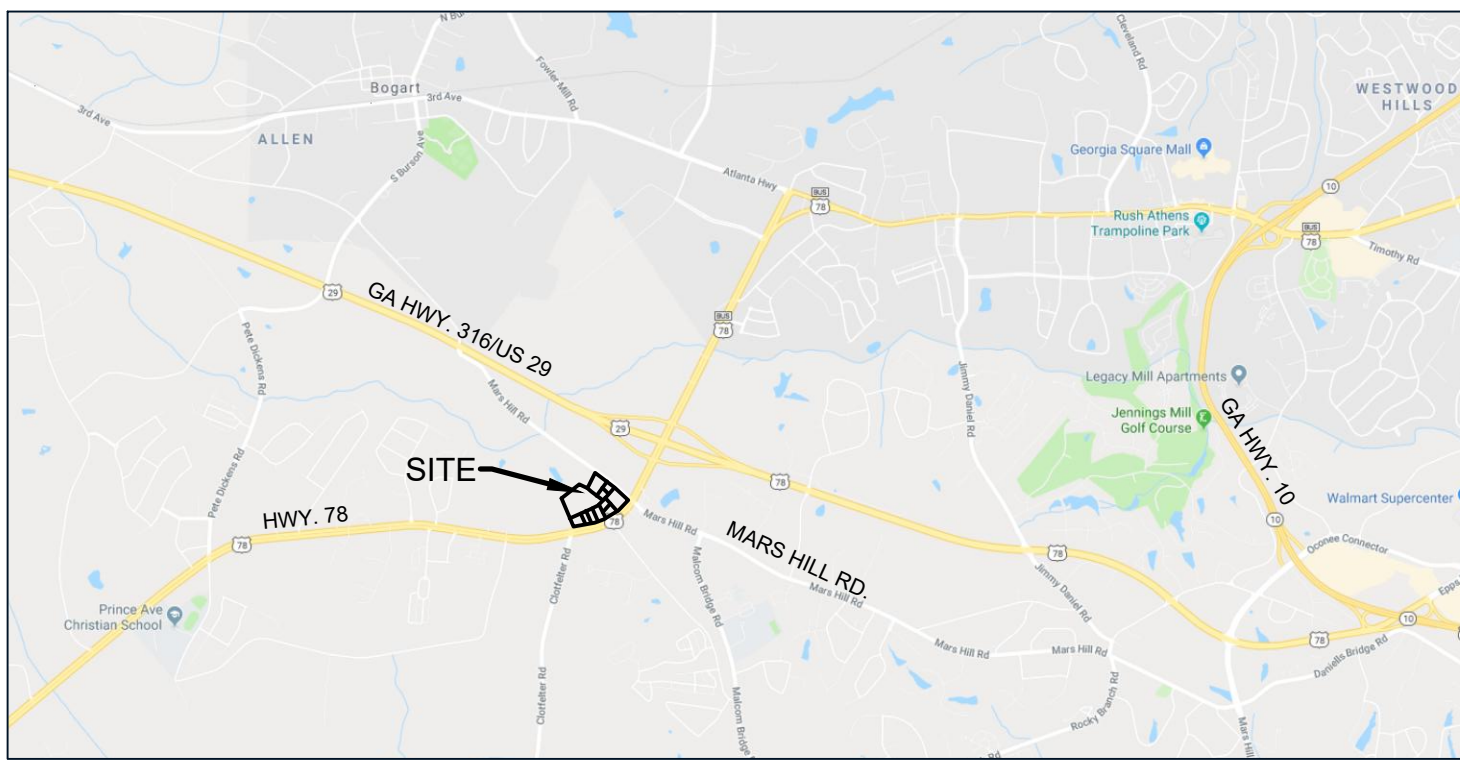
3) COORDINATES SHOWN ARE GEORGIA SFC. WEST ZONE, NOT ADJUSTED TO MEAN SEA LEVEL, DETERMINED BY ONSITE GPS OBSERVATION AT POINT 2081. ELEVATIONS SHOWN ARE NAD-88. ALL DISTANCES SHOWN ARE SURFACE MEASUREMENTS.

NOTE

NOTE
THIS PLAT WAS DRAWN FROM OUR SURVEY FOR JONES PETROLEUM
DATED MAY 18, 1918, WITH NO FIELDWORK ON THIS DATE.



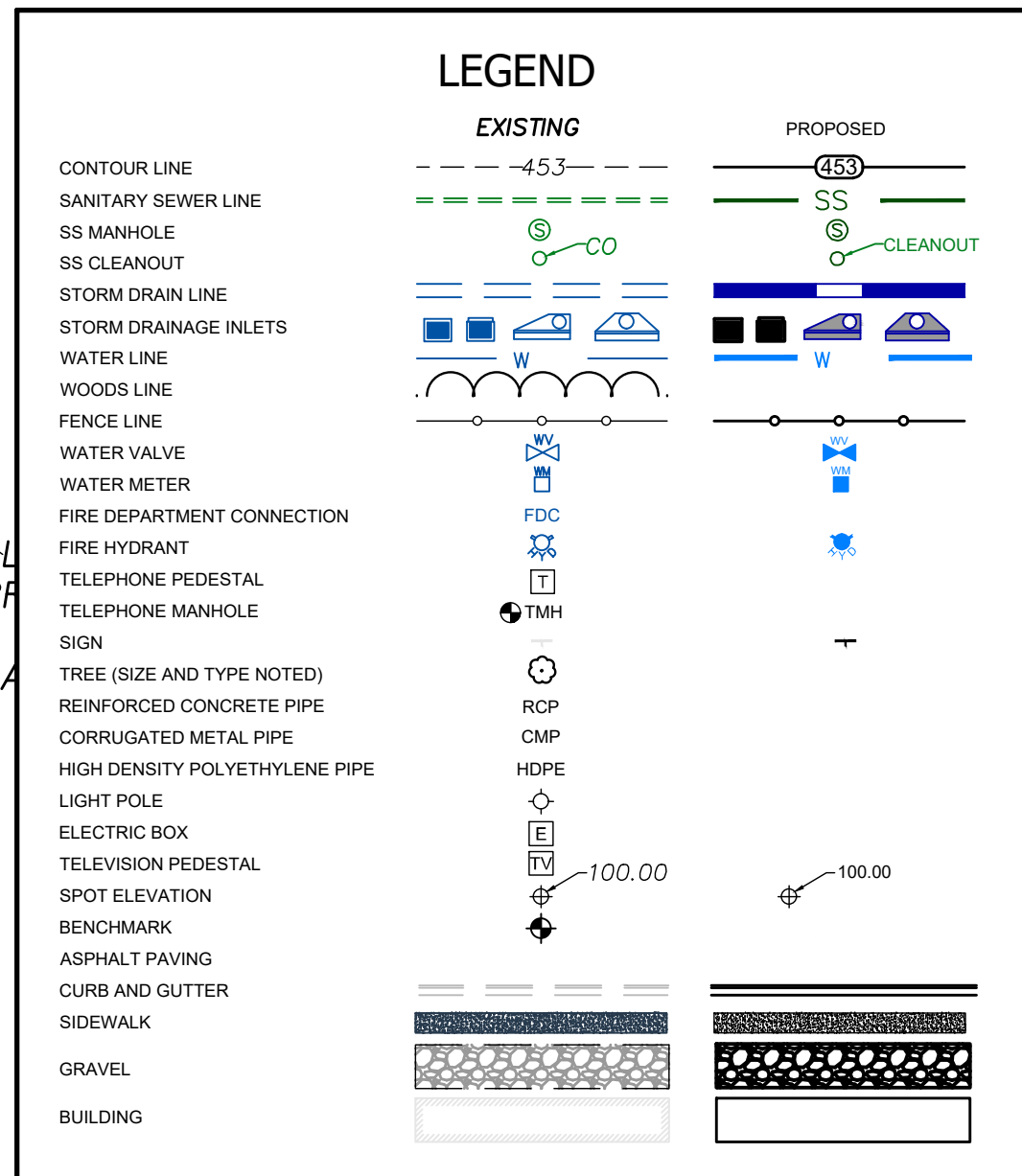
COMPOSITE PLAT FPN		JONES PETROLEUM			
COUNTY	CONCEE	SALE	240	FEATL	GEORGIA
DATE	JUNE 13, 2018	SALE	1"-100"	OWN	BY
RELINQUR	1005	SERVED BY: N. MCGRORY & ASSOCIATES, INC.		FILE NO	
		P.O. BOX 1005		346622-	
		R.D. #1005		700-254-5513	
		BUD, ALABAMA		44-38824	



VICINITY MAP
N.T.S.

EXHIBIT "A" TO RESON #2382	
CONDITIONS	
This Final Development Plan shall be subject to the following conditions, which shall be defined by the owner/developer at their expense:	
1. Development design and construction shall meet or exceed the standards indicated on the concept plan, including, but not limited to, sanitary sewer, storm water, and other drainage standards with the zoning regulations and local ordinances. This development shall not constitute approval of any standard that is not in conformity with the Unified Development Code.	
2. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
3. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
4. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
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6. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
7. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
8. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
9. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
10. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	
11. All proposed structures and other improvements shall be designed to meet the standards of the Unified Development Code, including but not limited to, minimum setbacks, lot coverage, and other standards. The owner/developer shall be responsible for obtaining all necessary permits from the appropriate local government agency.	

Parcel ID - B 02 045
LINDA C. CHESNUT
13 DOWNSHIRE CIRCLE
DECATUR GA 30033
ZONED AG



DEVELOPMENT DATA	
CURRENT OWNER:	WILLIAM B. JONES 264 ALABAMA BLVD. JACKSON, GA 30233 (770) 775-2386
DEVELOPER/ APPLICANT:	JPC DESIGN AND CONSTRUCTION, LLC P.O. BOX 710 JACKSON, GA 30233 (770) 775-2386
AREA:	32.04 ACRES
ZONING:	B-2
TAX PARCELS:	B02 061 - ZONED B-2 B02 046 - ZONED B-2 B02 046A - ZONED B-2 B02 046B - ZONED B-2 B02 046C - ZONED B-2
EXISTING BLDG:	±12,100 SF CONVENIENCE STORE AND RETAIL SHOPS ON PARCEL B02 061 (TO BE REMOVED)
IMPERVIOUS AREA:	13.6 ACRES OF PARKING/DRIVEWAYS 4.0 ACRES OF BUILDINGS/SIDEWALKS 17.6 ACRES TOTAL = 55% OF TOTAL SITE AREA
DEVELOPMENT SCHEDULE:	PHASE 1 - TO BE CONSTRUCTED 2019-2020 UPON ZONING APPROVAL PHASE 2 - 2020 THROUGH 2023 ROADWAY IMPROVEMENTS SHOWN ON MARS HILL ROAD AND HWY. 78 ARE TO BE CONSTRUCTED DURING PHASE 2 DEVELOPMENT
PUBLIC WATER AND SANITARY SEWER TO BE PROVIDED BY OCONEE COUNTY UTILITY DEPT.	
BOUNDARY AND TOPOGRAPHIC SURVEY BY: BEN McELROY & ASSOCIATES, INC. 140 MILL CENTER BLVD. ATHENS, GA 30606 SOURCE OF TOPOGRAPHIC DATA IS GROUND-RUN FIELD SURVEY	
THIS SITE DOES NOT CONTAIN A FLOOD HAZARD ZONE PER FEMA FLOOD MAP 13219C0045D, DATED 9-2-2009.	
STORMWATER MANAGEMENT SHALL BE IN ACCORDANCE WITH COUNTY, STATE, AND OTHER APPROPRIATE ORDINANCES AND REGULATIONS IN EFFECT AT THE TIME OF CONSTRUCTION PLAN APPROVAL.	

TOTAL PROPERTY AREA: 32.04 ACRES
PHASE 1: 7.97 ACRES
PARCEL 7 - 4.15 ACRES
MASTER STORMWATER POND - ±2.89 ACRES
DRIVEWAYS - 0.93 ACRES

Parcel	Parcel Area (Acres)	Proposed Use	Building Area (S.F.)
Parcel 1	2.00	Office/Institutional	5,000
Parcel 2	1.22	Retail/Quick-Serve Restaurant	3,000
Parcel 3	1.47	Retail/Quick-Serve Restaurant	3,000
Parcel 4	1.86	Retail/Quick-Serve Restaurant	3,500
Parcel 5	1.23	Retail/Quick-Serve Restaurant	3,500
Parcel 6	1.66	Retail/Quick-Serve Restaurant	3,000
Parcel 7	4.15	Convenience Store/Fast Food - 12 mpd's	11,000
Parcel 8	1.24	Office/Retail	12,000
Parcel 9	1.16	Office/Retail	12,000
Parcel 10	3.58	4-Story Hotel (200 Rooms)	50,400
Parcel 11	12.45	Big Box / Retail	68,000
TOTAL ACRES	32.04	TOTAL	174,400

BLDG Area (S.F.)	Factor	Req'd Parking Spaces
Restaurant	3,200	9.5/1,000
Store	8,000	5/1,000
TOTAL S.F.	11,200.00	TOTAL REQUIRED SPACES
		78
		TOTAL SPACES PROVIDED
		100

Parcel ID - B 02 046BA
HUGH D., JR. CROWE
4261 MARS HILL ROAD
BOGART GA 30622
ZONED A1

OWNER'S CERTIFICATION	
As the owner of this land, as shown on this preliminary site plan, or his agent, I certify that this drawing was made from an actual survey, and accurately portrays the existing land and its features and the proposed development and improvements thereon.	
Agent Name: Steven A. Rowland, PE (Rowland Engineering, Inc.)	
Signed: [Signature] Date: 12-31-2019	
DESIGNER'S CERTIFICATION	
It is hereby certified that this preliminary site plan was prepared using a survey of the property prepared by Baseline Surveying and Engineering, Inc., and further that the proposed development meets all requirements of the Oconee County Unified Development Code, as applicable to the property.	
By: Steven A. Rowland, PE Registration No.: GA PE 25853	
Address: 818 Corporate Pkwy, Ste. 301, Macon, GA 31210 Telephone Number: (478) 621-7500	
Signed: [Signature] Date: 12-31-2019	

Parcel ID - B 02 051
PATRICK THOMPSON
4241 MARS HILL ROAD
BOGART GA 30622
ZONED O-B-P

CERTIFICATE OF PROJECT APPROVAL	
Pursuant to the Unified Development Code of Oconee County, Georgia, all the requirements of Project Approval having been fulfilled, this Preliminary Site Plan was given Project Approval by the Oconee County Development Review Committee on 12/31/2019.	
This Preliminary Approval does not constitute approval of a Final Subdivision Plat or Development Construction Plans. This Certificate of Project Approval shall expire and be null and void one year from the date of project approval indicated above.	
Signed: [Signature] Date: 12/31/2019	
NOT FOR RECORDING	

Parcel ID - B 02 011G
SOUTHEASTERN PVC PIPE
MFG. INC. ET AL
4865 OLDE TOWN PKWY
STE 100
MARIETTA GA 30068
ZONED I

Parcel ID - B 02 060A
SOUTHEASTERN PVC PIPE
MFG. INC. ET AL
4865 OLDE TOWN PKWY
STE 100
MARIETTA GA 30068
ZONED AG

Parcel ID - B 02 060AA
SOUTHEASTERN PVC PIPE
MFG. INC. ET AL
4865 OLDE TOWN PKWY
STE 100
MARIETTA GA 30068
ZONED AG

Parcel ID - B 02 055A
N/F MICHELE P. STANCI
693 COLLIER COMMONS DR NW
ATLANTA GA 30318-1736
ZONED B2

Parcel ID - B 02 059
SHEILA L. HUNTER SMALL ET AL
2581 MONROE HWY.
BOGART GA 30622
ZONED AG

Parcel ID - B 02 064E
H.D. & ROSA L. CROWE
4171 MARS HILL ROAD
BOGART GA 30622
ZONED AG

Parcel ID - B 02 064
N/F MICHELE P. STANCI
693 COLLIER COMMONS DR NW
ATLANTA GA 30318-1736
ZONED B2

Parcel ID - B 02 011A
MOUNTAINPRIZE, INC
P.O. BOX 2437
SMYRNA GA 30081
ZONED B2

GRAPHIC SCALE
1 inch = 60 ft.



BURGER KING/CONVENIENCE STORE
AT JONES PETROLEUM TRAVEL CENTER
2430 MONROE HWY. BOGART, GEORGIA 30266
FOR
JPC DESIGN AND CONSTRUCTION, LLC

ROWLAND
ENGINEERING
318 Corporate Pkwy, Ste. 301
Macon, GA 31210
(478) 621-7500
steven@rowland-engineering.com



Sheet Title:
PRELIMINARY PLAT/
PRELIMINARY SITE PLAN

REI Project No: 1932

Date: 01-27-2020

Sheet No:

C-1.1

FIRST SUBMITTAL

2019 Property Tax Statement

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
oconeecountypay.com

MAKE CHECK/MONEY ORDER PAYABLE TO:
Oconee County Tax Commissioner

JONES WILLIAM B
P.O. BOX 933
JACKSON, GA 30233

RETURN THIS PORTION WITH PAYMENT

(Interest will be added per month if not paid by due date)

Bill No.	Due Date	Current Due	Prior Payment	Back Taxes	*Total Due*
2019-3872	12/20/2019	\$0.00	\$4083.42	\$0.00	Paid 11/26/2019

Map: B 02 061

Printed: 02/11/2020

Location: 2430 MONROE HWY

Please note that taxes outstanding as of 11/15 (or applicable due date) will be subject to additional interest and penalties set forth by Georgia law.

If property tax remains unpaid, the Office of the Tax Commissioner has the right and responsibility to levy on the property for nonpayment (additional fees apply). This is considered a last resort tax collection and other collection methods are always preferred.

Please visit our website oconeecountypay.com for additional information and to make online payments.

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
oconeecountypay.com

Phone: (706) 769-3917 Fax: (706) 769-3964



Tax Payer: JONES WILLIAM B
Map Code: B 02 061 Real
Description: 553/354 D & L SHOPPING CENTER
Location: 2430 MONROE HWY
Bill No: 2019-3872
District: 001

Building Value	Land Value	Acres	Fair Market Value	Due Date	Billing Date	Payment Good through	Exemptions
156,791.00	283,500.00	1.5000	\$440,291.00	12/20/2019			

Entity	Adjusted FMV	Net Assessment	Exemptions	Taxable Value	Millage Rate	Gross Tax	Credit	Net Tax
COUNTY M&O	\$440,291.00	\$176,116.00	\$0.00	\$176,116.00	10.826000	\$1,906.63	\$0.00	\$1,906.63
INSURANCE PREMIUM	\$440,291.00	\$176,116.00	\$0.00	\$176,116.00	-0.940000	\$0.00	-\$165.55	\$-165.55
ROLL BAC								
SALES TAX ROLLBACK	\$440,291.00	\$176,116.00	\$0.00	\$176,116.00	-3.200000	\$0.00	-\$563.57	\$-563.57
SCHOOL M&O	\$440,291.00	\$176,116.00	\$0.00	\$176,116.00	16.500000	\$2,905.91	\$0.00	\$2,905.91
STATE TAX	\$440,291.00	\$176,116.00	\$0.00	\$176,116.00	0.000000	\$0.00	\$0.00	\$0.00
TOTALS					23.186000	\$4,812.54	-\$729.12	\$4,083.42

We accept partial payments. Outstanding balances as of the due date will accrue interest monthly and additional penalties. Payments can be made in person, by mail or online at oconeecountypay.com. We accept cash, check (e-check online-\$1.50), money order, and debit/credit cards. There is a service fee to pay with a card in the office or online. Please remit top portion to your mortgage company if applicable. Status of payment received may be verified online at oconeecountypay.com. Mortgage companies usually remit payment the first week of November.

Owner occupied residences may qualify for certain homestead exemptions. PERSONS OVER AGE 65 MAY BE ELIGIBLE FOR ADDITIONAL EXEMPTIONS (age 62 eligibility-net income less than \$10,000). The full law relating to each exemption must be referred in order to determine eligibility (details available at oconeecountypay.com or 706-769-3917). Applications for homestead exemptions must be received by April 1, 2020. It is not necessary to refile for exemptions each year, unless there is a change in the property deed.

Current Due	\$4,083.42
Discount	\$0.00
Penalty	\$0.00
Interest	\$0.00
Other Fees	\$0.00
Previous Payments	\$4,083.42
Back Taxes	\$0.00
Total Due	\$0.00
Paid Date	11/26/2019

2019 Property Tax Statement

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
www.oconeecountypay.com

MAKE CHECK OR MONEY ORDER PAYABLE TO:
Oconee County Tax Commissioner

JONES WILLIAM B
P.O. BOX 933
JACKSON, GA 30233

RETURN THIS PORTION WITH PAYMENT
(Interest will be added per month if not paid by due date)

Bill No.	Due Date	TOTAL DUE
2019-3870		.00

Map : B 02 046

Last payment made on: 11/26/2019

Printed: 02/12/2020

Location: MARS HILL RD

Taxes outstanding as of 11/15/2019 (or applicable due date) will be subject to additional interest and penalties set forth by Georgia law. If property taxes remain unpaid, the Office of the Tax Commissioner has the right and responsibility to levy on the property (additional fees apply). This is considered a last resort for tax collection and other collection methods are always preferred. Partial payments are accepted. Contact our office with questions.

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Questions about values-Tax Appraiser's Office 706-769-3921.

8<

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
www.oconeecountypay.com



Tax Payer: JONES WILLIAM B
Map Code: B 02 046
Description: 566/26-28;
Location: MARS HILL RD
Bill No: 2019-3870
District: 001 OCONEE COUNTY

REAL

Phone: (706)769-3917 Fax: (706) 769-3964

Building Value	Land Value	Acres	Fair Market Value	Due Date	Billing Date		Payment Good Through	Exemptions	
20,723	321,240	23.2500	341,963						
Entity		Adjusted FMV	Net Assessment	Exemptions	Taxable Value	Millage Rate	Gross Tax	Credit	Net Tax
STATE TAX		341,963	136,785		136,785	.0000			.00
COUNTY M&O		341,963	136,785		136,785	10.8260	1,480.83		914.54
SALES TAX ROLLBACK					136,785	-3.2000		-437.71	
INSURANCE PREMIUM ROLL BAC					136,785	-.9400		-128.58	
SCHOOL M&O		341,963	136,785		136,785	16.5000	2,256.95		2,256.95
TOTALS						23.1860	3,737.78	-566.29	3,171.49

This gradual reduction and elimination of the state property tax millage rate is the result of property tax relief passed by the Governor and the House of Representatives and the Georgia State Senate.

Owner occupied residences may qualify for certain homestead exemptions. PERSONS OVER AGE 65 MAY BE ELIGIBLE FOR ADDITIONAL EXEMPTIONS (age 62 eligibility-net income less than \$10,000). The full law relating to each exemption must be referred to in order to determine eligibility (details available at oconeecountypay.com or 706-769-3917). Applications for homestead exemptions must be received by April 1, 2020. It is not necessary to refile for exemptions each year, unless there is a change in the property deed.

Current Due	3,171.49
Penalty	0.00
Interest	0.00
Other Fees	0.00
Previous Payments	3,171.49
Back taxes	0.00
TOTAL DUE	0.00

Printed: 02/12/2020

2019 Property Tax Statement

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
oconeecountypay.com

MAKE CHECK/MONEY ORDER PAYABLE TO:
Oconee County Tax Commissioner

JONES WILLIAM B
P.O. BOX 933
JACKSON, GA 30233

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(Interest will be added per month if not paid by due date)

Bill No.	Due Date	Current Due	Prior Payment	Back Taxes	*Total Due*
2019-3889	12/20/2019	\$0.00	\$2192.24	\$0.00	Paid 11/26/2019

Map: B 02 046 A

Printed: 02/11/2020

Location: 2510 MONROE HWY

Please note that taxes outstanding as of 11/15 (or applicable due date) will be subject to additional interest and penalties set forth by Georgia law.

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oconeecountypay.com

Phone: (706) 769-3917 Fax: (706) 769-3964



Tax Payer: JONES WILLIAM B
Map Code: B 02 046 A Real
Description: 1127/38 913/440 ; 36/463
Location: 2510 MONROE HWY
Bill No: 2019-3889
District: 001

Building Value	Land Value	Acres	Fair Market Value	Due Date	Billing Date	Payment Good through	Exemptions	
151,365.00	90,009.00	3.5000	\$241,374.00	12/20/2019			S1	
Entity	Adjusted FMV	Net Assessment	Exemptions	Taxable Value	Millage Rate	Gross Tax	Credit	Net Tax
COUNTY M&O	\$241,374.00	\$96,550.00	\$2,000.00	\$94,550.00	10.826000	\$1,023.60	\$0.00	\$1,023.60
INSURANCE PREMIUM ROLL BAC	\$241,374.00	\$96,550.00	\$2,000.00	\$94,550.00	-0.940000	\$0.00	-\$88.88	-\$88.88
SALES TAX ROLLBACK	\$241,374.00	\$96,550.00	\$2,000.00	\$94,550.00	-3.200000	\$0.00	-\$302.56	-\$302.56
SCHOOL M&O	\$241,374.00	\$96,550.00	\$2,000.00	\$94,550.00	16.500000	\$1,560.08	\$0.00	\$1,560.08
STATE TAX	\$241,374.00	\$96,550.00	\$2,000.00	\$94,550.00	0.000000	\$0.00	\$0.00	\$0.00
TOTALS					23.186000	\$2,583.68	-\$391.44	\$2,192.24

We accept partial payments. Outstanding balances as of the due date will accrue interest monthly and additional penalties. Payments can be made in person, by mail or online at oconeecountypay.com. We accept cash, check (e-check online-\$1.50), money order, and debit/credit cards. There is a service fee to pay with a card in the office or online. Please remit top portion to your mortgage company if applicable. Status of payment received may be verified online at oconeecountypay.com. Mortgage companies usually remit payment the first week of November.

Owner occupied residences may qualify for certain homestead exemptions. PERSONS OVER AGE 65 MAY BE ELIGIBLE FOR ADDITIONAL EXEMPTIONS (age 62 eligibility-net income less than \$10,000). The full law relating to each exemption must be referred in order to determine eligibility (details available at oconeecountypay.com or 706-769-3917). Applications for homestead exemptions must be received by April 1, 2020. It is not necessary to refile for exemptions each year, unless there is a change in the property deed.

Current Due	\$2,192.24
Discount	\$0.00
Penalty	\$0.00
Interest	\$0.00
Other Fees	\$0.00
Previous Payments	\$2,192.24
Back Taxes	\$0.00
Total Due	\$0.00
Paid Date	11/26/2019

2019 Property Tax Statement

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
www.oconeecountypay.com

MAKE CHECK OR MONEY ORDER PAYABLE TO:
Oconee County Tax Commissioner

JONES WILLIAM B
P.O. BOX 933
JACKSON, GA 30233

RETURN THIS PORTION WITH PAYMENT
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Bill No.	Due Date	TOTAL DUE
2019-2790		.00

Map : B 02 046 B

Last payment made on: 11/26/2019

Printed: 02/12/2020

Location: MARS HILL RD

Taxes outstanding as of 11/15/2019 (or applicable due date) will be subject to additional interest and penalties set forth by Georgia law. If property taxes remain unpaid, the Office of the Tax Commissioner has the right and responsibility to levy on the property (additional fees apply). This is considered a last resort for tax collection and other collection methods are always preferred. Partial payments are accepted. Contact our office with questions.

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8-4

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WATKINSVILLE, GA 30677
www.oconeecountypay.com



Tax Payer: JONES WILLIAM B
Map Code: B 02 046 B
Description: 913/438 ; 36/463
Location: MARS HILL RD
Bill No: 2019-2790
District: 001 OCONEE COUNTY

REAL

Phone: (706)769-3917 Fax: (706) 769-3964

Building Value	Land Value	Acres	Fair Market Value	Due Date	Billing Date	Payment Good Through		Exemptions	
0	75,684	2.1800	75,684						
Entity		Adjusted FMV	Net Assessment	Exemptions	Taxable Value	Millage Rate	Gross Tax	Credit	Net Tax
STATE TAX		75,684	30,274		30,274	.0000			.00
COUNTY M&O		75,684	30,274		30,274	10.8260	327.75		202.41
SALES TAX ROLLBACK					30,274	-3.2000		-96.88	
INSURANCE PREMIUM ROLL BAC					30,274	-.9400		-28.46	
SCHOOL M&O		75,684	30,274		30,274	16.5000	499.52		499.52
TOTALS						23.1860	827.27	-125.34	701.93

This gradual reduction and elimination of the state property tax millage rate is the result of property tax relief passed by the Governor and the House of Representatives and the Georgia State Senate.

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Current Due	701.93
Penalty	0.00
Interest	0.00
Other Fees	0.00
Previous Payments	701.93
Back taxes	0.00
TOTAL DUE	.00

Printed: 02/12/2020

2019 Property Tax Statement

JENNIFER T. RIDDLE
Oconee County Tax Commissioner
PO BOX 106
WATKINSVILLE, GA 30677
oconeecountypay.com

MAKE CHECK/MONEY ORDER PAYABLE TO:
Oconee County Tax Commissioner

JONES WILLIAM B
P.O. BOX 933
JACKSON, GA 30233

RETURN THIS PORTION WITH PAYMENT

(Interest will be added per month if not paid by due date)

Bill No.	Due Date	Current Due	Prior Payment	Back Taxes	*Total Due*
2019-3871	12/20/2019	\$0.00	\$1480.94	\$0.00	Paid 11/26/2019

Map: B 02 046 C

Printed: 02/11/2020

Location: 4171 MARS HILL RD

Please note that taxes outstanding as of 11/15 (or applicable due date) will be subject to additional interest and penalties set forth by Georgia law.

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Phone: (706) 769-3917 Fax: (706) 769-3964



Tax Payer: JONES WILLIAM B
Map Code: B 02 046 C Real
Description: 36/463
Location: 4171 MARS HILL RD
Bill No: 2019-3871
District: 001

Building Value	Land Value	Acres	Fair Market Value	Due Date	Billing Date	Payment Good through	Exemptions	
92,554.00	67,125.00	1.6600	\$159,679.00	12/20/2019				
Entity	Adjusted FMV	Net Assessment	Exemptions	Taxable Value	Millage Rate	Gross Tax	Credit	Net Tax
COUNTY M&O	\$159,679.00	\$63,872.00	\$0.00	\$63,872.00	10.826000	\$691.48	\$0.00	\$691.48
INSURANCE PREMIUM ROLL BAC	\$159,679.00	\$63,872.00	\$0.00	\$63,872.00	-0.940000	\$0.00	-\$60.04	\$-60.04
SALES TAX ROLLBACK	\$159,679.00	\$63,872.00	\$0.00	\$63,872.00	-3.200000	\$0.00	-\$204.39	\$-204.39
SCHOOL M&O	\$159,679.00	\$63,872.00	\$0.00	\$63,872.00	16.500000	\$1,053.89	\$0.00	\$1,053.89
STATE TAX	\$159,679.00	\$63,872.00	\$0.00	\$63,872.00	0.000000	\$0.00	\$0.00	\$0.00
TOTALS					23.186000	\$1,745.37	-\$264.43	\$1,480.94

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Current Due	\$1,480.94
Discount	\$0.00
Penalty	\$0.00
Interest	\$0.00
Other Fees	\$0.00
Previous Payments	\$1,480.94
Back Taxes	\$0.00
Total Due	\$0.00
Paid Date	11/26/2019

**REVISED TRAFFIC IMPACT STUDY
FOR
BOGART TRACT MIXED-USE DEVELOPMENT

OCONEE COUNTY, GEORGIA
FOR TWO SCENARIOS**



Prepared for:

***JPC Design & Construction, LLC.
P.O. Box 710
Jackson, GA 30233***

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

February 24, 2020
A & R Project # 18-168

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1.0 INTRODUCTION

The purpose of this revision to the original study dated January 21, 2018 and revised on March 13, 2019, is to evaluate the reconfigured and shifted north, driveway # 3 (southern driveway) on Mars Hill Road as a full access driveway. The development consists of two phases and the study includes the following two scenarios:

Scenario 1: Phase I – Convenience Store and 3,000 SF Fast Food Restaurant

Phase II – Rest of the Development

Scenario 2: Full Development with an additional full access driveway on US 78 (Monroe Highway)

This revised traffic study will determine the traffic impact that will result from the proposed Bogart Tract mixed-use development if it were to be developed in phases I and II and also if it were to be developed in full with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road. The proposed development is located in the northwest corner of the intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road in the Oconee County, Georgia. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The proposed development when constructed will consist of:

- Supermarket: 68,000 sf
- Fast-Food Restaurants: 16,000 sf
- Hotel: 200 Rooms
- Office Space: 17,000 sf
- Retail Space: 12,000 sf
- Convenience Store with Gas Station: 24 Vehicle Fueling Positions



The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
- Site Driveway 6: Full Access Driveway on US 78/SR 10 (Monroe Highway) – Scenario 2.

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:

- US 78/SR 10 (Monroe Highway) at Mars Hill Road
- US 78/SR 10 (Monroe Highway) at Clotfelter 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
A&R Engineering Inc.

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 US 78/SR 10 (Monroe Highway)

US 78/SR 10 (Monroe Highway) is a four-lane, median-divided roadway with a posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID's 2190107 & 2190109) indicate that the daily traffic volume on US 78/SR 10 (Monroe Highway) is 20,400 vehicles per day west of Trotters Walk and 18,100 vehicles per day northeast of University Parkway. GDOT classifies US 78/SR 10 (Monroe Highway) as an Urban Principal Arterial - Other roadway.

2.1.2 Mars Hill Road

Mars Hill Road is a two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. To the south of US 78/SR 10 (Monroe Highway), Mars Hill Road is posted with a speed limit of 35 mph. GDOT traffic counts (Station ID's 2190212 & 2190161) indicate that the daily traffic volume on Mars Hill Road is 4,920 vehicles per day southeast of US 78 and 760 vehicles per day north of University Parkway. GDOT classifies Mars Hill Road as an Urban Minor Arterial roadway near US 78 and as an Urban Minor Collector roadway north of University Parkway.

2.1.3 Clotfelter Road

Clotfelter Road is a two-lane, undivided roadway with a posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID 2198041) indicate that the daily traffic volume on Clotfelter Road is 1,750 vehicles per day south of Leyon Roberts Drive. GDOT classifies Clotfelter Road as an Urban Minor Collector roadway.

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. Synchro software, which utilizes the HCM methodology, was used for the analysis. If HCM 6th edition is unable to report results for any reason, HCM 2000 will be used for that intersection. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

3.1 Unsignalized Intersections

For unsignalized intersections at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on the average controlled delay incurred at the intersection. Controlled delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled 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 safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

TABLE 1 — LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
Level-of-service	Average Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: Highway Capacity Manual

3.2 Signalized Intersections

For signalized intersections, it is necessary to evaluate both capacity and level-of-service in order to evaluate the overall operation of the intersection. The capacity analysis of an intersection is performed by comparing the volume of traffic using the various lane groups at the intersection to the capacity of those lane groups. This results in a volume/capacity (v/c) ratio for each lane group. A v/c ratio greater than 1.0 indicates that the volume of traffic has exceeded the capacity available, resulting in a temporary excess of demand. Although the capacity of the entire intersection is not defined, a

composite v/c ratio for the sum of the critical lane groups within the intersection is computed. This composite v/c ratio is an indication of the overall intersection sufficiency.

Level-of-service for a signalized intersection is defined in terms of average controlled delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for signalized intersections, based on average controlled delay, are shown in Table 2. Level-of-service “A” indicates operations with very low controlled delay, while level-of-service “F” describes operations with extremely high average controlled delay. Level-of-service “E” is typically considered to be the limit of acceptable delay, and level-of-service “F” is considered unacceptable by most drivers.

TABLE 2 — LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS	
Level-of-service	Average Control Delay (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Source: Highway Capacity Manual

4.0 EXISTING TRAFFIC ANALYSIS

4.1 Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

- US 78/SR 10 (Monroe Highway) at Mars Hill Road
- US 78/SR 10 (Monroe Highway) at Clotfelter Road

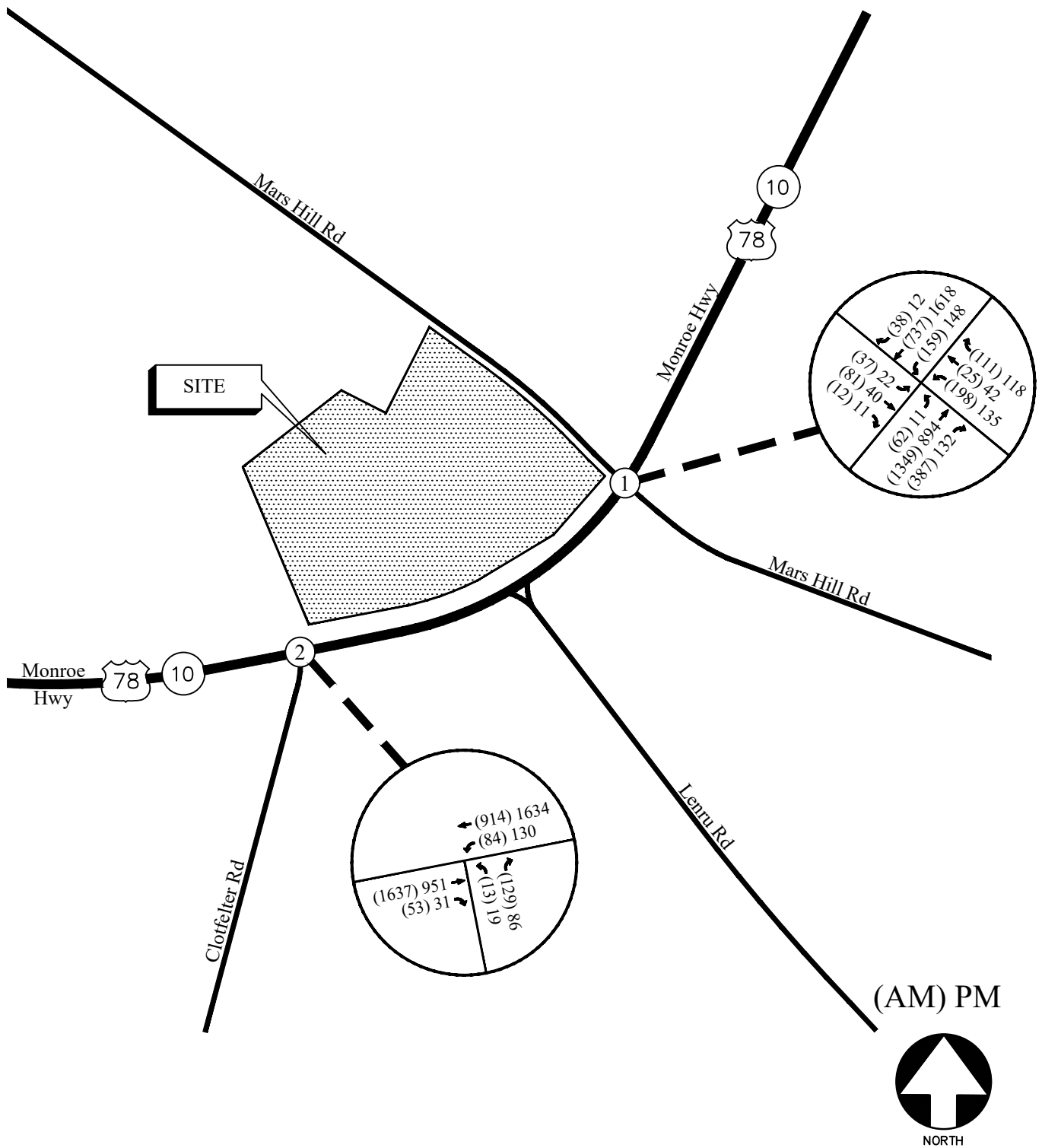
Turning movement counts were collected on Tuesday, December 4, 2018. All turning movement counts were recorded during the AM and PM peak hours between 7:00am to 9:00am and 4:00pm to 6:00pm, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.d

4.2 Existing Traffic Operations

Existing traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3. The existing traffic control and lane geometry for the intersections are shown in Figure 3.

TABLE 3 — EXISTING INTERSECTION OPERATIONS				
Intersection		Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	<u>US 78/SR 10 (Monroe Hwy) @ Mars Hill Rd</u>	Signalized	<u>C (30.4)</u>	<u>B (17.7)</u>
	-Eastbound Approach		C (25.0)	B (11.4)
	-Westbound Approach		C (20.8)	B (10.1)
	-Northbound Approach		E (62.4)	E (64.2)
	-Southbound Approach		E (79.1)	E (82.3)
2	<u>US 78/SR 10 (Monroe Hwy) @ Clotfelter Rd</u>	Stop Controlled on NB Approach		
	-Westbound Left		D (26.0)	B (12.0)
	-Northbound Approach		F (136.4)	C (27.9)




The results of the existing conditions analysis indicate that the signalized intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. The stop-controlled northbound (Clotfelter Road) approach to the intersection of US 78/SR 10 (Monroe Highway) at Clotfelter Road is operating at level-of-service “F” in the AM peak hour. These areas are addressed in the Future Traffic Operations section.

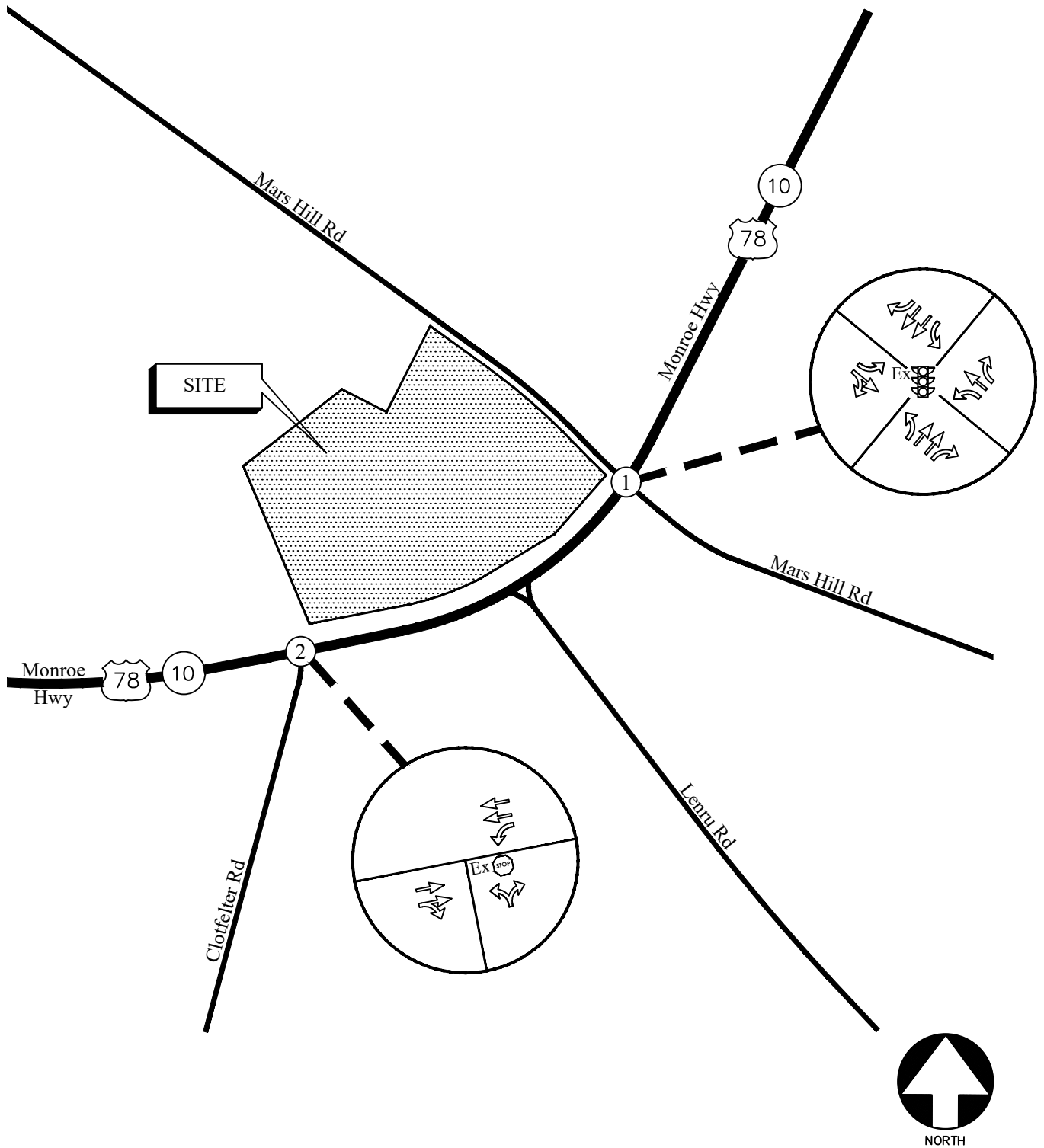


EXISTING WEEKDAY PEAK-HOUR VOLUMES

FIGURE 2
A&R Engineering Inc.

LEGEND

- Ex  Existing Signed Approach
-  Existing Lane Geometry
- Ex  Existing Traffic Signal



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

A&R Engineering Inc.

5.0 PROPOSED DEVELOPMENT

The proposed Bogart Tract mixed-use site will be located in the northwest corner of the intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road in Oconee County, Georgia. A site plan is shown in Figure 4. The development will consist of:

SCENARIO 1:

Phase I:

- Fast-Food Restaurants: 3,000 sf
- Convenience Store with Gas Station: 24 Vehicle Fueling Positions

Phase II:

- Supermarket: 68,000 sf
- Fast-Food Restaurants: 13,000 sf
- Hotel: 200 Rooms
- Office Space: 17,000 sf
- Retail Space: 12,000 sf

The development proposes access at the following locations in Scenario 1:

SCENARIO 1:

Phase I:

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)

Phase II:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)

SCENARIO 2:

This scenario will evaluate the impacts of the entire development with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road.

In addition to the driveways proposed in Scenario 1, the development proposes one more full access driveway as follows in Scenario 2:

- Site Driveway 6: Full-access driveway on US 78/SR 10 (Monroe Highway) aligned with Clotfelter Road – Scenario 2.

5.1 Trip Generation

Trip generation estimates for the project were based on the rates and equations published in the 10th 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 Uses: 310 – Hotel, 710 – General Office Building, 820 – Shopping Center, 850 – Supermarket, 933 – Fast-Food Restaurant without Drive-Through Window, 934 – Fast-Food Restaurant with Drive-Through Window and 960 – Super Convenience Market/Gas Station. Due to the nature of the development, pass-by and mixed-use reductions have been applied per ITE standards. For land-use 933 Fast Food Restaurant without Drive Through, pass-by rate of land-use 820 Shopping Center was used. The calculated trip generation for Phase I of the proposed development is shown in Table 4 and the total trips for the entire development for Phases I and II are shown in Table 5.

TABLE 4— TRIP GENERATION — PHASE I

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hr
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 934 – Fast-Food Restaurant with Drive-Through Window	3,000 sf	61	60	121	51	47	98	1,413
Pass-by Trips (49%) 50%		-30	-29	-59	-26	-24	-50	-500
ITE 960 – Super Convenience Market/Gas Station	24 Fueling Positions	337	337	674	276	275	551	5,532
Pass-by Trips (62%) 56%		-209	-209	-418	-155	-154	-309	-3,090*
Total Trips (without Reductions)		398	397	795	327	322	649	6,945
New External Trips (with Reductions)		159	159	318	146	144	290	3,355

* Daily pass-by reduction estimated to be least of the applied PM peak hour pass-by rate or ten times the PM pass-by volume.

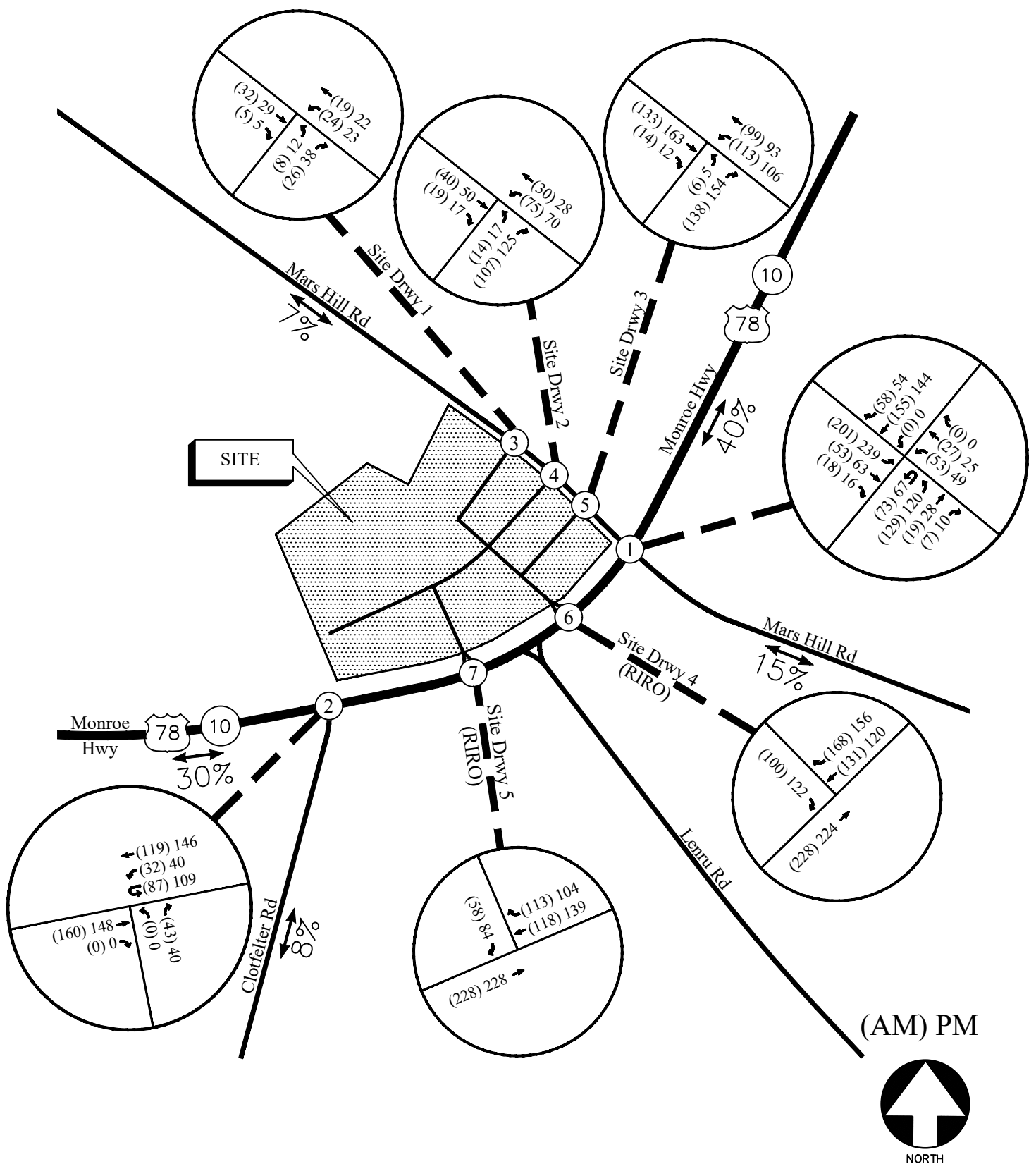
TABLE 5— TRIP GENERATION — PHASE I & II

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hr
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 310 – Hotel	200 Rooms	56	39	95	63	61	124	1,831
Mixed-Use Reduction		-17	-21	-38	-20	-32	-52	-652
ITE 710 – General Office Building	17,000 sf	17	3	20	3	17	20	166
Mixed-Use Reduction		-5	-1	-6	-1	-4	-5	-32
ITE 820 – Shopping Center	12,000 sf	7	4	11	22	24	46	453
Mixed-Use Reduction		-1	-1	-2	-1	-1	-2	-17
Pass-by Trips (0%) 34%		0	0	0	-7	-8	-15	-150
ITE 850 – Supermarket	68,000 sf	156	104	260	299	288	587	6,033
Mixed-Use Reduction		-7	-7	-14	-12	-7	-19	-223
Pass-by Trips (0%) 36%		0	0	0	-103	-101	-204	-2,040
ITE 933 – Fast-Food Restaurant without Drive-Through Window	9,500 sf	143	95	238	135	134	269	3,289
Mixed-Use Reduction		-4	-4	-8	-6	-4	-10	-122
Pass-by Trips (0%) 34%		0	0	0	-44	-44	-88	-880
ITE 934 – Fast-Food Restaurant with Drive-Through Window	6,500 sf	133	128	261	110	102	212	3,061
Mixed-Use Reduction		-4	-4	-8	-6	-3	-9	-113
Pass-by Trips (49%) 50%		-63	-61	-124	-52	-50	-102	-1,020
ITE 960 – Super Convenience Market/Gas Station	24 Fueling Positions	337	337	674	276	275	551	5,532
Mixed-Use Reduction		-6	-6	-12	-11	-6	-17	-205
Pass-by Trips (62%) 56%		-205	-205	-410	-148	-151	-299	-2,990
Total Trips (without Reductions)		849	710	1,559	908	901	1,809	20,365
New External Trips (with Reductions)		537	400	937	497	490	987	11,921

* Daily pass-by reduction estimated to be least of the applied PM peak hour pass-by rate or ten times the PM pass-by volume.

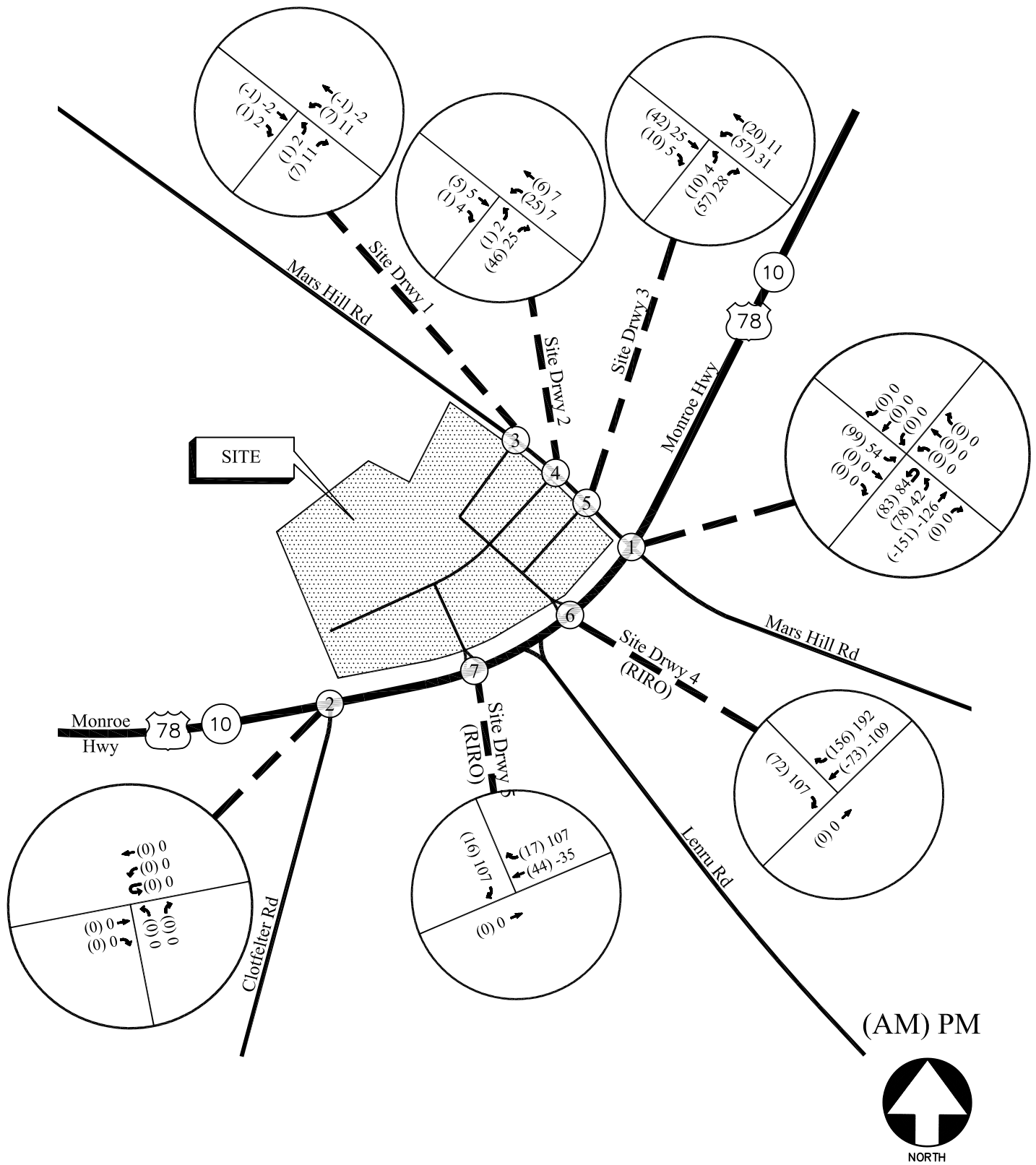
5.2 Trip Distribution

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 entire site are shown in Figure 5. Pass-by volumes have also been distributed based on existing travel patterns and are shown in Figure 6.



SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

FIGURE 5
A&R Engineering Inc.



SITE PEAK HOUR PASS-BY VOLUMES

FIGURE 6
A&R Engineering Inc.

6.0 FUTURE TRAFFIC ANALYSIS

The future traffic operations are analyzed for the “Build” and “No-Build” conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic.

Improvements that are identified as “System Improvements” address deficiencies that are found within the existing road network prior to any impacts from the proposed development’s added traffic. Improvements that are identified as “Site Improvements” address further impacts that are a result of the proposed development’s added traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

6.1 Future “No-Build” Conditions

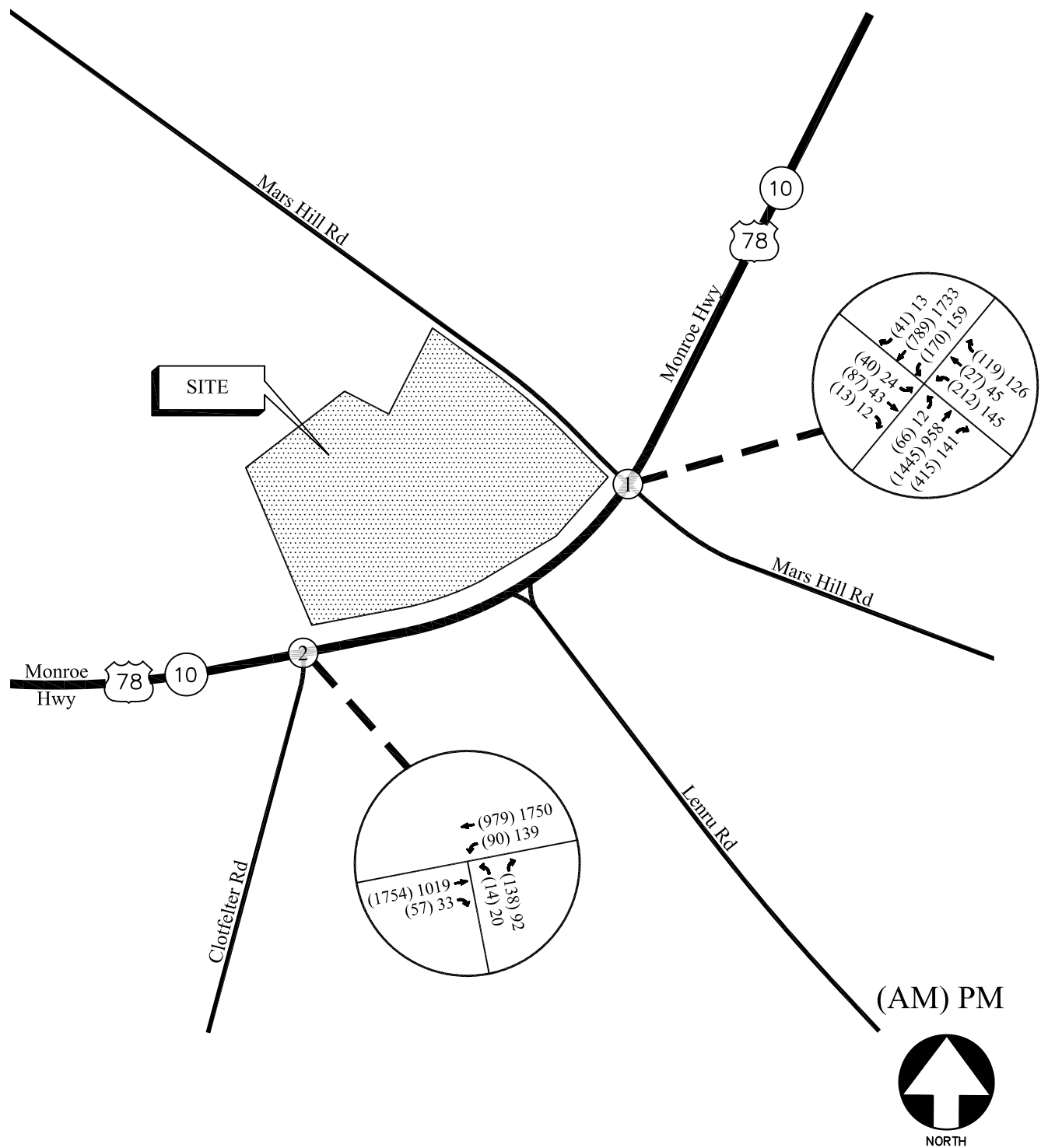
The “No-Build” (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future “No-Build” volumes consist of the existing 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 five years revealed no consistent positive growth of through traffic; therefore, a growth rate of 3.5% was used in the analysis. This growth factor was applied to the existing traffic volumes between collector and arterial roadways in order 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 7.

6.1.2 Future “No-Build” Traffic Operations

The future “No-Build” traffic operations were analyzed using the volumes in Figure 7 and the results are shown in Table 6.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 7
A&R Engineering Inc.

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) and pass-by volumes (Figure 6) were added to base traffic volumes (Figure 7) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes (Figure 8) were used to evaluate the “Build” condition, which includes the projected site traffic. The results of the “Build” operations analysis with the recommended site access configuration are shown in Table 6 for future “No-Build” and “Phase I Build” conditions and in Table 7 for future “Phase II Build with Improvements” and “Scenario 2 Build with Improvement” conditions.

6.2.1 Site Access Configuration

We have analyzed two scenarios of the development. Scenario 1 is a phased construction in two phases: Phase I and Phase II. Scenario 2 is a full construction with an additional full access driveway on US 78 (Monroe Highway aligned with Clotfelter Road). Site access configuration for different scenarios is given below as proposed in the site plan:

SCENARIO 1 - Phase I:

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A dedicated northbound left-turn bay is recommended to be constructed for entering traffic.
 - Entering right-turn movements are recommended to be made from southbound through lane
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A dedicated northbound left-turn bay is recommended to be constructed for entering traffic.
 - A southbound deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound approach is recommended to have only one right-turn lane for exiting traffic.

- The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
- A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.

SCENARIO 1 - Phase I & II:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are to be made from northbound through lane.
 - Entering right-turn movements are recommended to be made from the southbound through lane.
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are recommended to be made from the second northbound receiving lane being dropped as a left-turn lane at this driveway.
 - Entering right-turn movements are recommended to be made from the southbound through lane.
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) recommended is proposed to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are recommended to be made from the extended two-way-left-turn-lane.
 - Entering right-turn movements are recommended to be made from the southbound through lane.

- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) recommended is proposed to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.

Scenario 2 – With Additional Full Access Driveway on US 78/SR 10

In scenario 2, in addition to the five driveways as proposed in Scenario I, Phase I & II, a full access driveway is proposed on US 78/SR 10 (Monroe Highway) across from Clotfelter Road:

- Site Driveway 6: Full Access driveway on US 78/SR 10 (Monroe Highway) across from Clotfelter Road – Scenario 2.
 - This driveway is recommended to consist of one entering and two exiting lanes. The southbound (driveway) approach is recommended to have one dedicated right-turn lane and a shared through / left-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - Entering left-turn movements are recommended to be made from existing eastbound left-turn lane.
 - A deceleration lane is recommended to be constructed for entering right-turn movements.

6.2.2 Future “Build” Traffic Operations

The “Build” conditions are evaluated to determine effectiveness of the recommended system and site improvements. Results of “No-Build” and “Phase I- Build” operations are shown in Table 6 below and “Phase II – Build with Improvements” and “Scenario 2 – Build with Improvements” in Table 7. Recommendations on traffic control and lane geometry are shown graphically in Figure 9. The results of the analyses, including the recommended improvements, are discussed in detail in Section 6.2.3.

TABLE 6 – FUTURE “NO-BUILD” & “PHASE I -BUILD” INTERSECTION OPERATIONS

Intersection		Future Condition: LOS (Delay)			
		NO BUILD		PHASE – I BUILD	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>US 78/SR 10 (Monroe Hwy) @ Mars Hill Rd</u>	<u>D (34.7)</u>	<u>B (18.8)</u>	<u>C (34.8)</u>	<u>C (24.1)</u>
	-Eastbound Approach	C (29.0)	B (12.4)	B (15.5)	B (16.9)
	-Westbound Approach	C (26.0)	B (11.5)	B (11.4)	B (12.6)
	-Northbound Approach	E (66.6)	E (64.9)	F (149.1)	E (77.2)
	-Southbound Approach	E (78.6)	F (82.1)	F (88.9)	E (69.9)
2	<u>US 78/SR 10 (Monroe Hwy) @ Clotfelter Rd</u>				
	-Westbound Left	D (33.0)	B (12.7)	D (30.9)	C (15.8)
	-Northbound Approach	F (235.2)	D (34.2)	F (83.7)	E (40.9)
3	<u>Mars Hill Rd @ Site Drwy 2 (M)</u>				
	-Eastbound Approach	-	-	B (10.1)	A (9.2)
	-Northbound Left			A (7.7)	A (7.5)
4	<u>Mars Hill Rd @ Site Drwy 3 (S)</u>				
	-Eastbound Approach	-	-	B (12.0)	A (9.8)
	-Northbound Left			A (8.1)	A (7.7)
5	<u>US 78/SR 10 @ Site Drwy 4 (E. RIRO)</u>				
	-Southbound Approach	-	-	C (14.0)	E (38.8)
6.	<u>US 78/SR 10 @ Site Drwy 5 (W. RIRO)</u>				
	-Southbound Approach	-	-	C (15.1)	D (27.7)

TABLE 7 – FUTURE “PHASE II –BUILD WITH IMP” & “SCENARIO 2 – BUILD WITH IMP”

Intersection		Future Condition: LOS (Delay)			
		PHASE II – Build with Imp		SCENARIO 2 – Build with Imp	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>US 78/SR 10 (Monroe Hwy) @ Mars Hill Rd</u>	<u>D (53.4)</u>	<u>E (69.3)</u>	<u>D (38.2)</u>	<u>C (32.6)</u>
	-Eastbound Approach	D (40.8)	C (32.3)	C (28.9)	B (19.3)
	-Westbound Approach	D (35.8)	E (66.8)	C (34.4)	C (26.3)
	-Northbound Approach	F (101.8)	E (73.7)	E (71.9)	E (77.2)
	-Southbound Approach	F (116.9)	F (167.8)	E (71.5)	E (72.3)
2	<u>US 78/SR 10 @ Clotfelter Rd (Drwy # 6)</u>				
	-Eastbound Left	-	-	B (13.4)	D (29.9)
	-Westbound Left	F (187.6)	E (40.9)	F (63.1)	C (17.0)
	-Northbound Approach	F (*)	F (*)	F (*)	C (22.8)
	-Southbound Approach	-	-	F (*)	F (*)
3	<u>Mars Hill Rd @ Site Drwy 1 (N)</u>				
	-Eastbound Approach	B (10.7)	A (9.7)	B (10.7)	A (9.7)
	-Northbound Left	A (7.8)	A (7.6)	A (7.8)	A (7.6)
4	<u>Mars Hill Rd @ Site Drwy 2 (M)</u>				
	-Eastbound Approach	B (12.1)	B (10.8)	B (11.8)	B (10.5)
	-Northbound Left	A (8.1)	A (7.8)	A (8.0)	A (7.8)
5	<u>Mars Hill Rd @ Site Drwy 3 (S)</u>				
	-Eastbound Approach	C (17.0)	B (12.7)	B (12.1)	B (10.5)
	-Northbound Left	A (8.9)	A (8.4)	A (8.2)	A (7.9)
6	<u>US 78/SR 10 @ Site Drwy 4 (E. RIRO)</u>				
	-Southbound Approach	D (21.3)	F (140.9)	C (18.5)	F (84.8)
7	<u>US 78 (Monroe Hwy) @ Drwy 5 (W. RIRO)</u>				

-Southbound Approach	C (18.2)	F (121.8)	C (18.0)	F (82.6)
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*Delay exceeds 300 seconds.

6.2.3 Recommendations for Site Improvements

A detailed information on recommended improvements at each intersection is given below:

SCENARIO 1:

Phase I:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I, the intersection will operate at levels-of-service “C” in both AM and PM peak hours after following improvements have been implemented.

- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”. The southbound approach meets GDOT’s Left-Turn Phasing product rule Peak Hour Volume criteria in AM and PM peak hours.
- Construct a southbound deceleration lane on Mars Hill Road.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a northbound left-turn lane for entering traffic.

Site Driveway 3 (Southern) @ Mars Hill Road

- Construct a northbound left-turn lane for entering traffic.
- Construct a deceleration lane for entering traffic.

Site Driveway 4 and 5 (Right-in/right-outs) @ US 78 (Monroe Highway)

- Construct deceleration lanes for entering traffic on both driveways.

Phase II:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I and Phase II, the intersection will operate at levels-of-service “D” and “E” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Add an additional eastbound left-turn/U-turn lane.
- Add a second receiving lane on Mars Hill Road extending up to the proposed Driveway 2 (Middle) and dropping as a northbound left-turn lane at the driveway.
- Extend the existing southbound left-turn lane up to the middle driveway and convert the extended portion of the lane as a two-way-left-turn-lane.
- Construct a southbound right-turn lane on Mars Hill Road for right-turning movement.
- Change the eastbound left-turn signal phasing from “Permissive” to “Protected”.

- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

Site Driveway 3 (Southern) @ Mars Hill Road

- Construct a dedicated northbound left-turn bay for entering traffic.
- Continue the additional northbound receiving lane from the intersection of Mars Hill Road at US 78 (Monroe Highway) up to the middle driveway and drop it there as a northbound left turn lane at the middle driveway.
- Construct a deceleration lane for right-turning movement.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.

Site Driveway 4 and 5 (Right-in/right-outs) @ US 78 (Monroe Highway)

- Construct deceleration lanes for entering traffic on both driveways.

SCENARIO 2:

This scenario will evaluate the impacts of the entire development with an additional full access driveway on US 78/SR 10 (Monroe Highway) across from Clotfelter Road.

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road will be operating at an overall level-of-service “E” in the AM peak hour and “D” in the PM peak hour after the Phase II development is completed and recommended improvements therein have been implemented in scenario I. In scenario 2, after the full project is completed, the intersection will operate at levels-of-service “D” and “C” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Change the eastbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.
- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.
- Construct a southbound deceleration lane on Mars Hill Road.

Site Driveway 3 (Southern) @ Mars Hill Road

- Construct a dedicated northbound left-turn bay for entering traffic.
- Construct a deceleration lane for right-turning movement.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.

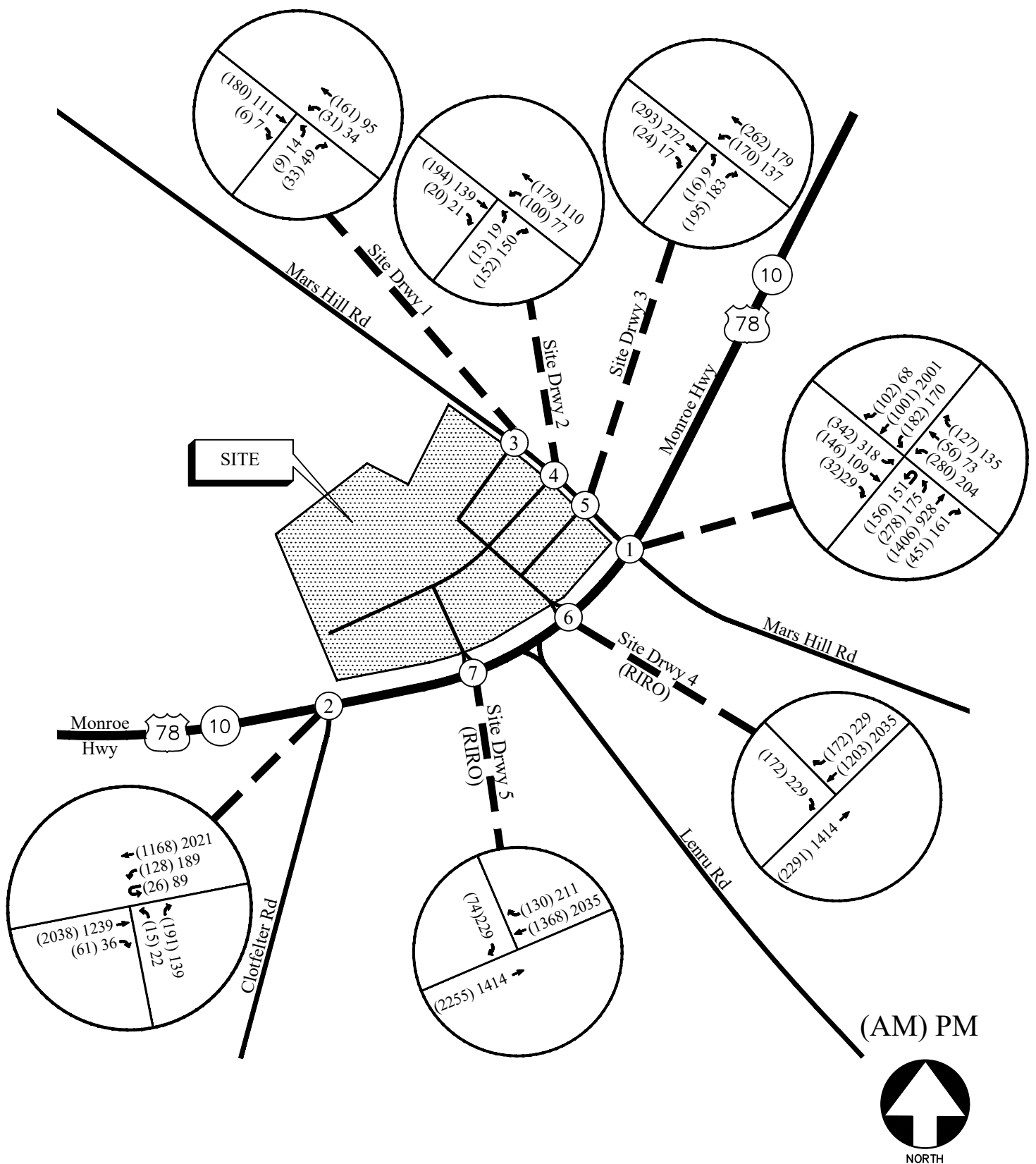
Site Driveway 4 and 5 (Right-in/right-outs) @ US 78 (Monroe Highway)

- Construct deceleration lanes for entering traffic on both driveways.

US 78/SR 10 (Monroe Highway) @ Clotfelter Road/Full-Access Site Driveway # 6

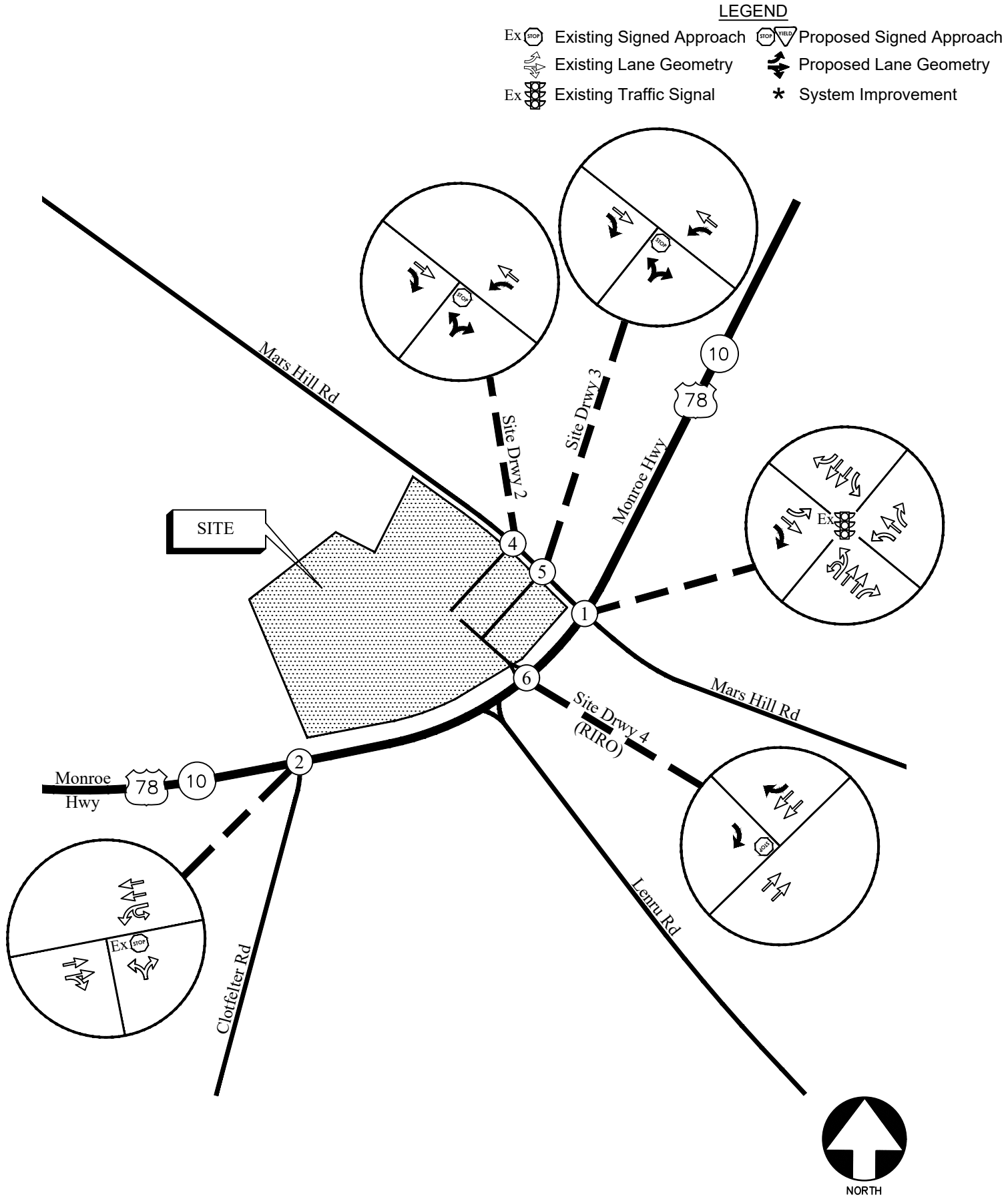
- Construct a westbound deceleration lane for entering right-turning movement.
- It is recommended to install a traffic signal if signal warrants are met. The intersection will potentially meet signal warrants for installation of a traffic signal after the development is

completed. Signal warrants will be even stronger when the neighboring land (which will be sharing the driveway) is also developed.



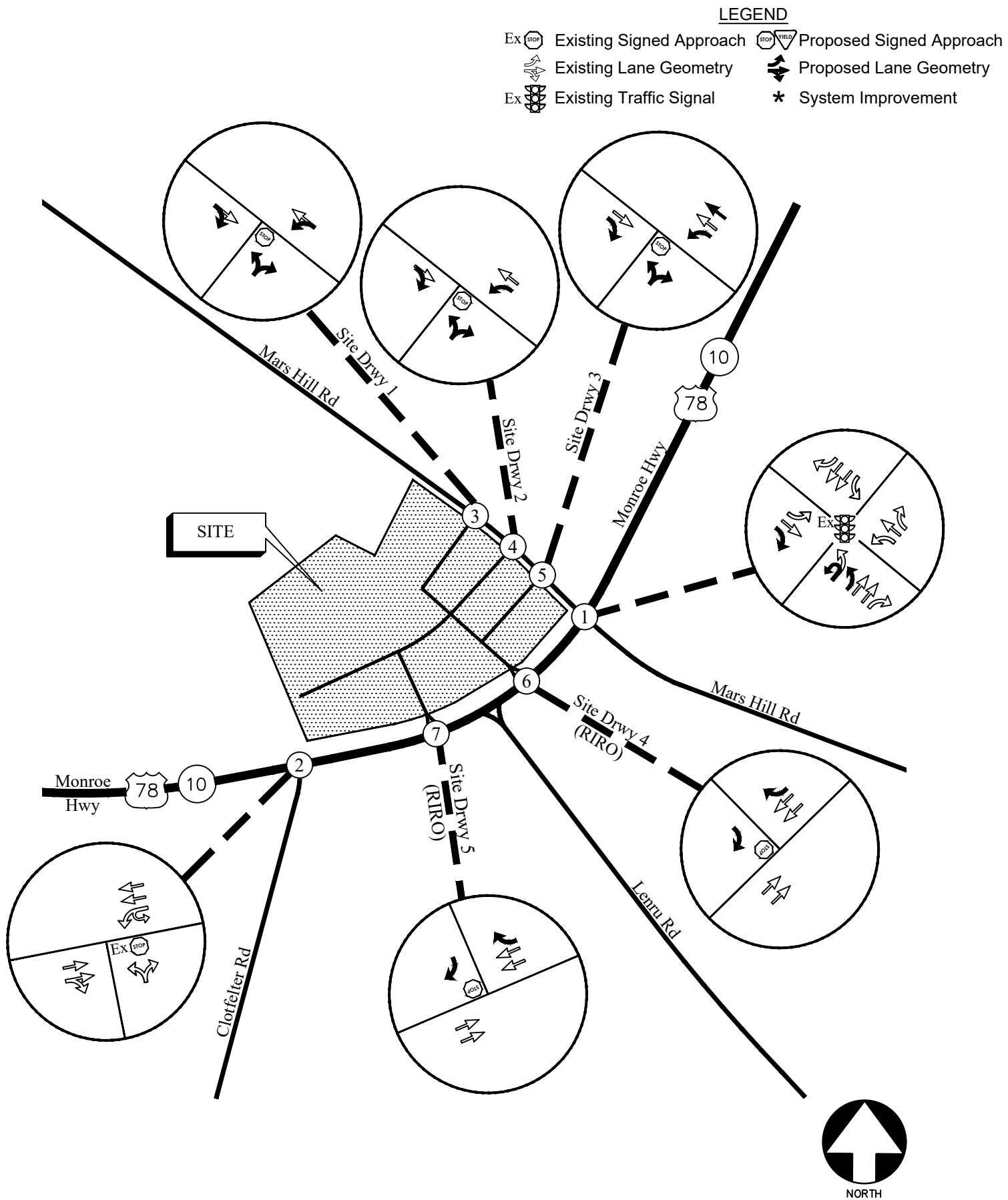
FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES
(SCENARIO 1 - PHASE I & II)

FIGURE 8
A&R Engineering Inc.



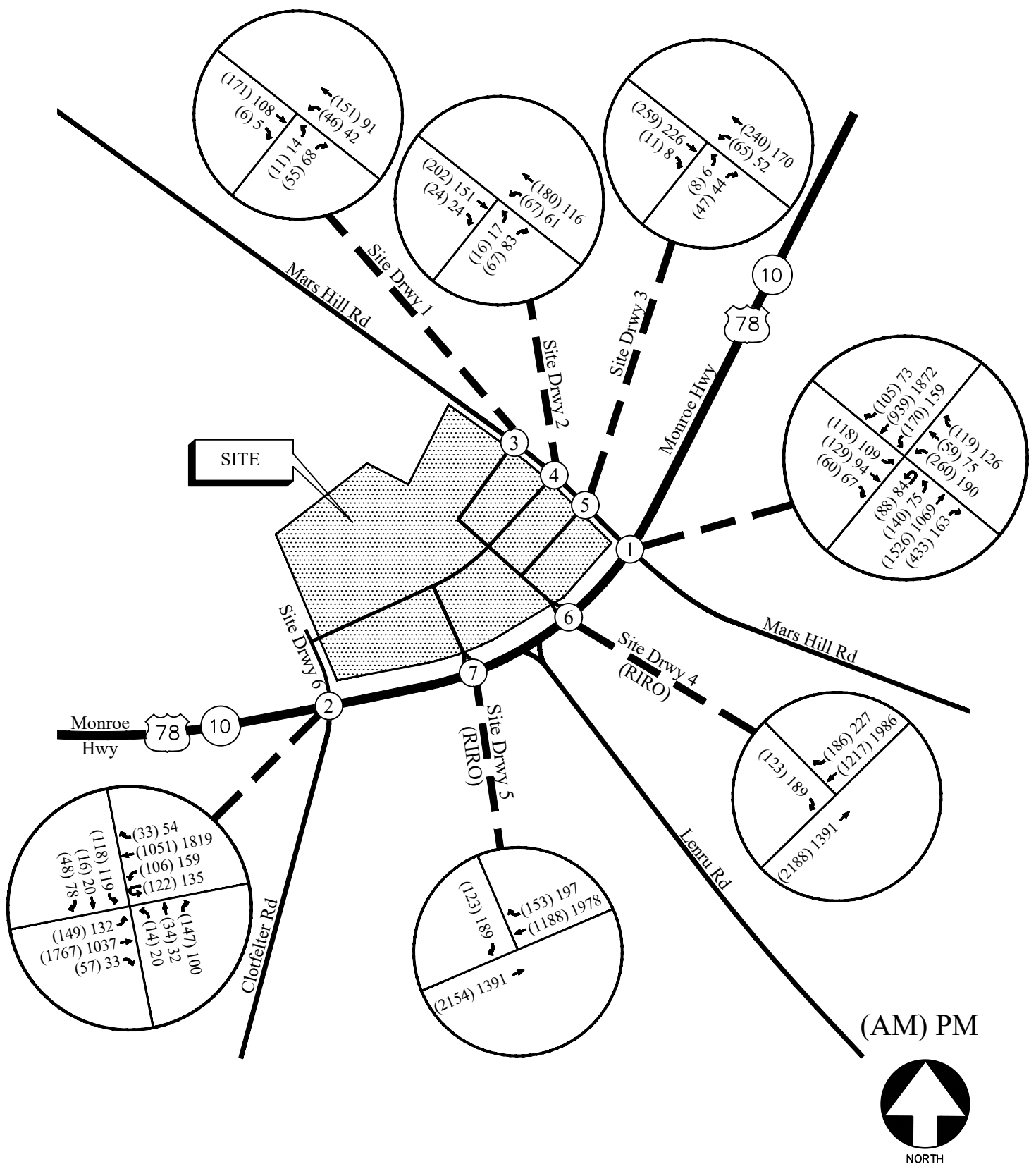
FUTURE TRAFFIC CONTROL AND LANE GEOMETRY
(SCENARIO 1 - PHASE I)

FIGURE 9
A&R Engineering Inc.



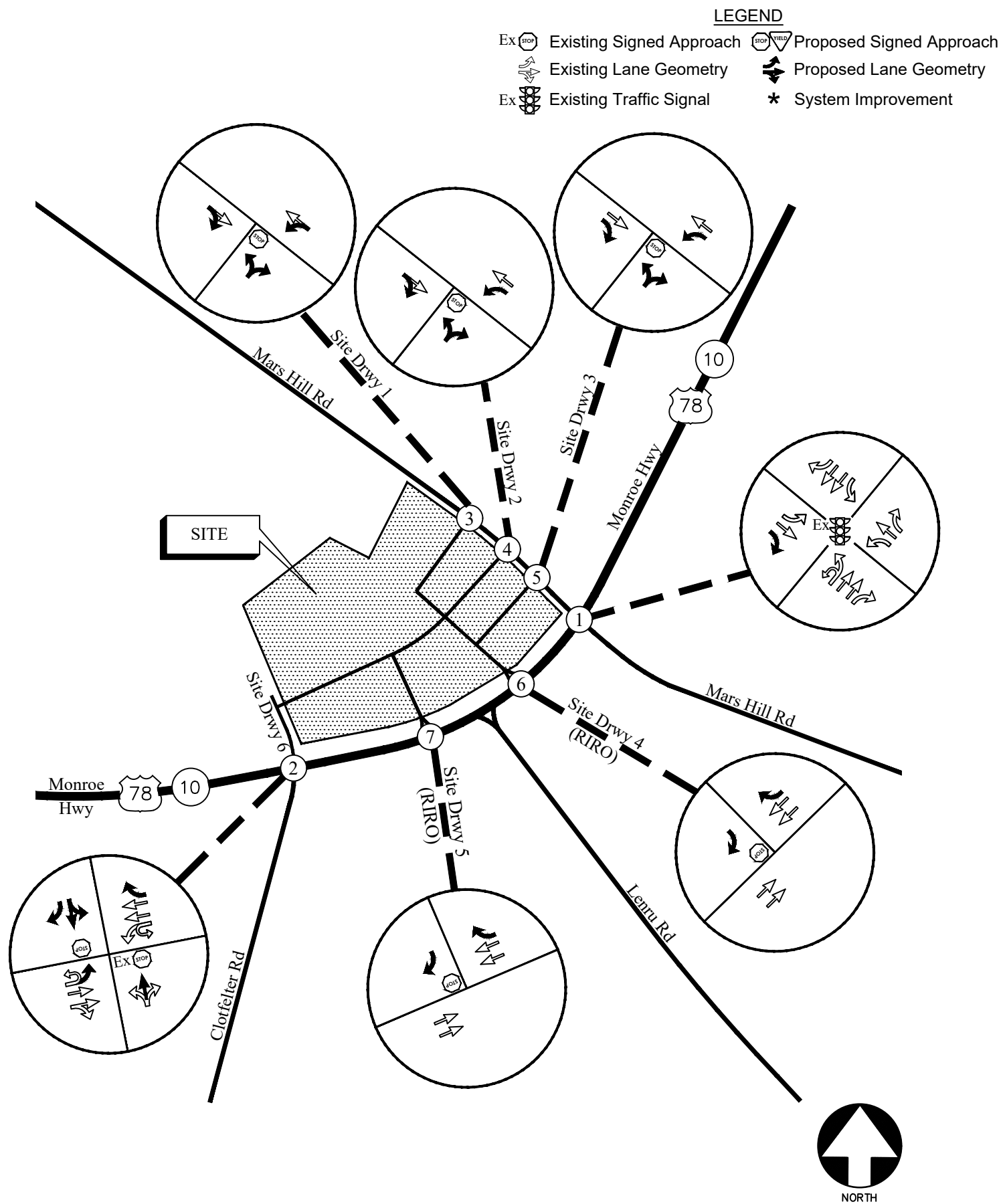
FUTURE TRAFFIC CONTROL AND LANE GEOMETRY
(SCENARIO 1 - PHASE I & II)

FIGURE 10
A&R Engineering Inc.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES
(SCENARIO 2)

FIGURE 11
A&R Engineering Inc.



**FUTURE TRAFFIC CONTROL AND LANE GEOMETRY
(SCENARIO 2)**

**FIGURE 12
A&R Engineering Inc.**

7.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this revision to the original study dated January 21, 2018 and revised on March 13, 2019, is to evaluate the reconfigured and shifted north, driveway # 3 (southern driveway) on Mars Hill Road as a full access driveway. The development consists of two phases and the study includes the following two scenarios:

Scenario 1: Phase I – Convenience Store and 3,000 SF Fast Food Restaurant

Phase II – Rest of the Development

Scenario 2: Full Development with an additional full access driveway on US 78 (Monroe Highway)

This revised traffic study will determine the traffic impact that will result from the proposed Bogart Tract mixed-use development if it were to be developed in phases I and II and also if it were to be developed in full with an additional full access driveway on US 78 (Monroe Highway) across from Clotfelter Road. The proposed development is located in the northwest corner of the intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road in the Oconee County, Georgia. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The proposed development when constructed will consist of:

- Supermarket: 68,000 sf
- Fast-Food Restaurants: 16,000 sf
- Hotel: 200 Rooms
- Office Space: 17,000 sf
- Retail Space: 12,000 sf
- Convenience Store with Gas Station: 24 Vehicle Fueling Positions

The development proposes three full-access driveways on Mars Hill Road and two right-in/right-out driveways on US 78/SR 10 (Monroe Highway). An additional full access driveway on US 78 (Monroe Highway) aligned with Clotfelter Road is proposed in scenario 2. Existing and future operations after completion of the project were analyzed at the intersections of:

- US 78/SR 10 (Monroe Highway) at Mars Hill Road
- US 78/SR 10 (Monroe Highway) at Clotfelter Road

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 the analysis are listed below:

7.1 Site Access Configuration

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

SCENARIO 1 - Phase I:

- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A dedicated northbound left-turn bay is recommended to be constructed for entering traffic.
 - Entering right-turn movements are recommended to be made from southbound through lane
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - A dedicated northbound left-turn bay is recommended to be constructed for entering traffic.
 - A southbound deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.

SCENARIO 1 - Phase I & II:

- Site Driveway 1: Full-access driveway (northern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are to be made from northbound through lane.
 - Entering right-turn movements are recommended to be made from the southbound through lane.
- Site Driveway 2: Full-access driveway (middle) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) approach is recommended to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are recommended to be made from the second northbound receiving lane being dropped as a left-turn lane at this driveway.
 - Entering right-turn movements are recommended to be made from the southbound through lane.
- Site Driveway 3: Full-access driveway (southern) on Mars Hill Road
 - This driveway is recommended to consist of one entering and one exiting lane. The eastbound (driveway) recommended is proposed to have a shared left / right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the eastbound approach.
 - Entering left-turn movements are recommended to be made from the extended two-way-left-turn-lane.
 - Entering right-turn movements are recommended to be made from the southbound through lane.
- Site Driveway 4: Right-in/right-out driveway (eastern) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) approach is recommended to have only one right-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - A deceleration lane is recommended to be constructed for entering traffic.
- Site Driveway 5: Right-in/right-out driveway (western) on US 78/SR 10 (Monroe Highway)
 - This driveway is recommended to consist of one entering and one exiting lane. The southbound (driveway) recommended is proposed to have only one right-turn lane for exiting traffic.

- The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
- A deceleration lane is recommended to be constructed for entering traffic.

Scenario 2 – With Additional Full Access Driveway on US 78/SR 10

In scenario 2, in addition to the five driveways as proposed in Scenario I, Phase I & II, a full access driveway is proposed on US 78/SR 10 (Monroe Highway) across from Clotfelter Road:

- Site Driveway 6: Full Access driveway on US 78/SR 10 (Monroe Highway) across from Clotfelter Road – Scenario 2.
 - This driveway is recommended to consist of one entering and two exiting lanes. The southbound (driveway) approach is recommended to have one dedicated right-turn lane and a shared through / left-turn lane for exiting traffic.
 - The intersection is recommended to be un-signalized with a STOP sign on the southbound approach.
 - Entering left-turn movements are recommended to be made from existing eastbound left-turn lane.
 - A deceleration lane is recommended to be constructed for entering right-turn movements.

7.2 Recommendations for Site Improvements

A detailed information on recommended improvements at each intersection is given below:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I, the intersection will operate at levels-of-service “C” in both AM and PM peak hours after following improvements have been implemented.

- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”. The southbound approach meets GDOT’s Left-Turn Phasing product rule Peak Hour Volume criteria in AM and PM peak hours.
- Construct a southbound deceleration lane on Mars Hill Road.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a northbound left-turn lane for entering traffic.

Site Driveway 3 (Southern) @ Mars Hill Road

- Construct a northbound left-turn lane for entering traffic.
- Construct a deceleration lane for entering traffic.

Site Driveway 4 and 5 (Right-in/right-outs) @ US 78 (Monroe Highway)

- Construct deceleration lanes for entering traffic on both driveways.

Phase II:

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road is currently operating at an overall level-of-service “C” in the AM peak hour and “B” in the PM peak hour. After accounting for growth of background traffic and project traffic from Phase I and Phase II, the intersection will operate at levels-of-service “D” and “E” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Add an additional eastbound left-turn/U-turn lane.
- Add a second receiving lane on Mars Hill Road extending up to the proposed Driveway 2 (Middle) and dropping as a northbound left-turn lane at the driveway.
- Extend the existing southbound left-turn lane up to the middle driveway and convert the extended portion of the lane as a two-way-left-turn-lane.
- Construct a southbound right-turn lane on Mars Hill Road for right-turning movement.
- Change the eastbound left-turn signal phasing from “Permissive” to “Protected”.
- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

Site Driveway 3 (Southern) @ Mars Hill Road

- Construct a dedicated northbound left-turn bay for entering traffic.
- Continue the additional northbound receiving lane from the intersection of Mars Hill Road at US 78 (Monroe Highway) up to the middle driveway and drop it there as a northbound left turn lane at the middle driveway.
- Construct a deceleration lane for right-turning movement.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.

Site Driveway 4 and 5 (Right-in/right-outs) @ US 78 (Monroe Highway)

- Construct deceleration lanes for entering traffic on both driveways.

SCENARIO 2:

This scenario will evaluate the impacts of the entire development with an additional full access driveway on US 78/SR 10 (Monroe Highway) across from Clotfelter Road.

US 78/SR 10 (Monroe Highway) @ Mars Hill Road

The intersection of US 78/SR 10 (Monroe Highway) at Mars Hill Road will be operating at an overall level-of-service “E” in the AM peak hour and “D” in the PM peak hour after the Phase II development is completed and recommended improvements therein have been implemented in scenario I. In scenario 2, after the full project is completed, the intersection will operate at levels-of-service “D” and “C” in the morning and evening peak hours, respectively after the following improvements have been implemented.

- Change the eastbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.
- Change the southbound left-turn signal phasing from “Permissive” to “Protected-Permissive”.

- Construct a southbound deceleration lane on Mars Hill Road.

Site Driveway 3 (Southern) @ Mars Hill Road

- Construct a dedicated northbound left-turn bay for entering traffic.
- Construct a deceleration lane for right-turning movement.

Site Driveway 2 (Middle) @ Mars Hill Road

- Construct a left-turn lane for entering traffic.

Site Driveway 4 and 5 (Right-in/right-outs) @ US 78 (Monroe Highway)

- Construct deceleration lanes for entering traffic on both driveways.

US 78/SR 10 (Monroe Highway) @ Clotfelter Road/Full-Access Site Driveway # 6

- Construct a westbound deceleration lane for entering right-turning movement.
- It is recommended to install a traffic signal if signal warrants are met. The intersection will potentially meet signal warrants for installation of a traffic signal after the development is completed. Signal warrants will be even stronger when the neighboring land (which will be sharing the driveway) is also developed.

Appendix

Existing Intersection Traffic Counts	
Existing Intersection Analysis.....	
AASHTO LEFT-TURN LANE ANALYSIS	
NCHRP 457 Right Turn Lane Analysis.....	
Future “No-Build” Intersection Analysis	
Future “Build” Intersection Analysis (With Improvements)	
Traffic Volume Worksheets	

EXISTING INTERSECTION TRAFFIC COUNTS

A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data
US 78/SR 10 (Monroe Hwy) @
Mars Hill Rd
7-9 am | 4-6 pm

File Name : 20180315
Site Code : 20180315
Start Date : 12/4/2018
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Mars Hill Road Northbound				Mars Hill Road Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	20	2	11	33	5	8	2	15	9	218	36	263	38	123	6	167	478
07:15 AM	39	5	26	70	9	15	1	25	16	275	72	363	41	166	16	223	681
07:30 AM	42	4	28	74	5	27	4	36	23	351	148	522	42	202	8	252	884
07:45 AM	63	12	31	106	17	17	4	38	11	389	94	494	40	196	7	243	881
Total	164	23	96	283	36	67	11	114	59	1233	350	1642	161	687	37	885	2924
08:00 AM	54	4	26	84	6	22	3	31	12	334	73	419	36	173	7	216	750
08:15 AM	18	3	18	39	5	5	5	15	4	292	44	340	34	161	6	201	595
08:30 AM	36	3	13	52	5	7	2	14	5	268	45	318	31	134	7	172	556
08:45 AM	18	5	9	32	2	6	2	10	3	245	43	291	29	128	7	164	497
Total	126	15	66	207	18	40	12	70	24	1139	205	1368	130	596	27	753	2398
*** BREAK ***																	
04:00 PM	68	8	28	104	6	10	2	18	2	188	39	229	28	267	3	298	649
04:15 PM	56	12	32	100	5	12	1	18	3	203	43	249	32	286	5	323	690
04:30 PM	39	14	29	82	4	9	3	16	2	212	35	249	37	299	4	340	687
04:45 PM	42	13	27	82	6	13	2	21	1	200	41	242	39	342	3	384	729
Total	205	47	116	368	21	44	8	73	8	803	158	969	136	1194	15	1345	2755
05:00 PM	38	11	31	80	7	12	2	21	2	204	34	240	41	391	2	434	775
05:15 PM	35	10	25	70	5	8	4	17	4	225	36	265	38	424	5	467	819
05:30 PM	33	9	33	75	6	11	2	19	2	241	33	276	36	421	3	460	830
05:45 PM	29	12	29	70	4	9	3	16	3	224	29	256	33	382	2	417	759
Total	135	42	118	295	22	40	11	73	11	894	132	1037	148	1618	12	1778	3183
Grand Total	630	127	396	1153	97	191	42	330	102	4069	845	5016	575	4095	91	4761	11260
Apprch %	54.6	11	34.3		29.4	57.9	12.7		2	81.1	16.8		12.1	86	1.9		
Total %	5.6	1.1	3.5	10.2	0.9	1.7	0.4	2.9	0.9	36.1	7.5	44.5	5.1	36.4	0.8	42.3	

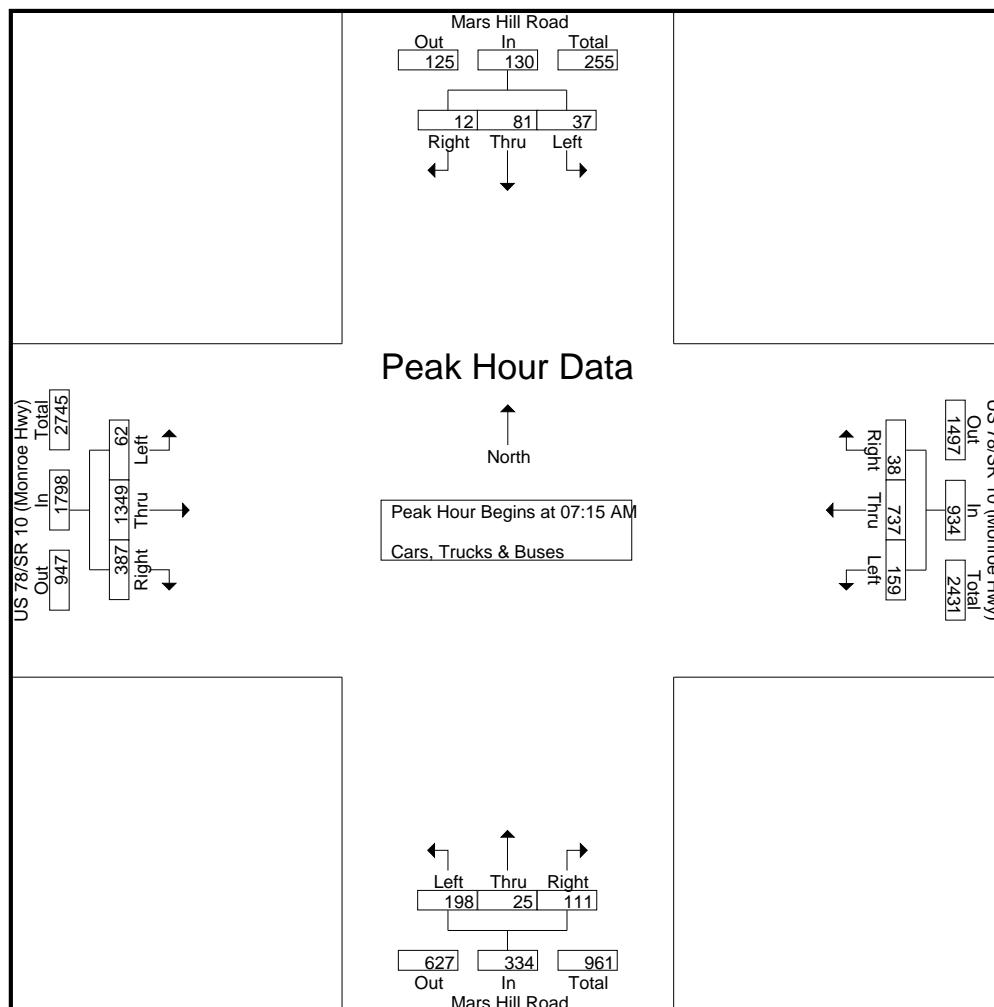
A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data
US 78/SR 10 (Monroe Hwy) @
Mars Hill Rd
7-9 am | 4-6 pm

File Name : 20180315
Site Code : 20180315
Start Date : 12/4/2018
Page No : 2

	Mars Hill Road Northbound				Mars Hill Road Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	39	5	26	70	9	15	1	25	16	275	72	363	41	166	16	223	681
07:30 AM	42	4	28	74	5	27	4	36	23	351	148	522	42	202	8	252	884
07:45 AM	63	12	31	106	17	17	4	38	11	389	94	494	40	196	7	243	881
08:00 AM	54	4	26	84	6	22	3	31	12	334	73	419	36	173	7	216	750
Total Volume	198	25	111	334	37	81	12	130	62	1349	387	1798	159	737	38	934	3196
% App. Total	59.3	7.5	33.2		28.5	62.3	9.2		3.4	75	21.5		17	78.9	4.1		
PHF	.786	.521	.895	.788	.544	.750	.750	.855	.674	.867	.654	.861	.946	.912	.594	.927	.904



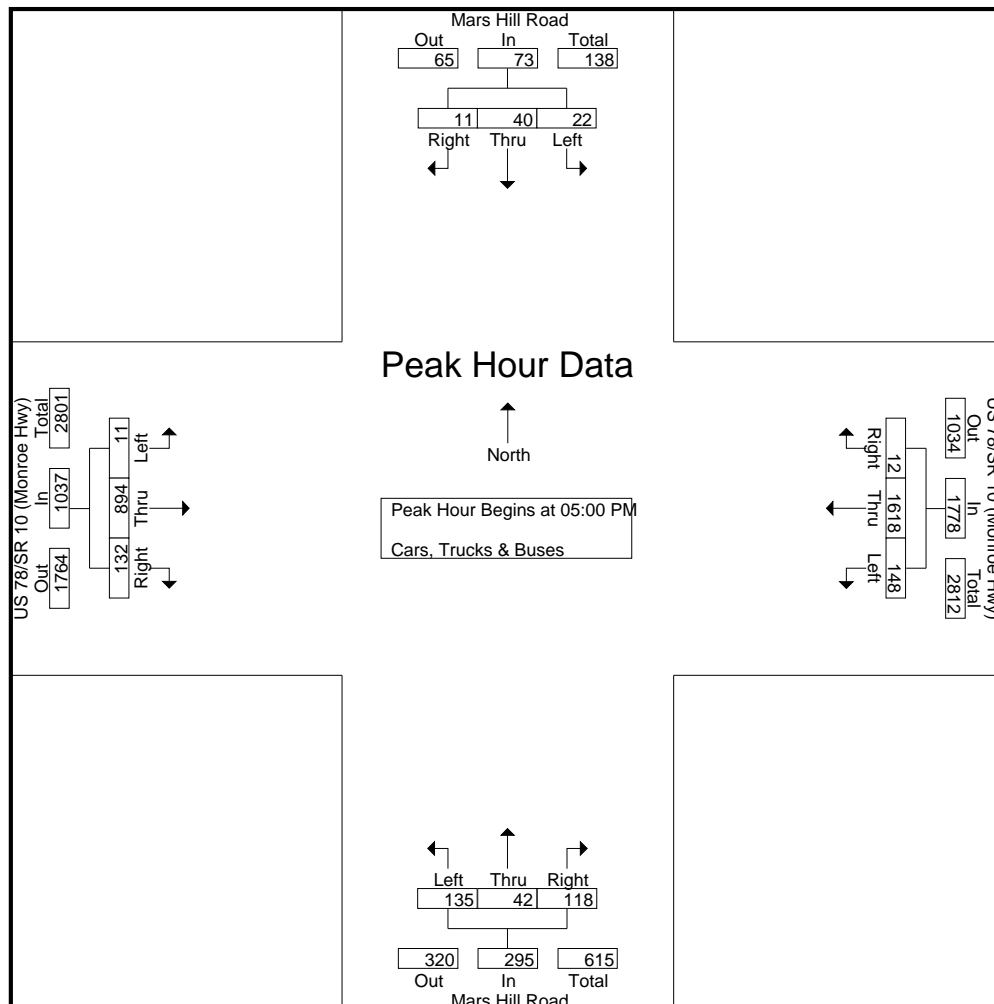
A&R Engineering, Inc.

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TMC Data
US 78/SR 10 (Monroe Hwy) @
Mars Hill Rd
7-9 am | 4-6 pm

File Name : 20180315
Site Code : 20180315
Start Date : 12/4/2018
Page No : 3

	Mars Hill Road Northbound				Mars Hill Road Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	38	11	31	80	7	12	2	21	2	204	34	240	41	391	2	434	775
05:15 PM	35	10	25	70	5	8	4	17	4	225	36	265	38	424	5	467	819
05:30 PM	33	9	33	75	6	11	2	19	2	241	33	276	36	421	3	460	830
05:45 PM	29	12	29	70	4	9	3	16	3	224	29	256	33	382	2	417	759
Total Volume	135	42	118	295	22	40	11	73	11	894	132	1037	148	1618	12	1778	3183
% App. Total	45.8	14.2	40		30.1	54.8	15.1		1.1	86.2	12.7		8.3	91	0.7		
PHF	.888	.875	.894	.922	.786	.833	.688	.869	.688	.927	.917	.939	.902	.954	.600	.952	.959



A&R Engineering, Inc.

2160 Kingston Court, Suite O
Marietta, GA 30067

TMC Data
US 78/SR 10 (Monroe Hwy) @
Clotfelter Rd
7-9 am | 4-6 pm

File Name : 20180316
Site Code : 20180316
Start Date : 12/4/2018
Page No : 1

Groups Printed- Cars, Trucks & Buses

Start Time	Clotfelter Rd Northbound				Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	2	0	16	18	0	0	0	0	0	235	11	246	9	140	0	149	413
07:15 AM	3	0	17	20	0	0	0	0	0	345	19	364	12	213	0	225	609
07:30 AM	6	0	33	39	0	0	0	0	0	452	10	462	18	217	0	235	736
07:45 AM	3	0	46	49	0	0	0	0	0	463	11	474	21	269	0	290	813
Total	14	0	112	126	0	0	0	0	0	1495	51	1546	60	839	0	899	2571
08:00 AM	1	0	33	34	0	0	0	0	0	377	13	390	33	215	0	248	672
08:15 AM	6	0	23	29	0	0	0	0	0	283	6	289	20	168	0	188	506
08:30 AM	0	0	23	23	0	0	0	0	0	277	3	280	25	153	0	178	481
08:45 AM	3	0	33	36	0	0	0	0	0	249	1	250	10	146	0	156	442
Total	10	0	112	122	0	0	0	0	0	1186	23	1209	88	682	0	770	2101
*** BREAK ***																	
04:00 PM	5	0	17	22	0	0	0	0	0	212	8	220	28	287	0	315	557
04:15 PM	3	0	17	20	0	0	0	0	0	232	4	236	25	305	0	330	586
04:30 PM	8	0	22	30	0	0	0	0	0	227	8	235	20	321	0	341	606
04:45 PM	6	0	19	25	0	0	0	0	0	223	8	231	21	365	0	386	642
Total	22	0	75	97	0	0	0	0	0	894	28	922	94	1278	0	1372	2391
05:00 PM	4	0	11	15	0	0	0	0	0	229	5	234	36	395	0	431	680
05:15 PM	8	0	25	33	0	0	0	0	0	240	6	246	30	433	0	463	742
05:30 PM	5	0	27	32	0	0	0	0	0	249	10	259	27	429	0	456	747
05:45 PM	2	0	23	25	0	0	0	0	0	233	10	243	37	377	0	414	682
Total	19	0	86	105	0	0	0	0	0	951	31	982	130	1634	0	1764	2851
Grand Total	65	0	385	450	0	0	0	0	0	4526	133	4659	372	4433	0	4805	9914
Apprch %	14.4	0	85.6		0	0	0		0	97.1	2.9		7.7	92.3	0		
Total %	0.7	0	3.9	4.5	0	0	0	0	0	45.7	1.3	47	3.8	44.7	0	48.5	

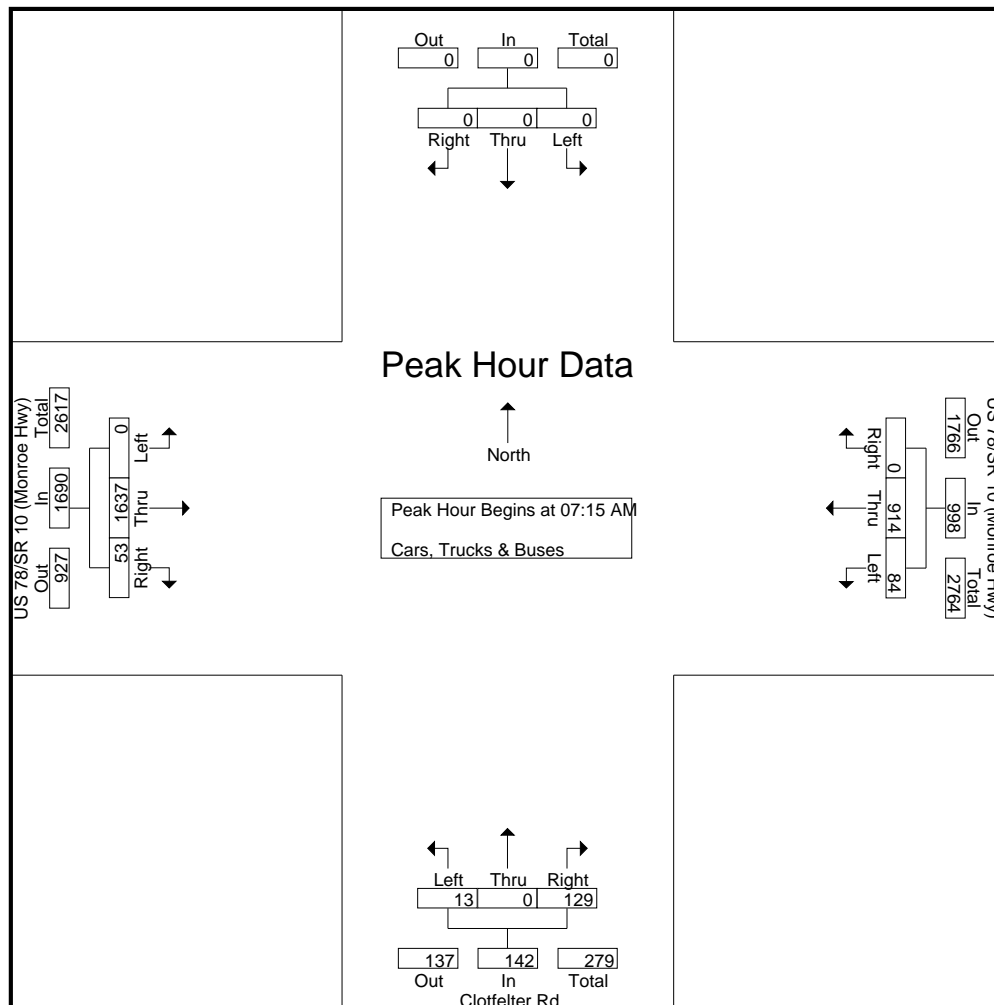
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TMC Data
US 78/SR 10 (Monroe Hwy) @
Clotfelter Rd
7-9 am | 4-6 pm

File Name : 20180316
Site Code : 20180316
Start Date : 12/4/2018
Page No : 2

	Clotfelter Rd Northbound				Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	3	0	17	20	0	0	0	0	0	345	19	364	12	213	0	225	609
07:30 AM	6	0	33	39	0	0	0	0	0	452	10	462	18	217	0	235	736
07:45 AM	3	0	46	49	0	0	0	0	0	463	11	474	21	269	0	290	813
08:00 AM	1	0	33	34	0	0	0	0	0	377	13	390	33	215	0	248	672
Total Volume	13	0	129	142	0	0	0	0	0	1637	53	1690	84	914	0	998	2830
% App. Total	9.2	0	90.8		0	0	0		0	96.9	3.1		8.4	91.6	0		
PHF	.542	.000	.701	.724	.000	.000	.000	.000	.000	.884	.697	.891	.636	.849	.000	.860	.870



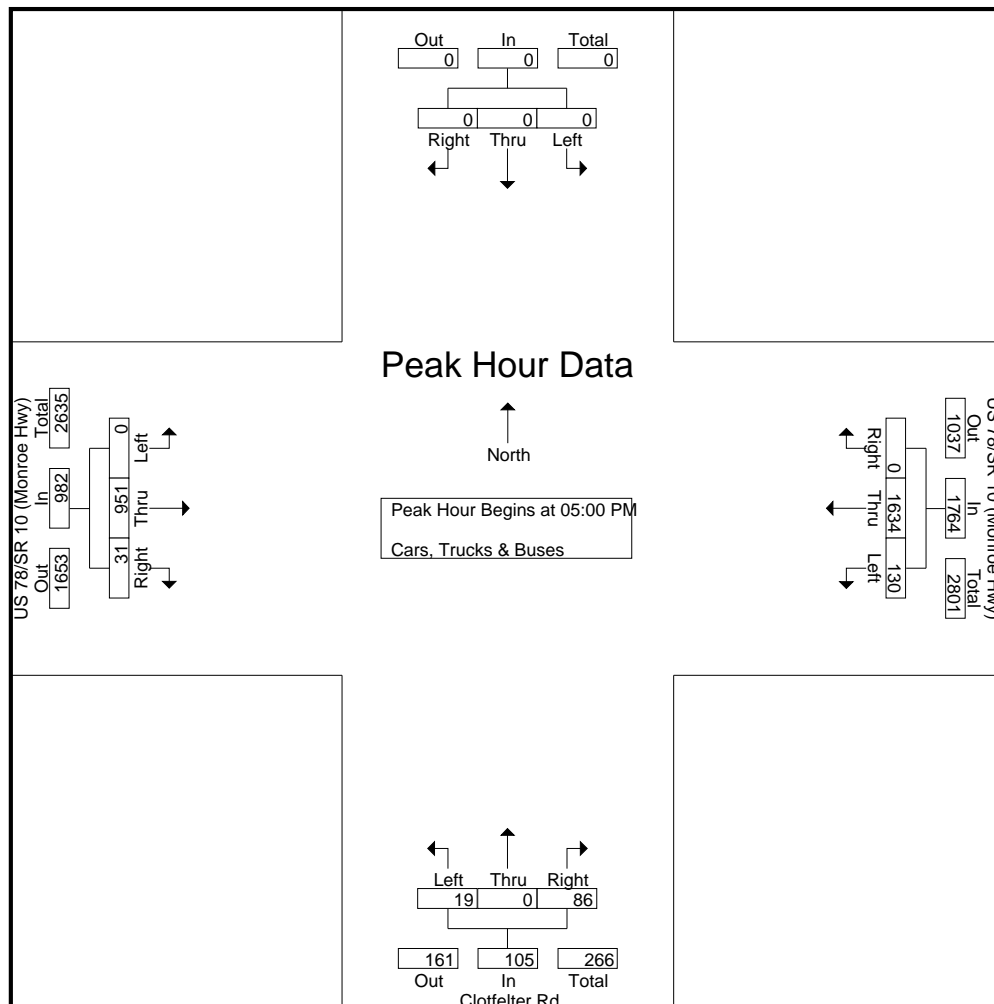
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TMC Data
US 78/SR 10 (Monroe Hwy) @
Clotfelter Rd
7-9 am | 4-6 pm

File Name : 20180316
Site Code : 20180316
Start Date : 12/4/2018
Page No : 3























	Clotfelter Rd Northbound				Southbound				US 78/SR 10 (Monroe Hwy) Eastbound				US 78/SR 10 (Monroe Hwy) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	4	0	11	15	0	0	0	0	0	229	5	234	36	395	0	431	680
05:15 PM	8	0	25	33	0	0	0	0	0	240	6	246	30	433	0	463	742
05:30 PM	5	0	27	32	0	0	0	0	0	249	10	259	27	429	0	456	747
05:45 PM	2	0	23	25	0	0	0	0	0	233	10	243	37	377	0	414	682
Total Volume	19	0	86	105	0	0	0	0	0	951	31	982	130	1634	0	1764	2851
% App. Total	18.1	0	81.9		0	0	0		0	96.8	3.2		7.4	92.6	0		
PHF	.594	.000	.796	.795	.000	.000	.000	.000	.000	.955	.775	.948	.878	.943	.000	.952	.954



EXISTING INTERSECTION ANALYSIS

Timings 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing AM
02/20/2020

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	62	1349	387	159	737	38	198	25	111	37	81
Future Volume (vph)	62	1349	387	159	737	38	198	25	111	37	81
Lane Group Flow (vph)	93	1551	595	167	810	64	251	48	123	69	124
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	59.0	59.0	59.0	15.0	74.0	74.0	27.0	86.0	86.0	59.0	59.0
Total Split (%)	36.9%	36.9%	36.9%	9.4%	46.3%	46.3%	16.9%	53.8%	53.8%	36.9%	36.9%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.25	0.76	0.59	0.91	0.34	0.06	0.80	0.10	0.24	0.51	0.67
Control Delay	20.7	30.0	15.4	73.7	12.5	3.4	68.9	43.0	7.4	80.7	83.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	30.0	15.4	73.7	12.5	3.4	68.9	43.0	7.4	80.7	83.2
Queue Length 50th (ft)	48	635	229	90	184	3	226	38	0	70	122
Queue Length 95th (ft)	66	750	173	#250	248	7	259	40	50	70	153
Internal Link Dist (ft)		1727			871			601			583
Turn Bay Length (ft)	475		222	450		155	95		60	60	
Base Capacity (vph)	369	2028	1011	183	2360	1074	320	937	857	452	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.76	0.59	0.91	0.34	0.06	0.78	0.05	0.14	0.15	0.20

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

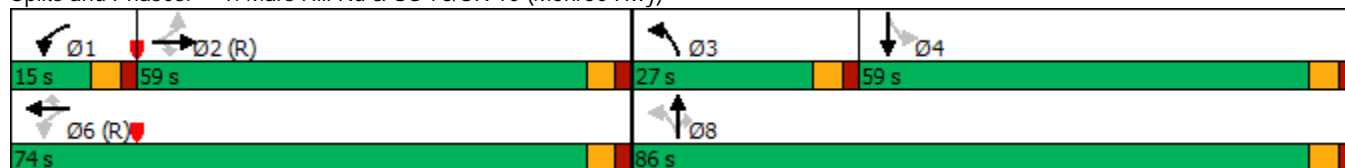
Natural Cycle: 145

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

























Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing AM
02/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	1349	387	159	737	38	198	25	111	37	81	12
Future Volume (veh/h)	62	1349	387	159	737	38	198	25	111	37	81	12
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	93	1551	595	167	810	64	251	48	123	69	108	16
Peak Hour Factor	0.67	0.87	0.65	0.95	0.91	0.59	0.79	0.52	0.90	0.54	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	2111	941	188	2414	1077	305	471	400	146	133	20
Arrive On Green	0.59	0.59	0.59	0.05	0.68	0.68	0.13	0.25	0.25	0.08	0.08	0.08
Sat Flow, veh/h	634	3554	1585	1781	3554	1585	1781	1870	1585	1214	1592	236
Grp Volume(v), veh/h	93	1551	595	167	810	64	251	48	123	69	0	124
Grp Sat Flow(s),veh/h/ln	634	1777	1585	1781	1777	1585	1781	1870	1585	1214	0	1828
Q Serve(g_s), s	11.4	50.3	39.0	6.1	15.2	2.2	20.2	3.2	10.1	8.8	0.0	10.7
Cycle Q Clear(g_c), s	12.9	50.3	39.0	6.1	15.2	2.2	20.2	3.2	10.1	8.8	0.0	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	416	2111	941	188	2414	1077	305	471	400	146	0	152
V/C Ratio(X)	0.22	0.73	0.63	0.89	0.34	0.06	0.82	0.10	0.31	0.47	0.00	0.81
Avail Cap(c_a), veh/h	416	2111	941	203	2414	1077	305	941	797	451	0	611
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	23.4	21.1	34.3	10.7	8.6	55.8	45.9	48.5	71.3	0.0	72.1
Incr Delay (d2), s/veh	1.2	2.3	3.2	33.4	0.4	0.1	16.3	0.1	0.4	2.4	0.0	10.0
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(95%),veh/ln	3.1	27.3	21.4	9.4	9.4	1.3	15.8	2.7	7.3	5.1	0.0	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	25.7	24.3	67.7	11.0	8.7	72.1	46.0	48.9	73.6	0.0	82.1
LnGrp LOS	B	C	C	E	B	A	E	D	D	E	A	F
Approach Vol, veh/h	2239			1041			422			193		
Approach Delay, s/veh	25.0			20.0			62.4			79.1		
Approach LOS	C			B			E			E		
Timer - Assigned Phs	1	2	3	4	6			8				
Phs Duration (G+Y+Rc), s	13.6	100.5	27.0	18.8	114.2			45.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5			5.5				
Max Green Setting (Gmax), s	9.5	53.5	21.5	53.5	68.5			80.5				
Max Q Clear Time (g_c+I1), s	8.1	52.3	22.2	12.7	17.2			12.1				
Green Ext Time (p_c), s	0.1	1.2	0.0	0.7	31.9			0.6				
Intersection Summary												
HCM 6th Ctrl Delay	30.4											
HCM 6th LOS	C											

HCM 6th TWSC
2: Clotfelter Rd & US 78/SR 10 (Monroe Hwy)

Existing AM
02/20/2020

Intersection

Int Delay, s/veh 9.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↘	
Traffic Vol, veh/h	1637	53	84	914	13	129
Future Vol, veh/h	1637	53	84	914	13	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1860	76	131	1075	24	184

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1936
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	300
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	300
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	136.4
HCM LOS			F























Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	194	-	-	300	-
HCM Lane V/C Ratio	1.074	-	-	0.438	-
HCM Control Delay (s)	136.4	-	-	26	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	9.8	-	-	2.1	-

Notes

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

Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing PM
02/20/2020

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	11	894	132	148	1618	12	135	42	118	22	40
Future Volume (vph)	11	894	132	148	1618	12	135	42	118	22	40
Lane Group Flow (vph)	16	961	143	164	1703	20	152	48	133	28	64
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	69.0	69.0	69.0	15.0	84.0	84.0	20.5	76.0	76.0	55.5	55.5
Total Split (%)	43.1%	43.1%	43.1%	9.4%	52.5%	52.5%	12.8%	47.5%	47.5%	34.7%	34.7%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.11	0.41	0.13	0.40	0.64	0.02	0.66	0.15	0.34	0.33	0.52
Control Delay	14.4	13.8	4.0	8.9	11.4	0.0	72.5	53.9	10.1	80.2	73.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	13.8	4.0	8.9	11.4	0.0	72.5	53.9	10.1	80.2	73.4
Queue Length 50th (ft)	6	244	14	45	428	0	142	42	0	29	55
Queue Length 95th (ft)	14	314	44	77	551	0	209	78	56	56	96
Internal Link Dist (ft)		1727			871			601			583
Turn Bay Length (ft)	475		222	450		155	95		60	60	
Base Capacity (vph)	142	2356	1088	418	2678	1211	234	820	771	422	567
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.41	0.13	0.39	0.64	0.02	0.65	0.06	0.17	0.07	0.11

Intersection Summary

Cycle Length: 160

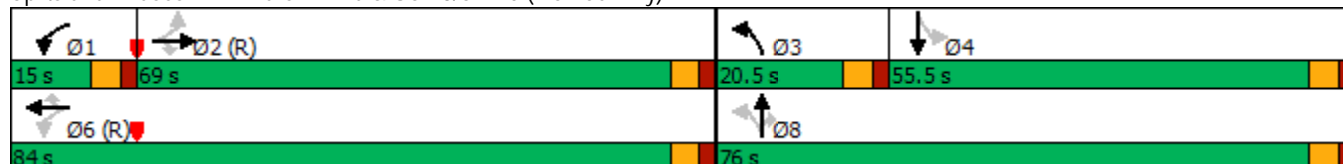
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



























HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Existing PM

02/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	894	132	148	1618	12	135	42	118	22	40	11
Future Volume (veh/h)	11	894	132	148	1618	12	135	42	118	22	40	11
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	961	143	164	1703	20	152	48	133	28	48	16
Peak Hour Factor	0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	2421	1080	404	2686	1198	227	328	278	105	67	22
Arrive On Green	0.68	0.68	0.68	0.04	0.76	0.76	0.09	0.18	0.18	0.05	0.05	0.05
Sat Flow, veh/h	282	3554	1585	1781	3554	1585	1781	1870	1585	1203	1342	447
Grp Volume(v), veh/h	16	961	143	164	1703	20	152	48	133	28	0	64
Grp Sat Flow(s),veh/h/ln	282	1777	1585	1781	1777	1585	1781	1870	1585	1203	0	1790
Q Serve(g_s), s	4.5	18.9	5.1	4.3	36.0	0.5	12.6	3.5	12.1	3.6	0.0	5.6
Cycle Q Clear(g_c), s	28.5	18.9	5.1	4.3	36.0	0.5	12.6	3.5	12.1	3.6	0.0	5.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	195	2421	1080	404	2686	1198	227	328	278	105	0	89
V/C Ratio(X)	0.08	0.40	0.13	0.41	0.63	0.02	0.67	0.15	0.48	0.27	0.00	0.72
Avail Cap(c_a), veh/h	195	2421	1080	438	2686	1198	231	824	698	421	0	559
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	11.1	8.9	8.2	9.2	4.8	62.9	55.8	59.4	74.0	0.0	74.9
Incr Delay (d2), s/veh	0.8	0.5	0.3	0.7	1.2	0.0	7.1	0.2	1.3	1.4	0.0	10.5
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(95%),veh/ln	0.6	11.2	3.3	2.7	17.2	0.3	10.2	3.0	8.6	2.1	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	11.6	9.2	8.9	10.3	4.9	70.0	56.0	60.7	75.3	0.0	85.4
LnGrp LOS	B	B	A	A	B	A	E	E	E	E	A	F
Approach Vol, veh/h	1120					1887		333		92		
Approach Delay, s/veh	11.4					10.1		64.2		82.3		
Approach LOS	B					B		E		F		
Timer - Assigned Phs	1	2	3	4	6		8					
Phs Duration (G+Y+Rc), s	11.9	114.5	20.1	13.4	126.4		33.6					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5		5.5					
Max Green Setting (Gmax), s	9.5	63.5	15.0	50.0	78.5		70.5					
Max Q Clear Time (g_c+I1), s	6.3	30.5	14.6	7.6	38.0		14.1					
Green Ext Time (p_c), s	0.1	27.0	0.0	0.3	39.6		0.7					
Intersection Summary												
HCM 6th Ctrl Delay			17.7									
HCM 6th LOS			B									

HCM 6th TWSC
2: Clotfelter Rd & US 78/SR 10 (Monroe Hwy)

Existing PM
02/20/2020

Intersection

Int Delay, s/veh 1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	951	31	130	1634	19	86
Future Vol, veh/h	951	31	130	1634	19	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	78	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1001	40	148	1738	32	108

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1041
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	664
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	664
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	27.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	294	-	-	664	-
HCM Lane V/C Ratio	0.475	-	-	0.222	-
HCM Control Delay (s)	27.9	-	-	12	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	2.4	-	-	0.8	-

Notes

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

AASHTO LEFT-TURN LANE ANALYSIS

LEFT TURN LANE ANALYSIS per AASHTO standards

The following left turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are not located on State Routes.

7.3 Methodology

M.D. Harmelink utilized a probabilistic model to establish left turn lane warrants for two-lane and four-lane highways at unsignalized T-intersections. These warrants are the basis for AASHTO guidelines for justifying a left-turn lane at an unsignalized intersection. The warrants developed are in the form of sets of different volume combinations, specifically, the advancing volume, the percentage of left-turns in the advancing volume, and the opposing volume. These warrants are based on maximum allowable probabilities that one or more through vehicles are present in the queue formed by the left-turning vehicles that is waiting for a suitable gap. The warrants, as summarized by AASHTO, were developed for the approach speeds of 40, 50 and 60 mph and left turn volumes that are 5%, 10%, 20%, and 30% of the advancing stream.

AASHTO THRESHOLDS (EXHIBIT 9-75, PG 685), 40 MPH				
Opposing Volumes	Advancing Volumes (by left turn %)			
	5%	10.0%	20.0%	30.0%
100	720	515	390	340
200	640	470	350	305
400	510	380	275	245
600	410	305	225	200
800	330	240	180	160

An interpolation of the thresholds is needed for other volumes and percentages that are not in the AASHTO table for left turn percentages that are not represented in the table.

7.4 Results

A graphic of the peak hour turning movements for the site, as they relate to the AASHTO criteria are provided in the following figures.

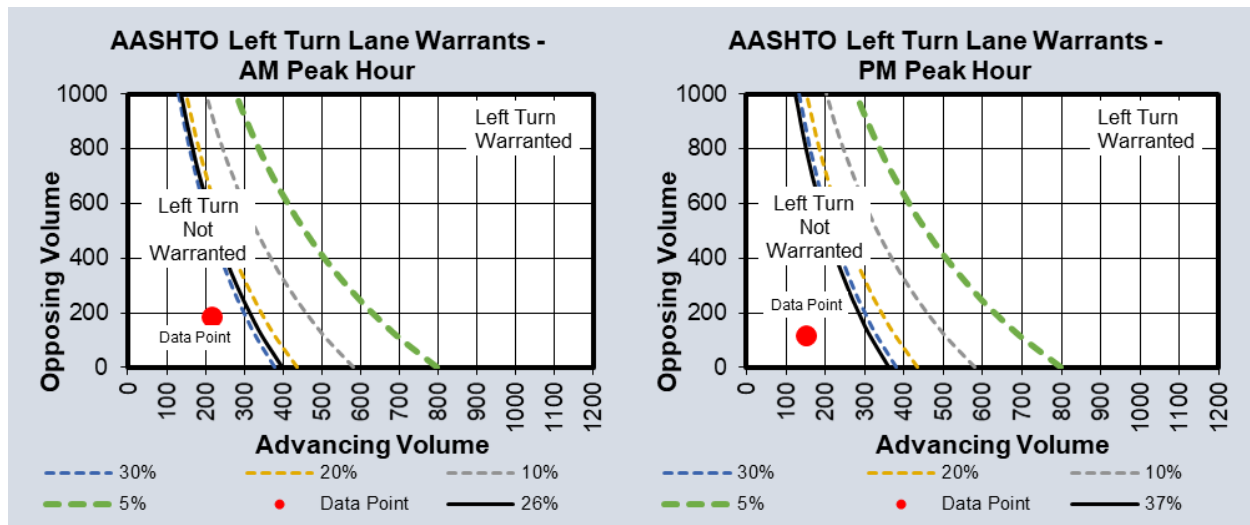


Figure 1 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 1 (N) Scenario 1 & 2

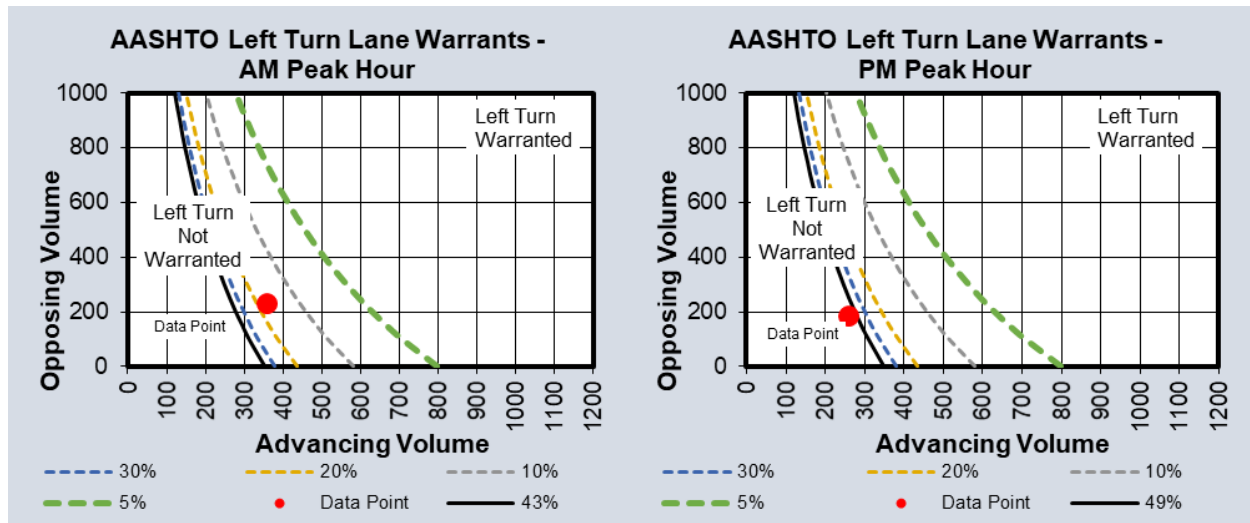


Figure 2 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Drwy 2 (M) – Scenario1 Phase II

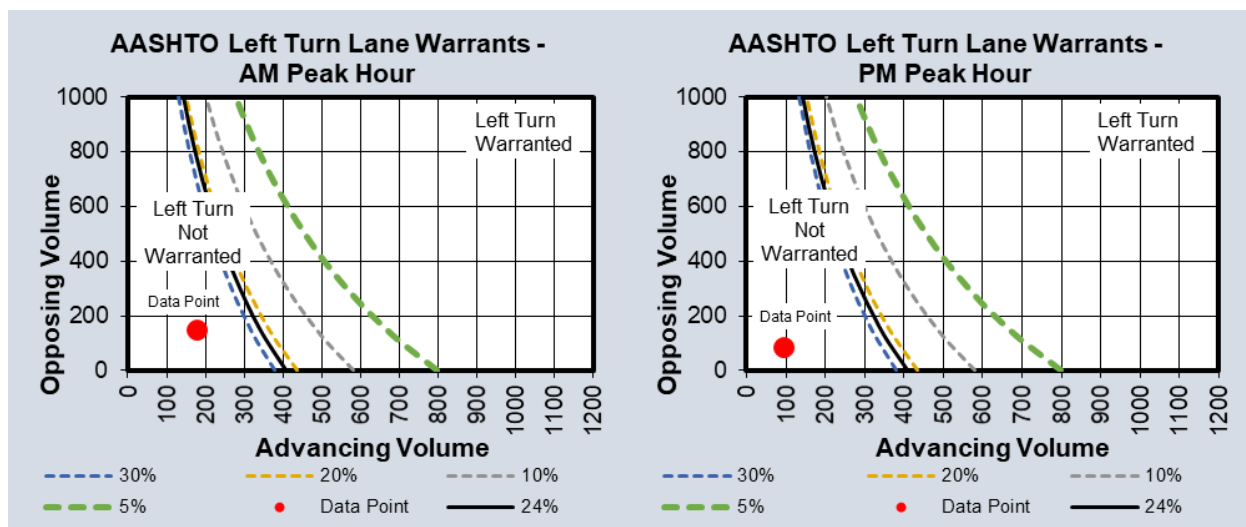


Figure 3 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Drwy 2 (M) Scenario 1 Phase I

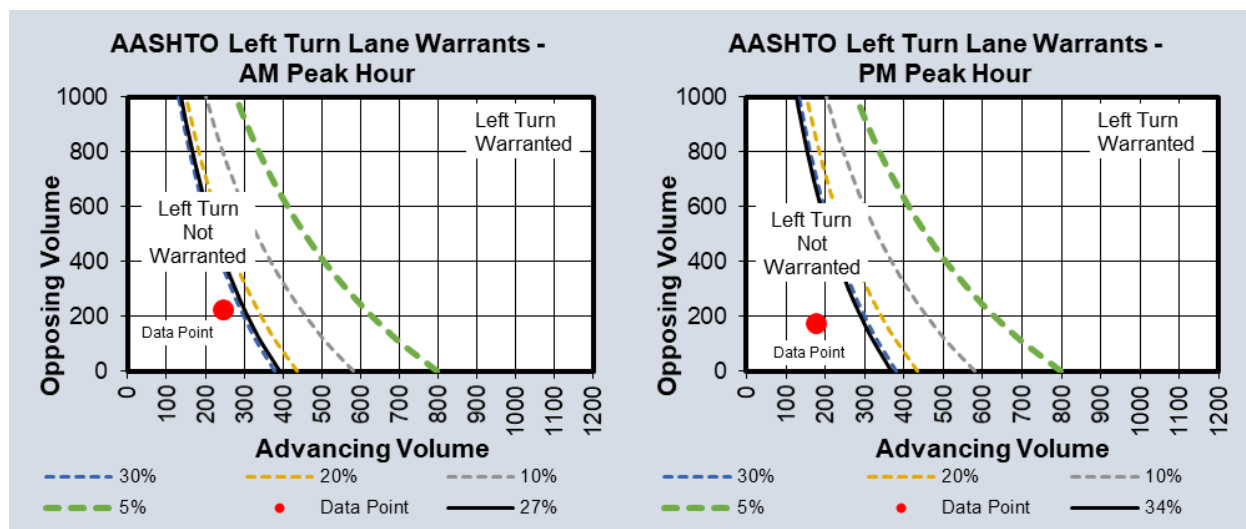


Figure 4 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 2 (M) - Scenario 2

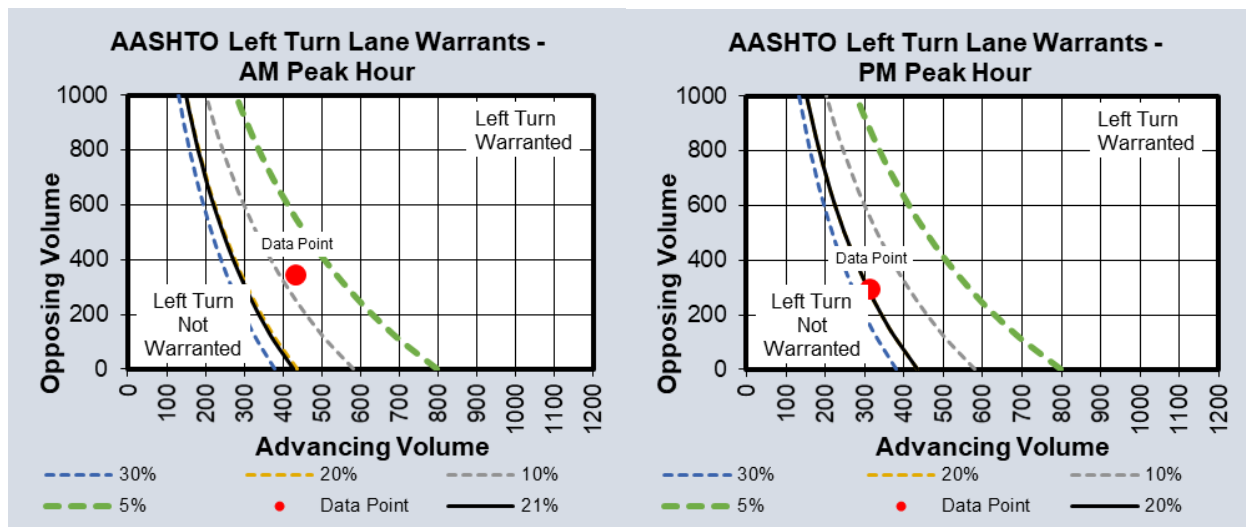


Figure 5 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Drwy 3 (S) – Scenario1 Phase II

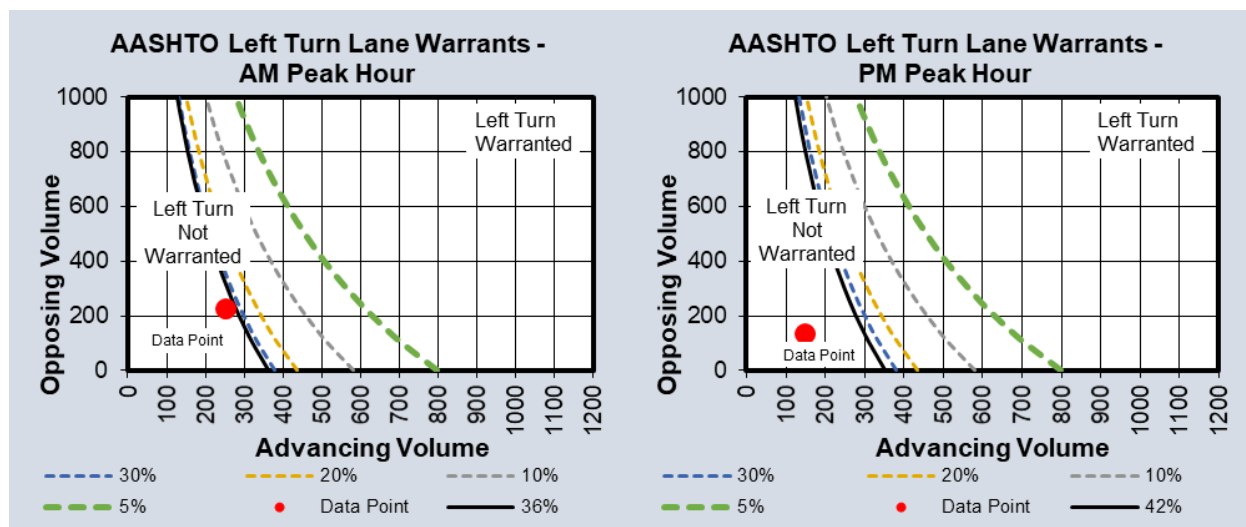


Figure 6 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Drwy 3 (S) Scenario 1 Phase I

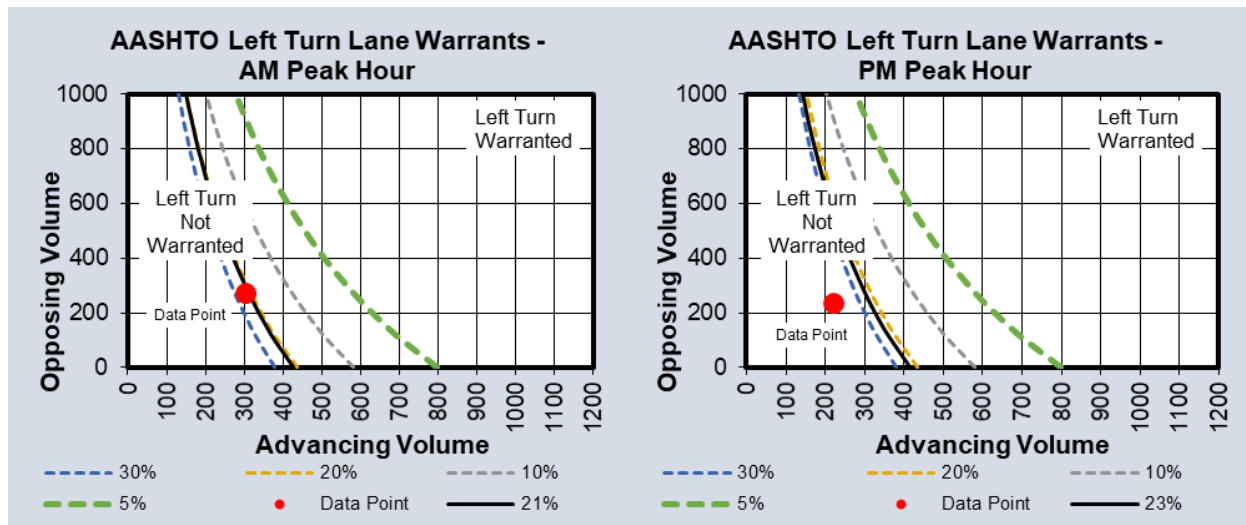


Figure 7 – AASHTO Left Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 3 (S) - Scenario 2

7.5 Findings

The results of the analysis show that a left-turn lane is required at Site Driveway 2 (middle) and Site Driveway 3 (south) only in Scenario 1 Phase II.

NCHRP 457 RIGHT TURN LANE ANALYSIS

RIGHT TURN LANE ANALYSIS per NCHRP 457 guidelines

The following right turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are not located on State Routes.

7.6 Methodology

Guidelines for determining when to provide a right-turn bay on the major road of a two-way stop-controlled intersection are provided in Hasan, T. and Stokes, R.W. "Guidelines for Right-Turn Treatments at Unsignalized Intersections and Driveways on Rural Highways" (Transportation Research Record 1579). These guidelines were based on an evaluation of the operating and collisions costs associated with the right turn maneuver relative to the cost of construction. The operating costs included those of road-user fuel and delay. Separate guidelines were developed for two-lane and four-lane roadways, which are found in the NCHRP Report 457 "Evaluating Intersection Improvements: An Engineering Study Guide".

7.7 Results

An evaluation of site traffic in relation to these guidelines is shown graphically in the following figures.

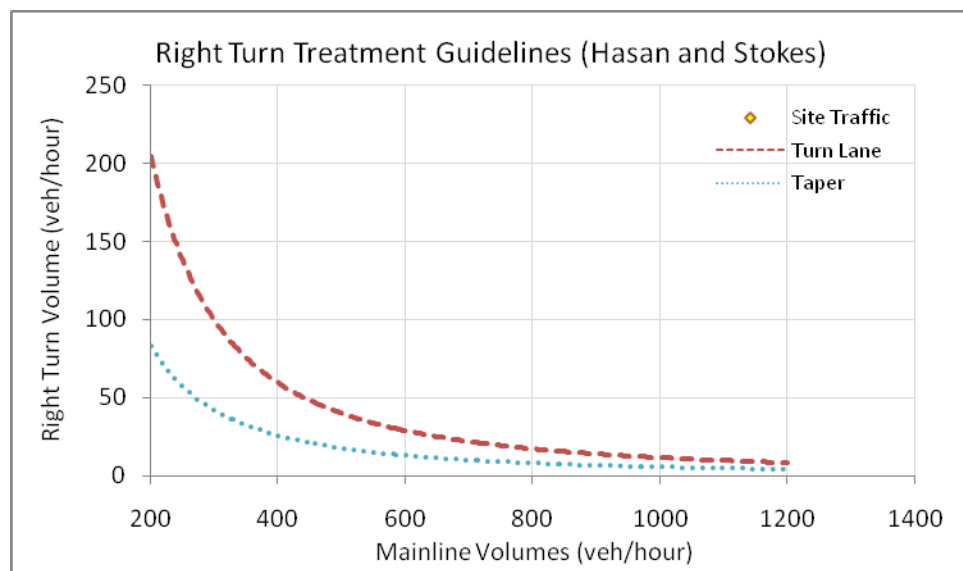


Figure 1 – NCHRP 457 Right Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 1 (N)

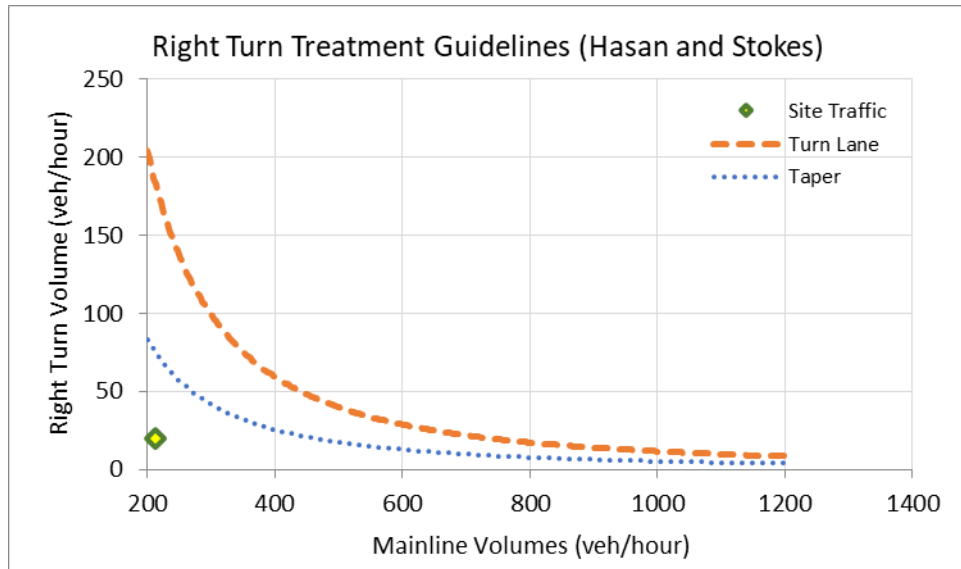


Figure 2 – NCHRP 457 Right Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 2 (M)

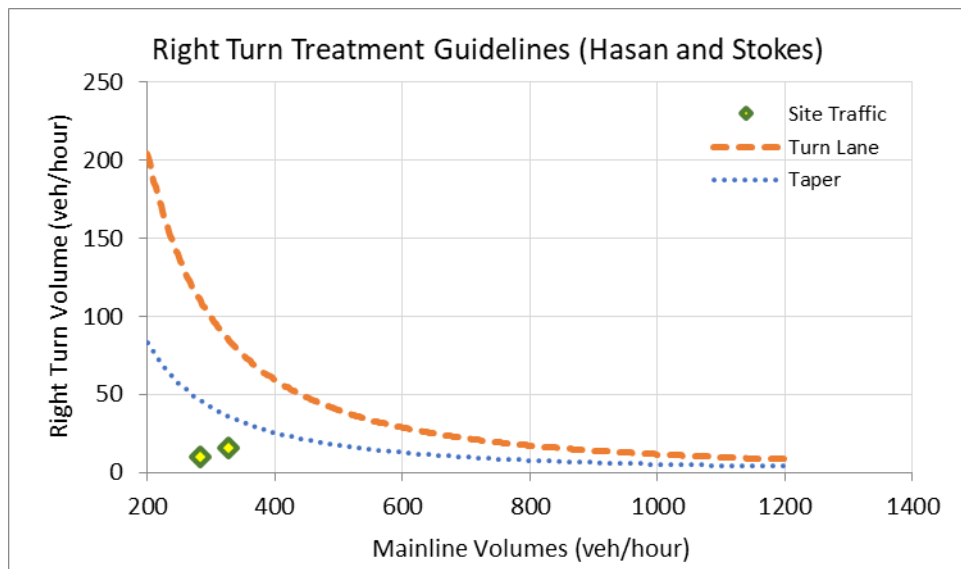


Figure 3 – NCHRP 457 Right Turn Lane Guidelines: Mars Hill Rd @ Site Drwy 3 (S)

7.8 Findings

The low volumes and speeds on the roadway would lessen the need for deceleration outside of the through lane. Therefore, unless stopping sight distance (430 feet for 45 mph) is obstructed on the southbound approach, a right turn lane is not warranted on the mainline at all the three site driveways on Mars Hill Road using the criteria in the NCHRP Report 457.

RIGHT TURN LANE ANALYSIS **per GDOT standards**

The following right turn lane analyses were used to determine the need for dedicated turn bays at the proposed site driveway locations that are located on State Routes.

GDOT standards require the installation of a deceleration lane on state routes at no cost to the department when traffic entering the development meets or exceeds the values shown in the following table.

GDOT REQUIREMENTS FOR DECELERATION LANES					
Site Driveway	Right Turn Traffic (% Total Entering)	Right Turn Volume (veh/day)	Roadway Speed / # Lanes	GDOT Threshold (veh/day)	Requirement
US 78/SR 10 (Monroe Hwy) @ Site Drwy 4 (E. RIRO)	20.4%	867	55 mph / 4-Lane	50	Warranted
US 78/SR 10 (Monroe Hwy) @ Site Drwy 5 (W. RIRO)	31.6%	1,342	55 mph / 4-Lane	50	Warranted

7.9 Findings

Based on the number of projected daily right turns the two proposed right-in/right-out driveways on US 78/SR 10 (Monroe Highway) will meet the GDOT requirements for construction of a deceleration lane.























**FUTURE “NO-BUILD” INTERSECTION
ANALYSIS**

Timings

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future No-Build AM

02/20/2020

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	66	1445	415	170	789	41	212	27	119	40	87
Future Volume (vph)	66	1445	415	170	789	41	212	27	119	40	87
Lane Group Flow (vph)	99	1661	638	179	867	69	268	52	132	74	133
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	59.0	59.0	59.0	15.0	74.0	74.0	27.0	86.0	86.0	59.0	59.0
Total Split (%)	36.9%	36.9%	36.9%	9.4%	46.3%	46.3%	16.9%	53.8%	53.8%	36.9%	36.9%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.29	0.83	0.64	1.13	0.37	0.06	0.85	0.10	0.25	0.53	0.68
Control Delay	22.1	33.7	17.6	148.3	13.3	3.9	73.4	42.5	7.2	80.3	83.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	33.7	17.6	148.3	13.3	3.9	73.4	42.5	7.2	80.3	83.3
Queue Length 50th (ft)	52	728	275	~159	204	5	242	41	0	75	131
Queue Length 95th (ft)	72	858	206	#334	275	9	275	42	51	73	162
Internal Link Dist (ft)		646			871			601			583
Turn Bay Length (ft)	475		222	450		155	95		60	60	
Base Capacity (vph)	345	2005	1002	158	2337	1064	320	937	862	450	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.83	0.64	1.13	0.37	0.06	0.84	0.06	0.15	0.16	0.22

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

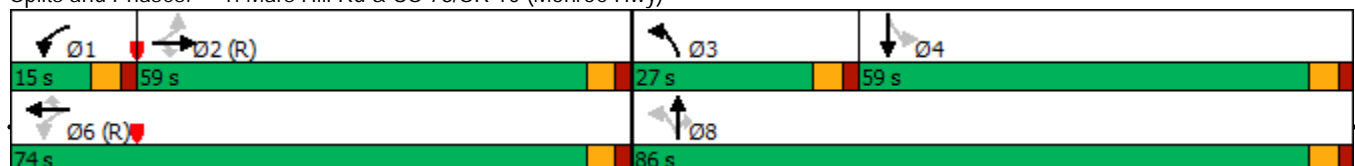
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



























HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future No-Build AM

02/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	1445	415	170	789	41	212	27	119	40	87	13
Future Volume (veh/h)	66	1445	415	170	789	41	212	27	119	40	87	13
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	1661	638	179	867	69	268	52	132	74	116	17
Peak Hour Factor	0.67	0.87	0.65	0.95	0.91	0.59	0.79	0.52	0.90	0.54	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	385	2062	920	185	2395	1068	306	481	408	151	141	21
Arrive On Green	0.58	0.58	0.58	0.06	0.67	0.67	0.13	0.26	0.26	0.09	0.09	0.09
Sat Flow, veh/h	598	3554	1585	1781	3554	1585	1781	1870	1585	1200	1595	234
Grp Volume(v), veh/h	99	1661	638	179	867	69	268	52	132	74	0	133
Grp Sat Flow(s),veh/h/ln	598	1777	1585	1781	1777	1585	1781	1870	1585	1200	0	1828
Q Serve(g_s), s	13.7	58.9	45.2	8.9	16.8	2.4	21.5	3.4	10.8	9.6	0.0	11.4
Cycle Q Clear(g_c), s	15.5	58.9	45.2	8.9	16.8	2.4	21.5	3.4	10.8	9.6	0.0	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	385	2062	920	185	2395	1068	306	481	408	151	0	162
V/C Ratio(X)	0.26	0.81	0.69	0.97	0.36	0.06	0.88	0.11	0.32	0.49	0.00	0.82
Avail Cap(c_a), veh/h	385	2062	920	185	2395	1068	306	941	797	446	0	611
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	26.5	23.6	45.2	11.2	8.9	55.9	45.4	48.1	70.8	0.0	71.7
Incr Delay (d2), s/veh	1.6	3.5	4.3	57.0	0.4	0.1	23.7	0.1	0.5	2.4	0.0	9.9
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(95%),veh/ln	3.5	31.9	24.6	15.3	10.2	1.4	17.4	2.9	7.8	5.4	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	29.9	27.9	102.2	11.7	9.0	79.5	45.5	48.6	73.3	0.0	81.6
LnGrp LOS	B	C	C	F	B	A	E	D	D	E	A	F
Approach Vol, veh/h	2398			1115			452			207		
Approach Delay, s/veh	29.0			26.0			66.6			78.6		
Approach LOS	C			C			E			E		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	15.0	98.3	27.0	19.7		113.3		46.7				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	53.5	21.5	53.5		68.5		80.5				
Max Q Clear Time (g_c+I1), s	10.9	60.9	23.5	13.4		18.8		12.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.7		33.3		0.7				
Intersection Summary												
HCM 6th Ctrl Delay				34.7								
HCM 6th LOS				C								

Intersection						
Int Delay, s/veh	15.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	
Traffic Vol, veh/h	1754	57	90	979	14	138
Future Vol, veh/h	1754	57	90	979	14	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1993	81	141	1152	26	197

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	2074
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	265
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	265
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	235.2
HCM LOS			F























Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	168	-	-	265	-
HCM Lane V/C Ratio	1.328	-	-	0.531	-
HCM Control Delay (s)	235.2	-	-	33	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	13.2	-	-	2.9	-

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

Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future No-Build PM

02/20/2020

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	12	958	141	159	1733	13	145	45	126	24	43
Future Volume (vph)	12	958	141	159	1733	13	145	45	126	24	43
Lane Group Flow (vph)	17	1030	153	177	1824	22	163	51	142	30	69
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA
Protected Phases		2		1	6		3	8			4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	2	2	2	1	6	6	3	8	8	4	4
Switch Phase											
Minimum Initial (s)	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	55.5	55.5
Total Split (s)	69.0	69.0	69.0	15.0	84.0	84.0	20.5	76.0	76.0	55.5	55.5
Total Split (%)	43.1%	43.1%	43.1%	9.4%	52.5%	52.5%	12.8%	47.5%	47.5%	34.7%	34.7%
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	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lead			Lead			Lag	Lag
Lead-Lag Optimize?											
Recall Mode	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.15	0.45	0.14	0.47	0.70	0.02	0.66	0.14	0.34	0.34	0.53
Control Delay	16.7	15.4	4.5	10.7	13.5	0.0	70.6	53.2	9.5	79.9	74.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	15.4	4.5	10.7	13.5	0.0	70.6	53.2	9.5	79.9	74.8
Queue Length 50th (ft)	7	271	18	49	496	0	153	45	0	31	60
Queue Length 95th (ft)	16	347	51	83	640	0	222	81	58	58	102
Internal Link Dist (ft)		646			871			601			583
Turn Bay Length (ft)	475		222	450		155	95		60	60	
Base Capacity (vph)	110	2284	1058	378	2615	1184	248	820	776	421	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.45	0.14	0.47	0.70	0.02	0.66	0.06	0.18	0.07	0.12

Intersection Summary

Cycle Length: 160

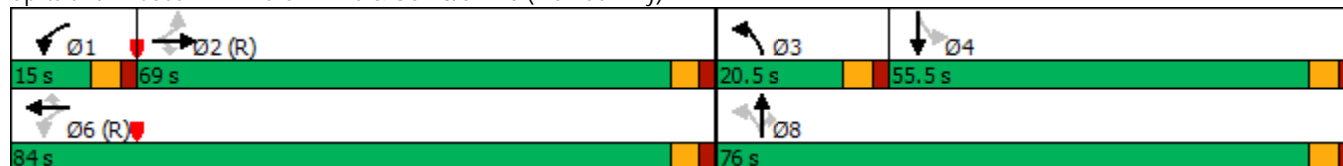
Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



























HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future No-Build PM

02/20/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	958	141	159	1733	13	145	45	126	24	43	12
Future Volume (veh/h)	12	958	141	159	1733	13	145	45	126	24	43	12
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	1030	153	177	1824	22	163	51	142	30	52	17
Peak Hour Factor	0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83	0.69
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	2392	1067	378	2668	1190	231	338	286	107	71	23
Arrive On Green	0.67	0.67	0.67	0.04	0.75	0.75	0.09	0.18	0.18	0.05	0.05	0.05
Sat Flow, veh/h	250	3554	1585	1781	3554	1585	1781	1870	1585	1190	1350	441
Grp Volume(v), veh/h	17	1030	153	177	1824	22	163	51	142	30	0	69
Grp Sat Flow(s),veh/h/ln	250	1777	1585	1781	1777	1585	1781	1870	1585	1190	0	1791
Q Serve(g_s), s	6.0	21.3	5.6	4.8	42.1	0.6	13.6	3.7	12.9	3.9	0.0	6.1
Cycle Q Clear(g_c), s	35.6	21.3	5.6	4.8	42.1	0.6	13.6	3.7	12.9	3.9	0.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	167	2392	1067	378	2668	1190	231	338	286	107	0	94
V/C Ratio(X)	0.10	0.43	0.14	0.47	0.68	0.02	0.70	0.15	0.50	0.28	0.00	0.73
Avail Cap(c_a), veh/h	167	2392	1067	406	2668	1190	231	824	698	417	0	560
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	12.0	9.5	9.3	10.2	5.0	62.6	55.2	59.0	73.7	0.0	74.7
Incr Delay (d2), s/veh	1.2	0.6	0.3	0.9	1.4	0.0	9.3	0.2	1.3	1.4	0.0	10.5
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(95%),veh/ln	0.7	12.4	3.6	3.0	19.9	0.3	11.0	3.2	9.1	2.2	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	12.6	9.7	10.2	11.7	5.1	71.9	55.4	60.3	75.1	0.0	85.2
LnGrp LOS	C	B	A	B	B	A	E	E	E	E	A	F
Approach Vol, veh/h	1200				2023				356			
Approach Delay, s/veh	12.4				11.5				64.9			
Approach LOS	B				B				E			
Approach LOS												
Timer - Assigned Phs	1	2	3	4	6			8				
Phs Duration (G+Y+Rc), s	12.4	113.2	20.5	13.9	125.6			34.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5			5.5				
Max Green Setting (Gmax), s	9.5	63.5	15.0	50.0	78.5			70.5				
Max Q Clear Time (g_c+I1), s	6.8	37.6	15.6	8.1	44.1			14.9				
Green Ext Time (p_c), s	0.1	22.6	0.0	0.3	34.0			0.7				
Intersection Summary												
HCM 6th Ctrl Delay	18.8											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Vol, veh/h	1019	33	139	1750	20	92
Future Vol, veh/h	1019	33	139	1750	20	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	78	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1073	42	158	1862	34	115
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1115	0	2341	558
Stage 1	-	-	-	-	1094	-
Stage 2	-	-	-	-	1247	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	622	-	~ 30	473
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	234	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	622	-	~ 22	473
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	175	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		34.2	
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	267	-	-	622	-	
HCM Lane V/C Ratio	0.558	-	-	0.254	-	
HCM Control Delay (s)	34.2	-	-	12.7	-	
HCM Lane LOS	D	-	-	B	-	
HCM 95th %tile Q(veh)	3.1	-	-	1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

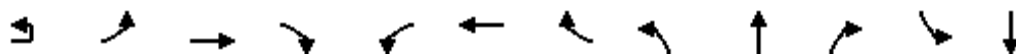
**FUTURE “BUILD” INTERSECTION ANALYSIS
(WITH IMPROVEMENTS)**

Timings

Future Build 2020 AM (Sc 1 - Phase I)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

02/24/2020



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	99	166	1303	401	165	814	52	219	36	115	195	108
Future Volume (vph)	99	166	1303	401	165	814	52	219	36	115	195	108
Lane Group Flow (vph)	0	288	1416	436	179	885	57	238	39	125	212	117
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases			2		1	6		3	8		7	4
Permitted Phases	2	2		2	6		6	8		8	4	
Detector Phase	2	2	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5
Total Split (s)	72.5	72.5	72.5	72.5	15.0	87.5	87.5	17.0	57.5	57.5	15.0	55.5
Total Split (%)	45.3%	45.3%	45.3%	45.3%	9.4%	54.7%	54.7%	10.6%	35.9%	35.9%	9.4%	34.7%
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	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	2.0
Lost Time Adjust (s)		0.0	0.0	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio		0.76	0.63	0.40	0.72	0.34	0.05	1.11	0.19	0.44	0.90	0.65
Control Delay		37.2	19.9	7.9	26.4	8.6	1.9	149.2	65.2	14.4	98.1	85.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.2	19.9	7.9	26.4	8.6	1.9	149.2	65.2	14.4	98.1	85.7
Queue Length 50th (ft)		203	453	94	52	162	1	~261	38	0	203	120
Queue Length 95th (ft)		#431	579	179	#105	222	15	#309	75	63	#292	185
Internal Link Dist (ft)			413			871			601			256
Turn Bay Length (ft)				222	450		155	95		60	60	
Base Capacity (vph)		379	2245	1086	249	2576	1167	214	605	598	236	582
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.76	0.63	0.40	0.72	0.34	0.05	1.11	0.06	0.21	0.90	0.20

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

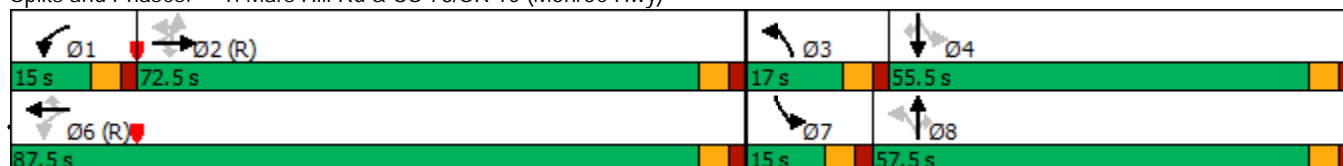
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 1 - Phase I)

02/24/2020

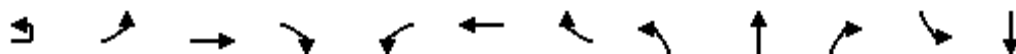
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	30
Future Volume (vph)	30
Lane Group Flow (vph)	33
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	55.5
Total Split (s)	55.5
Total Split (%)	34.7%
Yellow Time (s)	3.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.5
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.14
Control Delay	1.2
Queue Delay	0.0
Total Delay	1.2
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	557
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.06
Intersection Summary	

HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 1 - Phase I)

02/24/2020



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	99	166	1303	401	165	814	52	219	36	115	195	108
Future Volume (veh/h)	99	166	1303	401	165	814	52	219	36	115	195	108
Initial Q (Qb), veh		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	
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		180	1416	436	179	885	57	238	39	125	212	117
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		437	2363	1054	234	2643	1179	198	176	149	242	152
Arrive On Green		0.66	0.66	0.66	0.04	0.74	0.74	0.07	0.09	0.09	0.06	0.08
Sat Flow, veh/h		595	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870
Grp Volume(v), veh/h		180	1416	436	179	885	57	238	39	125	212	117
Grp Sat Flow(s),veh/h/ln		595	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870
Q Serve(g_s), s		23.7	35.5	20.3	5.0	13.6	1.5	11.5	3.1	12.4	9.5	9.8
Cycle Q Clear(g_c), s		24.7	35.5	20.3	5.0	13.6	1.5	11.5	3.1	12.4	9.5	9.8
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		437	2363	1054	234	2643	1179	198	176	149	242	152
V/C Ratio(X)		0.41	0.60	0.41	0.76	0.33	0.05	1.20	0.22	0.84	0.88	0.77
Avail Cap(c_a), veh/h		437	2363	1054	261	2643	1179	198	608	515	242	584
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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		13.4	14.9	12.4	21.8	7.0	5.5	67.7	67.1	71.3	68.6	72.0
Incr Delay (d2), s/veh		2.9	1.1	1.2	11.4	0.3	0.1	129.4	0.6	11.8	28.3	7.9
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
%ile BackOfQ(95%),veh/ln		5.8	19.2	11.9	8.5	7.9	0.9	15.6	2.7	9.4	9.8	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		16.2	16.1	13.6	33.2	7.3	5.5	197.1	67.7	83.1	96.8	79.9
LnGrp LOS		B	B	B	C	A	A	F	E	F	F	E
Approach Vol, veh/h			2032			1121			402			362
Approach Delay, s/veh			15.5			11.4			149.1			88.9
Approach LOS			B			B			F			F
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	12.6	111.9	17.0	18.5		124.5	15.0	20.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	67.0	11.5	50.0		82.0	9.5	52.0				
Max Q Clear Time (g_c+I1), s	7.0	37.5	13.5	11.8		15.6	11.5	14.4				
Green Ext Time (p_c), s	0.1	28.9	0.0	0.5		41.1	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	34.8
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 1 - Phase I)

02/24/2020

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	30
Future Volume (veh/h)	30
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	33
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	129
Arrive On Green	0.08
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	33
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	3.1
Cycle Q Clear(g_c), s	3.1
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	129
V/C Ratio(X)	0.26
Avail Cap(c_a), veh/h	495
HCM Platoon Ratio	1.00
Upstream Filter(l)	1.00
Uniform Delay (d), s/veh	68.9
Incr Delay (d2), s/veh	1.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	2.3
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	70.0
LnGrp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection						
Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Vol, veh/h	1742	55	148	994	13	147
Future Vol, veh/h	1742	55	148	994	13	147
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1893	60	161	1080	14	160
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1953	0	2785	977
Stage 1	-	-	-	-	1923	-
Stage 2	-	-	-	-	862	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	295	-	15	250
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	374	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	295	-	~ 7	250
Mov Cap-2 Maneuver	-	-	-	-	60	-
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	170	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4		83.7	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	199	-	-	295	-	
HCM Lane V/C Ratio	0.874	-	-	0.545	-	
HCM Control Delay (s)	83.7	-	-	30.9	-	
HCM Lane LOS	F	-	-	D	-	
HCM 95th %tile Q(veh)	6.7	-	-	3	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1969	1094	122	0	84
Future Vol, veh/h	0	1969	1094	122	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2140	1189	133	0	91






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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	447
HCM Lane V/C Ratio	-	-	0.204
HCM Control Delay (s)	-	-	15.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.8

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	82	43	135	141	6
Future Vol, veh/h	6	82	43	135	141	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	89	47	260	188	7






Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	546	192	195
Stage 1	192	-	-
Stage 2	354	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	499	850	1378
Stage 1	841	-	-
Stage 2	710	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	482	850	1378
Mov Cap-2 Maneuver	482	-	-
Stage 1	812	-	-
Stage 2	710	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	1.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1378	-	808	-	-
HCM Lane V/C Ratio	0.034	-	0.118	-	-
HCM Control Delay (s)	7.7	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	126	90	162	208	16
Future Vol, veh/h	16	126	90	162	208	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	137	98	312	277	17

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	785	277	294
Stage 1	277	-	-
Stage 2	508	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	361	762	1268
Stage 1	770	-	-
Stage 2	604	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	333	762	1268
Mov Cap-2 Maneuver	333	-	-
Stage 1	711	-	-
Stage 2	604	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1268	-	665	-	-
HCM Lane V/C Ratio	0.077	-	0.232	-	-
HCM Control Delay (s)	8.1	-	12	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1969	972	122	0	84
Future Vol, veh/h	0	1969	972	122	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2263	1068	133	0	91

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

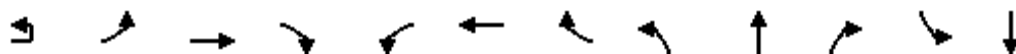
Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	491
HCM Lane V/C Ratio	-	-	0.186
HCM Control Delay (s)	-	-	14
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

Timings

Future Build 2020 PM (Sc 1 - Phase I)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

02/24/2020



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	59	72	879	137	153	1722	24	153	52	122	126	63
Future Volume (vph)	59	72	879	137	153	1722	24	153	52	122	126	63
Lane Group Flow (vph)	0	168	945	149	170	1813	40	172	59	137	159	76
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases			2		1	6		3	8		7	4
Permitted Phases	2	2		2	6		6	8		8	4	
Detector Phase	2	2	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	36.5	36.5	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5
Total Split (s)	72.5	72.5	72.5	72.5	15.0	87.5	87.5	15.0	57.5	57.5	15.0	57.5
Total Split (%)	45.3%	45.3%	45.3%	45.3%	9.4%	54.7%	54.7%	9.4%	35.9%	35.9%	9.4%	35.9%
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	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	2.0
Lost Time Adjust (s)		0.0	0.0	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	5.5	5.5
Lead/Lag	Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio		1.37	0.40	0.14	0.40	0.67	0.03	0.89	0.43	0.56	0.78	0.55
Control Delay		233.2	12.7	3.2	8.1	11.1	0.8	103.6	79.1	18.9	87.4	85.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		233.2	12.7	3.2	8.1	11.1	0.8	103.6	79.1	18.9	87.4	85.4
Queue Length 50th (ft)		~232	220	11	42	433	0	168	60	0	154	78
Queue Length 95th (ft)		#152	285	40	72	567	0	#259	106	66	195	122
Internal Link Dist (ft)			413			871			601			256
Turn Bay Length (ft)				222	450		155	95		60	60	
Base Capacity (vph)		123	2379	1102	431	2700	1221	194	605	606	204	605
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		1.37	0.40	0.14	0.39	0.67	0.03	0.89	0.10	0.23	0.78	0.13

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

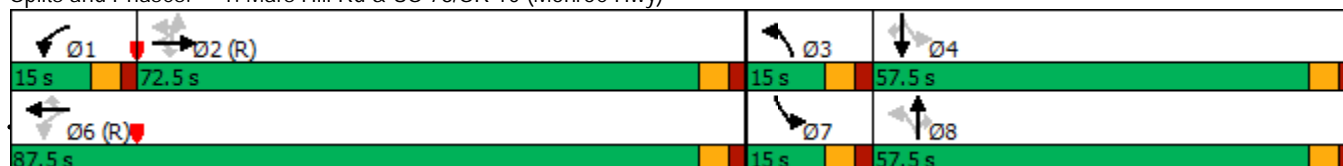
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 1 - Phase I)
























02/24/2020

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	27
Future Volume (vph)	27
Lane Group Flow (vph)	39
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	55.5
Total Split (s)	57.5
Total Split (%)	35.9%
Yellow Time (s)	3.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.5
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.19
Control Delay	2.1
Queue Delay	0.0
Total Delay	2.1
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	576
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.07
Intersection Summary	

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 1 - Phase I)

02/24/2020

												
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	59	72	879	137	153	1722	24	153	52	122	126	63
Future Volume (veh/h)	59	72	879	137	153	1722	24	153	52	122	126	63
Initial Q (Qb), veh		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	
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
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		104	945	149	170	1813	40	172	59	137	159	76
Peak Hour Factor		0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		159	2337	1043	397	2614	1166	232	191	162	237	191
Arrive On Green		0.66	0.66	0.66	0.04	0.74	0.74	0.06	0.10	0.10	0.06	0.10
Sat Flow, veh/h		249	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870
Grp Volume(v), veh/h		104	945	149	170	1813	40	172	59	137	159	76
Grp Sat Flow(s),veh/h/ln		249	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870
Q Serve(g_s), s		62.1	19.8	5.7	4.8	44.1	1.1	9.5	4.7	13.6	9.5	6.1
Cycle Q Clear(g_c), s		93.8	19.8	5.7	4.8	44.1	1.1	9.5	4.7	13.6	9.5	6.1
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		159	2337	1043	397	2614	1166	232	191	162	237	191
V/C Ratio(X)		0.65	0.40	0.14	0.43	0.69	0.03	0.74	0.31	0.85	0.67	0.40
Avail Cap(c_a), veh/h		159	2337	1043	426	2614	1166	232	608	515	237	608
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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		40.1	12.8	10.3	9.5	11.4	5.7	64.7	66.6	70.6	63.4	67.3
Incr Delay (d2), s/veh		18.9	0.5	0.3	0.7	1.5	0.1	11.9	0.9	11.5	7.1	1.3
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
%ile BackOfQ(95%),veh/ln		7.9	11.8	3.7	3.1	21.3	0.7	5.4	4.1	10.1	3.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		59.0	13.3	10.6	10.2	13.0	5.8	76.6	67.5	82.1	70.5	68.6
LnGrp LOS		E	B	B	B	B	A	E	E	F	E	E
Approach Vol, veh/h			1198			2023			368			274
Approach Delay, s/veh			16.9			12.6			77.2			69.5
Approach LOS			B			B			E			E
Timer - Assigned Phs	1	2	3	4	6	7	8					
Phs Duration (G+Y+Rc), s	12.4	110.7	15.0	21.8		123.2	15.0	21.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	67.0	9.5	52.0		82.0	9.5	52.0				
Max Q Clear Time (g_c+I1), s	6.8	95.8	11.5	8.1		46.1	11.5	15.6				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.4		35.4	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									
Notes												
User approved ignoring U-Turning movement.												

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 1 - Phase I)

02/24/2020

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	27
Future Volume (veh/h)	27
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	39
Peak Hour Factor	0.69
Percent Heavy Veh, %	2
Cap, veh/h	162
Arrive On Green	0.10
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	39
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	3.6
Cycle Q Clear(g_c), s	3.6
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	162
V/C Ratio(X)	0.24
Avail Cap(c_a), veh/h	515
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	66.1
Incr Delay (d2), s/veh	0.8
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	2.7
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	66.9
LnGrp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection							
Int Delay, s/veh	2.9						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↱	↑↑	↱	
Traffic Vol, veh/h	1028	32	18	147	1734	20	101
Future Vol, veh/h	1028	32	18	147	1734	20	101
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	-	0	1	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	78	92	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1082	41	20	167	1845	34	126
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	1123	1123	0	2400	562
Stage 1	-	-	-	-	-	1103	-
Stage 2	-	-	-	-	-	1297	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	277	618	-	~ 28	470
Stage 1	-	-	-	-	-	279	-
Stage 2	-	-	-	-	-	220	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	518	518	-	~ 18	470
Mov Cap-2 Maneuver	-	-	-	-	-	93	-
Stage 1	-	-	-	-	-	279	-
Stage 2	-	-	-	-	-	141	-
Approach	EB		WB		NB		
HCM Control Delay, s	0		1.5		40.9		
HCM LOS	E						
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	253	-	-	518	-		
HCM Lane V/C Ratio	0.633	-	-	0.36	-		
HCM Control Delay (s)	40.9	-	-	15.8	-		
HCM Lane LOS	E	-	-	C	-		
HCM 95th %tile Q(veh)	3.9	-	-	1.6	-		
Notes							
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

Intersection






Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1146	1817	114	0	82
Future Vol, veh/h	0	1146	1817	114	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1246	1975	124	0	89

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






Approach	EB	WB	SB
HCM Control Delay, s	0	0	27.7
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	246
HCM Lane V/C Ratio	-	-	0.362
HCM Control Delay (s)	-	-	27.7
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	1.6

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	54	23	72	81	5
Future Vol, veh/h	5	54	23	72	81	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	59	25	82	98	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	233	101	103	0	-	0
Stage 1	101	-	-	-	-	-
Stage 2	132	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	755	954	1489	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	742	954	1489	-	-	-
Mov Cap-2 Maneuver	742	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.2	1.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1489	-	931	-	-	
HCM Lane V/C Ratio	0.017	-	0.069	-	-	
HCM Control Delay (s)	7.5	-	9.2	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	90	62	87	125	10
Future Vol, veh/h	9	90	62	87	125	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	98	67	99	151	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	384	151	162
Stage 1	151	-	-
Stage 2	233	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	619	895	1417
Stage 1	877	-	-
Stage 2	806	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	590	895	1417
Mov Cap-2 Maneuver	590	-	-
Stage 1	836	-	-
Stage 2	806	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1417	-	855	-	-
HCM Lane V/C Ratio	0.048	-	0.126	-	-
HCM Control Delay (s)	7.7	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1146	1733	114	0	84
Future Vol, veh/h	0	1146	1733	114	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1232	1824	124	0	91

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 912
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 276
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 276
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	24.4
HCM LOS			C

























Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	276
HCM Lane V/C Ratio	-	-	0.331
HCM Control Delay (s)	-	-	24.4
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.4

Timings

Future Build 2022 AM (Sc 1 - Phases I & II)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

02/24/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	1406	451	182	1001	102	280	56	127	342	146	32
Future Volume (vph)	278	1406	451	182	1001	102	280	56	127	342	146	32
Lane Group Flow (vph)	585	1616	694	192	1100	173	304	61	138	372	159	35
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5	55.5
Total Split (s)	31.0	61.0	61.0	19.0	49.0	49.0	26.0	57.5	57.5	22.5	54.0	54.0
Total Split (%)	19.4%	38.1%	38.1%	11.9%	30.6%	30.6%	16.3%	35.9%	35.9%	14.1%	33.8%	33.8%
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	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	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	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	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.73	0.86	0.72	0.98	0.82	0.25	0.98	0.23	0.40	1.07	0.72	0.12
Control Delay	62.8	38.9	21.6	107.8	50.7	11.2	97.0	61.5	11.7	120.4	85.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	38.9	21.6	107.8	50.7	11.2	97.0	61.5	11.7	120.4	85.0	0.8
Queue Length 50th (ft)	297	751	335	150	534	28	278	58	0	-389	163	0
Queue Length 95th (ft)	252	885	238	#336	#726	24	#375	101	63	#549	235	0
Internal Link Dist (ft)		413			871			601			256	
Turn Bay Length (ft)	310		222	450		155	95		60	300		
Base Capacity (vph)	802	1877	970	196	1349	683	310	605	607	347	564	570
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.86	0.72	0.98	0.82	0.25	0.98	0.10	0.23	1.07	0.28	0.06

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

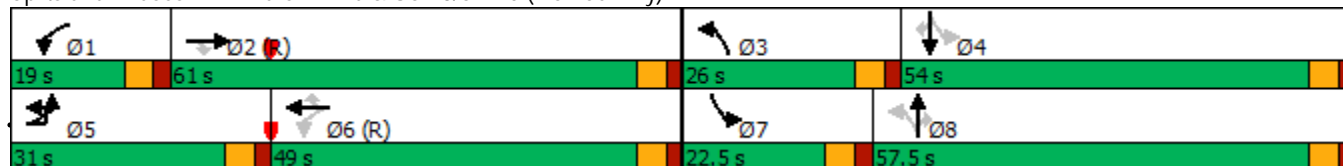
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

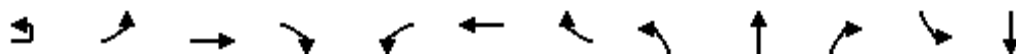


HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2022 AM (Sc 1 - Phases I & II)

02/24/2020



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	156	278	1406	451	182	1001	102	280	56	127	342	146
Future Volume (veh/h)	156	278	1406	451	182	1001	102	280	56	127	342	146
Initial Q (Qb), veh		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	
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
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		415	1616	694	192	1100	173	304	61	138	372	159
Peak Hour Factor		0.67	0.87	0.65	0.95	0.91	0.59	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		466	1980	883	213	1775	792	293	228	193	343	187
Arrive On Green		0.13	0.56	0.56	0.08	0.50	0.50	0.13	0.12	0.12	0.11	0.10
Sat Flow, veh/h		3456	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870
Grp Volume(v), veh/h		415	1616	694	192	1100	173	304	61	138	372	159
Grp Sat Flow(s),veh/h/ln		1728	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870
Q Serve(g_s), s		18.9	59.1	55.2	10.3	35.9	9.8	20.5	4.7	13.4	17.0	13.4
Cycle Q Clear(g_c), s		18.9	59.1	55.2	10.3	35.9	9.8	20.5	4.7	13.4	17.0	13.4
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		466	1980	883	213	1775	792	293	228	193	343	187
V/C Ratio(X)		0.89	0.82	0.79	0.90	0.62	0.22	1.04	0.27	0.71	1.08	0.85
Avail Cap(c_a), veh/h		551	1980	883	225	1775	792	293	608	515	343	567
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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		68.0	28.8	27.9	42.2	29.0	22.5	59.4	63.8	67.6	64.2	70.8
Incr Delay (d2), s/veh		14.7	3.9	7.0	34.2	1.6	0.6	63.1	0.6	4.9	72.7	10.3
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
%ile BackOfQ(95%),veh/ln		14.0	32.4	29.9	14.7	21.3	6.9	11.6	4.1	9.6	19.0	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		82.8	32.6	34.9	76.3	30.7	23.1	122.6	64.4	72.5	136.9	81.1
LnGrp LOS		F	C	C	E	C	C	F	E	E	F	F
Approach Vol, veh/h			2725			1465			503			566
Approach Delay, s/veh			40.8			35.8			101.8			116.9
Approach LOS			D			D			F			F
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.9	94.6	26.0	21.5	27.1	85.4	22.5	25.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	13.5	55.5	20.5	48.5	25.5	43.5	17.0	52.0				
Max Q Clear Time (g_c+I1), s	12.3	61.1	22.5	15.4	20.9	37.9	19.0	15.4				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.6	0.7	5.3	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay	53.4
HCM 6th LOS	D

Notes






User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2022 AM (Sc 1 - Phases I & II)




02/24/2020

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	32
Future Volume (veh/h)	32
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	35
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	158
Arrive On Green	0.10
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	35
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	3.3
Cycle Q Clear(g_c), s	3.3
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	158
V/C Ratio(X)	0.22
Avail Cap(c_a), veh/h	480
HCM Platoon Ratio	1.00
Upstream Filter(l)	1.00
Uniform Delay (d), s/veh	66.3
Incr Delay (d2), s/veh	0.7
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	2.4
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	67.0
LnGrp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection							
Int Delay, s/veh	37.1						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	0	2038	61	154	1168	15	191
Future Vol, veh/h	0	2038	61	154	1168	15	191
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	365	-	-	385	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	88	70	64	85	54	70
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	2316	87	241	1374	28	273
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	1374	0	0	2403	0	3529	1202
Stage 1	-	-	-	-	-	2360	-
Stage 2	-	-	-	-	-	1169	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	190	-	-	~ 196	-	~ 4	~ 177
Stage 1	-	-	-	-	-	57	-
Stage 2	-	-	-	-	-	258	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	190	-	-	~ 196	-	0	~ 177
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	57	-
Stage 2	-	-	-	-	-	0	-
Approach	EB		WB		NB		
HCM Control Delay, s	0		28		\$ 383.1		
HCM LOS					F		
Minor Lane/Major Mvmt	NBLn1	EBU	EBT	EBR	WBL	WBT	
Capacity (veh/h)	177	190	-	-	~ 196	-	
HCM Lane V/C Ratio	1.699	-	-	-	1.228	-	
HCM Control Delay (s)	\$ 383.1	0	-	-	187.6	-	
HCM Lane LOS	F	A	-	-	F	-	
HCM 95th %tile Q(veh)	20.9	0	-	-	12.7	-	
Notes							
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon							

Intersection






Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	33	31	161	180	6
Future Vol, veh/h	9	33	31	161	180	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	36	34	310	240	7

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	622	244	247
Stage 1	244	-	-
Stage 2	378	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	450	795	1319
Stage 1	797	-	-
Stage 2	693	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	436	795	1319
Mov Cap-2 Maneuver	436	-	-
Stage 1	772	-	-
Stage 2	693	-	-





Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1319	-	676	-	-
HCM Lane V/C Ratio	0.026	-	0.068	-	-
HCM Control Delay (s)	7.8	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	152	100	179	194	20
Future Vol, veh/h	15	152	100	179	194	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	165	109	344	259	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	821	259	281	0	-	0
Stage 1	259	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	344	780	1282	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	315	780	1282	-	-	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.1	1.9		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1282	-	689	-	-	
HCM Lane V/C Ratio	0.085	-	0.263	-	-	
HCM Control Delay (s)	8.1	-	12.1	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	1.1	-	-	

Intersection

Int Delay, s/veh 4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	195	170	262	323	24
Future Vol, veh/h	16	195	170	262	323	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	212	185	504	431	26

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1053	431	457
Stage 1	431	-	-
Stage 2	622	-	-
Critical Hdwy	6.63	6.23	4.13
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.83	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	236	623	1102
Stage 1	654	-	-
Stage 2	499	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	181	623	1102
Mov Cap-2 Maneuver	181	-	-
Stage 1	502	-	-
Stage 2	499	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	2.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1102	-	526	-	-
HCM Lane V/C Ratio	0.168	-	0.436	-	-
HCM Control Delay (s)	8.9	-	17	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.6	-	2.2	-	-

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2291	1203	324	0	172
Future Vol, veh/h	0	2291	1203	324	0	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2633	1322	352	0	187

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	405
HCM Lane V/C Ratio	-	-	0.462
HCM Control Delay (s)	-	-	21.3
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	2.4

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2255	1368	130	0	74
Future Vol, veh/h	0	2255	1368	130	0	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2592	1503	141	0	80

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 752
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 353
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 353
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.2
HCM LOS			C

























Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	353
HCM Lane V/C Ratio	-	-	0.228
HCM Control Delay (s)	-	-	18.2
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.9

Timings

Future Build 2022 PM (Sc 1 - Phases I & II)

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

02/24/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	928	161	170	2001	68	204	73	135	318	109	29
Future Volume (vph)	175	928	161	170	2001	68	204	73	135	318	109	29
Lane Group Flow (vph)	418	998	175	189	2106	113	229	83	152	403	131	42
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5	55.5
Total Split (s)	20.0	60.0	60.0	20.0	60.0	60.0	22.5	57.5	57.5	22.5	57.5	57.5
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	14.1%	35.9%	35.9%	14.1%	35.9%	35.9%
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	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	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	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	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.58	0.50	0.19	0.50	1.34	0.15	0.84	0.43	0.51	1.29	0.68	0.17
Control Delay	61.9	23.1	7.6	17.0	194.3	7.6	79.2	72.9	14.7	199.0	85.5	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	23.1	7.6	17.0	194.3	7.6	79.2	72.9	14.7	199.0	85.5	1.5
Queue Length 50th (ft)	211	326	30	65	~1468	12	210	83	0	~399	134	0
Queue Length 95th (ft)	m200	m418	m74	110	#1665	16	#287	134	66	#570	185	0
Internal Link Dist (ft)		413			871			601			256	
Turn Bay Length (ft)	310		222	450		155	95		60	300		
Base Capacity (vph)	717	2000	943	385	1569	753	273	605	617	312	605	576
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.50	0.19	0.49	1.34	0.15	0.84	0.14	0.25	1.29	0.22	0.07

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

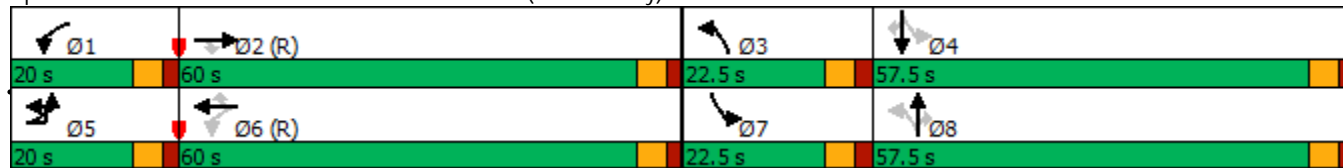
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

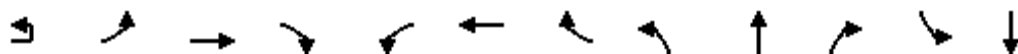


HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2022 PM (Sc 1 - Phases I & II)

02/24/2020



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	151	175	928	161	170	2001	68	204	73	135	318	109
Future Volume (veh/h)	151	175	928	161	170	2001	68	204	73	135	318	109
Initial Q (Qb), veh		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	
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
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		254	998	175	189	2106	113	229	83	152	403	131
Peak Hour Factor		0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		296	2078	927	353	1985	885	289	210	178	315	210
Arrive On Green		0.09	0.58	0.58	0.06	0.56	0.56	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h		3456	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870
Grp Volume(v), veh/h		254	998	175	189	2106	113	229	83	152	403	131
Grp Sat Flow(s),veh/h/ln		1728	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870
Q Serve(g_s), s		11.6	25.9	8.2	7.3	89.4	5.4	17.0	6.6	15.1	17.0	10.7
Cycle Q Clear(g_c), s		11.6	25.9	8.2	7.3	89.4	5.4	17.0	6.6	15.1	17.0	10.7
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		296	2078	927	353	1985	885	289	210	178	315	210
V/C Ratio(X)		0.86	0.48	0.19	0.54	1.06	0.13	0.79	0.40	0.86	1.28	0.62
Avail Cap(c_a), veh/h		313	2078	927	409	1985	885	289	608	515	315	608
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
Upstream Filter(l)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		72.2	19.2	15.5	15.5	35.3	16.8	57.4	66.0	69.8	62.7	67.8
Incr Delay (d2), s/veh		19.9	0.8	0.5	1.3	38.6	0.3	13.9	1.2	11.1	147.3	3.0
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
%ile BackOfQ(95%),veh/ln		9.8	15.5	5.6	5.2	59.8	3.7	14.4	5.8	10.9	26.6	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		92.1	20.0	16.0	16.8	73.9	17.1	71.3	67.2	80.8	210.0	70.9
LnGrp LOS		F	B	B	B	F	B	E	E	F	F	E
Approach Vol, veh/h			1427			2408			464			576
Approach Delay, s/veh			32.3			66.8			73.7			167.8
Approach LOS			C			E			E			F
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	99.1	22.5	23.4	19.2	94.9	22.5	23.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	14.5	54.5	17.0	52.0	14.5	54.5	17.0	52.0				
Max Q Clear Time (g_c+I1), s	9.3	27.9	19.0	12.7	13.6	91.4	19.0	17.1				
Green Ext Time (p_c), s	0.2	22.7	0.0	0.5	0.1	0.0	0.0	0.9				

Intersection Summary

HCM 6th Ctrl Delay 69.3

HCM 6th LOS E

Notes

User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2022 PM (Sc 1 - Phases I & II)

02/24/2020

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	29
Future Volume (veh/h)	29
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	42
Peak Hour Factor	0.69
Percent Heavy Veh, %	2
Cap, veh/h	178
Arrive On Green	0.11
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	42
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	3.9
Cycle Q Clear(g_c), s	3.9
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	178
V/C Ratio(X)	0.24
Avail Cap(c_a), veh/h	515
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	64.8
Incr Delay (d2), s/veh	0.7
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	2.9
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	65.5
LnGrp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	




Intersection							
Int Delay, s/veh	22.8						
Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↓	↑↑	↑	
Traffic Vol, veh/h	1239	36	38	189	2021	22	139
Future Vol, veh/h	1239	36	38	189	2021	22	139
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	385	-	0	-
Veh in Median Storage, #	0	-	-	-	0	1	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	78	92	88	94	59	80
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1304	46	41	215	2150	37	174

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1350
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.44	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.52	2.22
Pot Cap-1 Maneuver	-	197	506
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	343	343
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	\$ 378.5
HCM LOS			F






Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	129	-	-	343	-
HCM Lane V/C Ratio	1.636	-	-	0.747	-
HCM Control Delay (s)	\$ 378.5	-	-	40.9	-
HCM Lane LOS	F	-	-	E	-
HCM 95th %tile Q(veh)	15.4	-	-	5.8	-

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

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	49	34	95	111	7
Future Vol, veh/h	14	49	34	95	111	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	53	37	108	134	8
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	320	138	142	0	-	0
Stage 1	138	-	-	-	-	-
Stage 2	182	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	673	910	1441	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	655	910	1441	-	-	-
Mov Cap-2 Maneuver	655	-	-	-	-	-
Stage 1	865	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.7	1.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1441	-	838	-	-	
HCM Lane V/C Ratio	0.026	-	0.082	-	-	
HCM Control Delay (s)	7.6	0	9.7	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	150	77	110	139	21
Future Vol, veh/h	19	150	77	110	139	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	163	84	125	167	23





Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	472	179	190
Stage 1	179	-	-
Stage 2	293	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	551	864	1384
Stage 1	852	-	-
Stage 2	757	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	517	864	1384
Mov Cap-2 Maneuver	517	-	-
Stage 1	800	-	-
Stage 2	757	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	3.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1384	-	803	-	-
HCM Lane V/C Ratio	0.06	-	0.229	-	-
HCM Control Delay (s)	7.8	-	10.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	183	137	179	272	17
Future Vol, veh/h	9	183	137	179	272	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	199	149	203	328	18

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	728	328	346
Stage 1	328	-	-
Stage 2	400	-	-
Critical Hdwy	6.63	6.23	4.13
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.83	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	374	713	1211
Stage 1	729	-	-
Stage 2	647	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	322	713	1211
Mov Cap-2 Maneuver	322	-	-
Stage 1	628	-	-
Stage 2	647	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	3.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1211	-	675	-	-
HCM Lane V/C Ratio	0.123	-	0.309	-	-
HCM Control Delay (s)	8.4	0.2	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.3	-	-

HCM 6th TWSC
6: US 78/SR 10 (Monroe Hwy) & Site Drwy 4 (E. RIRO)

Future Build 2022 PM (Sc 1 - Phases I & II)

02/24/2020

Intersection

Int Delay, s/veh 8.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1414	2035	348	0	229
Future Vol, veh/h	0	1414	2035	348	0	229
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1520	2142	378	0	241

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1071
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 ~ 217
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - ~ 217
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	140.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	217
HCM Lane V/C Ratio	-	-	1.111
HCM Control Delay (s)	-	-	140.9
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	11.1

Notes

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

Intersection

Int Delay, s/veh 6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1414	2128	211	0	191
Future Vol, veh/h	0	1414	2128	211	0	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1520	2240	229	0	208

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1120
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 ~ 201
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - ~ 201
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	121.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	201
HCM Lane V/C Ratio	-	-	1.033
HCM Control Delay (s)	-	-	121.8
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	9.2

Notes

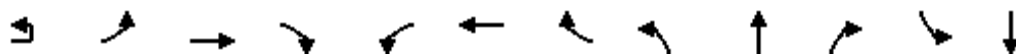
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 2)

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Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	88	228	1526	433	170	939	105	260	59	119	118	129
Future Volume (vph)	88	228	1526	433	170	939	105	260	59	119	118	129
Lane Group Flow (vph)	0	344	1659	471	185	1021	114	283	64	129	128	140
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases	2	2		2	6		6	8		8	4	
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5
Total Split (s)	28.0	28.0	61.0	61.0	15.0	48.0	48.0	28.5	57.5	57.5	26.5	55.5
Total Split (%)	17.5%	17.5%	38.1%	38.1%	9.4%	30.0%	30.0%	17.8%	35.9%	35.9%	16.6%	34.7%
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	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	2.0
Lost Time Adjust (s)		0.0	0.0	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	5.5	5.5
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio		0.68	0.85	0.49	1.23	0.80	0.17	0.85	0.21	0.36	0.42	0.69
Control Delay		42.9	36.0	15.2	185.4	51.6	4.5	71.8	59.7	11.1	48.1	85.3
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		42.9	36.0	15.2	185.4	51.6	4.5	71.8	59.7	11.1	48.1	85.3
Queue Length 50th (ft)		254	753	176	~181	491	0	253	59	0	103	143
Queue Length 95th (ft)		379	945	297	#365	631	34	#354	105	60	154	213
Internal Link Dist (ft)			413			871			601			256
Turn Bay Length (ft)				222	450		155	95		60	60	
Base Capacity (vph)		508	1958	958	151	1280	655	336	605	602	377	582
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.68	0.85	0.49	1.23	0.80	0.17	0.84	0.11	0.21	0.34	0.24

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

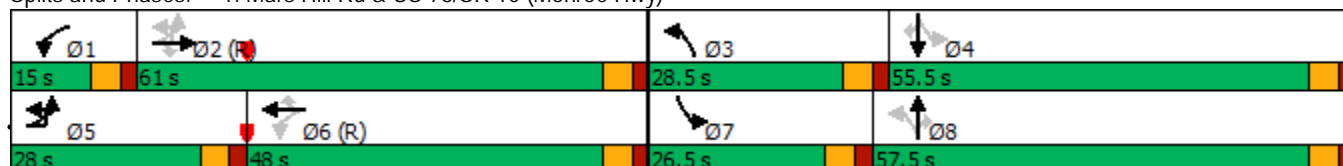
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 2)

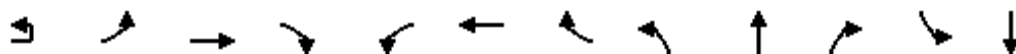
02/21/2020

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	60
Future Volume (vph)	60
Lane Group Flow (vph)	65
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	55.5
Total Split (s)	55.5
Total Split (%)	34.7%
Yellow Time (s)	3.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.5
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.23
Control Delay	1.8
Queue Delay	0.0
Total Delay	1.8
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0
Internal Link Dist (ft)	
Turn Bay Length (ft)	150
Base Capacity (vph)	584
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.11
Intersection Summary	

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 2)

02/21/2020



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	88	228	1526	433	170	939	105	260	59	119	118	129
Future Volume (veh/h)	88	228	1526	433	170	939	105	260	59	119	118	129
Initial Q (Qb), veh		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	
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
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		248	1659	471	185	1021	114	283	64	129	128	140
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		365	2022	902	187	1963	876	321	292	247	291	169
Arrive On Green		0.08	0.57	0.57	0.06	0.55	0.55	0.14	0.16	0.16	0.08	0.09
Sat Flow, veh/h		1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870
Grp Volume(v), veh/h		248	1659	471	185	1021	114	283	64	129	128	140
Grp Sat Flow(s),veh/h/ln		1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870
Q Serve(g_s), s		9.6	60.4	29.1	9.3	28.9	5.5	22.8	4.8	12.0	10.3	11.8
Cycle Q Clear(g_c), s		9.6	60.4	29.1	9.3	28.9	5.5	22.8	4.8	12.0	10.3	11.8
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		365	2022	902	187	1963	876	321	292	247	291	169
V/C Ratio(X)		0.68	0.82	0.52	0.99	0.52	0.13	0.88	0.22	0.52	0.44	0.83
Avail Cap(c_a), veh/h		480	2022	902	187	1963	876	321	608	515	386	584
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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		18.0	27.9	21.1	42.8	22.5	17.3	54.8	59.0	62.0	59.6	71.6
Incr Delay (d2), s/veh		2.5	3.9	2.2	62.4	1.0	0.3	23.7	0.4	1.7	1.0	9.9
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
%ile BackOfQ(95%),veh/ln		6.9	32.8	16.8	16.0	17.3	3.8	18.1	4.2	8.6	8.2	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		20.5	31.7	23.3	105.1	23.5	17.6	78.5	59.4	63.7	60.7	81.5
LnGrp LOS		C	C	C	F	C	B	E	E	E	E	F
Approach Vol, veh/h			2378			1320			476			333
Approach Delay, s/veh			28.9			34.4			71.9			71.5
Approach LOS			C			C			E			E
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	96.6	28.5	19.9	17.7	93.9	18.0	30.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	55.5	23.0	50.0	22.5	42.5	21.0	52.0				
Max Q Clear Time (g_c+I1), s	11.3	62.4	24.8	13.8	11.6	30.9	12.3	14.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.7	0.6	10.6	0.2	0.7				

Intersection Summary

HCM 6th Ctrl Delay	38.2
HCM 6th LOS	D

Notes









User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 AM (Sc 2)

02/21/2020

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	60
Future Volume (veh/h)	60
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	65
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	143
Arrive On Green	0.09
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	65
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	6.2
Cycle Q Clear(g_c), s	6.2
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	143
V/C Ratio(X)	0.45
Avail Cap(c_a), veh/h	495
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	69.0
Incr Delay (d2), s/veh	2.2
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	4.7
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	71.3
LnGrp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection												
Int Delay, s/veh	46.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	149	1767	57	228	1051	33	14	34	147	118	16	48
Future Vol, veh/h	149	1767	57	228	1051	33	14	34	147	118	16	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	365	-	-	385	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	162	1921	62	248	1142	36	15	37	160	128	17	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1178	0	0	1983	0	0	3352	3950	992	2941	3945	571
Stage 1	-	-	-	-	-	-	2276	2276	-	1638	1638	-
Stage 2	-	-	-	-	-	-	1076	1674	-	1303	2307	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	589	-	-	287	-	-	~ 3	~ 3	244	~ 7	~ 3	464
Stage 1	-	-	-	-	-	-	41	74	-	~ 105	157	-
Stage 2	-	-	-	-	-	-	234	151	-	170	72	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	589	-	-	287	-	-	~ 1	0	244	~ 1	0	464
Mov Cap-2 Maneuver	-	-	-	-	-	-	33	80	-	~ 101	21	-
Stage 1	-	-	-	-	-	-	30	54	-	~ 76	21	-
Stage 2	-	-	-	-	-	-	~ 5	~ 21	-	~ 13	52	-




Approach	EB	WB	NB	SB
HCM Control Delay, s	1	11	\$ 353.2	\$ 476.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	134	589	-	-	287	-	-	69	464
HCM Lane V/C Ratio	1.582	0.275	-	-	0.864	-	-	2.111	0.112
HCM Control Delay (s)	\$ 353.2	13.4	-	-	63.1	-	-	\$ 641.8	13.7
HCM Lane LOS	F	B	-	-	F	-	-	F	B
HCM 95th %tile Q(veh)	15	1.1	-	-	7.5	-	-	13.6	0.4

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

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	55	46	151	171	6
Future Vol, veh/h	11	55	46	151	171	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	60	50	290	228	7





Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	622	232	235
Stage 1	232	-	-
Stage 2	390	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	450	807	1332
Stage 1	807	-	-
Stage 2	684	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	430	807	1332
Mov Cap-2 Maneuver	430	-	-
Stage 1	771	-	-
Stage 2	684	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1332	-	704	-	-
HCM Lane V/C Ratio	0.038	-	0.102	-	-
HCM Control Delay (s)	7.8	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	67	67	180	202	24
Future Vol, veh/h	16	67	67	180	202	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	73	73	346	269	26






Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	774	282	295
Stage 1	282	-	-
Stage 2	492	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	367	757	1266
Stage 1	766	-	-
Stage 2	615	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	346	757	1266
Mov Cap-2 Maneuver	346	-	-
Stage 1	722	-	-
Stage 2	615	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1266	-	616	-	-
HCM Lane V/C Ratio	0.058	-	0.146	-	-
HCM Control Delay (s)	8	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	47	65	240	259	11
Future Vol, veh/h	8	47	65	240	259	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	52	75	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	51	71	462	345	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	949	345	357
Stage 1	345	-	-
Stage 2	604	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	289	698	1202
Stage 1	717	-	-
Stage 2	546	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	272	698	1202
Mov Cap-2 Maneuver	272	-	-
Stage 1	675	-	-
Stage 2	546	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1202	-	568	-	-
HCM Lane V/C Ratio	0.059	-	0.105	-	-
HCM Control Delay (s)	8.2	-	12.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2188	1217	186	0	123
Future Vol, veh/h	0	2188	1217	186	0	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2515	1337	202	0	134

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

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	400
HCM Lane V/C Ratio	-	-	0.334
HCM Control Delay (s)	-	-	18.5
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.4

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	2154	1188	153	0	123
Future Vol, veh/h	0	2154	1188	153	0	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	87	91	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2476	1305	166	0	134

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
























Approach	EB	WB	SB
HCM Control Delay, s	0	0	18
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	410
HCM Lane V/C Ratio	-	-	0.326
HCM Control Delay (s)	-	-	18
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.4

Timings 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 2)

02/21/2020

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	84	75	1069	163	159	1872	73	190	75	126	109	94
Future Volume (vph)	84	75	1069	163	159	1872	73	190	75	126	109	94
Lane Group Flow (vph)	0	200	1149	177	177	1971	122	213	85	142	138	113
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases	2	2		2	6		6	8		8	4	
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	15.0	36.5	36.5	15.0	29.5	29.5	15.0	57.5	57.5	15.0	55.5
Total Split (s)	15.0	15.0	62.0	62.0	18.0	65.0	65.0	22.5	59.0	59.0	21.0	57.5
Total Split (%)	9.4%	9.4%	38.8%	38.8%	11.3%	40.6%	40.6%	14.1%	36.9%	36.9%	13.1%	35.9%
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	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	2.0
Lost Time Adjust (s)		0.0	0.0	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	5.5	5.5
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio		0.60	0.56	0.18	0.54	1.11	0.15	0.78	0.41	0.47	0.49	0.64
Control Delay		47.9	22.2	7.5	17.3	97.1	7.0	73.7	71.8	14.2	56.6	85.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		47.9	22.2	7.5	17.3	97.1	7.0	73.7	71.8	14.2	56.6	85.7
Queue Length 50th (ft)		144	376	34	58	~1200	15	196	85	0	121	116
Queue Length 95th (ft)		163	481	78	99	#1416	18	268	136	64	156	165
Internal Link Dist (ft)			413			871			601			256
Turn Bay Length (ft)				222	450		155	95		60	60	
Base Capacity (vph)		335	2070	968	326	1771	838	274	622	623	295	605
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.60	0.56	0.18	0.54	1.11	0.15	0.78	0.14	0.23	0.47	0.19

Intersection Summary

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

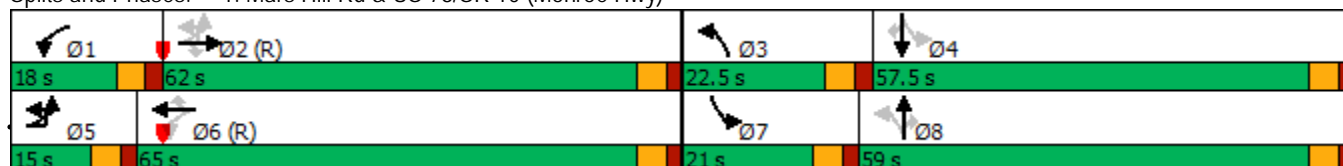
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)



Timings
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 2)

02/21/2020

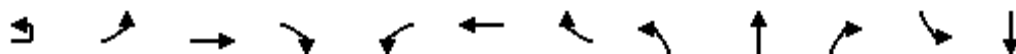
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	67
Future Volume (vph)	67
Lane Group Flow (vph)	97
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	6.0
Minimum Split (s)	55.5
Total Split (s)	57.5
Total Split (%)	35.9%
Yellow Time (s)	3.5
All-Red Time (s)	2.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	5.5
Lead/Lag	Lag
Lead-Lag Optimize?	
Recall Mode	None
v/c Ratio	0.41
Control Delay	16.3
Queue Delay	0.0
Total Delay	16.3
Queue Length 50th (ft)	0
Queue Length 95th (ft)	22
Internal Link Dist (ft)	
Turn Bay Length (ft)	150
Base Capacity (vph)	579
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.17
Intersection Summary	

HCM 6th Signalized Intersection Summary

1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 2)

02/21/2020



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕
Traffic Volume (veh/h)	84	75	1069	163	159	1872	73	190	75	126	109	94
Future Volume (veh/h)	84	75	1069	163	159	1872	73	190	75	126	109	94
Initial Q (Qb), veh		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	
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
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		109	1149	177	177	1971	122	213	85	142	138	113
Peak Hour Factor		0.69	0.93	0.92	0.90	0.95	0.60	0.89	0.88	0.89	0.79	0.83
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		144	2218	989	317	2271	1013	262	198	168	265	154
Arrive On Green		0.03	0.62	0.62	0.05	0.64	0.64	0.11	0.11	0.11	0.08	0.08
Sat Flow, veh/h		1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870
Grp Volume(v), veh/h		109	1149	177	177	1971	122	213	85	142	138	113
Grp Sat Flow(s),veh/h/ln		1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870
Q Serve(g_s), s		3.6	28.7	7.6	5.8	71.9	4.8	17.0	6.8	14.1	11.2	9.4
Cycle Q Clear(g_c), s		3.6	28.7	7.6	5.8	71.9	4.8	17.0	6.8	14.1	11.2	9.4
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		144	2218	989	317	2271	1013	262	198	168	265	154
V/C Ratio(X)		0.75	0.52	0.18	0.56	0.87	0.12	0.81	0.43	0.85	0.52	0.73
Avail Cap(c_a), veh/h		188	2218	989	368	2271	1013	262	625	530	290	608
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
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		35.9	16.7	12.7	14.0	23.4	11.3	60.3	67.0	70.3	60.5	71.7
Incr Delay (d2), s/veh		11.8	0.9	0.4	1.5	4.8	0.2	17.6	1.5	11.1	1.6	6.6
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
%ile BackOfQ(95%),veh/ln		5.5	16.5	5.1	3.9	36.9	3.2	14.2	6.0	10.3	8.8	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		47.7	17.6	13.1	15.5	28.2	11.5	77.9	68.5	81.4	62.0	78.3
LnGrp LOS		D	B	B	B	C	B	E	E	F	E	E
Approach Vol, veh/h			1435			2270			440			348
Approach Delay, s/veh			19.3			26.3			77.2			72.3
Approach LOS			B			C			E			E
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.5	105.4	22.5	18.7	11.1	107.7	18.8	22.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	12.5	56.5	17.0	52.0	9.5	59.5	15.5	53.5				
Max Q Clear Time (g_c+I1), s	7.8	30.7	19.0	11.6	5.6	73.9	13.2	16.1				
Green Ext Time (p_c), s	0.2	23.4	0.0	0.7	0.1	0.0	0.1	0.8				

Intersection Summary

HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

HCM 6th Signalized Intersection Summary
1: Mars Hill Rd & US 78/SR 10 (Monroe Hwy)

Future Build 2020 PM (Sc 2)









02/21/2020

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	67
Future Volume (veh/h)	67
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	97
Peak Hour Factor	0.69
Percent Heavy Veh, %	2
Cap, veh/h	131
Arrive On Green	0.08
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	97
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	9.6
Cycle Q Clear(g_c), s	9.6
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	131
V/C Ratio(X)	0.74
Avail Cap(c_a), veh/h	515
HCM Platoon Ratio	1.00
Upstream Filter(l)	1.00
Uniform Delay (d), s/veh	71.8
Incr Delay (d2), s/veh	8.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	7.5
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	79.8
LnGrp LOS	E
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

HCM 6th TWSC
2: Clotfelter Rd/Site Drwy 6 & US 78/SR 10 (Monroe Hwy)




Future Build 2020 PM (Sc 2)

02/21/2020

Intersection												
Int Delay, s/veh	206.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	132	1037	33	294	1819	54	20	32	100	119	20	78
Future Vol, veh/h	132	1037	33	294	1819	54	20	32	100	119	20	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	365	-	-	385	-	250	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	95	92	92	94	92	90	92	90	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	143	1092	36	320	1935	59	22	35	111	129	22	85
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1994	0	0	1128	0	0	3015	4030	564	3425	3989	968
Stage 1	-	-	-	-	-	-	1396	1396	-	2575	2575	-
Stage 2	-	-	-	-	-	-	1619	2634	-	850	1414	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	284	-	-	615	-	-	~ 6	~ 3	469	~ 3	~ 3	254
Stage 1	-	-	-	-	-	-	148	206	-	~ 26	52	-
Stage 2	-	-	-	-	-	-	108	48	-	322	202	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	284	-	-	615	-	-	0	~ 1	469	~ 1	~ 1	254
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	559	-	~ 12	25	-
Stage 1	-	-	-	-	-	-	73	102	-	~ 13	25	-
Stage 2	-	-	-	-	-	-	~ 5	~ 23	-	~ 80	100	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.4			2.3			22.8			\$ 3434.9		
HCM LOS							C			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	368	284	-	-	615	-	-	13	254			
HCM Lane V/C Ratio	0.457	0.505	-	-	0.52	-	-	11.622	0.334			
HCM Control Delay (s)	22.8	29.9	-	-	17	-	-	\$ 5347.8	26.1			
HCM Lane LOS	C	D	-	-	C	-	-	F	D			
HCM 95th %tile Q(veh)	2.3	2.7	-	-	3	-	-	20.1	1.4			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s				+: Computation Not Defined				*: All major volume in platoon		

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	68	42	91	108	5
Future Vol, veh/h	14	68	42	91	108	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	74	46	103	130	5





Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	328	133	135
Stage 1	133	-	-
Stage 2	195	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	666	916	1449
Stage 1	893	-	-
Stage 2	838	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	643	916	1449
Mov Cap-2 Maneuver	643	-	-
Stage 1	863	-	-
Stage 2	838	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	2.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1449	-	854	-	-
HCM Lane V/C Ratio	0.032	-	0.104	-	-
HCM Control Delay (s)	7.6	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection






Int Delay, s/veh 3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	83	61	116	151	24
Future Vol, veh/h	17	83	61	116	151	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	75	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	90	66	132	182	26

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	459	195	208
Stage 1	195	-	-
Stage 2	264	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	560	846	1363
Stage 1	838	-	-
Stage 2	780	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	533	846	1363
Mov Cap-2 Maneuver	533	-	-
Stage 1	798	-	-
Stage 2	780	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	2.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1363	-	769	-	-
HCM Lane V/C Ratio	0.049	-	0.141	-	-
HCM Control Delay (s)	7.8	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	44	52	170	226	8
Future Vol, veh/h	6	44	52	170	226	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	60	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	88	83	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	48	57	193	272	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	579	272	281	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	477	767	1282	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	456	767	1282	-	-	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.5	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1282	-	709	-	-	
HCM Lane V/C Ratio	0.044	-	0.077	-	-	
HCM Control Delay (s)	7.9	-	10.5	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

Intersection

Int Delay, s/veh 4.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1391	1986	227	0	189
Future Vol, veh/h	0	1391	1986	227	0	189
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	5	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1496	2091	247	0	205

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1046
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 225
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 225
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	84.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	225
HCM Lane V/C Ratio	-	-	0.913
HCM Control Delay (s)	-	-	84.8
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	7.6

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	1391	1978	197	0	189
Future Vol, veh/h	0	1391	1978	197	0	189
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	Yield
Storage Length	-	-	-	250	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	93	95	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1496	2082	214	0	205

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1041
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- 0 0 227
Stage 1	0	-	- 0 0 -
Stage 2	0	-	- 0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 227
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	82.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	227
HCM Lane V/C Ratio	-	-	0.905
HCM Control Delay (s)	-	-	82.6
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	7.5

TRAFFIC VOLUME WORKSHEETS

18-168 Bogart Tract Traffic Study
Traffic Volumes
Future Conditions

A&R Engineering
February 2020

1. US 78 @ Mars Hill
A.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
Existing 2018 Volumes:	0	198	25	111	334	0	37	81	12	130	0	62	1349	387	1798	0	159	737	38	934
Growth Factor (%):																				
No-Build 2019 Volumes:	0	205	26	115	346	0	38	84	12	134	0	64	1396	401	1861	0	165	763	39	967
No-Build 2020 Volumes:	0	212	27	119	358	0	40	87	13	140	0	66	1445	415	1926	0	170	789	41	1000
No-Build 2022 Volumes:	0	227	29	127	383	0	42	93	14	149	0	71	1548	444	2063	0	182	846	44	1072
New Trips (Scenario 1, Phase I):	0	14	10	0	24	0	64	24	18	106	30	30	0	0	60	0	0	51	13	64
Pass-by Trips (Scenario 1, Phase I):	0	0	0	0	0	0	93	0	0	93	69	72	-154	0	-13	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	39	17	0	56	0	137	29	0	166	43	99	19	7	168	0	0	104	45	149
Pass-by Trips (Scenario 1, Phase II):	0	0	0	0	0	0	6	0	0	6	14	6	-7	0	13	0	0	0	0	0
New Trips (Scenario 1, Phases I + II):	0	53	27	0	80	0	201	53	18	272	73	129	19	7	228	0	0	155	58	213
Pass-by Trips (Scenario 1, Phases I + II):	0	0	0	0	0	0	99	0	0	99	83	78	-161	0	0	0	0	0	0	0
New Trips (Scenario 2):	0	48	32	0	80	0	64	42	47	153	32	60	96	18	206	0	0	150	64	214
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	14	0	0	14	56	14	-15	0	55	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	219	36	115	370	0	195	108	30	333	99	166	1242	401	1908	0	165	814	52	1031
Future 2022 Volumes (Scenario 1, Phases I + II):	0	280	56	127	463	0	342	146	32	520	156	278	1406	451	2291	0	182	1001	102	1285
Future 2020 Volumes (Scenario 2):	0	260	59	119	438	0	118	129	60	307	88	140	1526	433	2187	0	170	939	105	1214

P.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
Existing 2018 Volumes:	0	135	42	118	295	0	22	40	11	73	0	11	894	132	1037	0	148	1618	12	1778
Growth Factor (%):																				
No-Build 2019 Volumes:	0	140	43	122	305	0	23	41	11	75	0	11	925	137	1073	0	153	1675	12	1840
No-Build 2020 Volumes:	0	145	45	126	316	0	24	43	12	79	0	12	958	141	1111	0	159	1733	13	1905
No-Build 2022 Volumes:	0	155	48	135	338	0	25	46	13	84	0	13	1026	151	1190	0	170	1857	14	2041
New Trips (Scenario 1, Phase I):	0	13	9	0	22	0	58	22	16	96	28	28	0	0	56	0	0	47	12	59
Pass-by Trips (Scenario 1, Phase I):	0	0	0	0	0	0	45	0	0	45	31	33	-417	0	-53	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	36	16	0	52	0	181	41	0	222	39	92	28	10	169	0	0	97	42	139
Pass-by Trips (Scenario 1, Phase II):	0	0	0	0	0	0	9	0	0	9	53	9	-9	0	53	0	0	0	0	0
New Trips (Scenario 1, Phases I + II):	0	49	25	0	74	0	239	63	16	318	67	120	28	10	225	0	0	144	54	198
Pass-by Trips (Scenario 1, Phases I + II):	0	0	0	0	0	0	54	0	0	54	84	42	-126	0	0	0	0	0	0	0
New Trips (Scenario 2):	0	45	30	0	75	0	78	51	55	184	30	56	118	22	226	0	0	139	60	199
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	7	0	0	7	54	7	-7	0	54	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	153	52	122	327	0	126	63	27	216	59	72	808	137	1076	0	153	1722	24	1899
Future 2022 Volumes (Scenario 1, Phases I + II):	0	204	73	135	412	0	318	109	29	456	151	175	928	161	1415	0	170	2001	68	2239
Future 2020 Volumes (Scenario 2):	0	190	75	126	391	0	109	94	67	270	84	75	1069	163	1391	0	159	1872	73	2104

18-168 Bogart Tract Traffic Study
Traffic Volumes
Future Conditions

A&R Engineering
February 2020

2 US 78 @ Clotfelter
A.M. Peak Hour

Condition	Clotfelter Road Northbound					Site Driveway 6 Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
Existing 2018 Volumes:	0	13	0	129	142	0	0	0	0	0	0	0	1637	53	1690	0	84	914	0	998
Growth Factor (%):																				
No-Build 2019 Volumes:	0	13	0	134	147	0	0	0	0	0	0	0	1694	55	1749	0	87	946	0	1033
No-Build 2020 Volumes:	0	14	0	138	152	0	0	0	0	0	0	0	1754	57	1811	0	90	979	0	1069
No-Build 2022 Volumes:	0	15	0	148	163	0	0	0	0	0	0	0	1878	61	1939	0	96	1049	0	1145
New Trips (Scenario 1, Phase I):	0	0	0	13	13	0	0	0	0	0	0	0	48	0	48	0	13	48	0	61
Pass-by Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	0	0	30	30	0	0	0	0	0	0	0	112	0	112	26	19	71	0	116
Pass-by Trips (Scenario 1, Phase II):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - Phases I+II)	0	0	0	43	43	0	0	0	0	0	0	0	160	0	160	26	32	119	0	177
Pass-by Trips (Scenario 1 - Phases I+II)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	0	0	34	9	43	0	51	16	36	103	0	81	81	0	162	66	16	84	21	187
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	67	0	12	79	0	68	-68	0	0	56	0	-12	12	56
Future 2019 Volumes (Scenario 1, Phase I):	0	13	0	147	160	0	0	0	0	0	0	0	1742	55	1797	0	100	994	0	1094
Future 2022 Volumes (Scenario 1, Phases I + II):	0	15	0	191	206	0	0	0	0	0	0	0	2038	61	2099	26	128	1168	0	1322
Future 2020 Volumes (Scenario 2):	0	14	34	147	195	0	118	16	48	182	0	149	1767	57	1973	122	106	1051	33	1312

P.M. Peak Hour

Condition	Clotfelter Road Northbound					Site Driveway 6 Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
Existing 2018 Volumes:	0	19	0	86	105	0	0	0	0	0	0	0	951	31	982	0	130	1634	0	1764
Growth Factor (%):																				
No-Build 2019 Volumes:	0	20	0	89	109	0	0	0	0	0	0	0	984	32	1016	0	135	1691	0	1826
No-Build 2020 Volumes:	0	20	0	92	112	0	0	0	0	0	0	0	1019	33	1052	0	139	1750	0	1889
No-Build 2022 Volumes:	0	22	0	99	121	0	0	0	0	0	0	0	1091	36	1127	0	149	1875	0	2024
New Trips (Scenario 1, Phase I):	0	0	0	12	12	0	0	0	0	0	0	0	44	0	44	0	12	43	0	55
Pass-by Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	0	0	28	28	0	0	0	0	0	0	0	104	0	104	38	28	103	0	169
Pass-by Trips (Scenario 1, Phase II):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - Phases I+II)	0	0	0	40	40	0	0	0	0	0	0	0	148	0	148	38	40	146	0	224
Pass-by Trips (Scenario 1 - Phases I+II)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 2):	0	0	32	8	40	0	62	20	44	126	0	75	75	0	150	81	20	103	20	224
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	57	0	34	91	0	57	-57	0	0	54	0	-34	34	54
Future 2019 Volumes (Scenario 1, Phase I):	0	20	0	101	121	0	0	0	0	0	0	0	1028	32	1060	0	147	1734	0	1881
Future 2022 Volumes (Scenario 1, Phases I + II):	0	22	0	139	161	0	0	0	0	0	0	0	1239	36	1275	38	189	2021	0	2248
Future 2020 Volumes (Scenario 2):	0	20	32	100	152	0	119	20	78	217	0	132	1037	33	1202	135	159	1819	54	2167

18-168 Bogart Tract Traffic Study
Traffic Volumes
Future Conditions

A&R Engineering
February 2020

3. Mars Hill @ Drwy 1 (N)

A.M. Peak Hour

Condition	Mars Hill Road Northbound				Mars Hill Road Southbound				Site Driveway 1 (North) Eastbound				Site Driveway 1 (North) Westbound			
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	Tot
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	Tot
Existing 2018 Volumes:	0	0	125	0	125	0	0	130	0	130	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	129	0	129	0	0	135	0	135	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	134	0	134	0	0	139	0	139	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	143	0	143	0	0	149	0	149	0	0	0	0	0	0
New Trips (Scenario), Phase I):	0	0	11	0	11	0	0	11	0	11	0	0	0	0	0	0
Pass-by Trips (Scenario), Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario), Phase II):	0	24	8	0	32	0	0	21	5	26	0	8	0	26	34	0
Pass-by Trips (Scenario), Phase II):	0	7	-1	0	6	0	0	-1	1	0	0	1	0	7	8	0
New Trips (Scenario I - Phases I+II)	0	24	19	0	43	0	0	32	5	37	0	8	0	26	34	0
Pass-by Trips (Scenario I - Phases I + II)	0	7	-1	0	6	0	0	-1	1	0	0	1	0	7	8	0
New Trips (Scenario 2):	0	46	17	0	63	0	0	32	6	38	0	11	0	55	66	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	0	140	0	140	0	0	146	0	146	0	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	31	161	0	192	0	0	180	6	186	0	9	0	33	42	0
Future 2020 Volumes (Scenario 2):	0	46	151	0	197	0	0	171	6	177	0	11	0	55	66	0

P.M. Peak Hour

Condition	Mars Hill Road Northbound				Mars Hill Road Southbound				Site Driveway 1 (North) Eastbound				Site Driveway 1 (North) Westbound			
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	Tot
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	Tot
Existing 2018 Volumes:	0	0	65	0	65	0	0	73	0	73	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	67	0	67	0	0	76	0	76	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	70	0	70	0	0	78	0	78	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	75	0	75	0	0	84	0	84	0	0	0	0	0	0
New Trips (Scenario), Phase I):	0	0	10	0	10	0	0	10	0	10	0	0	0	0	0	0
Pass-by Trips (Scenario), Phase I):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario), Phase II):	0	23	12	0	35	0	0	19	5	24	0	12	0	38	50	0
Pass-by Trips (Scenario), Phase II):	0	11	-2	0	9	0	0	-2	2	0	0	2	0	11	13	0
New Trips (Scenario I - Phases I+II)	0	23	22	0	45	0	0	29	5	34	0	12	0	38	50	0
Pass-by Trips (Scenario I - Phases I + II)	0	11	-2	0	9	0	0	-2	2	0	0	2	0	11	13	0
New Trips (Scenario 2):	0	42	21	0	63	0	0	30	5	35	0	14	0	68	82	0
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	0	77	0	77	0	0	86	0	86	0	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	34	95	0	129	0	0	111	7	118	0	14	0	49	63	0
Future 2020 Volumes (Scenario 2):	0	42	91	0	133	0	0	108	5	113	0	14	0	68	82	0

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4. Mars Hill @ Drwy 2 (M)

A.M. Peak Hour

Condition	Mars Hill Road Northbound				Mars Hill Road Southbound				Site Driveway 2 (Middle) Eastbound				Westbound			
	U	L	T	Tot	U	L	T	Tot	U	L	T	Tot	U	L	T	Tot
	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Existing 2018 Volumes:	0	0	125	0	125	0	130	0	130	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	129	0	129	0	135	0	135	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	134	0	134	0	139	0	139	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	143	0	143	0	149	0	149	0	0	0	0	0	0	0
New Trips (Scenario), Phase I):	0	19	6	0	25	0	0	6	12	0	6	0	37	43	0	0
Pass-by Trips (Scenario), Phase I):	0	24	0	0	24	0	0	0	0	0	0	0	45	45	0	0
New Trips (Scenario), Phase II):	0	56	24	0	80	0	0	34	13	47	0	8	0	69	77	0
Pass-by Trips (Scenario), Phase II):	0	1	6	0	7	0	0	5	1	6	0	1	0	1	2	0
New Trips (Scenario I - Phases I+II)	0	75	30	0	105	0	0	40	19	59	0	14	0	106	120	0
Pass-by Trips (Scenario I - Phases I+II)	0	25	6	0	31	0	0	5	1	6	0	1	0	46	47	0
New Trips (Scenario 2):	0	62	51	0	113	0	0	68	19	87	0	11	0	62	73	0
Pass-by Trips (Scenario 2):	0	5	-5	0	0	0	0	-5	5	0	0	5	0	5	10	0
Future 2019 Volumes (Scenario 1, Phase I):	0	43	135	0	178	0	0	141	6	147	0	6	0	82	88	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	100	179	0	279	0	0	194	20	214	0	15	0	152	167	0
Future 2020 Volumes (Scenario 2):	0	67	180	0	247	0	0	202	24	226	0	16	0	67	83	0

P.M. Peak Hour

Condition	Mars Hill Road Northbound				Mars Hill Road Southbound				Site Driveway 2 (Middle) Eastbound				Westbound			
	U	L	T	Tot	U	L	T	Tot	U	L	T	Tot	U	L	T	Tot
	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Existing 2018 Volumes:	0	0	65	0	65	0	73	0	73	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	67	0	67	0	76	0	76	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	70	0	70	0	78	0	78	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	75	0	75	0	84	0	84	0	0	0	0	0	0	0
New Trips (Scenario), Phase I):	0	18	5	0	23	0	0	5	5	10	0	5	0	33	38	0
Pass-by Trips (Scenario), Phase I):	0	5	0	0	5	0	0	0	0	0	0	0	0	21	21	0
New Trips (Scenario), Phase II):	0	52	23	0	75	0	0	45	12	57	0	12	0	92	104	0
Pass-by Trips (Scenario), Phase II):	0	2	7	0	9	0	0	5	4	9	0	2	0	4	6	0
New Trips (Scenario I - Phases I+II)	0	70	28	0	98	0	0	50	17	67	0	17	0	125	142	0
Pass-by Trips (Scenario I - Phases I+II)	0	7	7	0	14	0	0	5	4	9	0	2	0	25	27	0
New Trips (Scenario 2):	0	58	49	0	107	0	0	80	17	97	0	14	0	76	90	0
Pass-by Trips (Scenario 2):	0	3	-3	0	0	0	0	-7	7	0	0	3	0	7	10	0
Future 2019 Volumes (Scenario 1, Phase I):	0	23	72	0	95	0	0	81	5	86	0	5	0	54	59	0
Future 2022 Volumes (Scenario 1, Phases I + II):	0	77	110	0	187	0	0	139	21	160	0	19	0	150	169	0
Future 2020 Volumes (Scenario 2):	0	61	116	0	177	0	0	151	24	175	0	17	0	83	100	0

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5. Mars Hill @ Drwy 3 (S)

A.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 3 (South) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
Existing 2018 Volumes:	0	0	125	0	125	0	0	130	0	130	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	129	0	129	0	0	135	0	135	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	134	0	134	0	0	139	0	139	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	143	0	143	0	0	149	0	149	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase I):	0	33	19	0	52	0	0	37	6	43	0	6	0	69	75	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase I):	0	57	14	0	71	0	0	36	10	46	0	10	0	57	67	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	80	80	0	160	0	0	95	8	103	0	0	0	70	70	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase II):	0	0	6	0	6	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - Phases I+II)	0	113	99	0	212	0	0	132	14	146	0	6	0	139	145	0	0	0	0	0
Pass-by Trips (Scenario 1 - Phases I+II)	0	57	20	0	77	0	0	42	10	52	0	10	0	57	67	0	0	0	0	0
New Trips (Scenario 2):	0	46	111	0	157	0	0	125	6	131	0	3	0	28	31	0	0	0	0	0
Pass-by Trips (Scenario 2):	0	19	-5	0	14	0	0	-5	5	0	0	5	0	19	24	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	90	162	0	252	0	0	208	16	224	0	16	0	126	142	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I+II):	0	170	262	0	432	0	0	323	24	347	0	16	0	196	212	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	65	240	0	305	0	0	259	11	270	0	8	0	47	55	0	0	0	0	0

P.M. Peak Hour

Condition	Mars Hill Road Northbound					Mars Hill Road Southbound					Site Driveway 3 (South) Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	
Existing 2018 Volumes:	0	0	65	0	65	0	0	73	0	73	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	67	0	67	0	0	76	0	76	0	0	0	0	0	0	0	0	0	0
No-Build 2020 Volumes:	0	0	70	0	70	0	0	78	0	78	0	0	0	0	0	0	0	0	0	0
No-Build 2022 Volumes:	0	0	75	0	75	0	0	84	0	84	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1, Phase I):	0	31	18	0	49	0	0	33	5	38	0	5	0	62	67	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase I):	0	31	2	0	33	0	0	16	5	21	0	4	0	28	32	0	0	0	0	0
New Trips (Scenario 1, Phase II):	0	75	75	0	150	0	0	130	7	137	0	0	0	92	92	0	0	0	0	0
Pass-by Trips (Scenario 1, Phase II):	0	0	9	0	9	0	0	9	0	9	0	0	0	0	0	0	0	0	0	0
New Trips (Scenario 1 - Phases I+II)	0	106	93	0	199	0	0	163	12	175	0	5	0	154	159	0	0	0	0	0
Pass-by Trips (Scenario 1 - Phases I+II)	0	31	11	0	42	0	0	25	5	30	0	4	0	28	32	0	0	0	0	0
New Trips (Scenario 2):	0	42	103	0	145	0	0	151	5	156	0	3	0	34	37	0	0	0	0	0
Pass-by Trips (Scenario 2):	0	10	-3	0	7	0	0	-3	3	0	0	3	0	10	13	0	0	0	0	0
Future 2019 Volumes (Scenario 1, Phase I):	0	62	87	0	149	0	0	125	10	135	0	9	0	90	99	0	0	0	0	0
Future 2022 Volumes (Scenario 1, Phases I+II):	0	137	179	0	316	0	0	272	17	289	0	9	0	182	191	0	0	0	0	0
Future 2020 Volumes (Scenario 2):	0	52	170	0	222	0	0	226	8	234	0	6	0	44	50	0	0	0	0	0

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6. US78 @ Drwy 4 (E. RHO)

A.M. Peak Hour

Condition	Northbound					Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	Northbound					Southbound					Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1798	0	1798	0	0	998	0	998
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1861	0	1861	0	0	1033	0	1033
No-Build 2020 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1926	0	1926	0	0	1069	0	1069
No-Build 2022 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	2063	0	2063	0	0	1145	0	1145
New Trips (Scenario1, Phase I):	0	0	0	0	0	0	0	0	0	42	42	0	60	0	60	0	0	18	95	113
Pass-by Trips (Scenario1, Phase I):	0	0	0	0	0	0	0	0	0	65	65	0	48	0	48	0	0	-18	148	130
New Trips (Scenario1, Phase II):	0	0	0	0	0	0	0	0	0	58	58	0	168	0	168	0	0	113	73	186
Pass-by Trips (Scenario1, Phase II):	0	0	0	0	0	0	0	0	0	7	7	0	13	0	13	0	0	6	8	14
New Trips (Scenario 1 - Phases I+II)	0	0	0	0	0	0	0	0	0	100	100	0	228	0	228	0	0	131	168	299
Pass-by Trips (Scenario 1 - Phases I+II)	0	0	0	0	0	0	0	0	0	72	72	0	61	0	61	0	0	-12	156	144
New Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	63	63	0	206	0	206	0	0	153	125	278
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	60	60	0	56	0	56	0	0	-5	61	56
Future 2019 Volumes (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	107	107	0	1969	0	1969	0	0	1033	243	1276
Future 2022 Volumes (Scenario 1, Phases I + II):	0	0	0	0	0	0	0	0	0	172	172	0	2352	0	2352	0	0	1264	324	1588
Future 2020 Volumes (Scenario 2):	0	0	0	0	0	0	0	0	0	123	123	0	2188	0	2188	0	0	1217	186	1403

P.M. Peak Hour

Condition	Northbound					Southbound					US 78/SR 10 (Monroe Highway) Eastbound					US 78/SR 10 (Monroe Highway) Westbound				
	Northbound					Southbound					Eastbound					Westbound				
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2018 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1037	0	1037	0	0	1764	0	1764
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1073	0	1073	0	0	1826	0	1826
No-Build 2020 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1111	0	1111	0	0	1890	0	1890
No-Build 2022 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	1190	0	1190	0	0	2024	0	2024
New Trips (Scenario1, Phase I):	0	0	0	0	0	0	0	0	0	38	38	0	55	0	55	0	0	16	88	104
Pass-by Trips (Scenario1, Phase I):	0	0	0	0	0	0	0	0	0	54	54	0	18	0	18	0	0	-38	139	101
New Trips (Scenario1, Phase II):	0	0	0	0	0	0	0	0	0	84	84	0	169	0	169	0	0	104	68	172
Pass-by Trips (Scenario1, Phase II):	0	0	0	0	0	0	0	0	0	53	53	0	53	0	53	0	0	0	53	53
New Trips (Scenario 1 - Phases I+II)	0	0	0	0	0	0	0	0	0	122	122	0	224	0	224	0	0	120	156	276
Pass-by Trips (Scenario 1 - Phases I+II)	0	0	0	0	0	0	0	0	0	107	107	0	71	0	71	0	0	-38	192	154
New Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	78	78	0	226	0	226	0	0	153	115	268
Pass-by Trips (Scenario 2):	0	0	0	0	0	0	0	0	0	111	111	0	54	0	54	0	0	-57	112	55
Future 2019 Volumes (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	92	92	0	1146	0	1146	0	0	1804	227	2031
Future 2022 Volumes (Scenario 1, Phases I + II):	0	0	0	0	0	0	0	0	0	229	229	0	1485	0	1485	0	0	2106	348	2454
Future 2020 Volumes (Scenario 2):	0	0	0	0	0	0	0	0	0	189	189	0	1391	0	1391	0	0	1986	227	2213

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7. US 78 @ Drwy 5 (W. RIRCO)

A.M. Peak Hour

Condition	Northbound				Southbound				US 78/SR 10 (Monroe Highway)				US 78/SR 10 (Monroe Highway)			
	Northbound				Southbound				Eastbound				Westbound			
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	Tot
Existing 2018 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1766	0	1766	0	998
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1828	0	1828	0	1033
No-Build 2020 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1892	0	1892	0	1069
No-Build 2022 Volumes:	0	0	0	0	0	0	0	0	0	0	0	2027	0	2027	0	1145
New Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	60	0	60	0	30
Passby Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	48	0	48	0	48
New Trips (Scenario 1, Phase II):	0	0	0	0	0	0	0	0	58	58	0	168	0	168	0	27
Passby Trips (Scenario 1, Phase II):	0	0	0	0	0	0	0	0	16	16	0	13	0	13	0	-4
New Trips (Scenario 1 - Phases I+II):	0	0	0	0	0	0	0	0	58	58	0	228	0	228	0	57
Passby Trips (Scenario 1 - Phases I+II):	0	0	0	0	0	0	0	0	16	16	0	61	0	61	0	44
New Trips (Scenario 2):	0	0	0	0	0	0	0	0	63	63	0	206	0	206	0	124
Passby Trips (Scenario 2):	0	0	0	0	0	0	0	0	60	60	0	56	0	56	0	-5
Future 2019 Volumes (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	1936	0	1936	0	1111
Future 2022 Volumes (Scenario 1, Phases I + II):	0	0	0	0	0	0	0	0	74	74	0	2316	0	2316	0	1246
Future 2020 Volumes (Scenario 2):	0	0	0	0	0	0	0	0	123	123	0	2154	0	2154	0	1188

P.M. Peak Hour

Condition	Northbound				Southbound				US 78/SR 10 (Monroe Highway)				US 78/SR 10 (Monroe Highway)			
	Northbound				Southbound				Eastbound				Westbound			
	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	Tot
Existing 2018 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1037	0	1037	0	1764
Growth Factor (%):	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
No-Build 2019 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1073	0	1073	0	1826
No-Build 2020 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1111	0	1111	0	1890
No-Build 2022 Volumes:	0	0	0	0	0	0	0	0	0	0	0	1190	0	1190	0	2024
New Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	55	0	55	0	25
Passby Trips (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	18	0	18	0	18
New Trips (Scenario 1, Phase II):	0	0	0	0	0	0	0	0	84	84	0	169	0	169	0	43
Passby Trips (Scenario 1, Phase II):	0	0	0	0	0	0	0	0	107	107	0	53	0	53	0	-53
New Trips (Scenario 1 - Phases I+II):	0	0	0	0	0	0	0	0	84	84	0	224	0	224	0	68
Passby Trips (Scenario 1 - Phases I+II):	0	0	0	0	0	0	0	0	107	107	0	71	0	71	0	-35
New Trips (Scenario 2):	0	0	0	0	0	0	0	0	78	78	0	226	0	226	0	146
Passby Trips (Scenario 2):	0	0	0	0	0	0	0	0	111	111	0	54	0	54	0	-58
Future 2019 Volumes (Scenario 1, Phase I):	0	0	0	0	0	0	0	0	0	0	0	1146	0	1146	0	1869
Future 2022 Volumes (Scenario 1, Phases I + II):	0	0	0	0	0	0	0	0	191	191	0	1485	0	1485	0	2057
Future 2020 Volumes (Scenario 2):	0	0	0	0	0	0	0	0	189	189	0	1391	0	1391	0	1978

PROPERTY DESCRIPTION

All that tract or parcel of land lying in and being part of the 240th GMD, Oconee County, Georgia, containing 32.079 acres, and being more particularly described as follows: BEGINNING at a right of way (R/W) post found at the intersection of the southwesterly R/W line of Mars Hill Road (80 foot wide R/W) and the northwesterly R/W line of U.S. Highway 78 (R/W width varies), run thence along said R/W line of U.S. Highway 78 the following courses and distances: (i) an arc measurement of 369.89 feet around a curve having clockwise rotation and a radius of 1531.51 feet, the chord measurement thereof being South 40 degrees 47 minutes 49 seconds West 368.99 feet to a ½ inch reinforcing rod (RR), (ii) an arc measurement of 21.27 feet around a curve having clockwise rotation and a radius of 1531.51 feet, the chord measurement thereof being South 48 degrees 06 minutes 50 seconds West 21.27 feet to a R/W post, (iii) South 60 degrees 02 minutes 24 seconds West 122.74 feet to a ½ inch RR, (iv) South 60 degrees 02 minutes 24 seconds West 50.80 feet to a 5/8 inch RR, (v) South 58 degrees 43 minutes 21 seconds West 220.40 feet to a ½ inch RR, (vi) South 58 degrees 14 minutes 55 seconds West 51.47 feet to a ½ inch RR, (vii) South 58 degrees 14 minutes 55 seconds West 14.63 feet to a R/W post, (viii) an arc measurement of 334.17 feet around a curve having clockwise rotation and a radius of 1531.51 feet, the chord measurement thereof being South 72 degrees 14 minutes 00 seconds West 333.51 feet to a R/W post, and (ix) South 78 degrees 32 minutes 01 second West 464.77 feet to a ½ inch RR; leaving said R/W line, run thence North 22 degrees 35 minutes 48 seconds West 822.06 feet along property of Linda D. Chesnut to a ½ inch RR; thence North 52 degrees 20 minutes 16 seconds East 595.78 feet along property of Hugh D. Crowe, Jr. to a 1 inch pipe; run thence along property of Winamin LLC the following courses and distances: (i) South 62 degrees 45 minutes 06 seconds East 237.53 feet to a ½ inch RR, (ii) North 27 degrees 48 minutes 10 seconds East 99.92 feet to a ¾ inch rod, (iii) North 27 degrees 08 minutes 24 seconds East 115.79 feet to a ½ inch RR, and (iv) North 27 degrees 08 minutes 24 seconds East 234.02 feet to a ¾ inch rod situated on the southwesterly R/W line of Mars Hill Road; run thence along said R/W line of Mars Hill Road the following courses and distances: (i) South 55 degrees 04 minutes 16 seconds East 220.00 feet to a ½ inch RR, (ii) South 55 degrees 04 minutes 16 seconds East 113.64 feet to a point, (iii) an arc measurement of 48.58 feet around a curve having clockwise rotation and a radius of 3106.74 feet, the chord measurement thereof being South 54 degrees 37 minutes 23 seconds East 48.58 feet to a ½ inch RR, (iv) an arc measurement of 327.52 feet around a curve having clockwise rotation and a radius of 3106.74 feet, the chord measurement thereof being South 51 degrees 09 minutes 18 seconds East 327.37 feet to a ½ inch RR, (v) an arc measurement of 80.78 feet around a curve having clockwise rotation and a radius of 3106.74 feet, the chord measurement thereof being South 47 degrees 23 minutes 24 seconds East 80.78 feet to a point, (vi) South 46 degrees 43 minutes 43 seconds East 133.51 feet to a ½ inch RR, and (vii) South 46 degrees 43 minutes 43 seconds East 174.52 feet to the POINT OF BEGINNING.

All directions recited herein are referenced to Grid North, Georgia West Zone.

JPC Design and Construction, LLC

264 Alabama Blvd.

P.O. 710

Jackson, Georgia 30233

2/28/20

Mr. Guy Herring, Director

Oconee County Planning and Code Enforcement Dept.

1291 Greensboro Hwy.

Watkinsville, Georgia 30677

RE: Zoning Impact Analysis for JPC Design and Construction LLC, for 32.079 acres at US Hwy. 78 and Mars Hill Road, Oconee County, Georgia.

Mr. Herring,

In consideration of Change in Conditions of Approval for Case number 7702 for 32.079 acres located at the corner of US Hwy. 78 and Mars Hill Rd., we ask that you consider these factors:

- A. Whether the zoning proposal will permit a use that is suitable in view of the existing uses, development, and zoning of nearby property.

The existing uses of the property are mixed, mostly commercial at the intersection. The current zoning of the property is zoned B-2 with an existing convenience store and gas station with a retail strip center attached. We plan on demoing the existing store and building a new convenience store with Burger King attached. Nearby commercial zoning directly across Monroe Hwy. at the same intersection is a Racetrac convenience store with similar full access drive way onto Mars Hill Road. We are asking for this same type access to our store.

- B. Whether the property to be rezoned has a reasonable economic use as currently zoned.

The current zoning of B-2 is not in question, only the drive way on Mars Hill Rd. The property is currently commercial and convenience store use, we are adding a fast food which will be economically positive for the area.

- C. The extent to which the destruction of property values of the individual property owner promotes the health, safety, morals or general welfare of the public with consideration to:
1. Population density and effect on community facilities such as streets, schools, water and sewer;
 2. Environmental impact;
 3. Effect on existing use, usability and/or value of adjoining property.

US 78 is a major four lane highway. There is a traffic signal at the intersection of Mars Hill Rd and US 78 as well. There should be no impact on schools as this request is commercial. Water and sewer capacity are available.

There will be minimal environmental impacts on the property. We will adhere to all Oconee County development policy and State policy in regards to storm water retention and runoff, erosion and sediment control, landscaping both temporary and permanent, and the like.

There should be a positive effect on adjoining properties, all of which are commercial in nature. Values should increase due to the commercial zoning. Existing use and usability of our property is in need of attention. Thus the application for demo and rebuild of this new store. Old store was built in 1959 and is dilapidated.

- D. Length of time the property has been vacant as zoned, considered in the context of the land development in the area in the vicinity of the property.

According to tax records the original store was built in 1959. The two homes on the property were built in 1956 and 1972. The remainder of the property has been agriculture use. In the vicinity of the property there is a Racetrac Convenience store, the Oconee State Bank, Mars Hill Animal Hospital, and Homstead Hospice. All of which are commercial in zoning and use. NOTE that the Racetrac store has a full access driveway onto Mars Hill Road. We are asking for the same driveway to be allowed on our property.

- E. Consistency of the proposed use with the stated purpose of the zoning district that is being requested.

Change in Zoning Conditions is being requested in a B-2 zoning. The use is not in question, the driveway is in question. And we would like to have a full access driveway on Mars Hill Rd. as shown on our concept plan.

- F. Whether there are other existing or changing conditions or land use patterns affecting the use and development of the property which give supporting grounds for either approval or disapproval of the zoning proposal.

Other existing conditions and land use patterns are that of the Racetrac store across the street. This directly affects the use and development of our property being the same type use in nature. They have full access to Mars Hill Road, we do not currently. This should give grounds for our approval as requested.

- G. Conformity with or divergence from the Future Development Map or the goals and objectives of the Oconee County Community Agenda.

The site conforms with the Future Development Map which is Gateway Technology Use. The zoning has been approved.

H. The availability of adequate sites for the proposed use in districts that permit such use.

There are adequate sites along US 78. However this site is located at an intersection with a traffic signal, which is ideal. Water and sewer are also at the intersection of our property.

Your consideration in this proposal is greatly appreciated.

Respectfully,

A handwritten signature in dark ink, appearing to read "Mike Horne", with a long horizontal flourish extending to the right.

Mike Horne, Project Manager

JPC Design and Construction, LLC