DEVELOPMENT OF REGIONAL IMPACT
(DRI #3306)
TRAFFIC STUDY
FOR
BROADSTONE AT MORELAND

CITY OF ATLANTA, GEORGIA

Prepared for:

Alliance Residential Company
1720 Peachtree Street
Suite 150
Atlanta, GA 30309

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

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A & R Project # 21-005

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the added traffic from the proposed mixed-use development that will be located in the southeast corner of the intersection of SR 42/US 23 (Moreland Avenue) and Custer Avenue in City of Atlanta, DeKalb County, Georgia. The development will consist of:

- Multi-Family Housing: 354 Units
- Townhomes: 188 Units
- Dollar Tree: 11,019 sf

The development proposes three site accesses at the following locations:

- Site Driveway 1: Right-in/right-out driveway on SR 42/US 23 (Moreland Avenue)
- Site Driveway 2: Full-access (Western) driveway on Custer Avenue
- Site Driveway 3: Full-access (Eastern) driveway on Custer Avenue

Site Access Configuration

All the site driveway intersections are recommended to be un-signalized with a STOP sign on each of the driveway approaches. The following access configuration was utilized when modeling the proposed site driveway intersections.

Traffic Operations

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

1. SR 42/US 23 (Moreland Avenue) at Eastland Road
2. SR 42/US 23 (Moreland Avenue) at Custer Avenue
3. SR 42/US 23 (Moreland Ave) at McDonough Boulevard
4. Bouldercrest Road at Eastland Road
5. Custer Avenue at Site Driveway 3 (E)
6. Custer Avenue at Site Driveway 2 (W)
7. SR 42/US 23 (Moreland Avenue) at Site Driveway 1 (RIRO)

The analysis included the evaluation of Future operations for “No-Build” and “Build” conditions, both of which account for increases in annual growth of through traffic. The results of the analysis indicated that the differences between the “No-Build” and “Build” scenarios are insignificant after the site mitigation improvements were accounted for.

Site Mitigation Improvements

- Site Driveways:
    - Construction of deceleration lane on Driveway 1 (RIRO) on SR 41/US 23 (Moreland Avenue)
- SR 41/US 23 (Moreland Avenue) and Custer Avenue:
    - Repurposing of the second receiving eastbound through lane to be used as a dual westbound left turn lane (concept plan included as Figure 15)
    - Addition of protected left turn phase to existing traffic signal at the westbound approach
    - Construction of a northbound right turn lane

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INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed Broadstone at Moreland mixed-use development that will be located in the southeast corner of the intersection of SR 42/US 23 (Moreland Avenue) and Custer Avenue in City of Atlanta, Georgia. The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The development will consist of:

- Multi-Family Housing: 354 Units
- Townhomes: 188 Units
- Dollar Tree: 11,019 sf

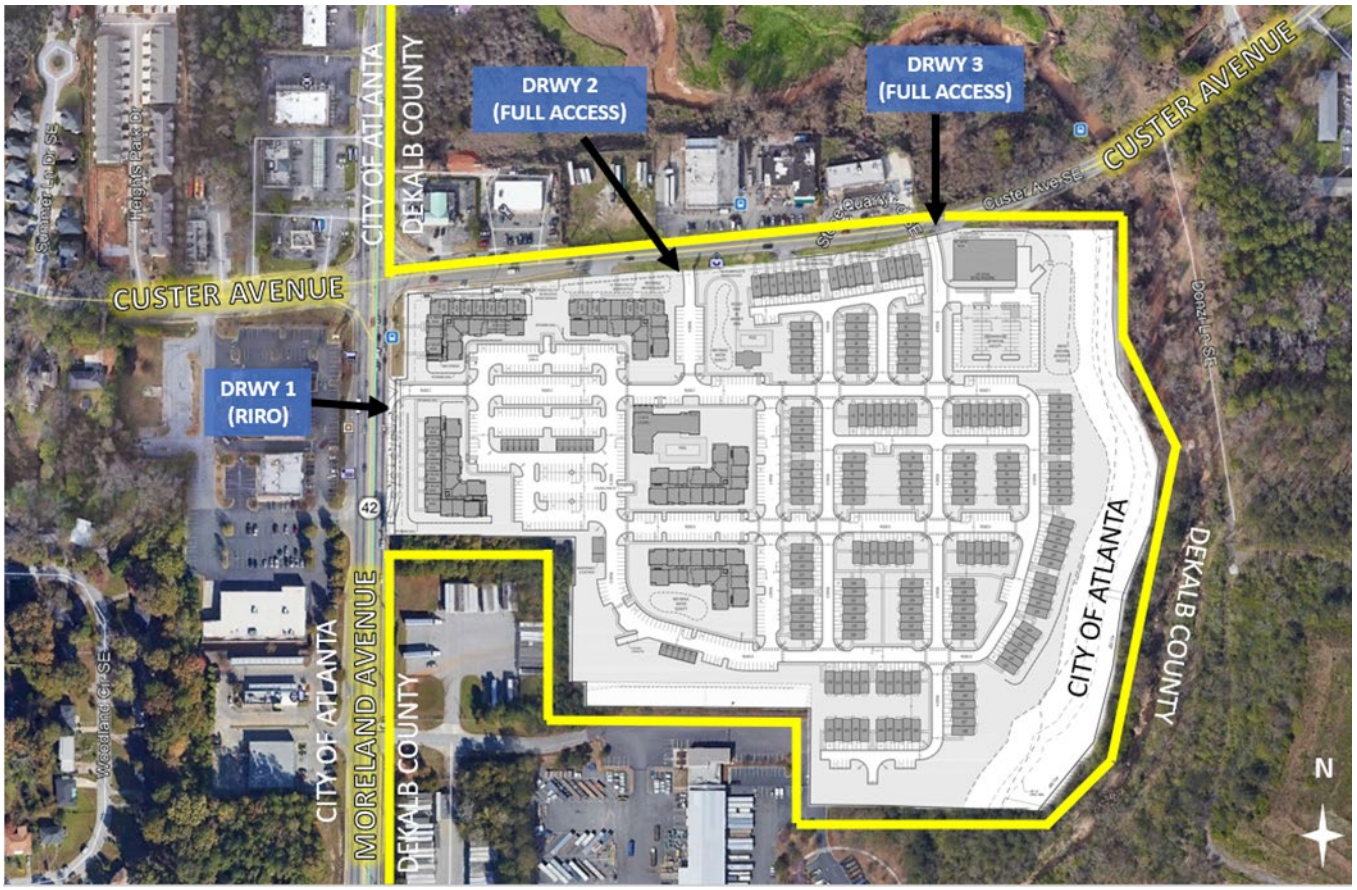

Figure 1: Site Overlay

The development proposes three site accesses at the following locations:

- Site Driveway 1: Right-in/right-out driveway on SR 42/US 23 (Moreland Avenue)
- Site Driveway 2: Full-access (Western) driveway on Custer Avenue
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Existing and future operations after completion of the project were analyzed at the intersections of:

- SR 42/US 23 (Moreland Avenue) at Eastland Road
- SR 42/US 23 (Moreland Avenue) at Custer Avenue

- SR 42/US 23 (Moreland Ave) at McDonough Boulevard
- Bouldercrest Road at Eastland Road
- Custer Avenue at Site Driveway 1 (E)
- Custer Avenue at Site Driveway 2 (W)
- SR 42/US 23 (Moreland Avenue) at Site Driveway 3 (RIRO)

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report.

STUDY NETWORK DETERMINATION

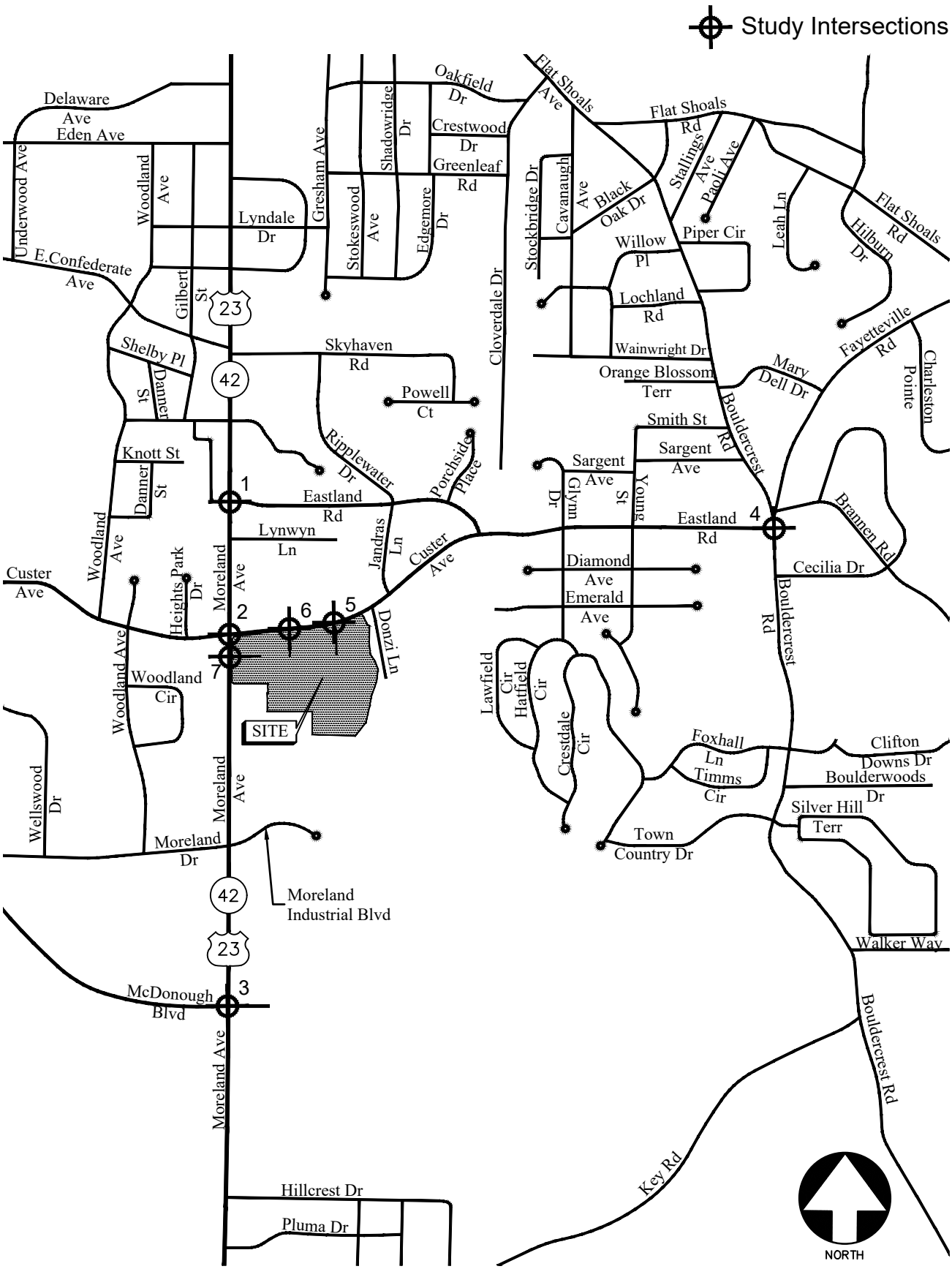
The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a "significant" amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. A level of service standard of "D" was used for determining the study area network, unless the level of service standard "E" is allowable as detailed in GRTA's Policies and Procedures (April 2021).

The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following study intersections fell within the 7% rule and/or have been selected as being suitable for evaluation in discussions with GRTA, ARC, GDOT, City of Atlanta, and Dekalb County:

- SR 42/US 23 (Moreland Avenue) at Eastland Road
- SR 42/US 23 (Moreland Avenue) at Custer Avenue
- SR 42/US 23 (Moreland Ave) at McDonough Boulevard
- Bouldercrest Road at Eastland Road

The distribution that was taken into account in the 7% rule determination is shown in Figure 2. The location of the development and the surrounding study network is shown in Figure 3. Other intersections within this corridor, such as unsignalized side streets, right-in / right-out driveways or private driveways have not been included in the study network.

Figure 2 – Trip Distribution



LOCATION MAP FIGURE 1

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EXISTING ROADWAY FACILITIES

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

SR 42/US 23 (Moreland Avenue)

SR 42/US 23 (Moreland Avenue) is a north-south, four-lane roadway with two way left-turn lane and posted with a speed limit of 45 mph in the vicinity of the site. Georgia Department of Transportation (GDOT) traffic counts (Station ID 121-5225) indicate that the daily traffic volume on SR 42/US 23 (Moreland Avenue) in 2019 was 28,200 vehicles per day south of Moreland Drive. GDOT classifies SR 42/US 23 (Moreland Avenue) as an Urban Principal Arterial roadway.

Custer Avenue

Custer Avenue is an east-west, two-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. GDOT traffic counts (Station ID 089-3947) indicate that the daily traffic volume on Custer Avenue in 2019 was 8,900 vehicles per day south of Jandras Lane. GDOT classifies Custer Avenue as an Urban Minor Collector roadway.

Eastland Road

Eastland Road is an east-west, two-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. GDOT traffic counts (Station ID 089-3945) indicate that the daily traffic volume on Eastland Road in 2019 was 10,000 vehicles per day east of Custer Avenue. GDOT classifies Eastland Road as an Urban Minor Collector roadway.

Bouldercrest Road

Bouldercrest Road is a north-south, two-lane, undivided roadway with a posted speed limit of 35 mph.

McDonough Boulevard

McDonough Boulevard is an east-west, four-lane roadway with two way left-turn lane and posted with a speed limit of 45 mph.

TABLE 1: ADDITIONAL ROADWAY INFORMATION

Roadway	# of Lanes	Ownership
Moreland Avenue (SR 23)	4	GDOT
Custer Avenue SE	2	City of Atlanta
McDonough Boulevard (SR 42)	2	GDOT
Eastland Road	2	Dekalb County
Bouldercrest Road	2	Dekalb County

EXISTING BICYCLE, PEDESTRIAN AND TRANSIT

Bicycle paths or sidewalks

Sidewalks and pedestrian facilities are present along the following roadways in the study network:

- Sidewalks are present on both sides of Moreland Avenue.
- Sidewalks are present on Custer Avenue to the west of Moreland Avenue.
- Crosswalks are present at the intersection Moreland Avenue and Custer Avenue

The following are potential pedestrian and bicycle destinations:

- MARTA transit bus stops
- fast food restaurants and local restaurants along Moreland Avenue
- Kroger, Aldi
- Dollar Tree, Dollar General, Family Dollar

Existing Transit Facilities

MARTA bus stops for routes 4, 9, and 832 are located in the vicinity of the proposed development. The transit route maps have been included in the appendix.

Figure 5 – Bus Routes near Proposed Development

Existing High-Capacity Transit Stations: No existing high capacity transit stations were identified in the vicinity of the proposed development.

Existing Transit Service Details*:* Transit operating days include weekdays, Saturday, and Sunday.

Proposed Pedestrian Route to Access Transit: Sidewalk from proposed development on Moreland Avenue to MARTA bus stop at the intersection of Moreland Avenue and Custer Avenue.

Transit Stop Ridership:

TABLE 2 – MARTA RIDERSHIP DATA

Office of Regional Planning
Special Projects and Analysis

marta

MARTA Ridership by Stop for Moreland @ Broadstone Site *May 19, 2021*

CODE	Description
SGN	Sign on U-channel post
SNT	Non-ad shelter, 2010s Tolar design
SAT	At shelter, 2010s Tolar design
NS	Near side of intersection
FS	Far side of intersection
AT	AT address
OP	Opposite to address number
N/A	Not available due to service not running under MARTA Essential Service Plan

*All Routes are now restored and running as of April 24th, 2021.

STOP NO.	STOP NAME	ROUTE NO.	STOP TYPE	LOCATION	DIRECTION	2019 ON	2019 OFF	2020 ON	2020 OFF
127012	MORELAND AVE SE @ CUSTER AVE SE	4	SAT	NS	S	11	32	9	51
127012	MORELAND AVE SE @ CUSTER AVE SE	832	SAT	NS	S	5	10	N/A	N/A
127044	CUSTER AVE SE @ 1278	9	SGN	AT	W	10	6	N/A	N/A
127046	MORELAND AVE SE @ CUSTER AVE SE	4	SAT	NS	N	30	8	51	6
127064	CUSTER AVE SE @ MORELAND AVE SE	9	SNT	FS	E	12	14	N/A	N/A
128134	CUSTER AVE SE @ 1278	9	SGN	OP	E	6	13	N/A	N/A

Transit Stop Amenity Standards: All MARTA bus stops should be marked with a MARTA bus stop sign, including contact information for bus schedules and customer service. MARTA will determine if the bus stop location qualifies the stop to include a bus shelter and bench based on the following factors: ridership, level of service of stops, proximity to other shelters, equity, and local land use.

EXISTING LAND USE AND ZONING

The property currently includes a shopping center that has 3 active tenants: Dollar Tree, DD's discounts, Value Village. The remainder of the of the suites are either vacant or not operating currently. The shopping center has one driveway on SR 42/US 23 (Moreland Avenue) and three driveways on Custeravenue. An aerial of the existing shopping center is included below.

Figure 6: Existing Aerial of Proposed Development

Existing Zoning: The property is zoned by the City of Atlanta as MRC1-C.

STUDY METHODOLOGY

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

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 3.

TABLE 3 – 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

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 3. 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 4 – 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

EXISTING 2021 TRAFFIC ANALYSIS

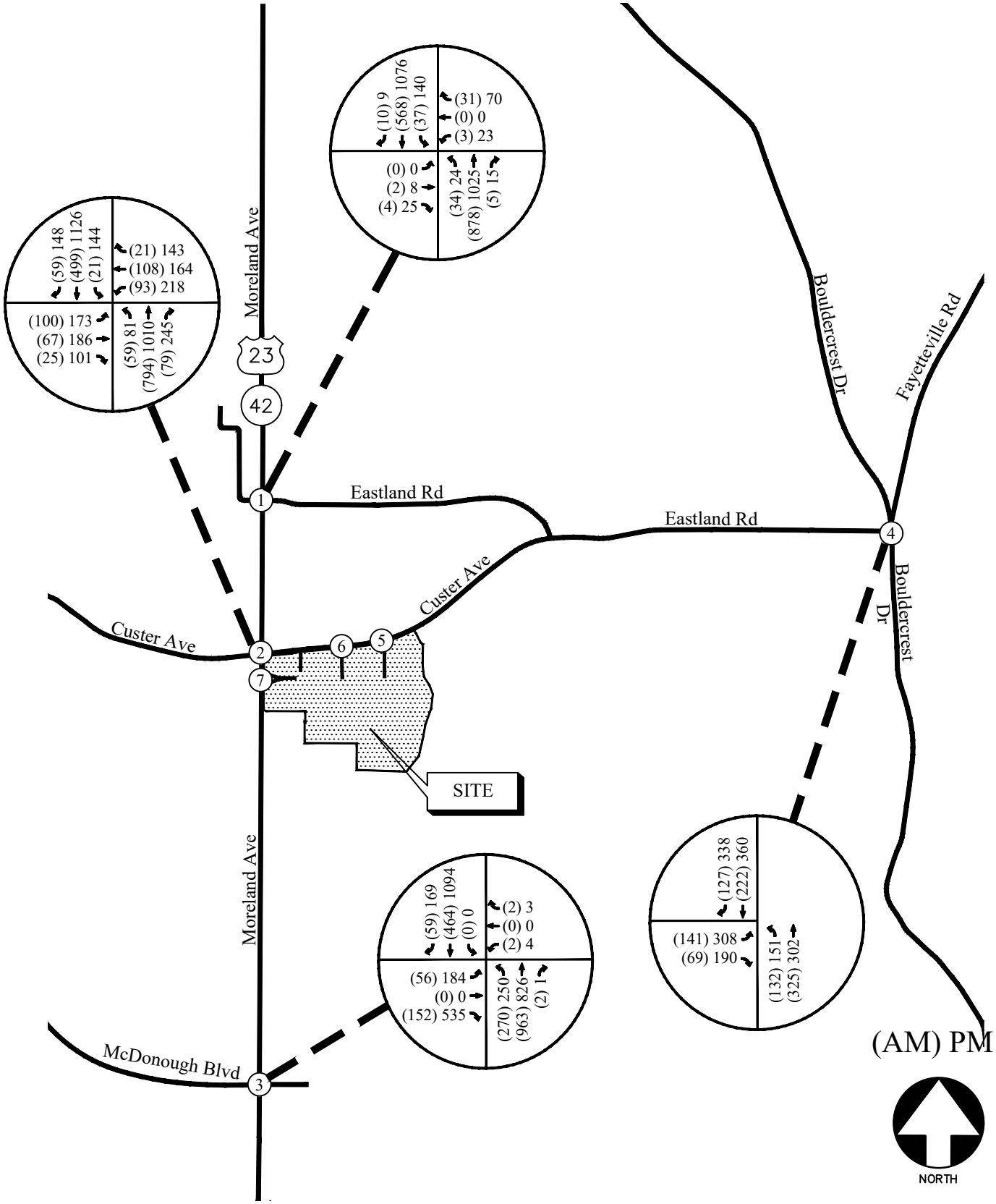
Existing Traffic Volumes

Traffic counts were obtained at the following study intersections. We collected AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak hour turning movement counts on Tuesday, May 18, 2021 at the following intersections:

- SR 42/US 23 (Moreland Avenue) at Eastland Road
- SR 42/US 23 (Moreland Avenue) at Custer Avenue
- SR 42/US 23 (Moreland Ave) at McDonough Boulevard
- Bouldercrest Road at Eastland Road

Adjusted 2021 Traffic Volumes

Since traffic patterns are abnormal due to increased number of people working from home to minimize the spread of COVID-19, we determined an adjustment factor based on the historical turning movement counts at the intersection SR 42/US 23 (Moreland Avenue) and Eastland Road in August 8,2019 in the study area. Based on the 2021 projected 2019 counts and the recent counts during the Covid-19 pandemic at the intersection of SR 42/US 23 (Moreland Avenue) at Eastland Road, AM and PM adjustment factors of 32% and 13% were determined for the counts collected in May 18, 2021. These adjustment factors were used to increase the 2021 AM and PM peak hour data to reflect normal traffic conditions. The unadjusted traffic volumes are shown in Figure 7. The adjusted volumes are shown in Figure 8.



EXISTING WEEKDAY PEAK-HOUR VOLUMES (DURING COVID-19)

FIGURE 2

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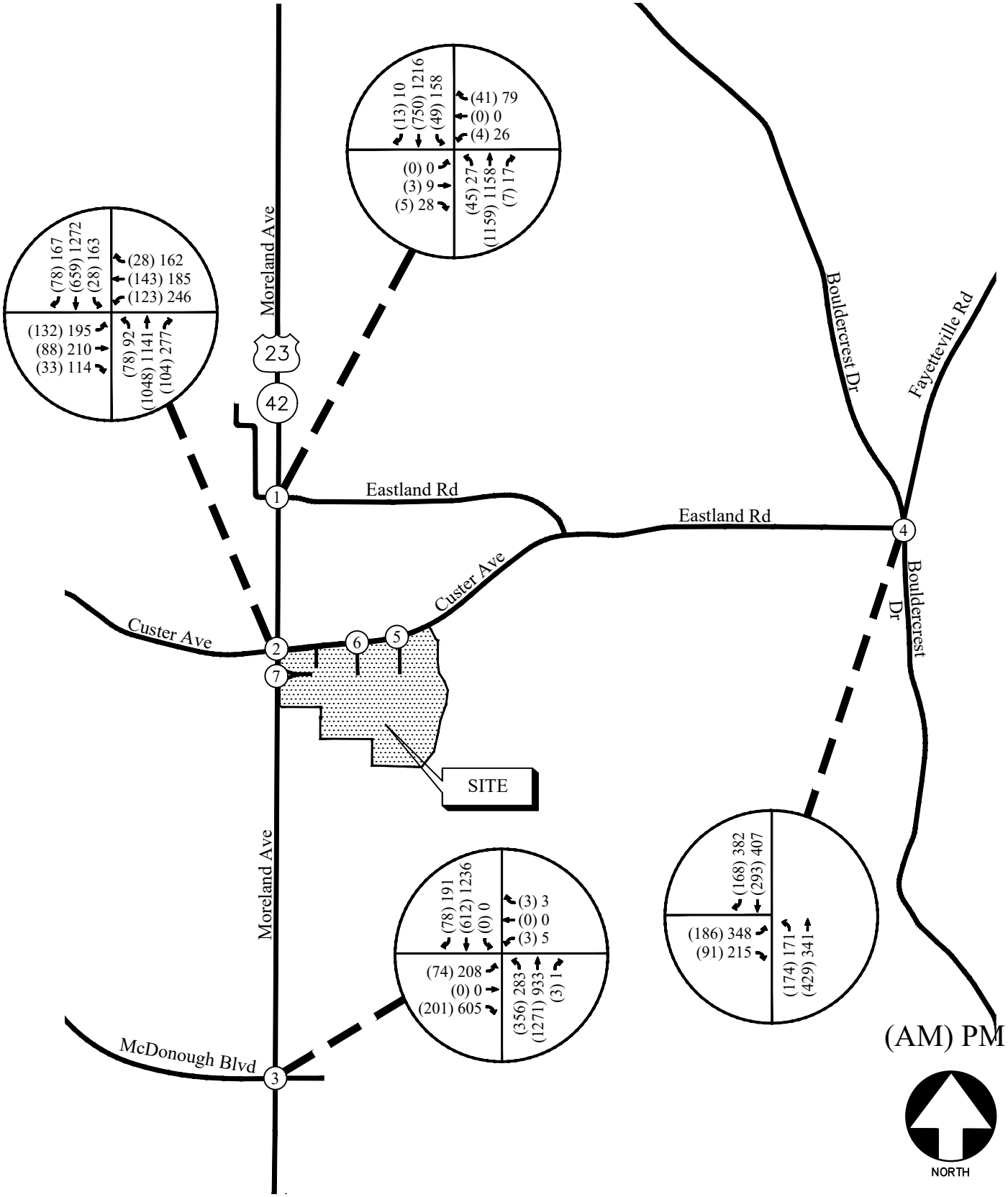

ADJUSTED EXISTING WEEKDAY PEAK-HOUR VOLUMES FIGURE 3

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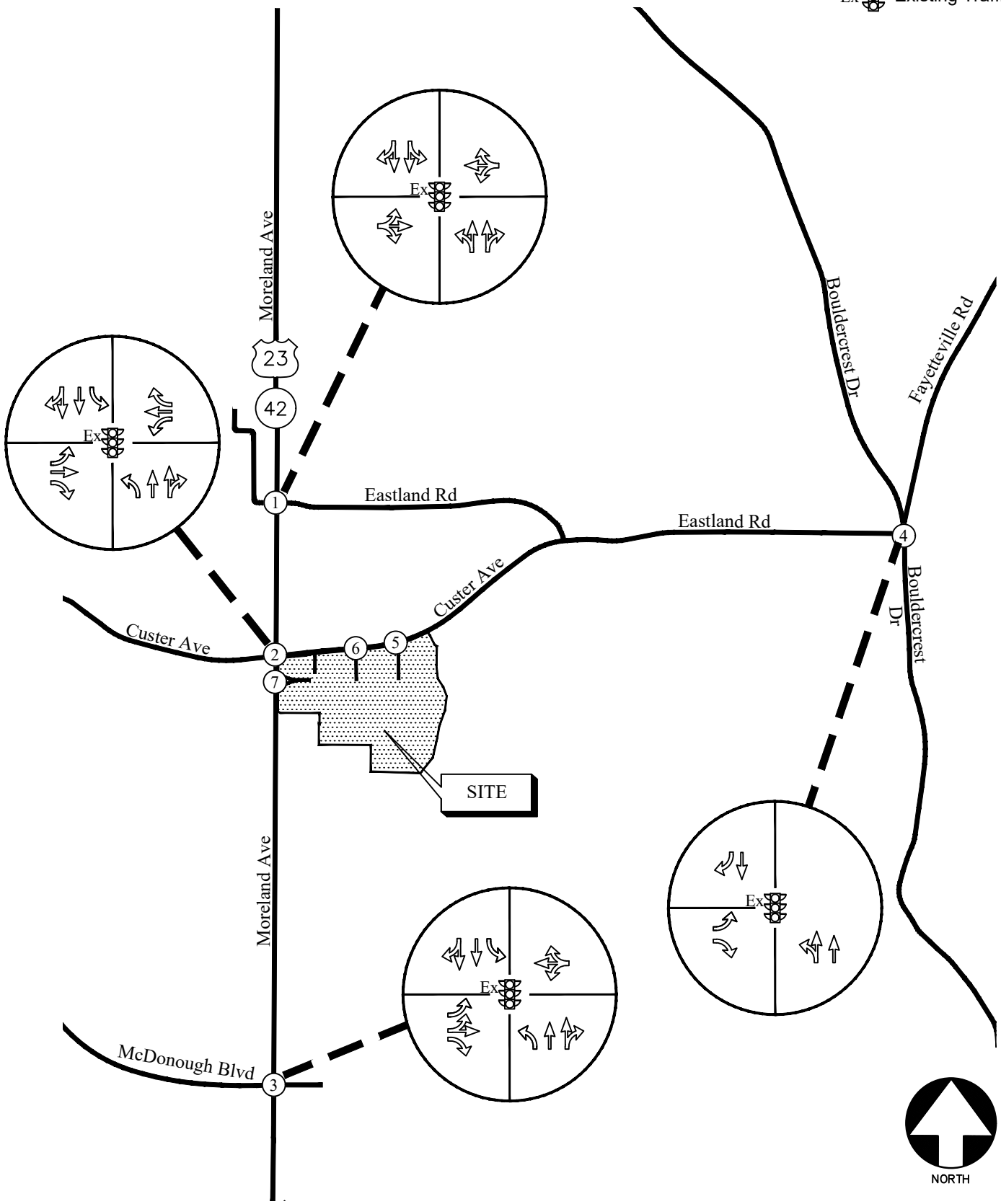
EXISTING TRAFFIC OPERATIONS

Existing 2021 traffic operations were analyzed at the study intersections in accordance with the HCM methodology using the volumes in Figure 3. The results of the analyses are shown in Table 5.

TABLE 5 – EXISTING INTERSECTION OPERATIONS

	Intersection	Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	**SR 42/US 23 (Moreland Ave) @ Eastland Rd**	Signalized	**A (3.8)**	**A (8.7)**
	-Eastbound Approach		E (56.0)	D (52.3)
	-Westbound Approach		E (60.0)	E (57.4)
	-Northbound Approach		A (2.6)	A (3.8)
	-Southbound Approach		A (2.0)	A (8.0)
2	**SR 42/US 23 (Moreland Ave) @ Custer Ave**	Signalized	**C (24.6)**	**D (44.6)**
	-Eastbound Approach		E (66.6)	E (74.7)
	-Westbound Approach		E (69.2)	F (122.4)
	-Northbound Approach		B (14.9)	C (30.6)
	-Southbound Approach		B (12.4)	C (29.4)
3	**SR 42/US 23 (Moreland Ave) @ McDonough Blvd**	Signalized	**B (12.4)**	**B (17.0)**
	-Eastbound Approach		E (74.5)	E (73.0)
	-Westbound Approach		F (90.0)	F (86.7)
	-Northbound Approach		B (11.5)	B (12.4)
	-Southbound Approach		A (6.8)	B (11.7)
4	**Bouldercrest Road @ Eastland Road**	Signalized	**B (12.4)**	**B (17.9)**
	-Eastbound Approach		D (41.1)	D (35.8)
	-Northbound Approach		A (5.6)	B (11.7)
	-Southbound Approach		A (4.1)	A (9.0)

The results of existing traffic operations analysis indicate that all the study intersections are operating at level-of-service "D" or better during the AM and PM peak hours. The existing traffic control and lane geometry for the intersections are shown in Figure 9.



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 4

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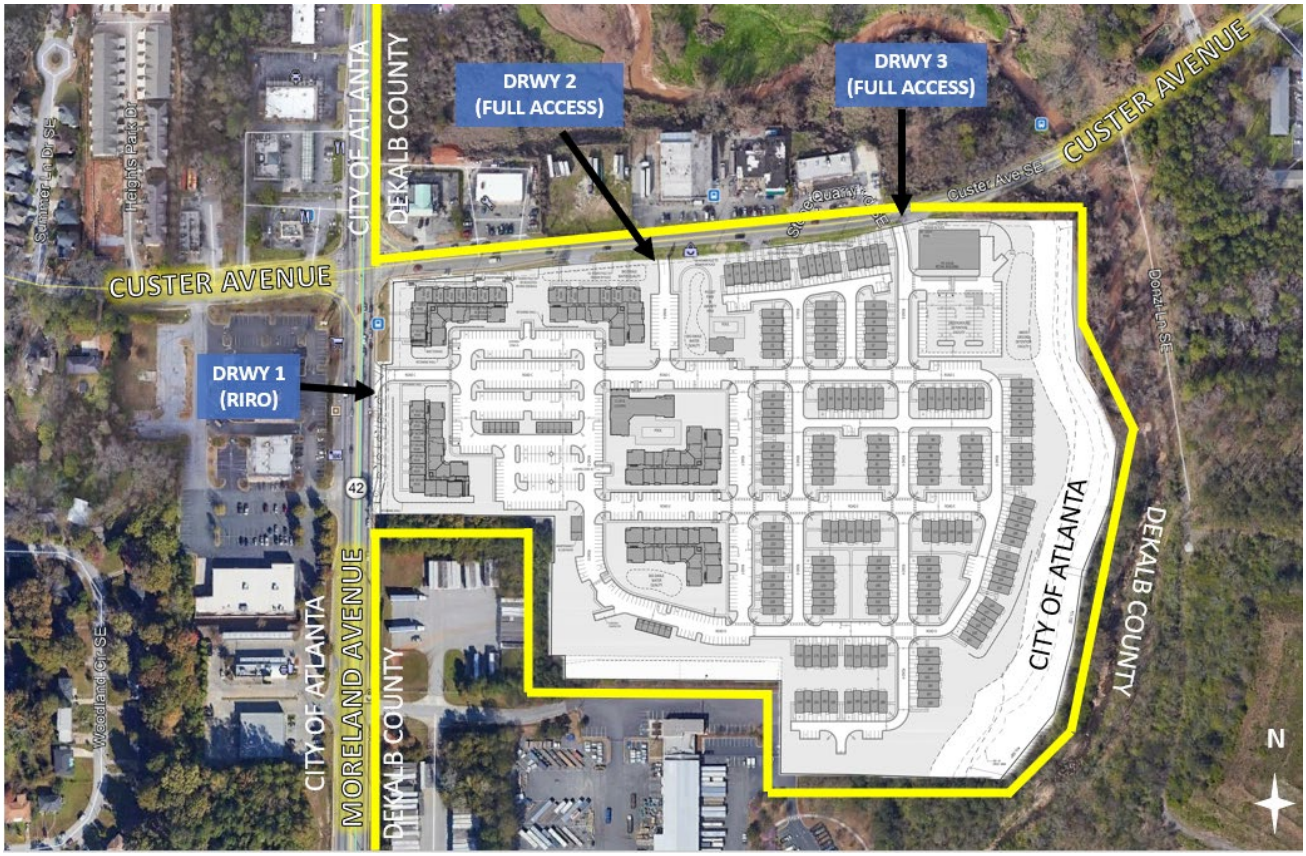
PROJECT DESCRIPTION

The proposed Broadstone at Moreland mixed-use development that will be located in the southeast corner of the intersection of SR 42/US 23 (Moreland Avenue) and Custer Avenue in City of Atlanta, Georgia.

The traffic analysis evaluates the current operations compared to the future conditions with the traffic generated by the development. The development will consist of:

- Multi-Family Housing: 354 Units
- Townhomes: 188 Units
- Dollar Tree: 11,019 sf

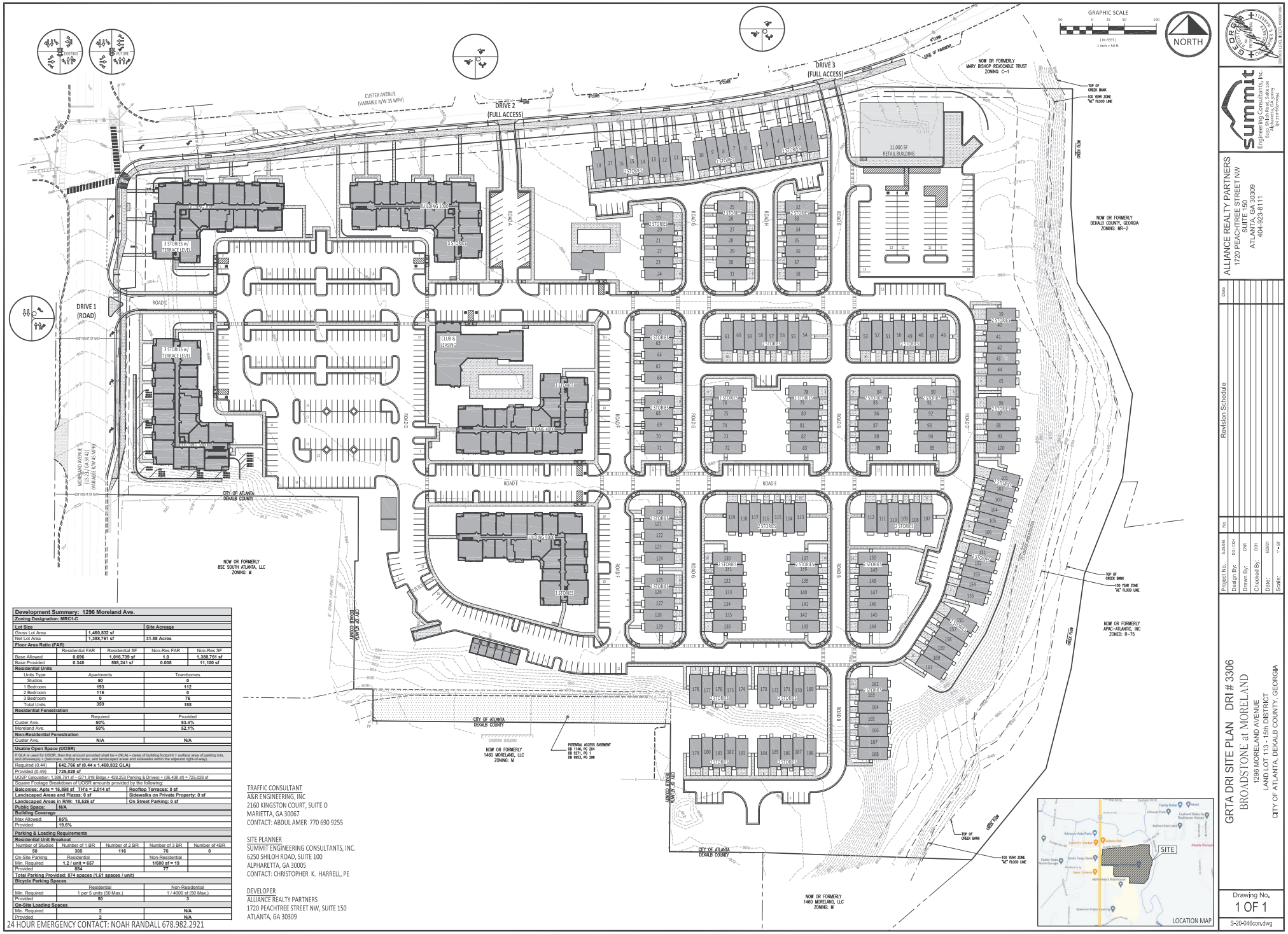


The development proposes three site accesses at the following locations:

- Site Driveway 1: Right-in/right-out driveway on SR 42/US 23 (Moreland Avenue)
- Site Driveway 2: Full-access (Western) driveway on Custer Avenue
- Site Driveway 3: Full-access (Eastern) driveway on Custer Avenue

Site Plan

A site plan is shown in Figure 10. A digital copy of the site plan is also provided with this report.



Development Summary: 1296 Moreland Ave.				
Zoning Designation: MRC1-C				
Lot Size			**Site Acreage**	
Gross Lot Area	1,460,832 sf		31.88 Acres	
Net Lot Area	1,388,761 sf			
Floor Area Ratio (FAR)				
	Residential FAR	Residential SF	Non-Res FAR	Non-Res SF
Base Allowed	0.696	1,016,739 sf	1.0	1,388,761 sf
Base Provided	0.348	508,241 sf	0.008	11,100 sf
Residential Units				
Units Type	Apartments		Townhomes	
Studios	50		0	
1 Bedroom	193		112	
2 Bedroom	116		0	
3 Bedroom	0		76	
Total Units	359		188	
Residential Fenestration				
	Required		Provided	
Custer Ave.	50%		53.4%	
Moreland Ave.	50%		62.1%	
Non-Residential Fenestration				
Custer Ave.	N/A		N/A	
Usable Open Space (UOSR)				
If GLA is used for UOSR, then the amount provided shall be = (NLA) – (area of building footprint + surface area of parking lots, and driveways) + (balconies, rooftop terraces, and landscaped areas and sidewalks within the adjacent right-of-way).				
Required (0.44)	642,766 sf (0.44 x 1,460,832 GLA)			
Provided (0.49)	725,028 sf			
UOSP Calculation: 1,388,761 sf – (271,918 Bldgs.+ 426,253 Parking & Drives) + (36,438 sf) = 725,028 sf				
Square Footage Breakdown of UOSR amounts provided by the following:				
Balconies: Apts = 15,898 sf TH's = 2,014 sf			**Rooftop Terraces: 0 sf**	
Landscaped Areas and Plazas: 0 sf			**Sidewalks on Private Property: 0 sf**	
Landscaped Areas in R/W: 18,526 sf			**On Street Parking: 0 sf**	
Public Space:	N/A			
Building Coverage				
Max Allowed:	85%			
Provided:	19.6%			
Parking & Loading Requirements				
Residential Unit Breakout				
Number of Studios	Number of 1 BR	Number of 2 BR	Number of 3 BR	Number of 4BR
50	305	116	76	0
On-Site Parking	Residential		Non-Residential	
Min. Required	1.2 / unit = 657		1/600 sf = 19	
Provided	884		77	
Total Parking Provided: 874 spaces (1.61 spaces / unit)				
Bicycle Parking Spaces				
	Residential		Non-Residential	
Min. Required	1 per 5 units (50 Max.)		1 / 4000 sf (50 Max.)	
Provided	50		3	
On-Site Loading Spaces				
Min. Required	2		N/A	
Provided	2		N/A	

24 HOUR EMERGENCY CONTACT: NOAH RANDALL 678.982.2921

TRAFFIC CONSULTANT
A&R ENGINEERING, INC
2160 KINGSTON COURT, SUITE O
MARIETTA, GA 30067
CONTACT: ABDUL AMER 770 690 9255

SITE PLANNER
SUMMIT ENGINEERING CONSULTANTS, INC.
6250 SHILOH ROAD, SUITE 100
ALPHARETTA, GA 30005
CONTACT: CHRISTOPHER K. HARRELL, PE

DEVELOPER
ALLIANCE REALTY PARTNERS
1720 PEACHTREE STREET NW, SUITE 150
ATLANTA, GA 30309

summit
Engineering Consultants, Inc.
6250 Shiloh Road, Suite 100
Alpharetta, GA 30005
(p) 770-667-0994

ALLIANCE REALTY PARTNERS
1720 PEACHTREE STREET NW
SUITE 150
ATLANTA, GA 30309
404-923-8111

Revision Schedule

No.	Date

Project No. 5-20-046
Design By: DG / CKH
Drawn By: DR
Checked By: CKH
Date: 6/23/21
Scale: 1" = 50'

GRTA DRI SITE PLAN DRI # 3306
BROADSTONE at MORELAND
1296 MORELAND AVENUE
LAND LOT 113 - 15th DISTRICT
CITY OF ATLANTA, DEKALB COUNTY, GEORGIA

Drawing No.
1 OF 1

S-20-046con.dwg

Planned Bicycle and Pedestrian Facilities

- Sidewalks are proposed along site frontage on Moreland Avenue and Custer Avenue.

Sidewalk & Streetscape Ordinance Standards (Under proposed zoning if a rezoning):

- Streetscape: The City of Atlanta and GDOT have agreed to increase the street furniture and trees from 5 ft to 7 ft.
- Sidewalk: The City of Atlanta and GDOT have agreed to allow the sidewalk to be 8 ft wide instead of 10 ft wide.

Potential Pedestrian & Bicycle Destinations:

- MARTA transit bus stops
- Fast food restaurants and local restaurants along Moreland Avenue
- Kroger, Aldi
- Dollar Tree, Dollar General, Family Dollar

Planned Transit Facilities

The proposed development will include the MARTA bus stop as it is in existing conditions.

Parking

The site plan accommodates 874 parking spots. According to parking and loading requirements, 657 parking spots are required.

Proposed Zoning

The future land use map has this property zoned as MRC1-C (low density mixed use). No zoning change is being requested.

Land Use Vision & Goals

- Support the growth of existing businesses in metro Atlanta by providing a source of employment and housing for people who work in the City of Atlanta
- Develops a neighborhood/activity center that is attractive to residents
- Effectively promotes metro Atlanta as a place to live, work, visit and do business in a coordinated and cohesive manner
- Provides basic retail services that are an unmet need in many areas of the City of Atlanta
- Provides neighborhood stabilization to the area of proposed development

Project Phasing

This project has been evaluated for the complete build-out of the development in 2024.

Trip Generation

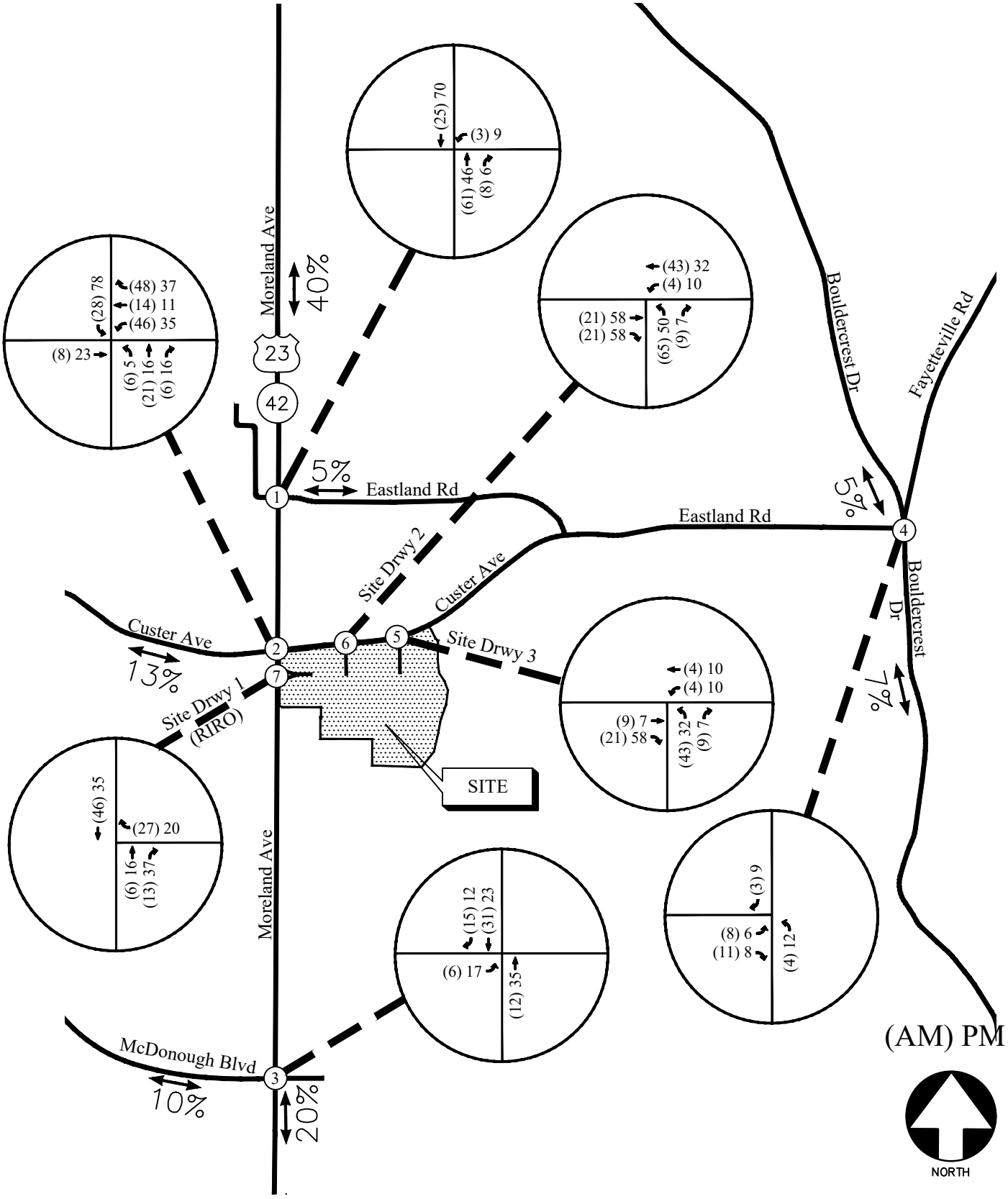
Trip generation estimates for the project were based on the rates and equations published in the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation report for the daily, AM and PM peak hours. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: *220 – Multifamily Housing (Low-Rise), 221 – Multifamily Housing (Mid-Rise)* and *814 – Variety Store*. Due to the availability of public transit near the proposed site, an alternate mode reduction of 7 percent was used for the AM and PM peak hours. The calculated total trip generation for the proposed development is shown in Table 6.

TABLE 6 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
221 – Multifamily Housing (Mid-Rise)	354 units	31	87	118	91	58	149	1,928
Mixed-Use Reduction		-1	-1	-2	-2	-2	-5	-41
220 – Multifamily Housing (Low-Rise)	188 units	20	67	87	65	39	104	1,380
Mixed-Use Reduction		-1	-1	-2	-2	-2	-3	-29
814 – Variety Store	11,019 sf	20	15	35	39	36	75	699
Mixed-Use Reduction		-2	-2	-4	-4	-4	-8	-70
Alternate Mode Reduction (7%)		-5	-12	-17	-13	-9	-22	-271
Total Trips (without Reductions)		**71**	**169**	**240**	**195**	**133**	**328**	**4,007**
New External Trips (with Reductions)		**62**	**153**	**215**	**174**	**116**	**290**	**3,596**

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 GDOT ADT volumes and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 6, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the site are shown in Figure 11.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

FIGURE 6

A&R Engineering Inc.

FUTURE 2024 TRAFFIC ANALYSIS

The future 2024 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. 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.

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 Mitigation Improvements" address further impacts that are a result of the proposed development's added traffic.

Future "No-Build" Conditions

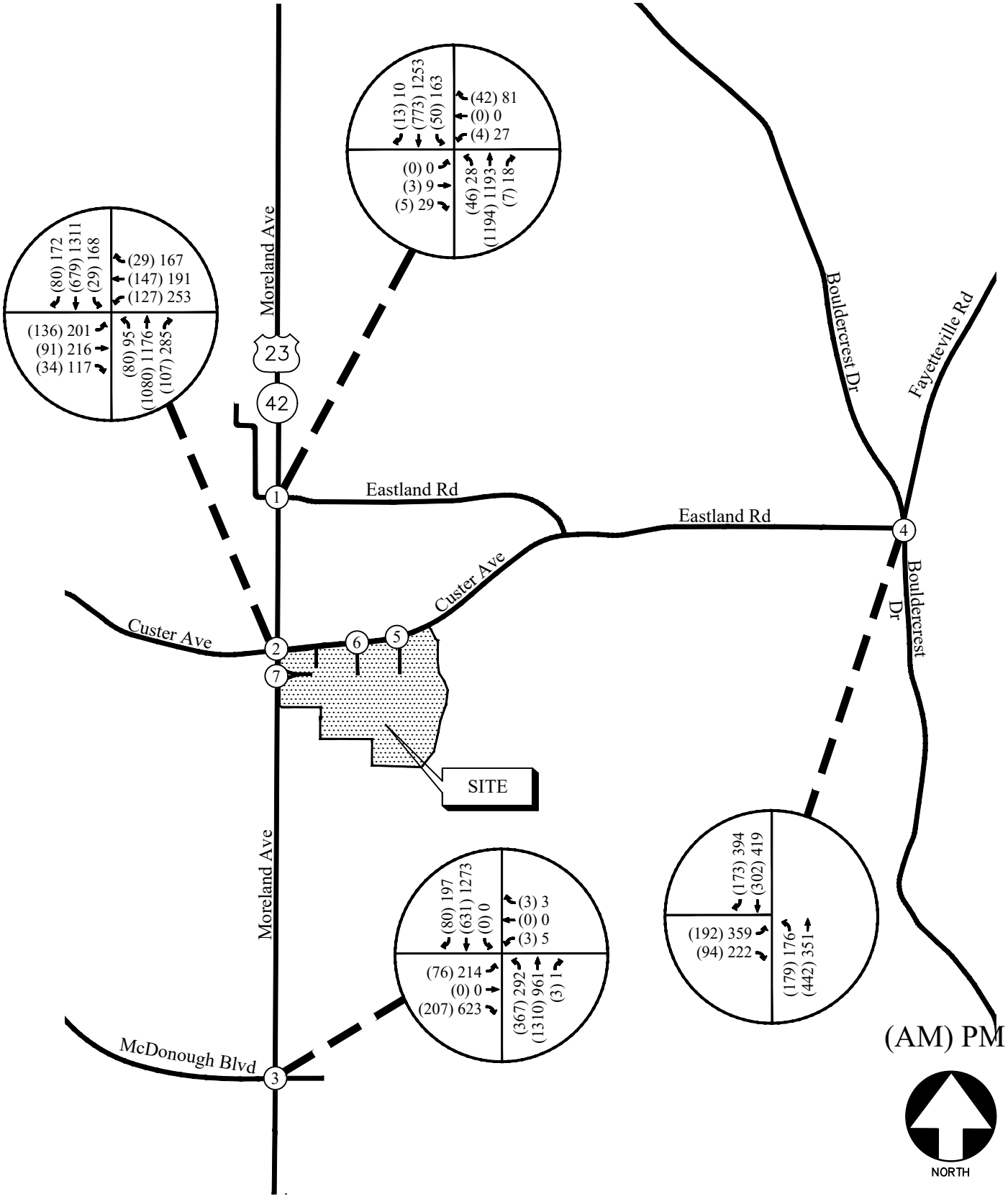
The "No-Build" (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future "No-Build" volumes consist of the adjusted existing traffic volumes (Figure 8) plus increases for annual growth of through traffic.

Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three years revealed no consistent positive growth of through traffic; therefore, a growth rate of 1% 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 12.

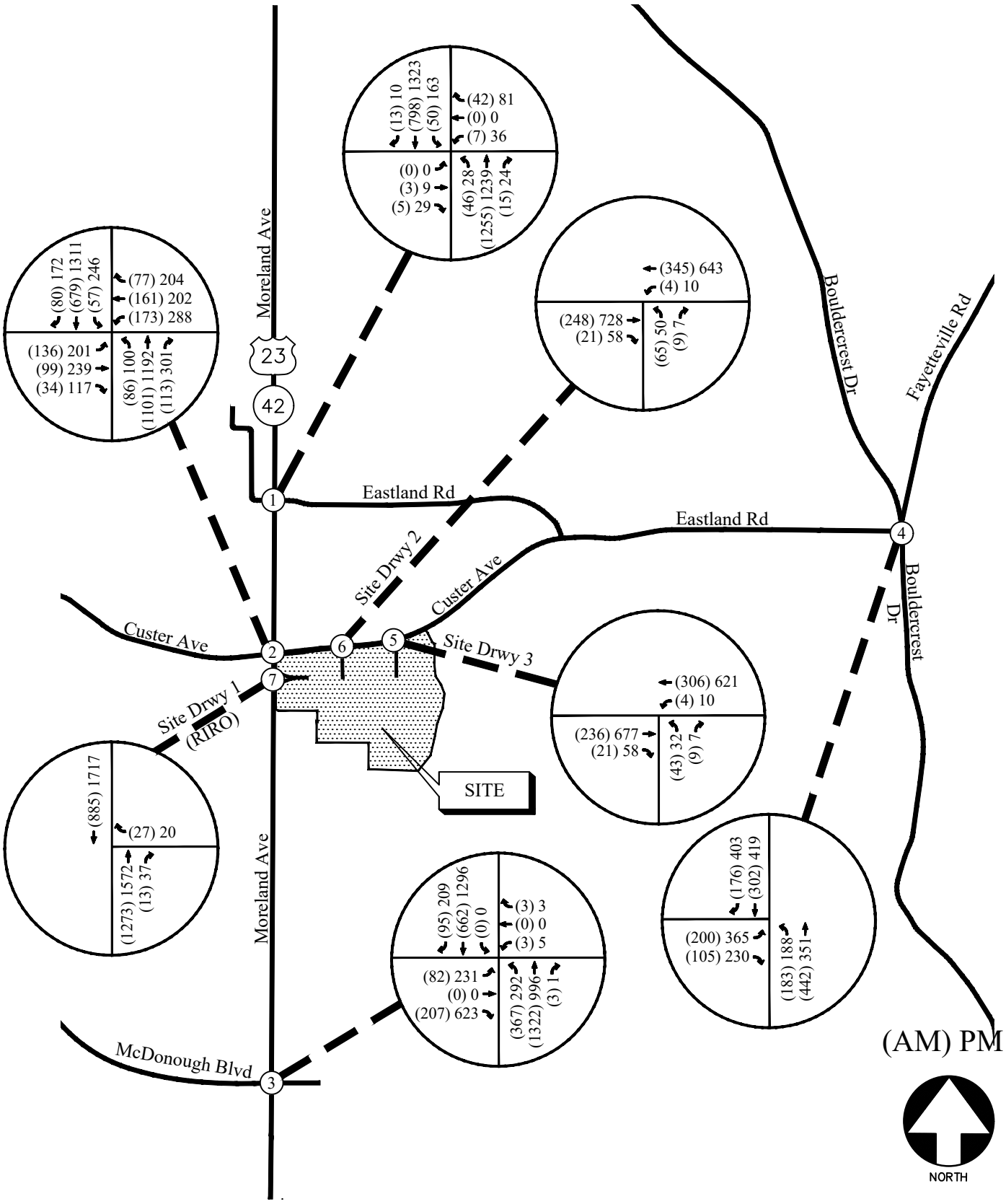
Future "Build" Conditions

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 6) were added to base traffic volumes (Figure 12) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 13.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 7

A&R Engineering Inc.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES FIGURE 8

A&R Engineering Inc.

Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersections:

- Site Driveway 1: Right-in/right-out driveway on SR 42/US 23 (Moreland Avenue)
- Site Driveway 2: Full-access (Western) driveway on Custer Avenue
- Site Driveway 3: Full-access (Eastern) driveway on Custer Avenue

It is recommended that all driveways consist of one entering lane and one exiting lane and are to be stop-sign controlled on the driveway approaches.

Future Traffic Operations

The future 2024 "No-Build" and "Build" traffic operations were analyzed using the volumes in Figure 7 and Figure 8, respectively, and the results are shown in Table 7.

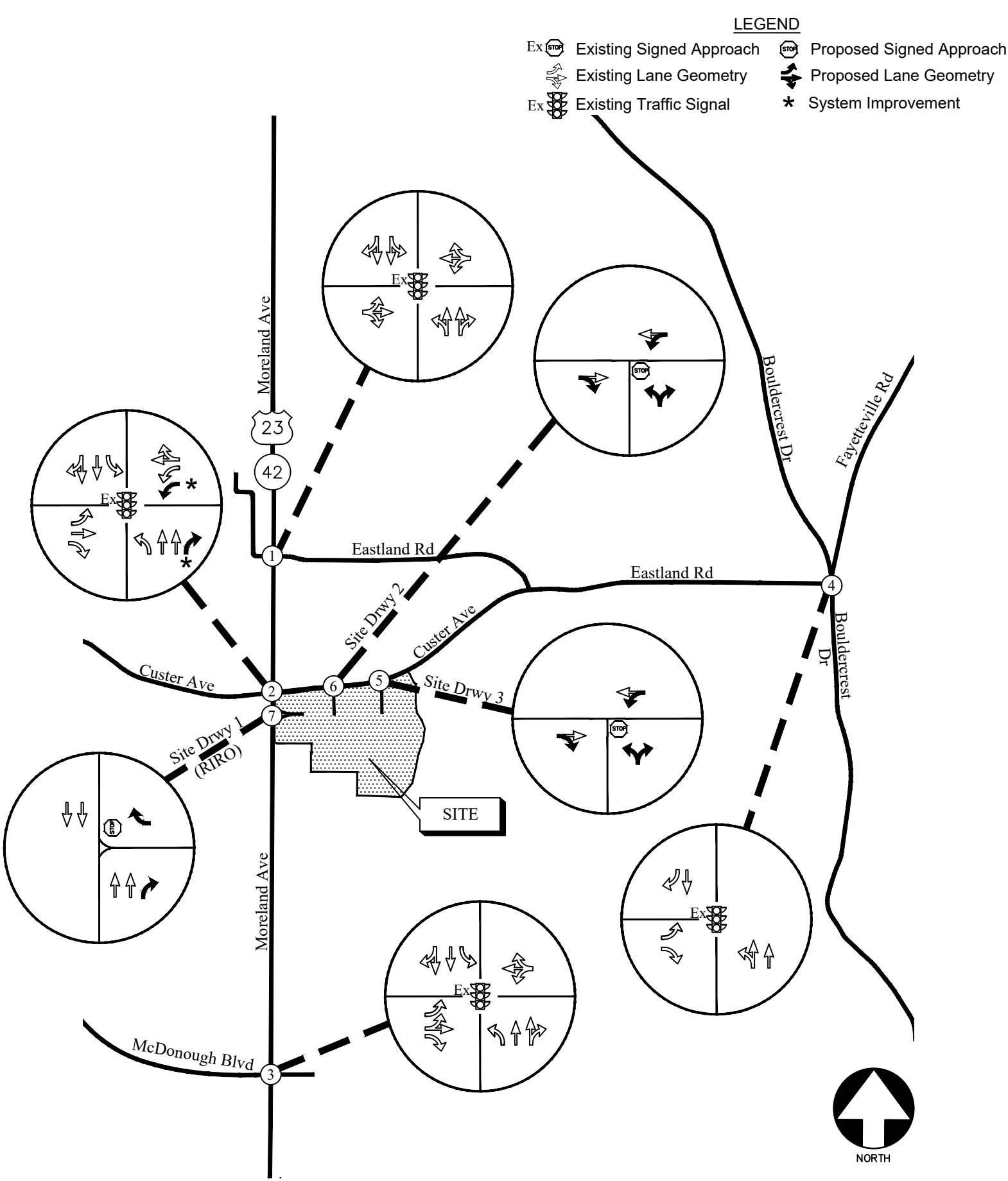
TABLE 7 – FUTURE INTERSECTION OPERATIONS

	Intersection	Future Condition: LOS (Delay)			
		NO-BUILD		BUILD (with improvements)	
		AM Peak	PM Peak	AM Peak	PM Peak
1	**SR 42/US 23 (Moreland Ave) @ Eastland Rd**	**A (3.8)**	**A (9.4)**	**A (4.0)**	**B (11.1)**
	-Eastbound Approach	E (56.0)	D (52.1)	E (55.9)	D (51.0)
	-Westbound Approach	E (60.1)	E (57.3)	E (60.3)	E (56.8)
	-Northbound Approach	A (2.6)	A (4.0)	A (2.8)	A (4.5)
	-Southbound Approach	A (2.1)	A (9.3)	A (2.2)	B (12.2)
2	**SR 42/US 23 (Moreland Ave) @ Custer Ave**	**C (25.2)**	**D (47.0)**	**C (26.7)**	**D (44.1)**
	-Eastbound Approach	E (64.2)	E (75.3)	E (63.5)	E (71.0)
	-Westbound Approach	E (69.0)	F (115.2)	E (76.7)	F (77.4)
	-Northbound Approach	B (16.1)	C (34.3)	B (15.4)	C (31.6)
	-Southbound Approach	B (13.2)	C (33.5)	B (13.8)	D (39.4)
3	**SR 42/US 23 (Moreland Ave) @ McDonough Blvd**	**B (13.6)**	**B (18.2)**	**B (14.2)**	**B (19.6)**
	-Eastbound Approach	E (74.7)	E (72.9)	E (75.3)	E (72.5)
	-Westbound Approach	F (90.0)	F (86.7)	F (90.0)	F (86.7)
	-Northbound Approach	B (13.1)	B (14.5)	B (13.8)	B (16.5)
	-Southbound Approach	A (7.0)	B (12.3)	A (7.1)	B (12.9)
4	**Bouldercrest Road @ Eastland Road**	**B (12.6)**	**B (18.4)**	**B (13.1)**	**B (18.7)**
	-Eastbound Approach	D (41.0)	D (36.2)	D (40.6)	D (35.8)
	-Northbound Approach	A (5.9)	B (12.6)	A (6.2)	B (13.4)
	-Southbound Approach	A (4.3)	A (9.5)	A (4.4)	A (9.8)
5	**Custer Ave @ Site Driveway 3 (E)**				
	-Westbound Left	-	-	A (7.8)	A (9.4)
	-Northbound Approach			B (13.2)	D (34.4)
6	**Custer Ave @ Site Driveway 2 (W)**				
	-Westbound Left	-	-	A (7.8)	A (9.7)
	-Northbound Approach			B (14.6)	E (49.2)
7	**SR 42/US 23 (Moreland Ave) @ Site Driveway 1 (RIRO)**	-	-		
	-Westbound Approach			C (15.1)	C (17.8)

The results of future traffic operations analysis indicate that the study intersections will continue to operate at a level-of-service “D” or better during the AM and PM peak hours. After the traffic from the proposed development were added to the study network and site mitigation improvements were accounted for, the intersections will continue to operate at a level-of-service “D” or better in the AM and PM peak hours.

Site Mitigation Improvements:

- Site Driveway:
    - Construction of deceleration lane on Driveway 1 (RIRO) on SR 41/US 23 (Moreland Avenue)
- SR 41/US 23 (Moreland Avenue) and Custer Avenue:
    - Repurposing of the second receiving eastbound through lane to be used as a dual westbound left turn lane (concept plan included as Figure 15)
    - Addition of protected left turn phase to existing traffic signal at the westbound approach
    - Construction of a northbound right turn lane



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY FIGURE 9

A&R Engineering Inc.

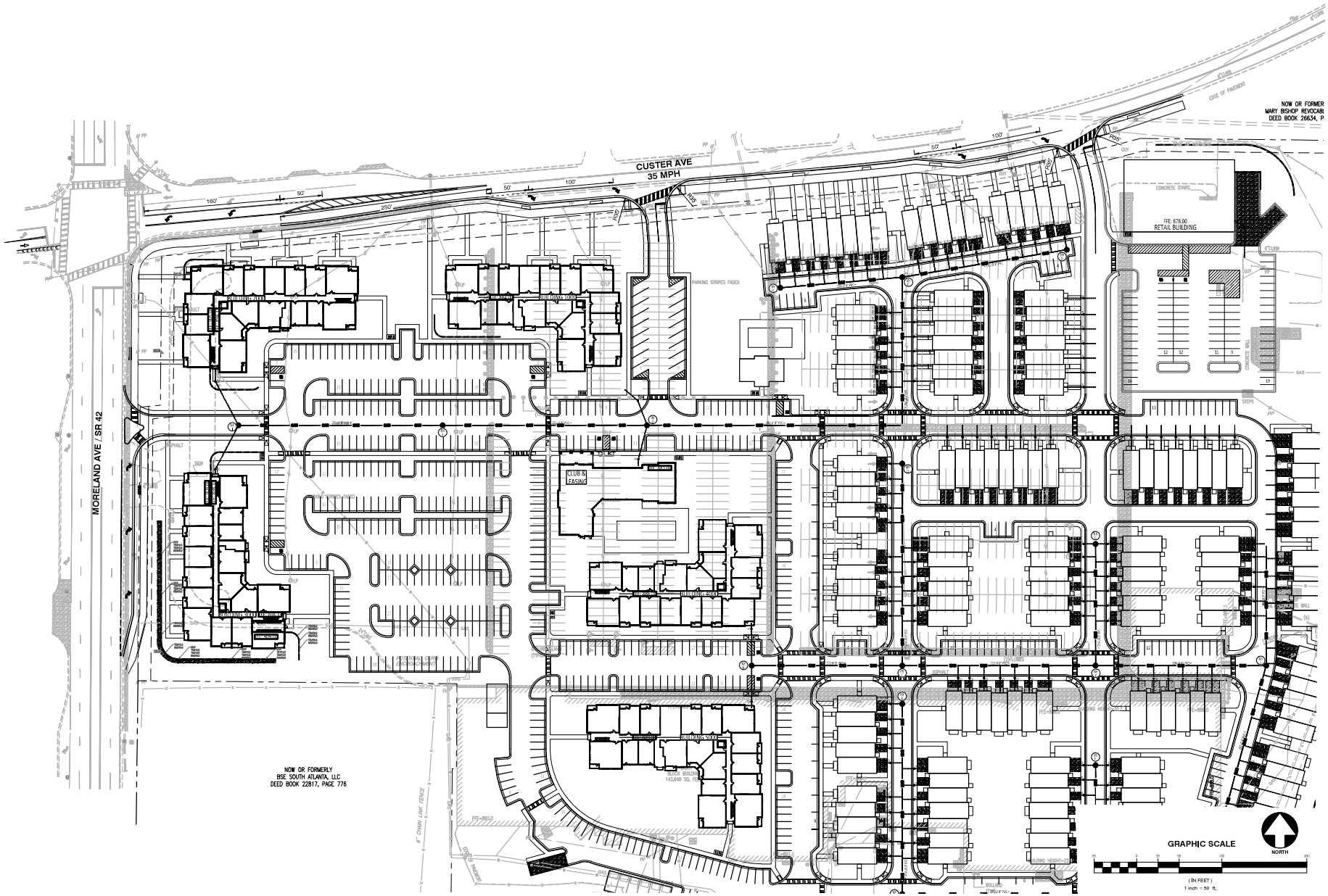


Figure 15– Concept Plan for Site Mitigation Improvements at Moreland Ave and Custer Ave

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the added traffic from the proposed mixed-use development that will be located in the southeast corner of the intersection of SR 42/US 23 (Moreland Avenue) and Custer Avenue in City of Atlanta, DeKalb County, Georgia. The development will consist of:

- Multi-Family Housing: 354 Units
- Townhomes: 188 Units
- Dollar Tree: 11,019 sf

The development proposes three site accesses at the following locations:

- Site Driveway 1: Right-in/right-out driveway on SR 42/US 23 (Moreland Avenue)
- Site Driveway 2: Full-access (Western) driveway on Custer Avenue
- Site Driveway 3: Full-access (Eastern) driveway on Custer Avenue

Site Access Configuration

All the site driveway intersections are recommended to be un-signalized with a STOP sign on each of the driveway approaches. The following access configuration was utilized when modeling the proposed site driveway intersections.

Traffic Operations

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

8. SR 42/US 23 (Moreland Avenue) at Eastland Road
9. SR 42/US 23 (Moreland Avenue) at Custer Avenue
10. SR 42/US 23 (Moreland Ave) at McDonough Boulevard
11. Bouldercrest Road at Eastland Road
12. Custer Avenue at Site Driveway 3 (E)
13. Custer Avenue at Site Driveway 2 (W)
14. SR 42/US 23 (Moreland Avenue) at Site Driveway 1 (RIRO)

The analysis included the evaluation of Future operations for “No-Build” and “Build” conditions, both of which account for increases in annual growth of through traffic. The results of the analysis indicated that the differences between the “No-Build” and “Build” scenarios are insignificant after the site mitigation improvements were accounted for.

Site Mitigation Improvements

- Site Driveway:
    - Construction of deceleration lane on Driveway 1 (RIRO) on SR 41/US 23 (Moreland Avenue)

- SR 41/US 23 (Moreland Avenue) and Custer Avenue:
    - Repurposing of the second receiving eastbound through lane to be used as a dual westbound left turn lane (concept plan included as Figure 15)

- Addition of protected left turn phase to existing traffic signal at the westbound approach
- Construction of a northbound right turn lane

Appendix

Existing Intersection Traffic Counts

A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
Moreland Ave @ Eastland Rd /
SpaceMax Storage Drwy
7-9 am | 4-6 pm

File Name : 20190197
Site Code : 02019197
Start Date : 8/22/2019
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Moreland Ave Northbound				Moreland Ave Southbound				SpaceMax Storage Drwy Eastbound				Eastland Rd 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	0	410	0	410	4	123	0	127	0	0	0	0	1	1	26	28	565
07:15 AM	1	412	2	415	6	177	0	183	0	0	1	1	0	1	27	28	627
07:30 AM	1	405	3	409	6	201	1	208	0	0	2	2	3	1	15	19	638
07:45 AM	0	405	1	406	9	201	0	210	0	1	1	2	2	0	37	39	657
Total	2	1632	6	1640	25	702	1	728	0	1	4	5	6	3	105	114	2487
08:00 AM	2	344	1	347	11	152	0	163	0	1	0	1	1	1	27	29	540
08:15 AM	1	267	1	269	9	209	1	219	1	1	0	2	0	0	32	32	522
08:30 AM	1	272	0	273	11	160	0	171	1	0	1	2	3	0	32	35	481
08:45 AM	1	267	1	269	10	164	0	174	0	1	1	2	1	0	24	25	470
Total	5	1150	3	1158	41	685	1	727	2	3	2	7	5	1	115	121	2013
*** BREAK ***																	
04:00 PM	1	288	1	290	12	293	0	305	0	1	2	3	3	2	19	24	622
04:15 PM	0	284	2	286	24	293	0	317	0	1	4	5	2	2	22	26	634
04:30 PM	4	271	0	275	21	311	0	332	0	2	4	6	1	0	21	22	635
04:45 PM	1	252	5	258	20	302	0	322	3	1	10	14	3	3	21	27	621
Total	6	1095	8	1109	77	1199	0	1276	3	5	20	28	9	7	83	99	2512
05:00 PM	1	296	3	300	21	301	0	322	1	1	6	8	3	1	16	20	650
05:15 PM	5	265	3	273	22	287	1	310	0	2	4	6	2	1	22	25	614
05:30 PM	2	262	8	272	16	296	2	314	1	1	7	9	6	2	20	28	623
05:45 PM	3	280	6	289	26	325	0	351	0	4	7	11	3	1	12	16	667
Total	11	1103	20	1134	85	1209	3	1297	2	8	24	34	14	5	70	89	2554
Grand Total	24	4980	37	5041	228	3795	5	4028	7	17	50	74	34	16	373	423	9566
Apprch %	0.5	98.8	0.7		5.7	94.2	0.1		9.5	23	67.6		8	3.8	88.2		
Total %	0.3	52.1	0.4	52.7	2.4	39.7	0.1	42.1	0.1	0.2	0.5	0.8	0.4	0.2	3.9	4.4	

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TMC DATA
Moreland Ave @ Eastland Rd /
SpaceMax Storage Drwy
7-9 am | 4-6 pm

File Name : 20190197
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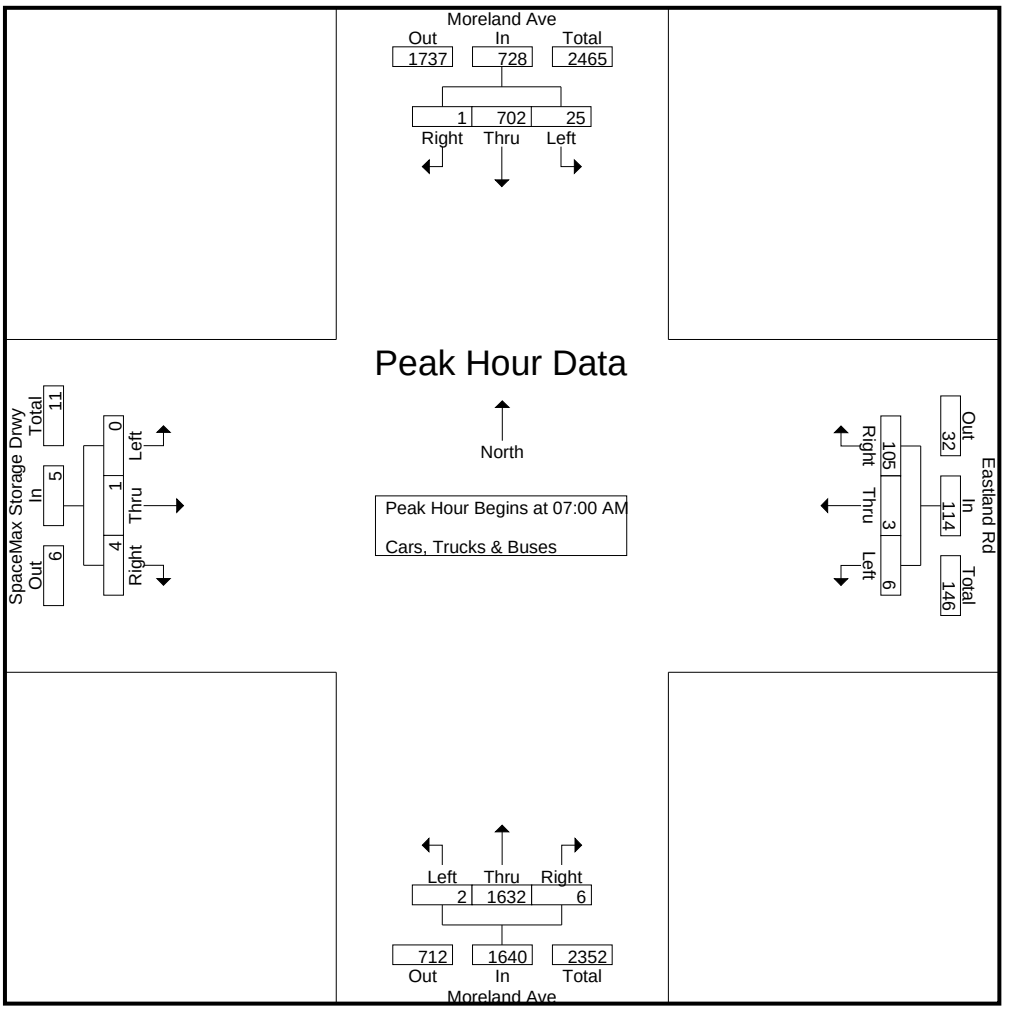
Start Date : 8/22/2019
Page No : 2

	Moreland Ave Northbound				Moreland Ave Southbound				SpaceMax Storage Drwy Eastbound				Eastland Rd 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 07:00 AM																	
07:00 AM	0	410	0	410	4	123	0	127	0	0	0	0	1	**1**	26	28	565
07:15 AM	**1**	**412**	2	**415**	6	177	0	183	0	0	1	1	0	1	27	28	627
07:30 AM	1	405	**3**	409	6	**201**	**1**	208	0	0	**2**	**2**	**3**	1	15	19	638
07:45 AM	0	405	1	406	**9**	201	0	**210**	0	**1**	1	2	2	0	**37**	**39**	**657**
Total Volume	2	1632	6	1640	25	702	1	728	0	1	4	5	6	3	105	114	2487
% App. Total	0.1	99.5	0.4		3.4	96.4	0.1		0	20	80		5.3	2.6	92.1		
PHF	.500	.990	.500	.988	.694	.873	.250	.867	.000	.250	.500	.625	.500	.750	.709	.731	.946



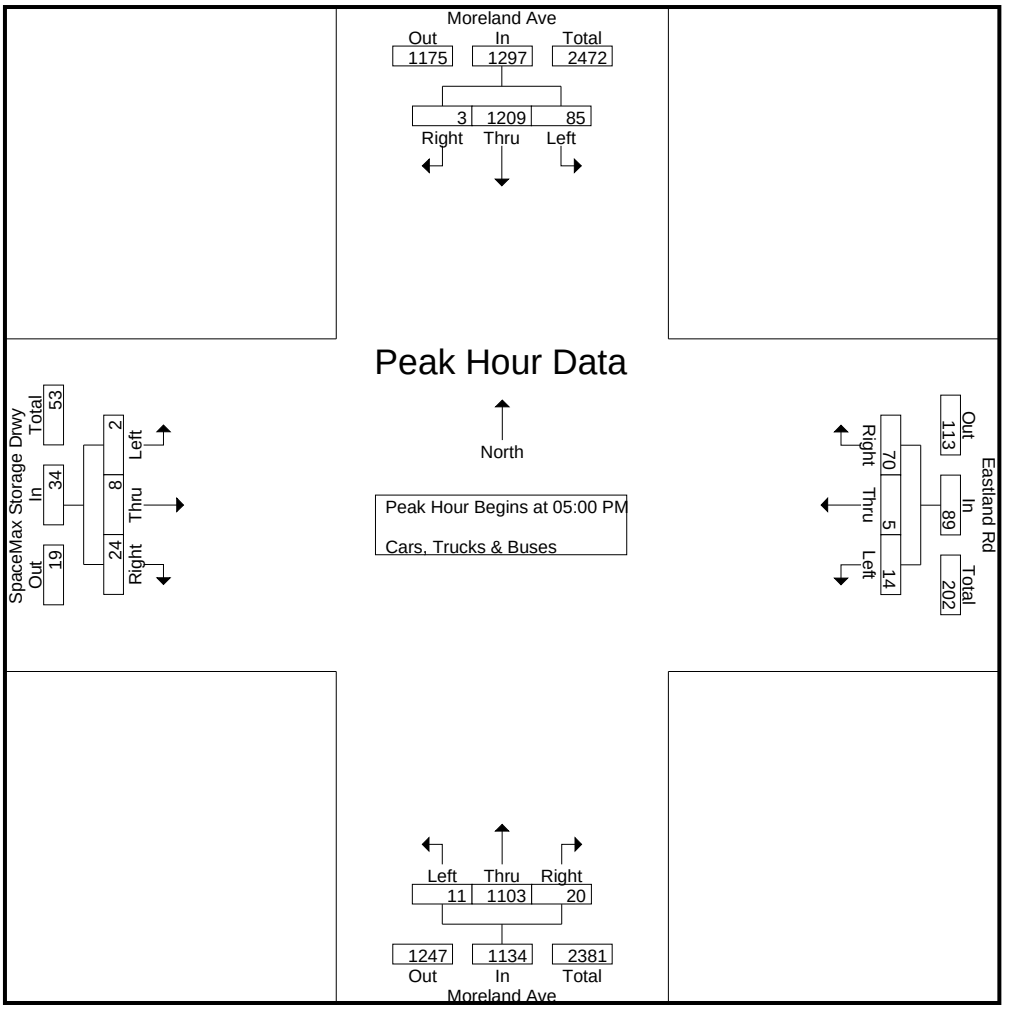
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
Moreland Ave @ Eastland Rd /
SpaceMax Storage Drwy
7-9 am | 4-6 pm

File Name : 20190197
Site Code : 02019197
Start Date : 8/22/2019
Page No : 3

	Moreland Ave Northbound				Moreland Ave Southbound				SpaceMax Storage Drwy Eastbound				Eastland Rd 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	1	**296**	3	**300**	21	301	0	322	**1**	1	6	8	3	1	16	20	650
05:15 PM	**5**	265	3	273	22	287	1	310	0	2	4	6	2	1	**22**	25	614
05:30 PM	2	262	**8**	272	16	296	**2**	314	1	1	**7**	9	**6**	**2**	20	**28**	623
05:45 PM	3	280	6	289	**26**	**325**	0	**351**	0	**4**	7	**11**	3	1	12	16	**667**
Total Volume	11	1103	20	1134	85	1209	3	1297	2	8	24	34	14	5	70	89	2554
% App. Total	1	97.3	1.8		6.6	93.2	0.2		5.9	23.5	70.6		15.7	5.6	78.7		
PHF	.550	.932	.625	.945	.817	.930	.375	.924	.500	.500	.857	.773	.583	.625	.795	.795	.957



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ Custer Ave
7-9 am | 4-6 pm

File Name : 20210148
Site Code : 20210148
Start Date : 5/18/2021
Page No : 1

Groups Printed- Cars,Buses - Trucks

	Moreland Ave Northbound				Moreland Ave Southbound				Custer Ave Eastbound				Custer Ave 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	10	194	9	213	1	94	7	102	5	5	4	14	17	8	9	34	363
07:15 AM	10	210	16	236	3	140	7	150	15	7	4	26	19	22	13	54	466
07:30 AM	17	212	18	247	5	123	14	142	22	14	7	43	17	29	5	51	483
07:45 AM	15	222	19	256	5	147	18	170	21	18	4	43	17	14	6	37	506
Total	52	838	62	952	14	504	46	564	63	44	19	126	70	73	33	176	1818
08:00 AM	12	175	18	205	5	109	11	125	27	17	7	51	29	31	4	64	445
08:15 AM	15	185	24	224	6	120	16	142	30	18	7	55	30	34	6	70	491
08:30 AM	17	174	17	208	4	113	12	129	31	22	10	63	32	35	5	72	472
08:45 AM	22	176	17	215	4	105	8	117	29	19	8	56	33	31	6	70	458
Total	66	710	76	852	19	447	47	513	117	76	32	225	124	131	21	276	1866
*** BREAK ***																	
04:00 PM	9	225	40	274	21	264	25	310	29	32	9	70	34	20	16	70	724
04:15 PM	12	237	46	295	26	272	27	325	33	34	13	80	40	24	20	84	784
04:30 PM	16	248	47	311	29	282	29	340	37	38	17	92	43	30	25	98	841
04:45 PM	21	248	48	317	33	285	34	352	39	39	20	98	49	34	29	112	879
Total	58	958	181	1197	109	1103	115	1327	138	143	59	340	166	108	90	364	3228
05:00 PM	26	254	65	345	38	282	38	358	46	45	22	113	55	37	33	125	941
05:15 PM	20	266	74	360	41	294	41	376	48	48	27	123	60	43	39	142	1001
05:30 PM	14	242	58	314	32	265	35	332	40	54	32	126	54	50	42	146	918
05:45 PM	12	229	53	294	28	249	24	301	32	44	20	96	40	38	29	107	798
Total	72	991	250	1313	139	1090	138	1367	166	191	101	458	209	168	143	520	3658
Grand Total	248	3497	569	4314	281	3144	346	3771	484	454	211	1149	569	480	287	1336	10570
Apprch %	5.7	81.1	13.2		7.5	83.4	9.2		42.1	39.5	18.4		42.6	35.9	21.5		
Total %	2.3	33.1	5.4	40.8	2.7	29.7	3.3	35.7	4.6	4.3	2	10.9	5.4	4.5	2.7	12.6	
Cars,Buses	240	3256	468	3964	281	2989	346	3616	484	429	204	1117	546	461	281	1288	9985
% Cars,Buses	96.8	93.1	82.2	91.9	100	95.1	100	95.9	100	94.5	96.7	97.2	96	96	97.9	96.4	94.5
Trucks	8	241	101	350	0	155	0	155	0	25	7	32	23	19	6	48	585
% Trucks	3.2	6.9	17.8	8.1	0	4.9	0	4.1	0	5.5	3.3	2.8	4	4	2.1	3.6	5.5

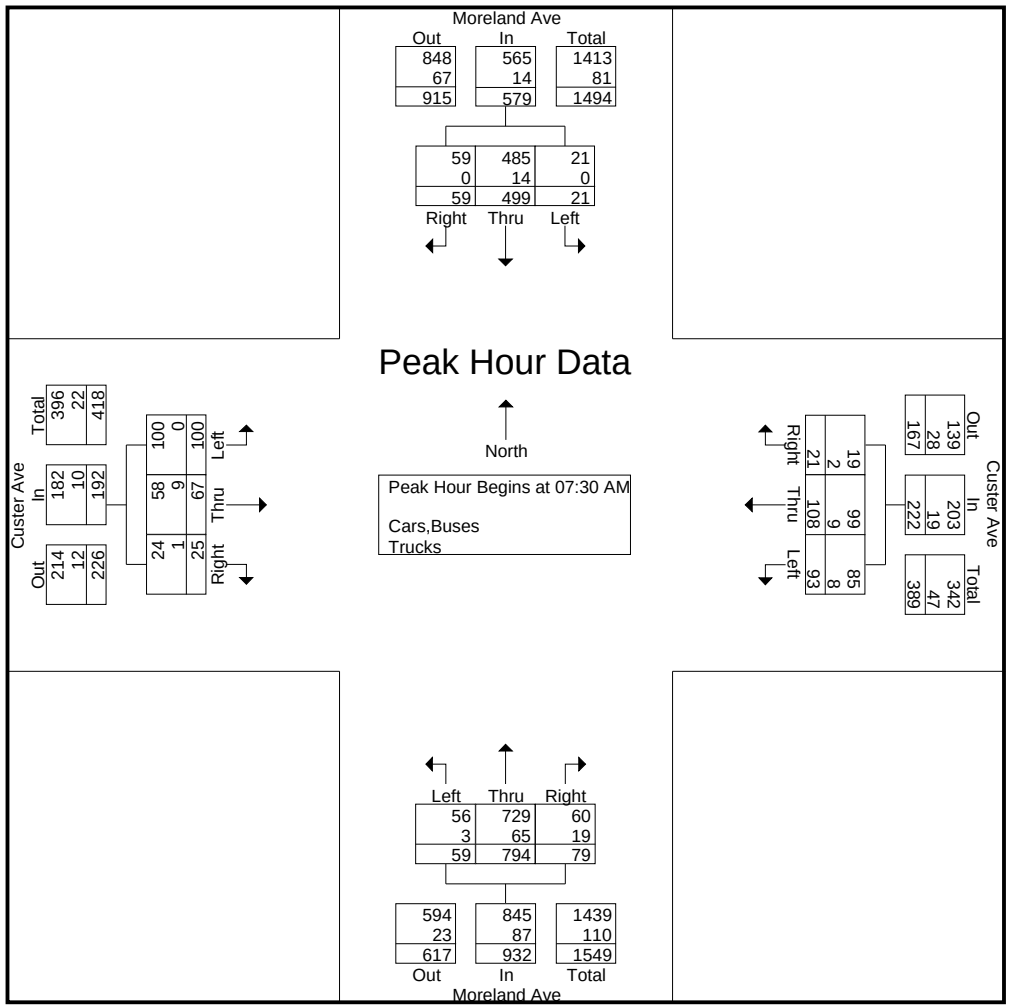
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ Custer Ave
7-9 am | 4-6 pm

File Name : 20210148
Site Code : 20210148
Start Date : 5/18/2021
Page No : 2

	Moreland Ave Northbound				Moreland Ave Southbound				Custer Ave Eastbound				Custer Ave 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**17**	212	18	247	5	123	14	142	22	14	**7**	43	17	29	5	51	483
07:45 AM	15	**222**	19	**256**	5	**147**	**18**	**170**	21	**18**	4	43	17	14	**6**	37	**506**
08:00 AM	12	175	18	205	5	109	11	125	27	17	7	51	29	31	4	64	445
08:15 AM	15	185	**24**	224	**6**	120	16	142	**30**	18	7	**55**	**30**	**34**	6	**70**	491
Total Volume	59	794	79	932	21	499	59	579	100	67	25	192	93	108	21	222	1925
% App. Total	6.3	85.2	8.5		3.6	86.2	10.2		52.1	34.9	13		41.9	48.6	9.5		
PHF	.868	.894	.823	.910	.875	.849	.819	.851	.833	.931	.893	.873	.775	.794	.875	.793	.951
Cars,Buses	56	729	60	845	21	485	59	565	100	58	24	182	85	99	19	203	1795
% Cars,Buses	94.9	91.8	75.9	90.7	100	97.2	100	97.6	100	86.6	96.0	94.8	91.4	91.7	90.5	91.4	93.2
Trucks	3	65	19	87	0	14	0	14	0	9	1	10	8	9	2	19	130
% Trucks	5.1	8.2	24.1	9.3	0	2.8	0	2.4	0	13.4	4.0	5.2	8.6	8.3	9.5	8.6	6.8



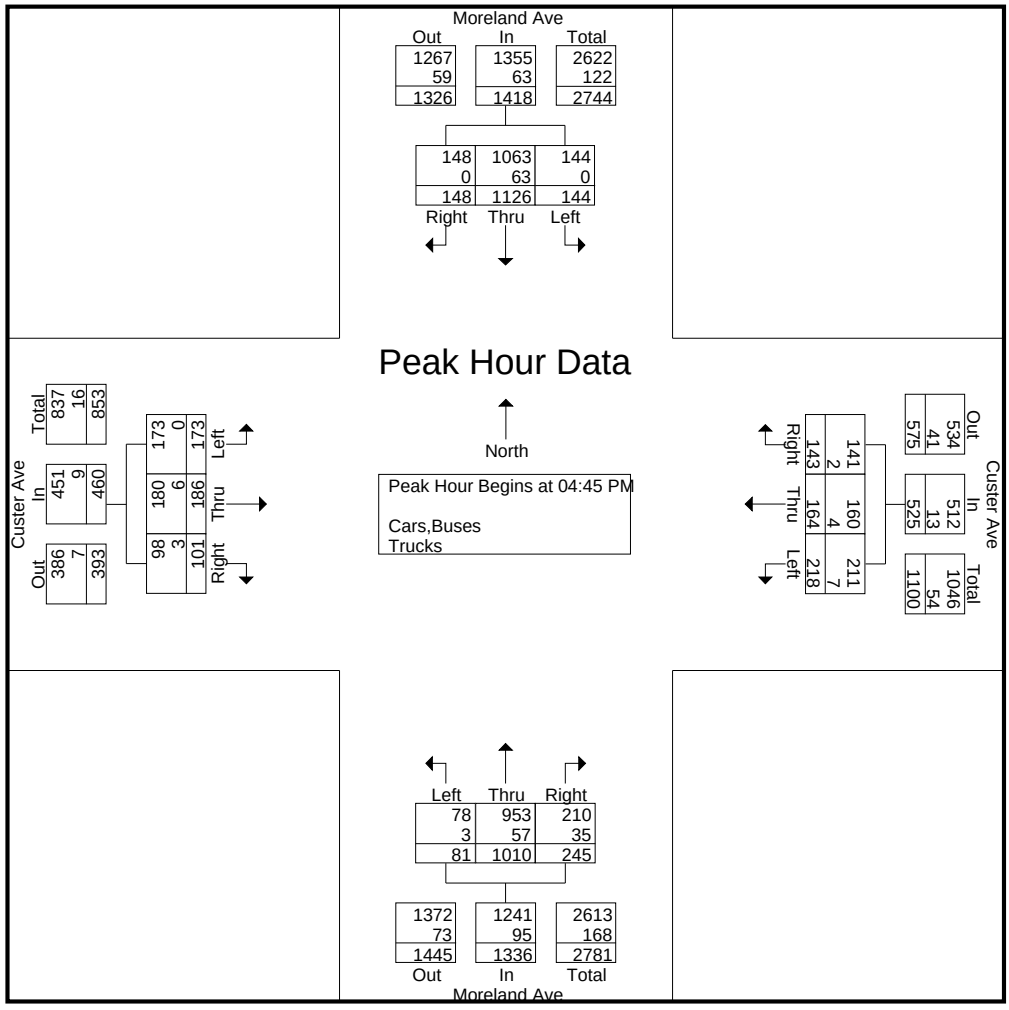
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ Custer Ave
7-9 am | 4-6 pm

File Name : 20210148
Site Code : 20210148
Start Date : 5/18/2021
Page No : 3

	Moreland Ave Northbound				Moreland Ave Southbound				Custer Ave Eastbound				Custer Ave 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	21	248	48	317	33	285	34	352	39	39	20	98	49	34	29	112	879
05:00 PM	**26**	254	65	345	38	282	38	358	46	45	22	113	55	37	33	125	941
05:15 PM	20	**266**	**74**	**360**	**41**	**294**	**41**	**376**	**48**	48	27	123	**60**	43	39	142	**1001**
05:30 PM	14	242	58	314	32	265	35	332	40	**54**	**32**	**126**	54	**50**	**42**	**146**	918
Total Volume	81	1010	245	1336	144	1126	148	1418	173	186	101	460	218	164	143	525	3739
% App. Total	6.1	75.6	18.3		10.2	79.4	10.4		37.6	40.4	22		41.5	31.2	27.2		
PHF	.779	.949	.828	.928	.878	.957	.902	.943	.901	.861	.789	.913	.908	.820	.851	.899	.934
Cars,Buses	78	953	210	1241	144	1063	148	1355	173	180	98	451	211	160	141	512	3559
% Cars,Buses	96.3	94.4	85.7	92.9	100	94.4	100	95.6	100	96.8	97.0	98.0	96.8	97.6	98.6	97.5	95.2
Trucks	3	57	35	95	0	63	0	63	0	6	3	9	7	4	2	13	180
% Trucks	3.7	5.6	14.3	7.1	0	5.6	0	4.4	0	3.2	3.0	2.0	3.2	2.4	1.4	2.5	4.8



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ McDonough Blvd
7-9 am | 4-6 pm

File Name : 20210149
Site Code : 20210149
Start Date : 5/18/2021
Page No : 1

Groups Printed- Cars,Buses - Trucks

	Moreland Ave Northbound				Moreland Ave Southbound				McDonough Blvd Eastbound				Private Drwy 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	46	214	0	260	0	94	5	99	5	0	17	22	0	0	0	0	381
07:15 AM	51	217	0	268	0	97	9	106	4	0	19	23	0	0	0	0	397
07:30 AM	55	228	1	284	0	100	8	108	8	0	23	31	0	0	0	0	423
07:45 AM	61	223	0	284	0	102	11	113	12	0	27	39	1	0	0	1	437
Total	213	882	1	1096	0	393	33	426	29	0	86	115	1	0	0	1	1638
08:00 AM	64	230	0	294	0	106	16	122	9	0	31	40	0	0	1	1	457
08:15 AM	69	233	1	303	0	112	14	126	13	0	37	50	1	0	0	1	480
08:30 AM	73	245	1	319	0	118	19	137	17	0	39	56	1	0	1	2	514
08:45 AM	64	255	0	319	0	128	10	138	17	0	45	62	0	0	0	0	519
Total	270	963	2	1235	0	464	59	523	56	0	152	208	2	0	2	4	1970
*** BREAK ***																	
04:00 PM	36	187	0	223	0	243	20	263	24	0	96	120	3	0	0	3	609
04:15 PM	42	195	1	238	0	244	23	267	26	0	103	129	3	0	1	4	638
04:30 PM	44	197	0	241	0	251	26	277	30	0	115	145	4	0	0	4	667
04:45 PM	53	197	2	252	0	258	29	287	36	0	121	157	3	0	0	3	699
Total	175	776	3	954	0	996	98	1094	116	0	435	551	13	0	1	14	2613
05:00 PM	61	205	0	266	0	271	34	305	37	0	126	163	2	0	1	3	737
05:15 PM	57	212	0	269	0	271	38	309	50	0	129	179	1	0	0	1	758
05:30 PM	75	216	0	291	0	273	45	318	57	0	136	193	0	0	1	1	803
05:45 PM	57	193	1	251	0	279	52	331	40	0	144	184	1	0	1	2	768
Total	250	826	1	1077	0	1094	169	1263	184	0	535	719	4	0	3	7	3066
Grand Total	908	3447	7	4362	0	2947	359	3306	385	0	1208	1593	20	0	6	26	9287
Apprch %	20.8	79	0.2		0	89.1	10.9		24.2	0	75.8		76.9	0	23.1		
Total %	9.8	37.1	0.1	47	0	31.7	3.9	35.6	4.1	0	13	17.2	0.2	0	0.1	0.3	
Cars,Buses	793	3241	7	4041	0	2797	359	3156	376	0	1197	1573	2	0	6	8	8778
% Cars,Buses	87.3	94	100	92.6	0	94.9	100	95.5	97.7	0	99.1	98.7	10	0	100	30.8	94.5
Trucks	115	206	0	321	0	150	0	150	9	0	11	20	18	0	0	18	509
% Trucks	12.7	6	0	7.4	0	5.1	0	4.5	2.3	0	0.9	1.3	90	0	0	69.2	5.5

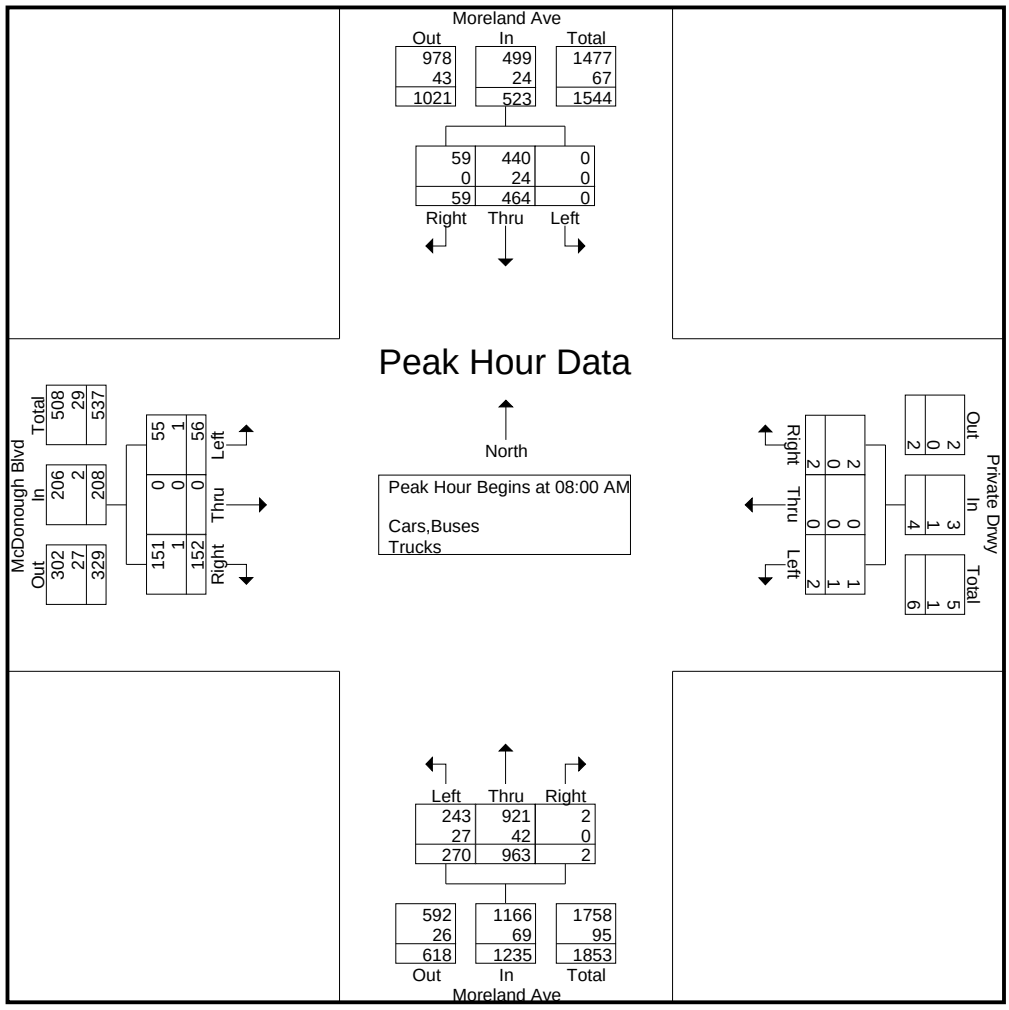
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ McDonough Blvd
7-9 am | 4-6 pm

File Name : 20210149
Site Code : 20210149
Start Date : 5/18/2021
Page No : 2

	Moreland Ave Northbound				Moreland Ave Southbound				McDonough Blvd Eastbound				Private Drwy 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	64	230	0	294	0	106	16	122	9	0	31	40	0	0	**1**	1	457
08:15 AM	69	233	**1**	303	0	112	14	126	13	0	37	50	**1**	0	0	1	480
08:30 AM	**73**	245	1	**319**	0	118	**19**	137	**17**	0	39	56	1	0	1	**2**	514
08:45 AM	64	**255**	0	319	0	**128**	10	**138**	17	0	**45**	**62**	0	0	0	0	**519**
Total Volume	270	963	2	1235	0	464	59	523	56	0	152	208	2	0	2	4	1970
% App. Total	21.9	78	0.2		0	88.7	11.3		26.9	0	73.1		50	0	50		
PHF	.925	.944	.500	.968	.000	.906	.776	.947	.824	.000	.844	.839	.500	.000	.500	.500	.949
Cars,Buses	243	921	2	1166	0	440	59	499	55	0	151	206	1	0	2	3	1874
% Cars,Buses	90.0	95.6	100	94.4	0	94.8	100	95.4	98.2	0	99.3	99.0	50.0	0	100	75.0	95.1
Trucks	27	42	0	69	0	24	0	24	1	0	1	2	1	0	0	1	96
% Trucks	10.0	4.4	0	5.6	0	5.2	0	4.6	1.8	0	0.7	1.0	50.0	0	0	25.0	4.9



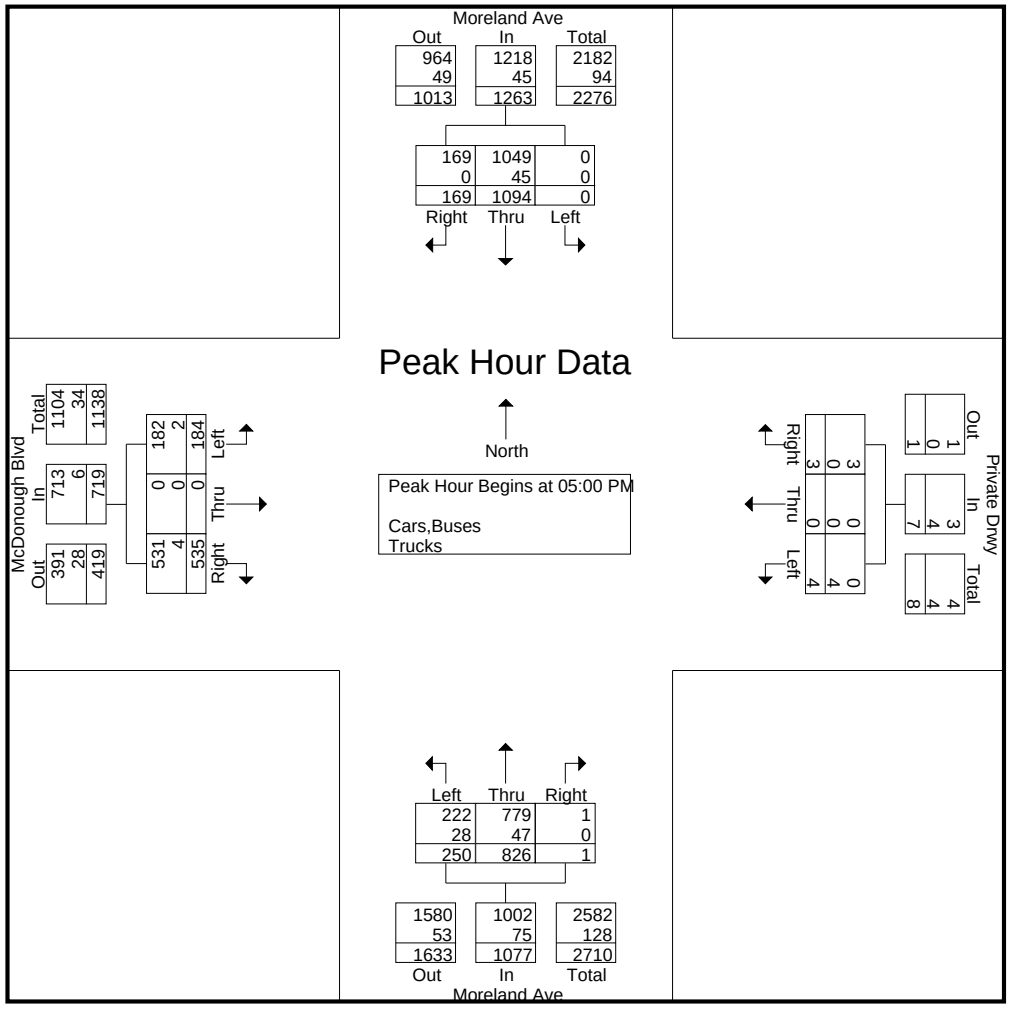
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ McDonough Blvd
7-9 am | 4-6 pm

File Name : 20210149
Site Code : 20210149
Start Date : 5/18/2021
Page No : 3

	Moreland Ave Northbound				Moreland Ave Southbound				McDonough Blvd Eastbound				Private Drwy 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	61	205	0	266	0	271	34	305	37	0	126	163	**2**	0	**1**	**3**	737
05:15 PM	57	212	0	269	0	271	38	309	50	0	129	179	1	0	0	1	758
05:30 PM	**75**	**216**	0	**291**	0	273	45	318	**57**	0	136	**193**	0	0	1	1	**803**
05:45 PM	57	193	**1**	251	0	**279**	**52**	**331**	40	0	**144**	184	1	0	1	2	768
Total Volume	250	826	1	1077	0	1094	169	1263	184	0	535	719	4	0	3	7	3066
% App. Total	23.2	76.7	0.1		0	86.6	13.4		25.6	0	74.4		57.1	0	42.9		
PHF	.833	.956	.250	.925	.000	.980	.813	.954	.807	.000	.929	.931	.500	.000	.750	.583	.955
Cars,Buses	222	779	1	1002	0	1049	169	1218	182	0	531	713	0	0	3	3	2936
% Cars,Buses	88.8	94.3	100	93.0	0	95.9	100	96.4	98.9	0	99.3	99.2	0	0	100	42.9	95.8
Trucks	28	47	0	75	0	45	0	45	2	0	4	6	4	0	0	4	130
% Trucks	11.2	5.7	0	7.0	0	4.1	0	3.6	1.1	0	0.7	0.8	100	0	0	57.1	4.2



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ Eastland Rd
7-9 am | 4-6 pm

File Name : 20210150
Site Code : 20210150
Start Date : 5/18/2021
Page No : 1

Groups Printed- Cars,Buses - Trucks

	Moreland Ave Northbound				Moreland Ave Southbound				Eastland Rd Eastbound				Eastland Rd 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	3	199	0	202	5	112	4	121	0	0	0	0	0	0	12	12	335
07:15 AM	5	205	2	212	7	118	2	127	0	1	1	2	2	0	11	13	354
07:30 AM	5	207	2	214	7	124	2	133	0	0	2	2	0	0	15	15	364
07:45 AM	7	218	0	225	10	132	3	145	0	1	0	1	1	0	14	15	386
Total	20	829	4	853	29	486	11	526	0	2	3	5	3	0	52	55	1439
08:00 AM	9	215	1	225	6	131	4	141	0	0	2	2	1	0	10	11	379
08:15 AM	6	219	2	227	10	142	1	153	0	1	1	2	0	0	9	9	391
08:30 AM	10	220	1	231	11	143	2	156	0	1	0	1	1	0	7	8	396
08:45 AM	9	224	1	234	10	152	3	165	0	0	1	1	1	0	5	6	406
Total	34	878	5	917	37	568	10	615	0	2	4	6	3	0	31	34	1572
*** BREAK ***																	
04:00 PM	3	241	3	247	26	248	0	274	0	1	7	8	3	0	19	22	551
04:15 PM	7	248	5	260	27	256	2	285	0	1	6	7	4	0	21	25	577
04:30 PM	4	249	5	258	30	260	1	291	0	2	9	11	4	0	25	29	589
04:45 PM	6	255	4	265	32	269	2	303	0	1	8	9	6	0	16	22	599
Total	20	993	17	1030	115	1033	5	1153	0	5	30	35	17	0	81	98	2316
05:00 PM	5	261	3	269	38	273	3	314	0	3	5	8	5	0	18	23	614
05:15 PM	9	260	3	272	40	274	3	317	0	2	3	5	8	0	11	19	613
05:30 PM	8	246	2	256	32	260	1	293	0	1	4	5	5	0	9	14	568
05:45 PM	5	227	1	233	30	248	1	279	0	1	2	3	3	0	7	10	525
Total	27	994	9	1030	140	1055	8	1203	0	7	14	21	21	0	45	66	2320
Grand Total	101	3694	35	3830	321	3142	34	3497	0	16	51	67	44	0	209	253	7647
Apprch %	2.6	96.4	0.9		9.2	89.8	1		0	23.9	76.1		17.4	0	82.6		
Total %	1.3	48.3	0.5	50.1	4.2	41.1	0.4	45.7	0	0.2	0.7	0.9	0.6	0	2.7	3.3	
Cars,Buses	101	3535	35	3671	311	3015	34	3360	0	16	51	67	44	0	209	253	7351
% Cars,Buses	100	95.7	100	95.8	96.9	96	100	96.1	0	100	100	100	100	0	100	100	96.1
Trucks	0	159	0	159	10	127	0	137	0	0	0	0	0	0	0	0	296
% Trucks	0	4.3	0	4.2	3.1	4	0	3.9	0	0	0	0	0	0	0	0	3.9

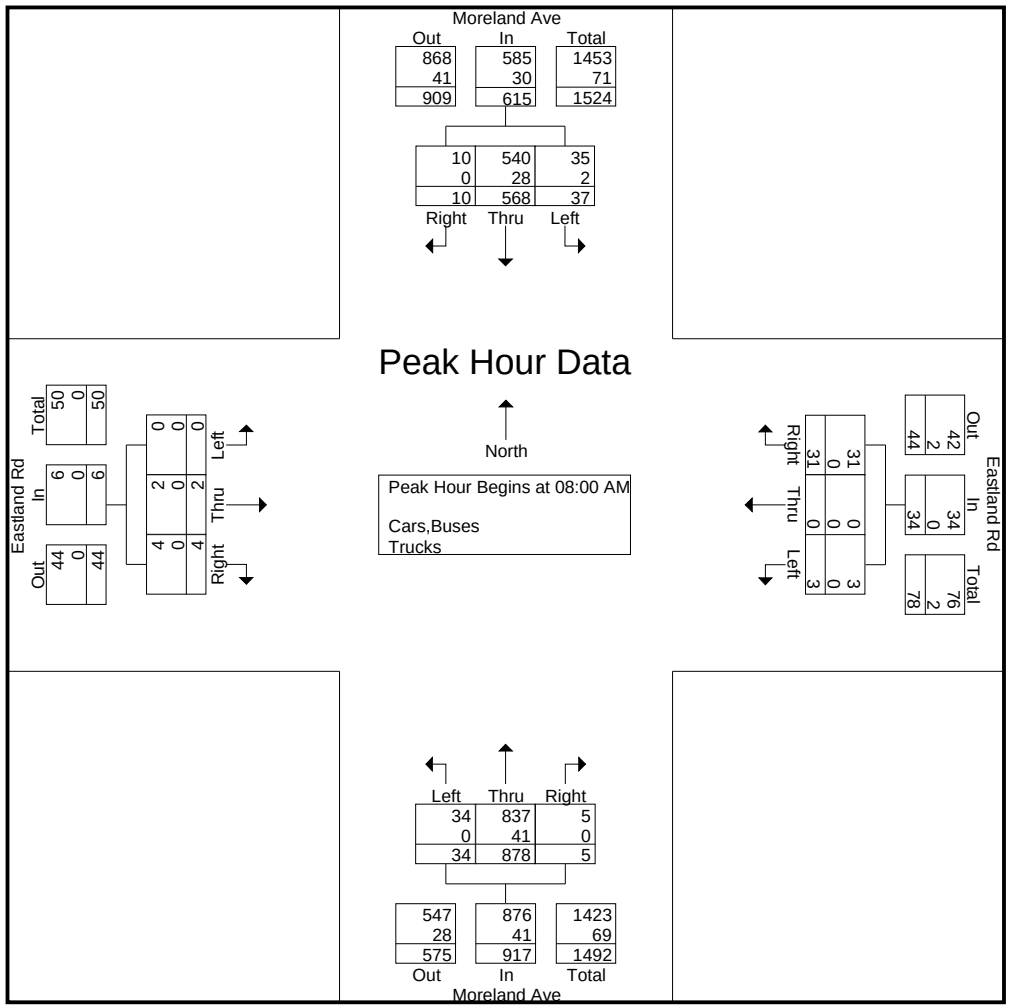
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ Eastland Rd
7-9 am | 4-6 pm

File Name : 20210150
Site Code : 20210150
Start Date : 5/18/2021
Page No : 2

	Moreland Ave Northbound				Moreland Ave Southbound				Eastland Rd Eastbound				Eastland Rd 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	9	215	1	225	6	131	**4**	141	0	0	**2**	**2**	**1**	0	**10**	**11**	379
08:15 AM	6	219	**2**	227	10	142	1	153	0	**1**	1	2	0	0	9	9	391
08:30 AM	**10**	220	1	231	**11**	143	2	156	0	1	0	1	1	0	7	8	396
08:45 AM	9	**224**	1	**234**	10	**152**	3	**165**	0	0	1	1	1	0	5	6	**406**
Total Volume	34	878	5	917	37	568	10	615	0	2	4	6	3	0	31	34	1572
% App. Total	3.7	95.7	0.5		6	92.4	1.6		0	33.3	66.7		8.8	0	91.2		
PHF	.850	.980	.625	.980	.841	.934	.625	.932	.000	.500	.500	.750	.750	.000	.775	.773	.968
Cars,Buses	34	837	5	876	35	540	10	585	0	2	4	6	3	0	31	34	1501
% Cars,Buses	100	95.3	100	95.5	94.6	95.1	100	95.1	0	100	100	100	100	0	100	100	95.5
Trucks	0	41	0	41	2	28	0	30	0	0	0	0	0	0	0	0	71
% Trucks	0	4.7	0	4.5	5.4	4.9	0	4.9	0	0	0	0	0	0	0	0	4.5



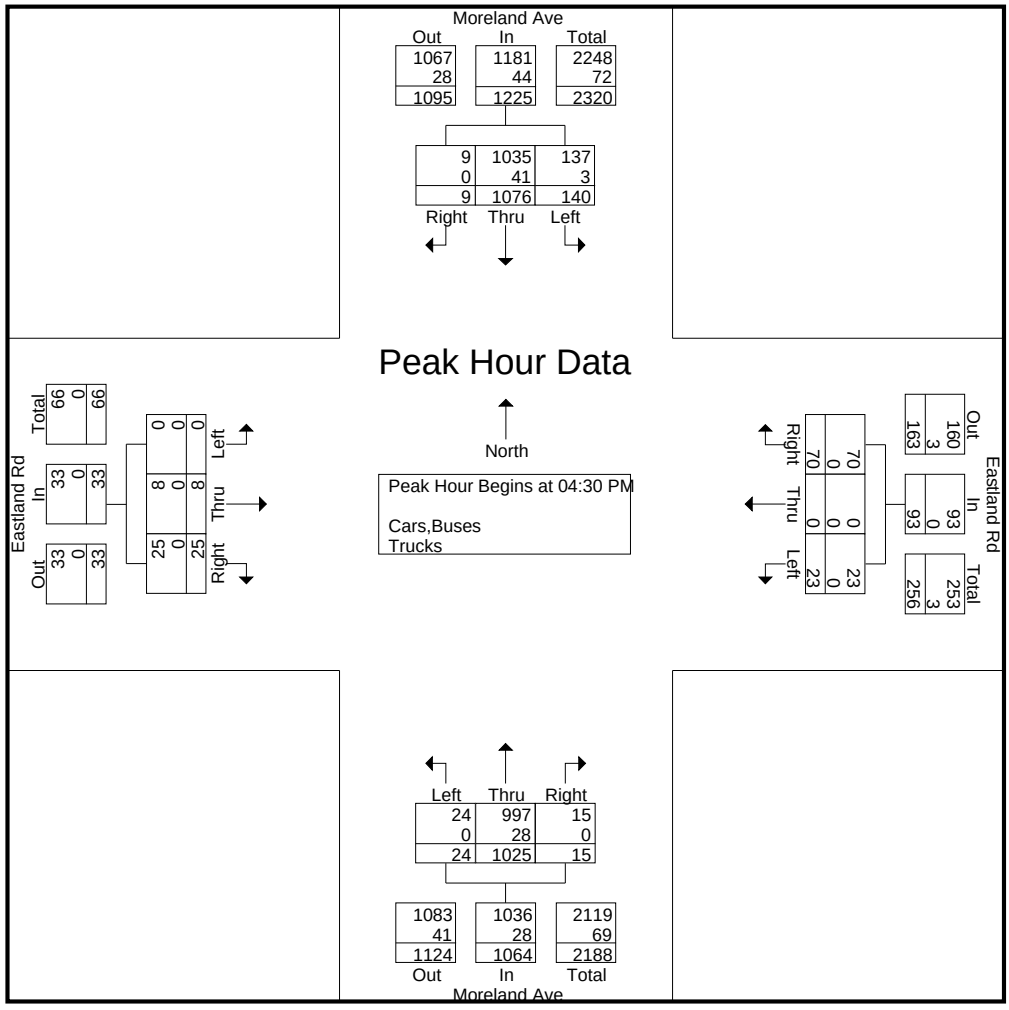
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Moreland Ave @ Eastland Rd
7-9 am | 4-6 pm

File Name : 20210150
Site Code : 20210150
Start Date : 5/18/2021
Page No : 3

	Moreland Ave Northbound				Moreland Ave Southbound				Eastland Rd Eastbound				Eastland Rd 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	4	249	**5**	258	30	260	1	291	0	2	**9**	**11**	4	0	**25**	**29**	589
04:45 PM	6	255	4	265	32	269	2	303	0	1	8	9	6	0	16	22	599
05:00 PM	5	**261**	3	269	38	273	**3**	314	0	**3**	5	8	5	0	18	23	**614**
05:15 PM	**9**	260	3	**272**	**40**	**274**	3	**317**	0	2	3	5	**8**	0	11	19	613
Total Volume	24	1025	15	1064	140	1076	9	1225	0	8	25	33	23	0	70	93	2415
% App. Total	2.3	96.3	1.4		11.4	87.8	0.7		0	24.2	75.8		24.7	0	75.3		
PHF	.667	.982	.750	.978	.875	.982	.750	.966	.000	.667	.694	.750	.719	.000	.700	.802	.983
Cars,Buses	24	997	15	1036	137	1035	9	1181	0	8	25	33	23	0	70	93	2343
% Cars,Buses	100	97.3	100	97.4	97.9	96.2	100	96.4	0	100	100	100	100	0	100	100	97.0
Trucks	0	28	0	28	3	41	0	44	0	0	0	0	0	0	0	0	72
% Trucks	0	2.7	0	2.6	2.1	3.8	0	3.6	0	0	0	0	0	0	0	0	3.0



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Eastland Rd and Bouldercrest Rd
7-9 am | 4-6 pm

File Name : 20210151
Site Code : 20210151
Start Date : 5/18/2021
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Bouldercrest Rd Northbound				Bouldercrest Rd Southbound				Eastland Rd Eastbound				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	17	65	0	82	0	37	14	51	15	0	3	18	0	0	0	0	151
07:15 AM	19	67	0	86	0	39	16	55	18	0	5	23	0	0	0	0	164
07:30 AM	21	69	0	90	0	42	19	61	21	0	8	29	0	0	0	0	180
07:45 AM	26	72	0	98	0	46	22	68	25	0	11	36	0	0	0	0	202
Total	83	273	0	356	0	164	71	235	79	0	27	106	0	0	0	0	697
08:00 AM	28	77	0	105	0	49	27	76	28	0	16	44	0	0	0	0	225
08:15 AM	31	81	0	112	0	52	28	80	34	0	13	47	0	0	0	0	239
08:30 AM	34	85	0	119	0	58	35	93	39	0	19	58	0	0	0	0	270
08:45 AM	39	82	0	121	0	63	37	100	40	0	21	61	0	0	0	0	282
Total	132	325	0	457	0	222	127	349	141	0	69	210	0	0	0	0	1016
*** BREAK ***																	
04:00 PM	21	59	0	80	0	72	67	139	61	0	32	93	0	0	0	0	312
04:15 PM	24	63	0	87	0	76	71	147	66	0	37	103	0	0	0	0	337
04:30 PM	28	66	0	94	0	78	74	152	69	0	39	108	0	0	0	0	354
04:45 PM	33	69	0	102	0	83	78	161	73	0	42	115	0	0	0	0	378
Total	106	257	0	363	0	309	290	599	269	0	150	419	0	0	0	0	1381
05:00 PM	36	74	0	110	0	87	83	170	78	0	46	124	0	0	0	0	404
05:15 PM	39	78	0	117	0	91	85	176	82	0	47	129	0	0	0	0	422
05:30 PM	43	81	0	124	0	99	92	191	75	0	55	130	0	0	0	0	445
05:45 PM	32	72	0	104	0	70	77	147	64	0	58	122	0	0	0	0	373
Total	150	305	0	455	0	347	337	684	299	0	206	505	0	0	0	0	1644
Grand Total	471	1160	0	1631	0	1042	825	1867	788	0	452	1240	0	0	0	0	4738
Apprch %	28.9	71.1	0		0	55.8	44.2		63.5	0	36.5		0	0	0		
Total %	9.9	24.5	0	34.4	0	22	17.4	39.4	16.6	0	9.5	26.2	0	0	0	0	

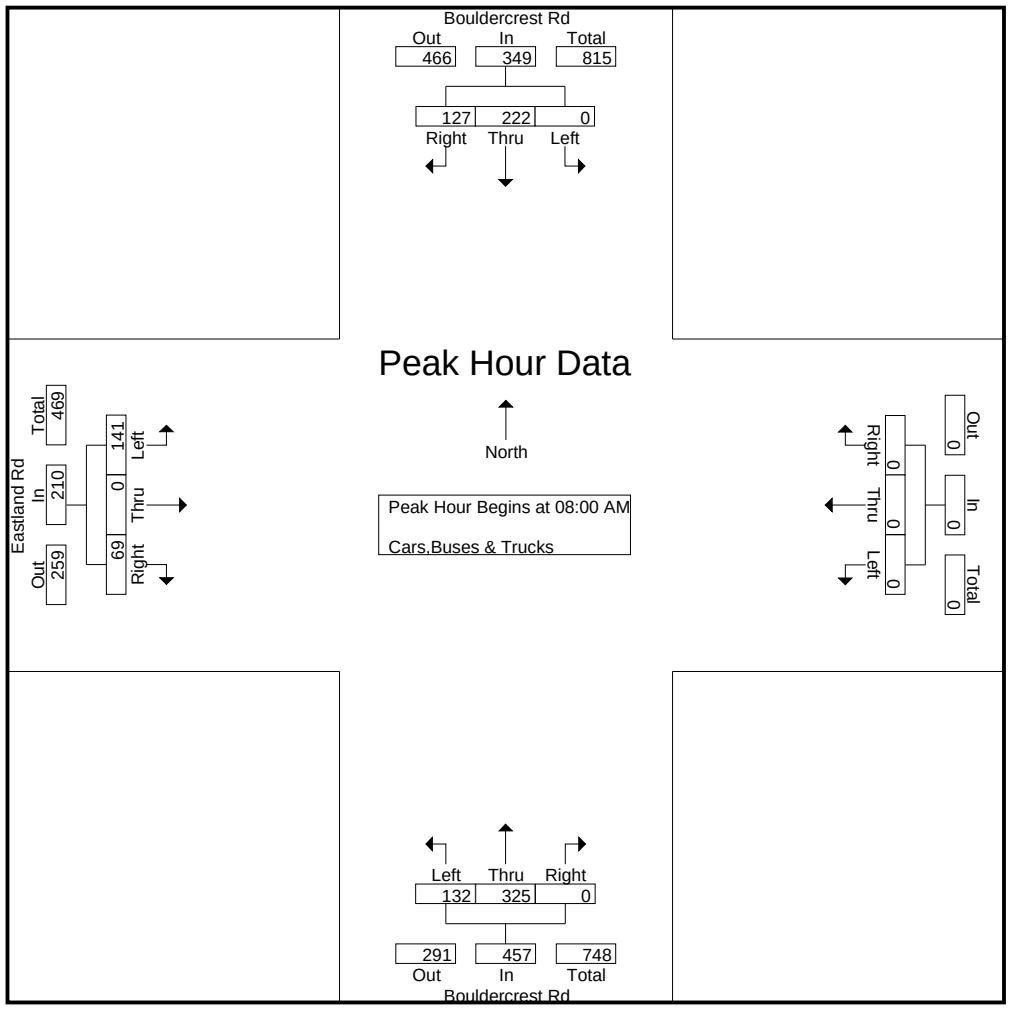
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Eastland Rd and Bouldercrest Rd
7-9 am | 4-6 pm

File Name : 20210151
Site Code : 20210151
Start Date : 5/18/2021
Page No : 2

	Bouldercrest Rd Northbound				Bouldercrest Rd Southbound				Eastland Rd Eastbound				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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	28	77	0	105	0	49	27	76	28	0	16	44	0	0	0	0	225
08:15 AM	31	81	0	112	0	52	28	80	34	0	13	47	0	0	0	0	239
08:30 AM	34	**85**	0	119	0	58	35	93	39	0	19	58	0	0	0	0	270
08:45 AM	**39**	82	0	**121**	0	**63**	**37**	**100**	**40**	0	**21**	**61**	0	0	0	0	**282**
Total Volume	132	325	0	457	0	222	127	349	141	0	69	210	0	0	0	0	1016
% App. Total	28.9	71.1	0		0	63.6	36.4		67.1	0	32.9		0	0	0		
PHF	.846	.956	.000	.944	.000	.881	.858	.873	.881	.000	.821	.861	.000	.000	.000	.000	.901



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2160 Kingston Court, Suite 'O',
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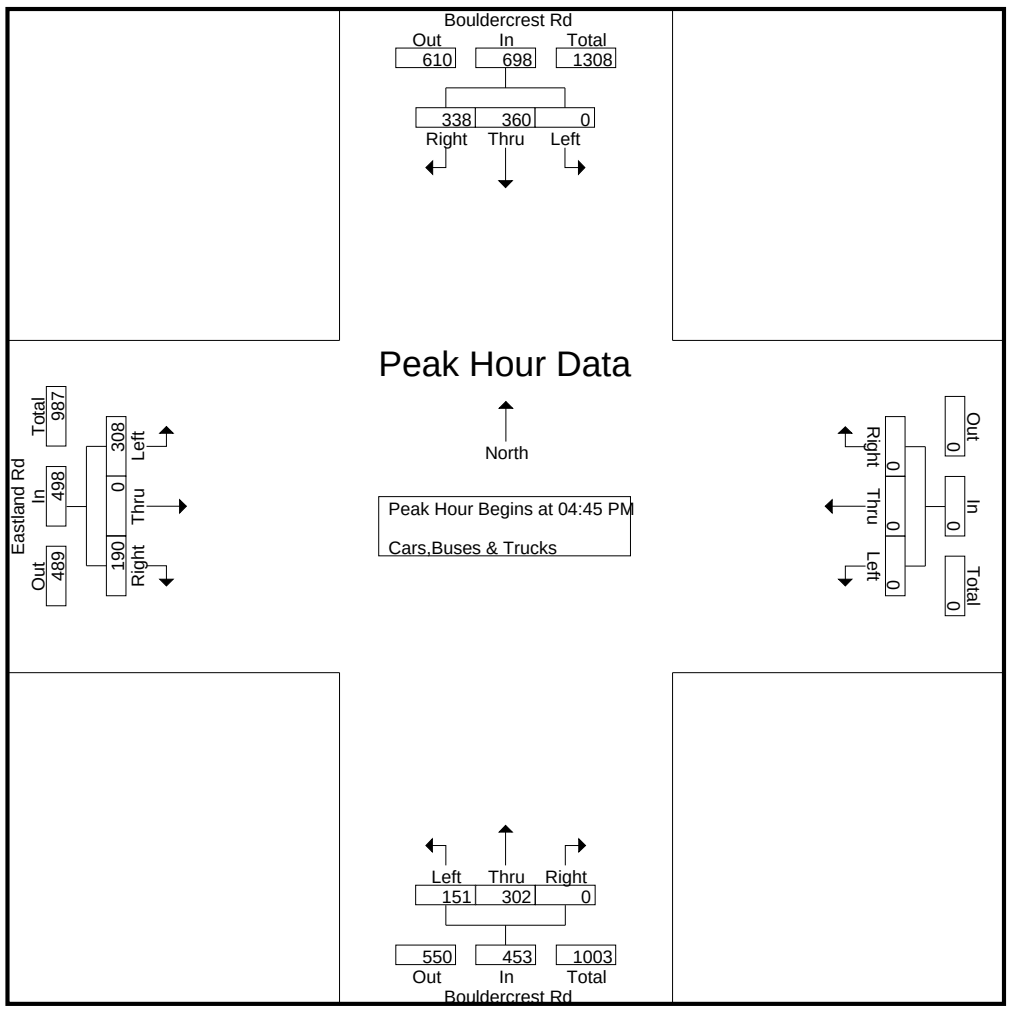
TMC Data
Eastland Rd and Bouldercrest Rd
7-9 am | 4-6 pm

File Name : 20210151
Site Code : 20210151
Start Date : 5/18/2021
Page No : 3

	Bouldercrest Rd Northbound				Bouldercrest Rd Southbound				Eastland Rd Eastbound				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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	33	69	0	102	0	83	78	161	73	0	42	115	0	0	0	0	378
05:00 PM	36	74	0	110	0	87	83	170	78	0	46	124	0	0	0	0	404
05:15 PM	39	78	0	117	0	91	85	176	**82**	0	47	129	0	0	0	0	422
05:30 PM	**43**	**81**	0	**124**	0	**99**	**92**	**191**	75	0	**55**	**130**	0	0	0	0	**445**
Total Volume	151	302	0	453	0	360	338	698	308	0	190	498	0	0	0	0	1649
% App. Total	33.3	66.7	0		0	51.6	48.4		61.8	0	38.2		0	0	0		
PHF	.878	.932	.000	.913	.000	.909	.918	.914	.939	.000	.864	.958	.000	.000	.000	.000	.926



GRTA Letter of Understanding

LETTER OF UNDERSTANDING

4/29/2021

Noah Randall
Alliance Realty Partners, LLC
1720 Peachtree Street NW, Suite 150
Atlanta, GA 30309

RE: **Broadstone at Moreland** (**DRI#: 3306)**

Dear Mr. Randall:

The purpose of this Letter of Understanding is to document the discussions during the Methodology Meeting held virtually on April 22, 2021 regarding the **Broadstone at Moreland** Development of Regional Impact (DRI). The *GRTA DRI Review Procedures*, as well as the inputs and parameters documented in this Letter of Understanding and the revised Methodology Meeting Packet, shall be adhered to in preparing the GRTA required Transportation Study.

PROJECT OVERVIEW

- The proposed site is located to the southeast of the intersection of Moreland Avenue (SR 23) and Custer Ave SE.
- The proposed development includes 354 apartment units, 188 townhomes, and 11,019 square feet of commercial/retail.
- The projected build-out is one phase to be completed by 2024.
- The proposed development includes 1 right-in, right-out access along Moreland Avenue and 2 full access driveways along Custer Avenue SE.
- The DRI trigger for this development is a SAP submittal to the City of Atlanta.
- The vehicular trip generation is estimated to be 3,596 net daily trips based on the *ITE Trip Generation Manual 10th edition.*
- The applicant is applying for approval under GRTA's non-expedited review process.

STUDY NETWORK

1. Moreland Avenue at Custer Avenue SE
2. Eastland Road at Moreland Avenue
3. Bouldercrest Road SE at Eastland Road
4. McDonough Boulevard at Moreland Avenue
5. Site Access #1 at Moreland Avenue
6. Site Access #2 at Custer Avenue SE
7. Site Access #3 at Custer Avenue SE

METHODOLOGY MEETING PACKET INPUTS & PARAMETERS

- The Site Plan shall meet all the applicable requirements in Section 7.1 of the *GRTA DRI Review Procedures*.
- All Study Network intersections shall be analyzed during the AM and PM peak hours for (1) existing conditions, (2) future "no-build" conditions, and (3) future "build" conditions as specified in the *GRTA DRI Review Procedures*.

- This DRI shall be modeled and reviewed in one phase to be completed by 2024.

- The Level of Service (LOS) standard for all analysis shall be LOS D unless specified otherwise in Section 3.2.2.1. For example, a LOS E standard is allowed if the existing LOS for the intersection or approach is a LOS F.

- Default values should not be assumed in the traffic modeling. Existing conditions shall be taken into account as required in Section 3.2.2.

- The trip generation calculations in the revised Methodology Meeting Packet shall be used in the Transportation Study. Mixed-use reductions are allowed for this site. Pass-by reductions shall not be utilized for this study. Additionally, an Alternative Mode Reduction of 7% shall be included for the Project.

- The trip assignment approach in the revised Methodology Meeting Packet shall be utilized for all Study Network intersection movements.

- The applicant shall research TIP, STIP, RTP and GDOT's construction work program, as well as any local government and transit operator plans (SPLOST, CIP, etc.), to determine the open date, sponsor, cost of the project, funding source(s), for future roadway projects in the project vicinity. Programmed transportation projects anticipated to open on or before the Build Out year of the DRI Project shall be modeled as completed in the No-Build and Build conditions unless approved otherwise.

- A 1% annual traffic Background Growth Rate shall be used for all roadways.

- Capacity analysis shall be based on turning movement counts collected not more than 12-months prior to the date of the actual DRI submittal to GRTA, unless specified otherwise. As specified in Section 2.3, turning movement counts shall be collected while local schools are in session, on a Tuesday, Wednesday or Thursday (unless approved otherwise) and not during holiday periods (weeks of July 4th, Thanksgiving and +/- 5 days of Christmas).

- COVID-19: The transportation analysis shall utilize existing turning movement count data when available during COVID. All counts older than a year shall be grown by the Background Growth Rate unless approved otherwise. If new counts are required, a control count location where existing count data is available shall be used for developing traffic growth extrapolation rates. The traffic engineer shall submit the proposed growth rates to GRTA, GDOT and local government stakeholders for input and GRTA approval before submitting the Transportation Study.

- The TIS shall include the MMP's transit data requirements that were not provided at the Methodology Meeting. The MMP transit requirements include: For each transit route identified, the MMP shall list the operator, route number and name, outbound and inbound end of line destinations, the service span, days in service (weekday, Saturday, Sunday) and the service frequency. The MMP shall also note the location of transit stops adjacent to the Project Site and if any bus pads or transit shelters are present. If the Project borders a roadway with a transit route, the MMP shall include the average daily boardings and alightings for all transit stops adjacent to the Project as well as the nearest stop not bordering the Project Site in each direction. The average daily ridership shall be averaged for each transit operator for a recent fiscal year, calendar year or month that is representative of typical ridership levels, excluding months when school is not in session and during COVID-19. In addition to existing ridership, the MMP shall reiterate in the text the Project's estimated Alternative Mode Reduction (Section 2.2.4.2) with the caveat that the estimate also includes walking and bicycling trips not related to transit. The Alternative Mode Reduction shall be included both as a percentage and as the total number of alternative transportation trips. The Project's estimated Alternative Mode Reduction trips shall be added to any existing transit boarding data and compared against transit operator(s) transit stop amenity standards for when amenities such as transit shelters are warranted. **MARTA routes 4, 9, and 832 have been identified as serving this project.**

ADDITIONAL REQUIREMENTS

All applicable requirements of the *GRTA DRI Review Procedures* must be met for the Transportation Study to be considered complete. The *GRTA DRI Review Procedures* are located on GRTA's DRI website: https://www.srta.ga.gov/programs-projects/dev-of-regional-impact/ Contact GRTA staff if you have any questions on these requirements.

The Transportation Study shall also include as attachments the native LOS modeling file (i.e., Synchro modeling files) as well as the modeling reports (PDFs) for all Study Network intersections for the Existing, No-Build and Build conditions for all phases. The PDF reports shall be numbered (in page headers) and organized in order according to the Study Network numbering sequence in this Letter of Understanding. The reports shall also be organized in the following sequence: *Existing condition AM, Existing condition PM, No-build condition AM, No-Build condition PM, Build condition AM, Build condition PM*. If improvements are modeled, those PDFs shall be labeled as such and follow the appropriate condition's applicable peak period.

The Transportation Study appendices shall also include all turning movement count data, regardless of if using historic data or newly collected turning movement counts.

When documenting any Queue Length impacts required in Section 3.2.3.6, the TIS Executive Summary shall also note any individual *movements* not meeting the LOS standard where the DRI Project adds trips in the Build condition and exceeds available storage capacity for that movement.

DRI REVIEW PACKAGE SUBMITTAL

GRTA will begin reviewing the DRI once the DRI Review Package is submitted and deemed complete. The DRI Review Package includes: the permitting Local Government inputting both Department of Community Affairs (DCA) forms into the DCA DRI website; and the **Traffic Engineer submittal of the GRTA Transportation Study (including LOS appendices, traffic count data and any other required attachments) and Site Plan to GRTA staff and ALL stakeholders included in the CC list of this Letter of Understanding**.

All DRI Review Packages shall be submitted electronically via email to all stakeholders in the CC list of the Letter of Understanding. If the DRI Review Package total file size is greater than 10 MB, the DRI Review Package shall be submitted via email with an FTP link provided for downloading the files.

Please contact me if you have any questions about the Letter of Understanding or the *GRTA DRI Review Procedures*.

Sincerely,

Richard Hathcock
Senior Transit & Transportation Planner

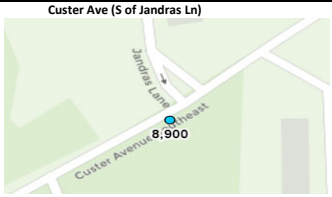
Cc:

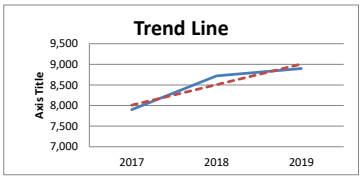
Jon West, DCA
Andrew Smith, ARC
Greg Giuffrida, ARC
Marquitrice Mangum, ARC
Aries Little, ARC
Cain Williamson, GRTA/ATL
Andrew Spiloitis, GRTA
Greg Floyd, MARTA
Paul DeNard, GDOT
Justin Hatch, GDOT
Josh Montefusco, GDOT
Megan Wilson, GDOT
Noah Randall, Alliance Realty Partners
Andrew Butcher, Alliance Realty Partners
Daniel Parker, GDOT
Monique Forte, City of Atlanta
Lenise Lyons, City of Atlanta
Nathaniel Hoelzel, City of Atlanta
Betty Smoot Madison, City of Atlanta
Nursef Kedir, City of Atlanta
Mark Tai, City of Atlanta
Keyetta Holmes, City of Atlanta
Nathan Brown, City of Atlanta
Larry Washington, DeKalb County
Sylvia Smith, DeKalb County
Naila Amer, A&R Engineering
Abdul Amer, A&R Engineering

Linear Regression of Daily Traffic

Location	Growth Rate	R Squared	Station ID	Route	2017	2018	2019	
Custer Ave (S of Jandras Ln)	6.1%	0.88	089-3947	00007500	7,900	8,720	8,900	Minor Collector (Urban)
Eastland Rd (E of Custer Ave)	1.5%	1.00	089-3945	00004000	9,700	9,850	10,000	Minor Collector (Urban)
Custer Ave (E of Fisher Rd)	1.8%	1.00	121-6192	00149003	3,600	3,660	3,730	Minor Collector (Urban)
Moreland Ave (S of Pluma Dr)	-1.3%	0.83	121-5223	00004200	35,000	34,900	34,100	Principal Arterial - Other (Urban)
Moreland Ave (S of Gracewood	-3.4%	0.68	121-5227	00004200	31,500	29,200	29,400	Principal Arterial - Other (Urban)
Weighted Average	**-0.9%**	0.84	Sum of Count Stations =		87,700	86,330	86,130	

Location	Traffic Counter	RCLINK	2017	2018	2019
Custer Ave (S of Jandras Ln)	089-3947	00007500	7,900	8,720	8,900

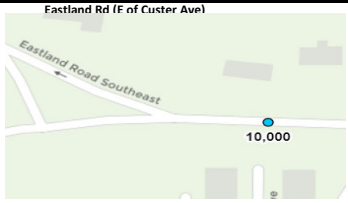


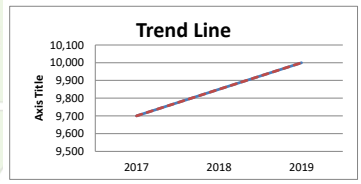


Growth Rate	Trend Line	Intercept	-1,000,493	Slope	500.00
6.1%			8,007	8,507	9,007

Sum X	6,054
Sum Y	25,520
Sum XY	51,500,360
Sum X^2	12,216,974
Count	3
a	-1,000,493
b	500
Mean Y	8,507
SS_{tot}	568,267
SS_{res}	68,267
R^2	0.88

Location	Traffic Counter	RCLINK	2017	2018	2019
Eastland Rd (E of Custer Ave)	089-3945	00004000	9,700	9,850	10,000

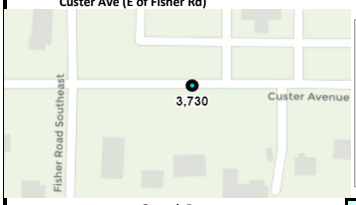


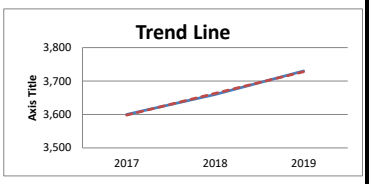


Growth Rate	Trend Line	Intercept	-292,850	Slope	150.00
1.5%			9,700	9,850	10,000

Sum X	6,054
Sum Y	29,550
Sum XY	59,632,200
Sum X^2	12,216,974
Count	3
a	-292,850
b	150
Mean Y	9,850
SS_{tot}	45,000
SS_{res}	0
R^2	1

Location	Traffic Counter	RCLINK	2017	2018	2019
Custer Ave (E of Fisher Rd)	121-6192	00149003	3,600	3,660	3,730

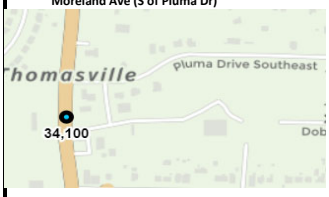


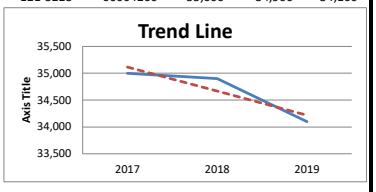


Growth Rate	Trend Line	Intercept	-127,507	Slope	65.00
1.8%			3,598	3,663	3,728

Sum X	6,054
Sum Y	10,990
Sum XY	22,177,950
Sum X^2	12,216,974
Count	3
a	-127,507
b	65
Mean Y	3,663
SS_{tot}	8,467
SS_{res}	17
R^2	1

Location	Traffic Counter	RCLINK	2017	2018	2019
Moreland Ave (S of Pluma Dr)	121-5223	00004200	35,000	34,900	34,100

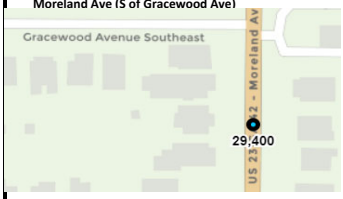


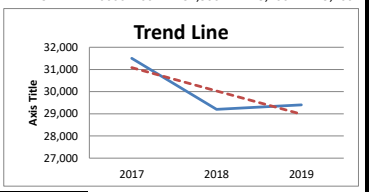


Growth Rate	Trend Line	Intercept	942,767	Slope	-450.00
-1.3%			35,117	34,667	34,217

Sum X	6,054
Sum Y	104,000
Sum XY	209,871,100
Sum X^2	12,216,974
Count	3
a	942,767
b	-450
Mean Y	34,667
SS_{tot}	486,667
SS_{res}	81,667
R^2	0.83

Location	Traffic Counter	RCLINK	2017	2018	2019
Moreland Ave (S of Gracewood Ave)	121-5227	00004200	31,500	29,200	29,400

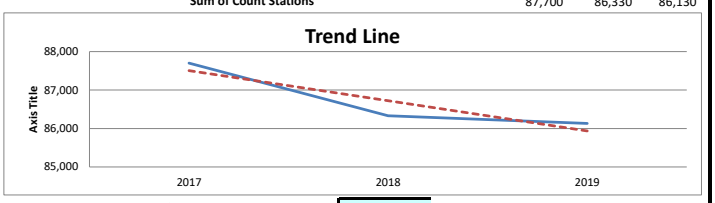




Growth Rate	Trend Line	Intercept	2,148,933	Slope	-1,050.00
-3.4%			31,083	30,033	28,983

Sum X	6,054
Sum Y	90,100
Sum XY	181,819,700
Sum X^2	12,216,974
Count	3
a	2,148,933
b	-1,050
Mean Y	30,033
SS_{tot}	3,246,667
SS_{res}	1,041,667
R^2	0.68

Weighted Average	2017	2018	2019
Sum of Count Stations	87,700	86,330	86,130



Growth Rate	Trend Line	Intercept	1,670,850	Slope	-785.00
-0.9%			87,505	86,720	85,935

Sum X	6,054
Sum Y	260,160
Sum XY	525,001,310
Sum X^2	12,216,974
Count	3
a	1,670,850
b	-785
Mean Y	86,720
SS_{tot}	1,460,600
SS_{res}	228,150
R^2	0.84

Existing Intersection Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	3	5	4	0	41	45	1159	7	49	750	13
Future Volume (veh/h)	0	3	5	4	0	41	45	1159	7	49	750	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	1900	1900	1900	1900	1900	1900	1900	1841	1900	1826	1841	1900
Adj Flow Rate, veh/h	0	3	5	4	0	42	46	1195	7	51	773	13
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	5	4	0
Cap, veh/h	0	27	45	36	2	61	111	2813	16	167	2462	41
Arrive On Green	0.00	0.04	0.04	0.04	0.00	0.04	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	0	640	1067	85	55	1468	91	3246	19	154	2841	47
Grp Volume(v), veh/h	0	0	8	46	0	0	629	0	619	380	0	457
Grp Sat Flow(s),veh/h/ln	0	0	1708	1608	0	0	1685	0	1672	1376	0	1667
Q Serve(g_s), s	0.0	0.0	0.5	1.4	0.0	0.0	0.0	0.0	9.4	0.0	0.0	6.0
Cycle Q Clear(g_c), s	0.0	0.0	0.5	3.4	0.0	0.0	8.3	0.0	9.4	4.2	0.0	6.0
Prop In Lane	0.00		0.62	0.09		0.91	0.07		0.01	0.13		0.03
Lane Grp Cap(c), veh/h	0	0	71	100	0	0	1492	0	1449	1226	0	1444
V/C Ratio(X)	0.00	0.00	0.11	0.46	0.00	0.00	0.42	0.00	0.43	0.31	0.00	0.32
Avail Cap(c_a), veh/h	0	0	320	332	0	0	1492	0	1449	1226	0	1444
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	55.4	56.7	0.0	0.0	1.6	0.0	1.7	1.3	0.0	1.5
Incr Delay (d2), s/veh	0.0	0.0	0.7	3.3	0.0	0.0	0.9	0.0	0.9	0.7	0.0	0.6
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(50%),veh/ln	0.0	0.0	0.2	1.5	0.0	0.0	1.2	0.0	1.2	0.7	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	56.0	60.0	0.0	0.0	2.5	0.0	2.6	2.0	0.0	2.0
LnGrp LOS	A	A	E	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		8			46			1248			837	
Approach Delay, s/veh		56.0			60.0			2.6			2.0	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	109.5		10.5		109.5		10.5					
Change Period (Y+Rc), s	5.5		5.5		5.5		5.5					
Max Green Setting (Gmax), s	86.5		22.5		86.5		22.5					
Max Q Clear Time (g_c+I1), s	11.4		2.5		8.0		5.4					
Green Ext Time (p_c), s	26.9		0.0		14.6		0.1					

Intersection Summary		
HCM 6th Ctrl Delay	3.8	
HCM 6th LOS	A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	88	33	123	143	28	78	1048	104	28	659	78
Future Volume (veh/h)	132	88	33	123	143	28	78	1048	104	28	659	78
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	1900	1707	1841	1781	1781	1767	1826	1781	1544	1900	1870	1900
Adj Flow Rate, veh/h	139	93	0	129	151	0	82	1103	109	29	694	82
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	13	4	8	8	9	5	8	24	0	2	0
Cap, veh/h	197	184		225	180		480	2051	202	311	2081	246
Arrive On Green	0.07	0.11	0.00	0.06	0.10	0.00	0.03	0.66	0.66	0.02	0.65	0.65
Sat Flow, veh/h	1810	1707	1560	1697	1781	0	1739	3111	307	1810	3201	378
Grp Volume(v), veh/h	139	93	0	129	151	0	82	599	613	29	385	391
Grp Sat Flow(s),veh/h/ln	1810	1707	1560	1697	1781	0	1739	1692	1726	1810	1777	1802
Q Serve(g_s), s	10.3	7.7	0.0	9.5	12.5	0.0	2.4	28.0	28.1	0.8	14.5	14.5
Cycle Q Clear(g_c), s	10.3	7.7	0.0	9.5	12.5	0.0	2.4	28.0	28.1	0.8	14.5	14.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.18	1.00		0.21
Lane Grp Cap(c), veh/h	197	184		225	180		480	1115	1138	311	1155	1172
V/C Ratio(X)	0.71	0.51		0.57	0.84		0.17	0.54	0.54	0.09	0.33	0.33
Avail Cap(c_a), veh/h	197	370		225	374		534	1115	1138	383	1155	1172
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	63.2	0.0	57.4	66.2	0.0	8.7	13.5	13.5	10.7	11.7	11.7
Incr Delay (d2), s/veh	11.0	2.2	0.0	3.5	10.0	0.0	0.2	1.9	1.8	0.1	0.8	0.8
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(50%),veh/ln	5.3	3.5	0.0	4.6	6.2	0.0	0.9	10.4	10.7	0.3	5.6	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.4	65.3	0.0	60.9	76.2	0.0	8.9	15.4	15.3	10.8	12.5	12.5
LnGrp LOS	E	E		E	E		A	B	B	B	B	B
Approach Vol, veh/h		232	A		280	A		1294			805	
Approach Delay, s/veh		66.6			69.2			14.9			12.4	
Approach LOS		E			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	104.4	15.0	21.6	10.3	103.0	16.0	20.6
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	7.5	76.5	9.5	32.5	9.5	76.5	10.5	31.5
Max Q Clear Time (g_c+I1), s	2.8	30.1	11.5	9.7	4.4	16.5	12.3	14.5
Green Ext Time (p_c), s	0.0	21.1	0.0	0.4	0.1	11.4	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	24.6
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	0	201	3	0	3	356	1271	3	0	612	78
Future Volume (veh/h)	74	0	201	3	0	3	356	1271	3	0	612	78
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	1885	1900	1900	1159	1900	1900	1752	1841	1900	1900	1826	1900
Adj Flow Rate, veh/h	78	0	0	3	0	3	375	1338	3	0	644	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	50	0	0	10	4	0	0	5	0
Cap, veh/h	138	0		8	0	8	665	1551	1357	225	2543	
Arrive On Green	0.04	0.00	0.00	0.01	0.00	0.01	0.07	0.84	0.84	0.00	0.73	0.00
Sat Flow, veh/h	3591	0	1610	852	0	852	1668	1841	1610	1810	3561	0
Grp Volume(v), veh/h	78	0	0	6	0	0	375	1338	3	0	644	0
Grp Sat Flow(s),veh/h/ln	1795	0	1610	1704	0	0	1668	1841	1610	1810	1735	0
Q Serve(g_s), s	3.2	0.0	0.0	0.5	0.0	0.0	7.9	62.8	0.0	0.0	9.1	0.0
Cycle Q Clear(g_c), s	3.2	0.0	0.0	0.5	0.0	0.0	7.9	62.8	0.0	0.0	9.1	0.0
Prop In Lane	1.00		1.00	0.50		0.50	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	138	0		15	0	0	665	1551	1357	225	2543	
V/C Ratio(X)	0.56	0.00		0.40	0.00	0.00	0.56	0.86	0.00	0.00	0.25	
Avail Cap(c_a), veh/h	431	0		204	0	0	915	1551	1357	338	2543	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	70.9	0.0	0.0	73.9	0.0	0.0	4.0	6.8	1.9	0.0	6.6	0.0
Incr Delay (d2), s/veh	3.6	0.0	0.0	16.1	0.0	0.0	0.8	6.6	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	0.3	0.0	0.0	2.0	17.5	0.0	0.0	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.5	0.0	0.0	90.0	0.0	0.0	4.8	13.4	1.9	0.0	6.8	0.0
LnGrp LOS	E	A		F	A	A	A	B	A	A	A	
Approach Vol, veh/h		78	A		6			1716			644	A
Approach Delay, s/veh		74.5			90.0			11.5			6.8	
Approach LOS		E			F			B			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	81.9		11.3	16.4	115.5		6.8
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	9.5	82.5		18.0	33.5	58.5		18.0
Max Q Clear Time (g_c+I1), s	4.2	64.8		5.2	9.9	11.1		2.5
Green Ext Time (p_c), s	0.0	15.5		0.1	1.1	9.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

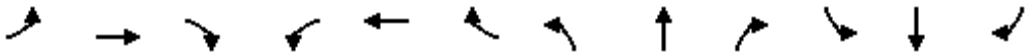
Notes

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	186	91	174	429	293	168
Future Volume (veh/h)	186	91	174	429	293	168
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	101	193	477	326	187
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	256	228	561	1435	1373	1164
Arrive On Green	0.14	0.14	0.73	0.73	0.73	0.73
Sat Flow, veh/h	1781	1585	672	2039	1870	1585
Grp Volume(v), veh/h	207	101	282	388	326	187
Grp Sat Flow(s),veh/h/ln	1781	1585	1009	1617	1870	1585
Q Serve(g_s), s	10.1	5.2	8.2	7.5	5.1	3.2
Cycle Q Clear(g_c), s	10.1	5.2	13.3	7.5	5.1	3.2
Prop In Lane	1.00	1.00	0.68			1.00
Lane Grp Cap(c), veh/h	256	228	808	1187	1373	1164
V/C Ratio(X)	0.81	0.44	0.35	0.33	0.24	0.16
Avail Cap(c_a), veh/h	544	484	808	1187	1373	1164
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	37.3	35.2	5.4	4.2	3.9	3.6
Incr Delay (d2), s/veh	6.0	1.4	1.2	0.7	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	2.1	2.0	2.1	1.6	6.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.4	36.6	6.6	4.9	4.3	3.9
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	308			670	513	
Approach Delay, s/veh	41.1			5.6	4.1	
Approach LOS	D			A	A	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		71.6		18.4		71.6
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		51.5		27.5		51.5
Max Q Clear Time (g_c+I1), s		15.3		12.1		7.1
Green Ext Time (p_c), s		10.2		0.8		6.0

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	9	28	26	0	79	27	1158	17	158	1216	10
Future Volume (veh/h)	0	9	28	26	0	79	27	1158	17	158	1216	10
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	1900	1900	1900	1900	1900	1900	1900	1870	1900	1870	1856	1900
Adj Flow Rate, veh/h	0	9	29	27	0	81	28	1182	17	161	1241	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	2	3	0
Cap, veh/h	0	34	109	62	9	101	69	2736	39	245	1936	16
Arrive On Green	0.00	0.09	0.09	0.09	0.00	0.09	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	0	396	1275	290	106	1186	45	3325	47	251	2353	20
Grp Volume(v), veh/h	0	0	38	108	0	0	621	0	606	564	0	848
Grp Sat Flow(s),veh/h/ln	0	0	1671	1581	0	0	1725	0	1693	938	0	1685
Q Serve(g_s), s	0.0	0.0	2.6	5.4	0.0	0.0	0.0	0.0	11.9	29.3	0.0	21.6
Cycle Q Clear(g_c), s	0.0	0.0	2.6	8.0	0.0	0.0	10.6	0.0	11.9	41.1	0.0	21.6
Prop In Lane	0.00		0.76	0.25		0.75	0.05		0.03	0.29		0.01
Lane Grp Cap(c), veh/h	0	0	143	173	0	0	1451	0	1393	811	0	1386
V/C Ratio(X)	0.00	0.00	0.27	0.63	0.00	0.00	0.43	0.00	0.43	0.70	0.00	0.61
Avail Cap(c_a), veh/h	0	0	292	311	0	0	1451	0	1393	811	0	1386
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	51.3	53.8	0.0	0.0	2.8	0.0	2.9	6.4	0.0	3.8
Incr Delay (d2), s/veh	0.0	0.0	1.0	3.7	0.0	0.0	0.9	0.0	1.0	4.9	0.0	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(50%),veh/ln	0.0	0.0	1.1	3.3	0.0	0.0	2.5	0.0	2.6	6.3	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	52.3	57.4	0.0	0.0	3.7	0.0	3.9	11.3	0.0	5.8
LnGrp LOS	A	A	D	E	A	A	A	A	A	B	A	A
Approach Vol, veh/h		38			108			1227			1412	
Approach Delay, s/veh		52.3			57.4			3.8			8.0	
Approach LOS		D			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		104.2		15.8		104.2		15.8				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		88.0		21.0		88.0		21.0				
Max Q Clear Time (g_c+I1), s		13.9		4.6		43.1		10.0				
Green Ext Time (p_c), s		26.2		0.1		29.5		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			8.7									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	210	114	246	185	162	92	1141	277	163	1272	167
Future Volume (veh/h)	195	210	114	246	185	162	92	1141	277	163	1272	167
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	1900	1856	1856	1856	1870	1885	1856	1826	1693	1900	1826	1900
Adj Flow Rate, veh/h	210	226	0	265	199	0	99	1227	298	175	1368	180
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	3	3	3	2	1	3	5	14	0	5	0
Cap, veh/h	254	257		229	259		197	1583	379	223	1814	237
Arrive On Green	0.09	0.14	0.00	0.09	0.14	0.00	0.04	0.57	0.57	0.05	0.59	0.59
Sat Flow, veh/h	1810	1856	1572	1767	1870	0	1767	2776	665	1810	3085	403
Grp Volume(v), veh/h	210	226	0	265	199	0	99	761	764	175	764	784
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1767	1870	0	1767	1735	1706	1810	1735	1753
Q Serve(g_s), s	13.5	17.9	0.0	13.5	15.4	0.0	3.5	50.3	52.3	6.0	48.7	49.9
Cycle Q Clear(g_c), s	13.5	17.9	0.0	13.5	15.4	0.0	3.5	50.3	52.3	6.0	48.7	49.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.39	1.00		0.23
Lane Grp Cap(c), veh/h	254	257		229	259		197	989	973	223	1020	1031
V/C Ratio(X)	0.83	0.88		1.16	0.77		0.50	0.77	0.79	0.78	0.75	0.76
Avail Cap(c_a), veh/h	254	395		229	398		245	989	973	264	1020	1031
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	73.1	63.4	0.0	55.7	62.3	0.0	22.9	24.7	25.1	28.8	22.7	23.0
Incr Delay (d2), s/veh	19.5	13.4	0.0	108.3	4.7	0.0	2.0	5.7	6.4	12.3	5.0	5.3
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(50%),veh/ln	9.6	9.4	0.0	9.1	7.6	0.0	1.5	21.0	21.6	4.3	20.0	20.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.6	76.7	0.0	164.0	67.0	0.0	24.9	30.4	31.5	41.1	27.8	28.3
LnGrp LOS	E	E		F	E		C	C	C	D	C	C
Approach Vol, veh/h		436	A		464	A		1624			1723	
Approach Delay, s/veh		74.7			122.4			30.6			29.4	
Approach LOS		E			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	91.0	19.0	26.3	11.0	93.7	19.0	26.3
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	71.1	13.5	31.9	9.5	73.1	13.5	31.9
Max Q Clear Time (g_c+I1), s	8.0	54.3	15.5	19.9	5.5	51.9	15.5	17.4
Green Ext Time (p_c), s	0.1	13.6	0.0	0.9	0.1	16.7	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	44.6
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	208	0	605	5	0	3	283	933	1	0	1236	191
Future Volume (veh/h)	208	0	605	5	0	3	283	933	1	0	1236	191
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	1885	1900	1900	418	1900	1900	1737	1826	1900	1900	1841	1900
Adj Flow Rate, veh/h	219	0	0	5	0	3	298	982	1	0	1301	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	100	0	0	11	5	0	0	4	0
Cap, veh/h	278	0		12	0	7	362	1463	1290	381	2441	
Arrive On Green	0.08	0.00	0.00	0.01	0.00	0.01	0.07	0.80	0.80	0.00	0.70	0.00
Sat Flow, veh/h	3591	0	1610	1081	0	648	1654	1826	1610	1810	3589	0
Grp Volume(v), veh/h	219	0	0	8	0	0	298	982	1	0	1301	0
Grp Sat Flow(s),veh/h/ln	1795	0	1610	1729	0	0	1654	1826	1610	1810	1749	0
Q Serve(g_s), s	9.0	0.0	0.0	0.7	0.0	0.0	7.3	34.7	0.0	0.0	26.8	0.0
Cycle Q Clear(g_c), s	9.0	0.0	0.0	0.7	0.0	0.0	7.3	34.7	0.0	0.0	26.8	0.0
Prop In Lane	1.00		1.00	0.62		0.37	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	278	0		20	0	0	362	1463	1290	381	2441	
V/C Ratio(X)	0.79	0.00		0.41	0.00	0.00	0.82	0.67	0.00	0.00	0.53	
Avail Cap(c_a), veh/h	625	0		208	0	0	489	1463	1290	494	2441	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	68.0	0.0	0.0	73.6	0.0	0.0	15.8	6.4	3.0	0.0	10.9	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.0	13.0	0.0	0.0	8.1	2.5	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	0.4	0.0	0.0	6.3	11.0	0.0	0.0	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.0	0.0	0.0	86.7	0.0	0.0	23.9	8.9	3.0	0.0	11.7	0.0
LnGrp LOS	E	A		F	A	A	C	A	A	A	B	
Approach Vol, veh/h		219	A		8			1281			1301	A
Approach Delay, s/veh		73.0			86.7			12.4			11.7	
Approach LOS		E			F			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	25.7		17.1	15.5	110.2		7.2
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	7.5	74.4		26.1	21.5	62.4		18.0
Max Q Clear Time (g_c+I1), s	0.0	36.7		11.0	9.3	28.8		2.7
Green Ext Time (p_c), s	0.0	18.4		0.6	0.7	20.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	17.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	348	215	171	341	407	382
Future Volume (veh/h)	348	215	171	341	407	382
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	374	231	184	367	438	411
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	434	386	414	1038	1187	1006
Arrive On Green	0.24	0.24	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1781	1585	529	1721	1870	1585
Grp Volume(v), veh/h	374	231	190	361	438	411
Grp Sat Flow(s),veh/h/ln	1781	1585	548	1617	1870	1585
Q Serve(g_s), s	18.1	11.6	17.0	9.5	10.1	11.5
Cycle Q Clear(g_c), s	18.1	11.6	27.1	9.5	10.1	11.5
Prop In Lane	1.00	1.00	0.97			1.00
Lane Grp Cap(c), veh/h	434	386	427	1026	1187	1006
V/C Ratio(X)	0.86	0.60	0.45	0.35	0.37	0.41
Avail Cap(c_a), veh/h	722	643	427	1026	1187	1006
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	32.6	30.2	14.2	7.7	7.9	8.1
Incr Delay (d2), s/veh	5.8	1.5	3.3	0.9	0.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	4.4	2.7	3.1	3.7	14.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.4	31.6	17.5	8.7	8.7	9.4
LnGrp LOS	D	C	B	A	A	A
Approach Vol, veh/h	605			551	849	
Approach Delay, s/veh	35.8			11.7	9.0	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	62.6		27.4		62.6
Change Period (Y+Rc), s	5.5		5.5		5.5
Max Green Setting (Gmax), s	42.5		36.5		42.5
Max Q Clear Time (g_c+I1), s	29.1		20.1		13.5
Green Ext Time (p_c), s	5.6		1.8		9.7

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Future “No-Build” Intersection Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	3	5	4	0	42	46	1194	7	50	773	13
Future Volume (veh/h)	0	3	5	4	0	42	46	1194	7	50	773	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	1900	1900	1900	1900	1900	1900	1900	1841	1900	1826	1841	1900
Adj Flow Rate, veh/h	0	3	5	4	0	43	47	1231	7	52	797	13
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	5	4	0
Cap, veh/h	0	27	45	36	2	62	110	2811	16	165	2453	40
Arrive On Green	0.00	0.04	0.04	0.04	0.00	0.04	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	0	640	1067	83	54	1471	90	3245	18	151	2832	46
Grp Volume(v), veh/h	0	0	8	47	0	0	648	0	637	389	0	473
Grp Sat Flow(s),veh/h/ln	0	0	1708	1608	0	0	1681	0	1672	1362	0	1667
Q Serve(g_s), s	0.0	0.0	0.5	1.5	0.0	0.0	0.0	0.0	9.9	0.0	0.0	6.4
Cycle Q Clear(g_c), s	0.0	0.0	0.5	3.4	0.0	0.0	8.7	0.0	9.9	4.3	0.0	6.4
Prop In Lane	0.00		0.62	0.09		0.91	0.07		0.01	0.13		0.03
Lane Grp Cap(c), veh/h	0	0	72	100	0	0	1489	0	1448	1214	0	1444
V/C Ratio(X)	0.00	0.00	0.11	0.47	0.00	0.00	0.44	0.00	0.44	0.32	0.00	0.33
Avail Cap(c_a), veh/h	0	0	320	332	0	0	1489	0	1448	1214	0	1444
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	55.3	56.7	0.0	0.0	1.7	0.0	1.7	1.4	0.0	1.5
Incr Delay (d2), s/veh	0.0	0.0	0.7	3.4	0.0	0.0	0.9	0.0	1.0	0.7	0.0	0.6
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(50%),veh/ln	0.0	0.0	0.2	1.5	0.0	0.0	1.3	0.0	1.3	0.7	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	56.0	60.1	0.0	0.0	2.6	0.0	2.7	2.1	0.0	2.1
LnGrp LOS	A	A	E	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		8			47			1285			862	
Approach Delay, s/veh		56.0			60.1			2.6			2.1	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	109.5		10.5		109.5		10.5					
Change Period (Y+Rc), s	5.5		5.5		5.5		5.5					
Max Green Setting (Gmax), s	86.5		22.5		86.5		22.5					
Max Q Clear Time (g_c+I1), s	11.9		2.5		8.4		5.4					
Green Ext Time (p_c), s	28.4		0.0		15.3		0.1					

Intersection Summary												
HCM 6th Ctrl Delay		3.8										
HCM 6th LOS		A										

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	91	34	127	147	29	80	1080	107	29	679	80
Future Volume (veh/h)	136	91	34	127	147	29	80	1080	107	29	679	80
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	1900	1707	1841	1781	1781	1767	1826	1781	1544	1900	1870	1900
Adj Flow Rate, veh/h	143	96	0	134	155	0	84	1137	113	31	715	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	13	4	8	8	9	5	8	24	0	2	0
Cap, veh/h	209	199		234	183		462	2020	200	294	2055	241
Arrive On Green	0.08	0.12	0.00	0.06	0.10	0.00	0.03	0.65	0.65	0.02	0.64	0.64
Sat Flow, veh/h	1810	1707	1560	1697	1781	0	1739	3110	309	1810	3203	376
Grp Volume(v), veh/h	143	96	0	134	155	0	84	618	632	31	396	403
Grp Sat Flow(s),veh/h/ln	1810	1707	1560	1697	1781	0	1739	1692	1726	1810	1777	1803
Q Serve(g_s), s	10.6	7.9	0.0	9.5	12.8	0.0	2.5	30.2	30.4	0.9	15.4	15.5
Cycle Q Clear(g_c), s	10.6	7.9	0.0	9.5	12.8	0.0	2.5	30.2	30.4	0.9	15.4	15.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.18	1.00		0.21
Lane Grp Cap(c), veh/h	209	199		234	183		462	1099	1121	294	1140	1156
V/C Ratio(X)	0.69	0.48		0.57	0.85		0.18	0.56	0.56	0.11	0.35	0.35
Avail Cap(c_a), veh/h	209	361		234	353		516	1099	1121	365	1140	1156
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	62.1	0.0	57.4	66.1	0.0	9.3	14.5	14.5	11.6	12.4	12.4
Incr Delay (d2), s/veh	9.0	1.8	0.0	3.3	10.1	0.0	0.2	2.1	2.1	0.2	0.8	0.8
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(50%),veh/ln	5.3	3.5	0.0	0.6	6.3	0.0	0.9	11.4	11.6	0.3	6.1	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	63.9	0.0	60.7	76.2	0.0	9.5	16.6	16.6	11.7	13.3	13.2
LnGrp LOS	E	E		E	E		A	B	B	B	B	B
Approach Vol, veh/h		239	A		289	A		1334			830	
Approach Delay, s/veh		64.2			69.0			16.1			13.2	
Approach LOS		E			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	32.9	15.0	22.9	10.3	101.7	17.0	20.9
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	7.6	27.4	9.5	31.7	9.5	77.3	11.5	29.7
Max Q Clear Time (g_c+I1), s	2.9	32.4	11.5	9.9	4.5	17.5	12.6	14.8
Green Ext Time (p_c), s	0.0	21.8	0.0	0.4	0.1	11.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	0	207	3	0	3	367	1310	3	0	631	80
Future Volume (veh/h)	76	0	207	3	0	3	367	1310	3	0	631	80
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	1885	1900	1900	1159	1900	1900	1752	1841	1900	1900	1826	1900
Adj Flow Rate, veh/h	80	0	0	3	0	3	386	1379	3	0	664	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	50	0	0	10	4	0	0	5	0
Cap, veh/h	139	0		8	0	8	656	1551	1357	197	2534	
Arrive On Green	0.04	0.00	0.00	0.01	0.00	0.01	0.08	0.84	0.84	0.00	0.73	0.00
Sat Flow, veh/h	3591	0	1610	852	0	852	1668	1841	1610	1810	3561	0
Grp Volume(v), veh/h	80	0	0	6	0	0	386	1379	3	0	664	0
Grp Sat Flow(s),veh/h/ln	1795	0	1610	1704	0	0	1668	1841	1610	1810	1735	0
Q Serve(g_s), s	3.3	0.0	0.0	0.5	0.0	0.0	8.2	70.5	0.0	0.0	9.6	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	0.5	0.0	0.0	8.2	70.5	0.0	0.0	9.6	0.0
Prop In Lane	1.00		1.00	0.50		0.50	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	139	0		15	0	0	656	1551	1357	197	2534	
V/C Ratio(X)	0.58	0.00		0.40	0.00	0.00	0.59	0.89	0.00	0.00	0.26	
Avail Cap(c_a), veh/h	431	0		204	0	0	925	1551	1357	311	2534	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	70.9	0.0	0.0	73.9	0.0	0.0	4.1	7.4	1.9	0.0	6.7	0.0
Incr Delay (d2), s/veh	3.8	0.0	0.0	16.1	0.0	0.0	0.8	8.0	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.3	0.0	0.0	2.1	20.1	0.0	0.0	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.7	0.0	0.0	90.0	0.0	0.0	5.0	15.4	1.9	0.0	7.0	0.0
LnGrp LOS	E	A		F	A	A	A	B	A	A	A	
Approach Vol, veh/h		80	A		6			1768			664	A
Approach Delay, s/veh		74.7			90.0			13.1			7.0	
Approach LOS		E			F			B			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	81.9		11.3	16.8	115.1		6.8
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5
Max Green Setting (Gmax), s	9.5	82.5		18.0	35.5	56.5		18.0
Max Q Clear Time (g_c+I1), s	0.0	72.5		5.3	10.2	11.6		2.5
Green Ext Time (p_c), s	0.0	9.2		0.1	1.1	9.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

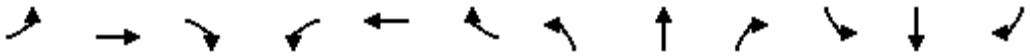
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	192	94	179	442	302	173
Future Volume (veh/h)	192	94	179	442	302	173
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	213	104	199	491	336	192
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	262	233	554	1417	1367	1158
Arrive On Green	0.15	0.15	0.73	0.73	0.73	0.73
Sat Flow, veh/h	1781	1585	666	2024	1870	1585
Grp Volume(v), veh/h	213	104	288	402	336	192
Grp Sat Flow(s),veh/h/ln	1781	1585	988	1617	1870	1585
Q Serve(g_s), s	10.4	5.4	9.0	8.0	5.3	3.3
Cycle Q Clear(g_c), s	10.4	5.4	14.3	8.0	5.3	3.3
Prop In Lane	1.00	1.00	0.69			1.00
Lane Grp Cap(c), veh/h	262	233	790	1182	1367	1158
V/C Ratio(X)	0.81	0.45	0.36	0.34	0.25	0.17
Avail Cap(c_a), veh/h	524	467	790	1182	1367	1158
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	37.2	35.0	5.7	4.3	4.0	3.7
Incr Delay (d2), s/veh	6.1	1.3	1.3	0.8	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	2.1	2.1	2.2	1.6	6.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.3	36.4	7.0	5.1	4.4	4.0
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	317			690	528	
Approach Delay, s/veh	41.0			5.9	4.3	
Approach LOS	D			A	A	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		71.3		18.7		71.3
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		52.5		26.5		52.5
Max Q Clear Time (g_c+I1), s		16.3		12.4		7.3
Green Ext Time (p_c), s		10.6		0.8		6.3

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	9	29	27	0	81	28	1193	18	163	1253	10
Future Volume (veh/h)	0	9	29	27	0	81	28	1193	18	163	1253	10
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	1900	1900	1900	1900	1900	1900	1900	1870	1900	1870	1856	1900
Adj Flow Rate, veh/h	0	9	30	28	0	83	29	1217	18	166	1279	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	2	3	0
Cap, veh/h	0	34	112	63	9	103	69	2722	40	239	1909	16
Arrive On Green	0.00	0.09	0.09	0.09	0.00	0.09	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	0	385	1284	293	105	1181	45	3317	49	244	2326	19
Grp Volume(v), veh/h	0	0	39	111	0	0	639	0	625	578	0	877
Grp Sat Flow(s),veh/h/ln	0	0	1669	1579	0	0	1718	0	1693	904	0	1685
Q Serve(g_s), s	0.0	0.0	2.6	5.6	0.0	0.0	0.0	0.0	12.6	36.3	0.0	23.3
Cycle Q Clear(g_c), s	0.0	0.0	2.6	8.2	0.0	0.0	11.2	0.0	12.6	48.9	0.0	23.3
Prop In Lane	0.00		0.77	0.25		0.75	0.05		0.03	0.29		0.01
Lane Grp Cap(c), veh/h	0	0	146	176	0	0	1441	0	1390	781	0	1383
V/C Ratio(X)	0.00	0.00	0.27	0.63	0.00	0.00	0.44	0.00	0.45	0.74	0.00	0.63
Avail Cap(c_a), veh/h	0	0	292	311	0	0	1441	0	1390	781	0	1383
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	51.1	53.6	0.0	0.0	2.9	0.0	3.1	7.8	0.0	4.0
Incr Delay (d2), s/veh	0.0	0.0	1.0	3.7	0.0	0.0	1.0	0.0	1.1	6.3	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.1	3.4	0.0	0.0	2.7	0.0	2.8	7.7	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	52.1	57.3	0.0	0.0	3.9	0.0	4.1	14.0	0.0	6.2
LnGrp LOS	A	A	D	E	A	A	A	A	A	B	A	A
Approach Vol, veh/h		39			111			1264			1455	
Approach Delay, s/veh		52.1			57.3			4.0			9.3	
Approach LOS		D			E			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	104.0	16.0	104.0	16.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	88.0	21.0	88.0	21.0
Max Q Clear Time (g_c+I1), s	14.6	4.6	50.9	10.2
Green Ext Time (p_c), s	27.7	0.1	26.8	0.4

Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A



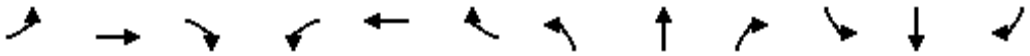
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	216	117	253	191	167	95	1176	285	168	1311	172
Future Volume (veh/h)	201	216	117	253	191	167	95	1176	285	168	1311	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		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	1900	1856	1856	1856	1870	1885	1856	1826	1693	1900	1826	1900
Adj Flow Rate, veh/h	216	232	0	272	205	0	102	1265	306	181	1410	185
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	3	3	3	2	1	3	5	14	0	5	0
Cap, veh/h	263	263		240	277		183	1551	369	210	1781	232
Arrive On Green	0.09	0.14	0.00	0.10	0.15	0.00	0.04	0.56	0.56	0.06	0.58	0.58
Sat Flow, veh/h	1810	1856	1572	1767	1870	0	1767	2779	662	1810	3087	401
Grp Volume(v), veh/h	216	232	0	272	205	0	102	782	789	181	787	808
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1767	1870	0	1767	1735	1707	1810	1735	1754
Q Serve(g_s), s	13.5	18.4	0.0	14.5	15.7	0.0	3.7	54.4	57.0	6.4	52.6	54.2
Cycle Q Clear(g_c), s	13.5	18.4	0.0	14.5	15.7	0.0	3.7	54.4	57.0	6.4	52.6	54.2
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.39	1.00		0.23
Lane Grp Cap(c), veh/h	263	263		240	277		183	968	953	210	1001	1012
V/C Ratio(X)	0.82	0.88		1.13	0.74		0.56	0.81	0.83	0.86	0.79	0.80
Avail Cap(c_a), veh/h	263	380		240	395		228	968	953	246	1001	1012
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	63.2	0.0	54.6	61.1	0.0	26.0	26.7	27.2	31.3	24.5	24.9
Incr Delay (d2), s/veh	18.5	15.6	0.0	98.0	4.4	0.0	2.6	7.2	8.2	22.8	6.2	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	0.0
%ile BackOfQ(50%),veh/ln	2.8	9.8	0.0	8.7	7.8	0.0	1.7	23.1	24.0	4.9	22.0	23.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	78.7	0.0	152.7	65.5	0.0	28.6	33.9	35.5	54.1	30.7	31.5
LnGrp LOS	E	E		F	E		C	C	D	D	C	C
Approach Vol, veh/h		448	A		477	A		1673			1776	
Approach Delay, s/veh		75.3			115.2			34.3			33.5	
Approach LOS		E			F			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	89.2	20.0	26.7	11.2	92.1	19.0	27.7
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	8.5	71.3	14.5	30.7	9.5	73.3	13.5	31.7
Max Q Clear Time (g_c+I1), s	8.4	59.0	16.5	20.4	5.7	56.2	15.5	17.7
Green Ext Time (p_c), s	0.1	10.6	0.0	0.8	0.1	14.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	47.0
HCM 6th LOS	D

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	0	623	5	0	3	292	961	1	0	1273	197
Future Volume (veh/h)	214	0	623	5	0	3	292	961	1	0	1273	197
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	1885	1900	1900	418	1900	1900	1737	1826	1900	1900	1841	1900
Adj Flow Rate, veh/h	225	0	0	5	0	3	307	1012	1	0	1340	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	100	0	0	11	5	0	0	4	0
Cap, veh/h	284	0		12	0	7	353	1460	1288	360	2428	
Arrive On Green	0.08	0.00	0.00	0.01	0.00	0.01	0.07	0.80	0.80	0.00	0.69	0.00
Sat Flow, veh/h	3591	0	1610	1081	0	648	1654	1826	1610	1810	3589	0
Grp Volume(v), veh/h	225	0	0	8	0	0	307	1012	1	0	1340	0
Grp Sat Flow(s),veh/h/ln	1795	0	1610	1729	0	0	1654	1826	1610	1810	1749	0
Q Serve(g_s), s	9.2	0.0	0.0	0.7	0.0	0.0	7.6	37.4	0.0	0.0	28.5	0.0
Cycle Q Clear(g_c), s	9.2	0.0	0.0	0.7	0.0	0.0	7.6	37.4	0.0	0.0	28.5	0.0
Prop In Lane	1.00		1.00	0.62		0.37	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	284	0		20	0	0	353	1460	1288	360	2428	
V/C Ratio(X)	0.79	0.00		0.41	0.00	0.00	0.87	0.69	0.00	0.00	0.55	
Avail Cap(c_a), veh/h	610	0		208	0	0	476	1460	1288	474	2428	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	67.9	0.0	0.0	73.6	0.0	0.0	18.6	6.8	3.0	0.0	11.4	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.0	13.0	0.0	0.0	12.4	2.7	0.0	0.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	0.4	0.0	0.0	9.2	12.0	0.0	0.0	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.9	0.0	0.0	86.7	0.0	0.0	31.1	9.5	3.0	0.0	12.3	0.0
LnGrp LOS	E	A		F	A	A	C	A	A	A	B	
Approach Vol, veh/h		225	A		8			1320			1340	A
Approach Delay, s/veh		72.9			86.7			14.5			12.3	
Approach LOS		E			F			B			B	

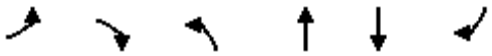
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	125.5		17.3	15.8	109.6		7.2				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	75.0		25.5	21.5	63.0		18.0				
Max Q Clear Time (g_c+I1), s	0.0	39.4		11.2	9.6	30.5		2.7				
Green Ext Time (p_c), s	0.0	18.7		0.6	0.7	20.4		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	18.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	359	222	176	351	419	394
Future Volume (veh/h)	359	222	176	351	419	394
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	386	239	189	377	451	424
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	445	396	401	1019	1174	995
Arrive On Green	0.25	0.25	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1781	1585	512	1708	1870	1585
Grp Volume(v), veh/h	386	239	191	375	451	424
Grp Sat Flow(s),veh/h/ln	1781	1585	518	1617	1870	1585
Q Serve(g_s), s	18.7	12.0	18.8	10.1	10.6	12.2
Cycle Q Clear(g_c), s	18.7	12.0	29.4	10.1	10.6	12.2
Prop In Lane	1.00	1.00	0.99			1.00
Lane Grp Cap(c), veh/h	445	396	405	1015	1174	995
V/C Ratio(X)	0.87	0.60	0.47	0.37	0.38	0.43
Avail Cap(c_a), veh/h	703	625	405	1015	1174	995
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	32.3	29.8	15.4	8.1	8.2	8.5
Incr Delay (d2), s/veh	6.9	1.5	3.9	1.0	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	4.6	2.9	3.3	4.0	14.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.2	31.3	19.3	9.2	9.2	9.8
LnGrp LOS	D	C	B	A	A	A
Approach Vol, veh/h	625			566	875	
Approach Delay, s/veh	36.2			12.6	9.5	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	62.0		28.0		62.0
Change Period (Y+Rc), s	5.5		5.5		5.5
Max Green Setting (Gmax), s	43.5		35.5		43.5
Max Q Clear Time (g_c+I1), s	31.4		20.7		14.2
Green Ext Time (p_c), s	5.3		1.8		10.1

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Future “Build” (With Improvements) Intersection Analysis

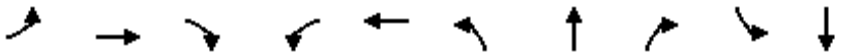
Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases	4		8		2		6
Permitted Phases		8		2		6	
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	23.5	26.5	26.5	24.5	24.5	23.5	23.5
Total Split (s)	27.0	27.0	27.0	93.0	93.0	93.0	93.0
Total Split (%)	22.5%	22.5%	22.5%	77.5%	77.5%	77.5%	77.5%
Maximum Green (s)	21.5	21.5	21.5	87.5	87.5	87.5	87.5
Yellow Time (s)	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
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	14.0	14.0	12.0	12.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0
90th %ile Green (s)	9.7	9.7	9.7	99.3	99.3	99.3	99.3
90th %ile Term Code	Hold	Gap	Gap	Coord	Coord	Coord	Coord
70th %ile Green (s)	7.4	7.4	7.4	101.6	101.6	101.6	101.6
70th %ile Term Code	Hold	Gap	Gap	Coord	Coord	Coord	Coord
50th %ile Green (s)	6.0	6.0	6.0	103.0	103.0	103.0	103.0
50th %ile Term Code	Hold	Min	Min	Coord	Coord	Coord	Coord
30th %ile Green (s)	6.0	6.0	6.0	103.0	103.0	103.0	103.0
30th %ile Term Code	Hold	Min	Min	Coord	Coord	Coord	Coord
10th %ile Green (s)	0.0	0.0	0.0	114.5	114.5	114.5	114.5
10th %ile Term Code	Skip	Skip	Skip	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	3	5	7	0	42	46	1255	15	50	798	13
Future Volume (veh/h)	0	3	5	7	0	42	46	1255	15	50	798	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	1900	1900	1900	1900	1900	1900	1900	1841	1900	1826	1841	1900
Adj Flow Rate, veh/h	0	3	5	7	0	43	47	1294	15	52	823	13
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	5	4	0
Cap, veh/h	0	27	46	41	3	59	104	2800	32	159	2440	38
Arrive On Green	0.00	0.04	0.04	0.04	0.00	0.04	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	0	640	1067	151	73	1378	83	3235	37	145	2819	44
Grp Volume(v), veh/h	0	0	8	50	0	0	686	0	670	397	0	491
Grp Sat Flow(s),veh/h/ln	0	0	1708	1602	0	0	1687	0	1668	1341	0	1667
Q Serve(g_s), s	0.0	0.0	0.5	2.0	0.0	0.0	0.0	0.0	10.8	0.0	0.0	6.7
Cycle Q Clear(g_c), s	0.0	0.0	0.5	3.7	0.0	0.0	9.6	0.0	10.8	4.4	0.0	6.7
Prop In Lane	0.00		0.62	0.14		0.86	0.07		0.02	0.13		0.03
Lane Grp Cap(c), veh/h	0	0	73	103	0	0	1492	0	1444	1195	0	1443
V/C Ratio(X)	0.00	0.00	0.11	0.49	0.00	0.00	0.46	0.00	0.46	0.33	0.00	0.34
Avail Cap(c_a), veh/h	0	0	306	319	0	0	1492	0	1444	1195	0	1443
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	55.2	56.7	0.0	0.0	1.7	0.0	1.8	1.4	0.0	1.5
Incr Delay (d2), s/veh	0.0	0.0	0.7	3.5	0.0	0.0	1.0	0.0	1.1	0.7	0.0	0.6
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(50%),veh/ln	0.0	0.0	0.2	1.6	0.0	0.0	1.5	0.0	1.5	0.7	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	55.9	60.3	0.0	0.0	2.8	0.0	2.9	2.1	0.0	2.2
LnGrp LOS	A	A	E	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		8			50			1356			888	
Approach Delay, s/veh		55.9			60.3			2.8			2.2	
Approach LOS		E			E			A			A	

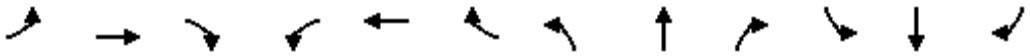
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	109.4		10.6		109.4		10.6					
Change Period (Y+Rc), s	5.5		5.5		5.5		5.5					
Max Green Setting (Gmax), s	87.5		21.5		87.5		21.5					
Max Q Clear Time (g_c+I1), s	12.8		2.5		8.7		5.7					
Green Ext Time (p_c), s	31.5		0.0		16.2		0.1					

Intersection Summary												
HCM 6th Ctrl Delay			4.0									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4			2		2	6	
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	15.0	35.5	35.5	15.0	34.5	15.0	31.5	31.5	15.0	41.5
Total Split (s)	17.0	36.6	36.6	20.0	39.6	15.0	78.4	78.4	15.0	78.4
Total Split (%)	11.3%	24.4%	24.4%	13.3%	26.4%	10.0%	52.3%	52.3%	10.0%	52.3%
Maximum Green (s)	11.5	31.1	31.1	14.5	34.1	9.5	72.9	72.9	9.5	72.9
Yellow Time (s)	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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
Walk Time (s)		7.0	7.0		7.0		7.0	7.0		7.0
Flash Dont Walk (s)		23.0	23.0		19.0		19.0	19.0		29.0
Pedestrian Calls (#/hr)		0	0		0		0	0		0
90th %ile Green (s)	11.5	31.1	31.1	14.5	34.1	9.5	73.0	73.0	9.4	72.9
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Coord	Coord	Gap	Coord
70th %ile Green (s)	11.5	27.2	27.2	14.5	30.2	9.7	78.0	78.0	8.3	76.6
70th %ile Term Code	Max	Hold	Hold	Max	Gap	Gap	Coord	Coord	Gap	Coord
50th %ile Green (s)	11.5	24.4	24.4	13.7	26.6	8.5	82.0	82.0	7.9	81.4
50th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord
30th %ile Green (s)	11.5	22.3	22.3	12.1	22.9	7.5	86.4	86.4	7.2	86.1
30th %ile Term Code	Max	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Gap	Coord
10th %ile Green (s)	10.4	18.2	18.2	9.9	17.7	6.3	105.4	105.4	0.0	93.6
10th %ile Term Code	Gap	Hold	Hold	Gap	Gap	Gap	Coord	Coord	Skip	Coord

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



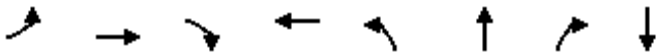
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	99	34	173	161	77	86	1101	113	57	679	80
Future Volume (veh/h)	136	99	34	173	161	77	86	1101	113	57	679	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	1900	1707	1841	1781	1781	1767	1826	1781	1544	1900	1870	1900
Adj Flow Rate, veh/h	143	104	0	182	169	0	91	1159	119	60	715	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	13	4	8	8	9	5	8	24	0	2	0
Cap, veh/h	210	203		228	199		455	2148	830	299	2026	238
Arrive On Green	0.08	0.12	0.00	0.07	0.11	0.00	0.03	0.63	0.63	0.03	0.63	0.63
Sat Flow, veh/h	1810	1707	1560	3291	1781	0	1739	3385	1309	1810	3203	376
Grp Volume(v), veh/h	143	104	0	182	169	0	91	1159	119	60	396	403
Grp Sat Flow(s),veh/h/ln	1810	1707	1560	1646	1781	0	1739	1692	1309	1810	1777	1803
Q Serve(g_s), s	10.4	8.6	0.0	8.2	14.0	0.0	2.8	28.5	5.5	1.7	15.8	15.9
Cycle Q Clear(g_c), s	10.4	8.6	0.0	8.2	14.0	0.0	2.8	28.5	5.5	1.7	15.8	15.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	210	203		228	199		455	2148	830	299	1124	1140
V/C Ratio(X)	0.68	0.51		0.80	0.85		0.20	0.54	0.14	0.20	0.35	0.35
Avail Cap(c_a), veh/h	210	354		318	405		508	2148	830	358	1124	1140
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	62.0	0.0	68.8	65.4	0.0	9.8	15.2	11.0	11.9	13.0	13.0
Incr Delay (d2), s/veh	8.7	2.0	0.0	9.4	9.7	0.0	0.2	1.0	0.4	0.3	0.9	0.9
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(50%),veh/ln	5.3	3.8	0.0	3.7	6.9	0.0	1.0	10.6	1.7	0.7	6.3	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.1	64.0	0.0	78.2	75.1	0.0	10.1	16.2	11.4	12.2	13.9	13.9
LnGrp LOS	E	E		E	E		B	B	B	B	B	B
Approach Vol, veh/h		247	A		351	A		1369			859	
Approach Delay, s/veh		63.5			76.7			15.4			13.8	
Approach LOS		E			E			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	100.7	15.9	23.4	10.4	100.4	17.0	22.2
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	72.9	14.5	31.1	9.5	72.9	11.5	34.1
Max Q Clear Time (g_c+I1), s	3.7	30.5	10.2	10.6	4.8	17.9	12.4	16.0
Green Ext Time (p_c), s	0.0	21.4	0.2	0.4	0.1	11.8	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

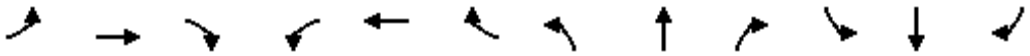
Notes

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



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT	Ø1
Protected Phases	4	4		8	5	2		6	1
Permitted Phases			4		2		2		
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	5.0
Minimum Split (s)	23.5	23.5	23.5	23.5	15.0	23.5	23.5	24.5	15.0
Total Split (s)	23.5	23.5	23.5	23.5	43.0	88.0	88.0	60.0	15.0
Total Split (%)	15.7%	15.7%	15.7%	15.7%	28.7%	58.7%	58.7%	40.0%	10%
Maximum Green (s)	18.0	18.0	18.0	18.0	37.5	82.5	82.5	54.5	9.5
Yellow Time (s)	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
Lead/Lag					Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None
Walk Time (s)								7.0	
Flash Dont Walk (s)								12.0	
Pedestrian Calls (#/hr)								0	
90th %ile Green (s)	15.3	15.3	15.3	6.0	36.1	112.2	112.2	70.6	0.0
90th %ile Term Code	Gap	Gap	Gap	Min	Gap	Coord	Coord	Coord	Skip
70th %ile Green (s)	10.7	10.7	10.7	0.0	24.2	128.3	128.3	98.6	0.0
70th %ile Term Code	Gap	Gap	Gap	Skip	Gap	Coord	Coord	Coord	Skip
50th %ile Green (s)	9.2	9.2	9.2	0.0	18.2	129.8	129.8	106.1	0.0
50th %ile Term Code	Gap	Gap	Gap	Skip	Gap	Coord	Coord	Coord	Skip
30th %ile Green (s)	7.7	7.7	7.7	0.0	12.2	131.3	131.3	113.6	0.0
30th %ile Term Code	Gap	Gap	Gap	Skip	Gap	Coord	Coord	Coord	Skip
10th %ile Green (s)	6.0	6.0	6.0	0.0	8.7	133.0	133.0	118.8	0.0
10th %ile Term Code	Min	Min	Min	Skip	Gap	Coord	Coord	Coord	Skip

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 150
Offset: 107 (71%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	0	207	3	0	3	367	1322	3	0	662	95
Future Volume (veh/h)	82	0	207	3	0	3	367	1322	3	0	662	95
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	1885	1900	1900	1159	1900	1900	1752	1841	1900	1900	1826	1900
Adj Flow Rate, veh/h	86	0	0	3	0	3	386	1392	3	0	697	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	50	0	0	10	4	0	0	5	0
Cap, veh/h	140	0		8	0	8	638	1550	1356	188	2533	
Arrive On Green	0.04	0.00	0.00	0.01	0.00	0.01	0.08	0.84	0.84	0.00	0.73	0.00
Sat Flow, veh/h	3591	0	1610	852	0	852	1668	1841	1610	1810	3561	0
Grp Volume(v), veh/h	86	0	0	6	0	0	386	1392	3	0	697	0
Grp Sat Flow(s),veh/h/ln	1795	0	1610	1704	0	0	1668	1841	1610	1810	1735	0
Q Serve(g_s), s	3.5	0.0	0.0	0.5	0.0	0.0	8.2	73.4	0.0	0.0	10.2	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.5	0.0	0.0	8.2	73.4	0.0	0.0	10.2	0.0
Prop In Lane	1.00		1.00	0.50		0.50	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	140	0		15	0	0	638	1550	1356	188	2533	
V/C Ratio(X)	0.62	0.00		0.40	0.00	0.00	0.60	0.90	0.00	0.00	0.28	
Avail Cap(c_a), veh/h	431	0		204	0	0	929	1550	1356	301	2533	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	71.0	0.0	0.0	73.9	0.0	0.0	4.3	7.7	1.9	0.0	6.8	0.0
Incr Delay (d2), s/veh	4.4	0.0	0.0	16.1	0.0	0.0	0.9	8.6	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.3	0.0	0.0	2.1	20.9	0.0	0.0	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.3	0.0	0.0	90.0	0.0	0.0	5.2	16.3	1.9	0.0	7.1	0.0
LnGrp LOS	E	A		F	A	A	A	B	A	A	A	
Approach Vol, veh/h		86	A		6			1781			697	A
Approach Delay, s/veh		75.3			90.0			13.8			7.1	
Approach LOS		E			F			B			A	

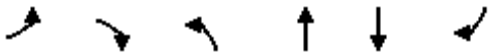
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	131.8		11.3	16.8	115.0		6.8				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	82.5		18.0	37.5	54.5		18.0				
Max Q Clear Time (g_c+I1), s	0.0	75.4		5.5	10.2	12.2		2.5				
Green Ext Time (p_c), s	0.0	6.7		0.2	1.2	10.1		0.0				

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

Notes

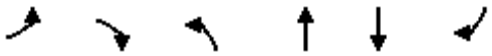
User approved volume balancing among the lanes for turning movement.

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



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Protected Phases	7			2	6	
Permitted Phases		4	2			6
Minimum Initial (s)	5.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	15.0	23.5	23.5	23.5	29.5	29.5
Total Split (s)	33.0	33.0	57.0	57.0	57.0	57.0
Total Split (%)	36.7%	36.7%	63.3%	63.3%	63.3%	63.3%
Maximum Green (s)	27.5	27.5	51.5	51.5	51.5	51.5
Yellow Time (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	5.0	5.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min
Walk Time (s)					7.0	7.0
Flash Dont Walk (s)					17.0	17.0
Pedestrian Calls (#/hr)					0	0
90th %ile Green (s)	22.6	22.6	56.4	56.4	56.4	56.4
90th %ile Term Code	Gap	Hold	Coord	Coord	Coord	Coord
70th %ile Green (s)	19.1	19.1	59.9	59.9	59.9	59.9
70th %ile Term Code	Gap	Hold	Coord	Coord	Coord	Coord
50th %ile Green (s)	16.6	16.6	62.4	62.4	62.4	62.4
50th %ile Term Code	Gap	Hold	Coord	Coord	Coord	Coord
30th %ile Green (s)	14.1	14.1	64.9	64.9	64.9	64.9
30th %ile Term Code	Gap	Hold	Coord	Coord	Coord	Coord
10th %ile Green (s)	10.5	10.5	68.5	68.5	68.5	68.5
10th %ile Term Code	Gap	Hold	Coord	Coord	Coord	Coord

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	200	105	183	442	302	176
Future Volume (veh/h)	200	105	183	442	302	176
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	222	117	203	491	336	196
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	272	242	554	1392	1356	1149
Arrive On Green	0.15	0.15	0.73	0.73	0.73	0.73
Sat Flow, veh/h	1781	1585	670	2005	1870	1585
Grp Volume(v), veh/h	222	117	288	406	336	196
Grp Sat Flow(s),veh/h/ln	1781	1585	972	1617	1870	1585
Q Serve(g_s), s	10.9	6.1	9.5	8.3	5.4	3.5
Cycle Q Clear(g_c), s	10.9	6.1	14.9	8.3	5.4	3.5
Prop In Lane	1.00	1.00	0.71			1.00
Lane Grp Cap(c), veh/h	272	242	773	1172	1356	1149
V/C Ratio(X)	0.82	0.48	0.37	0.35	0.25	0.17
Avail Cap(c_a), veh/h	544	484	773	1172	1356	1149
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	36.9	34.9	6.1	4.5	4.1	3.9
Incr Delay (d2), s/veh	5.9	1.5	1.4	0.8	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	2.4	2.2	2.3	1.7	6.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.8	36.4	7.4	5.4	4.6	4.2
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	339			694	532	
Approach Delay, s/veh	40.6			6.2	4.4	
Approach LOS	D			A	A	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	70.8		19.2		70.8
Change Period (Y+Rc), s	5.5		5.5		5.5
Max Green Setting (Gmax), s	51.5		27.5		51.5
Max Q Clear Time (g_c+I1), s	16.9		12.9		7.4
Green Ext Time (p_c), s	10.5		0.9		6.3

Intersection Summary		
HCM 6th Ctrl Delay	13.1	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	236	21	4	306	43	9
Future Vol, veh/h	236	21	4	306	43	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	257	23	4	333	47	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	280	0	610	269
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1283	-	458	770
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	720	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1283	-	456	770
Mov Cap-2 Maneuver	-	-	-	-	456	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	491	-	-	1283	-
HCM Lane V/C Ratio	0.115	-	-	0.003	-
HCM Control Delay (s)	13.3	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	248	21	4	345	65	9
Future Vol, veh/h	248	21	4	345	65	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	270	23	4	375	71	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	293	0	665	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	383	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1269	-	425	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1269	-	423	757
Mov Cap-2 Maneuver	-	-	-	-	423	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	686	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	447	-	-	1269	-
HCM Lane V/C Ratio	0.18	-	-	0.003	-
HCM Control Delay (s)	14.8	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	27	1273	13	0	885
Future Vol, veh/h	0	27	1273	13	0	885
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	175	-	-
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	29	1384	14	0	962

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	692	0	-	-	-
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	386	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	386	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	386	-
HCM Lane V/C Ratio	-	0.076	-
HCM Control Delay (s)	-	15.1	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	0.2	-

Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	9	36	0	28	1239	163	1323
Future Volume (vph)	9	36	0	28	1239	163	1323
Turn Type	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4		8		2		6
Permitted Phases		8		2		6	
Detector Phase	4	8	8	2	2	6	6
Switch Phase							
Minimum Initial (s)	6.0	6.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	23.5	26.5	26.5	24.5	24.5	23.5	23.5
Total Split (s)	26.5	26.5	26.5	93.5	93.5	93.5	93.5
Total Split (%)	22.1%	22.1%	22.1%	77.9%	77.9%	77.9%	77.9%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0		0.0		0.0		0.0
Total Lost Time (s)	5.5		5.5		5.5		5.5
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	9.2		9.2		99.8		99.8
Actuated g/C Ratio	0.08		0.08		0.83		0.83
v/c Ratio	0.25		0.62		0.52		0.90
Control Delay	25.4		34.0		4.1		17.2
Queue Delay	0.0		0.0		0.0		0.0
Total Delay	25.4		34.0		4.1		17.2
LOS	C		C		A		B
Approach Delay	25.4		34.0		4.1		17.2
Approach LOS	C		C		A		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 12.2	Intersection LOS: B
Intersection Capacity Utilization 104.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: SR 42/US 23 (Moreland Avenue) & Eastland Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	9	29	36	0	81	28	1239	24	163	1323	10
Future Volume (veh/h)	0	9	29	36	0	81	28	1239	24	163	1323	10
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	1900	1900	1900	1900	1900	1900	1900	1870	1900	1870	1856	1900
Adj Flow Rate, veh/h	0	9	30	37	0	83	29	1264	24	166	1350	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	2	3	0
Cap, veh/h	0	37	123	75	10	102	66	2682	51	220	1891	15
Arrive On Green	0.00	0.10	0.10	0.10	0.00	0.10	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	0	385	1284	367	105	1059	42	3302	62	224	2328	19
Grp Volume(v), veh/h	0	0	39	120	0	0	667	0	650	615	0	911
Grp Sat Flow(s),veh/h/ln	0	0	1669	1531	0	0	1716	0	1691	886	0	1685
Q Serve(g_s), s	0.0	0.0	2.6	6.6	0.0	0.0	0.0	0.0	14.1	48.4	0.0	26.5
Cycle Q Clear(g_c), s	0.0	0.0	2.6	9.2	0.0	0.0	12.5	0.0	14.1	62.5	0.0	26.5
Prop In Lane	0.00		0.77	0.31		0.69	0.04		0.04	0.27		0.01
Lane Grp Cap(c), veh/h	0	0	160	186	0	0	1425	0	1373	758	0	1369
V/C Ratio(X)	0.00	0.00	0.24	0.64	0.00	0.00	0.47	0.00	0.47	0.81	0.00	0.67
Avail Cap(c_a), veh/h	0	0	292	307	0	0	1425	0	1373	758	0	1369
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)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	50.2	53.2	0.0	0.0	3.3	0.0	3.4	10.4	0.0	4.6
Incr Delay (d2), s/veh	0.0	0.0	0.8	3.7	0.0	0.0	1.1	0.0	1.2	9.3	0.0	2.6
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(50%),veh/ln	0.0	0.0	1.1	3.7	0.0	0.0	3.3	0.0	3.3	10.6	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	51.0	56.8	0.0	0.0	4.4	0.0	4.6	19.6	0.0	7.2
LnGrp LOS	A	A	D	E	A	A	A	A	A	B	A	A
Approach Vol, veh/h		39			120			1317			1526	
Approach Delay, s/veh		51.0			56.8			4.5			12.2	
Approach LOS		D			E			A			B	

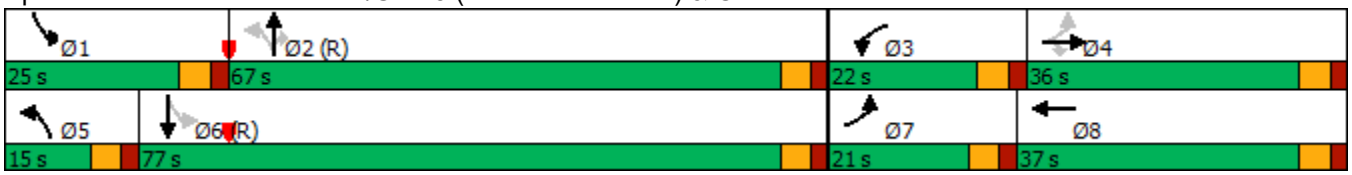
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	103.0	17.0	103.0	17.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	88.0	21.0	88.0	21.0
Max Q Clear Time (g_c+I1), s	16.1	4.6	64.5	11.2
Green Ext Time (p_c), s	29.8	0.1	19.4	0.4

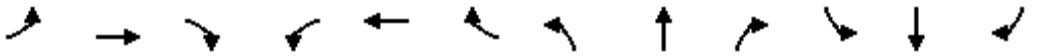
Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	201	239	117	288	202	100	1192	301	246	1311
Future Volume (vph)	201	239	117	288	202	100	1192	301	246	1311
Turn Type	pm+pt	NA	Perm	Prot	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases	4		4			2		2	6	
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	15.0	35.5	35.5	15.0	34.5	15.0	31.5	31.5	15.0	41.5
Total Split (s)	21.0	36.0	36.0	22.0	37.0	15.0	67.0	67.0	25.0	77.0
Total Split (%)	14.0%	24.0%	24.0%	14.7%	24.7%	10.0%	44.7%	44.7%	16.7%	51.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	46.4	30.9	30.9	16.1	31.5	70.8	61.9	61.9	86.5	72.1
Actuated g/C Ratio	0.31	0.21	0.21	0.11	0.21	0.47	0.41	0.41	0.58	0.48
v/c Ratio	0.91	0.68	0.29	0.85	1.12	0.71	0.90	0.49	0.95	0.97
Control Delay	80.5	65.2	7.6	86.6	132.3	54.4	50.2	19.3	85.5	54.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	65.2	7.6	86.6	132.3	54.4	50.2	19.3	85.5	54.4
LOS	F	E	A	F	F	D	D	B	F	D
Approach Delay		58.6			113.3		44.6			58.8
Approach LOS		E			F		D			E

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 62.1	Intersection LOS: E
Intersection Capacity Utilization 99.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: SR 42/US 23 (Moreland Avenue) & Custer Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	239	117	288	202	204	100	1192	301	246	1311	172
Future Volume (veh/h)	201	239	117	288	202	204	100	1192	301	246	1311	172
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	1900	1856	1856	1856	1870	1885	1856	1826	1693	1900	1826	1900
Adj Flow Rate, veh/h	216	257	0	310	217	0	108	1282	324	265	1410	185
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	3	3	3	2	1	3	5	14	0	5	0
Cap, veh/h	287	287		354	289		178	1728	715	289	1704	222
Arrive On Green	0.10	0.15	0.00	0.10	0.15	0.00	0.04	0.50	0.50	0.10	0.55	0.55
Sat Flow, veh/h	1810	1856	1572	3428	1870	0	1767	3469	1434	1810	3087	401
Grp Volume(v), veh/h	216	257	0	310	217	0	108	1282	324	265	787	808
Grp Sat Flow(s),veh/h/ln	1810	1856	1572	1714	1870	0	1767	1735	1434	1810	1735	1754
Q Serve(g_s), s	15.1	20.4	0.0	13.4	16.6	0.0	4.5	44.1	22.0	12.2	55.7	57.4
Cycle Q Clear(g_c), s	15.1	20.4	0.0	13.4	16.6	0.0	4.5	44.1	22.0	12.2	55.7	57.4
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	287	287		354	289		178	1728	715	289	958	968
V/C Ratio(X)	0.75	0.90		0.87	0.75		0.61	0.74	0.45	0.92	0.82	0.83
Avail Cap(c_a), veh/h	287	377		377	393		214	1728	715	349	958	968
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	62.2	0.0	66.3	60.6	0.0	29.1	30.0	24.4	35.1	27.5	27.9
Incr Delay (d2), s/veh	10.7	19.1	0.0	19.1	5.3	0.0	3.5	2.9	2.1	25.4	7.9	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	11.1	0.0	6.8	8.3	0.0	2.0	18.3	7.9	7.1	23.8	24.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	81.3	0.0	85.4	65.9	0.0	32.6	32.9	26.5	60.5	35.4	36.3
LnGrp LOS	E	F		F	E		C	C	C	E	D	D
Approach Vol, veh/h		473	A		527	A		1714			1860	
Approach Delay, s/veh		71.0			77.4			31.6			39.4	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	80.2	21.0	28.7	12.0	88.3	21.0	28.7
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	14.5	61.5	16.5	30.5	9.5	71.5	15.5	31.5
Max Q Clear Time (g_c+I1), s	17.4	46.1	15.4	22.4	6.5	59.4	17.1	18.6
Green Ext Time (p_c), s	0.3	12.4	0.1	0.8	0.1	10.4	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

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

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	NBR	SBT	Ø1
Lane Configurations									
Traffic Volume (vph)	231	0	623	0	292	996	1	1296	
Future Volume (vph)	231	0	623	0	292	996	1	1296	
Turn Type	Split	NA	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases	4	4		8	5	2		6	1
Permitted Phases			4		2		2		
Detector Phase	4	4	4	8	5	2	2	6	
Switch Phase									
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	15.0	5.0
Minimum Split (s)	23.5	23.5	23.5	23.5	15.0	23.5	23.5	24.5	15.0
Total Split (s)	31.0	31.0	31.0	23.5	25.0	80.5	80.5	70.5	15.0
Total Split (%)	20.7%	20.7%	20.7%	15.7%	16.7%	53.7%	53.7%	47.0%	10%
Yellow Time (s)	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
Lost Time Adjust (s)	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	
Lead/Lag					Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	25.5	25.5	25.5	6.0	111.2	111.2	111.2	69.0	
Actuated g/C Ratio	0.17	0.17	0.17	0.04	0.74	0.74	0.74	0.46	
v/c Ratio	0.42	0.42	1.15	0.05	0.69	0.78	0.00	1.00	
Control Delay	60.8	60.8	109.3	0.5	46.9	18.2	0.0	49.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	60.8	60.8	109.3	0.5	46.9	18.2	0.0	49.3	
LOS	E	E	F	A	D	B	A	D	
Approach Delay		96.2		0.5		24.7		49.3	
Approach LOS		F		A		C		D	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 98 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 51.5	Intersection LOS: D
Intersection Capacity Utilization 99.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: SR 42/US 23 (Moreland Avenue) & McDonough Boulevard/Private Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	0	623	5	0	3	292	996	1	0	1296	209
Future Volume (veh/h)	231	0	623	5	0	3	292	996	1	0	1296	209
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	1885	1900	1900	418	1900	1900	1737	1826	1900	1900	1841	1900
Adj Flow Rate, veh/h	243	0	0	5	0	3	307	1048	1	0	1364	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	100	0	0	11	5	0	0	4	0
Cap, veh/h	302	0		12	0	7	344	1451	1279	332	2407	
Arrive On Green	0.08	0.00	0.00	0.01	0.00	0.01	0.07	0.79	0.79	0.00	0.69	0.00
Sat Flow, veh/h	3591	0	1610	1081	0	648	1654	1826	1610	1810	3589	0
Grp Volume(v), veh/h	243	0	0	8	0	0	307	1048	1	0	1364	0
Grp Sat Flow(s),veh/h/ln	1795	0	1610	1729	0	0	1654	1826	1610	1810	1749	0
Q Serve(g_s), s	10.0	0.0	0.0	0.7	0.0	0.0	7.8	41.5	0.0	0.0	29.9	0.0
Cycle Q Clear(g_c), s	10.0	0.0	0.0	0.7	0.0	0.0	7.8	41.5	0.0	0.0	29.9	0.0
Prop In Lane	1.00		1.00	0.62		0.37	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	302	0		20	0	0	344	1451	1279	332	2407	
V/C Ratio(X)	0.80	0.00		0.41	0.00	0.00	0.89	0.72	0.00	0.00	0.57	
Avail Cap(c_a), veh/h	610	0		208	0	0	444	1451	1279	445	2407	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	67.5	0.0	0.0	73.6	0.0	0.0	20.1	7.4	3.2	0.0	12.0	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.0	13.0	0.0	0.0	16.6	3.1	0.0	0.0	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	0.0	0.4	0.0	0.0	9.5	13.6	0.0	0.0	10.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.5	0.0	0.0	86.7	0.0	0.0	36.7	10.6	3.2	0.0	12.9	0.0
LnGrp LOS	E	A		F	A	A	D	B	A	A	B	
Approach Vol, veh/h		243	A		8			1356			1364	A
Approach Delay, s/veh		72.5			86.7			16.5			12.9	
Approach LOS		E			F			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	0.0	124.7		18.1	16.0	108.7		7.2				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	75.0		25.5	19.5	65.0		18.0				
Max Q Clear Time (g_c+I1), s	0.0	43.5		12.0	9.8	31.9		2.7				
Green Ext Time (p_c), s	0.0	18.4		0.7	0.6	21.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

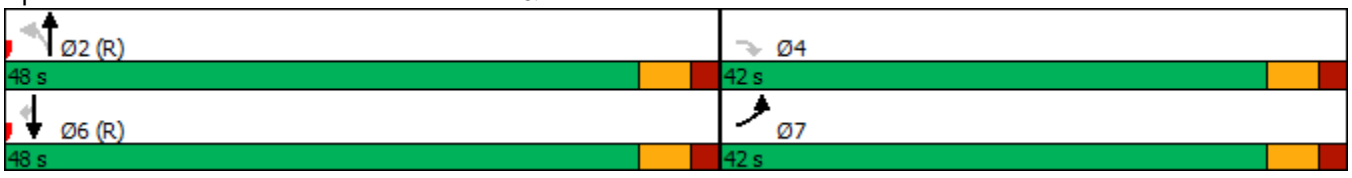
User approved volume balancing among the lanes for turning movement.

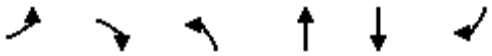
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	365	230	188	351	419	403
Future Volume (vph)	365	230	188	351	419	403
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	7			2	6	
Permitted Phases		4	2			6
Detector Phase	7	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	15.0	23.5	23.5	23.5	29.5	29.5
Total Split (s)	42.0	42.0	48.0	48.0	48.0	48.0
Total Split (%)	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	25.5	25.5		53.5	53.5	53.5
Actuated g/C Ratio	0.28	0.28		0.59	0.59	0.59
v/c Ratio	0.78	0.40		0.43	0.41	0.39
Control Delay	40.5	4.8		12.3	12.4	2.3
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	40.5	4.8		12.3	12.4	2.3
LOS	D	A		B	B	A
Approach Delay	26.7			12.3	7.5	
Approach LOS	C			B	A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 71.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Bouldercrest Road & Eastland Road





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	365	230	188	351	419	403
Future Volume (veh/h)	365	230	188	351	419	403
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	392	247	202	377	451	433
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	452	402	397	1009	1167	989
Arrive On Green	0.25	0.25	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1781	1585	508	1702	1870	1585
Grp Volume(v), veh/h	392	247	202	377	451	433
Grp Sat Flow(s),veh/h/ln	1781	1585	508	1617	1870	1585
Q Serve(g_s), s	18.9	12.4	21.1	10.3	10.8	12.7
Cycle Q Clear(g_c), s	18.9	12.4	31.9	10.3	10.8	12.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	452	402	397	1009	1167	989
V/C Ratio(X)	0.87	0.61	0.51	0.37	0.39	0.44
Avail Cap(c_a), veh/h	722	643	397	1009	1167	989
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	32.1	29.7	16.3	8.3	8.4	8.8
Incr Delay (d2), s/veh	6.6	1.5	4.6	1.1	1.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	4.7	3.3	3.4	4.1	15.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.7	31.2	20.9	9.4	9.4	10.2
LnGrp LOS	D	C	C	A	A	B
Approach Vol, veh/h	639			579	884	
Approach Delay, s/veh	35.8			13.4	9.8	
Approach LOS	D			B	A	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	61.6		28.4		61.6
Change Period (Y+Rc), s	5.5		5.5		5.5
Max Green Setting (Gmax), s	42.5		36.5		42.5
Max Q Clear Time (g_c+I1), s	33.9		20.9		14.7
Green Ext Time (p_c), s	4.3		1.9		10.0

Intersection Summary	
HCM 6th Ctrl Delay	18.7
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	677	58	10	621	32	7
Future Vol, veh/h	677	58	10	621	32	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	736	63	11	675	35	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	799	0	1465	768
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	697	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	824	-	141	402
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	494	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	824	-	138	402
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	484	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	36.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	156	-	-	824	-
HCM Lane V/C Ratio	0.272	-	-	0.013	-
HCM Control Delay (s)	36.5	-	-	9.4	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	728	58	10	643	50	7
Future Vol, veh/h	728	58	10	643	50	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	791	63	11	699	54	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	854	0	1544	823
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	785	-	126	373
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	482	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	785	-	123	373
Mov Cap-2 Maneuver	-	-	-	-	123	-
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	471	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	53.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	134	-	-	785	-
HCM Lane V/C Ratio	0.462	-	-	0.014	-
HCM Control Delay (s)	53.1	-	-	9.7	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	2.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	20	1572	37	0	1717
Future Vol, veh/h	0	20	1572	37	0	1717
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	175	-	-
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	22	1709	40	0	1866

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	855	0	-	-	-
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	302	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	302	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	302	-
HCM Lane V/C Ratio	-	0.072	-
HCM Control Delay (s)	-	17.8	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	0.2	-

Traffic Volume Worksheets

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

1. SR 42 @ Eastland Rd

A.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) **Northbound**					SR 42/US 23 (Moreland Avenue) **Southbound**					Eastland Road **Eastbound**					Eastland Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	34	878	5	917	0	37	568	10	615	0	0	2	4	6	0	3	0	31	34
Adjusted Existing 2021 Volumes:	0	45	1159	7	1211	0	49	750	13	812	0	0	3	5	8	0	4	0	41	45
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	46	1194	7	1247	0	50	773	13	836	0	0	3	5	8	0	4	0	42	46
Proposed Site Trips:	0	0	61	8	69	0	0	25	0	25	0	0	0	0	0	0	3	0	0	3
Future 2024 Traffic Volumes:	0	46	1255	15	1316	0	50	798	13	861	0	0	3	5	8	0	7	0	42	49

P.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) **Northbound**					SR 42/US 23 (Moreland Avenue) **Southbound**					Eastland Road **Eastbound**					Eastland Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	24	1025	15	1064	0	140	1076	9	1225	0	0	8	25	33	0	23	0	70	93
Adjusted Existing 2021 Volumes:	0	27	1158	17	1202	0	158	1216	10	1384	0	0	9	28	37	0	26	0	79	105
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	28	1193	18	1239	0	163	1253	10	1426	0	0	9	29	38	0	27	0	81	108
Proposed Site Trips:	0	0	46	6	52	0	0	70	0	70	0	0	0	0	0	0	9	0	0	9
Future 2024 Traffic Volumes:	0	28	1239	24	1291	0	163	1323	10	1496	0	0	9	29	38	0	36	0	81	117

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

2. SR 42 @ Custer Ave

A.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) Northbound					SR 42/US 23 (Moreland Avenue) Southbound					Custer Avenue Eastbound					Custer Avenue Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	59	794	79	932	0	21	499	59	579	0	100	67	25	192	0	93	108	21	222
Adjusted Existing 2021 Volumes:	0	78	1048	104	1230	0	28	659	78	765	0	132	88	33	253	0	123	143	28	294
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	80	1080	107	1267	0	29	679	80	788	0	136	91	34	261	0	127	147	29	303
Proposed Site Trips:	0	6	21	6	33	0	28	0	0	28	0	0	8	0	8	0	46	14	48	108
Future 2024 Traffic Volumes:	0	86	1101	113	1300	0	57	679	80	816	0	136	99	34	269	0	173	161	77	411

P.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) Northbound					SR 42/US 23 (Moreland Avenue) Southbound					Custer Avenue Eastbound					Custer Avenue Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	81	1010	245	1336	0	144	1126	148	1418	0	173	186	101	460	0	218	164	143	525
Adjusted Existing 2021 Volumes:	0	92	1141	277	1510	0	163	1272	167	1602	0	195	210	114	519	0	246	185	162	593
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	95	1176	285	1556	0	168	1311	172	1651	0	201	216	117	534	0	253	191	167	611
Proposed Site Trips:	0	5	16	16	37	0	78	0	0	78	0	0	23	0	23	0	35	11	37	83
Future 2024 Traffic Volumes:	0	100	1192	301	1593	0	246	1311	172	1729	0	201	239	117	557	0	288	202	204	694

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

3. SR 42 @ McDonough Blvd

A.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) **Northbound**					SR 42/US 23 (Moreland Avenue) **Southbound**					McDonough Boulevard **Eastbound**					xx Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	270	963	2	1235	0	0	464	59	523	0	56	0	152	208	0	2	0	2	4
Adjusted Existing 2021 Volumes:	0	356	1271	3	1630	0	0	612	78	690	0	74	0	201	275	0	3	0	3	6
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	367	1310	3	1680	0	0	631	80	711	0	76	0	207	283	0	3	0	3	6
Proposed Site Trips:	0	0	12	0	12	0	0	31	15	46	0	6	0	0	6	0	0	0	0	0
Future 2024 Traffic Volumes:	0	367	1322	3	1692	0	0	662	95	757	0	82	0	207	289	0	3	0	3	6

P.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) **Northbound**					SR 42/US 23 (Moreland Avenue) **Southbound**					McDonough Boulevard **Eastbound**					xx Road **Westbound**				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	250	826	1	1077	0	0	1094	169	1263	0	184	0	535	719	0	4	0	3	7
Adjusted Existing 2021 Volumes:	0	283	933	1	1217	0	0	1236	191	1427	0	208	0	605	813	0	5	0	3	8
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	292	961	1	1254	0	0	1273	197	1470	0	214	0	623	837	0	5	0	3	8
Proposed Site Trips:	0	0	35	0	35	0	0	23	12	35	0	17	0	0	17	0	0	0	0	0
Future 2024 Traffic Volumes:	0	292	996	1	1289	0	0	1296	209	1505	0	231	0	623	854	0	5	0	3	8

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

4. Bouldercrest @ Eastland

A.M. Peak Hour

	Bouldercrest Road Northbound					Bouldercrest Road Southbound					Eastland Road Eastbound					- Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	132	325	0	457	0	0	222	127	349	0	141	0	69	210	0	0	0	0	0
Adjusted Existing 2021 Volumes:	0	174	429	0	603	0	0	293	168	461	0	186	0	91	277	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	179	442	0	621	0	0	302	173	475	0	192	0	94	286	0	0	0	0	0
Proposed Site Trips:	0	4	0	0	4	0	0	0	3	3	0	8	0	11	19	0	0	0	0	0
Future 2024 Traffic Volumes:	0	183	442	0	625	0	0	302	176	478	0	200	0	105	305	0	0	0	0	0

P.M. Peak Hour

	Bouldercrest Road Northbound					Bouldercrest Road Southbound					Eastland Road Eastbound					- Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	151	302	0	453	0	0	360	338	698	0	308	0	190	498	0	0	0	0	0
Adjusted Existing 2021 Volumes:	0	171	341	0	512	0	0	407	382	789	0	348	0	215	563	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	176	351	0	527	0	0	419	394	813	0	359	0	222	581	0	0	0	0	0
Proposed Site Trips:	0	12	0	0	12	0	0	0	9	9	0	6	0	8	14	0	0	0	0	0
Future 2024 Traffic Volumes:	0	188	351	0	539	0	0	419	403	822	0	365	0	230	595	0	0	0	0	0

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

5. Custer Ave @ Drwy 3 (E)

A.M. Peak Hour

	Site Driveway 3 (E) Northbound					- Southbound					Custer Avenue Eastbound					Custer Avenue Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	0	0	0	0	0	0	0	0	0	0	0	167	0	167	0	0	222	0	222
Adjusted Existing 2021 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	220	0	220	0	0	293	0	293
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	227	0	227	0	0	302	0	302
Proposed Site Trips:	0	43	0	9	52	0	0	0	0	0	0	0	9	21	30	0	4	4	0	8
Future 2024 Traffic Volumes:	0	43	0	9	52	0	0	0	0	0	0	0	236	21	257	0	4	306	0	310

P.M. Peak Hour

	Site Driveway 3 (E) Northbound					- Southbound					Custer Avenue Eastbound					Custer Avenue Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	0	0	0	0	0	0	0	0	0	0	0	575	0	575	0	0	525	0	525
Adjusted Existing 2021 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	650	0	650	0	0	593	0	593
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	670	0	670	0	0	611	0	611
Proposed Site Trips:	0	32	0	7	39	0	0	0	0	0	0	0	7	58	65	0	10	10	0	20
Future 2024 Traffic Volumes:	0	32	0	7	39	0	0	0	0	0	0	0	677	58	735	0	10	621	0	631

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

6. Custer Ave @ Drwy 2 (W)

A.M. Peak Hour

	Site Driveway 2 (W) Northbound					- Southbound					Custer Avenue Eastbound					Custer Avenue Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	0	0	0	0	0	0	0	0	0	0	0	167	0	167	0	0	222	0	222
Adjusted Existing 2021 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	220	0	220	0	0	293	0	293
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	227	0	227	0	0	302	0	302
Proposed Site Trips:	0	65	0	9	74	0	0	0	0	0	0	0	21	21	42	0	4	43	0	47
Future 2024 Traffic Volumes:	0	65	0	9	74	0	0	0	0	0	0	0	248	21	269	0	4	345	0	349

P.M. Peak Hour

	Site Driveway 2 (W) Northbound					- Southbound					Custer Avenue Eastbound					Custer Avenue Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	0	0	0	0	0	0	0	0	0	0	0	575	0	575	0	0	525	0	525
Adjusted Existing 2021 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	650	0	650	0	0	593	0	593
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	670	0	670	0	0	611	0	611
Proposed Site Trips:	0	50	0	7	57	0	0	0	0	0	0	0	58	58	116	0	10	32	0	42
Future 2024 Traffic Volumes:	0	50	0	7	57	0	0	0	0	0	0	0	728	58	786	0	10	643	0	653

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%

21-005 Moreland Avenue and Custer Avenue DRI
Traffic Volumes

A&R Engineering
June 2021

7. SR 42 @ Drwy 1 (RIRO)

A.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) Northbound					SR 42/US 23 (Moreland Avenue) Southbound					- Eastbound					Site Driveway 1 (RIRO) Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	0	932	0	932	0	0	617	0	617	0	0	0	0	0	0	0	0	0	0
Adjusted Existing 2021 Volumes:	0	0	1230	0	1230	0	0	814	0	814	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	1267	0	1267	0	0	839	0	839	0	0	0	0	0	0	0	0	0	0
Proposed Site Trips:	0	0	6	13	19	0	0	46	0	46	0	0	0	0	0	0	0	0	27	27
Future 2024 Traffic Volumes:	0	0	1273	13	1286	0	0	885	0	885	0	0	0	0	0	0	0	0	27	27

P.M. Peak Hour

	SR 42/US 23 (Moreland Avenue) Northbound					SR 42/US 23 (Moreland Avenue) Southbound					- Eastbound					Site Driveway 1 (RIRO) Westbound				
Condition	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot	U	L	T	R	Tot
Existing 2021 Volumes during Covid-19:	0	0	1336	0	1336	0	0	1445	0	1445	0	0	0	0	0	0	0	0	0	0
Adjusted Existing 2021 Volumes:	0	0	1510	0	1510	0	0	1633	0	1633	0	0	0	0	0	0	0	0	0	0
Growth Factor (%):	1	1	1	1		1	1	1	1		1	1	1	1		1	1	1	1	
No-Build 2024 Volumes:	0	0	1556	0	1556	0	0	1682	0	1682	0	0	0	0	0	0	0	0	0	0
Proposed Site Trips:	0	0	16	37	53	0	0	35	0	35	0	0	0	0	0	0	0	0	20	20
Future 2024 Traffic Volumes:	0	0	1572	37	1609	0	0	1717	0	1717	0	0	0	0	0	0	0	0	20	20

Number of Years =	3
Growth Factor (%) =	1
AM Covid-19 Factor:	32%
PM Covid-19 Factor:	13%