APPENDIX H

CIRCULATION ANALYSIS

NEWPARK PLACE
CIRCULATION ANALYSIS

NEWARK, CALIFORNIA

APRIL 19, 2021

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CITY OF NEWARK

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TABLE OF CONTENTS

1.0 INTRODUCTION AND SUMMARY 4
1.1 INTRODUCTION 4
1.2 SUMMARY 5
2.0 SETTING 5
2.1 ROADWAY NETWORK 5
2.2 TRANSIT SERVICE 9
2.3 BICYCLE FACILITIES 9
2.4 PEDESTRIAN FACILITIES 9
3.0 STUDY SCOPE AND APPROACH 9
3.1 ANALYSIS CRITERIA 9
3.2 LEVEL OF SERVICE (LOS) 9
3.3 QUEUEING ANALYSIS 10
3.4 VEHICLE MILES TRAVELED (VMT) 10
3.5 TRIP GENERATION 11
3.6 TRIP DISTRIBUTION AND ASSIGNMENT 11
3.7 STUDY INTERSECTIONS 15
3.8 INTERSECTION OPERATING CONDITIONS – EXISTING CONDITIONS 15
3.9 POLICY CONFORMANCE ANALYSIS 19
4.0 EXISTING PLUS PROJECT CONDITIONS 19
4.1 LOS INTERSECTION OPERATING CONDITIONS – EXISTING PLUS PROJECT CONDITIONS 23
4.2 ADDITIONAL INTERSECTION IMPROVEMENTS 23
4.2.0 MOWRY AVE & STREET 'A' (NORTH) INTERSECTION (INT-1) 23
4.2.1 NEWPARK MALL RD & STREET 'A' (NORTH) INTERSECTION (INT-2) 24
4.2.2 PARCEL A RESIDENTIAL DRIVEWAY 24
4.2.3 CEDAR BLVD & NORTH MAGAZINE ST INTERSECTION 24
5.0 STREET 'A' (NORTH) QUEUEING AND COORDINATION ANALYSIS 25
6.0 STREET 'A' (NORTH) ROUNDABOUT FEASIBLITY 26
6.1 ROUNDABOUT RIGHT OF WAY CONSTRAINTS 26
6.2 ROUNDABOUT CAPACITY 28
6.3 ROUNDABOUT STORAGE CAPACITY CONCERNS 28
7.0 CAMUTCD SIGNAL WARRANTS 29

8.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN 29

9.0 CONSTRUCTION SCHEDULE 29

9.1 IMPLEMENTATION 30

9.2 PHASED DEVELOPMENT AND REQUIREMENTS 30

9.3 PHASE A 30

9.4 PHASE D1/D4 31

9.5 ADJACENT DRIVEWAY AT INT-3 31

10.0 CONCLUSIONS AND RECOMMENDATIONS 32

Appendix A - TRAFFIC Count Survey Data .....

Appendix B - TRAFFIC Count Data from Newark Area 4 Level of Service Update dated June 14, 2019 .....

Appendix C - Synchro Level of Service (LOS) Reports .....

Appendix D - Trip Approximation, Generation and Distribution Methodology memo .....

Appendix E- Trip Generation Table .....

Appendix F- CAMUTCD Signal Warrant 3 analysis .....

1.0 INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

This report presents the findings of the circulation analysis performed by Sandis Civil Engineers for the NewPark Mall redevelopment project (Project) in Newark, CA. The NewPark Place Specific Plan previously prepared for the City of Newark defines the extents of the Project site in addition to providing guidance in the form of plans, policies, development standards, and design guidelines for the project. Environmental review and approval was determined through the General Plan EIR and other supplemental reports. This circulation analysis is not intended to directly assess environmental impact or clearance.

The Project site includes the existing NewPark Mall along with surrounding surface parking facilities and related peripheral commercial developments. The overall Project will redevelop the mall and provide infill development to the associated surrounding areas and parking facilities. The approved site land uses include: Retail, Office, Hotel and Residential.

Traffic will access the site via four access points including Street 'A' (North), North Magazine St, South Magazine St & Street 'A' (South). The roadway network throughout the site will be reconstructed to conform to the configurations shown in the project's Tentative Map.

This study has been prepared to confirm that the proposed roadway network is configured appropriately to accommodate the anticipated project traffic volumes. The NewPark Place Master Plan is the Project's basis for this analysis. Additionally, this report addresses the requirements of Mobility Policy M-3 of the NewPark Place Specific Plan and examines the following explicitly specified criteria:

1. Feasibility and utility of constructing a roundabout at the Street 'A' (North)/NewPark Mall Rd intersection.

2. Roadway capacity requirements for the segment of Street 'A' (North) between Mowry Avenue and NewPark Mall Rd, including consideration of a roundabout at NewPark Mall Rd, potential queuing of vehicles at the NewPark Mall Rd/Street 'A' (North) intersection back onto Mowry Avenue, and opportunities to value engineer the segment while retaining its complete street features.

3. Operational analyses at the following intersections:
    - Street 'A' (North) & Mowry Ave (INT-1)
    - Street 'A' (North) & NewPark Mall Rd (INT-2)

In addition to the above Specific Plan Requirements and as requested by the City of Newark in their 4/17/2020 dated comment letter, this report also analyzes circulation and level of service at the following intersections:

- North Magazine St & Cedar Blvd (INT-3)
- North Magazine St & NewPark Mall Rd (INT-4)
- South Magazine St & Cedar Blvd (INT-5)
- South Magazine St & NewPark Mall Rd (INT-6)
- Street 'A' (South) & Balentine Dr (INT-7)
- Street 'A' (South) & NewPark Mall Rd (INT-8)

These eight intersections are considered to be the study intersections for this report.

1.2 SUMMARY

The Project is forecast to generate 3,662 AM Peak Hour trips, 6,357 PM Peak Hour trips and 7,389 Saturday Peak Hour trips. This circulation analysis found that all eight of the study intersections would operate acceptably under Ex+Project volumes and Project roadway configurations. The potential for vehicles to backup beyond the available storage capacity along Street 'A' (North) between Mowry Ave and NewPark Mall Rd was found to be remedied by coordinating the signal timing of the two adjacent intersections. Additionally, the construction of a roundabout at the NewPark Mall Rd/Street 'A' (North) intersection (INT-2) was found to be infeasible due to the lack of available right-of-way and the potential for vehicles to backup into the Mowry Ave/ Street 'A' (North) intersection (INT-1).

2.0 SETTING

This section provides a brief overview of the existing transportation network surrounding the site including vehicle, transit, bicycle & pedestrian facilities.

2.1 ROADWAY NETWORK

Mowry Avenue is an arterial roadway to the Northwest of the project. For the purposes of this report Mowry Avenue was assumed to run East-West. In the vicinity of the project, it has three travel lanes in each direction. Mowry Avenue provides access to I-880, Central Fremont and other local destinations. Access between the site and Mowry Avenue is provided via Street 'A' (North).

Cedar Boulevard is an arterial roadway Southwest of the project site. For the purposes of this report Cedar Boulevard was assumed to run North-South. In the vicinity of the project it has, two lanes in each direction. Cedar Boulevard provides access to Central Newark and other local destinations. Access between Cedar Boulevard and project site is provided by North Magazine Street & South Magazine Street as well as various project driveways.

Stevenson Boulevard in an arterial roadway Southeast of the project site. For the purposes of this report Stevenson Boulevard was assumed to run East-West. In the vicinity of the project, Stevenson Boulevard has three lanes in each direction. Stevenson Boulevard provides access to Fremont as well as other local destinations. Access to Stevenson Boulevard is provided via Balentine Drive.

Balentine Drive is a collector roadway Southeast of the project site. Balentine Drive runs both north-south and east-west and makes a 90-degree turn at its intersection with Street A (South). Balentine Drive has two travel lanes in each direction. Balentine Drive provides a connection from the project site to Stevenson Boulevard and Cedar Boulevard.

Interstate-880 is a Caltrans freeway to the Northeast of the project. For the purposes of this report Interstate-880 was assumed to run North-South. In the vicinity of the project, Interstate-880 has four travel lanes in each direction. Interstate-880 provides regional access to adjacent cities such as Hayward, Oakland & San Jose.

North Magazine Street is collector roadway within the project site. It was assumed to run East-West. North Magazine Street provides a direct connection between NewPark Mall Road and Cedar Boulevard which lies to the west of the project.

South Magazine Street is collector roadway within the project site. It was assumed to run East-West. South Magazine Street provides a direct connection between NewPark Mall Road and Cedar Boulevard which lies to the west of the project.

NewPark Mall Road is a collector roadway within the project site. The road takes a circular path around the project site and hence runs either North-South or East-West depending on location. NewPark Mall Road provides connection between different points within the site.

Figure 1 shows the surrounding existing roadway network while **Figure 2** shows the proposed site plan for the project along with the location and letter designation of each parcel.

Figure 1: Existing Roadway Network

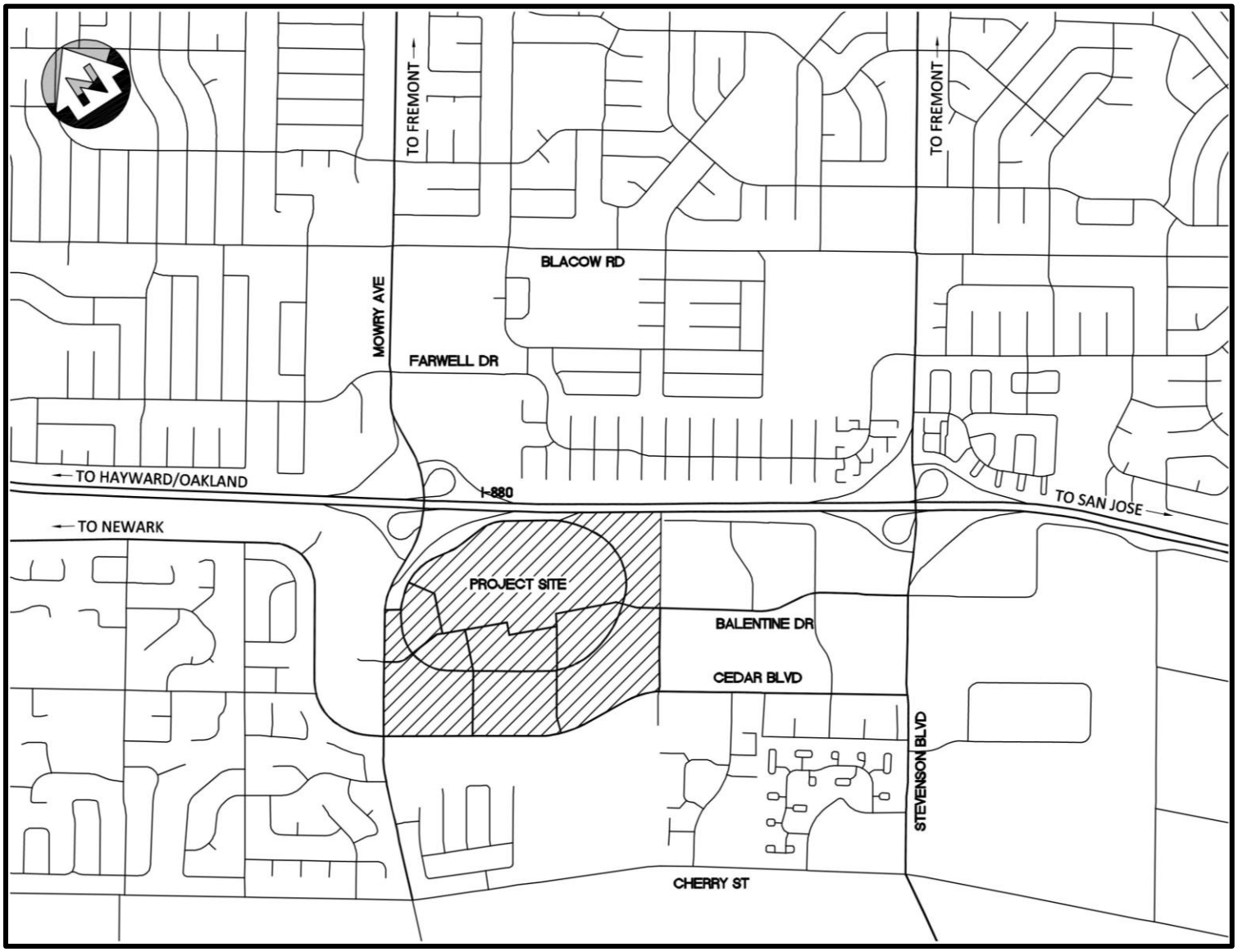
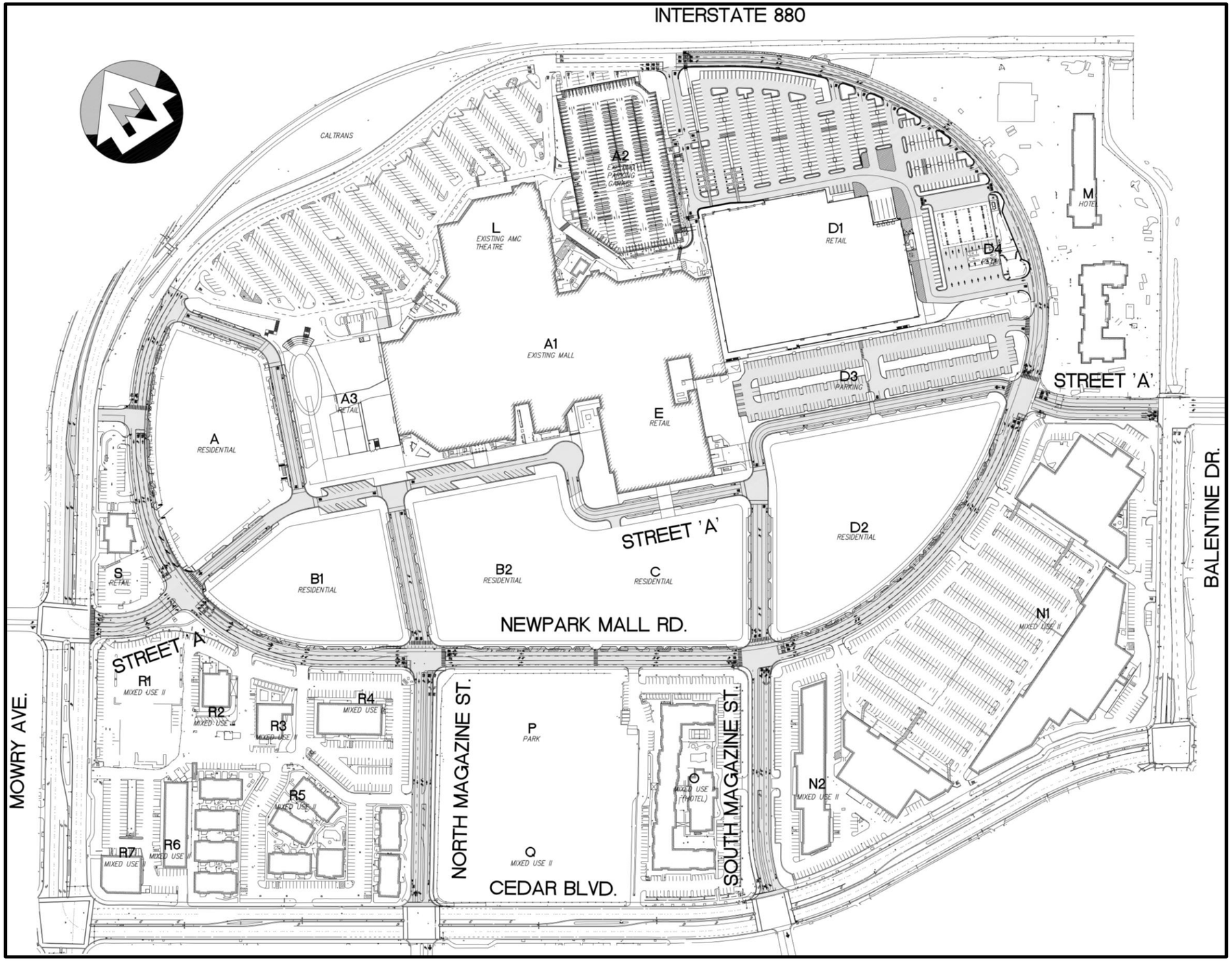


Figure 2:
Proposed Site Plan



2.2 TRANSIT SERVICE

The site is served directly by AC Transit bus service. There are currently 3 local bus lines that stop on the North side of the existing mall near the Sears building. These are lines 200, 216 & 232. These lines provide service to surrounding destinations including Fremont and Union City BART Stations. For further details regarding the existing transit facilities and services in the area, see the ***NewPark Place Transit Sub-Master Plan***.

2.3 BICYCLE FACILITIES

The existing NewPark Mall does not have dedicated bicycle facilities. There are no bike lanes connecting the mall to the external roadway network. In the vicinity of the site a class II bike facility exists on Balentine Dr, a class II/III bike facility exists on Cedar Blvd and a Class III bike route exists along Mowry Ave. The proposed project will add bicycle facilities where possible to the proposed internal roadway network. Bike racks and lockers will be provided throughout the site. For details regarding bicycle facilities in the area, see the ***NewPark Place Mobility Sub-Master Plan***.

2.4 PEDESTRIAN FACILITIES

The existing NewPark Mall does not have dedicated pedestrian facilities. There are no sidewalks connecting the mall to the external sidewalk network. The proposed project will add pedestrian facilities where possible to the proposed internal roadway network. For details regarding pedestrian facilities in the area, see the ***NewPark Place Mobility Sub-Master Plan***.

3.0 STUDY SCOPE AND APPROACH

3.1 ANALYSIS CRITERIA

The following criteria was developed for use in this report in conjunction with the City of Newark to assess the circulation and operational performance of the roadway and intersections. Traffic increases or changes were found to have a potential impact if:

- The intersection HCM 6 Level of Service (LOS) Category dropped below LOS D under Ex + Project Conditions
- SimTraffic modelling indicated that queueing would exceed available storage capacity

As stated in Section 1.1, this report was prepared to satisfy Mobility Policy M-3 of the NewPark Place Specific Plan. For this reason, the following conditions are not included in the analysis:

- Existing LOS at all study intersections
- Ex + Background Conditions
- Background + No Project Conditions
- 2040 Conditions
- VMT was not analyzed as part of this circulatory analysis and may be provided in separate environmental analysis

3.2 LEVEL OF SERVICE (LOS)

HCM 6 LOS was used as the primary performance metric for intersections in this analysis. LOS is defined by the Highway Capacity Manual 6th Edition (HCM) and is a widely accepted metric for intersection performance based on control delay per vehicle. LOS is based on average control delay for signalized and all-way stop controlled intersection and based on delay for worst

movement for two-way stop-controlled intersection. Trafficware Synchro V10 modelling software was used to analyze LOS. **Tables 1A, 1B & 1C** below summarize the HCM criteria for each LOS category.

Table 1A: Automobile Level of Service by Control Delay (HCM Exhibit 19-8) for Signalized Intersections

Control Delay (sec/veh)	Level of Service Category
≤10	A
>10-20	B
>20-35	C
>35-55	D
>55-80	E
>80	F

Table 1B: Automobile Level of Service by Control Delay (HCM Exhibit 20-2) for Two-Way Stop Controlled Intersections

Control Delay (sec/veh)	Level of Service Category
0-10	A
>10-15	B
>15-25	C
>25-35	D
>35-50	E
>50	F

Table 1C: Automobile Level of Service by Control Delay (HCM Exhibit 21-8) for All-Way Stop Controlled Intersections

Control Delay (sec/veh)	Level of Service Category
0-10	A
>10-15	B
>15-25	C
>25-35	D
>35-50	E
>50	F

3.3 QUEUEING ANALYSIS

Queue lengths at study intersections were analyzed and visually observed using Simtraffic modelling software to determine if queue lengths are likely to exceed storage capacity at any location.

3.4 VEHICLE MILES TRAVELED (VMT)

In July 2020, SB743 established vehicle miles travelled (VMT) as the primary metric for traffic impacts in environmental impact reports. However, this metric cannot effectively be used to assess circulatory performance.

This report is not intended to address or review environmental impacts and solely addresses Mobility Policy M-3. VMT analysis may be provided by others, as determined by the City.

3.5 TRIP GENERATION

The Institute of Transportation Engineers' (ITE), Trip Generation Manual, 10th Edition was used to forecast the anticipated vehicle trips related to the site. This publication provides trip rates for various land uses and allows future trips to be forecast for various facility types.

Trip Internalization accounts for users within the site that visit multiple developments and land uses within a single trip. Internalization for the project was accounted for by using guidance in the ITE Trip Generation Handbook and NCHRP 684 spreadsheet tool.

Alternative transportation modes are available to and from the site including bus, bicycling, and walking. It is believed that collectively these alternative transportation modes will reduce the actual projects trips at least 5% below the otherwise forecasted volumes. A 5% multi-modal reduction was applied to the project trips to account for this effect.

Due to the complex nature of the Project site and trip internalization calculations, the complete trip generation methodology can be found in Appendix D and the complete trip generation tables can be found in Appendix E. **Table 2** summarizes the result of total Project trip generation.

Table 2: Project Trip Generation Results

	AM		PM		SAT	
	In	Out	In	Out	In	Out
Traffic Volumes	2107	1555	3178	3179	3892	3497
Total	3662		6357		7389	

*A 5% reduction was assumed based on input from the City

3.6 TRIP DISTRIBUTION AND ASSIGNMENT

Trips associated with the site trip generation were distributed throughout the local/surrounding roadway network using various trip distribution assumptions. Reasonable trip distribution assumptions for each site access point were developed in conjunction with the City of Newark. Below is a summary of the percent of project traffic that was assumed to utilize each site access point.

- 46% of the project traffic was Attributed to the **Street 'A' (North)** access point.
- 20% of the project traffic was attributed to the **Street 'A' (South)** access point.
- 3% of the project traffic was attributed to the **North Magazine St** Access point.
- 3% of the project traffic was attributed to the **South Magazine St** Access point.
- 1% to 5% of the project traffic was attributed to each of the external driveways providing direct access from one of the surrounding arterials. (Totaling to 28%)

See **Figure 3A** (Inbound) and **Figure 3B** (Outbound) for the results of this distribution. The complete details of the Project's distribution methodology can be found in Appendix D.

For the external intersections as defined below, approximated existing volumes were used for any movement not associated with site access (entering or exiting). For movements that are associated with the site, the approximated existing volumes were removed and replaced by the proposed project forecasted trips. These intersections include:

- Mowry Ave. & Street 'A' (North) (INT-1)
- Cedar Blvd. & N Magazine St. (INT-3)
- Cedar Blvd. & S Magazine St. (INT-5)
- Balentine Dr & Street 'A' (South). (INT-7)

For the intersections along the Ring Road (NewPark Mall Rd), trip volumes were based entirely on the results of project specific trip generation/distribution. This is because these intersections serve only project site and are therefore assumed to only carry project related traffic volumes. These intersections include:

- NewPark Mall Rd & Street 'A' (North) (INT-2)
- North Magazine St & NewPark Mall Rd (INT-4)
- South Magazine St & NewPark Mall Rd (INT-6)
- Street 'A' (South) & NewPark Mall Rd (INT-8)

Figure 3A Local Trip Distribution (Inbound)

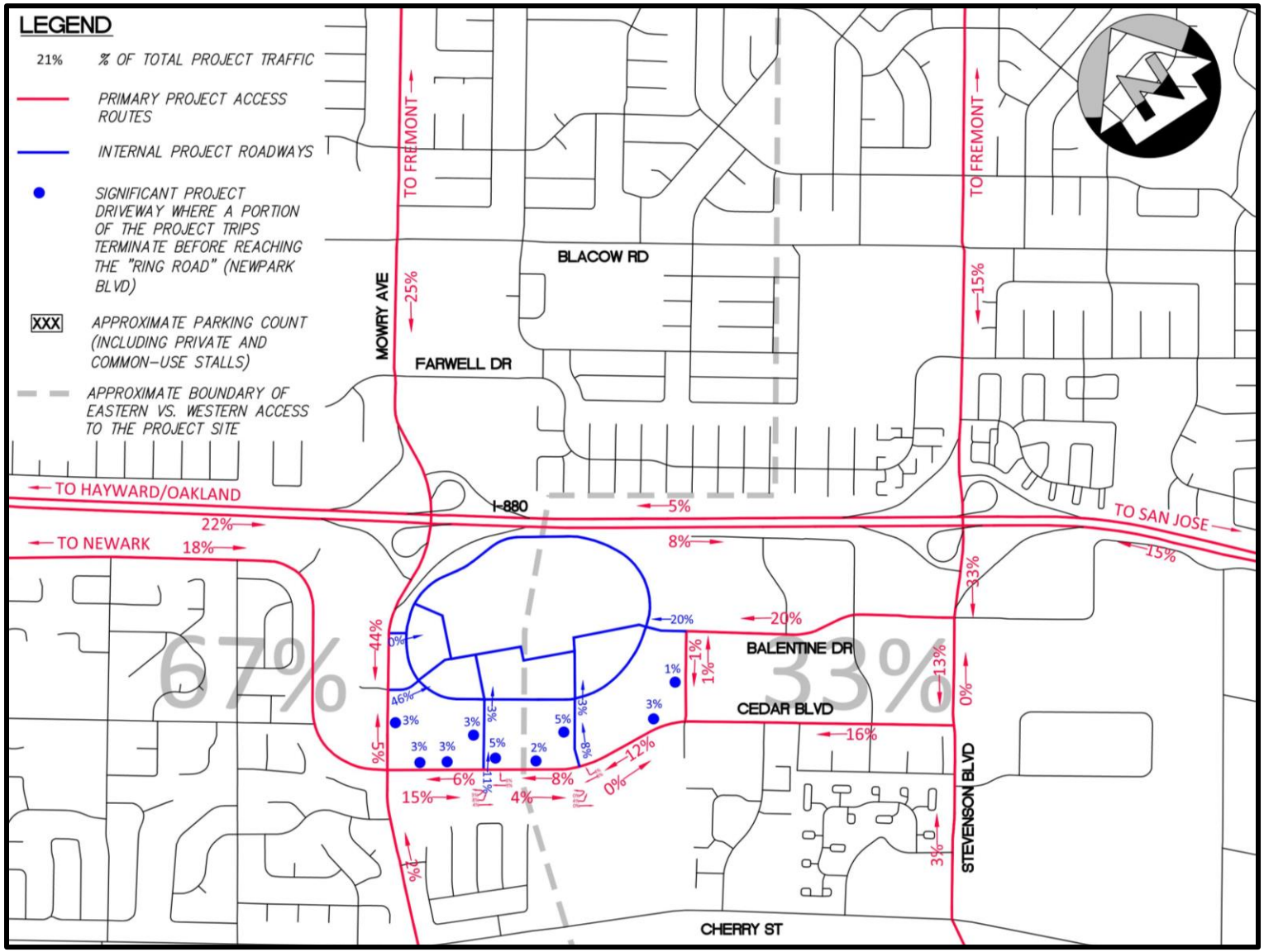
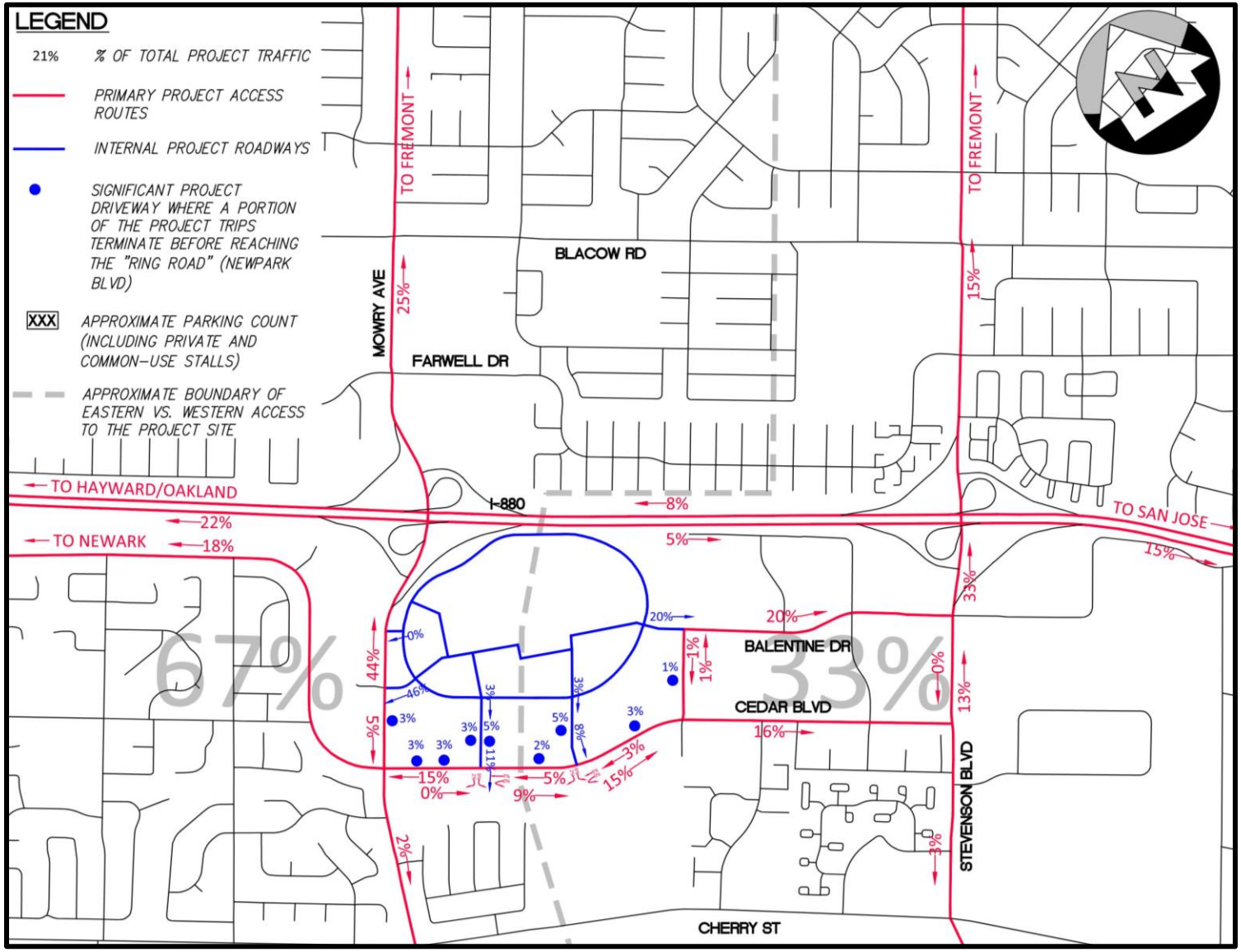


Figure 3B Local Trip Distribution (Outbound)



3.7 STUDY INTERSECTIONS

The LOS was analyzed for the AM, PM and Saturday peak hours at the following project intersections

- Street 'A' (North) & Mowry Ave (INT-1)
- Street 'A' (North) & NewPark Mall Rd (INT-2)
- North Magazine St & Cedar Blvd (INT-3)
- North Magazine St & NewPark Mall Rd (INT-4)
- South Magazine St & Cedar Blvd (INT-5)
- South Magazine St & NewPark Mall Rd (INT-6)
- Street 'A' (South) & Balentine Dr (INT-7)
- Street 'A' (South) & NewPark Mall Rd (INT-8)

3.8 INTERSECTION OPERATING CONDITIONS – EXISTING CONDITIONS

To characterize existing traffic conditions, existing Intersection Level of Service (LOS) was analyzed at the four external project intersections at the perimeter of the project site including:

- Mowry Ave. & Alpenrose Ct. (INT-1)
- Cedar Blvd. & N Magazine St. (INT-3)
- Cedar Blvd. & S Magazine St. (INT-5)
- Balentine Dr & Balentine Dr. (INT-7)

The existing configurations at these four external intersections are shown in **Figure 4**. The signal timing used at each intersection was based on timing cards provided by the city of Newark.

Ideally, existing traffic volumes would have been based on representative traffic counts collected specifically for the project. However, as of March 2020, the greater Bay Area has been experiencing unprecedented impacts due to the global pandemic that has ensued from COVID-19. As a result, typical roadway traffic volumes have been reduced significantly from the pre-COVID levels.

With this in mind, the project instead approximated typical background existing traffic volumes using available historical traffic data and a calibration factor. More information on this approximation methodology can be found in Appendix D of this report. The resulting approximated existing traffic movements are shown in **Figure 5**.

The approximated traffic data and existing lane configurations were used to create a traffic model in Synchro 10 software (Existing Conditions). All of the four analyzed existing intersections were found to operate at a LOS B or better during the AM, PM and Saturday peaks. **Table 3** summarizes these results. The complete synchro reports can be found in Appendix C of this report.

Table 3: Ex. Intersection LOS

Intersection Number	Intersection	AM		PM		Saturday	
		LOS	Delay	LOS	Delay	LOS	Delay
1	Mowry Ave/ Street 'A' (North)	B	11.5	B	19.8	B	13.1
3	Cedar Blvd/ North Magazine St	B	13.5	B	16.0	B	16.5
5	Cedar Blvd/ South Magazine St	A	8.4	B	14.2	A	7.6
7	Balentine Dr/ Street 'A' (South)	A	8.2	A	9.3	A	8.9

Existing conditions and background traffic were not approximated for the four internal project intersections as these intersections only serve project traffic and the project site is being fundamentally reconfigured. This means that the future site and all intersections within it are being treated as a brand-new development instead of as a net increase to an existing development. This methodology was determined to be the least prone to inaccuracy because it is not dependent on approximating existing volumes using the very limited available historical traffic data. No attempt was made to approximate existing volumes at these internal intersections. The internal intersections where existing conditions were not modelled include:

- Street 'A' & NewPark Mall Rd (North) (INT-2)
- N Magazine St & NewPark Mall Rd (INT-4)
- S Magazine St & NewPark Mall Rd (INT-6)
- Street 'A' & NewPark Mall Rd (South) (INT-8)

Figure 4: Existing Intersection Configurations

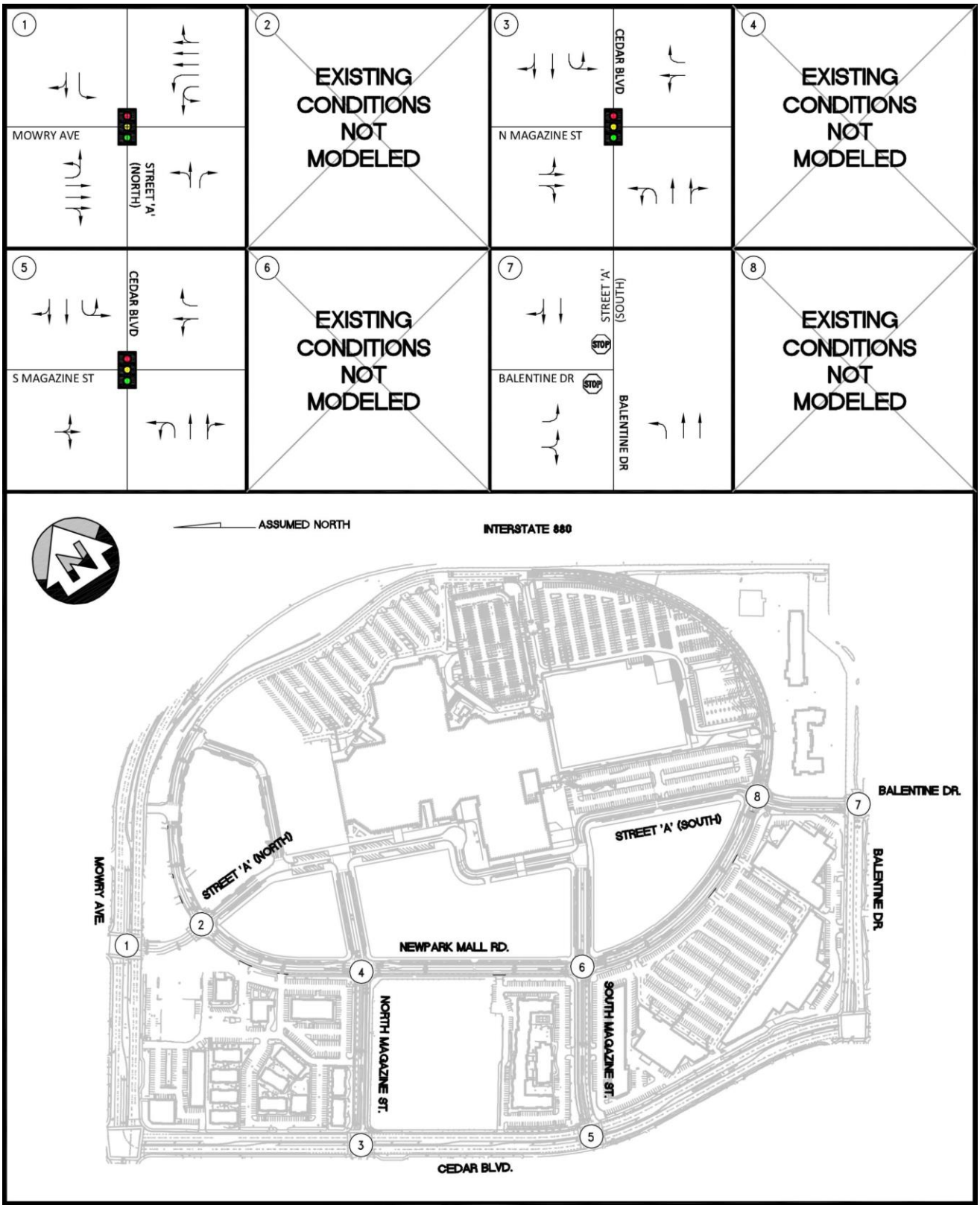
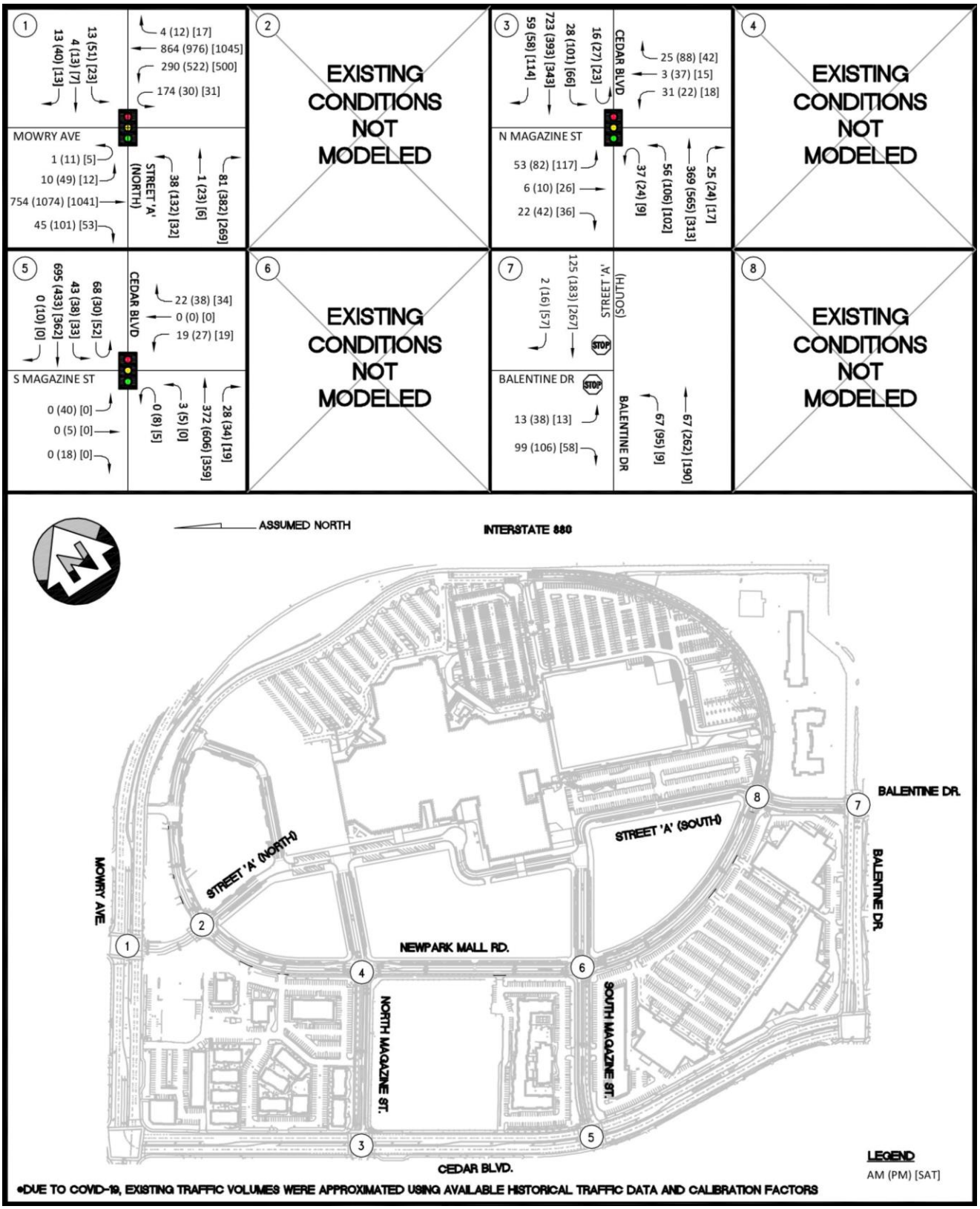


Figure 5: Existing Traffic Volumes*



3.9 POLICY CONFORMANCE ANALYSIS

As described in the NewPark Place Specific Plan Policy M-3, the project applicant for the first project containing residential uses that is proposed within areas designated Mixed Use I shall prepare a circulation design analysis to address the following:

Policy M-3- Item #1: Feasibility and utility of constructing a roundabout at the Alpenrose Court/NewPark Boulevard intersection.

Policy M-3- Item #2: Roadway capacity requirements for the segment of Alpenrose Court between Mowry Avenue and NewPark Boulevard, including consideration of a roundabout at Newpark Boulevard, potential queuing of vehicles at the NewPark Boulevard/Alpenrose intersection back onto Mowry Avenue, and opportunities to value engineer the segment while retaining its complete street features.

4.0 EXISTING PLUS PROJECT CONDITIONS

The Existing + Project Condition scenario utilizes the proposed lane geometry as shown in the project's tentative map which was developed to effectively promote overall site circulation. These roadway configurations are also comprised of additional transportation network improvements that are recommended as part of the Project, as discussed in section 4.2 of this report. **Figure 6** shows the proposed intersection lane configurations. Configurations that have changed and/or approaches that have been reconstructed in their entirety have been shown in red and bold. **Figure 7A** shows forecasted Project related trip volumes while **Figure 7B** shows the Existing plus Project forecasted traffic volumes.

Figure 6: Proposed Intersection Configurations (Changes Shown in Red/Bold)

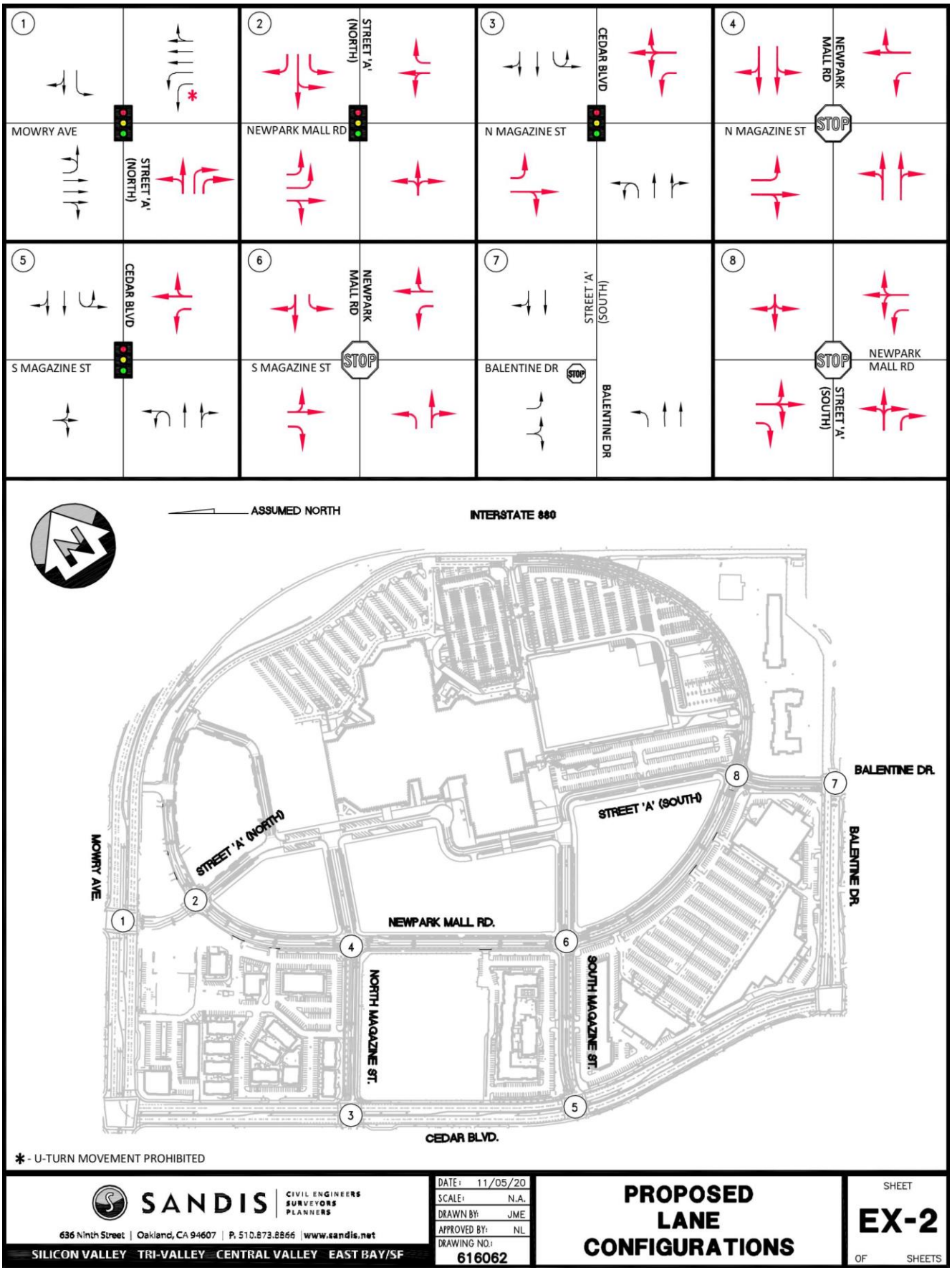


Figure 7A: Project Volumes

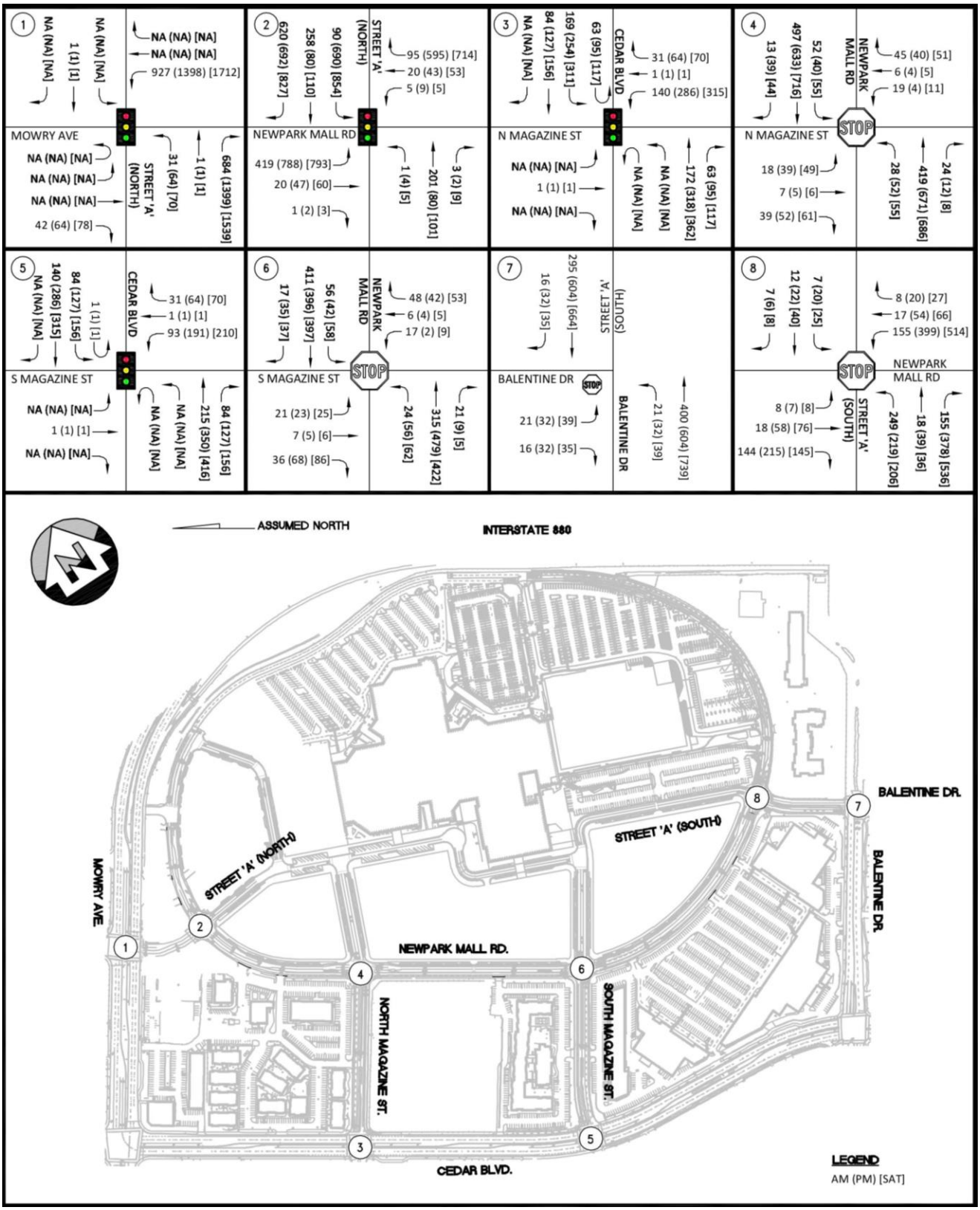
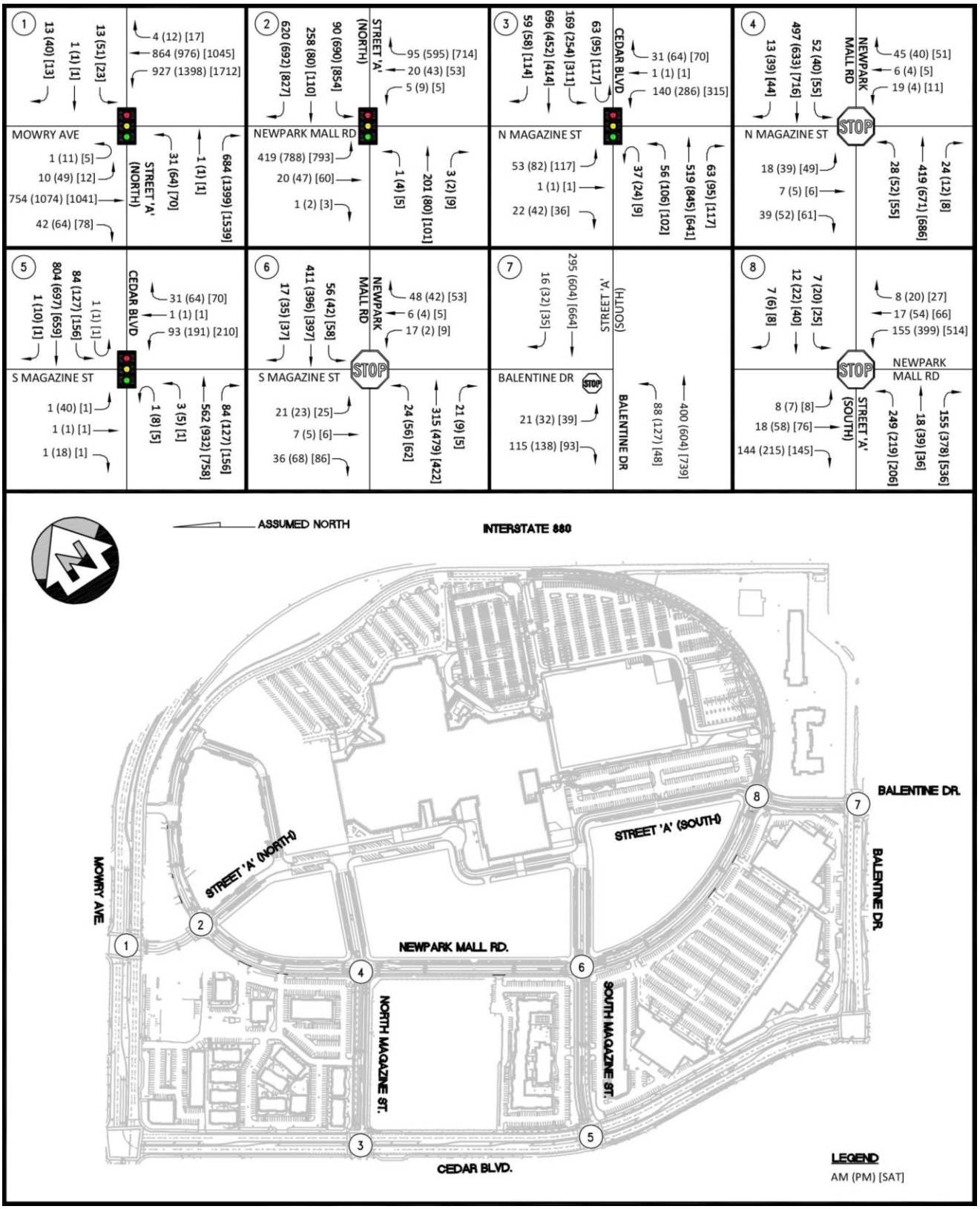


Figure 7B: Forecasted Existing Plus Project Volumes



4.1 LOS INTERSECTION OPERATING CONDITIONS – EXISTING PLUS PROJECT CONDITIONS

Table 4 shows the resulting LOS during the AM, PM and Saturday peak hours under the existing plus project conditions. Synchro analysis determined that all study intersections would continue to operate at LOS D or better under the Existing plus Project conditions as modelled. Complete Synchro LOS reports can be found for all intersections in Appendix C of this report.

Table 4: Existing Plus Project LOS

Intersection Number	Intersection	AM		PM		Saturday	
		LOS	Delay	LOS	Delay	LOS	Delay
1	Mowry Ave/ Street 'A' (North)	C	29.0	D	44.0	D	54.0
2	NewPark Mall Rd/ Street 'A' (North)	C	29.6	C	29.3	D	35.3
3	Cedar Blvd/ North Magazine St	B	16.4	C	27.2	C	29.7
4	NewPark Mall Rd/ North Magazine St	B	12.9	C	20.4	D	28.6
5	Cedar Blvd/ South Magazine St	B	13.3	C	22.1	B	19.5
6	NewPark Mall Rd/ South Magazine St	C	16.2	C	23.7	C	21.4
7	Balentine Dr/ Street 'A' (South)	B	10.7	C	22.9	D	29.7
8	NewPark Mall Rd/ Street 'A' (South)	B	11.7	C	19.8	D	32.6

4.2 ADDITIONAL INTERSECTION IMPROVEMENTS

In addition to the intersection configuration changes shown in the project's Tentative Map, additional changes and improvements were identified through this analysis and the creation of the Tentative MAP. Phasing of additional intersection improvements is discussed in Section 9 of this report.

4.2.0 MOWRY AVE & STREET 'A' (NORTH) INTERSECTION (INT-1)

At the **Mowry Ave** & **Street 'A' (North)** intersection (INT-1) the following changes were applied to the proposed roadway network in addition to the intersection configuration changes shown in the project's Tentative Map.

- The West bound Left-turn pocket was lengthened to 465'. This creates enough storage capacity to accommodate the largest foreseeable queue lengths experienced at peak hours.
- The signal cycle length was revised to 105 seconds.
- Lead/lag optimization was enabled for the Mowry Left turn movements.

- A right turn overlap phase was added for north bound right-turn vehicles so that they may turn concurrently with west bound left turn vehicles. This improvement will require the prohibition of West bound U-turns. However, it is not anticipated that this will be impactful as the destinations served by this U-turn are also accessible via left turn with a similar trip length.
- This signal was coordinated with the proposed signal at **NewPark Mall Rd** & **Street 'A' (North)** Intersection (INT-2).

4.2.1 NEWPARK MALL RD & STREET 'A' (NORTH) INTERSECTION (INT-2)

At the **Mowry Ave** & **Street 'A' (North)** intersection (INT-2) the following changes were applied to the proposed roadway network in addition to the intersection configuration changes shown in the project's Tentative Map.

- A New Signal system will be installed at this intersection with the following characteristics:
  - 105 second cycle length
  - Split Phasing for North bound and south bound traffic
  - Lagging protected left phase for East bound traffic
  - Permissive left for westbound traffic
  - Right turn overlaps for South Bound traffic
  - Right turn Overlap for West Bound Traffic.
- This signal was coordinated with the existing signal at **Mowry Ave** & **Street 'A' (North)** Intersection (INT-1).

4.2.2 PARCEL A RESIDENTIAL DRIVEWAY

The residential driveway for Parcel A along **NewPark Mall Rd.** is within 150' of the **NewPark Mall Rd & Street 'A' (North) Intersection (Int-2).** As a result, it has the potential to be impacted by queues at the Westbound approach of this intersection. Under peak hour operations, queues for Westbound NewPark Mall Rd may block vehicles from making a left turn out of the driveway, onto NewPark Mall Rd. However, it is forecasted that only a very low volume of vehicles will be impacted by this because a majority of exiting vehicles will make a right turn in the east bound direction and/or exit during non-peak hours.

The developer of Parcel A and/or NewPark Place shall continually monitor driveway operations throughout the duration of the development of NewPark Place. If queues on westbound NewPark Mall Rd are regularly observed obstructing left-turns out of the driveway, Developer shall install physical barrier (i.e., median, delineators, etc.) in NewPark Mall Road to prevent left-turn movements into and out of garage driveway.

4.2.3 CEDAR BLVD & NORTH MAGAZINE ST INTERSECTION

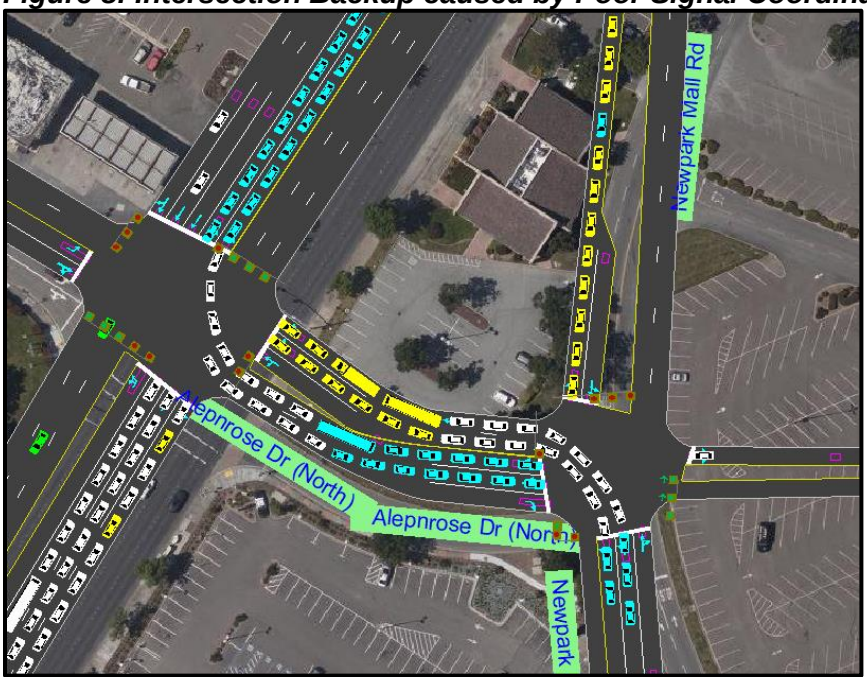
At the **Cedar Blvd** & **North Magazine St** (INT-3) intersection the following changes were applied to the proposed roadway network in addition to the intersection configuration changes shown in the project's Tentative Map.

- Reconfigure Adjacent Private Driveway to one left lane and a thru-right lane. This is to accommodate the reconfiguration of North magazine St proposed by the project's Tentative map. North Magazine St is being reconfigured from two receiving lanes to one and hence can only accommodate one thru approaching lane. This private driveway reconfiguration is not triggered by any LOS related concerns.

5.0 STREET 'A' (NORTH) QUEUEING AND COORDINATION ANALYSIS

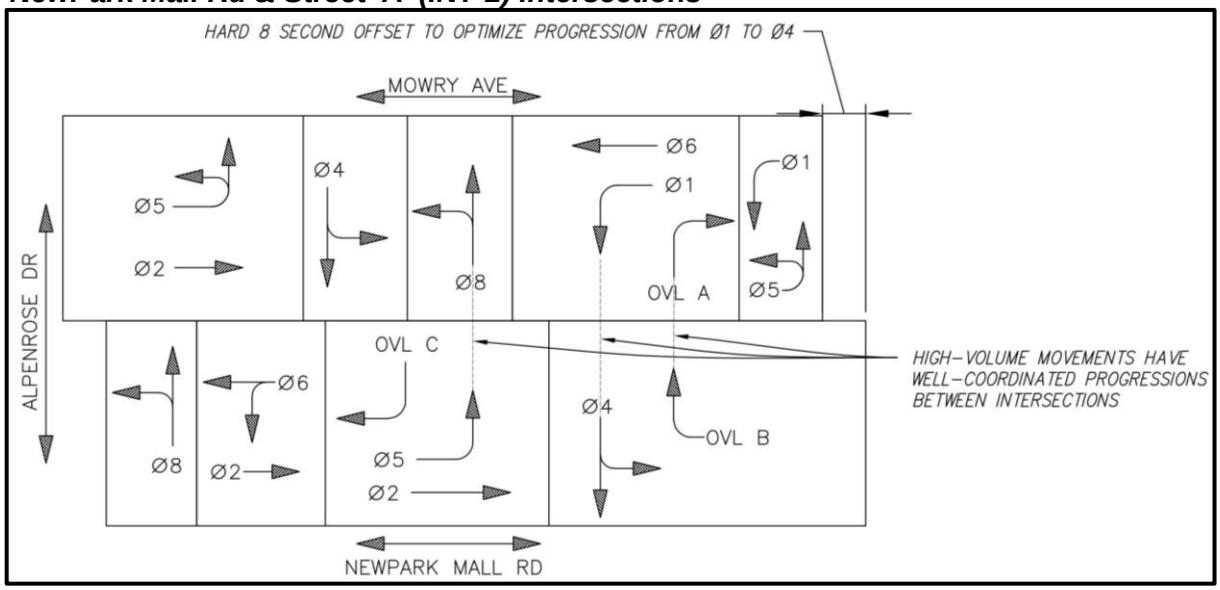
One of the primary concerns at the **Street 'A' (North)** access corridor is the possibility of backup into the intersection and gridlock related to poor signal coordination. The two movements that were identified as most susceptible to backing up into the intersection were West bound left turns at the **Mowry Ave** & **Street 'A'** (INT-1) and East bound Left turns at the **NewPark Mall Rd** & **Street 'A'** intersection (INT-2). This is because both of these movements have high demand and relatively low receiving storage capacity. When this type of backup occurs, entire cycles at an intersection could fail to serve vehicles until the backup is cleared from the intersection. In an uncoordinated version of the model for this area, queues exceeding the available receiving storage capacity were regularly observed. **Figure 8** shows this occurring in the uncoordinated version of the model for illustration purposes. For this reason, it was determined that these two signal systems must be coordinated.

Figure 8: Intersection Backup caused by Poor Signal Coordination



The most effective coordination measure was determined to be tying the timing of the Westbound left turns at the **Mowry Ave** & **Street 'A'** intersection (INT-1) to the timing of the Southbound movement at the **NewPark Mall Rd** & **Street 'A'** intersection (INT-2). The two intersections were coordinated so that the yellow indication for the later movement occurs exactly 8 seconds after the yellow indication for the former. This ensures that queued vehicles always have the needed downstream green indication to vacate the intersection prior to termination of the upstream phase. The downstream signal is offset to stay green 8 seconds after the upstream intersection so that a majority of vehicles traveling from the upstream intersection have enough travel time to make it through both intersections within the same cycle. This coordination measure also allows for the East bound left turns at the **NewPark Mall Rd** & **Street 'A'** intersection (INT-2) to be well coordinated with the North Bound movements at the **Mowry Ave** & **Street 'A'** intersection (INT-1). The coordination mode used at both intersections was float. **Figure 9** shows the phase diagrams for both intersections aligned approximately with when each phase is triggered with respect to what phase is active at the adjacent intersection.

Figure 9: Chronologically aligned Phase diagrams for Mowry Ave & Street 'A' (INT-1) and NewPark Mall Rd & Street 'A' (INT-2) Intersections



6.0 STREET 'A' (NORTH) ROUNDABOUT FEASIBLITY

The feasibility of a roundabout at the **NewPark Mall Rd**/ **Street 'A' (North)** intersection (INT-2) was explored as part of this study. NCHRP Report 672 *Roundabouts: An Informational Guide* Second Edition (NCHRP-672) was primarily consulted for this roundabout feasibility study.

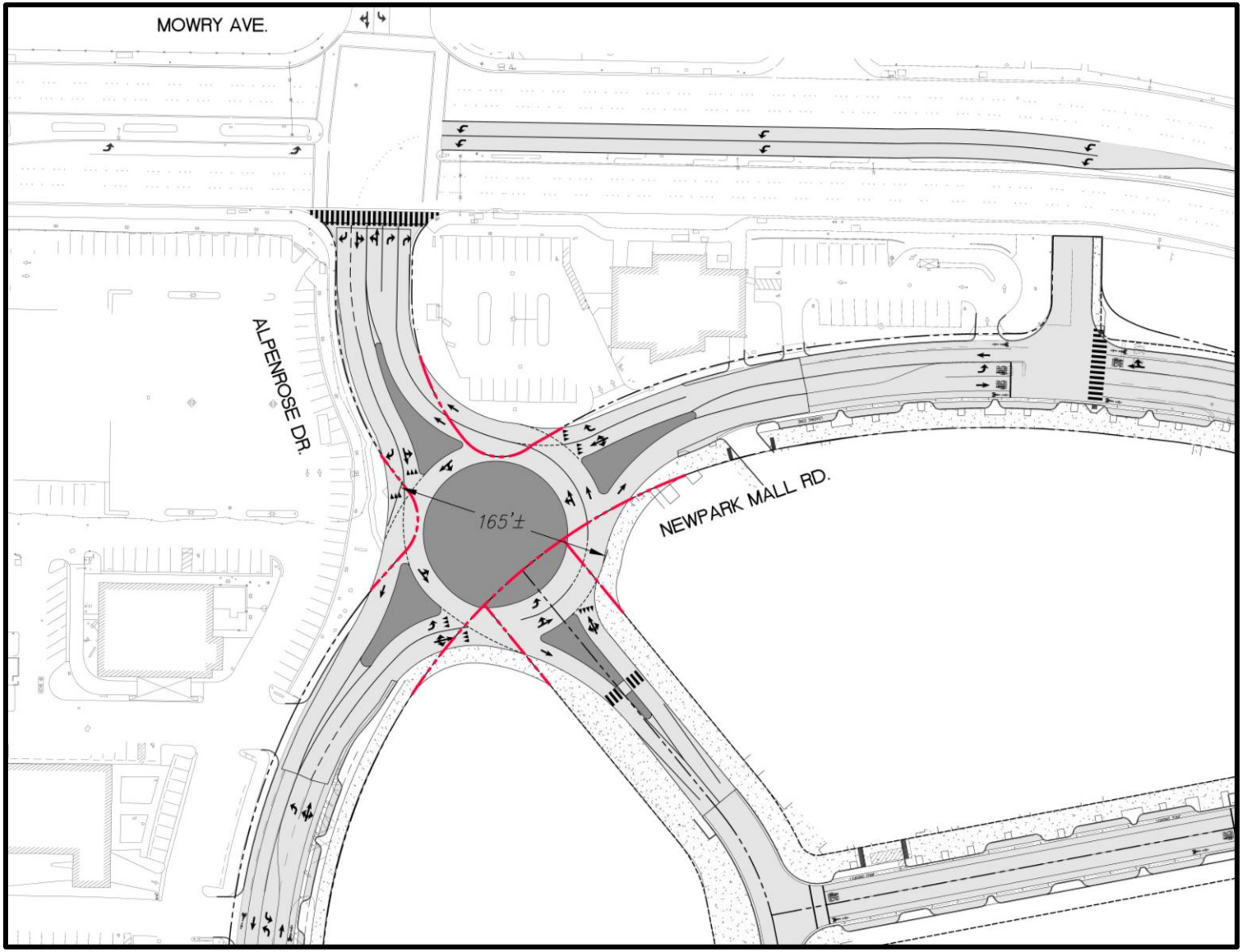
To begin, a conceptual roundabout layout was created that could accommodate the proposed number of approach lanes along each roadway connecting to the roundabout. To ensure that each approach lane has a corresponding receiving lane, a hybrid 1-lane/2-lane roundabout is needed. For preliminary assessment purposes, this was assumed to be the absolute minimum conceivable number of lanes required just to accommodate the connecting roadways. However, this is irrespective of other additional roundabout capacity guidelines which may recommend further additional lanes based on anticipated volumes.

To determine how much space is required, a reasonable inscribed circle diameter (ID) was determined. This is the diameter of the roundabout as measured from the outside edge of the outermost circulatory lane. NCHRP-672 recommends that for two lane roundabouts, IDs in the 160 ft to 180 ft range are an appropriate starting point. For this conceptual roundabout, 165' was used. Using this ID and additional geometric guidance from the NCHRP-672 the conceptual roundabout shown in **Figure 10** was created.

6.1 ROUNDABOUT RIGHT OF WAY CONSTRAINTS

As shown in **Figure 10** an adequate roundabout would encroach into adjacent private parcels on all four corners of the intersection. For this reason, it was determined that a roundabout is not a feasible solution.

Figure 10: Conceptual Roundabout Layout



6.2 ROUNDABOUT CAPACITY

A preliminary capacity calculation was also performed to confirm whether the minimally sized roundabout would be capable of handling the anticipated peak hour traffic flows.

NCHRP-672 section 3.5.1 provides planning level roundabout capacity guidelines. **Table 5** summarizes these guidelines

Table 5: NCHRP-672 Section 3.5.1 Roundabout Capacity Guidelines

Volume Range (Sum of Vehicles Entering and Conflicting Vehicles)	Number of Entry Lanes Required
0-1,000 veh/hr	• Single Lane Likely Sufficient
1,000-1,300 veh/hr	• Two lane Entry May Be Needed • Single Lane May Be Sufficient based upon more Detailed Analysis
1,300-1,800 veh/hr	• Two Lane Entry Likely Sufficient
Above 1,800 veh/hr	• More than two entering lanes may be required • A more detailed capacity evaluation should be conducted to verify lane numbers and arrangements

To utilize this guidance, vehicles entering and conflicting vehicle volumes were calculated using the peak hour (AM, PM & SAT) movement volumes that were forecasted by the project's trip generation and distribution. **Table 6** summarizes the results of this calculation.

Table 6: Recommended number of entry lanes Based on Peak Hour Volumes

	NewPark Mall Rd				Street 'A'			
	Eastbound		Westbound		Northbound		Southbound	
	Sum of Ent + Conf	# of Lanes Req.	Sum of Ent + Conf	# of Lanes Req.	Sum of Ent + Conf	# of Lanes Req.	Sum of Ent + Conf	# of Lanes Req.
AM	793	1	741	1	734	1	995	1
PM	1616	2	1519	2	1610	2	1518	2
SAT	1824	2 or more	1672	2	1822	2 or more	1854	2 or more

As can be seen, during the Saturday peak at least two approach lanes will likely be needed at each leg and even then, it's possible that this may be inadequate at most of the approaches. Based on this result, a roundabout even larger than the conceptual roundabout presented may be needed to address peak hour traffic. For this reason, right of way constraints were deemed to be the primary barrier to implementation of a roundabout at this location.

6.3 ROUNDABOUT STORAGE CAPACITY CONCERNS

Concerns about corridor coordination and possible backup related to limited storage capacity along **Street 'A' (North)** would also be relevant in the roundabout scenario. Although the roundabout would likely dissipate traffic quite efficiently, a roundabout inherently cannot be coordinated with any other intersection since it is not signalized.

For the south bound entry of the roundabout, if conflicting traffic is too high it's possible that traffic will not have frequent enough opportunities to enter the roundabout and queues could exceed the available storage capacity on **Street 'A'** spilling back into the adjacent **Mowry Ave**/ **Street 'A' (North)** signalized intersection (INT-1). Similarly, if north bound traffic at the **Mowry Ave**/ **Street 'A' (North)** intersection (INT-1) is held for too long by the signal system, queues could spill back into the roundabout. For this reason, a more detailed queueing analysis would need to be performed to accompany any specific roundabout configuration that is identified for the site.

7.0 CAMUTCD SIGNAL WARRANTS

For each unsignalized study intersection, the California manual on Uniform traffic Control Devices (CAMUTCD) was consulted to determine what signal warrants could be applied. Of the 9 available warrants, warrant 3 was the only applicable warrant where sufficient data was available.

Warrant 3 uses peak hour volumes to predict possible undue delay to the minor roadway approach. For this warrant analysis the previously forecasted existing plus project volumes were used. **Table 7** below summarizes which approaches were assumed to be the major and minor at each intersection.

Table 7: Warrant 3 Major/Minor Approach Assumptions

Intersection number	Intersection	Major Approaches	Minor Approaches
4	NewPark Mall Rd/ North Magazine St	Northbound, Southbound	Eastbound, Westbound
6	NewPark Mall Rd/ South Magazine St	Northbound, Southbound	Eastbound, Westbound
7	Balentine Dr/ Street 'A' (South)	Northbound, Southbound	Eastbound
8	NewPark Mall Rd/ Street 'A' (South)	Northbound, Westbound	Eastbound, Southbound

None of the intersection trigger Part A or Part B of Signal warrant 3. This means that warrant 3 does not advise the installation of a signal at any of the proposed stop-controlled study intersections. The complete warrant 3 analysis for these intersections can be found in Appendix F of this report.

8.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN

The need and requirements for a TDM may be identified in the future by the City and Developer and could be implemented on a Parcel Basis. A TDM may be required to mitigate any potential impacts based on results of the pending VMT analysis being conducted by Kimley-Horn.

9.0 CONSTRUCTION SCHEDULE

The site will be developed in phases. As of publication of this report the proposed chronological phasing sequence of the site is as follows:

1. Parcel A
2. Parcels D1/D4
3. Parcel A3
4. Parcels D2/D3
5. Parcel B1
6. Parcel B2
7. Parcel C
8. Remaining Outer Ring Parcels (M, N1-2, O, P, Q, R1-7, S)

Incremental Trip Generations were prepared to determine total project trips for each phase of the project. Table 8 shows the resulting total project trips after the completion of each phase of the project. Other than the full buildout condition, the highest trip volumes are forecasted to occur after the completion of Parcels D1/D4. The subsequent development of parcel A3 will then reduce the overall retail floor space resulting in a drop in forecasted project trips. Phases D2 through C will primarily add residential development which have a high rate of internalization. This results in comparatively smaller increases in traffic as compared to those related to the prior D1/D4 phase.

Table 8: Project trips after the Completion of Each Project Phase

Phase	AM Trips	PM Trips	Sat Trips
A	1794	4352	5263
D1	2008	4801	5888
A3	2071	4587	5595
D2	2153	4552	5564
B1	2210	4565	5576
B2	2284	4584	5603
C	2370	4597	5608
Outer Ring Parcels (Full Buildout)	3662	6357	7389

9.1 IMPLEMENTATION

Based on the outcome of the design analysis, the Community Development Director may consider modifications to all roadway classification standards and may make other amendments to the specific plan to revise any of the roadway classification standards. Such changes are considered minor amendments to the specific plan.

9.2 PHASED DEVELOPMENT AND REQUIREMENTS

Residential projects within Mixed Use Area I will be proposed and developed over a period of approximately 8 years. This report provides recommendations for when each improvement deemed necessary by the analysis is required to be constructed.

9.3 PHASE A

Phase A traffic volumes were analyzed in Synchro to determine resulting LOS.

First a "no Mitigations" model was prepared. This model was based off the existing roadway network model with changes applied to reflect roadway improvements tied to phase A by the Tentative Map. None of the additional intersection improvements identified in this study were applied to this model. The two intersections with LOS triggered improvements were analyzed (INT-1 & INT-2).

The existing signalized Mowry Ave and Street 'A' intersection (INT-1) experienced an acceptable LOS C. However, the NewPark Mall Rd and Street 'A' intersection (INT-2) experienced and unacceptable LOS F under all-way stop control configurations.

For this reason, a signal system should be installed at the NewPark Mall Rd and Street 'A' intersection (INT-2) in conjunction with the development of parcel A. To ensure smooth coordinated function with the adjacent Mowry signal several other signal improvements should also be installed in relation to this new signal. This includes:

New Signal Interconnect between INT-1 and INT-2
Reprogram cycle length at INT-1 to 105 seconds to match proposed cycle length and adjacent INT-2 and ensure that lead-lag optimization is enabled in both controllers.
Install right-turn overlap signal heads and equipment at INT-2 for NB right turns
A "with mitigations" model was created with the above additional improvements incorporated. The resulting LOS from this model is a satisfactory LOS C at both intersections. This model was used to also verify the adequacy of the existing left hand turn pocket and INT-1 for WB Mowry Ave. The maximum queue for this approach was forecasted to be 312 which is less than the 325' length of the existing left-turn pocket. This indicates that the turn pocket does not need to be lengthened in conjunction with phase A.

Complete Synchro LOS reports can be found in Appendix C of this report.

9.4 PHASE D1/D4

Only the left-hand turn pocket length at INT-1 for WB Mowry Ave was analyzed because all other additional LOS based improvements at the **Mowry Ave** & **Street 'A'** (INT-1) and **NewPark Mall Rd** & **Street 'A'** (INT-2) intersections were previously triggered by the preceding Phase A.

A model was created using Phase D1/D4 trip volumes. 95th percentile Queue lengths exceeded the existing turn pocket length by approximately 100' indicating that the turn pocket should be lengthened in conjunction with phase D1/D4 development. It is recommended that the turn pocket be extended out to the full 465' length required at full buildout in conjunction with the development of phase D1/D4.

After the completion of Phase D1/D4, all of the LOS based additional intersection improvements have been triggered. Complete Synchro LOS reports can be found in Appendix C of this report.

9.5 ADJACENT DRIVEWAY AT INT-3

The EB private driveway at INT-3 will need to be reconfigured whenever North Magazine St is reconstructed in order to remain compatible with the proposed roadway section along North Magazine St. This is because North Magazine St is being reconfigured from 2 receiving lanes to 1. The adjacent EB Private Driveway will need to be reconfigured to one left lane and one thru-right lane. This will involve adding lane arrow pavement markings and lane line striping to the existing driveway as well as adding lane designation signage to the appropriate existing signal mast arm on the opposite side of the intersection. This is not related to any LOS based

concerns and hence is not tied to project trip levels. This improvement should be constructed in conjunction with the reconstruction of North Magazine St.

10.0 CONCLUSIONS AND RECOMMENDATIONS

This report presented the findings of the circulation analysis prepared for the NewPark Mall redevelopment project for eight intersections throughout the NewPark Place site based on Mobility Policy M-3 of the NewPark Place Specific Plan and as requested by the City of Newark. Several additional intersection improvements were recommended in addition to improvements that are already presented in the project's Tentative Map. These improvements and the phase at which they are required is summarized in **Table 9.** Using the given documented assumptions, this analysis concluded that all study intersections would operate at a LOS D or better under Existing plus Project conditions. **Table 10** summarizes the LOS results for each intersection under both the Existing and Existing plus Project conditions.

The potential of vehicles to backup beyond the available storage capacity along Street 'A' between Mowry Ave and NewPark Mall Rd was also analyzed and was found to be remedied by coordinating the signal timing of the two adjacent intersections using a cycle length of 105 seconds.

Additionally, the construction of a roundabout at the NewPark Mall Rd/Street 'A' (North) intersection (INT-2) was found to be infeasible due to the lack of available right away and potential for vehicles to backup into the Mowry Ave/ Street 'A' (North) intersection (INT-1).

Table 9: Additional Intersection improvements and Phasing

Int #	Intersection	Improvement	Phase Required
1	Mowry Ave/ Street 'A' (North)	Revise cycle length to 105 seconds.	A
		Right turn overlap for north bound right-turns	A
		Enable Lead/lag optimization	A
		Signal Interconnect to INT-2	A
		Lengthened turn pocket to 465'	D1/D4
2	Newpark Mall Rd/ Street 'A' (North)	New Signal System	A
		Signal Interconnect to INT-1	A
3	Cedar Blvd/ North Magazine St	Reconfigure EB Driveway	NA (Tied to Tentative Map Improvements)
4	Newpark Mall Rd/ North Magazine St	No additional intersection improvements	
5	Cedar Blvd/ South Magazine St	No additional intersection improvements	
6	Newpark Mall Rd/ South Magazine St	No additional intersection improvements	
7	Balentine Dr/ Street 'A' (South)	No additional intersection improvements	
8	Newpark Mall Rd/ Street 'A' (South)	No additional intersection improvements	

***Table 10: Intersection* LOS**

Int #	Int	AM				PM				Saturday			
		EX		EX+Project		Ex		EX+Project		Ex		EX+Project	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1	Mowry Ave/ Street 'A' (North)	B	11.5	C	29.0	B	19.8	D	44.0	B	13.1	D	54.0
2	NewPark Mall Rd/ Street 'A' (North)	NA	NA	C	29.6	NA	NA	C	29.3	NA	NA	D	35.3
3	Cedar Blvd/ North Magazine St	B	13.5	B	16.4	B	16.0	C	27.2	B	16.5	C	29.7
4	NewPark Mall Rd/ North Magazine St	NA	NA	B	12.9	NA	NA	C	20.4	NA	NA	D	28.6
5	Cedar Blvd/ South Magazine St	A	8.4	B	13.3	B	14.2	C	22.1	A	7.6	B	19.5
6	NewPark Mall Rd/ South Magazine St	NA	NA	C	16.2	NA	NA	C	23.7	NA	NA	C	21.4
7	Balentine Dr/ Street 'A' (South)	A	8.2	B	10.7	A	9.3	C	22.9	A	8.9	D	29.7
8	NewPark Mall Rd/ Street 'A' (South)	NA	NA	B	11.7	NA	NA	C	19.8	NA	NA	D	32.6

APPENDIX A - TRAFFIC COUNT SURVEY DATA

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF NEWARK

Latitude: 37.526666
Longitude: -122.006316

File Name : alpenrose-mowry-a
Site Code : 1
Start Date : 6/13/2018
Page No : 1

Groups Printed- Vehicles Only

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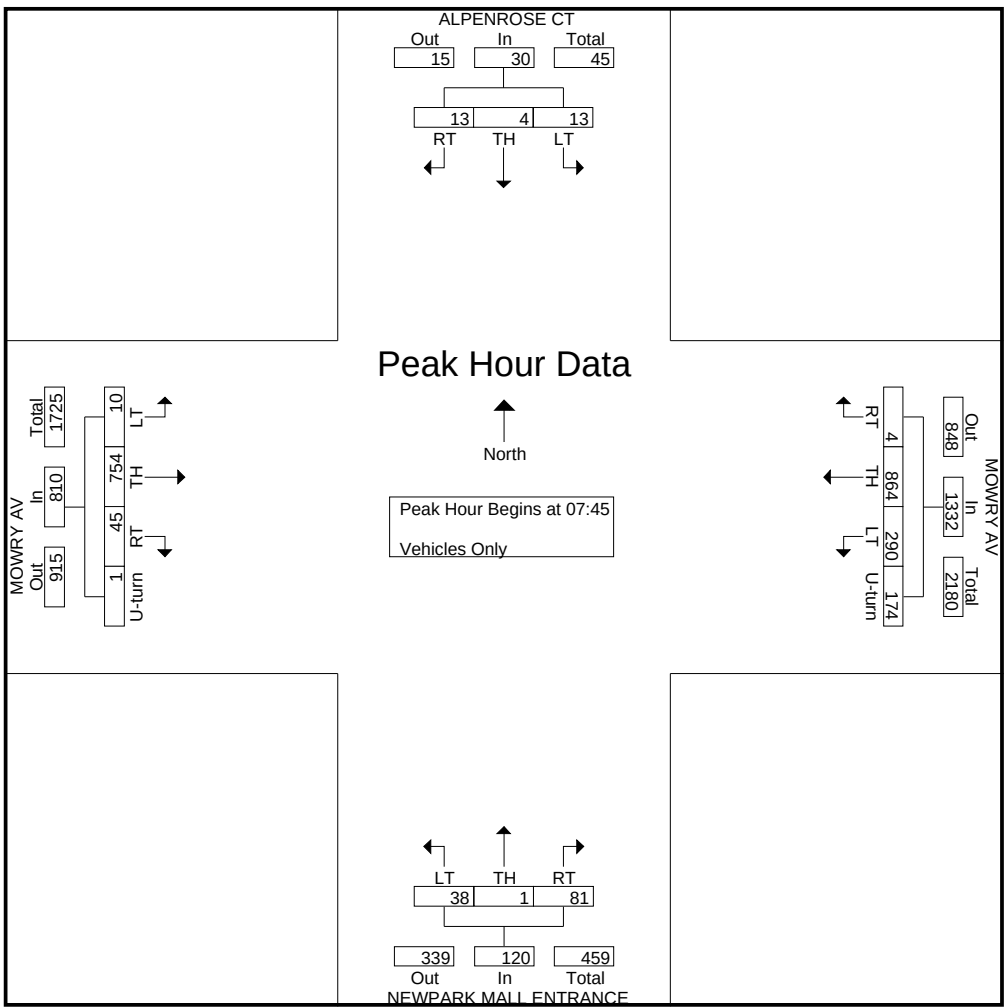
07:15	2	1	8	11	1	188	62	50	301	17	0	6	23	11	177	6	1	195	530
07:30	6	1	4	11	1	240	69	52	362	24	1	3	28	8	174	7	0	189	590
07:45	0	1	1	2	0	227	77	36	340	15	0	5	20	16	217	2	0	235	597
Total	12	5	19	36	3	824	240	153	1220	71	1	22	94	41	754	21	1	817	2167
08:00	4	2	7	13	2	190	50	37	279	20	1	13	34	7	179	4	1	191	517
08:15	2	1	1	4	0	222	53	56	331	20	0	11	31	12	198	3	0	213	579
08:30	7	0	4	11	2	225	110	45	382	26	0	9	35	10	160	1	0	171	599
08:45	1	2	5	8	4	197	110	29	340	25	2	14	41	15	182	6	0	203	592
Total	14	5	17	36	8	834	323	167	1332	91	3	47	141	44	719	14	1	778	2287
Grand Total	26	10	36	72	11	1658	563	320	2552	162	4	69	235	85	1473	35	2	1595	4454
Apprch %	36.1	13.9	50		0.4	65	22.1	12.5		68.9	1.7	29.4		5.3	92.4	2.2	0.1		
Total %	0.6	0.2	0.8	1.6	0.2	37.2	12.6	7.2	57.3	3.6	0.1	1.5	5.3	1.9	33.1	0.8	0	35.8	

	ALPENROSE CT Southbound				MOWRY AV Westbound					NEWPARK MALL ENTRANCE Northbound				MOWRY AV Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45																			
07:45	0	1	1	2	0	**227**	77	36	340	15	0	5	20	**16**	**217**	2	0	**235**	597
08:00	4	**2**	**7**	**13**	**2**	190	50	37	279	20	**1**	**13**	34	7	179	**4**	**1**	191	517
08:15	2	1	1	4	0	222	53	**56**	331	20	0	11	31	12	198	3	0	213	579
08:30	**7**	0	4	11	2	225	**110**	45	**382**	**26**	0	9	**35**	10	160	1	0	171	**599**
Total Volume	13	4	13	30	4	864	290	174	1332	81	1	38	120	45	754	10	1	810	2292
% App. Total	43.3	13.3	43.3		0.3	64.9	21.8	13.1		67.5	0.8	31.7		5.6	93.1	1.2	0.1		
PHF	.464	.500	.464	.577	.500	.952	.659	.777	.872	.779	.250	.731	.857	.703	.869	.625	.250	.862	.957



TRAFFIC COUNTS PLUS
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CITY OF NEWARK

Latitude: 37.526666
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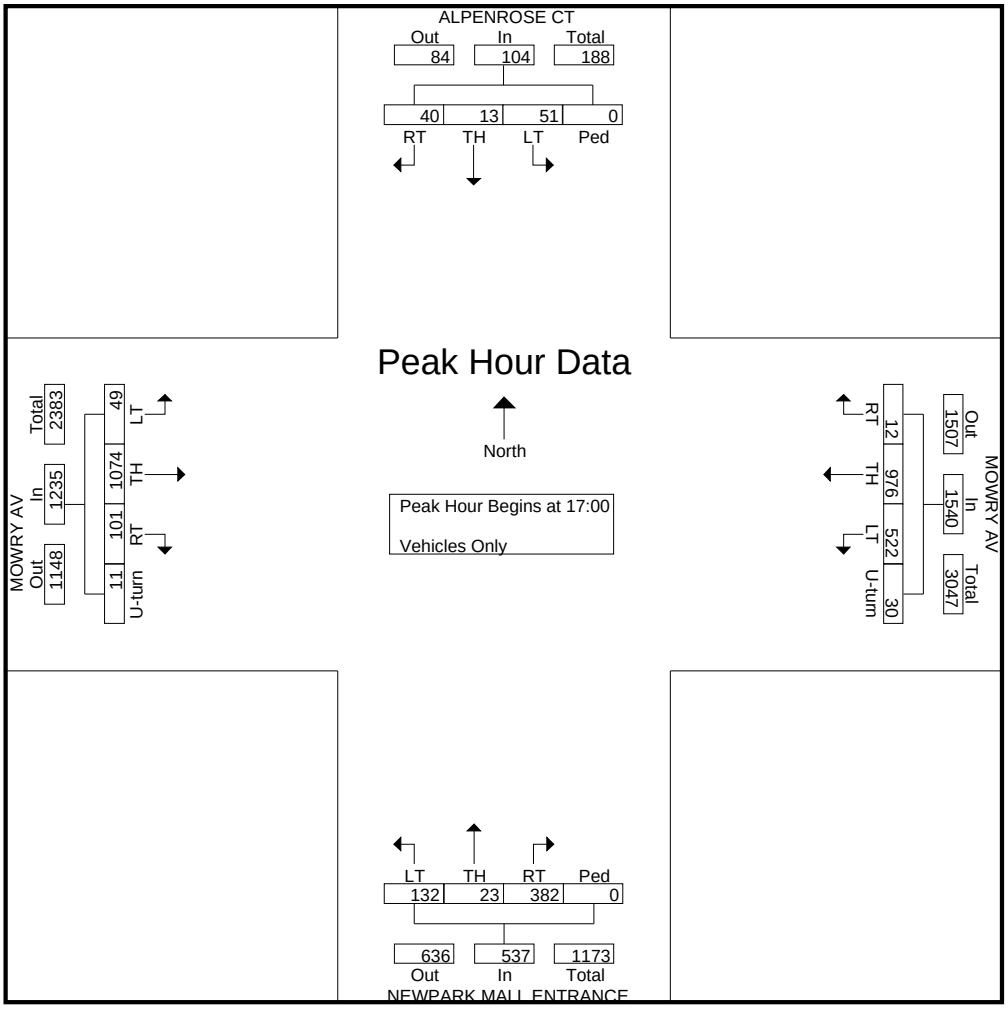
16:15	3	0	10	0	13	1	181	137	5	324	79	6	23	0	108	19	203	3	0	225	670
16:30	4	4	7	0	15	2	209	92	2	305	81	1	15	0	97	25	249	6	0	280	697
16:45	7	4	8	0	19	5	199	121	6	331	80	1	28	0	109	21	185	4	1	211	670
Total	18	8	28	0	54	9	756	454	20	1239	311	9	88	0	408	85	842	20	3	950	2651
17:00	5	2	7	0	14	3	227	124	8	362	73	4	31	0	108	20	277	13	1	311	795
17:15	6	1	9	0	16	2	278	111	5	396	98	12	36	0	146	30	275	5	3	313	871
17:30	14	4	20	0	38	2	242	137	4	385	107	5	38	0	150	22	294	17	4	337	910
17:45	15	6	15	0	36	5	229	150	13	397	104	2	27	0	133	29	228	14	3	274	840
Total	40	13	51	0	104	12	976	522	30	1540	382	23	132	0	537	101	1074	49	11	1235	3416
Grand Total	58	21	79	0	158	21	1732	976	50	2779	693	32	220	0	945	186	1916	69	14	2185	6067
Apprch %	36.7	13.3	50	0		0.8	62.3	35.1	1.8		73.3	3.4	23.3	0		8.5	87.7	3.2	0.6		
Total %	1	0.3	1.3	0	2.6	0.3	28.5	16.1	0.8	45.8	11.4	0.5	3.6	0	15.6	3.1	31.6	1.1	0.2	36	

	ALPENROSE CT Southbound					MOWRY AV Westbound					NEWPARK MALL ENTRANCE Northbound					MOWRY AV Eastbound					
Start Time	RT	TH	LT	Ped	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	Ped	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	5	2	7	0	14	3	227	124	8	362	73	4	31	0	108	20	277	13	1	311	795
17:15	6	1	9	0	16	2	**278**	111	5	396	98	**12**	36	0	146	**30**	275	5	3	313	871
17:30	14	4	**20**	0	**38**	2	242	137	4	385	**107**	5	**38**	0	**150**	22	**294**	**17**	**4**	**337**	**910**
17:45	**15**	**6**	15	0	36	**5**	229	**150**	**13**	**397**	104	2	27	0	133	29	228	14	3	274	840
Total Volume	40	13	51	0	104	12	976	522	30	1540	382	23	132	0	537	101	1074	49	11	1235	3416
% App. Total	38.5	12.5	49	0		0.8	63.4	33.9	1.9		71.1	4.3	24.6	0		8.2	87	4	0.9		
PHF	.667	.542	.638	.000	.684	.600	.878	.870	.577	.970	.893	.479	.868	.000	.895	.842	.913	.721	.688	.916	.938



TRAFFIC COUNTS PLUS

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MARIN COUNTY

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Longitude:

File Name : alpenrose-mowry-s
Site Code : 00000000
Start Date : 11/14/2020
Page No : 1

Groups Printed- Vehicles Only

	ALPENROSE CT Southbound				MOWRY AVE Westbound					ALPENROSE CT Northbound				MOWRY AVE Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
11:00	1	0	1	2	2	165	89	5	261	24	1	6	31	17	142	1	0	160	454
11:15	1	0	0	1	0	167	92	8	267	31	2	9	42	11	226	1	0	238	548
11:30	1	0	0	1	1	191	93	6	291	43	1	11	55	21	246	2	5	274	621
11:45	3	0	2	5	1	213	99	5	318	49	2	9	60	19	241	4	4	268	651
Total	6	0	3	9	4	736	373	24	1137	147	6	35	188	68	855	8	9	940	2274
12:00	1	0	3	4	2	184	97	11	294	61	0	7	68	12	225	1	2	240	606
12:15	2	1	3	6	2	187	114	9	312	56	0	11	67	18	247	7	4	276	661
12:30	2	0	4	6	1	197	102	3	303	51	1	16	68	9	211	4	1	225	602
12:45	2	1	5	8	1	176	109	4	290	47	1	13	61	10	201	1	1	213	572
Total	7	2	15	24	6	744	422	27	1199	215	2	47	264	49	884	13	8	954	2441
13:00	3	0	4	7	7	214	125	9	355	57	2	5	64	11	218	2	0	231	657
13:15	0	0	6	6	3	220	98	8	329	58	2	7	67	13	209	3	1	226	628
13:30	6	3	6	15	2	223	93	7	325	48	0	6	54	15	227	3	1	246	640
13:45	2	3	3	8	2	224	106	2	334	64	1	9	74	6	224	2	2	234	650
Total	11	6	19	36	14	881	422	26	1343	227	5	27	259	45	878	10	4	937	2575
14:00	5	0	1	6	2	206	106	4	318	72	3	14	89	14	219	3	5	241	654
14:15	7	1	6	14	2	185	98	7	292	55	0	4	59	6	209	4	0	219	584
14:30	2	0	5	7	3	171	120	2	296	67	1	14	82	11	201	3	2	217	602
14:45	3	1	1	5	3	185	92	7	287	57	1	6	64	6	221	2	3	232	588
Total	17	2	13	32	10	747	416	20	1193	251	5	38	294	37	850	12	10	909	2428
15:00	2	4	5	11	1	175	107	5	288	65	4	9	78	5	173	1	2	181	558
15:15	1	1	2	4	1	167	105	5	278	73	0	11	84	8	178	2	0	188	554
15:30	0	1	8	9	2	169	103	7	281	64	0	11	75	7	198	1	1	207	572
15:45	4	1	6	11	3	203	113	12	331	65	2	9	76	13	195	0	2	210	628
Total	7	7	21	35	7	714	428	29	1178	267	6	40	313	33	744	4	5	786	2312
16:00	3	0	4	7	1	180	114	7	302	69	0	9	78	12	173	7	3	195	582
16:15	2	0	11	13	3	214	105	7	329	69	0	6	75	9	199	0	1	209	626
16:30	6	1	8	15	2	177	107	11	297	82	0	11	93	9	209	4	1	223	628
16:45	4	2	4	10	3	193	101	5	302	74	1	12	87	7	216	4	3	230	629
Total	15	3	27	45	9	764	427	30	1230	294	1	38	333	37	797	15	8	857	2465
Grand Total	63	20	98	181	50	4586	2488	156	7280	1401	25	225	1651	269	5008	62	44	5383	14495
Apprch %	34.8	11	54.1		0.7	63	34.2	2.1		84.9	1.5	13.6		5	93	1.2	0.8		
Total %	0.4	0.1	0.7	1.2	0.3	31.6	17.2	1.1	50.2	9.7	0.2	1.6	11.4	1.9	34.5	0.4	0.3	37.1	

	ALPENROSE CT Southbound				MOWRY AVE Westbound					ALPENROSE CT Northbound				MOWRY AVE Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 to 16:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 13:00																			
13:00	3	0	4	7	**7**	214	**125**	**9**	**355**	57	**2**	5	64	11	218	2	0	231	**657**
13:15	0	0	**6**	6	3	220	98	8	329	58	2	7	67	13	209	**3**	1	226	628
13:30	**6**	**3**	6	**15**	2	223	93	7	325	48	0	6	54	**15**	**227**	3	1	**246**	640
13:45	2	3	3	8	2	**224**	106	2	334	**64**		**9**	**74**	6	224	2	**2**	234	650
Total Volume	11	6	19	36	14	881	422	26	1343	227	5	27	259	45	878	10	4	937	2575
% App. Total	30.6	16.7	52.8		1	65.6	31.4	1.9		87.6	1.9	10.4		4.8	93.7	1.1	0.4		
PHF	.458	.500	.792	.600	.500	.983	.844	.722	.946	.887	.625	.750	.875	.750	.967	.833	.500	.952	.980

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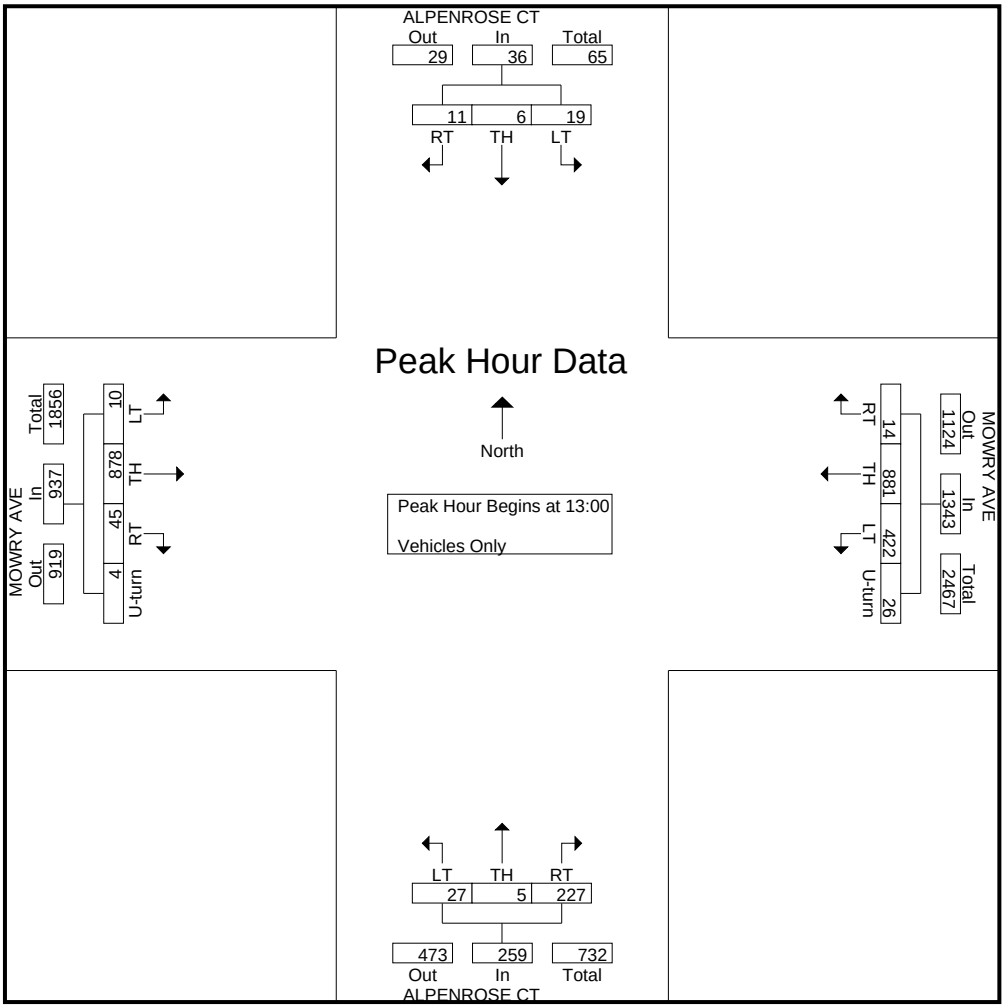
File Name : alpenrose-mowry-s
Site Code : 00000000
Start Date : 11/14/2020
Page No : 2



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CITY OF NEWARK

Latitude: 37.524910
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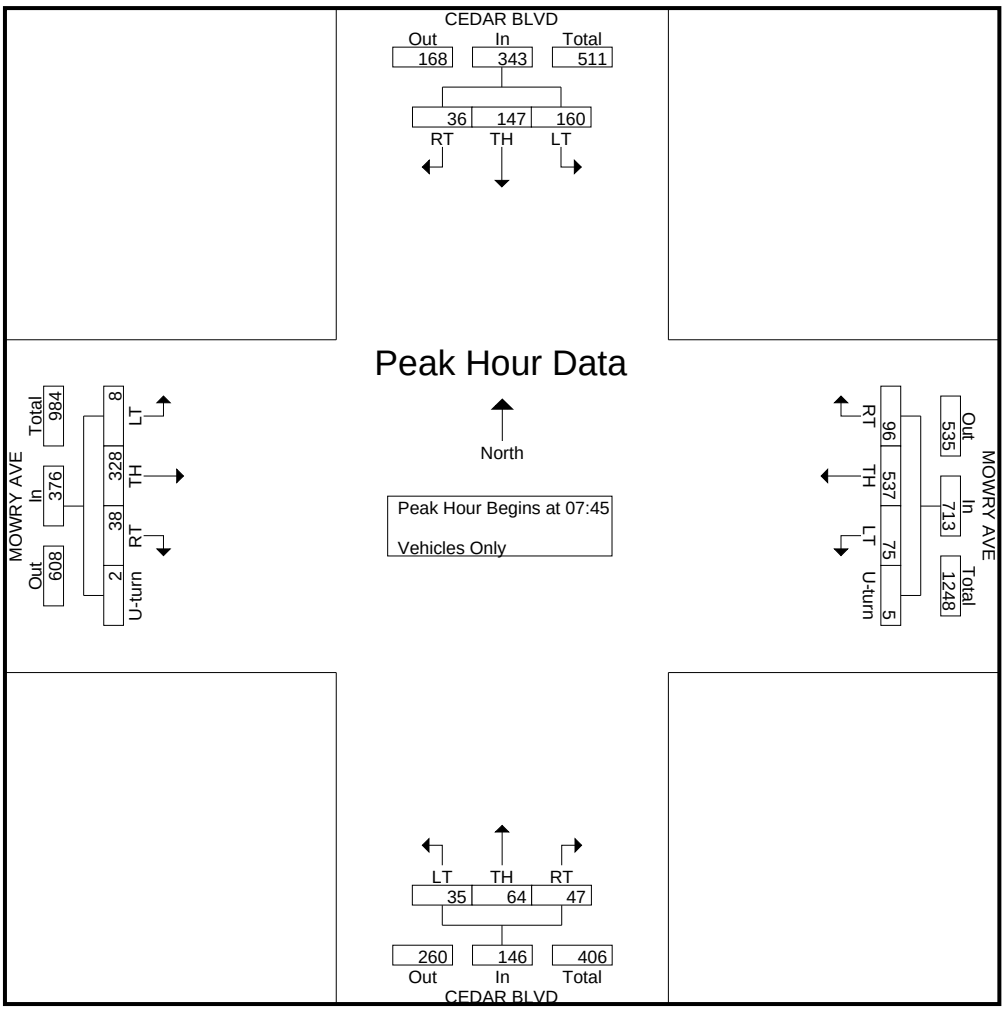
File Name : cedar-mowry-a
Site Code : 6
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound				MOWRY AVE Westbound					CEDAR BLVD Northbound				MOWRY AVE Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
07:00	4	14	28	46	14	122	7	1	144	14	7	11	32	9	92	3	1	105	327
07:15	7	16	35	58	11	118	10	1	140	19	10	5	34	11	107	5	0	123	355
07:30	8	40	44	92	17	103	10	2	132	12	14	5	31	9	86	3	2	100	355
07:45	9	44	45	98	22	155	15	0	192	10	13	6	29	13	74	0	0	87	406
Total	28	114	152	294	64	498	42	4	608	55	44	27	126	42	359	11	3	415	1443
08:00	12	26	42	80	22	150	14	0	186	16	14	11	41	7	90	2	0	99	406
08:15	10	40	41	91	20	117	22	4	163	10	16	7	33	10	85	3	1	99	386
08:30	5	37	32	74	32	115	24	1	172	11	21	11	43	8	79	3	1	91	380
08:45	5	55	55	115	26	108	29	0	163	14	18	8	40	8	60	4	0	72	390
Total	32	158	170	360	100	490	89	5	684	51	69	37	157	33	314	12	2	361	1562
Grand Total	60	272	322	654	164	988	131	9	1292	106	113	64	283	75	673	23	5	776	3005
Apprch %	9.2	41.6	49.2		12.7	76.5	10.1	0.7		37.5	39.9	22.6		9.7	86.7	3	0.6		
Total %	2	9.1	10.7	21.8	5.5	32.9	4.4	0.3	43	3.5	3.8	2.1	9.4	2.5	22.4	0.8	0.2	25.8	

	CEDAR BLVD Southbound				MOWRY AVE Westbound					CEDAR BLVD Northbound				MOWRY AVE Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45																			
07:45	9	**44**	**45**	**98**	22	**155**	15	0	**192**	10	13	6	29	**13**	74	0	0	87	**406**
08:00	**12**	26	42	80	22	150	14	0	186	**16**		**11**			**90**	2	0	**99**	406
08:15	10	40	41	91	20	117	22	**4**	163	10	16	7	33	10	85	**3**	**1**	99	386
08:30	5	37	32	74	**32**	115	**24**	1	172	11	**21**	11	**43**	8	79	3	1	91	380
Total Volume	36	147	160	343	96	537	75	5	713	47	64	35	146	38	328	8	2	376	1578
% App. Total	10.5	42.9	46.6		13.5	75.3	10.5	0.7		32.2	43.8	24		10.1	87.2	2.1	0.5		
PHF	.750	.835	.889	.875	.750	.866	.781	.313	.928	.734	.762	.795	.849	.731	.911	.667	.500	.949	.972



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CITY OF NEWARK

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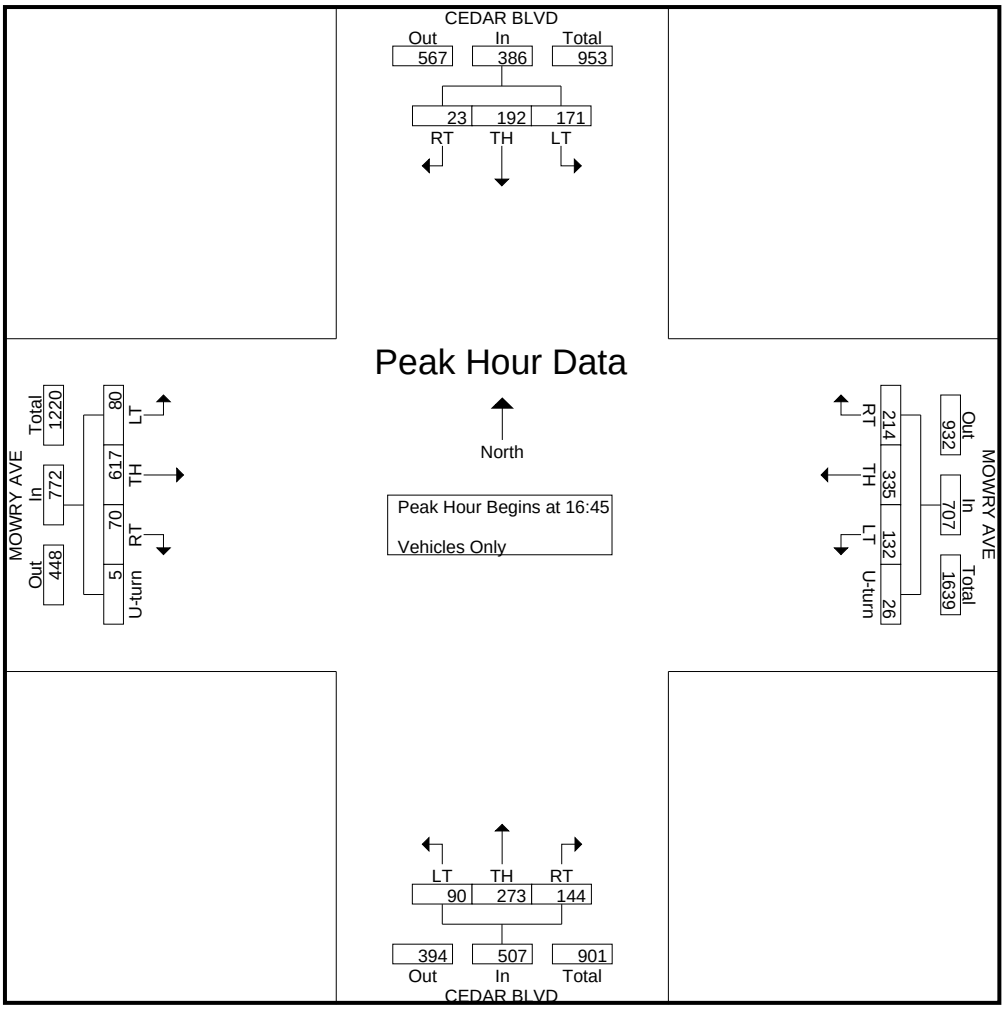
File Name : cedar-mowry-p
Site Code : 6
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound				MOWRY AVE Westbound					CEDAR BLVD Northbound				MOWRY AVE Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
16:00	5	43	39	87	45	79	41	8	173	29	53	18	100	20	149	22	0	191	551
16:15	10	48	37	95	52	77	31	10	170	20	61	28	109	27	114	12	0	153	527
16:30	8	50	35	93	58	82	34	6	180	32	60	23	115	21	169	17	0	207	595
16:45	6	46	31	83	55	85	33	5	178	31	58	17	106	19	157	16	1	193	560
Total	29	187	142	358	210	323	139	29	701	112	232	86	430	87	589	67	1	744	2233
17:00	7	53	44	104	60	79	28	4	171	36	67	27	130	19	149	31	0	199	604
17:15	6	50	39	95	54	85	31	10	180	36	76	25	137	20	145	18	3	186	598
17:30	4	43	57	104	45	86	40	7	178	41	72	21	134	12	166	15	1	194	610
17:45	7	49	37	93	54	85	31	8	178	28	66	21	115	18	115	26	2	161	547
Total	24	195	177	396	213	335	130	29	707	141	281	94	516	69	575	90	6	740	2359
Grand Total	53	382	319	754	423	658	269	58	1408	253	513	180	946	156	1164	157	7	1484	4592
Apprch %	7	50.7	42.3		30	46.7	19.1	4.1		26.7	54.2	19		10.5	78.4	10.6	0.5		
Total %	1.2	8.3	6.9	16.4	9.2	14.3	5.9	1.3	30.7	5.5	11.2	3.9	20.6	3.4	25.3	3.4	0.2	32.3	

	CEDAR BLVD Southbound				MOWRY AVE Westbound					CEDAR BLVD Northbound				MOWRY AVE Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:45																			
16:45	6	46	31	83	55	85	33	5	178	31	58	17	106	19	157	16	1	193	560
17:00	**7**	**53**	44	**104**	**60**	79	28	4	171	36	67	**27**	**130**	**19**	**149**	**31**	0	**199**	604
17:15	6	50	39	95	54	85	31	**10**	**180**	36	**76**	25	**137**	**20**	145	18	**3**	186	598
17:30	4	43	**57**	104	45	**86**	**40**	7	178	**41**					**166**	15	1	194	**610**
Total Volume	23	192	171	386	214	335	132	26	707	144	273	90	507	70	617	80	5	772	2372
% App. Total	6	49.7	44.3		30.3	47.4	18.7	3.7		28.4	53.8	17.8		9.1	79.9	10.4	0.6		
PHF	.821	.906	.750	.928	.892	.974	.825	.650	.982	.878	.898	.833	.925	.875	.929	.645	.417	.970	.972



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CITY OF NEWARK

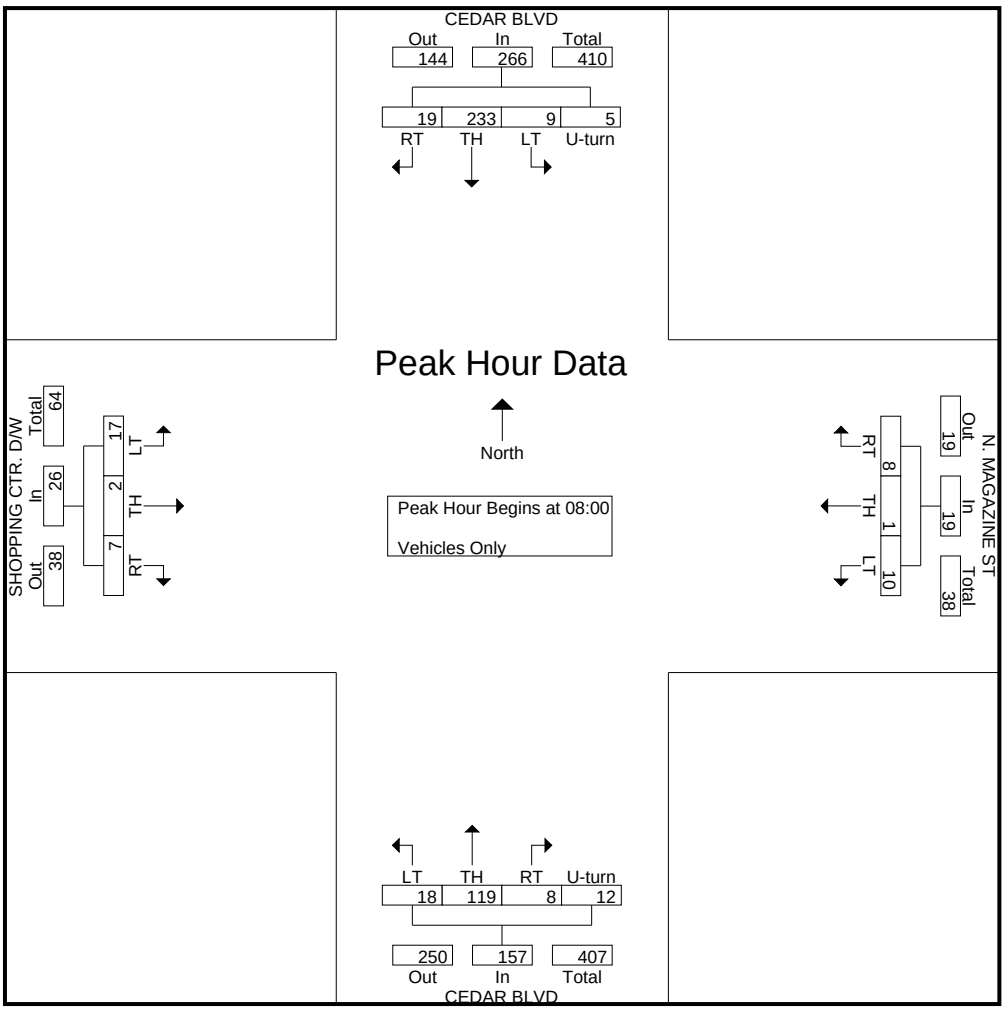
Latitude: 37.523588
Longitude: -122.005070

File Name : cedar-n. magazine-a
Site Code : 5
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound					N. MAGAZINE ST Westbound				CEDAR BLVD Northbound					SHOPPING CTR. D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	24	1	0	25	5	0	2	7	0	17	1	4	22	0	0	4	4	58
07:15	1	30	1	2	34	5	0	0	5	0	29	5	3	37	0	0	2	2	78
07:30	2	46	3	0	51	4	1	0	5	1	19	2	7	29	0	0	7	7	92
07:45	3	64	3	2	72	0	1	2	3	0	21	5	3	29	0	0	4	4	108
Total	6	164	8	4	182	14	2	4	20	1	86	13	17	117	0	0	17	17	336
08:00	2	44	1	3	50	3	0	2	5	3	29	6	3	41	0	0	4	4	100
08:15	7	57	2	1	67	2	0	1	3	2	26	7	5	40	2	1	2	5	115
08:30	6	59	2	1	68	2	1	5	8	3	34	0	3	40	5	1	6	12	128
08:45	4	73	4	0	81	1	0	2	3	0	30	5	1	36	0	0	5	5	125
Total	19	233	9	5	266	8	1	10	19	8	119	18	12	157	7	2	17	26	468
Grand Total	25	397	17	9	448	22	3	14	39	9	205	31	29	274	7	2	34	43	804
Apprch %	5.6	88.6	3.8	2		56.4	7.7	35.9		3.3	74.8	11.3	10.6		16.3	4.7	79.1		
Total %	3.1	49.4	2.1	1.1	55.7	2.7	0.4	1.7	4.9	1.1	25.5	3.9	3.6	34.1	0.9	0.2	4.2	5.3	

	CEDAR BLVD Southbound					N. MAGAZINE ST Westbound				CEDAR BLVD Northbound					SHOPPING CTR. D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 08:00																			
08:00	2	44	1	**3**	50	**3**	0	2	5	**3**	**29**	**6**	**3**	**41**	0	0	4	4	100
08:15	**7**	57	2	1	67	2	0	1	3	2	26	**7**	**5**	40	2	**1**	2	5	115
08:30	6	59	2	1	68	2	**1**	**5**	**8**	3	**34**	0	3	40	**5**	1	**6**	**12**	**128**
08:45	4	**73**	**4**	0	**81**	1	0	2	3	0	30	5	1	36	0	0	5	5	125
Total Volume	19	233	9	5	266	8	1	10	19	8	119	18	12	157	7	2	17	26	468
% App. Total	7.1	87.6	3.4	1.9		42.1	5.3	52.6		5.1	75.8	11.5	7.6		26.9	7.7	65.4		
PHF	.679	.798	.563	.417	.821	.667	.250	.500	.594	.667	.875	.643	.600	.957	.350	.500	.708	.542	.914



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CITY OF NEWARK

Latitude: 37.523588
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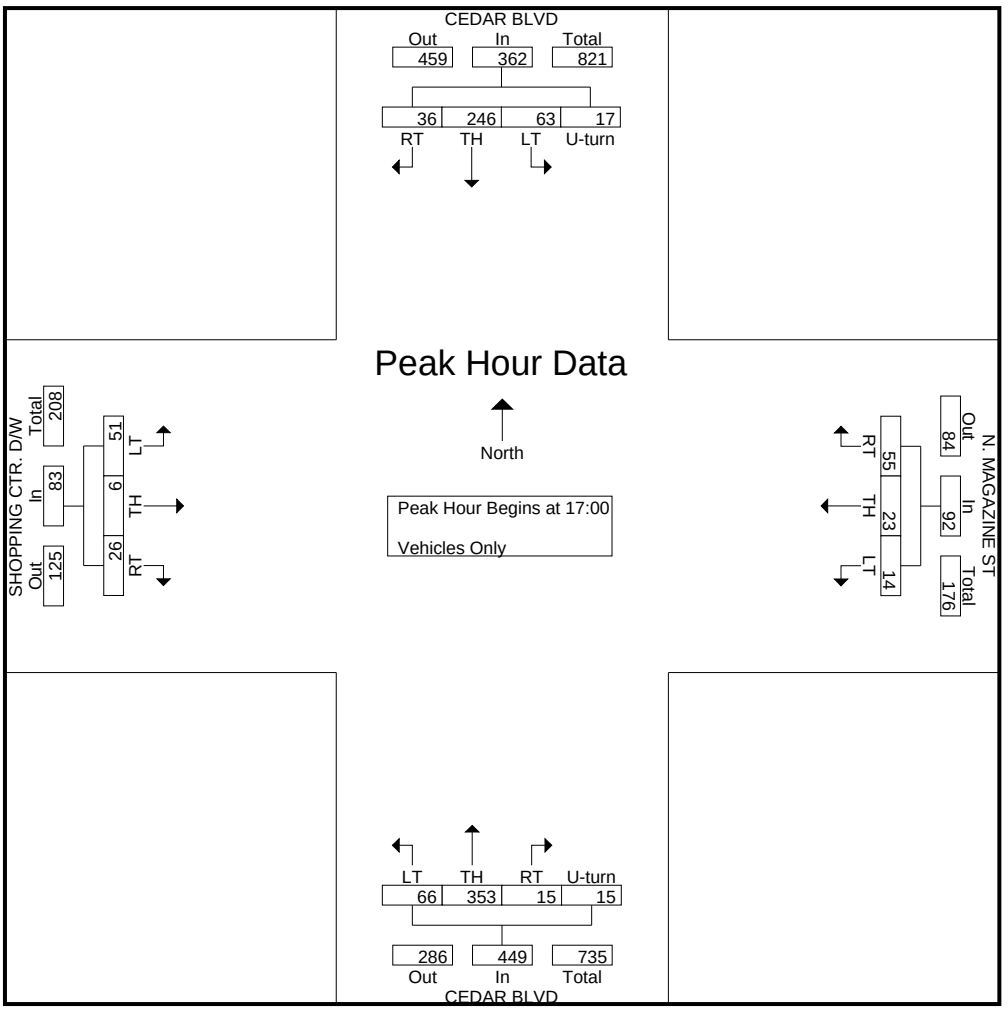
File Name : cedar-n. magazine-p
Site Code : 5
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound					N. MAGAZINE ST Westbound				CEDAR BLVD Northbound					SHOPPING CTR. D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	10	70	7	5	92	10	7	2	19	2	68	13	2	85	7	0	10	17	213
16:15	7	80	11	4	102	12	2	3	17	3	83	14	4	104	9	0	8	17	240
16:30	8	66	10	1	85	17	4	2	23	3	71	11	3	88	4	2	14	20	216
16:45	9	64	12	1	86	9	3	4	16	4	85	13	2	104	10	6	8	24	230
Total	34	280	40	11	365	48	16	11	75	12	307	51	11	381	30	8	40	78	899
17:00	8	70	13	6	97	10	5	0	15	3	98	12	4	117	6	1	12	19	248
17:15	8	56	21	3	88	18	3	4	25	5	78	22	3	108	7	2	18	27	248
17:30	6	65	13	3	87	13	9	2	24	5	105	14	5	129	8	2	9	19	259
17:45	14	55	16	5	90	14	6	8	28	2	72	18	3	95	5	1	12	18	231
Total	36	246	63	17	362	55	23	14	92	15	353	66	15	449	26	6	51	83	986
Grand Total	70	526	103	28	727	103	39	25	167	27	660	117	26	830	56	14	91	161	1885
Apprch %	9.6	72.4	14.2	3.9		61.7	23.4	15		3.3	79.5	14.1	3.1		34.8	8.7	56.5		
Total %	3.7	27.9	5.5	1.5	38.6	5.5	2.1	1.3	8.9	1.4	35	6.2	1.4	44	3	0.7	4.8	8.5	

	CEDAR BLVD Southbound					N. MAGAZINE ST Westbound				CEDAR BLVD Northbound					SHOPPING CTR. D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 17:00																			
17:00	8	**70**	13	**6**	**97**	10	5	0	15	3	98	12	4	117	6	1	12	19	248
17:15	8	56	**21**	3	88	**18**	3	4	25	**5**		**22**				**2**	**18**	**27**	248
17:30	6	65	13	3	87	13	**9**	2	24	5	**105**	14	**5**	**129**	**8**	2	9	19	**259**
17:45	**14**	55	16	5	90	14	6	**8**	**28**	2	72	18	3	95	5	1	12	18	231
Total Volume	36	246	63	17	362	55	23	14	92	15	353	66	15	449	26	6	51	83	986
% App. Total	9.9	68	17.4	4.7		59.8	25	15.2		3.3	78.6	14.7	3.3		31.3	7.2	61.4		
PHF	.643	.879	.750	.708	.933	.764	.639	.438	.821	.750	.840	.750	.750	.870	.813	.750	.708	.769	.952



TRAFFIC COUNTS PLUS
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925.305.4358

CITY OF NEWARK

Latitude: 37.523588
Longitude: -122.005070

File Name : cedar-n. magazine-s
Site Code : 5
Start Date : 10/24/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound					N. MAGAZINE ST Westbound				CEDAR BLVD Northbound					SHOPPING CTR. D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
11:00	24	64	7	4	99	8	3	6	17	2	59	25	2	88	8	4	14	26	230
11:15	12	55	18	3	88	7	2	1	10	1	46	29	0	76	14	3	22	39	213
11:30	17	79	3	4	103	9	5	3	17	0	56	13	1	70	7	1	15	23	213
11:45	13	73	13	0	99	10	6	3	19	3	50	24	1	78	4	1	13	18	214
Total	66	271	41	11	389	34	16	13	63	6	211	91	4	312	33	9	64	106	870
12:00	20	60	7	1	88	10	6	4	20	4	61	23	4	92	9	2	26	37	237
12:15	24	82	12	2	120	9	2	5	16	4	62	23	1	90	7	4	28	39	265
12:30	23	69	13	1	106	8	5	3	16	2	49	15	1	67	10	6	26	42	231
12:45	27	77	11	6	121	7	4	2	13	5	76	20	0	101	10	6	22	38	273
Total	94	288	43	10	435	34	17	14	65	15	248	81	6	350	36	18	102	156	1006
13:00	22	61	20	10	113	11	2	5	18	3	77	28	6	114	3	6	23	32	277
13:15	10	67	10	5	92	16	7	3	26	0	57	16	6	79	9	1	25	35	232
13:30	19	63	17	10	109	16	4	6	26	3	56	19	3	81	5	4	14	23	239
13:45	18	65	7	2	92	15	6	3	24	6	57	20	2	85	4	4	26	34	235
Total	69	256	54	27	406	58	19	17	94	12	247	83	17	359	21	15	88	124	983
14:00	15	66	10	2	93	11	6	1	18	2	67	21	5	95	10	4	24	38	244
14:15	14	69	13	5	101	15	2	2	19	3	46	23	3	75	7	3	23	33	228
14:30	14	70	14	5	103	14	5	4	23	0	59	20	2	81	5	3	13	21	228
14:45	17	47	16	2	82	12	3	6	21	1	78	22	2	103	9	2	18	29	235
Total	60	252	53	14	379	52	16	13	81	6	250	86	12	354	31	12	78	121	935
15:00	13	67	11	3	94	8	4	3	15	1	65	10	3	79	7	4	22	33	221
15:15	14	50	15	2	81	18	8	2	28	1	68	14	7	90	8	0	17	25	224
15:30	13	79	9	3	104	11	5	4	20	3	57	19	3	82	8	3	15	26	232
15:45	12	46	13	1	72	11	4	4	19	2	58	19	2	81	10	0	15	25	197
Total	52	242	48	9	351	48	21	13	82	7	248	62	15	332	33	7	69	109	874
16:00	13	47	15	7	82	15	2	3	20	2	45	15	4	66	5	5	15	25	193
16:15	11	50	11	6	78	6	5	5	16	5	63	20	3	91	5	2	13	20	205
16:30	11	68	8	2	89	16	5	7	28	5	78	14	2	99	3	3	16	22	238
16:45	15	69	11	6	101	17	9	7	33	3	63	30	8	104	6	1	23	30	268
Total	50	234	45	21	350	54	21	22	97	15	249	79	17	360	19	11	67	97	904
Grand Total	391	1543	284	92	2310	280	110	92	482	61	1453	482	71	2067	173	72	468	713	5572
Apprch %	16.9	66.8	12.3	4		58.1	22.8	19.1		3	70.3	23.3	3.4		24.3	10.1	65.6		
Total %	7	27.7	5.1	1.7	41.5	5	2	1.7	8.7	1.1	26.1	8.7	1.3	37.1	3.1	1.3	8.4	12.8	

	CEDAR BLVD Southbound					N. MAGAZINE ST Westbound				CEDAR BLVD Northbound					SHOPPING CTR. D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 11:00 to 16:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 12:15																			
12:15	24	**82**	12	2	120	9	2	**5**	16	4	62	23	1	90	7	4	**28**	39	265
12:30	23	69	13	1	106	8	**5**	3	16	2	49	15	1	67	**10**	**6**	26	**42**	231
12:45	**27**	77	11	6	**121**	7	4	2	13	**5**									
13:00	**22**	**61**	**20**	**10**	113	**11**	2	5	**18**	3	**77**	**28**	**6**	**114**	3	6	23	32	**277**
Total Volume	96	289	56	19	460	35	13	15	63	14	264	86	8	372	30	22	99	151	1046
% App. Total	20.9	62.8	12.2	4.1		55.6	20.6	23.8		3.8	71	23.1	2.2		19.9	14.6	65.6		
PHF	.889	.881	.700	.475	.950	.795	.650	.750	.875	.700	.857	.768	.333	.816	.750	.917	.884	.899	.944

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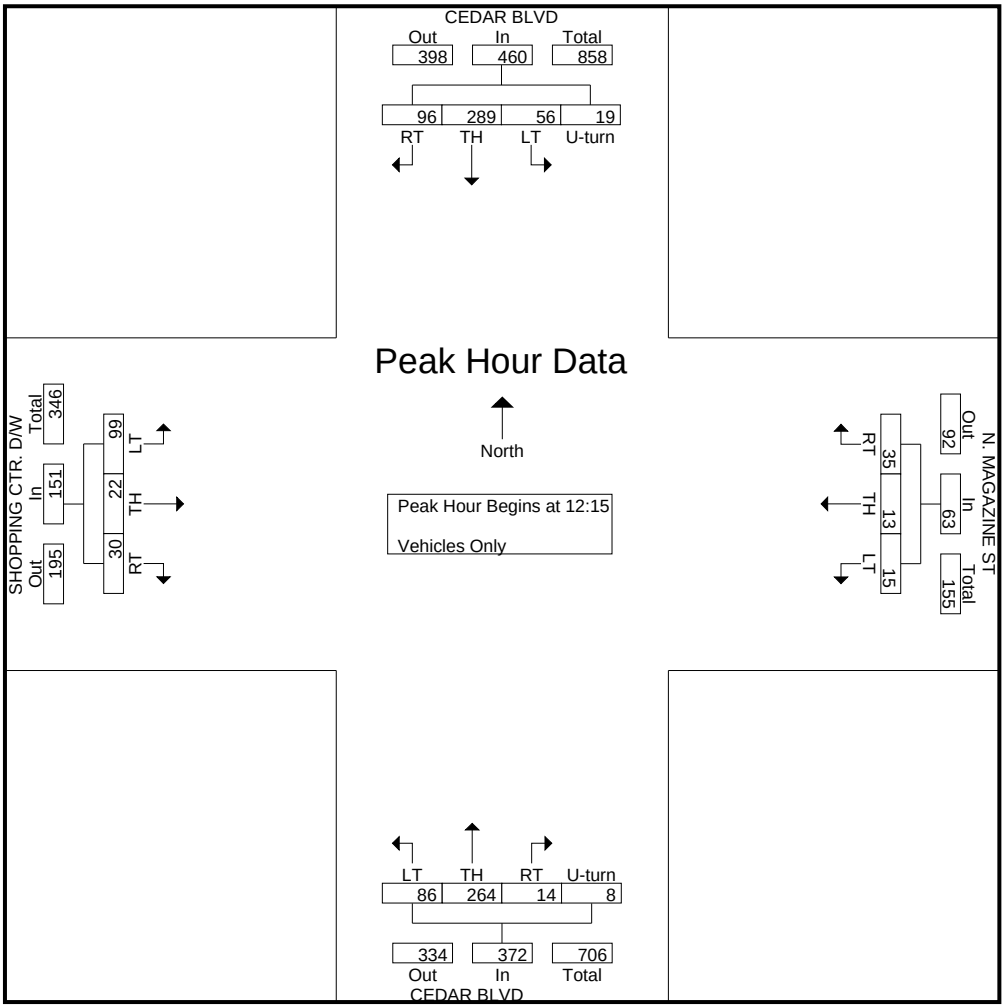
File Name : cedar-n. magazine-s
Site Code : 5
Start Date : 10/24/2020
Page No : 2



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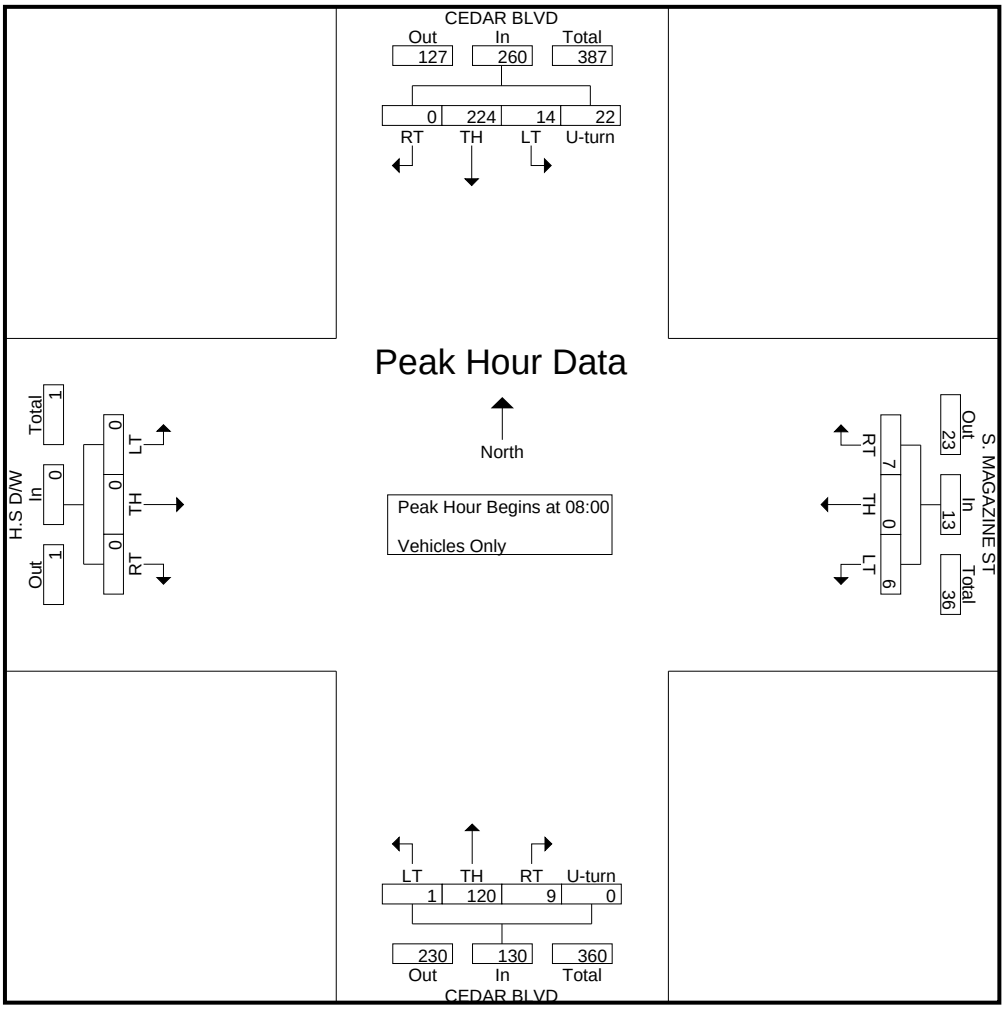
Latitude: 37.522651
Longitude: -122.002425

File Name : cedar-s. magazine-a
Site Code : 4
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound					S. MAGAZINE ST Westbound				CEDAR BLVD Northbound					H.S D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	23	2	2	27	2	0	0	2	0	17	0	0	17	0	0	0	0	46
07:15	0	34	0	0	34	5	0	1	6	1	31	0	0	32	0	0	0	0	72
07:30	0	42	3	1	46	2	0	1	3	2	23	0	0	25	0	0	0	0	74
07:45	1	58	8	1	68	2	0	0	2	1	25	0	0	26	0	0	0	0	96
Total	1	157	13	4	175	11	0	2	13	4	96	0	0	100	0	0	0	0	288
08:00	0	47	3	4	54	4	0	2	6	2	31	1	0	34	0	0	0	0	94
08:15	0	51	2	3	56	0	0	0	0	3	35	0	0	38	0	0	0	0	94
08:30	0	60	4	8	72	3	0	3	6	1	29	0	0	30	0	0	0	0	108
08:45	0	66	5	7	78	0	0	1	1	3	25	0	0	28	0	0	0	0	107
Total	0	224	14	22	260	7	0	6	13	9	120	1	0	130	0	0	0	0	403
Grand Total	1	381	27	26	435	18	0	8	26	13	216	1	0	230	0	0	0	0	691
Apprch %	0.2	87.6	6.2	6		69.2	0	30.8		5.7	93.9	0.4	0		0	0	0		
Total %	0.1	55.1	3.9	3.8	63	2.6	0	1.2	3.8	1.9	31.3	0.1	0	33.3	0	0	0	0	

	CEDAR BLVD Southbound					S. MAGAZINE ST Westbound				CEDAR BLVD Northbound					H.S D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 08:00																			
08:00	0	47	3	4	54	**4**	0	2	**6**	2	31	**1**	**0**	**34**	**0**	**0**	**0**	**0**	**94**
08:15	**0**	**51**	**2**	**3**	**56**	**0**	**0**	**0**	**0**	**3**	**35**	0	0	**38**	0	0	0	0	94
08:30	0	60	4	**8**	72	3	0	**3**	6	1	29	0	0	30	0	0	0	0	**108**
08:45	0	**66**	**5**	7	**78**	0	0	1	1	3	25	0	0	28	0	0	0	0	107
Total Volume	0	224	14	22	260	7	0	6	13	9	120	1	0	130	0	0	0	0	403
% App. Total	0	86.2	5.4	8.5		53.8	0	46.2		6.9	92.3	0.8	0		0	0	0		
PHF	.000	.848	.700	.688	.833	.438	.000	.500	.542	.750	.857	.250	.000	.855	.000	.000	.000	.000	.933



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CITY OF NEWARK

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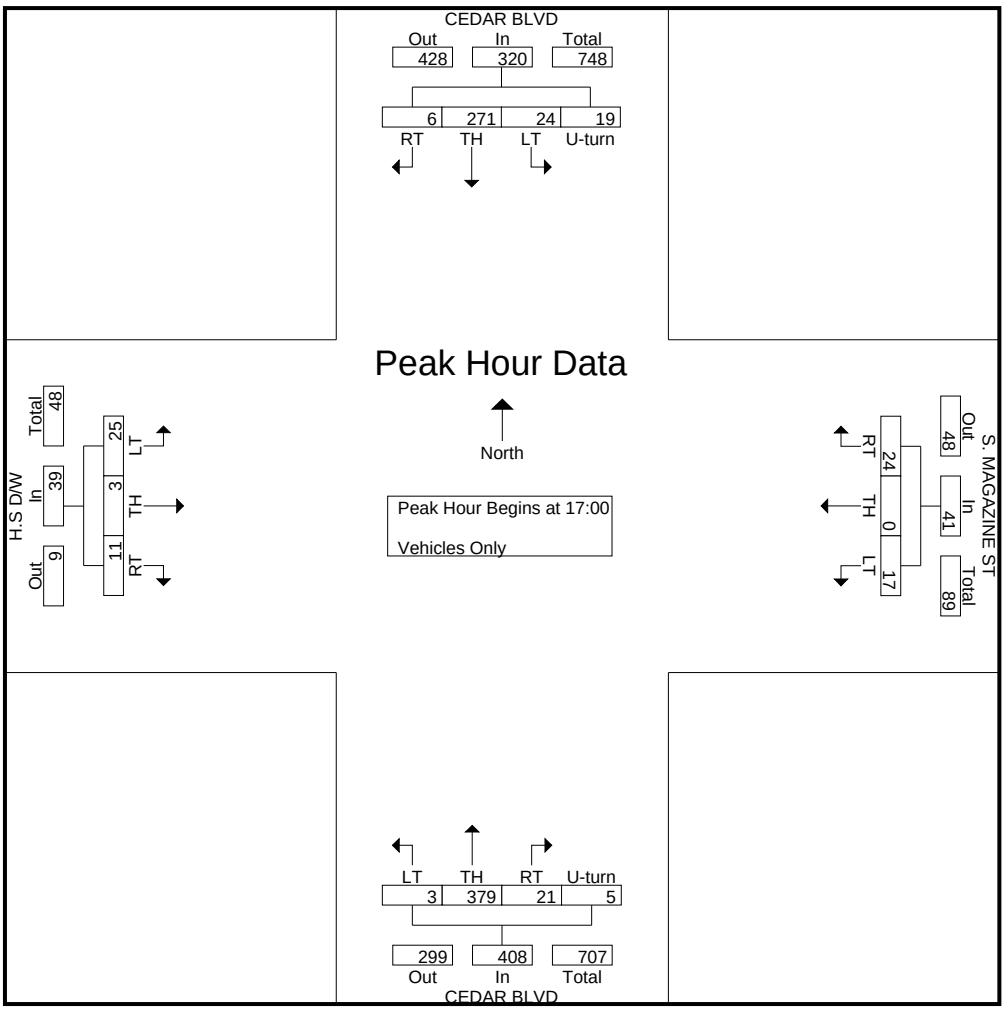
Longitude: -122.002425

File Name : cedar-s. magazine-p
Site Code : 4
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound					S. MAGAZINE ST Westbound				CEDAR BLVD Northbound					H.S D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	73	7	2	82	4	0	5	9	6	81	2	2	91	1	0	3	4	186
16:15	1	73	8	8	90	6	0	1	7	4	86	4	2	96	3	1	3	7	200
16:30	0	57	3	4	64	3	0	1	4	2	75	0	3	80	6	1	7	14	162
16:45	0	67	4	3	74	5	1	1	7	1	90	3	2	96	3	0	6	9	186
Total	1	270	22	17	310	18	1	8	27	13	332	9	9	363	13	2	19	34	734
17:00	1	64	7	4	76	7	0	6	13	6	96	1	1	104	6	1	8	15	208
17:15	3	65	6	5	79	5	0	3	8	6	88	1	0	95	1	2	7	10	192
17:30	2	73	8	3	86	8	0	4	12	5	114	0	1	120	0	0	3	3	221
17:45	0	69	3	7	79	4	0	4	8	4	81	1	3	89	4	0	7	11	187
Total	6	271	24	19	320	24	0	17	41	21	379	3	5	408	11	3	25	39	808
Grand Total	7	541	46	36	630	42	1	25	68	34	711	12	14	771	24	5	44	73	1542
Apprch %	1.1	85.9	7.3	5.7		61.8	1.5	36.8		4.4	92.2	1.6	1.8		32.9	6.8	60.3		
Total %	0.5	35.1	3	2.3	40.9	2.7	0.1	1.6	4.4	2.2	46.1	0.8	0.9	50	1.6	0.3	2.9	4.7	

	CEDAR BLVD Southbound					S. MAGAZINE ST Westbound				CEDAR BLVD Northbound					H.S D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 17:00																			
17:00	1	64	7	4	76	7	0	**6**	**13**	**6**	**96**	**1**	**1**	**104**	**6**	1	**8**	**15**	208
17:15	**3**	65	6	5	79	5	0	3	8	6	88	1	0	95	1	**2**	7	10	192
17:30	2	**73**	**8**	3	**86**	**8**	0	4	12	5	**114**	0	1	**120**	0	0	3	3	**221**
17:45	0	69	3	**7**	79	4	0	4	8	4	81	1	**3**	89	4	0	7	11	187
Total Volume	6	271	24	19	320	24	0	17	41	21	379	3	5	408	11	3	25	39	808
% App. Total	1.9	84.7	7.5	5.9		58.5	0	41.5		5.1	92.9	0.7	1.2		28.2	7.7	64.1		
PHF	.500	.928	.750	.679	.930	.750	.000	.708	.788	.875	.831	.750	.417	.850	.458	.375	.781	.650	.914



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CITY OF NEWARK

Latitude: 37.522354
Longitude: -122.002422

File Name : cedar-s. magazine-s
Site Code : 4
Start Date : 10/24/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound					S. MAGAZINE ST Westbound				CEDAR BLVD Northbound					HIGH SCHOOL D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
11:00	0	69	6	8	83	4	0	1	5	1	71	0	0	72	0	0	0	0	160
11:15	0	58	13	6	77	6	0	1	7	1	60	0	2	63	0	0	0	0	147
11:30	0	88	10	4	102	8	0	4	12	2	66	0	0	68	0	0	0	0	182
11:45	0	69	6	7	82	2	0	2	4	7	75	0	1	83	0	0	0	0	169
Total	0	284	35	25	344	20	0	8	28	11	272	0	3	286	0	0	0	0	658
12:00	0	74	6	10	90	11	0	5	16	0	68	0	1	69	0	0	0	0	175
12:15	0	88	9	9	106	5	0	4	9	4	76	0	0	80	0	0	0	0	195
12:30	0	70	7	8	85	6	0	3	9	6	61	0	3	70	0	0	0	0	164
12:45	0	77	9	12	98	11	0	4	15	3	84	0	0	87	0	0	0	0	200
Total	0	309	31	39	379	33	0	16	49	13	289	0	4	306	0	0	0	0	734
13:00	0	70	3	15	88	7	0	5	12	3	82	0	1	86	0	0	0	0	186
13:15	0	62	7	13	82	5	0	2	7	5	66	0	0	71	0	0	0	0	160
13:30	0	76	8	5	89	3	0	1	4	3	74	0	0	77	0	0	0	0	170
13:45	0	71	4	5	80	7	0	2	9	4	78	0	1	83	0	0	0	0	172
Total	0	279	22	38	339	22	0	10	32	15	300	0	2	317	0	0	0	0	688
14:00	0	74	4	12	90	9	0	1	10	1	73	0	0	74	0	0	0	0	174
14:15	0	86	7	10	103	7	0	4	11	5	61	0	0	66	0	0	0	0	180
14:30	0	82	3	6	91	5	0	4	9	7	67	0	0	74	0	0	0	0	174
14:45	0	58	3	13	74	9	0	1	10	4	83	0	1	88	0	0	0	0	172
Total	0	300	17	41	358	30	0	10	40	17	284	0	1	302	0	0	0	0	700
15:00	0	67	4	9	80	8	0	4	12	6	64	0	0	70	0	0	0	0	162
15:15	0	57	9	6	72	5	0	2	7	3	80	0	1	84	0	0	0	0	163
15:30	0	88	8	3	99	9	0	5	14	3	76	0	0	79	0	0	0	0	192
15:45	0	61	5	4	70	8	0	6	14	4	71	0	0	75	0	0	0	0	159
Total	0	273	26	22	321	30	0	17	47	16	291	0	1	308	0	0	0	0	676
16:00	0	53	3	5	61	10	0	3	13	8	55	0	2	65	0	0	0	0	139
16:15	0	68	9	6	83	11	0	3	14	5	76	0	0	81	0	0	0	0	178
16:30	0	78	2	6	86	13	0	5	18	3	83	0	1	87	0	0	0	0	191
16:45	0	79	4	12	95	15	0	4	19	4	76	0	0	80	0	0	0	0	194
Total	0	278	18	29	325	49	0	15	64	20	290	0	3	313	0	0	0	0	702
Grand Total	0	1723	149	194	2066	184	0	76	260	92	1726	0	14	1832	0	0	0	0	4158
Apprch %	0	83.4	7.2	9.4		70.8	0	29.2		5	94.2	0	0.8		0	0	0		
Total %	0	41.4	3.6	4.7	49.7	4.4	0	1.8	6.3	2.2	41.5	0	0.3	44.1	0	0	0	0	

	CEDAR BLVD Southbound					S. MAGAZINE ST Westbound				CEDAR BLVD Northbound					HIGH SCHOOL D/W Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 11:00 to 16:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 12:15																			
12:15	0	**88**	**9**	9	**106**	5	0	4	9	4	76	0	0	80	0	0	0	0	195
12:30	0	70	7	8	85	6	0	3	9	**6**			**3**	70	0	0	0	0	164
12:45	0	77	9	12	98	**11**	0	4	**15**	3	**84**	0	0	**87**	0	0	0	0	**200**
13:00	0	70	3	**15**	88	7	0	**5**	12	3	82	0	1	86	0	0	0	0	186
Total Volume	0	305	28	44	377	29	0	16	45	16	303	0	4	323	0	0	0	0	745
% App. Total	0	80.9	7.4	11.7		64.4	0	35.6		5	93.8	0	1.2		0	0	0		
PHF	.000	.866	.778	.733	.889	.659	.000	.800	.750	.667	.902	.000	.333	.928	.000	.000	.000	.000	.931

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CITY OF NEWARK

Latitude: 37.522354
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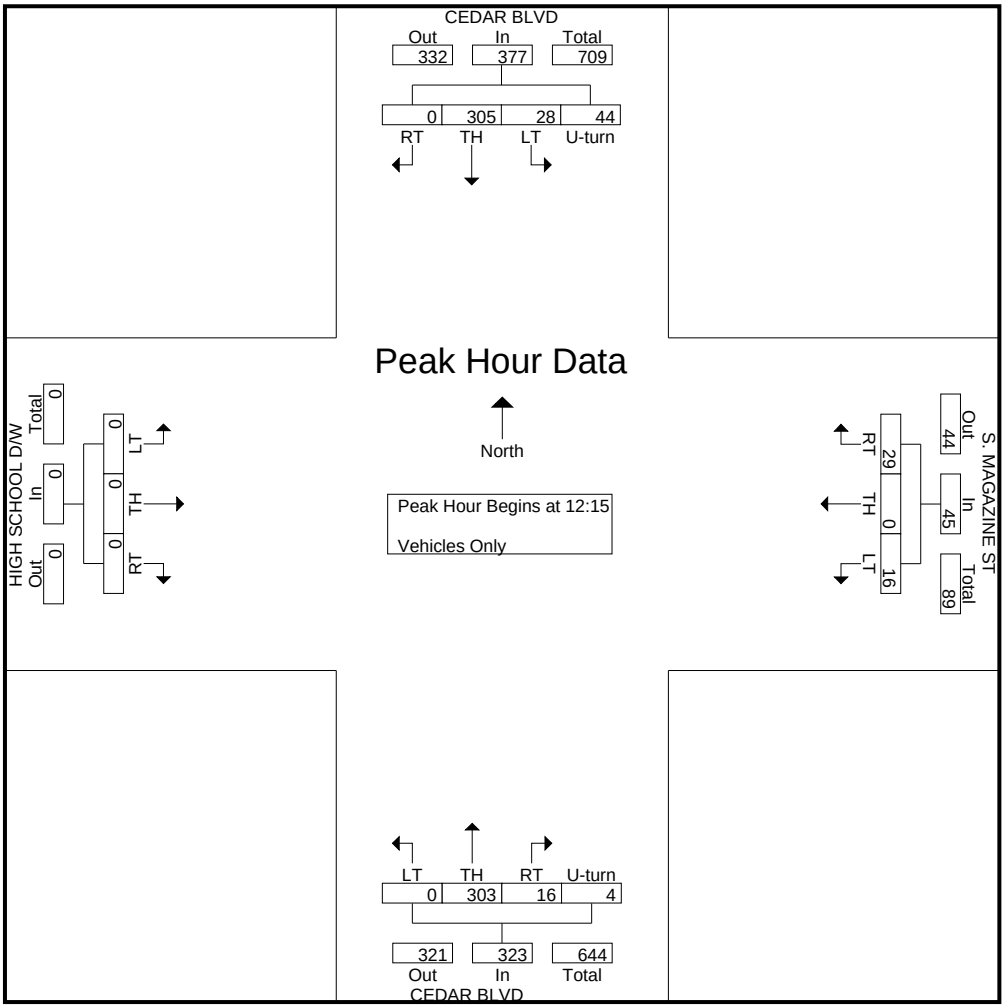
File Name : cedar-s. magazine-s
Site Code : 4
Start Date : 10/24/2020
Page No : 2



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CITY OF NEWARK

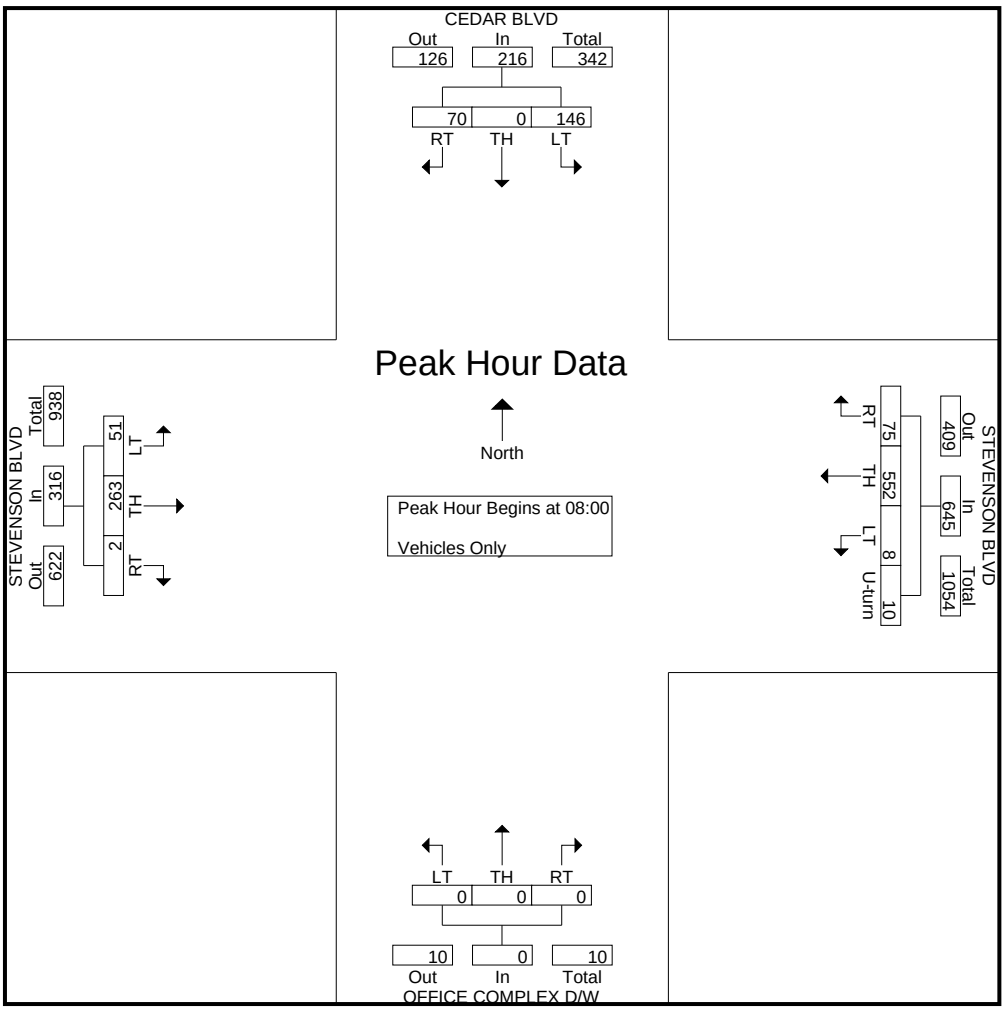
Latitude: 37.518089
Longitude: -122.991355

File Name : cedar-stevenson-a
Site Code : 2
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound				STEVENSON BLVD Westbound					OFFICE COMPLEX D/W Northbound				STEVENSON BLVD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	12	0	24	36	6	121	0	3	130	1	0	0	1	0	51	15	66	233
07:15	13	0	22	35	14	119	0	7	140	0	0	0	0	0	57	10	67	242
07:30	11	0	29	40	8	107	1	3	119	0	0	0	0	1	66	4	71	230
07:45	20	0	31	51	15	148	3	2	168	0	0	0	0	0	70	13	83	302
Total	56	0	106	162	43	495	4	15	557	1	0	0	1	1	244	42	287	1007
08:00	20	0	33	53	16	140	1	3	160	0	0	0	0	0	65	17	82	295
08:15	12	0	33	45	16	133	0	4	153	0	0	0	0	1	68	12	81	279
08:30	21	0	40	61	20	131	2	1	154	0	0	0	0	1	60	10	71	286
08:45	17	0	40	57	23	148	5	2	178	0	0	0	0	0	70	12	82	317
Total	70	0	146	216	75	552	8	10	645	0	0	0	0	2	263	51	316	1177
Grand Total	126	0	252	378	118	1047	12	25	1202	1	0	0	1	3	507	93	603	2184
Apprch %	33.3	0	66.7		9.8	87.1	1	2.1		100	0	0		0.5	84.1	15.4		
Total %	5.8	0	11.5	17.3	5.4	47.9	0.5	1.1	55	0	0	0	0	0.1	23.2	4.3	27.6	

	CEDAR BLVD Southbound				STEVENSON BLVD Westbound					OFFICE COMPLEX D/W Northbound				STEVENSON BLVD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:00																		
08:00	20	0	33	53	16	140	1	3	160	0	0	0	0	0	65	**17**	**82**	295
08:15	12	0	33	45	16	133	0	**4**	153	0	0	0	0	**1**	68	12	81	279
08:30	**21**	0	**40**	**61**	20	131	2	1	154	0	0	0	0	1	60	10	71	286
08:45	17	0	40	57	**23**	**148**	**5**	2	**178**	0	0	0	0	0	**70**	12	82	**317**
Total Volume	70	0	146	216	75	552	8	10	645	0	0	0	0	2	263	51	316	1177
% App. Total	32.4	0	67.6		11.6	85.6	1.2	1.6		0	0	0		0.6	83.2	16.1		
PHF	.833	.000	.913	.885	.815	.932	.400	.625	.906	.000	.000	.000	.000	.500	.939	.750	.963	.928



TRAFFIC COUNTS PLUS
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925.305.4358

CITY OF NEWARK

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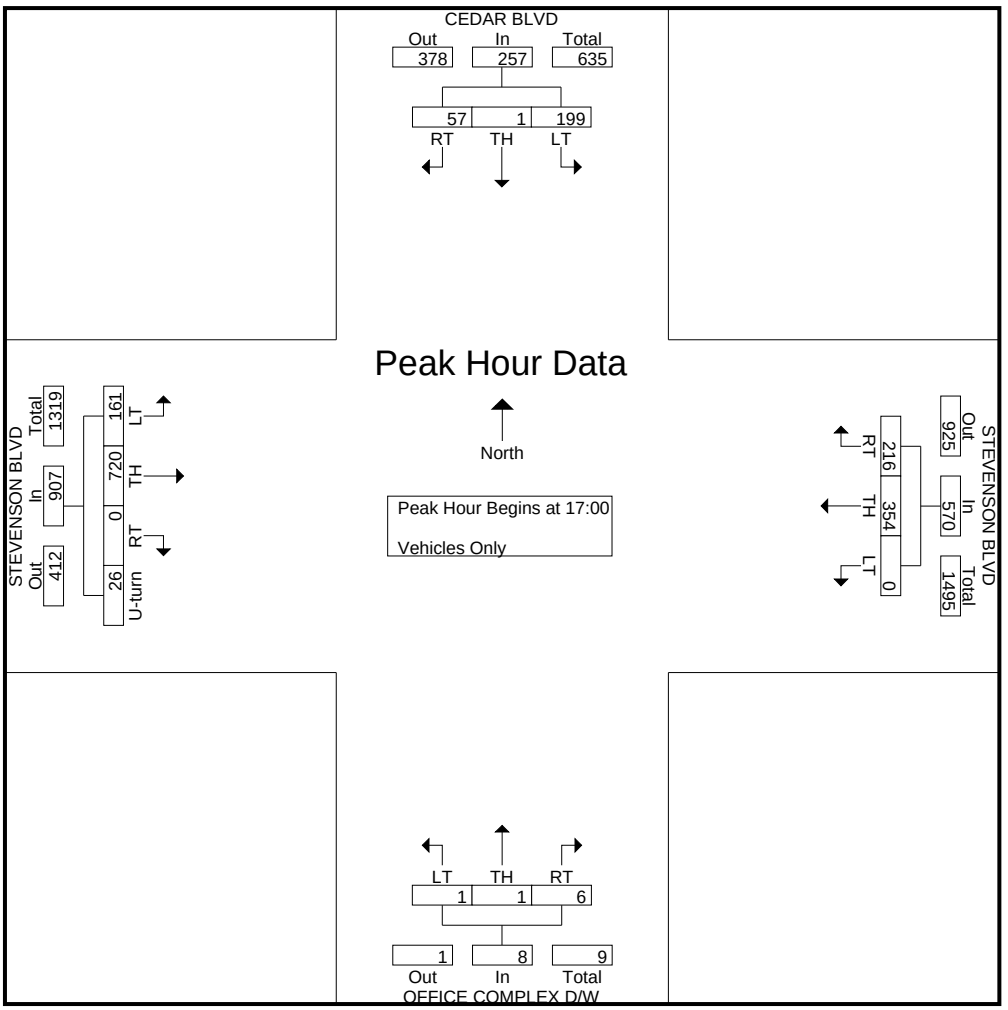
File Name : cedar-stevenson-p
Site Code : 2
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	CEDAR BLVD Southbound				STEVENSON BLVD Westbound				OFFICE COMPLEX D/W Northbound				STEVENSON BLVD Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
16:00	16	0	46	62	48	77	0	125	0	0	0	0	1	176	23	2	202	389
16:15	12	0	51	63	52	61	0	113	3	0	0	3	0	113	39	7	159	338
16:30	18	0	48	66	52	79	1	132	6	1	0	7	0	205	42	5	252	457
16:45	17	0	43	60	51	57	1	109	4	0	0	4	0	161	22	8	191	364
Total	63	0	188	251	203	274	2	479	13	1	0	14	1	655	126	22	804	1548
17:00	13	0	48	61	56	78	0	134	5	1	1	7	0	216	39	4	259	461
17:15	13	0	54	67	48	78	0	126	0	0	0	0	0	195	43	9	247	440
17:30	16	1	51	68	61	112	0	173	0	0	0	0	0	146	40	6	192	433
17:45	15	0	46	61	51	86	0	137	1	0	0	1	0	163	39	7	209	408
Total	57	1	199	257	216	354	0	570	6	1	1	8	0	720	161	26	907	1742
Grand Total	120	1	387	508	419	628	2	1049	19	2	1	22	1	1375	287	48	1711	3290
Apprch %	23.6	0.2	76.2		39.9	59.9	0.2		86.4	9.1	4.5		0.1	80.4	16.8	2.8		
Total %	3.6	0	11.8	15.4	12.7	19.1	0.1	31.9	0.6	0.1	0	0.7	0	41.8	8.7	1.5	52	

	CEDAR BLVD Southbound				STEVENSON BLVD Westbound				OFFICE COMPLEX D/W Northbound				STEVENSON BLVD Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 17:00																		
17:00	13	0	48	61	56	78	0	134	**5**	**1**	**1**	**7**	0	**216**	39	4	**259**	**461**
17:15	13	0	**54**	67	48	78	0	126	0	0	0	0	0	195	**43**	**9**	247	440
17:30	**16**	**1**	51	**68**	**61**	**112**	0	**173**	0	0	0	0	0	146	40	6	192	433
17:45	15	0	46	61	51	86	0	137	1	0	0	1	0	163	39	7	209	408
Total Volume	57	1	199	257	216	354	0	570	6	1	1	8	0	720	161	26	907	1742
% App. Total	22.2	0.4	77.4		37.9	62.1	0		75	12.5	12.5		0	79.4	17.8	2.9		
PHF	.891	.250	.921	.945	.885	.790	.000	.824	.300	.250	.250	.286	.000	.833	.936	.722	.875	.945



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CITY OF NEWARK

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File Name : balentine-balentine-a
Site Code : 3
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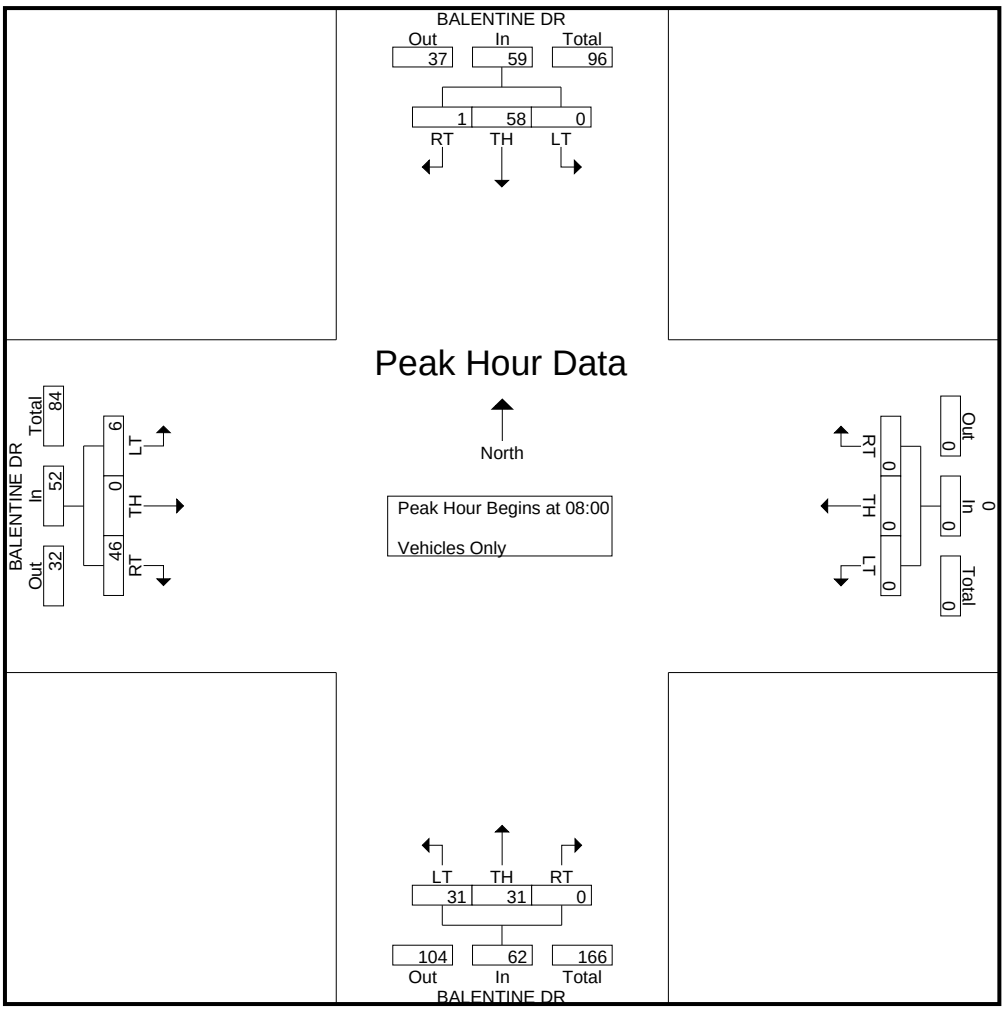
Groups Printed- Vehicles Only

	BALENTINE DR Southbound				0 Westbound				BALENTINE DR Northbound				BALENTINE DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	6	0	6	0	0	0	0	0	7	3	10	4	0	0	4	20
07:15	0	9	0	9	0	0	0	0	0	5	6	11	10	0	0	10	30
07:30	1	11	0	12	0	0	0	0	0	9	4	13	6	0	2	8	33
07:45	3	11	0	14	0	0	0	0	0	8	8	16	10	0	2	12	42
Total	4	37	0	41	0	0	0	0	0	29	21	50	30	0	4	34	125
08:00	1	16	0	17	0	0	0	0	0	10	6	16	6	0	0	6	39
08:15	0	13	0	13	0	0	0	0	0	5	5	10	11	0	2	13	36
08:30	0	10	0	10	0	0	0	0	0	7	11	18	13	0	2	15	43
08:45	0	19	0	19	0	0	0	0	0	9	9	18	16	0	2	18	55
Total	1	58	0	59	0	0	0	0	0	31	31	62	46	0	6	52	173
Grand Total	5	95	0	100	0	0	0	0	0	60	52	112	76	0	10	86	298
Apprch %	5	95	0		0	0	0		0	53.6	46.4		88.4	0	11.6		
Total %	1.7	31.9	0	33.6	0	0	0	0	0	20.1	17.4	37.6	25.5	0	3.4	28.9	

	BALENTINE DR Southbound				0 Westbound				BALENTINE DR Northbound				BALENTINE DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	**1**	16	0	17	0	0	0	0	0	**10**	6	16	6	0	0	6	39
08:15	0	13	0	13	0	0	0	0	0	5	5	10	11	0	**2**	13	36
08:30	0	10	0	10	0	0	0	0	0	7	**11**	**18**	13	0	2	15	43
08:45	0	**19**	0	**19**	0	0	0	0	0	9	9	18	**16**	0	2	**18**	**55**
Total Volume	1	58	0	59	0	0	0	0	0	31	31	62	46	0	6	52	173
% App. Total	1.7	98.3	0		0	0	0		0	50	50		88.5	0	11.5		
PHF	.250	.763	.000	.776	.000	.000	.000	.000	.000	.775	.705	.861	.719	.000	.750	.722	.786



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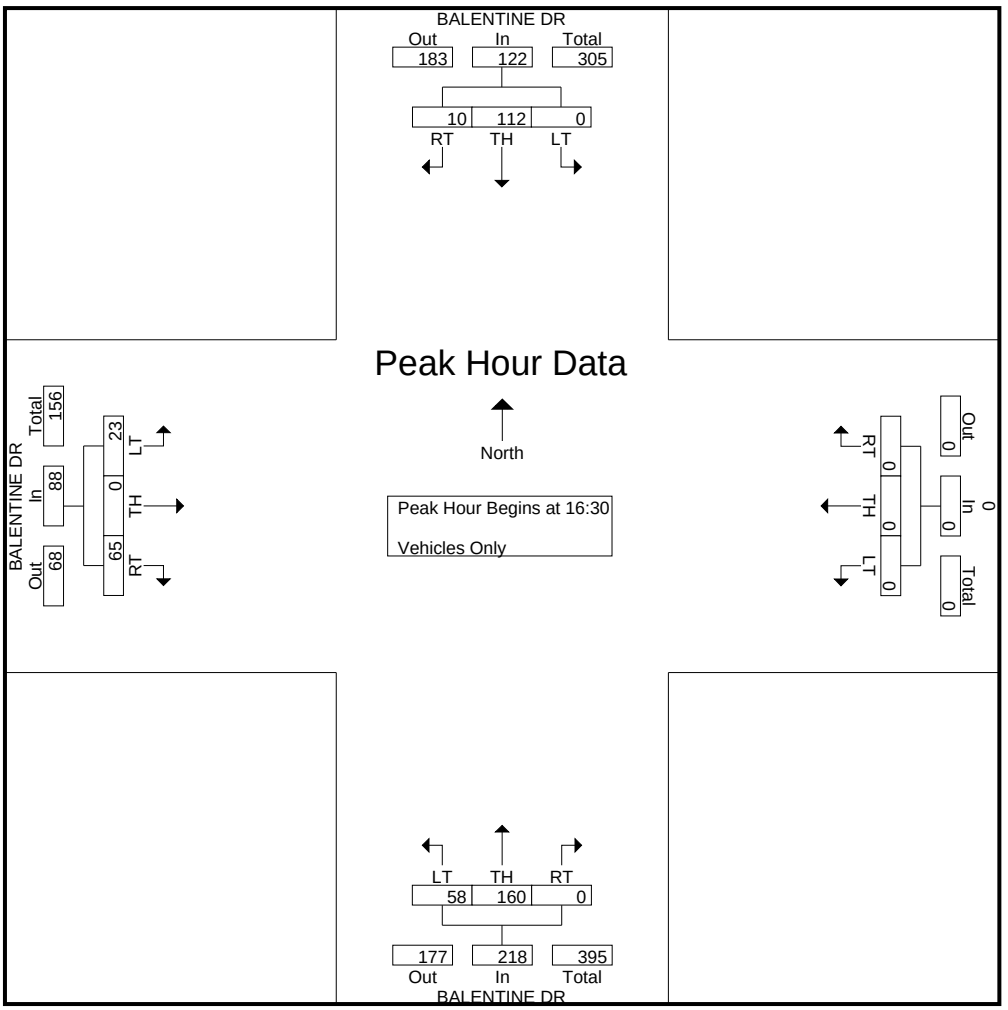
File Name : balentine-balentine-p
Site Code : 3
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	BALENTINE DR Southbound				0 Westbound				BALENTINE DR Northbound				BALENTINE DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	1	42	0	43	0	0	0	0	0	43	6	49	8	0	2	10	102
16:15	6	34	0	40	0	0	0	0	0	47	16	63	10	0	4	14	117
16:30	4	29	0	33	0	0	0	0	0	32	11	43	19	0	7	26	102
16:45	2	24	0	26	0	0	0	0	0	37	14	51	12	0	5	17	94
Total	13	129	0	142	0	0	0	0	0	159	47	206	49	0	18	67	415
17:00	2	22	0	24	0	0	0	0	0	43	21	64	16	0	4	20	108
17:15	2	37	0	39	0	0	0	0	0	48	12	60	18	0	7	25	124
17:30	2	26	0	28	0	0	0	0	0	46	20	66	3	0	3	6	100
17:45	1	31	0	32	0	0	0	0	0	48	10	58	2	0	4	6	96
Total	7	116	0	123	0	0	0	0	0	185	63	248	39	0	18	57	428
Grand Total	20	245	0	265	0	0	0	0	0	344	110	454	88	0	36	124	843
Apprch %	7.5	92.5	0		0	0	0		0	75.8	24.2		71	0	29		
Total %	2.4	29.1	0	31.4	0	0	0	0	0	40.8	13	53.9	10.4	0	4.3	14.7	

	BALENTINE DR Southbound				0 Westbound				BALENTINE DR Northbound				BALENTINE DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	**4**	29	0	33	0	0	0	0	0	32	11	43	**19**	0	**7**	**26**	102
16:45	2	24	0	26	0	0	0	0	0	37	14	51	12	0	5	17	94
17:00	2	22	0	24	0	0	0	0	0	43	**21**	**64**	16	0	4	20	108
17:15	2	**37**	0	**39**	0	0	0	0	0	**48**	12	60	18	0	7	25	**124**
Total Volume	10	112	0	122	0	0	0	0	0	160	58	218	65	0	23	88	428
% App. Total	8.2	91.8	0		0	0	0		0	73.4	26.6		73.9	0	26.1		
PHF	.625	.757	.000	.782	.000	.000	.000	.000	.000	.833	.690	.852	.855	.000	.821	.846	.863



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File Name : balentine-balentine-s
Site Code : 3
Start Date : 10/24/2020
Page No : 1

Groups Printed- Vehicles Only

	BALENTINE DR Southbound				0 Westbound				BALENTINE DR Northbound				BALENTINE DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
11:00	16	45	0	61	0	0	0	0	0	18	1	19	4	0	2	6	86
11:15	6	45	0	51	0	0	0	0	0	29	2	31	6	0	0	6	88
11:30	16	40	0	56	0	0	0	0	0	20	3	23	10	0	2	12	91
11:45	11	47	0	58	0	0	0	0	0	29	4	33	17	0	5	22	113
Total	49	177	0	226	0	0	0	0	0	96	10	106	37	0	9	46	378
12:00	19	41	0	60	0	0	0	0	0	30	3	33	8	0	2	10	103
12:15	12	45	0	57	0	0	0	0	0	28	1	29	12	0	3	15	101
12:30	11	48	0	59	0	0	0	0	0	32	2	34	10	0	1	11	104
12:45	7	63	0	70	0	0	0	0	0	40	0	40	5	0	4	9	119
Total	49	197	0	246	0	0	0	0	0	130	6	136	35	0	10	45	427
13:00	25	52	0	77	0	0	0	0	0	29	2	31	5	0	0	5	113
13:15	12	45	0	57	0	0	0	0	0	39	3	42	8	0	3	11	110
13:30	11	46	0	57	0	0	0	0	0	43	5	48	5	0	0	5	110
13:45	18	52	0	70	0	0	0	0	0	40	0	40	8	0	4	12	122
Total	66	195	0	261	0	0	0	0	0	151	10	161	26	0	7	33	455
14:00	12	52	0	64	0	0	0	0	0	29	2	31	10	0	7	17	112
14:15	16	44	0	60	0	0	0	0	0	50	1	51	8	0	4	12	123
14:30	15	49	0	64	0	0	0	0	0	35	0	35	13	0	2	15	114
14:45	14	50	0	64	0	0	0	0	0	50	0	50	10	0	3	13	127
Total	57	195	0	252	0	0	0	0	0	164	3	167	41	0	16	57	476
15:00	14	49	0	63	0	0	0	0	0	40	2	42	11	0	0	11	116
15:15	12	57	0	69	0	0	0	0	0	36	2	38	16	0	5	21	128
15:30	15	52	0	67	0	0	0	0	0	37	1	38	15	0	2	17	122
15:45	7	57	0	64	0	0	0	0	0	39	4	43	12	0	2	14	121
Total	48	215	0	263	0	0	0	0	0	152	9	161	54	0	9	63	487
16:00	14	59	0	73	0	0	0	0	0	48	1	49	6	0	2	8	130
16:15	16	51	0	67	0	0	0	0	0	42	3	45	4	0	4	8	120
16:30	12	43	0	55	0	0	0	0	0	41	0	41	7	0	1	8	104
16:45	5	37	0	42	0	0	0	0	0	42	1	43	5	0	3	8	93
Total	47	190	0	237	0	0	0	0	0	173	5	178	22	0	10	32	447
Grand Total	316	1169	0	1485	0	0	0	0	0	866	43	909	215	0	61	276	2670
Apprch %	21.3	78.7	0		0	0	0		0	95.3	4.7		77.9	0	22.1		
Total %	11.8	43.8	0	55.6	0	0	0	0	0	32.4	1.6	34	8.1	0	2.3	10.3	

	BALENTINE DR Southbound				0 Westbound				BALENTINE DR Northbound				BALENTINE DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 11:00 to 16:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 15:15																	
15:15	12	57	0	69	0	0	0	0	0	36	2	38	**16**	0	**5**	**21**	128
15:30	**15**	52	0	67	0	0	0	0	0	37	1	38	15	0	2	17	122
15:45	7	57	0	64	0	0	0	0	0	39	**4**	43	12	0	2	14	121
16:00	14	**59**	0	**73**	0	0	0	0	0	**48**	1	**49**	6	0	2	8	**130**
Total Volume	48	225	0	273	0	0	0	0	0	160	8	168	49	0	11	60	501
% App. Total	17.6	82.4	0		0	0	0		0	95.2	4.8		81.7	0	18.3		
PHF	.800	.953	.000	.935	.000	.000	.000	.000	.000	.833	.500	.857	.766	.000	.550	.714	.963

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Latitude: 37.523833
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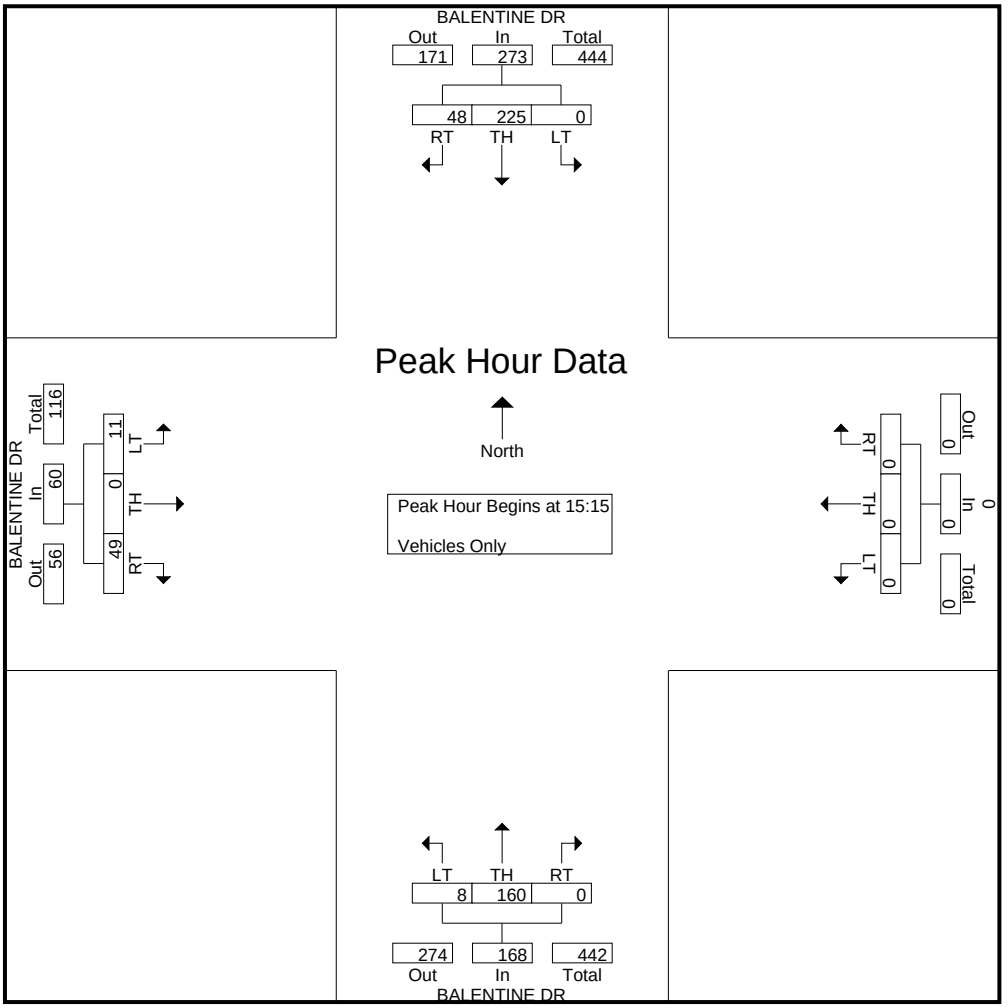
File Name : balentine-balentine-s
Site Code : 3
Start Date : 10/24/2020
Page No : 2



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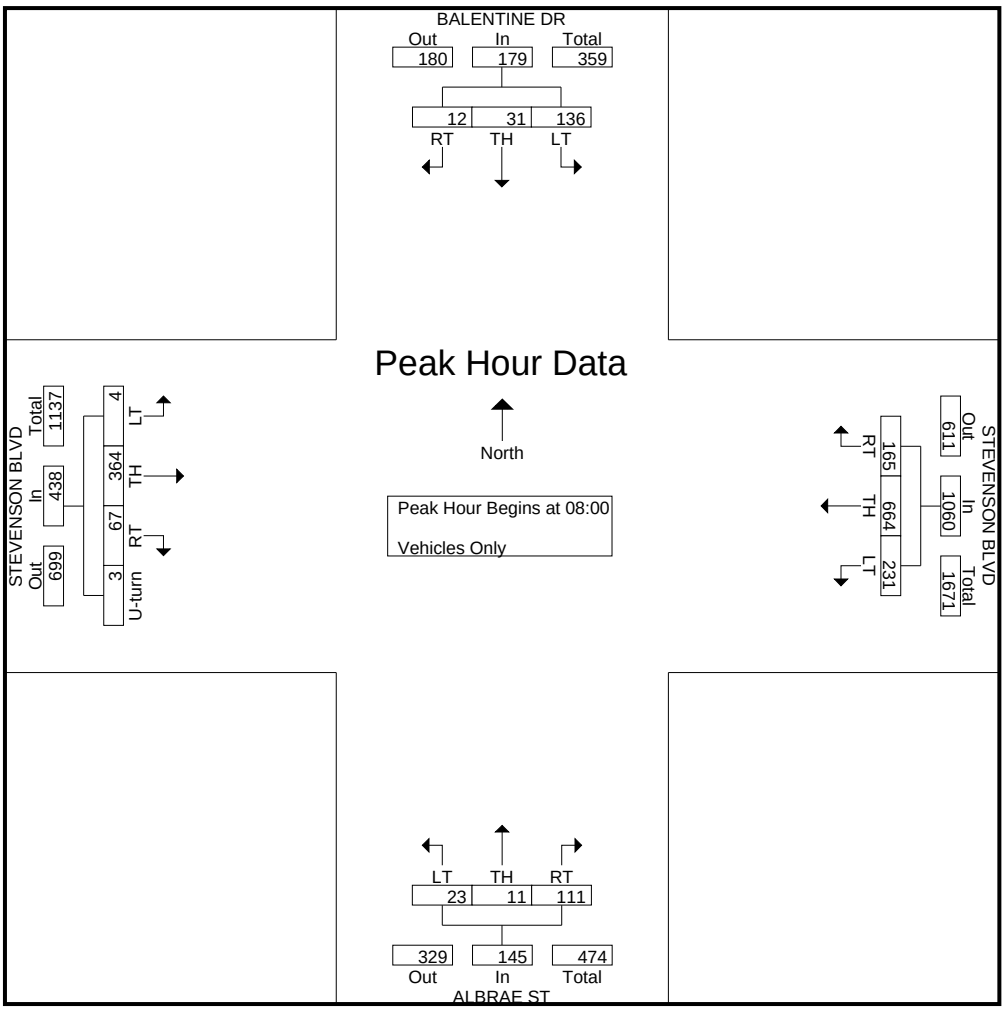
File Name : balentine-stevenson-a
Site Code : 1
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	BALENTINE DR Southbound				STEVENSON BLVD Westbound				ALBRAE ST Northbound				STEVENSON BLVD Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
07:00	0	2	15	17	21	147	29	197	19	0	2	21	9	85	0	0	94	329
07:15	2	6	19	27	44	121	48	213	18	2	5	25	15	80	0	0	95	360
07:30	2	7	24	33	27	133	41	201	24	3	6	33	14	85	1	0	100	367
07:45	3	8	18	29	41	160	53	254	25	1	5	31	21	86	1	1	109	423
Total	7	23	76	106	133	561	171	865	86	6	18	110	59	336	2	1	398	1479
08:00	2	9	33	44	42	159	60	261	27	1	8	36	16	75	0	0	91	432
08:15	1	7	33	41	35	158	58	251	30	4	1	35	20	98	1	1	120	447
08:30	3	4	33	40	41	159	45	245	33	3	7	43	16	86	2	0	104	432
08:45	6	11	37	54	47	188	68	303	21	3	7	31	15	105	1	2	123	511
Total	12	31	136	179	165	664	231	1060	111	11	23	145	67	364	4	3	438	1822
Grand Total	19	54	212	285	298	1225	402	1925	197	17	41	255	126	700	6	4	836	3301
Apprch %	6.7	18.9	74.4		15.5	63.6	20.9		77.3	6.7	16.1		15.1	83.7	0.7	0.5		
Total %	0.6	1.6	6.4	8.6	9	37.1	12.2	58.3	6	0.5	1.2	7.7	3.8	21.2	0.2	0.1	25.3	

	BALENTINE DR Southbound				STEVENSON BLVD Westbound				ALBRAE ST Northbound				STEVENSON BLVD Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:00																		
08:00	2	9	33	44	42	159	60	261	27	1	**8**	36	16	75	0	0	91	432
08:15	1	7	33	41	35	158	58	251	30	**4**			**20**	98	1	1	120	447
08:30	3	4	33	40	41	159	45	245	**33**	3	7	**43**	16	86	**2**	0	104	432
08:45	**6**	**11**	**37**	**54**	**47**	**188**	**68**	**303**	21	3	7	31	15	**105**	1	**2**	**123**	**511**
Total Volume	12	31	136	179	165	664	231	1060	111	11	23	145	67	364	4	3	438	1822
% App. Total	6.7	17.3	76		15.6	62.6	21.8		76.6	7.6	15.9		15.3	83.1	0.9	0.7		
PHF	.500	.705	.919	.829	.878	.883	.849	.875	.841	.688	.719	.843	.838	.867	.500	.375	.890	.891



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF NEWARK

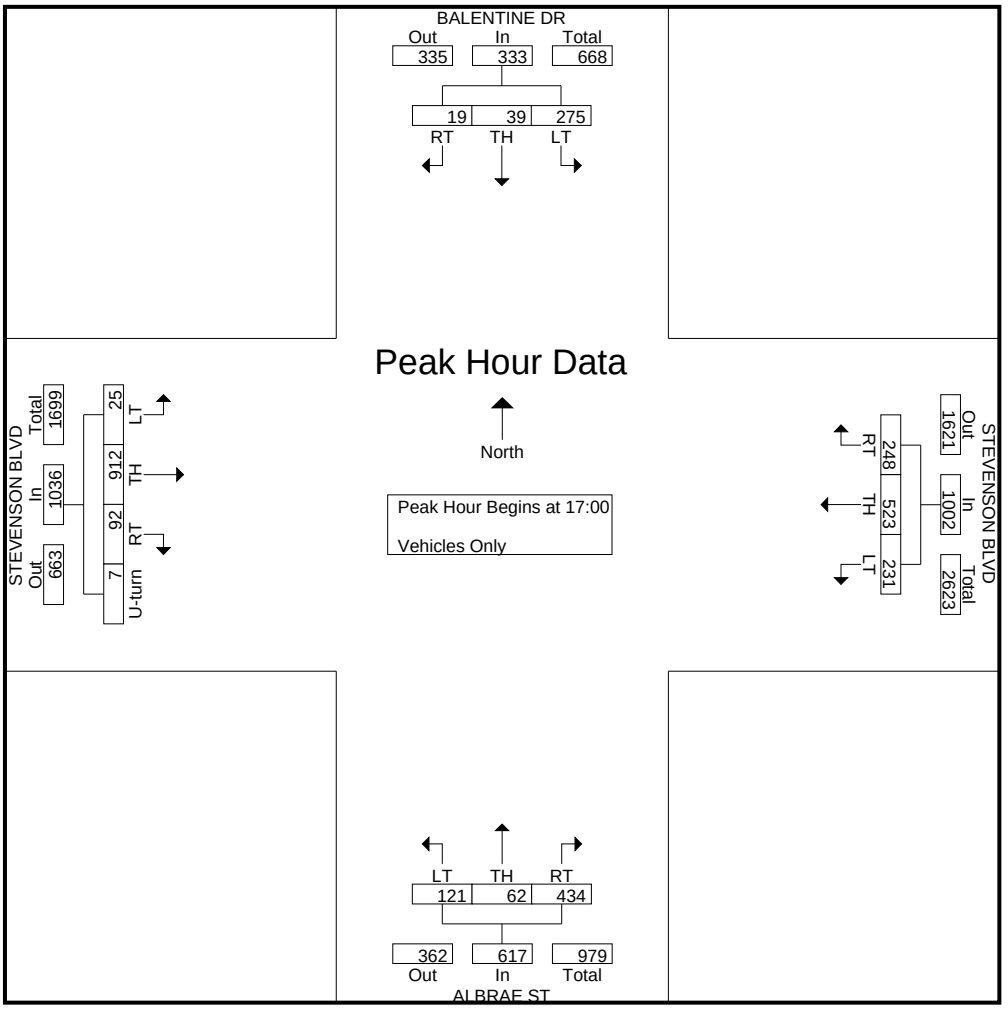
Latitude: 37.520466
Longitude: -122.989534

File Name : balentine-stevenson-p
Site Code : 1
Start Date : 10/27/2020
Page No : 1

Groups Printed- Vehicles Only

	BALENTINE DR Southbound				STEVENSON BLVD Westbound				ALBRAE ST Northbound				STEVENSON BLVD Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
16:00	5	13	75	93	60	111	64	235	105	9	28	142	25	196	3	2	226	696
16:15	2	12	77	91	51	116	58	225	100	16	31	147	27	152	11	0	190	653
16:30	4	10	63	77	40	123	52	215	103	18	26	147	27	226	3	3	259	698
16:45	4	11	54	69	40	80	39	159	109	21	35	165	16	192	2	1	211	604
Total	15	46	269	330	191	430	213	834	417	64	120	601	95	766	19	6	886	2651
17:00	3	12	75	90	58	133	50	241	126	15	33	174	28	253	6	3	290	795
17:15	9	7	75	91	66	114	62	242	104	9	33	146	23	262	8	0	293	772
17:30	4	11	67	82	52	139	71	262	103	24	33	160	19	181	6	2	208	712
17:45	3	9	58	70	72	137	48	257	101	14	22	137	22	216	5	2	245	709
Total	19	39	275	333	248	523	231	1002	434	62	121	617	92	912	25	7	1036	2988
Grand Total	34	85	544	663	439	953	444	1836	851	126	241	1218	187	1678	44	13	1922	5639
Apprch %	5.1	12.8	82.1		23.9	51.9	24.2		69.9	10.3	19.8		9.7	87.3	2.3	0.7		
Total %	0.6	1.5	9.6	11.8	7.8	16.9	7.9	32.6	15.1	2.2	4.3	21.6	3.3	29.8	0.8	0.2	34.1	

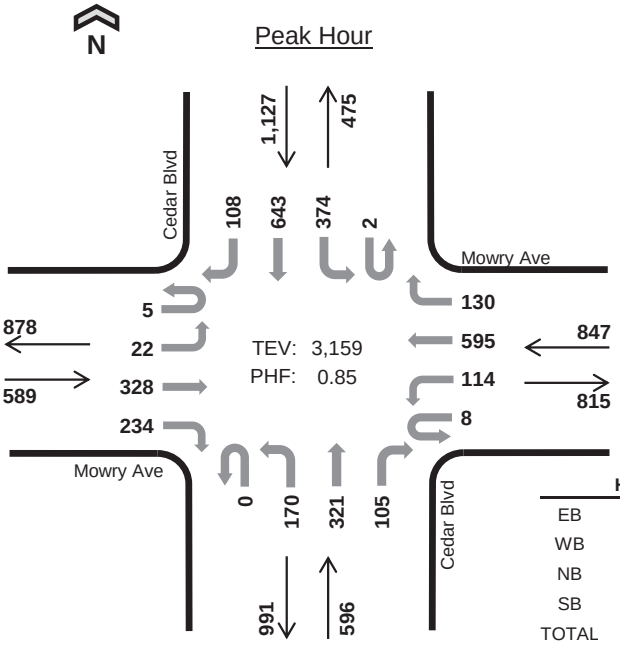
	BALENTINE DR Southbound				STEVENSON BLVD Westbound				ALBRAE ST Northbound				STEVENSON BLVD Eastbound					
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 17:00																		
17:00	3	**12**	**75**	90	58	133	50	241	**126**	15	**33**	**174**	**28**	253	6	**3**	290	**795**
17:15	**9**	7	75	**91**	66	114	62	242	104	9	33	146	23	**262**	**8**	0	**293**	772
17:30	4	11	67	82	52	**139**	**71**	**262**	103	**24**								
17:45	**3**	**9**	**58**	**70**	**72**	137	48	257	101	14	22	137	22	216	5	2	245	709
Total Volume	19	39	275	333	248	523	231	1002	434	62	121	617	92	912	25	7	1036	2988
% App. Total	5.7	11.7	82.6		24.8	52.2	23.1		70.3	10	19.6		8.9	88	2.4	0.7		
PHF	.528	.813	.917	.915	.861	.941	.813	.956	.861	.646	.917	.886	.821	.870	.781	.583	.884	.940



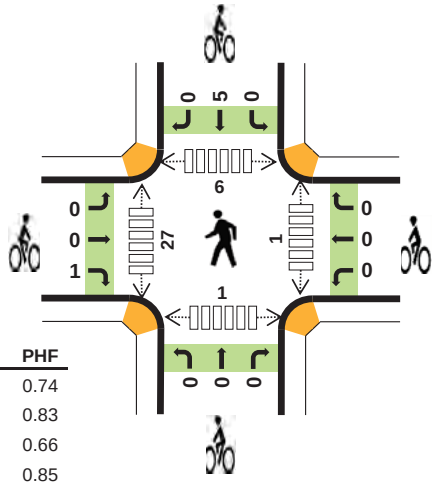
APPENDIX B - TRAFFIC COUNT DATA FROM NEWARK AREA 4 LEVEL OF SERVICE UPDATE DATED JUNE 14, 2019

Cedar Blvd
Mowry Ave

Date: 04-10-2018
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM



	HV %:	PHF
EB	7.5%	0.74
WB	5.1%	0.83
NB	1.7%	0.66
SB	0.8%	0.85
TOTAL	3.4%	0.85



Two-Hour Count Summaries

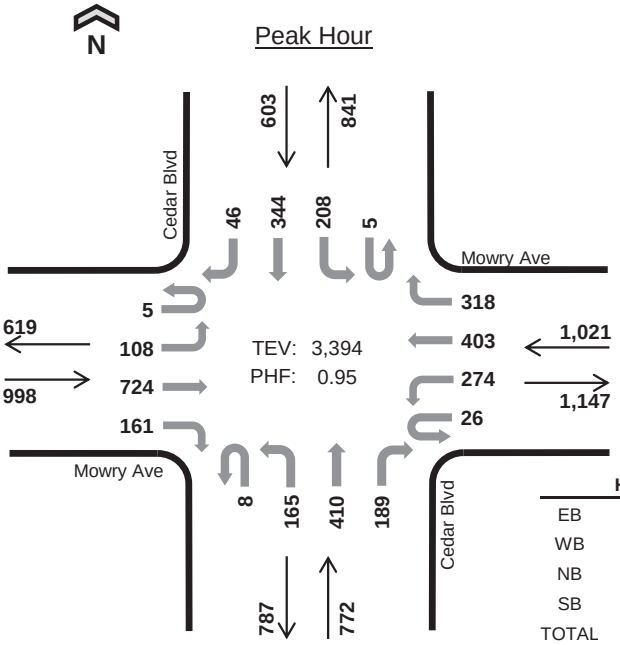
Interval Start	Mowry Ave Eastbound				Mowry Ave Westbound				Cedar Blvd Northbound				Cedar Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	2	4	69	36	0	34	121	21	1	18	34	9	2	61	96	20	528	0
7:15 AM	**1**	**5**	**72**	**78**	**2**	**30**	**151**	**23**	**0**	**36**	**83**	**22**	**0**	**89**	**182**	**17**	**791**	0
7:30 AM	**1**	**7**	**80**	**110**	**1**	**32**	**118**	**21**	**0**	**69**	**111**	**47**	**0**	**80**	**234**	**17**	**928**	0
7:45 AM	**2**	**6**	**98**	**30**	**2**	**22**	**187**	**43**	**0**	**52**	**95**	**25**	**1**	**87**	**124**	**36**	**810**	3,057
8:00 AM	**1**	**4**	**78**	**16**	**3**	**30**	**139**	**43**	**0**	**13**	**32**	**11**	**1**	**118**	**103**	**38**	**630**	**3,159**
8:15 AM	1	6	91	19	1	23	178	44	0	10	21	18	0	108	139	30	689	3,057
8:30 AM	0	5	92	24	2	45	161	34	0	9	22	13	1	104	152	38	702	2,831
8:45 AM	0	8	89	13	1	42	164	28	0	8	19	42	0	87	133	38	672	2,693
Count Total	8	45	669	326	12	258	1,219	257	1	215	417	187	5	734	1,163	234	5,750	0
Peak Hour All	**5**	**22**	**328**	**234**	**8**	**114**	**595**	**130**	**0**	**170**	**321**	**105**	**2**	**374**	**643**	**108**	**3,159**	**0**
Peak Hour HV	**0**	**1**	**40**	**3**	**0**	**4**	**32**	**7**	**0**	**3**	**3**	**4**	**0**	**2**	**7**	**0**	**106**	**0**
Peak Hour HV%	**0%**	**5%**	**12%**	**1%**	**0%**	**4%**	**5%**	**5%**	**-**	**2%**	**1%**	**4%**	**0%**	**1%**	**1%**	**0%**	**3%**	**0**

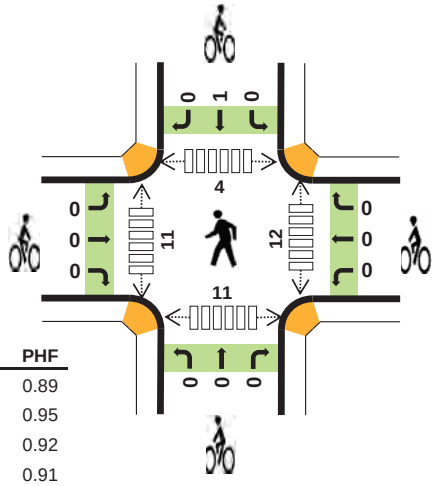
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	20	13	1	4	*38*	0	0	0	0	*0*	0	1	2	0	*3*
7:15 AM	**13**	**15**	**4**	**3**	***35***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**1**	**0**	*6*
7:30 AM	**12**	**8**	**2**	**1**	***23***	**1**	**0**	**0**	**4**	***5***	**0**	**12**	**3**	**0**	*15*
7:45 AM	**9**	**7**	**3**	**4**	***23***	**0**	**0**	**0**	**0**	***0***	**0**	**8**	**1**	**1**	*10*
8:00 AM	**10**	**13**	**1**	**1**	***25***	**0**	**0**	**0**	**1**	***1***	**1**	**2**	**1**	**0**	***4***
8:15 AM	14	20	2	1	*37*	0	0	0	1	*1*	0	0	1	0	*1*
8:30 AM	10	21	1	3	*35*	0	0	0	3	*3*	1	1	1	0	*3*
8:45 AM	15	23	2	7	*47*	0	0	0	0	*0*	0	1	0	1	*2*
Count Total	103	120	16	24	*263*	1	0	0	9	*10*	2	30	10	2	*44*
Peak Hour	**44**	**43**	**10**	**9**	***106***	**1**	**0**	**0**	**5**	***6***	**1**	**27**	**6**	**1**	***35***

Cedar Blvd
Mowry Ave

Date: 04-10-2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	3.1%	0.89
WB	2.5%	0.95
NB	0.4%	0.92
SB	0.8%	0.91
TOTAL	1.9%	0.95

Two-Hour Count Summaries

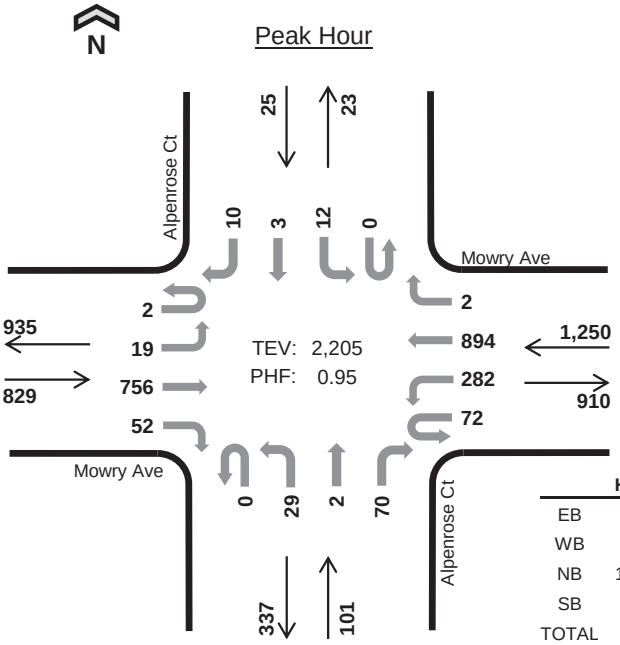
Interval Start	Mowry Ave Eastbound				Mowry Ave Westbound				Cedar Blvd Northbound				Cedar Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	31	164	21	4	43	98	67	2	31	76	29	0	55	60	13	694	0
4:15 PM	0	28	172	25	5	50	110	54	0	20	74	21	1	50	52	12	674	0
4:30 PM	2	39	174	27	7	42	99	62	2	33	66	25	1	42	72	5	698	0
4:45 PM	0	24	181	23	4	44	94	62	2	31	89	38	1	60	69	9	731	2,797
5:00 PM	**0**	**29**	**223**	**27**	**7**	**51**	**107**	**69**	**2**	**30**	**117**	**46**	**1**	**50**	**67**	**13**	**839**	2,942
5:15 PM	**2**	**30**	**170**	**40**	**4**	**74**	**98**	**92**	**2**	**42**	**88**	**47**	**3**	**46**	**96**	**7**	**841**	3,109
5:30 PM	**1**	**17**	**163**	**44**	**7**	**72**	**92**	**86**	**3**	**42**	**99**	**45**	**1**	**44**	**97**	**12**	**825**	3,236
5:45 PM	**2**	**32**	**168**	**50**	**8**	**77**	**106**	**71**	**1**	**51**	**106**	**51**	**0**	**68**	**84**	**14**	**889**	**3,394**
Count Total	7	230	1,415	257	46	453	804	563	14	280	715	302	8	415	597	85	6,191	0
Peak Hour All	**5**	**108**	**724**	**161**	**26**	**274**	**403**	**318**	**8**	**165**	**410**	**189**	**5**	**208**	**344**	**46**	**3,394**	**0**
Peak Hour HV	**0**	**3**	**27**	**1**	**0**	**5**	**15**	**6**	**0**	**0**	**0**	**3**	**0**	**2**	**3**	**0**	**65**	**0**
Peak Hour HV%	**0%**	**3%**	**4%**	**1%**	**0%**	**2%**	**4%**	**2%**	**0%**	**0%**	**0%**	**2%**	**0%**	**1%**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

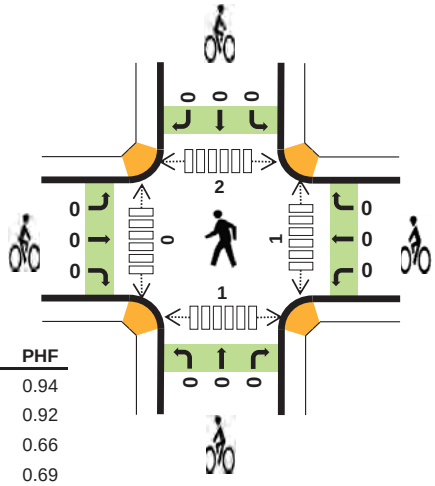
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	10	13	3	4	*30*	0	0	0	0	*0*	2	2	2	3	*9*
4:15 PM	9	15	2	2	*28*	0	0	2	0	*2*	8	9	6	2	*25*
4:30 PM	7	9	1	0	*17*	0	0	0	1	*1*	3	15	0	0	*18*
4:45 PM	4	12	4	1	*21*	0	0	0	1	*1*	1	6	0	3	*10*
5:00 PM	**9**	**7**	**2**	**1**	***19***	**0**	**0**	**0**	**1**	***1***	**5**	**5**	**2**	**6**	*18*
5:15 PM	**9**	**10**	**1**	**1**	***21***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**0**	*2*
5:30 PM	**8**	**4**	**0**	**2**	***14***	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**2**	**0**	*7*
5:45 PM	**5**	**5**	**0**	**1**	***11***	**0**	**0**	**0**	**0**	***0***	**3**	**3**	**0**	**5**	***11***
Count Total	61	75	13	12	*161*	0	0	2	3	*5*	26	43	12	19	*100*
Peak Hour	**31**	**26**	**3**	**5**	***65***	**0**	**0**	**0**	**1**	***1***	**12**	**11**	**4**	**11**	***38***

Alpenrose Ct
Mowry Ave

Date: 04-10-2018
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	7.1%	0.94
WB	6.5%	0.92
NB	10.9%	0.66
SB	4.0%	0.69
TOTAL	6.9%	0.95



Two-Hour Count Summaries

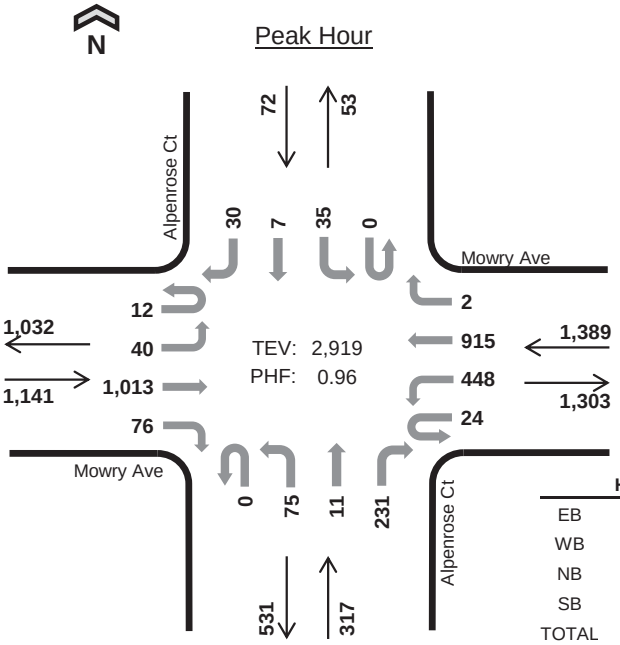
Interval Start		Mowry Ave Eastbound				Mowry Ave Westbound				Alpenrose Ct Northbound				Alpenrose Ct Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	1	133	13	7	27	158	0	0	7	0	18	0	2	0	1	367	0
7:15 AM		1	6	174	8	5	44	193	0	0	4	0	15	0	2	1	1	454	0
7:30 AM		0	3	179	13	14	71	174	1	0	5	2	19	0	1	0	3	485	0
7:45 AM		0	1	201	13	15	49	228	0	0	8	0	15	0	2	0	3	535	1,841
8:00 AM		**1**	**6**	**190**	**12**	**16**	**43**	**228**	**0**	**0**	**5**	**1**	**16**	**0**	**2**	**3**	**3**	**526**	2,000
8:15 AM		**0**	**6**	**193**	**8**	**23**	**69**	**215**	**1**	**0**	**8**	**0**	**10**	**0**	**4**	**0**	**2**	**539**	2,085
8:30 AM		**0**	**4**	**179**	**10**	**20**	**87**	**231**	**0**	**0**	**9**	**1**	**28**	**0**	**5**	**0**	**4**	**578**	2,178
8:45 AM		**1**	**3**	**194**	**22**	**13**	**83**	**220**	**1**	**0**	**7**	**0**	**16**	**0**	**1**	**0**	**1**	**562**	**2,205**
Count Total		3	30	1,443	99	113	473	1,647	3	0	53	4	137	0	19	4	18	4,046	0
Peak Hour	**All**	**2**	**19**	**756**	**52**	**72**	**282**	**894**	**2**	**0**	**29**	**2**	**70**	**0**	**12**	**3**	**10**	**2,205**	**0**
	HV	**0**	**0**	**52**	**7**	**0**	**12**	**69**	**0**	**0**	**8**	**0**	**3**	**0**	**0**	**0**	**1**	**152**	**0**
	HV%	**0%**	**0%**	**7%**	**13%**	**0%**	**4%**	**8%**	**0%**	**-**	**28%**	**0%**	**4%**	**-**	**0%**	**0%**	**10%**	**7%**	**0**

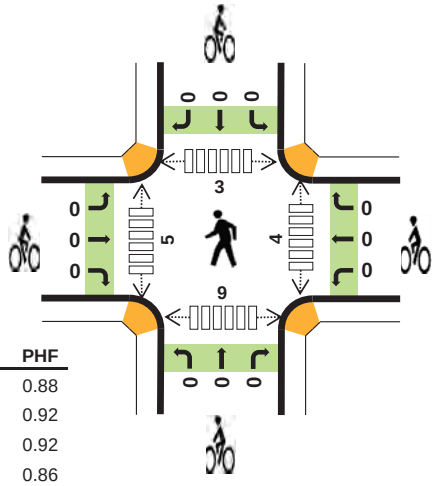
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	18	13	4	1	*36*	0	0	0	0	*0*	0	2	1	0	*3*
7:15 AM	13	15	3	1	*32*	0	0	0	0	*0*	0	2	0	0	*2*
7:30 AM	12	8	3	0	*23*	0	1	0	0	*1*	0	0	1	0	*1*
7:45 AM	11	7	1	0	*19*	0	0	0	0	*0*	0	0	2	0	*2*
8:00 AM	**10**	**15**	**6**	**0**	***31***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
8:15 AM	**15**	**19**	**1**	**0**	***35***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
8:30 AM	**12**	**21**	**3**	**1**	***37***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**1**	*2*
8:45 AM	**22**	**26**	**1**	**0**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	113	124	22	3	*262*	0	1	0	0	*1*	1	4	6	1	*12*
Peak Hour	**59**	**81**	**11**	**1**	***152***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**2**	**1**	***4***

Alpenrose Ct
Mowry Ave

Date: 04-10-2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	3.1%	0.88
WB	1.8%	0.92
NB	3.2%	0.92
SB	0.0%	0.86
TOTAL	2.4%	0.96

Two-Hour Count Summaries

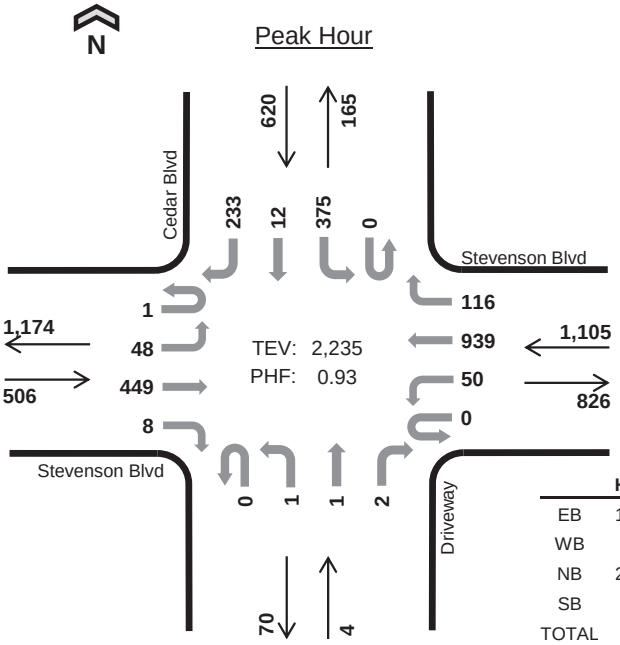
Interval Start		Mowry Ave Eastbound				Mowry Ave Westbound				Alpenrose Ct Northbound				Alpenrose Ct Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		2	5	222	20	5	77	173	1	0	18	1	56	0	5	1	8	594	0
4:15 PM		1	3	225	22	7	102	213	0	0	8	1	46	0	8	0	1	637	0
4:30 PM		3	9	221	23	6	114	191	0	0	19	2	63	0	9	4	8	672	0
4:45 PM		1	2	227	19	5	98	170	1	0	24	4	52	0	4	3	3	613	2,516
5:00 PM		**1**	**8**	**298**	**16**	**5**	**111**	**200**	**0**	**0**	**20**	**3**	**54**	**0**	**9**	**2**	**10**	**737**	2,659
5:15 PM		**4**	**12**	**246**	**17**	**7**	**88**	**236**	**0**	**0**	**18**	**4**	**64**	**0**	**10**	**3**	**3**	**712**	2,734
5:30 PM		**2**	**9**	**229**	**17**	**6**	**107**	**250**	**1**	**0**	**19**	**2**	**55**	**0**	**8**	**1**	**6**	**712**	2,774
5:45 PM		**5**	**11**	**240**	**26**	**6**	**142**	**229**	**1**	**0**	**18**	**2**	**58**	**0**	**8**	**1**	**11**	**758**	**2,919**
Count Total		19	59	1,908	160	47	839	1,662	4	0	144	19	448	0	61	15	50	5,435	0
Peak Hour	**All**	**12**	**40**	**1,013**	**76**	**24**	**448**	**915**	**2**	**0**	**75**	**11**	**231**	**0**	**35**	**7**	**30**	**2,919**	**0**
	HV	**0**	**0**	**29**	**6**	**0**	**5**	**20**	**0**	**0**	**7**	**0**	**3**	**0**	**0**	**0**	**0**	**70**	**0**
	HV%	**0%**	**0%**	**3%**	**8%**	**0%**	**1%**	**2%**	**0%**	**-**	**9%**	**0%**	**1%**	**-**	**0%**	**0%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

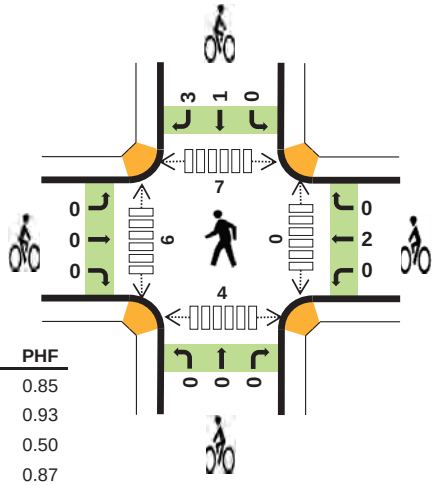
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	12	10	4	0	*26*	1	0	0	0	*1*	1	3	0	5	*9*
4:15 PM	10	17	1	0	*28*	0	0	0	0	*0*	0	1	0	0	*1*
4:30 PM	7	9	3	0	*19*	0	0	0	0	*0*	1	0	1	2	*4*
4:45 PM	5	8	2	0	*15*	0	0	0	0	*0*	0	3	0	1	*4*
5:00 PM	**10**	**6**	**5**	**0**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**1**	*3*
5:15 PM	**10**	**9**	**2**	**0**	***21***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**1**	**3**	*6*
5:30 PM	**9**	**4**	**2**	**0**	***15***	**0**	**0**	**0**	**0**	***0***	**2**	**1**	**1**	**2**	*6*
5:45 PM	**6**	**6**	**1**	**0**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**1**	**3**	***6***
Count Total	69	69	20	0	*158*	1	0	0	0	*1*	6	12	4	17	*39*
Peak Hour	**35**	**25**	**10**	**0**	***70***	**0**	**0**	**0**	**0**	***0***	**4**	**5**	**3**	**9**	***21***

Cedar Blvd
Stevenson Blvd

Date: 04-10-2018
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	11.5%	0.85
WB	5.5%	0.93
NB	25.0%	0.50
SB	1.8%	0.87
TOTAL	5.9%	0.93



Two-Hour Count Summaries

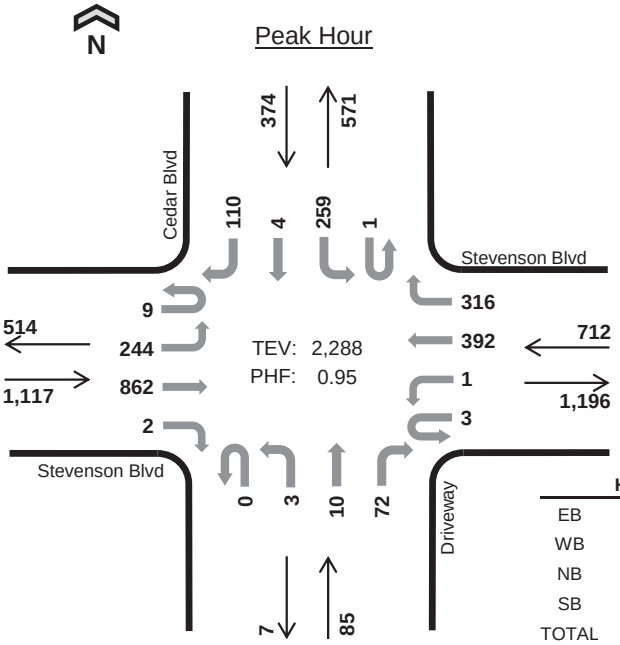
Interval Start	Stevenson Blvd Eastbound				Stevenson Blvd Westbound				Driveway Northbound				Cedar Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	10	61	1	2	7	141	17	0	0	0	1	0	43	1	21	305	0
7:15 AM	0	8	91	2	1	5	166	23	0	0	0	2	0	66	0	22	386	0
7:30 AM	0	16	90	1	0	9	181	21	0	0	0	2	0	69	2	33	424	0
7:45 AM	0	6	102	2	0	8	266	22	0	0	0	0	1	93	3	58	561	1,676
8:00 AM	**0**	**11**	**97**	**2**	**0**	**6**	**230**	**21**	**0**	**0**	**0**	**0**	**0**	**72**	**1**	**43**	**483**	1,854
8:15 AM	**0**	**10**	**111**	**2**	**0**	**16**	**241**	**27**	**0**	**1**	**0**	**0**	**0**	**104**	**3**	**57**	**572**	2,040
8:30 AM	**0**	**12**	**135**	**2**	**0**	**13**	**217**	**36**	**0**	**0**	**0**	**1**	**0**	**96**	**4**	**62**	**578**	2,194
8:45 AM	**1**	**15**	**106**	**2**	**0**	**15**	**251**	**32**	**0**	**0**	**1**	**1**	**0**	**103**	**4**	**71**	**602**	**2,235**
Count Total	1	88	793	14	3	79	1,693	199	0	1	1	7	1	646	18	367	3,911	0
Peak Hour All	**1**	**48**	**449**	**8**	**0**	**50**	**939**	**116**	**0**	**1**	**1**	**2**	**0**	**375**	**12**	**233**	**2,235**	**0**
Peak Hour HV	**0**	**2**	**56**	**0**	**0**	**0**	**56**	**5**	**0**	**0**	**0**	**1**	**0**	**5**	**0**	**6**	**131**	**0**
Peak Hour HV%	**0%**	**4%**	**12%**	**0%**	**-**	**0%**	**6%**	**4%**	**-**	**0%**	**0%**	**50%**	**-**	**1%**	**0%**	**3%**	**6%**	**0**

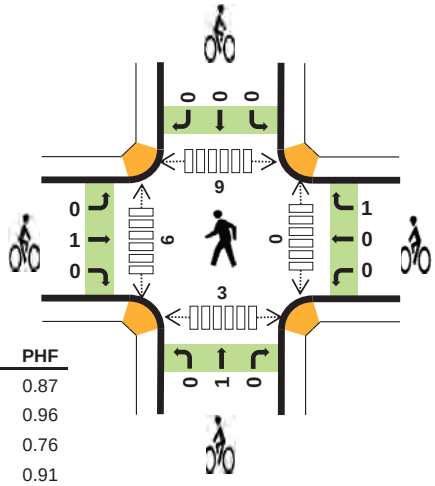
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	15	12	1	3	*31*	0	0	0	0	*0*	0	0	2	0	*2*
7:15 AM	13	10	0	4	*27*	0	1	0	0	*1*	0	0	0	0	*0*
7:30 AM	15	11	1	2	*29*	1	0	0	0	*1*	0	0	0	0	*0*
7:45 AM	14	10	0	1	*25*	0	1	0	1	*2*	0	2	4	0	*6*
8:00 AM	**12**	**14**	**0**	**1**	***27***	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**1**	*1*
8:15 AM	**19**	**16**	**0**	**4**	***39***	**0**	**1**	**0**	**0**	***1***	**0**	**4**	**5**	**1**	*10*
8:30 AM	**16**	**9**	**0**	**2**	***27***	**0**	**1**	**0**	**2**	***3***	**0**	**1**	**0**	**2**	*3*
8:45 AM	**11**	**22**	**1**	**4**	***38***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**2**	**0**	***3***
Count Total	115	104	3	21	*243*	1	4	0	5	*10*	0	8	13	4	*25*
Peak Hour	**58**	**61**	**1**	**11**	***131***	**0**	**2**	**0**	**4**	***6***	**0**	**6**	**7**	**4**	***17***

Cedar Blvd
Stevenson Blvd

Date: 04-10-2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	1.4%	0.87
WB	3.5%	0.96
NB	2.4%	0.76
SB	1.9%	0.91
TOTAL	2.2%	0.95

Two-Hour Count Summaries

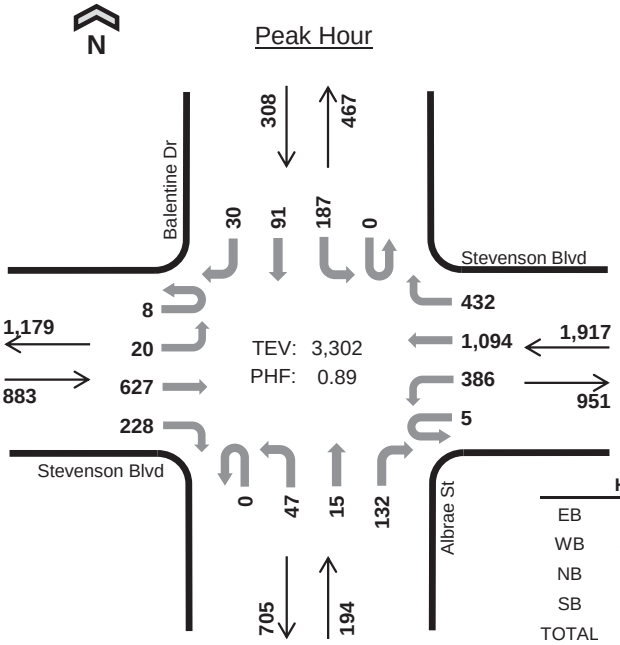
Interval Start		Stevenson Blvd Eastbound				Stevenson Blvd Westbound				Driveway Northbound				Cedar Blvd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		1	34	199	1	0	1	86	57	0	2	3	11	0	49	0	23	467	0
4:15 PM		1	45	170	1	1	1	81	57	0	1	5	7	0	53	0	14	437	0
4:30 PM		1	42	252	0	0	2	98	60	0	3	3	18	0	58	0	21	558	0
4:45 PM		0	25	198	0	1	2	97	40	0	0	4	11	2	54	0	26	460	1,922
5:00 PM		**2**	**60**	**260**	**0**	**0**	**0**	**84**	**74**	**0**	**0**	**3**	**16**	**1**	**56**	**0**	**25**	**581**	2,036
5:15 PM		**1**	**49**	**182**	**2**	**1**	**0**	**105**	**80**	**0**	**1**	**3**	**24**	**0**	**66**	**0**	**23**	**537**	2,136
5:30 PM		**4**	**68**	**228**	**0**	**1**	**1**	**99**	**81**	**0**	**0**	**2**	**17**	**0**	**71**	**2**	**27**	**601**	2,179
5:45 PM		**2**	**67**	**192**	**0**	**1**	**0**	**104**	**81**	**0**	**2**	**2**	**15**	**0**	**66**	**2**	**35**	**569**	**2,288**
Count Total		12	390	1,681	4	5	7	754	530	0	9	25	119	3	473	4	194	4,210	0
Peak Hour	**All**	**9**	**244**	**862**	**2**	**3**	**1**	**392**	**316**	**0**	**3**	**10**	**72**	**1**	**259**	**4**	**110**	**2,288**	**0**
	HV	**0**	**3**	**13**	**0**	**0**	**0**	**22**	**3**	**0**	**0**	**0**	**2**	**0**	**5**	**0**	**2**	**50**	**0**
	HV%	**0%**	**1%**	**2%**	**0%**	**0%**	**0%**	**6%**	**1%**	**-**	**0%**	**0%**	**3%**	**0%**	**2%**	**0%**	**2%**	**2%**	**0**

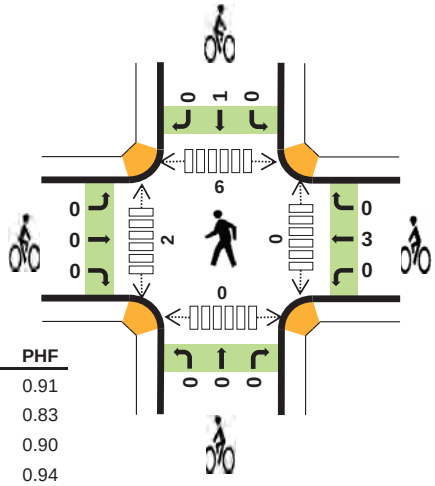
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	10	2	5	*21*	0	0	0	0	*0*	0	2	2	2	*6*
4:15 PM	12	10	0	2	*24*	2	0	0	0	*2*	0	2	3	2	*7*
4:30 PM	7	8	1	2	*18*	0	0	0	0	*0*	0	1	2	0	*3*
4:45 PM	10	11	0	0	*21*	0	0	0	0	*0*	0	1	2	1	*4*
5:00 PM	**3**	**6**	**1**	**1**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
5:15 PM	**4**	**8**	**0**	**2**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**2**	**2**	*7*
5:30 PM	**5**	**6**	**1**	**2**	***14***	**1**	**1**	**1**	**0**	***3***	**0**	**0**	**6**	**0**	*6*
5:45 PM	**4**	**5**	**0**	**2**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**1**	**1**	***4***
Count Total	49	64	5	16	*134*	3	1	1	0	*5*	0	12	18	8	*38*
Peak Hour	**16**	**25**	**2**	**7**	***50***	**1**	**1**	**1**	**0**	***3***	**0**	**6**	**9**	**3**	***18***

Albrae St
Stevenson Blvd

Date: 04-10-2018
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	7.0%	0.91
WB	4.3%	0.83
NB	9.3%	0.90
SB	3.9%	0.94
TOTAL	5.3%	0.89

Two-Hour Count Summaries

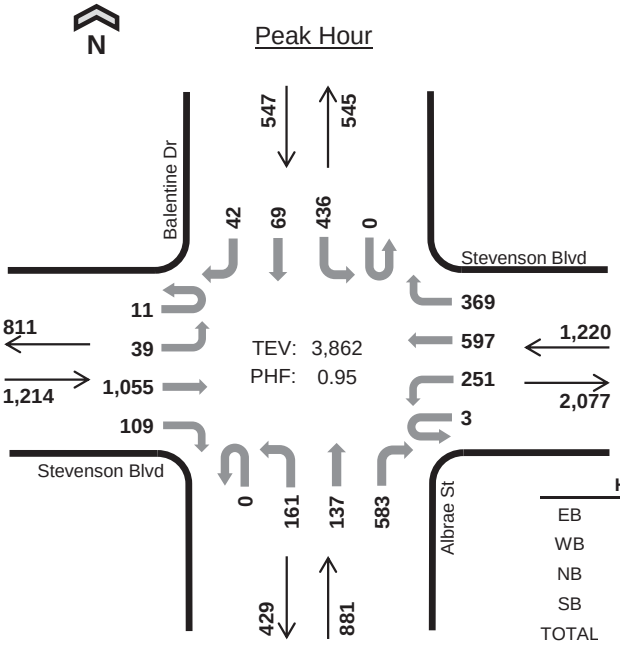
Interval Start		Stevenson Blvd Eastbound				Stevenson Blvd Westbound				Albrae St Northbound				Balentine Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		1	1	108	19	2	40	170	46	0	6	3	10	0	55	12	2	475	0
7:15 AM		1	2	143	26	1	53	208	49	0	6	2	19	0	47	12	8	577	0
7:30 AM		2	2	141	23	1	79	232	68	0	7	2	28	0	55	21	8	669	0
7:45 AM		0	1	177	39	5	107	265	63	0	10	3	25	0	56	19	15	785	2,506
8:00 AM		**1**	**4**	**139**	**45**	**1**	**92**	**265**	**71**	**0**	**9**	**4**	**40**	**0**	**45**	**17**	**8**	**741**	2,772
8:15 AM		**6**	**5**	**153**	**55**	**4**	**102**	**271**	**89**	**0**	**10**	**4**	**35**	**0**	**42**	**24**	**9**	**809**	3,004
8:30 AM		**0**	**6**	**164**	**72**	**0**	**87**	**236**	**124**	**0**	**16**	**3**	**35**	**0**	**45**	**30**	**7**	**825**	3,160
8:45 AM		**1**	**5**	**171**	**56**	**0**	**105**	**322**	**148**	**0**	**12**	**4**	**22**	**0**	**55**	**20**	**6**	**927**	**3,302**
Count Total		12	26	1,196	335	14	665	1,969	658	0	76	25	214	0	400	155	63	5,808	0
Peak Hour	**All**	**8**	**20**	**627**	**228**	**5**	**386**	**1,094**	**432**	**0**	**47**	**15**	**132**	**0**	**187**	**91**	**30**	**3,302**	**0**
	HV	**0**	**1**	**56**	**5**	**0**	**18**	**58**	**6**	**0**	**4**	**1**	**13**	**0**	**6**	**3**	**3**	**174**	**0**
	HV%	**0%**	**5%**	**9%**	**2%**	**0%**	**5%**	**5%**	**1%**	**-**	**9%**	**7%**	**10%**	**-**	**3%**	**3%**	**10%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

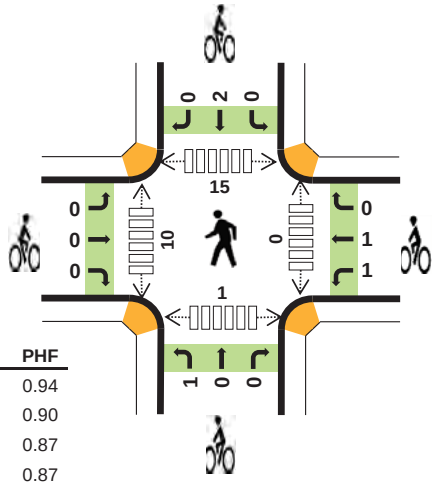
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	14	16	2	5	*37*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	20	11	3	2	*36*	0	1	0	0	*1*	0	6	3	0	*9*
7:30 AM	16	14	7	0	*37*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	15	19	4	1	*39*	0	1	0	1	*2*	0	0	1	0	*1*
8:00 AM	**13**	**21**	**6**	**3**	***43***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**20**	**15**	**4**	**5**	***44***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**2**	**0**	*2*
8:30 AM	**15**	**18**	**5**	**1**	***39***	**0**	**2**	**0**	**1**	***3***	**0**	**0**	**2**	**0**	*2*
8:45 AM	**14**	**28**	**3**	**3**	***48***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**2**	**0**	***4***
Count Total	127	142	34	20	*323*	0	5	0	2	*7*	0	8	10	0	*18*
Peak Hour	**62**	**82**	**18**	**12**	***174***	**0**	**3**	**0**	**1**	***4***	**0**	**2**	**6**	**0**	***8***

Albrae St
Stevenson Blvd

Date: 04-10-2018
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	1.6%	0.94
WB	2.5%	0.90
NB	1.2%	0.87
SB	0.9%	0.87
TOTAL	1.7%	0.95



Two-Hour Count Summaries

Interval Start		Stevenson Blvd Eastbound				Stevenson Blvd Westbound				Albrae St Northbound				Balentine Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		2	4	214	32	0	95	101	90	0	30	24	100	0	101	21	9	823	0
4:15 PM		3	9	224	24	0	59	158	95	0	36	7	108	0	73	15	7	818	0
4:30 PM		1	5	284	33	0	70	125	87	0	38	23	140	0	90	23	9	928	0
4:45 PM		1	7	269	27	0	59	123	94	0	37	23	111	0	83	20	6	860	3,429
5:00 PM		**3**	**10**	**281**	**25**	**2**	**62**	**134**	**81**	**0**	**46**	**33**	**173**	**0**	**87**	**22**	**10**	**969**	3,575
5:15 PM		**2**	**8**	**248**	**28**	**1**	**61**	**141**	**110**	**0**	**36**	**28**	**148**	**0**	**103**	**20**	**7**	**941**	3,698
5:30 PM		**2**	**15**	**275**	**31**	**0**	**74**	**163**	**101**	**0**	**42**	**33**	**134**	**0**	**117**	**13**	**11**	**1,011**	3,781
5:45 PM		**4**	**6**	**251**	**25**	**0**	**54**	**159**	**77**	**0**	**37**	**43**	**128**	**0**	**129**	**14**	**14**	**941**	**3,862**
Count Total		18	64	2,046	225	3	534	1,104	735	0	302	214	1,042	0	783	148	73	7,291	0
Peak Hour	**All**	**11**	**39**	**1,055**	**109**	**3**	**251**	**597**	**369**	**0**	**161**	**137**	**583**	**0**	**436**	**69**	**42**	**3,862**	**0**
	HV	**0**	**1**	**16**	**3**	**0**	**8**	**20**	**3**	**0**	**4**	**0**	**7**	**0**	**3**	**1**	**1**	**67**	**0**
	HV%	**0%**	**3%**	**2%**	**3%**	**0%**	**3%**	**3%**	**1%**	**-**	**2%**	**0%**	**1%**	**-**	**1%**	**1%**	**2%**	**2%**	**0**

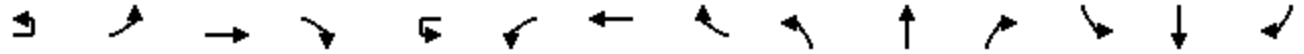
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	6	14	4	1	*25*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	12	19	4	2	*37*	0	1	0	0	*1*	0	1	3	0	*4*
4:30 PM	9	8	4	2	*23*	0	0	0	0	*0*	0	7	4	0	*11*
4:45 PM	9	13	7	1	*30*	0	0	1	0	*1*	0	0	3	1	*4*
5:00 PM	**5**	**8**	**3**	**3**	***19***	**0**	**1**	**0**	**1**	***2***	**0**	**1**	**2**	**0**	*3*
5:15 PM	**2**	**7**	**3**	**1**	***13***	**0**	**0**	**0**	**1**	***1***	**0**	**5**	**4**	**0**	*9*
5:30 PM	**9**	**11**	**4**	**0**	***24***	**0**	**0**	**1**	**0**	***1***	**0**	**2**	**4**	**0**	*6*
5:45 PM	**4**	**5**	**1**	**1**	***11***	**0**	**1**	**0**	**0**	***1***	**0**	**2**	**5**	**1**	***8***
Count Total	56	85	30	11	*182*	0	3	2	2	*7*	0	18	25	2	*45*
Peak Hour	**20**	**31**	**11**	**5**	***67***	**0**	**2**	**1**	**2**	***5***	**0**	**10**	**15**	**1**	***26***

APPENDIX C - SYNCHRO LEVEL OF SERVICE (LOS) REPORTS

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

02/18/2021



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	1	10	754	45	174	290	864	4	38	1	81	13	4	13
Future Volume (veh/h)	1	10	754	45	174	290	864	4	38	1	81	13	4	13
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00		1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No				No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870		1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		11	820	45		315	939	4	41	1	0	14	4	0
Peak Hour Factor		0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2		2	2	2	2	2	2	2	2	2
Cap, veh/h		15	1359	74		511	2171	9	49	1	45	24	26	0
Arrive On Green		0.01	0.27	0.27		0.15	0.41	0.41	0.03	0.03	0.00	0.01	0.01	0.00
Sat Flow, veh/h		1781	4955	271		3456	5248	22	1741	42	1585	1781	1870	0
Grp Volume(v), veh/h		11	563	302		315	609	334	42	0	0	14	4	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1822		1728	1702	1866	1783	0	1585	1781	1870	0
Q Serve(g_s), s		0.2	5.4	5.5		3.2	4.8	4.8	0.9	0.0	0.0	0.3	0.1	0.0
Cycle Q Clear(g_c), s		0.2	5.4	5.5		3.2	4.8	4.8	0.9	0.0	0.0	0.3	0.1	0.0
Prop In Lane		1.00		0.15		1.00		0.01	0.98		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		15	934	500		511	1408	772	50	0	45	24	26	0
V/C Ratio(X)		0.71	0.60	0.61		0.62	0.43	0.43	0.83	0.00	0.00	0.58	0.16	0.00
Avail Cap(c_a), veh/h		423	5094	2726		5226	9433	5172	988	0	878	470	494	0
HCM Platoon Ratio		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		18.7	12.0	12.0		15.1	7.9	7.9	18.3	0.0	0.0	18.6	18.5	0.0
Incr Delay (d2), s/veh		20.1	0.2	0.4		0.5	0.1	0.1	12.2	0.0	0.0	7.7	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		0.2	1.6	1.7		1.0	1.2	1.3	0.5	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh		38.8	12.2	12.4		15.6	8.0	8.1	30.6	0.0	0.0	26.3	19.5	0.0
LnGrp LOS		D	B	B		B	A	A	C	A	A	C	B	A
Approach Vol, veh/h			876				1258			42			18	
Approach Delay, s/veh			12.6				9.9			30.6			24.8	
Approach LOS			B				A			C			C	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	10.6	15.7	5.5	5.3	21.0	6.1
Change Period (Y+Rc), s	5.0	5.3	5.0	5.0	5.3	5.0
Max Green Setting (Gmax), s	57.3	56.7	10.0	9.0	105.0	21.0
Max Q Clear Time (g_c+I1), s	5.2	7.5	2.3	2.2	6.8	2.9
Green Ext Time (p_c), s	0.6	2.9	0.0	0.0	4.4	0.1

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	0	0	0	19	0	22	3	372	28	68	43	695	0
Future Volume (veh/h)	0	0	0	19	0	22	3	372	28	68	43	695	0
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	1683	1683	1683	1683	1683	1683	1683	1683	1683		1683	1683	1683
Adj Flow Rate, veh/h	0	0	0	21	0	0	3	404	26		47	755	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2	2
Cap, veh/h	0	6	0	26	0	23	6	1313	84		52	1473	0
Arrive On Green	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.43	0.43		0.03	0.46	0.00
Sat Flow, veh/h	0	1683	0	1603	0	1427	1603	3052	196		1603	3282	0
Grp Volume(v), veh/h	0	0	0	21	0	0	3	211	219		47	755	0
Grp Sat Flow(s),veh/h/ln	0	1683	0	1603	0	1427	1603	1599	1648		1603	1599	0
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.1	2.5	2.5		0.8	4.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.4	0.0	0.0	0.1	2.5	2.5		0.8	4.8	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		0.12		1.00		0.00
Lane Grp Cap(c), veh/h	0	6	0	26	0	23	6	688	709		52	1473	0
V/C Ratio(X)	0.00	0.00	0.00	0.81	0.00	0.00	0.54	0.31	0.31		0.90	0.51	0.00
Avail Cap(c_a), veh/h	0	175	0	1058	0	941	613	4499	4637		3007	13775	0
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00		1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.1	0.0	0.0	14.3	5.4	5.4		13.9	5.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	43.3	0.0	0.0	62.7	0.2	0.2		36.5	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	0.0	0.0	0.0	0.4	0.0	0.0	0.1	0.5	0.5		0.8	0.8	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	0.0	0.0	0.0	57.4	0.0	0.0	77.0	5.6	5.6		50.3	5.8	0.0
LnGrp LOS	A	A	A	E	A	A	E	A	A		D	A	A
Approach Vol, veh/h		0			21			433				802	
Approach Delay, s/veh		0.0			57.4			6.1				8.4	
Approach LOS					E			A				A	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	5.1	18.3	5.5	5.9	17.4	0.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	124.0	19.0	54.0	81.0	3.0
Max Q Clear Time (g_c+I1), s	2.1	6.8	2.4	2.8	4.5	0.0
Green Ext Time (p_c), s	0.0	6.5	0.0	0.1	2.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	53	6	22	31	3	25	37	56	369	25	16	28	723	59
Future Volume (veh/h)	53	6	22	31	3	25	37	56	369	25	16	28	723	59
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach		No			No				No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		1870	1870	1870		1870	1870	1870
Adj Flow Rate, veh/h	58	7	0	34	3	0		61	401	23		30	786	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	79	79	0	41	4	40		76	1429	82		38	1327	101
Arrive On Green	0.04	0.04	0.00	0.03	0.03	0.00		0.04	0.42	0.42		0.02	0.40	0.40
Sat Flow, veh/h	1781	1870	0	1643	145	1585		1781	3417	195		1781	3346	255
Grp Volume(v), veh/h	58	7	0	37	0	0		61	208	216		30	417	429
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1788	0	1585		1781	1777	1835		1781	1777	1824
Q Serve(g_s), s	1.3	0.2	0.0	0.8	0.0	0.0		1.4	3.1	3.2		0.7	7.5	7.5
Cycle Q Clear(g_c), s	1.3	0.2	0.0	0.8	0.0	0.0		1.4	3.1	3.2		0.7	7.5	7.5
Prop In Lane	1.00		0.00	0.92		1.00		1.00		0.11		1.00		0.14
Lane Grp Cap(c), veh/h	79	79	0	45	0	40		76	743	768		38	705	723
V/C Ratio(X)	0.73	0.09	0.00	0.82	0.00	0.00		0.80	0.28	0.28		0.79	0.59	0.59
Avail Cap(c_a), veh/h	612	611	0	615	0	545		1225	4013	4145		743	3533	3628
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	0.00	0.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	18.7	0.0	19.8	0.0	0.0		19.3	7.8	7.8		19.8	9.7	9.7
Incr Delay (d2), s/veh	12.4	0.5	0.0	29.1	0.0	0.0		16.9	0.2	0.2		30.0	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	0.7	0.1	0.0	0.7	0.0	0.0		0.9	0.9	0.9		0.6	2.3	2.4
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	31.6	19.2	0.0	48.9	0.0	0.0		36.2	8.0	8.0		49.9	10.5	10.5
LnGrp LOS	C	B	A	D	A	A		D	A	A		D	B	B
Approach Vol, veh/h		65			37				485				876	
Approach Delay, s/veh		30.3			48.9				11.6				11.8	
Approach LOS		C			D				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	6.7	21.2	6.0	5.9	22.0	6.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	28.0	81.0	14.0	17.0	92.0	14.0
Max Q Clear Time (g_c+I1), s	3.4	9.5	2.8	2.7	5.2	3.3
Green Ext Time (p_c), s	0.1	6.6	0.1	0.0	2.8	0.2

Intersection Summary	
HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	99	67	67	125	2
Future Vol, veh/h	13	99	67	67	125	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	108	73	73	136	2
Number of Lanes	2	0	1	2	2	0

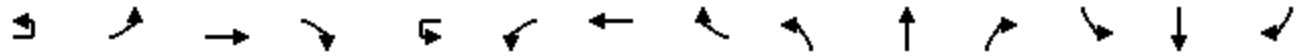
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	2
HCM Control Delay	8.1	8.1	8.5
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	4%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	100%	95%
Vol Right, %	0%	0%	0%	0%	96%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	34	34	9	103	83	44
LT Vol	67	0	0	9	4	0	0
Through Vol	0	34	34	0	0	83	42
RT Vol	0	0	0	0	99	0	2
Lane Flow Rate	73	36	36	9	112	91	47
Geometry Grp	8	8	8	8	8	8	8

Degree of Util (X)	0.114	0.052	0.034	0.015	0.144	0.129	0.067
Departure Headway (Hd)	5.646	5.144	3.403	5.776	4.626	5.145	5.113
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	636	697	1051	621	775	697	701
Service Time	3.372	2.87	1.128	3.502	2.352	2.874	2.841
HCM Lane V/C Ratio	0.115	0.052	0.034	0.014	0.145	0.131	0.067
HCM Control Delay	9.1	8.2	6.2	8.6	8.1	8.6	8.2
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.4	0.2	0.1	0	0.5	0.4	0.2

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

02/18/2021



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	11	49	1074	101	30	522	976	12	132	23	382	51	13	40
Future Volume (veh/h)	11	49	1074	101	30	522	976	12	132	23	382	51	13	40
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00		1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No				No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870		1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		53	1167	102		567	1061	12	143	25	55	55	14	0
Peak Hour Factor		0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2		2	2	2	2	2	2	2	2	2
Cap, veh/h		67	1534	134		700	2530	29	197	34	205	78	82	0
Arrive On Green		0.04	0.32	0.32		0.20	0.49	0.49	0.13	0.13	0.13	0.04	0.04	0.00
Sat Flow, veh/h		1781	4782	418		3456	5205	59	1527	267	1585	1781	1870	0
Grp Volume(v), veh/h		53	831	438		567	694	379	168	0	55	55	14	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1795		1728	1702	1860	1794	0	1585	1781	1870	0
Q Serve(g_s), s		2.0	14.7	14.7		10.5	8.8	8.8	6.0	0.0	2.1	2.0	0.5	0.0
Cycle Q Clear(g_c), s		2.0	14.7	14.7		10.5	8.8	8.8	6.0	0.0	2.1	2.0	0.5	0.0
Prop In Lane		1.00		0.23		1.00		0.03	0.85		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		67	1092	576		700	1654	904	232	0	205	78	82	0
V/C Ratio(X)		0.80	0.76	0.76		0.81	0.42	0.42	0.72	0.00	0.27	0.70	0.17	0.00
Avail Cap(c_a), veh/h		319	2681	1414		2236	4273	2334	1019	0	900	293	307	0
HCM Platoon Ratio		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		32.0	20.4	20.4		25.4	11.1	11.1	28.0	0.0	26.3	31.6	30.8	0.0
Incr Delay (d2), s/veh		7.8	0.4	0.8		0.9	0.1	0.1	1.6	0.0	0.3	4.2	0.4	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		1.0	5.3	5.6		4.1	2.8	3.1	2.6	0.0	0.8	0.9	0.2	0.0
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh		39.8	20.8	21.2		26.3	11.2	11.2	29.6	0.0	26.5	35.7	31.2	0.0
LnGrp LOS		D	C	C		C	B	B	C	A	C	D	C	A
Approach Vol, veh/h			1322				1640			223			69	
Approach Delay, s/veh			21.7				16.4			28.9			34.8	
Approach LOS			C				B			C			C	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	18.6	26.8	7.9	7.5	37.8	13.6
Change Period (Y+Rc), s	5.0	5.3	5.0	5.0	5.3	5.0
Max Green Setting (Gmax), s	43.3	52.7	11.0	12.0	84.0	38.0
Max Q Clear Time (g_c+I1), s	12.5	16.7	4.0	4.0	10.8	8.0
Green Ext Time (p_c), s	1.1	4.8	0.0	0.0	5.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	40	5	18	27	0	38	8	5	606	34	30	38	433	10
Future Volume (veh/h)	40	5	18	27	0	38	8	5	606	34	30	38	433	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	1683	1683	1683	1683	1683	1683		1683	1683	1683		1683	1683	1683
Adj Flow Rate, veh/h	43	5	10	29	0	0		5	659	35		41	471	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	51	6	12	34	0	30		7	1124	60		45	1242	26
Arrive On Green	0.04	0.04	0.04	0.02	0.00	0.00		0.00	0.36	0.36		0.03	0.39	0.39
Sat Flow, veh/h	1168	136	272	1603	0	1427		1603	3089	164		1603	3202	68
Grp Volume(v), veh/h	58	0	0	29	0	0		5	341	353		41	235	246
Grp Sat Flow(s),veh/h/ln	1576	0	0	1603	0	1427		1603	1599	1654		1603	1599	1671
Q Serve(g_s), s	1.3	0.0	0.0	0.7	0.0	0.0		0.1	6.3	6.4		0.9	3.9	3.9
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.7	0.0	0.0		0.1	6.3	6.4		0.9	3.9	3.9
Prop In Lane	0.74		0.17	1.00		1.00		1.00		0.10		1.00		0.04
Lane Grp Cap(c), veh/h	68	0	0	34	0	30		7	582	602		45	620	648
V/C Ratio(X)	0.85	0.00	0.00	0.86	0.00	0.00		0.77	0.59	0.59		0.91	0.38	0.38
Avail Cap(c_a), veh/h	1114	0	0	697	0	620		523	3782	3911		1220	4477	4679
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		1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	0.0	18.0	0.0	0.0		18.3	9.5	9.5		17.8	8.1	8.1
Incr Delay (d2), s/veh	23.5	0.0	0.0	43.3	0.0	0.0		100.6	0.9	0.9		43.2	0.4	0.4
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	0.9	0.0	0.0	0.6	0.0	0.0		0.2	1.7	1.8		0.8	1.0	1.0
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	41.0	0.0	0.0	61.3	0.0	0.0		118.9	10.4	10.4		61.0	8.5	8.4
LnGrp LOS	D	A	A	E	A	A		F	B	B		E	A	A
Approach Vol, veh/h		58			29				699				522	
Approach Delay, s/veh		41.0			61.3				11.2				12.6	
Approach LOS		D			E				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	5.1	19.3	5.8	6.0	18.4	6.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	12.0	103.0	16.0	28.0	87.0	26.0
Max Q Clear Time (g_c+I1), s	2.1	5.9	2.7	2.9	8.4	3.3
Green Ext Time (p_c), s	0.0	3.2	0.1	0.1	5.0	0.2

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

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	82	10	42	22	37	88	24	106	565	24	27	101	393	58
Future Volume (veh/h)	82	10	42	22	37	88	24	106	565	24	27	101	393	58
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach		No			No				No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		1870	1870	1870		1870	1870	1870
Adj Flow Rate, veh/h	89	11	10	24	40	5		115	614	24		110	427	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	136	69	63	33	56	77		155	1068	42		148	960	121
Arrive On Green	0.08	0.08	0.08	0.05	0.05	0.05		0.09	0.31	0.31		0.08	0.30	0.30
Sat Flow, veh/h	1781	902	820	688	1147	1585		1781	3487	136		1781	3176	399
Grp Volume(v), veh/h	89	0	21	64	0	5		115	313	325		110	238	243
Grp Sat Flow(s),veh/h/ln	1781	0	1723	1836	0	1585		1781	1777	1846		1781	1777	1798
Q Serve(g_s), s	2.0	0.0	0.5	1.4	0.0	0.1		2.6	6.1	6.1		2.5	4.4	4.5
Cycle Q Clear(g_c), s	2.0	0.0	0.5	1.4	0.0	0.1		2.6	6.1	6.1		2.5	4.4	4.5
Prop In Lane	1.00		0.48	0.37		1.00		1.00		0.07		1.00		0.22
Lane Grp Cap(c), veh/h	136	0	132	89	0	77		155	544	565		148	537	543
V/C Ratio(X)	0.65	0.00	0.16	0.72	0.00	0.06		0.74	0.57	0.58		0.75	0.44	0.45
Avail Cap(c_a), veh/h	779	0	753	1025	0	885		1471	2719	2824		1428	2675	2708
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	1.00	1.00	0.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	17.8	19.3	0.0	18.7		18.3	12.0	12.0		18.5	11.6	11.6
Incr Delay (d2), s/veh	5.2	0.0	0.6	10.3	0.0	0.4		6.8	1.0	0.9		7.2	0.6	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	0.9	0.0	0.2	0.8	0.0	0.0		1.2	2.1	2.1		1.2	1.5	1.5
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	23.7	0.0	18.3	29.6	0.0	19.0		25.2	13.0	13.0		25.7	12.1	12.2
LnGrp LOS	C	A	B	C	A	B		C	B	B		C	B	B
Approach Vol, veh/h		110			69				753				591	
Approach Delay, s/veh		22.6			28.8				14.8				14.7	
Approach LOS		C			C				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	8.6	17.4	7.0	8.4	17.6	8.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	34.0	62.0	23.0	33.0	63.0	18.0
Max Q Clear Time (g_c+I1), s	4.6	6.5	3.4	4.5	8.1	4.0
Green Ext Time (p_c), s	0.3	3.2	0.2	0.3	4.5	0.4

Intersection Summary	
HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	38	106	95	262	183	16
Future Vol, veh/h	38	106	95	262	183	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	115	103	285	199	17
Number of Lanes	2	0	1	2	2	0

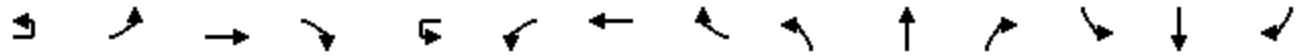
Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	2
HCM Control Delay	9.6	8.9	9.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	11%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	100%	79%
Vol Right, %	0%	0%	0%	0%	89%	0%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	131	131	25	119	122	77
LT Vol	95	0	0	25	13	0	0
Through Vol	0	131	131	0	0	122	61
RT Vol	0	0	0	0	106	0	16
Lane Flow Rate	103	142	142	28	129	133	84
Geometry Grp	8	8	8	8	8	8	8

Degree of Util (X)	0.171	0.217	0.148	0.05	0.195	0.21	0.129
Departure Headway (Hd)	5.979	5.476	3.731	6.511	5.436	5.707	5.56
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	596	651	948	545	653	622	638
Service Time	3.755	3.252	1.506	4.31	3.235	3.501	3.354
HCM Lane V/C Ratio	0.173	0.218	0.15	0.051	0.198	0.214	0.132
HCM Control Delay	10	9.8	7.2	9.7	9.6	10	9.2
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.6	0.8	0.5	0.2	0.7	0.8	0.4

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

02/18/2021



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	5	12	1041	53	31	500	1045	17	32	6	269	23	7	13
Future Volume (veh/h)	5	12	1041	53	31	500	1045	17	32	6	269	23	7	13
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00		1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No				No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870		1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		13	1132	55		543	1136	17	35	7	4	25	8	0
Peak Hour Factor		0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2		2	2	2	2	2	2	2	2	2
Cap, veh/h		18	1629	79		722	2724	41	46	9	49	39	41	0
Arrive On Green		0.01	0.33	0.33		0.21	0.53	0.53	0.03	0.03	0.03	0.02	0.02	0.00
Sat Flow, veh/h		1781	4989	242		3456	5183	78	1496	299	1585	1781	1870	0
Grp Volume(v), veh/h		13	772	415		543	746	407	42	0	4	25	8	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1827		1728	1702	1856	1796	0	1585	1781	1870	0
Q Serve(g_s), s		0.4	9.8	9.8		7.3	6.6	6.6	1.1	0.0	0.1	0.7	0.2	0.0
Cycle Q Clear(g_c), s		0.4	9.8	9.8		7.3	6.6	6.6	1.1	0.0	0.1	0.7	0.2	0.0
Prop In Lane		1.00		0.13		1.00		0.04	0.83		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		18	1112	597		722	1789	976	56	0	49	39	41	0
V/C Ratio(X)		0.74	0.69	0.70		0.75	0.42	0.42	0.75	0.00	0.08	0.63	0.19	0.00
Avail Cap(c_a), veh/h		217	3842	2062		3242	6621	3611	1273	0	1124	289	303	0
HCM Platoon Ratio		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		24.4	14.5	14.5		18.3	7.1	7.1	23.7	0.0	23.2	23.9	23.7	0.0
Incr Delay (d2), s/veh		19.5	0.3	0.5		0.6	0.1	0.1	7.4	0.0	0.3	6.1	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		0.2	3.1	3.4		2.6	1.6	1.8	0.6	0.0	0.0	0.3	0.1	0.0
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh		43.8	14.8	15.0		18.9	7.2	7.2	31.2	0.0	23.5	30.1	24.5	0.0
LnGrp LOS		D	B	B		B	A	A	C	A	C	C	C	A
Approach Vol, veh/h			1200				1696			46			33	
Approach Delay, s/veh			15.2				10.9			30.5			28.7	
Approach LOS			B				B			C			C	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	15.3	21.4	6.1	5.5	31.2	6.5
Change Period (Y+Rc), s	5.0	5.3	5.0	5.0	5.3	5.0
Max Green Setting (Gmax), s	46.3	55.7	8.0	6.0	96.0	35.0
Max Q Clear Time (g_c+I1), s	9.3	11.8	2.7	2.4	8.6	3.1
Green Ext Time (p_c), s	1.0	4.4	0.0	0.0	5.8	0.1

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

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	0	0	0	19	0	34	5	0	359	19	52	33	362	0
Future Volume (veh/h)	0	0	0	19	0	34	5	0	359	19	52	33	362	0
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	1683	1683	1683	1683	1683	1683		1683	1683	1683		1683	1683	1683
Adj Flow Rate, veh/h	0	0	0	21	0	0		0	390	19		36	393	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	0	7	0	26	0	23		7	940	46		43	1751	0
Arrive On Green	0.00	0.00	0.00	0.02	0.00	0.00		0.00	0.30	0.30		0.03	0.55	0.00
Sat Flow, veh/h	0	1683	0	1603	0	1427		1603	3105	151		1603	3282	0
Grp Volume(v), veh/h	0	0	0	21	0	0		0	200	209		36	393	0
Grp Sat Flow(s),veh/h/ln	0	1683	0	1603	0	1427		1603	1599	1656		1603	1599	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0		0.0	2.3	2.3		0.5	1.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.0		0.0	2.3	2.3		0.5	1.5	0.0
Prop In Lane	0.00		0.00	1.00		1.00		1.00		0.09		1.00		0.00
Lane Grp Cap(c), veh/h	0	7	0	26	0	23		7	484	502		43	1751	0
V/C Ratio(X)	0.00	0.00	0.00	0.80	0.00	0.00		0.00	0.41	0.42		0.84	0.22	0.00
Avail Cap(c_a), veh/h	0	220	0	1678	0	1493		909	5578	5777		3495	16315	0
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	0.00	1.00	0.00	0.00		0.00	1.00	1.00		1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	11.2	0.0	0.0		0.0	6.4	6.4		11.1	2.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	40.7	0.0	0.0		0.0	0.6	0.6		32.4	0.1	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	0.0	0.0	0.0	0.4	0.0	0.0		0.0	0.4	0.4		0.5	0.0	0.0
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	0.0	0.0	0.0	52.0	0.0	0.0		0.0	6.9	6.9		43.5	2.7	0.0
LnGrp LOS	A	A	A	D	A	A		A	A	A		D	A	A
Approach Vol, veh/h		0			21				409				429	
Approach Delay, s/veh		0.0			52.0				6.9				6.2	
Approach LOS					D				A				A	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	0.0	17.6	5.4	5.6	11.9	0.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	117.0	24.0	50.0	80.0	3.0
Max Q Clear Time (g_c+I1), s	0.0	3.5	2.3	2.5	4.3	0.0
Green Ext Time (p_c), s	0.0	2.9	0.0	0.1	2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	117	26	36	18	15	42	9	102	313	17	23	66	343	114
Future Volume (veh/h)	117	26	36	18	15	42	9	102	313	17	23	66	343	114
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach		No			No				No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		1870	1870	1870		1870	1870	1870
Adj Flow Rate, veh/h	127	28	24	20	16	0		111	340	15		72	373	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	219	114	98	25	20	39		149	984	43		92	703	182
Arrive On Green	0.12	0.12	0.12	0.02	0.02	0.00		0.08	0.28	0.28		0.05	0.25	0.25
Sat Flow, veh/h	1781	930	797	1011	809	1585		1781	3467	153		1781	2792	725
Grp Volume(v), veh/h	127	0	52	36	0	0		111	174	181		72	236	235
Grp Sat Flow(s),veh/h/ln	1781	0	1727	1820	0	1585		1781	1777	1843		1781	1777	1740
Q Serve(g_s), s	2.6	0.0	1.1	0.8	0.0	0.0		2.4	3.0	3.0		1.5	4.4	4.5
Cycle Q Clear(g_c), s	2.6	0.0	1.1	0.8	0.0	0.0		2.4	3.0	3.0		1.5	4.4	4.5
Prop In Lane	1.00		0.46	0.56		1.00		1.00		0.08		1.00		0.42
Lane Grp Cap(c), veh/h	219	0	212	45	0	39		149	504	523		92	447	438
V/C Ratio(X)	0.58	0.00	0.25	0.80	0.00	0.00		0.74	0.34	0.35		0.78	0.53	0.54
Avail Cap(c_a), veh/h	1243	0	1205	800	0	697		1612	2894	3002		1382	2664	2609
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	1.00	1.00	0.00	0.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	0.0	15.3	18.8	0.0	0.0		17.3	11.0	11.0		18.1	12.5	12.5
Incr Delay (d2), s/veh	2.4	0.0	0.6	26.0	0.0	0.0		7.2	0.4	0.4		13.4	1.0	1.0
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	1.0	0.0	0.4	0.6	0.0	0.0		1.1	1.0	1.0		0.9	1.5	1.5
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	18.5	0.0	15.9	44.8	0.0	0.0		24.5	11.4	11.4		31.6	13.5	13.6
LnGrp LOS	B	A	B	D	A	A		C	B	B		C	B	B
Approach Vol, veh/h		179			36				466				543	
Approach Delay, s/veh		17.7			44.8				14.5				15.9	
Approach LOS		B			D				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	8.2	14.7	6.0	7.0	16.0	9.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	35.0	58.0	17.0	30.0	63.0	27.0
Max Q Clear Time (g_c+I1), s	4.4	6.5	2.8	3.5	5.0	4.6
Green Ext Time (p_c), s	0.3	3.2	0.1	0.2	2.3	1.0

Intersection Summary	
HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	58	9	190	267	57
Future Vol, veh/h	13	58	9	190	267	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	63	10	207	290	62
Number of Lanes	2	0	1	2	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	2
HCM Control Delay	8.7	8.1	9.5
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	7%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	100%	61%
Vol Right, %	0%	0%	0%	0%	93%	0%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	95	95	9	62	178	146
LT Vol	9	0	0	9	4	0	0
Through Vol	0	95	95	0	0	178	89
RT Vol	0	0	0	0	58	0	57
Lane Flow Rate	10	103	103	9	68	193	159
Geometry Grp	8	8	8	8	8	8	8

Degree of Util (X)	0.016	0.156	0.106	0.017	0.099	0.277	0.215
Departure Headway (Hd)	5.951	5.449	3.706	6.395	5.276	5.146	4.872
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	601	657	962	558	676	697	735
Service Time	3.693	3.191	1.448	4.156	3.036	2.888	2.614
HCM Lane V/C Ratio	0.017	0.157	0.107	0.016	0.101	0.277	0.216
HCM Control Delay	8.8	9.2	6.9	9.3	8.6	9.9	9
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.6	0.4	0.1	0.3	1.1	0.8

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

04/19/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	1	10	754	42	927	864	4	31	1	684	13	1	13
Future Volume (veh/h)	1	10	754	42	927	864	4	31	1	684	13	1	13
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		11	820	39	1008	939	4	34	1	630	14	1	0
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		901	981	47	1877	1201	5	122	4	1712	18	19	0
Arrive On Green		0.51	0.20	0.20	0.54	0.23	0.23	0.07	0.07	0.07	0.01	0.01	0.00
Sat Flow, veh/h		1781	4995	237	3456	5248	22	1733	51	2790	1781	1870	0
Grp Volume(v), veh/h		11	558	301	1008	609	334	35	0	630	14	1	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1828	1728	1702	1866	1784	0	1395	1781	1870	0
Q Serve(g_s), s		0.3	16.5	16.6	19.8	17.6	17.7	2.0	0.0	7.4	0.8	0.1	0.0
Cycle Q Clear(g_c), s		0.3	16.5	16.6	19.8	17.6	17.7	2.0	0.0	7.4	0.8	0.1	0.0
Prop In Lane		1.00		0.13	1.00		0.01	0.97		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		901	668	359	1877	779	427	126	0	1712	18	19	0
V/C Ratio(X)		0.01	0.84	0.84	0.54	0.78	0.78	0.28	0.00	0.37	0.78	0.05	0.00
Avail Cap(c_a), veh/h		901	872	468	1877	2299	1260	126	0	1712	75	78	0
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		12.9	40.6	40.6	15.5	38.0	38.0	46.3	0.0	10.1	51.8	51.5	0.0
Incr Delay (d2), s/veh		0.0	4.3	8.0	0.2	0.7	1.2	0.4	0.0	0.0	22.7	0.4	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		0.1	7.2	8.1	7.3	7.3	8.0	0.9	0.0	3.5	0.5	0.0	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh		12.9	44.9	48.6	15.6	38.7	39.2	46.7	0.0	10.2	74.5	51.9	0.0
LnGrp LOS		B	D	D	B	D	D	D	A	B	E	D	A
Approach Vol, veh/h			870			1951			665			15	
Approach Delay, s/veh			45.8			26.9			12.1			73.0	
Approach LOS			D			C			B			E	

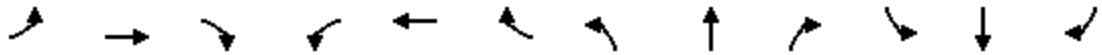
Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	61.6	25.7	5.7	58.2	29.1	12.0
Change Period (Y+Rc), s	4.6	5.1	4.6	5.1	* 5.1	4.6
Max Green Setting (Gmax), s	47.4	26.9	4.4	3.4	* 71	7.4
Max Q Clear Time (g_c+I1), s	21.8	18.6	2.8	2.3	19.7	9.4
Green Ext Time (p_c), s	2.1	2.0	0.0	0.0	4.4	0.0

Intersection Summary	
HCM 6th Ctrl Delay	29.0
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	419	20	1	5	20	95	1	201	3	90	258	620
Future Volume (veh/h)	419	20	1	5	20	95	1	201	3	90	258	620
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	455	22	0	5	22	43	1	218	2	98	280	402
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	553	443	0	48	48	831	1	258	2	875	919	1032
Arrive On Green	0.16	0.24	0.00	0.03	0.03	0.03	0.14	0.14	0.14	0.49	0.49	0.49
Sat Flow, veh/h	3456	1870	0	236	1463	1585	8	1842	17	1781	1870	1585
Grp Volume(v), veh/h	455	22	0	27	0	43	221	0	0	98	280	402
Grp Sat Flow(s),veh/h/ln	1728	1870	0	1699	0	1585	1867	0	0	1781	1870	1585
Q Serve(g_s), s	13.4	1.0	0.0	0.7	0.0	1.4	12.1	0.0	0.0	3.1	9.4	0.0
Cycle Q Clear(g_c), s	13.4	1.0	0.0	1.7	0.0	1.4	12.1	0.0	0.0	3.1	9.4	0.0
Prop In Lane	1.00		0.00	0.19		1.00	0.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	553	443	0	97	0	831	262	0	0	875	919	1032
V/C Ratio(X)	0.82	0.05	0.00	0.28	0.00	0.05	0.84	0.00	0.00	0.11	0.30	0.39
Avail Cap(c_a), veh/h	935	695	0	139	0	869	366	0	0	875	919	1032
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	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	30.9	0.0	49.9	0.0	12.2	44.0	0.0	0.0	14.4	16.0	8.5
Incr Delay (d2), s/veh	3.1	0.0	0.0	1.5	0.0	0.0	12.0	0.0	0.0	0.3	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.4	0.0	0.7	0.0	1.1	6.5	0.0	0.0	1.3	4.2	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.8	31.0	0.0	51.4	0.0	12.2	56.0	0.0	0.0	14.6	16.8	9.7
LnGrp LOS	D	C	A	D	A	B	E	A	A	B	B	A
Approach Vol, veh/h		477			70			221			780	
Approach Delay, s/veh		45.1			27.3			56.0			12.9	
Approach LOS		D			C			E			B	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	29.5	56.2	21.4	8.1	19.3
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	39.0	31.6	28.4	6.0	20.6
Max Q Clear Time (g_c+I1), s	3.0	11.4	15.4	3.7	14.1
Green Ext Time (p_c), s	0.1	3.5	1.4	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	1	1	1	93	1	31	1	3	562	84	1	84	804	1
Future Volume (veh/h)	1	1	1	93	1	31	1	3	562	84	1	84	804	1
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	1683	1683	1683	1683	1683	1683		1683	1683	1683		1683	1683	1683
Adj Flow Rate, veh/h	1	1	0	101	1	1		3	611	83		91	874	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	2	2	0	130	62	62		4	995	135		114	1377	2
Arrive On Green	0.00	0.00	0.00	0.08	0.08	0.08		0.00	0.35	0.35		0.07	0.42	0.42
Sat Flow, veh/h	821	821	0	1603	772	772		1603	2830	384		1603	3278	4
Grp Volume(v), veh/h	2	0	0	101	0	2		3	345	349		91	426	449
Grp Sat Flow(s),veh/h/ln	1642	0	0	1603	0	1544		1603	1599	1614		1603	1599	1683
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0		0.1	7.2	7.2		2.3	8.5	8.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	2.5	0.0	0.0		0.1	7.2	7.2		2.3	8.5	8.5
Prop In Lane	0.50		0.00	1.00		0.50		1.00		0.24		1.00		0.00
Lane Grp Cap(c), veh/h	4	0	0	130	0	125		4	562	568		114	672	707
V/C Ratio(X)	0.49	0.00	0.00	0.78	0.00	0.02		0.76	0.61	0.62		0.80	0.63	0.63
Avail Cap(c_a), veh/h	285	0	0	1349	0	1299		278	3324	3356		1270	4314	4539
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	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	0.0	18.2	0.0	17.1		20.1	10.8	10.8		18.5	9.3	9.3
Incr Delay (d2), s/veh	70.8	0.0	0.0	9.6	0.0	0.1		135.8	1.1	1.1		12.1	1.0	1.0
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	0.1	0.0	0.0	1.2	0.0	0.0		0.2	2.0	2.0		1.1	2.2	2.3
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	90.9	0.0	0.0	27.8	0.0	17.1		156.0	11.9	11.9		30.6	10.3	10.2
LnGrp LOS	F	A	A	C	A	B		F	B	B		C	B	B
Approach Vol, veh/h		2			103				697				966	
Approach Delay, s/veh		90.9			27.6				12.5				12.2	
Approach LOS		F			C				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	5.1	22.0	8.3	7.9	19.2	5.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	109.0	34.0	32.0	84.0	7.0
Max Q Clear Time (g_c+I1), s	2.1	10.5	4.5	4.3	9.2	2.0
Green Ext Time (p_c), s	0.0	6.5	0.3	0.2	4.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	53	1	22	140	1	31	37	56	519	63	63	169	696	59
Future Volume (veh/h)	53	1	22	140	1	31	37	56	519	63	63	169	696	59
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach		No			No				No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		1870	1870	1870		1870	1870	1870
Adj Flow Rate, veh/h	58	1	0	170	0	0		61	564	61		184	757	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	73	77	0	317	166	0		77	929	100		249	1282	100
Arrive On Green	0.04	0.04	0.00	0.09	0.00	0.00		0.04	0.29	0.29		0.14	0.38	0.38
Sat Flow, veh/h	1781	1870	0	3563	1870	0		1781	3235	349		1781	3340	260
Grp Volume(v), veh/h	58	1	0	170	0	0		61	309	316		184	403	413
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0		1781	1777	1808		1781	1777	1824
Q Serve(g_s), s	1.5	0.0	0.0	2.1	0.0	0.0		1.5	6.8	6.8		4.5	8.1	8.2
Cycle Q Clear(g_c), s	1.5	0.0	0.0	2.1	0.0	0.0		1.5	6.8	6.8		4.5	8.1	8.2
Prop In Lane	1.00		0.00	1.00		0.00		1.00		0.19		1.00		0.14
Lane Grp Cap(c), veh/h	73	77	0	317	166	0		77	510	519		249	682	700
V/C Ratio(X)	0.80	0.01	0.00	0.54	0.00	0.00		0.80	0.61	0.61		0.74	0.59	0.59
Avail Cap(c_a), veh/h	592	622	0	1737	912	0		868	2126	2163		1816	3071	3152
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	0.00	0.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	20.8	0.0	19.7	0.0	0.0		21.4	13.9	13.9		18.6	11.1	11.1
Incr Delay (d2), s/veh	17.5	0.1	0.0	1.4	0.0	0.0		16.7	1.2	1.2		4.3	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	0.9	0.0	0.0	0.8	0.0	0.0		0.9	2.3	2.4		1.9	2.6	2.6
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	38.9	20.8	0.0	21.1	0.0	0.0		38.1	15.0	15.0		22.9	11.9	11.9
LnGrp LOS	D	C	A	C	A	A		D	B	B		C	B	B
Approach Vol, veh/h		59			170				686				1000	
Approach Delay, s/veh		38.6			21.1				17.1				13.9	
Approach LOS		D			C				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	6.9	22.3	9.0	11.3	18.0	6.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	22.0	78.0	22.0	46.0	54.0	15.0
Max Q Clear Time (g_c+I1), s	3.5	10.2	4.1	6.5	8.8	3.5
Green Ext Time (p_c), s	0.1	5.9	0.5	0.5	4.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	7	36	17	6	48	24	315	21	56	411	17
Future Vol, veh/h	21	7	36	17	6	48	24	315	21	56	411	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	8	39	18	7	52	26	342	23	61	447	18
Number of Lanes	0	1	1	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10	10.1	14.9	18.8
HCM LOS	A	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	75%	0%	100%	0%	100%	0%
Vol Thru, %	0%	94%	25%	0%	0%	11%	0%	96%
Vol Right, %	0%	6%	0%	100%	0%	89%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	24	336	28	36	17	54	56	428
LT Vol	24	0	21	0	17	0	56	0
Through Vol	0	315	7	0	0	6	0	411
RT Vol	0	21	0	36	0	48	0	17
Lane Flow Rate	26	365	30	39	18	59	61	465
Geometry Grp	7	7	7	7	7	7	7	7

Degree of Util (X)	0.044	0.565	0.063	0.069	0.039	0.104	0.101	0.703
Departure Headway (Hd)	6.118	5.569	7.402	6.305	7.513	6.367	5.97	5.438
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	586	650	484	567	477	562	601	665
Service Time	3.848	3.299	5.148	4.05	5.258	4.112	3.695	3.163
HCM Lane V/C Ratio	0.044	0.562	0.062	0.069	0.038	0.105	0.101	0.699
HCM Control Delay	9.1	15.3	10.6	9.5	10.6	9.9	9.4	20
HCM Lane LOS	A	C	B	A	B	A	A	C
HCM 95th-tile Q	0.1	3.5	0.2	0.2	0.1	0.3	0.3	5.7

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	7	39	19	6	45	28	419	24	52	497	13
Future Vol, veh/h	18	7	39	19	6	45	28	419	24	52	497	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	8	42	21	7	49	30	455	26	57	540	14
Number of Lanes	1	1	0	1	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.3	10.3	12.5	13.8
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	12%	0%	100%	0%	100%	0%	17%	0%
Vol Thru, %	88%	90%	0%	15%	0%	12%	83%	95%
Vol Right, %	0%	10%	0%	85%	0%	88%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	238	234	18	46	19	51	301	262
LT Vol	28	0	18	0	19	0	52	0
Through Vol	210	210	0	7	0	6	249	249
RT Vol	0	24	0	39	0	45	0	13
Lane Flow Rate	258	254	20	50	21	55	327	284
Geometry Grp	7	7	7	7	7	7	7	7

Degree of Util (X)	0.418	0.402	0.042	0.092	0.045	0.102	0.521	0.444
Departure Headway (Hd)	5.835	5.703	7.777	6.659	7.761	6.618	5.746	5.624
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	617	632	460	538	461	541	627	640
Service Time	3.57	3.437	5.526	4.407	5.507	4.364	3.478	3.355
HCM Lane V/C Ratio	0.418	0.402	0.043	0.093	0.046	0.102	0.522	0.444
HCM Control Delay	12.7	12.2	10.9	10.1	10.9	10.1	14.6	12.8
HCM Lane LOS	B	B	B	B	B	B	B	B
HCM 95th-tile Q	2.1	1.9	0.1	0.3	0.1	0.3	3	2.3

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	18	144	155	17	8	249	18	155	7	12	7
Future Vol, veh/h	8	18	144	155	17	8	249	18	155	7	12	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	20	157	168	18	9	271	20	168	8	13	8
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	9.3	10.7	13.2	9.6
HCM LOS	A	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	88%	0%	9%	0%	100%	72%	27%
Vol Thru, %	6%	0%	21%	0%	0%	19%	46%
Vol Right, %	5%	100%	70%	100%	0%	9%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	283	140	86	84	90	90	26
LT Vol	249	0	8	0	90	65	7
Through Vol	18	0	18	0	0	17	12
RT Vol	16	140	60	84	0	8	7
Lane Flow Rate	307	152	94	91	98	98	28
Geometry Grp	7	7	7	7	7	7	6

Degree of Util (X)	0.519	0.209	0.151	0.139	0.181	0.176	0.049
Departure Headway (Hd)	6.08	4.971	5.765	5.504	6.661	6.457	6.212
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	596	723	622	652	539	556	576
Service Time	3.805	2.695	3.496	3.235	4.391	4.187	4.251
HCM Lane V/C Ratio	0.515	0.21	0.151	0.14	0.182	0.176	0.049
HCM Control Delay	15.2	9	9.5	9.1	10.9	10.6	9.6
HCM Lane LOS	C	A	A	A	B	B	A
HCM 95th-tile Q	3	0.8	0.5	0.5	0.7	0.6	0.2

Intersection	
Intersection Delay, s/veh	10.7
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	115	88	400	295	16
Future Vol, veh/h	21	115	88	400	295	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	125	96	435	321	17
Number of Lanes	2	0	1	2	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	2
HCM Control Delay	10.7	10.1	11.5
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	6%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	100%	86%
Vol Right, %	0%	0%	0%	0%	94%	0%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	88	200	200	14	122	197	114
LT Vol	88	0	0	14	7	0	0
Through Vol	0	200	200	0	0	197	98
RT Vol	0	0	0	0	115	0	16
Lane Flow Rate	96	217	217	15	133	214	124
Geometry Grp	8	8	8	8	8	8	8

Degree of Util (X)	0.169	0.354	0.249	0.031	0.226	0.361	0.207
Departure Headway (Hd)	6.369	5.865	4.116	7.278	6.138	6.087	5.988
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	563	613	872	492	585	592	599
Service Time	4.102	3.597	1.848	5.021	3.881	3.822	3.724
HCM Lane V/C Ratio	0.171	0.354	0.249	0.03	0.227	0.361	0.207
HCM Control Delay	10.4	11.8	8.2	10.3	10.7	12.2	10.3
HCM Lane LOS	B	B	A	B	B	B	B
HCM 95th-tile Q	0.6	1.6	1	0.1	0.9	1.6	0.8

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

04/19/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	11	49	1074	64	1398	976	12	64	1	1399	51	1	40
Future Volume (veh/h)	11	49	1074	64	1398	976	12	64	1	1399	51	1	40
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		53	1167	63	1520	1061	11	70	1	1457	55	1	0
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		830	1223	66	1666	1344	14	90	1	1488	71	75	0
Arrive On Green		0.47	0.25	0.25	0.48	0.26	0.26	0.05	0.05	0.05	0.04	0.04	0.00
Sat Flow, veh/h		1781	4959	268	3456	5211	54	1757	25	2790	1781	1870	0
Grp Volume(v), veh/h		53	801	429	1520	693	379	71	0	1457	55	1	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1822	1728	1702	1861	1782	0	1395	1781	1870	0
Q Serve(g_s), s		1.7	24.3	24.4	42.7	19.9	19.9	4.1	0.0	5.4	3.2	0.1	0.0
Cycle Q Clear(g_c), s		1.7	24.3	24.4	42.7	19.9	19.9	4.1	0.0	5.4	3.2	0.1	0.0
Prop In Lane		1.00		0.15	1.00		0.03	0.99		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		830	840	449	1666	878	480	92	0	1488	71	75	0
V/C Ratio(X)		0.06	0.95	0.95	0.91	0.79	0.79	0.77	0.00	0.98	0.77	0.01	0.00
Avail Cap(c_a), veh/h		830	840	449	1666	2169	1185	92	0	1488	75	78	0
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		15.4	39.0	39.0	25.2	36.3	36.3	49.2	0.0	23.9	49.9	48.4	0.0
Incr Delay (d2), s/veh		0.0	20.4	30.8	7.9	0.6	1.1	30.4	0.0	18.4	33.5	0.0	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		0.7	12.3	14.4	18.1	8.1	9.0	2.6	0.0	20.5	2.1	0.0	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh		15.4	59.4	69.7	33.0	36.9	37.4	79.6	0.0	42.4	83.4	48.4	0.0
LnGrp LOS		B	E	E	C	D	D	E	A	D	F	D	A
Approach Vol, veh/h			1283			2592			1528			56	
Approach Delay, s/veh			61.0			34.7			44.1			82.8	
Approach LOS			E			C			D			F	

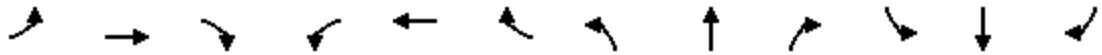
Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	55.2	31.0	8.8	54.0	32.2	10.0
Change Period (Y+Rc), s	4.6	5.1	4.6	5.1	* 5.1	4.6
Max Green Setting (Gmax), s	50.4	25.9	4.4	9.4	* 67	5.4
Max Q Clear Time (g_c+I1), s	44.7	26.4	5.2	3.7	21.9	7.4
Green Ext Time (p_c), s	2.2	0.0	0.0	0.0	5.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	788	47	2	9	43	595	4	80	2	690	80	692
Future Volume (veh/h)	788	47	2	9	43	595	4	80	2	690	80	692
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	857	51	1	10	47	610	4	87	1	812	0	526
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	936	671	13	51	82	778	5	111	1	1561	0	1124
Arrive On Green	0.27	0.37	0.37	0.05	0.05	0.05	0.06	0.06	0.06	0.44	0.00	0.44
Sat Flow, veh/h	3456	1828	36	201	1563	1585	81	1761	20	3563	0	1585
Grp Volume(v), veh/h	857	0	52	57	0	610	92	0	0	812	0	526
Grp Sat Flow(s),veh/h/ln	1728	0	1864	1764	0	1585	1863	0	0	1781	0	1585
Q Serve(g_s), s	25.2	0.0	1.9	1.4	0.0	5.5	5.1	0.0	0.0	17.4	0.0	0.0
Cycle Q Clear(g_c), s	25.2	0.0	1.9	3.3	0.0	5.5	5.1	0.0	0.0	17.4	0.0	0.0
Prop In Lane	1.00		0.02	0.18		1.00	0.04		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	936	0	684	133	0	778	118	0	0	1561	0	1124
V/C Ratio(X)	0.92	0.00	0.08	0.43	0.00	0.78	0.78	0.00	0.00	0.52	0.00	0.47
Avail Cap(c_a), veh/h	1001	0	719	133	0	778	131	0	0	1561	0	1124
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	21.6	48.7	0.0	15.0	48.5	0.0	0.0	21.5	0.0	6.6
Incr Delay (d2), s/veh	12.2	0.0	0.0	2.2	0.0	5.3	23.5	0.0	0.0	1.2	0.0	1.4
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	12.2	0.0	0.9	1.6	0.0	17.3	3.2	0.0	0.0	7.5	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	0.0	21.7	50.9	0.0	20.3	71.9	0.0	0.0	22.7	0.0	8.0
LnGrp LOS	D	A	C	D	A	C	E	A	A	C	A	A
Approach Vol, veh/h		909			667			92			1338	
Approach Delay, s/veh		47.7			22.9			71.9			16.9	
Approach LOS		D			C			E			B	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	43.1	50.6	33.0	10.1	11.2
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	40.5	43.3	30.4	5.5	7.4
Max Q Clear Time (g_c+I1), s	3.9	19.4	27.2	7.5	7.1
Green Ext Time (p_c), s	0.3	5.9	1.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	40	1	18	191	1	64	8	5	932	127	1	127	697	10
Future Volume (veh/h)	40	1	18	191	1	64	8	5	932	127	1	127	697	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	1683	1683	1683	1683	1683	1683		1683	1683	1683		1683	1683	1683
Adj Flow Rate, veh/h	43	1	10	208	1	8		5	1013	131		138	758	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	53	1	12	251	25	202		6	1279	165		172	1783	26
Arrive On Green	0.04	0.04	0.04	0.16	0.16	0.16		0.00	0.45	0.45		0.11	0.55	0.55
Sat Flow, veh/h	1249	29	290	1603	161	1290		1603	2848	368		1603	3227	47
Grp Volume(v), veh/h	54	0	0	208	0	9		5	568	576		138	376	393
Grp Sat Flow(s),veh/h/ln	1569	0	0	1603	0	1451		1603	1599	1617		1603	1599	1675
Q Serve(g_s), s	2.8	0.0	0.0	10.3	0.0	0.4		0.3	24.9	24.9		6.9	11.2	11.2
Cycle Q Clear(g_c), s	2.8	0.0	0.0	10.3	0.0	0.4		0.3	24.9	24.9		6.9	11.2	11.2
Prop In Lane	0.80		0.19	1.00		0.89		1.00		0.23		1.00		0.03
Lane Grp Cap(c), veh/h	66	0	0	251	0	228		6	718	726		172	884	925
V/C Ratio(X)	0.81	0.00	0.00	0.83	0.00	0.04		0.79	0.79	0.79		0.80	0.43	0.43
Avail Cap(c_a), veh/h	268	0	0	686	0	621		118	1602	1620		509	1993	2087
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	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	38.9	0.0	0.0	33.4	0.0	29.3		40.7	19.3	19.3		35.7	10.7	10.7
Incr Delay (d2), s/veh	20.4	0.0	0.0	6.8	0.0	0.1		108.5	2.0	2.0		8.4	0.3	0.3
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	1.4	0.0	0.0	4.4	0.0	0.2		0.3	8.7	8.8		3.0	3.6	3.7
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	59.2	0.0	0.0	40.3	0.0	29.3		149.2	21.3	21.3		44.0	11.0	11.0
LnGrp LOS	E	A	A	D	A	C		F	C	C		D	B	B
Approach Vol, veh/h		54			217				1149				907	
Approach Delay, s/veh		59.2			39.8				21.8				16.1	
Approach LOS		E			D				C				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	5.3	50.2	17.8	13.8	41.8	8.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	6.0	102.0	35.0	26.0	82.0	14.0
Max Q Clear Time (g_c+I1), s	2.3	13.2	12.3	8.9	26.9	4.8
Green Ext Time (p_c), s	0.0	5.4	0.6	0.3	9.8	0.1

Intersection Summary	
HCM 6th Ctrl Delay	22.1
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	82	1	42	286	1	64	24	106	845	95	95	254	452	58
Future Volume (veh/h)	82	1	42	286	1	64	24	106	845	95	95	254	452	58
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach		No			No				No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		1870	1870	1870		1870	1870	1870
Adj Flow Rate, veh/h	89	1	0	363	0	0		115	918	98		276	491	55
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	116	122	0	487	256	0		149	1192	127		327	1509	168
Arrive On Green	0.07	0.07	0.00	0.14	0.00	0.00		0.08	0.37	0.37		0.18	0.47	0.47
Sat Flow, veh/h	1781	1870	0	3563	1870	0		1781	3239	346		1781	3223	360
Grp Volume(v), veh/h	89	1	0	363	0	0		115	504	512		276	270	276
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0		1781	1777	1808		1781	1777	1806
Q Serve(g_s), s	4.0	0.0	0.0	8.0	0.0	0.0		5.1	20.3	20.3		12.2	7.7	7.8
Cycle Q Clear(g_c), s	4.0	0.0	0.0	8.0	0.0	0.0		5.1	20.3	20.3		12.2	7.7	7.8
Prop In Lane	1.00		0.00	1.00		0.00		1.00		0.19		1.00		0.20
Lane Grp Cap(c), veh/h	116	122	0	487	256	0		149	654	666		327	832	845
V/C Ratio(X)	0.77	0.01	0.00	0.75	0.00	0.00		0.77	0.77	0.77		0.84	0.32	0.33
Avail Cap(c_a), veh/h	285	299	0	1096	575	0		460	1203	1224		965	1706	1733
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	0.00	0.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	35.5	0.0	33.7	0.0	0.0		36.5	22.6	22.6		32.0	13.5	13.6
Incr Delay (d2), s/veh	10.1	0.0	0.0	2.3	0.0	0.0		8.1	2.0	1.9		5.9	0.2	0.2
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	2.0	0.0	0.0	3.6	0.0	0.0		2.5	8.2	8.3		5.5	2.9	3.0
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	47.4	35.6	0.0	36.0	0.0	0.0		44.6	24.6	24.6		37.9	13.8	13.8
LnGrp LOS	D	D	A	D	A	A		D	C	C		D	B	B
Approach Vol, veh/h		90			363				1131				822	
Approach Delay, s/veh		47.3			36.0				26.6				21.9	
Approach LOS		D			D				C				C	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	11.8	43.0	16.1	19.9	34.9	10.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	21.0	78.0	25.0	44.0	55.0	13.0
Max Q Clear Time (g_c+I1), s	7.1	9.8	10.0	14.2	22.3	6.0
Green Ext Time (p_c), s	0.2	3.6	1.2	0.8	7.6	0.1

Intersection Summary	
HCM 6th Ctrl Delay	27.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	23.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	5	68	2	4	42	56	479	9	42	396	35
Future Vol, veh/h	23	5	68	2	4	42	56	479	9	42	396	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	5	74	2	4	46	61	521	10	46	430	38
Number of Lanes	0	1	1	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.7	10.4	28.6	22.1
HCM LOS	B	B	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	82%	0%	100%	0%	100%	0%
Vol Thru, %	0%	98%	18%	0%	0%	9%	0%	92%
Vol Right, %	0%	2%	0%	100%	0%	91%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	488	28	68	2	46	42	431
LT Vol	56	0	23	0	2	0	42	0
Through Vol	0	479	5	0	0	4	0	396
RT Vol	0	9	0	68	0	42	0	35
Lane Flow Rate	61	530	30	74	2	50	46	468
Geometry Grp	7	7	7	7	7	7	7	7

Degree of Util (X)	0.105	0.836	0.066	0.137	0.005	0.096	0.08	0.744
Departure Headway (Hd)	6.192	5.674	7.835	6.696	8.093	6.922	6.282	5.719
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	579	637	456	534	441	516	570	632
Service Time	3.929	3.41	5.599	4.459	5.864	4.692	4.022	3.459
HCM Lane V/C Ratio	0.105	0.832	0.066	0.139	0.005	0.097	0.081	0.741
HCM Control Delay	9.7	30.8	11.2	10.5	10.9	10.4	9.6	23.3
HCM Lane LOS	A	D	B	B	B	B	A	C
HCM 95th-tile Q	0.4	9	0.2	0.5	0	0.3	0.3	6.6

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	5	52	4	4	40	52	671	12	40	633	39
Future Vol, veh/h	39	5	52	4	4	40	52	671	12	40	633	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	5	57	4	4	43	57	729	13	43	688	42
Number of Lanes	1	1	0	1	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.6	11.2	22	20.6
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	13%	0%	100%	0%	100%	0%	11%	0%
Vol Thru, %	87%	97%	0%	9%	0%	9%	89%	89%
Vol Right, %	0%	3%	0%	91%	0%	91%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	388	348	39	57	4	44	357	356
LT Vol	52	0	39	0	4	0	40	0
Through Vol	336	336	0	5	0	4	317	317
RT Vol	0	12	0	52	0	40	0	39
Lane Flow Rate	421	378	42	62	4	48	388	386
Geometry Grp	7	7	7	7	7	7	7	7

Degree of Util (X)	0.73	0.645	0.101	0.127	0.011	0.1	0.674	0.658
Departure Headway (Hd)	6.242	6.149	8.543	7.371	8.72	7.547	6.266	6.131
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	577	585	418	484	409	472	574	587
Service Time	4.01	3.917	6.33	5.157	6.513	5.34	4.036	3.901
HCM Lane V/C Ratio	0.73	0.646	0.1	0.128	0.01	0.102	0.676	0.658
HCM Control Delay	24.2	19.5	12.3	11.2	11.6	11.2	21.1	20
HCM Lane LOS	C	C	B	B	B	B	C	C
HCM 95th-tile Q	6.1	4.6	0.3	0.4	0	0.3	5.1	4.8

Intersection	
Intersection Delay, s/veh	19.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	58	215	399	54	20	219	39	378	20	22	6
Future Vol, veh/h	7	58	215	399	54	20	219	39	378	20	22	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	63	234	434	59	22	238	42	411	22	24	7
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	13.2	19.7	23.4	12.6
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	66%	0%	5%	0%	100%	69%	42%
Vol Thru, %	12%	0%	40%	0%	0%	23%	46%
Vol Right, %	23%	100%	55%	100%	0%	8%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	334	302	145	135	235	238	48
LT Vol	219	0	7	0	235	164	20
Through Vol	39	0	58	0	0	54	22
RT Vol	76	302	80	135	0	20	6
Lane Flow Rate	363	329	157	147	256	258	52
Geometry Grp	7	7	7	7	7	7	6

Degree of Util (X)	0.74	0.589	0.324	0.29	0.559	0.549	0.122
Departure Headway (Hd)	7.342	6.455	7.428	7.079	7.87	7.65	8.425
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	493	559	484	508	458	473	426
Service Time	5.071	4.185	5.168	4.818	5.605	5.385	6.472
HCM Lane V/C Ratio	0.736	0.589	0.324	0.289	0.559	0.545	0.122
HCM Control Delay	28.2	18.1	13.7	12.7	20.2	19.3	12.6
HCM Lane LOS	D	C	B	B	C	C	B
HCM 95th-tile Q	6.2	3.8	1.4	1.2	3.4	3.3	0.4

Intersection	
Intersection Delay, s/veh	22.9
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	138	127	604	604	32
Future Vol, veh/h	32	138	127	604	604	32
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	150	138	657	657	35
Number of Lanes	2	0	1	2	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	2
HCM Control Delay	14.9	17	31.8
HCM LOS	B	C	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	7%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	100%	86%
Vol Right, %	0%	0%	0%	0%	93%	0%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	127	302	302	21	149	403	233
LT Vol	127	0	0	21	11	0	0
Through Vol	0	302	302	0	0	403	201
RT Vol	0	0	0	0	138	0	32
Lane Flow Rate	138	328	328	23	162	438	254
Geometry Grp	8	8	8	8	8	8	8

Degree of Util (X)	0.293	0.65	0.489	0.059	0.359	0.866	0.495
Departure Headway (Hd)	7.637	7.129	5.365	9.13	7.991	7.124	7.026
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	509	670	392	449	508	512
Service Time	5.375	4.867	3.103	6.886	5.746	4.866	4.768
HCM Lane V/C Ratio	0.293	0.644	0.49	0.059	0.361	0.862	0.496
HCM Control Delay	13.5	22.2	13.2	12.5	15.2	40.6	16.5
HCM Lane LOS	B	C	B	B	C	E	C
HCM 95th-tile Q	1.2	4.6	2.7	0.2	1.6	9.2	2.7

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

04/19/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	5	12	1041	78	1712	1045	17	70	1	1539	23	1	13
Future Volume (veh/h)	5	12	1041	78	1712	1045	17	70	1	1539	23	1	13
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		13	1132	77	1861	1136	16	76	1	1612	25	1	0
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		840	1084	74	1835	1434	20	87	1	1620	31	33	0
Arrive On Green		0.47	0.22	0.22	0.53	0.28	0.28	0.05	0.05	0.05	0.02	0.02	0.00
Sat Flow, veh/h		1781	4883	332	3456	5188	73	1759	23	2790	1781	1870	0
Grp Volume(v), veh/h		13	789	420	1861	745	407	77	0	1612	25	1	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1811	1728	1702	1857	1782	0	1395	1781	1870	0
Q Serve(g_s), s		0.4	23.3	23.3	55.8	21.3	21.3	4.5	0.0	5.2	1.5	0.1	0.0
Cycle Q Clear(g_c), s		0.4	23.3	23.3	55.8	21.3	21.3	4.5	0.0	5.2	1.5	0.1	0.0
Prop In Lane		1.00		0.18	1.00		0.04	0.99		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		840	755	402	1835	941	513	88	0	1620	31	33	0
V/C Ratio(X)		0.02	1.04	1.05	1.01	0.79	0.79	0.87	0.00	1.00	0.80	0.03	0.00
Avail Cap(c_a), veh/h		840	755	402	1835	2354	1284	88	0	1620	51	53	0
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		14.8	40.8	40.9	24.6	35.2	35.2	49.6	0.0	21.9	51.4	50.7	0.0
Incr Delay (d2), s/veh		0.0	44.9	57.3	24.6	0.6	1.1	54.6	0.0	21.2	15.7	0.1	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		0.2	14.2	16.5	27.0	8.7	9.5	3.4	0.0	23.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh		14.8	85.8	98.1	49.2	35.8	36.3	104.2	0.0	43.1	67.1	50.8	0.0
LnGrp LOS		B	F	F	F	D	D	F	A	D	E	D	A
Approach Vol, veh/h			1222			3013			1689			26	
Approach Delay, s/veh			89.3			44.1			45.9			66.4	
Approach LOS			F			D			D			E	

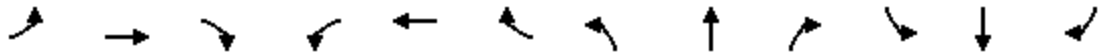
Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	60.4	28.4	6.4	54.6	34.1	9.8
Change Period (Y+Rc), s	4.6	5.1	4.6	5.1	* 5.1	4.6
Max Green Setting (Gmax), s	54.6	23.3	3.0	5.3	* 73	5.2
Max Q Clear Time (g_c+I1), s	57.8	25.3	3.5	2.4	23.3	7.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	5.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.0
HCM 6th LOS	D

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	793	60	3	5	53	714	5	101	9	854	110	827
Future Volume (veh/h)	793	60	3	5	53	714	5	101	9	854	110	827
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	862	65	2	5	58	740	5	110	7	1014	0	682
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	914	639	20	40	69	770	6	124	8	1568	0	1117
Arrive On Green	0.26	0.35	0.35	0.05	0.05	0.05	0.07	0.07	0.07	0.44	0.00	0.44
Sat Flow, veh/h	3456	1805	56	68	1507	1585	76	1666	106	3563	0	1585
Grp Volume(v), veh/h	862	0	67	63	0	740	122	0	0	1014	0	682
Grp Sat Flow(s),veh/h/ln	1728	0	1860	1575	0	1585	1847	0	0	1781	0	1585
Q Serve(g_s), s	25.7	0.0	2.5	1.7	0.0	4.8	6.9	0.0	0.0	23.4	0.0	0.0
Cycle Q Clear(g_c), s	25.7	0.0	2.5	4.3	0.0	4.8	6.9	0.0	0.0	23.4	0.0	0.0
Prop In Lane	1.00		0.03	0.08		1.00	0.04		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	914	0	659	109	0	770	137	0	0	1568	0	1117
V/C Ratio(X)	0.94	0.00	0.10	0.58	0.00	0.96	0.89	0.00	0.00	0.65	0.00	0.61
Avail Cap(c_a), veh/h	918	0	661	109	0	770	137	0	0	1568	0	1117
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	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.8	0.0	22.7	49.8	0.0	15.1	48.2	0.0	0.0	23.0	0.0	8.0
Incr Delay (d2), s/veh	17.5	0.0	0.1	7.4	0.0	23.2	45.4	0.0	0.0	2.1	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	0.0	1.1	1.9	0.0	24.6	4.9	0.0	0.0	10.1	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.4	0.0	22.8	57.2	0.0	38.3	93.6	0.0	0.0	25.1	0.0	10.5
LnGrp LOS	E	A	C	E	A	D	F	A	A	C	A	B
Approach Vol, veh/h		929			803			122			1696	
Approach Delay, s/veh		53.0			39.8			93.6			19.2	
Approach LOS		D			D			F			B	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	41.8	50.8	32.4	9.4	12.4
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	37.3	46.1	27.9	4.8	7.8
Max Q Clear Time (g_c+I1), s	4.5	25.4	27.7	6.8	8.9
Green Ext Time (p_c), s	0.3	7.8	0.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	1	1	1	210	1	70	5	1	758	156	1	156	659	1
Future Volume (veh/h)	1	1	1	210	1	70	5	1	758	156	1	156	659	1
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	1683	1683	1683	1683	1683	1683		1683	1683	1683		1683	1683	1683
Adj Flow Rate, veh/h	1	1	0	228	1	11		1	824	159		170	716	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	1	1	0	280	21	231		2	1084	209		213	1760	2
Arrive On Green	0.00	0.00	0.00	0.17	0.17	0.17		0.00	0.41	0.41		0.13	0.54	0.54
Sat Flow, veh/h	821	821	0	1603	120	1325		1603	2674	516		1603	3277	5
Grp Volume(v), veh/h	2	0	0	228	0	12		1	493	490		170	349	368
Grp Sat Flow(s),veh/h/ln	1642	0	0	1603	0	1445		1603	1599	1590		1603	1599	1682
Q Serve(g_s), s	0.1	0.0	0.0	9.6	0.0	0.5		0.0	18.5	18.5		7.2	9.1	9.1
Cycle Q Clear(g_c), s	0.1	0.0	0.0	9.6	0.0	0.5		0.0	18.5	18.5		7.2	9.1	9.1
Prop In Lane	0.50		0.00	1.00		0.92		1.00		0.32		1.00		0.00
Lane Grp Cap(c), veh/h	3	0	0	280	0	252		2	648	645		213	859	904
V/C Ratio(X)	0.74	0.00	0.00	0.81	0.00	0.05		0.44	0.76	0.76		0.80	0.41	0.41
Avail Cap(c_a), veh/h	70	0	0	962	0	867		69	1828	1818		733	2491	2620
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	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	0.0	27.8	0.0	24.0		34.9	17.9	17.9		29.4	9.6	9.6
Incr Delay (d2), s/veh	170.3	0.0	0.0	5.7	0.0	0.1		95.5	1.9	1.9		6.8	0.3	0.3
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	0.2	0.0	0.0	4.0	0.0	0.2		0.1	6.4	6.3		3.0	2.7	2.8
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	205.2	0.0	0.0	33.5	0.0	24.1		130.5	19.8	19.8		36.2	9.9	9.9
LnGrp LOS	F	A	A	C	A	C		F	B	B		D	A	A
Approach Vol, veh/h		2			240				984				887	
Approach Delay, s/veh		205.2			33.0				19.9				14.9	
Approach LOS		F			C				B				B	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	5.1	42.6	17.2	14.3	33.4	5.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	3.0	109.0	42.0	32.0	80.0	3.0
Max Q Clear Time (g_c+I1), s	2.0	11.1	11.6	9.2	20.5	2.1
Green Ext Time (p_c), s	0.0	4.9	0.8	0.4	7.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	19.5
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Volume (veh/h)	117	1	36	315	1	70	9	102	641	117	117	311	414	114
Future Volume (veh/h)	117	1	36	315	1	70	9	102	641	117	117	311	414	114
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach		No			No				No				No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		1870	1870	1870		1870	1870	1870
Adj Flow Rate, veh/h	127	1	1	400	0	0		111	697	117		338	450	107
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2		2	2	2		2	2	2
Cap, veh/h	163	78	78	528	277	0		144	907	152		391	1246	294
Arrive On Green	0.09	0.09	0.09	0.15	0.00	0.00		0.08	0.30	0.30		0.22	0.44	0.44
Sat Flow, veh/h	1781	858	858	3563	1870	0		1781	3045	511		1781	2853	673
Grp Volume(v), veh/h	127	0	2	400	0	0		111	407	407		338	279	278
Grp Sat Flow(s),veh/h/ln	1781	0	1716	1781	1870	0		1781	1777	1778		1781	1777	1749
Q Serve(g_s), s	5.7	0.0	0.1	8.9	0.0	0.0		5.0	17.1	17.2		15.0	8.6	8.8
Cycle Q Clear(g_c), s	5.7	0.0	0.1	8.9	0.0	0.0		5.0	17.1	17.2		15.0	8.6	8.8
Prop In Lane	1.00		0.50	1.00		0.00		1.00		0.29		1.00		0.38
Lane Grp Cap(c), veh/h	163	0	157	528	277	0		144	529	530		391	776	764
V/C Ratio(X)	0.78	0.00	0.01	0.76	0.00	0.00		0.77	0.77	0.77		0.86	0.36	0.36
Avail Cap(c_a), veh/h	346	0	334	1169	614	0		390	950	951		1082	1641	1616
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	1.00	1.00	0.00	0.00		1.00	1.00	1.00		1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	34.0	33.6	0.0	0.0		37.1	26.3	26.3		30.9	15.5	15.5
Incr Delay (d2), s/veh	7.9	0.0	0.0	2.3	0.0	0.0		8.5	2.4	2.4		5.8	0.3	0.3
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	2.8	0.0	0.0	3.9	0.0	0.0		2.5	7.2	7.2		6.8	3.3	3.3
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	44.5	0.0	34.0	35.9	0.0	0.0		45.6	28.7	28.7		36.7	15.8	15.8
LnGrp LOS	D	A	C	D	A	A		D	C	C		D	B	B
Approach Vol, veh/h		129			400				925				895	
Approach Delay, s/veh		44.3			35.9				30.7				23.7	
Approach LOS		D			D				C				C	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	11.6	40.9	17.2	23.1	29.5	12.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	18.0	76.0	27.0	50.0	44.0	16.0
Max Q Clear Time (g_c+I1), s	7.0	10.8	10.9	17.0	19.2	7.7
Green Ext Time (p_c), s	0.2	3.7	1.3	1.0	5.3	0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	21.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	6	86	9	5	53	62	422	5	58	397	37
Future Vol, veh/h	25	6	86	9	5	53	62	422	5	58	397	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	7	93	10	5	58	67	459	5	63	432	40
Number of Lanes	0	1	1	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11	10.8	23.2	23.6
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	81%	0%	100%	0%	100%	0%
Vol Thru, %	0%	99%	19%	0%	0%	9%	0%	91%
Vol Right, %	0%	1%	0%	100%	0%	91%	0%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	427	31	86	9	58	58	434
LT Vol	62	0	25	0	9	0	58	0
Through Vol	0	422	6	0	0	5	0	397
RT Vol	0	5	0	86	0	53	0	37
Lane Flow Rate	67	464	34	93	10	63	63	472
Geometry Grp	7	7	7	7	7	7	7	7

Degree of Util (X)	0.12	0.761	0.073	0.174	0.022	0.121	0.112	0.767
Departure Headway (Hd)	6.418	5.903	7.843	6.711	8.106	6.934	6.42	5.854
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	557	613	455	532	440	514	557	618
Service Time	4.169	3.654	5.621	4.488	5.891	4.718	4.171	3.604
HCM Lane V/C Ratio	0.12	0.757	0.075	0.175	0.023	0.123	0.113	0.764
HCM Control Delay	10	25.1	11.2	10.9	11.1	10.7	10	25.4
HCM Lane LOS	A	D	B	B	B	B	A	D
HCM 95th-tile Q	0.4	6.9	0.2	0.6	0.1	0.4	0.4	7.1

Intersection	
Intersection Delay, s/veh	28.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	6	61	11	5	51	55	686	8	55	716	44
Future Vol, veh/h	49	6	61	11	5	51	55	686	8	55	716	44
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	7	66	12	5	55	60	746	9	60	778	48
Number of Lanes	1	1	0	1	1	0	0	2	0	0	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12.6	12.1	28.6	32.2
HCM LOS	B	B	D	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	14%	0%	100%	0%	100%	0%	13%	0%
Vol Thru, %	86%	98%	0%	9%	0%	9%	87%	89%
Vol Right, %	0%	2%	0%	91%	0%	91%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	398	351	49	67	11	56	413	402
LT Vol	55	0	49	0	11	0	55	0
Through Vol	343	343	0	6	0	5	358	358
RT Vol	0	8	0	61	0	51	0	44
Lane Flow Rate	433	382	53	73	12	61	449	437
Geometry Grp	7	7	7	7	7	7	7	7

Degree of Util (X)	0.813	0.708	0.134	0.159	0.031	0.136	0.832	0.793
Departure Headway (Hd)	6.763	6.677	9.039	7.863	9.227	8.049	6.676	6.53
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	536	542	397	457	388	446	543	555
Service Time	4.497	4.41	6.783	5.607	6.972	5.793	4.408	4.263
HCM Lane V/C Ratio	0.808	0.705	0.134	0.16	0.031	0.137	0.827	0.787
HCM Control Delay	32.7	24	13.2	12.1	12.3	12.1	34.4	29.9
HCM Lane LOS	D	C	B	B	B	B	D	D
HCM 95th-tile Q	7.9	5.6	0.5	0.6	0.1	0.5	8.5	7.5

Intersection	
Intersection Delay, s/veh	32.6
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	76	145	514	66	27	206	36	536	25	40	8
Future Vol, veh/h	8	76	145	514	66	27	206	36	536	25	40	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	83	158	559	72	29	224	39	583	27	43	9
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	14.2	31.4	40.6	14
HCM LOS	B	D	E	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	51%	0%	7%	0%	100%	69%	34%
Vol Thru, %	9%	0%	63%	0%	0%	22%	55%
Vol Right, %	40%	100%	30%	100%	0%	9%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	403	375	120	109	303	304	73
LT Vol	206	0	8	0	303	211	25
Through Vol	36	0	76	0	0	66	40
RT Vol	161	375	36	109	0	27	8
Lane Flow Rate	438	408	131	118	330	330	79
Geometry Grp	7	7	7	7	7	7	6

Degree of Util (X)	0.918	0.777	0.306	0.259	0.757	0.738	0.195
Departure Headway (Hd)	7.548	6.857	8.425	7.883	8.266	8.044	8.838
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	482	530	426	455	438	449	406
Service Time	5.284	4.592	6.176	5.634	6.004	5.782	6.882
HCM Lane V/C Ratio	0.909	0.77	0.308	0.259	0.753	0.735	0.195
HCM Control Delay	50.8	29.6	14.9	13.4	32.6	30.3	14
HCM Lane LOS	F	D	B	B	D	D	B
HCM 95th-tile Q	10.6	7	1.3	1	6.3	6	0.7

Intersection	
Intersection Delay, s/veh	29.7
Intersection LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	93	48	739	664	35
Future Vol, veh/h	39	93	48	739	664	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	101	52	803	722	38
Number of Lanes	2	0	1	2	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	2	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	2
HCM Control Delay	13.8	22.8	40.4
HCM LOS	B	C	E

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	12%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	100%	86%
Vol Right, %	0%	0%	0%	0%	88%	0%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	370	370	26	106	443	256
LT Vol	48	0	0	26	13	0	0
Through Vol	0	370	370	0	0	443	221
RT Vol	0	0	0	0	93	0	35
Lane Flow Rate	52	402	402	28	115	481	279
Geometry Grp	8	8	8	8	8	8	8

Degree of Util (X)	0.11	0.79	0.593	0.073	0.264	0.945	0.54
Departure Headway (Hd)	7.587	7.079	5.319	9.321	8.242	7.071	6.974
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	473	510	679	384	436	515	521
Service Time	5.328	4.82	3.059	7.081	6.001	4.771	4.674
HCM Lane V/C Ratio	0.11	0.788	0.592	0.073	0.264	0.934	0.536
HCM Control Delay	11.3	31.6	15.6	12.8	14	53.6	17.6
HCM Lane LOS	B	D	C	B	B	F	C
HCM 95th-tile Q	0.4	7.3	3.9	0.2	1	11.8	3.2

Intersection: 2: Street 'A' (North)/Alpenrose CT & Mowry Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	UL	T	T	TR	L	L	T	T	TR	LT	R	R
Maximum Queue (ft)	48	316	327	279	351	414	1307	1305	215	92	144	137
Average Queue (ft)	25	254	260	239	249	322	581	334	131	53	93	116
95th Queue (ft)	50	316	332	282	373	440	1561	1140	260	111	142	160
Link Distance (ft)		663	663	663			1292	1292	1292	74	74	74
Upstream Blk Time (%)							4	2		26	7	20
Queuing Penalty (veh)							0	0		140	36	105
Storage Bay Dist (ft)	180				465	465						
Storage Blk Time (%)		41										
Queuing Penalty (veh)		7										

Intersection: 2: Street 'A' (North)/Alpenrose CT & Mowry Ave

Movement	B4	B4	SB	SB
Directions Served	T	T	L	TR
Maximum Queue (ft)	36	110	31	31
Average Queue (ft)	7	52	12	18
95th Queue (ft)	31	133	37	42
Link Distance (ft)	64	64	352	352
Upstream Blk Time (%)		5		
Queuing Penalty (veh)		43		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

03/26/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	5	12	1041	56	1228	1045	17	49	1	1088	23	1	13
Future Volume (veh/h)	5	12	1041	56	1228	1045	17	49	1	1088	23	1	13
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		13	1132	57	1335	1136	17	53	1	63	25	1	0
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		17	1394	70	1458	3589	54	92	2	146	31	32	0
Arrive On Green		0.01	0.28	0.28	0.42	0.69	0.69	0.05	0.05	0.05	0.02	0.02	0.00
Sat Flow, veh/h		1781	4979	251	3456	5183	78	1750	33	2790	1781	1870	0
Grp Volume(v), veh/h		13	774	415	1335	746	407	54	0	63	25	1	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1825	1728	1702	1856	1783	0	1395	1781	1870	0
Q Serve(g_s), s		0.6	18.8	18.8	32.3	7.7	7.7	2.6	0.0	1.9	1.2	0.0	0.0
Cycle Q Clear(g_c), s		0.6	18.8	18.8	32.3	7.7	7.7	2.6	0.0	1.9	1.2	0.0	0.0
Prop In Lane		1.00		0.14	1.00		0.04	0.98		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		17	953	511	1458	2357	1286	94	0	146	31	32	0
V/C Ratio(X)		0.79	0.81	0.81	0.92	0.32	0.32	0.58	0.00	0.43	0.81	0.03	0.00
Avail Cap(c_a), veh/h		100	1559	836	2773	4099	2235	602	0	942	60	63	0
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		43.9	29.8	29.8	24.2	5.4	5.4	41.1	0.0	40.8	43.5	42.9	0.0
Incr Delay (d2), s/veh		25.5	0.6	1.2	1.0	0.0	0.1	2.1	0.0	0.7	16.9	0.1	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		0.4	7.4	8.0	12.4	2.2	2.4	1.2	0.0	0.7	0.7	0.0	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh		69.4	30.5	31.0	25.2	5.4	5.4	43.2	0.0	41.6	60.4	43.1	0.0
LnGrp LOS		E	C	C	C	A	A	D	A	D	E	D	A
Approach Vol, veh/h			1202			2488			117			26	
Approach Delay, s/veh			31.1			16.1			42.3			59.7	
Approach LOS			C			B			D			E	

Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	42.5	30.2	6.5	5.8	66.8	9.7
Change Period (Y+Rc), s	5.0	5.3	5.0	5.0	5.3	5.0
Max Green Setting (Gmax), s	71.3	40.7	3.0	5.0	107.0	30.0
Max Q Clear Time (g_c+I1), s	34.3	20.8	3.2	2.6	9.7	4.6
Green Ext Time (p_c), s	3.1	4.0	0.0	0.0	5.8	0.3

Intersection Summary	
HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

Intersection	
Intersection Delay, s/veh	204
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	436	35	1	3	31	688	1	14	3	777	16	491
Future Vol, veh/h	436	35	1	3	31	688	1	14	3	777	16	491
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	474	38	1	3	34	748	1	15	3	845	17	534
Number of Lanes	1	1	0	0	1	1	0	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	3	2	2
HCM Control Delay	205.9	428.6	17.9	79.6
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	6%	100%	0%	9%	0%	100%	96%	0%
Vol Thru, %	78%	0%	97%	91%	0%	0%	4%	0%
Vol Right, %	17%	0%	3%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	436	36	34	688	396	397	491
LT Vol	1	436	0	3	0	396	381	0
Through Vol	14	0	35	31	0	0	16	0
RT Vol	3	0	1	0	688	0	0	491
Lane Flow Rate	20	474	39	37	748	431	431	534
Geometry Grp	8	8	8	8	8	7	7	7

Degree of Util (X)	0.063	1.375	0.108	0.103	1.924	0.987	0.986	1.046
Departure Headway (Hd)	14.207	12.553	12.005	10.984	10.208	9.858	9.837	8.584
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	254	294	301	328	366	370	371	427
Service Time	11.907	10.253	9.705	8.684	7.908	7.558	7.537	6.284
HCM Lane V/C Ratio	0.079	1.612	0.13	0.113	2.044	1.165	1.162	1.251
HCM Control Delay	17.9	221.6	16.2	14.9	449	75.9	75.5	86
HCM Lane LOS	C	F	C	B	F	F	F	F
HCM 95th-tile Q	0.2	20.6	0.4	0.3	46.2	11.3	11.3	14.1

HCM 6th Signalized Intersection Summary
2: Street 'A' (North)/Alpenrose CT & Mowry Ave

03/24/2021

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (veh/h)	5	12	1041	56	1228	1045	17	49	1	1088	23	1	13
Future Volume (veh/h)	5	12	1041	56	1228	1045	17	49	1	1088	23	1	13
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		13	1132	54	1335	1136	16	53	1	1117	25	1	0
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h		820	1255	60	1694	1434	20	107	2	1538	31	33	0
Arrive On Green		0.46	0.25	0.25	0.49	0.28	0.28	0.06	0.06	0.06	0.02	0.02	0.00
Sat Flow, veh/h		1781	4993	238	3456	5188	73	1750	33	2790	1781	1870	0
Grp Volume(v), veh/h		13	771	415	1335	745	407	54	0	1117	25	1	0
Grp Sat Flow(s),veh/h/ln		1781	1702	1828	1728	1702	1857	1783	0	1395	1781	1870	0
Q Serve(g_s), s		0.4	23.0	23.1	33.7	21.3	21.3	3.1	0.0	6.4	1.5	0.1	0.0
Cycle Q Clear(g_c), s		0.4	23.0	23.1	33.7	21.3	21.3	3.1	0.0	6.4	1.5	0.1	0.0
Prop In Lane		1.00		0.13	1.00		0.04	0.98		1.00	1.00		0.00
Lane Grp Cap(c), veh/h		820	855	459	1694	941	513	109	0	1538	31	33	0
V/C Ratio(X)		0.02	0.90	0.90	0.79	0.79	0.79	0.50	0.00	0.73	0.80	0.03	0.00
Avail Cap(c_a), veh/h		820	905	486	1694	2286	1247	109	0	1538	64	68	0
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh		15.4	38.1	38.1	22.2	35.2	35.2	47.7	0.0	17.6	51.4	50.7	0.0
Incr Delay (d2), s/veh		0.0	11.2	18.6	2.4	0.6	1.1	1.3	0.0	1.5	15.7	0.1	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		0.2	10.7	12.4	13.3	8.7	9.5	1.4	0.0	10.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh		15.4	49.3	56.7	24.6	35.8	36.3	49.0	0.0	19.2	67.1	50.8	0.0
LnGrp LOS		B	D	E	C	D	D	D	A	B	E	D	A
Approach Vol, veh/h			1199			2487			1171			26	
Approach Delay, s/veh			51.5			29.9			20.5			66.4	
Approach LOS			D			C			C			E	

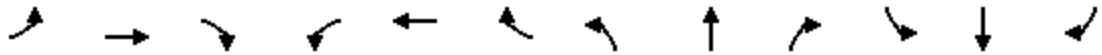
Timer - Assigned Phs	1	2	4	5	6	8
Phs Duration (G+Y+Rc), s	56.1	31.5	6.4	53.4	34.1	11.0
Change Period (Y+Rc), s	4.6	5.1	4.6	5.1	* 5.1	4.6
Max Green Setting (Gmax), s	48.0	27.9	3.8	5.4	* 71	6.4
Max Q Clear Time (g_c+I1), s	35.7	25.1	3.5	2.4	23.3	8.4
Green Ext Time (p_c), s	2.7	1.3	0.0	0.0	5.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Notes

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	436	35	1	3	31	688	1	14	3	777	16	491
Future Volume (veh/h)	436	35	1	3	31	688	1	14	3	777	16	491
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	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683	1683
Adj Flow Rate, veh/h	474	38	0	3	34	650	1	15	0	857	0	410
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	496	651	0	40	45	720	1	17	0	1511	0	1114
Arrive On Green	0.31	0.39	0.00	0.03	0.03	0.03	0.01	0.01	0.00	0.47	0.00	0.47
Sat Flow, veh/h	1603	1683	0	76	1345	1427	105	1573	0	3206	0	1427
Grp Volume(v), veh/h	474	38	0	37	0	650	16	0	0	857	0	410
Grp Sat Flow(s),veh/h/ln	1603	1683	0	1422	0	1427	1678	0	0	1603	0	1427
Q Serve(g_s), s	30.4	1.5	0.0	1.3	0.0	3.5	1.0	0.0	0.0	20.3	0.0	0.0
Cycle Q Clear(g_c), s	30.4	1.5	0.0	2.8	0.0	3.5	1.0	0.0	0.0	20.3	0.0	0.0
Prop In Lane	1.00		0.00	0.08		1.00	0.06		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	651	0	84	0	720	18	0	0	1511	0	1114
V/C Ratio(X)	0.95	0.06	0.00	0.44	0.00	0.90	0.89	0.00	0.00	0.57	0.00	0.37
Avail Cap(c_a), veh/h	501	656	0	84	0	720	48	0	0	1511	0	1114
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	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	20.2	0.0	50.4	0.0	13.8	51.9	0.0	0.0	20.0	0.0	3.5
Incr Delay (d2), s/veh	29.0	0.0	0.0	3.5	0.0	14.8	72.9	0.0	0.0	1.5	0.0	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	15.8	0.6	0.0	1.1	0.0	20.2	0.8	0.0	0.0	7.8	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.5	20.2	0.0	54.0	0.0	28.5	124.8	0.0	0.0	21.6	0.0	4.5
LnGrp LOS	E	C	A	D	A	C	F	A	A	C	A	A
Approach Vol, veh/h		512			687			16			1267	
Approach Delay, s/veh		61.2			29.9			124.8			16.1	
Approach LOS		E			C			F			B	

Timer - Assigned Phs	2	4	5	6	8
Phs Duration (G+Y+Rc), s	45.2	54.1	37.1	8.1	5.7
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	40.9	47.3	32.8	3.5	3.0
Max Q Clear Time (g_c+I1), s	3.5	22.3	32.4	5.5	3.0
Green Ext Time (p_c), s	0.2	5.5	0.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	29.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection: 2: Street 'A' (North)/Alpenrose CT & Mowry Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	UL	T	T	TR	L	L	T	T	TR	LT	R	R
Maximum Queue (ft)	27	276	267	230	269	312	193	247	257	111	161	158
Average Queue (ft)	5	240	229	195	191	245	39	71	76	63	120	130
95th Queue (ft)	23	293	285	240	277	333	166	220	229	116	173	165
Link Distance (ft)		422	422	422			1075	1075	1075	98	98	98
Upstream Blk Time (%)										3	6	13
Queuing Penalty (veh)										10	23	51
Storage Bay Dist (ft)	180				325	325						
Storage Blk Time (%)		19				0						
Queuing Penalty (veh)		3				1						

Intersection: 2: Street 'A' (North)/Alpenrose CT & Mowry Ave

Movement	B4	B4	SB	SB
Directions Served	T	T	L	TR
Maximum Queue (ft)	23	67	31	31
Average Queue (ft)	9	13	22	6
95th Queue (ft)	27	58	42	27
Link Distance (ft)	54	54	351	351
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		6		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Street 'A' (North)/Alpenrose CT & Mowry Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	UL	T	T	TR	L	L	T	T	TR	LT	R	R
Maximum Queue (ft)	204	438	379	289	337	350	1090	586	219	81	122	147
Average Queue (ft)	52	415	344	216	306	348	684	367	110	64	93	120
95th Queue (ft)	179	475	403	288	390	350	1067	724	221	93	145	179
Link Distance (ft)		422	422	422			1075	1075	1075	98	98	98
Upstream Blk Time (%)		4					5			7	4	10
Queuing Penalty (veh)		0					0			28	15	44
Storage Bay Dist (ft)	180				325	325						
Storage Blk Time (%)		60			2	23						
Queuing Penalty (veh)		10			6	79						

Intersection: 2: Street 'A' (North)/Alpenrose CT & Mowry Ave

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (ft)	52	31
Average Queue (ft)	26	18
95th Queue (ft)	54	43
Link Distance (ft)	351	351
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

APPENDIX D - TRIP APPROXIMATION, GENERATION AND DISTRIBUTION METHODOLOGY MEMO

SANDIS | CIVIL ENGINEERS SURVEYORS PLANNERS

NEWPARK PLACE

TRIP APPROXIMATION, GENERATION AND DISTRIBUTION METHODOLOGY

NEWARK, CALIFORNIA

FEBRUARY 23, 2021

PREPARED FOR:
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TABLE OF CONTENTS

Introduction 2

Existing Traffic Approximation 2

AM & PM Peak Hour Approximations 2

Saturday Peak Hour Approximations 3

TRIP GENERATION 5

TRIP DISTRIBUTION 7

Regional Trip Distribution 7

Local Trip Distribution 7

Internal Site Trip Distribution 12

Trip Distribution to Parcels/Locations 12

Associating Internal Distributions with Local Access Point Distributions 15

Costco Specific Access Point Redistribution/Correction 17

AM Common-Use Parking Assumptions 20

INTRODUCTION

This memo is intended to accompany the Circulation Analysis Report prepared by Sandis for Newpark Place. This memo provides further detail regarding the existing traffic approximation, trip generation, and trip distribution methodology that was used in the Circulation Analysis report.

EXISTING TRAFFIC APPROXIMATION

On March 17th, 2020, a shelter-in-place order of indefinite length was issued for the greater Bay Area and subsequently for all of California, related to the COVID-19 pandemic. As a result of the pandemic, traffic patterns are irregular and are substantially lower than usual in most locations. Because of this, it was not possible to collect representative traffic counts to characterize typical background traffic. Instead, it was necessary to approximate typical existing background traffic conditions. Background conditions were approximated at the four external project intersections including:

- Mowry Avenue and Alpenrose Court
- Cedar Avenue and N Magazine Street
- Cedar Avenue and S Magazine Street
- Ballentine Drive and Balentine Drive

It was determined that existing background traffic did not need to be approximated for the four internal project intersections due to these intersections only serving the project site. Because of this, there is effectively no background or pass-by traffic flowing through the internal intersections and all traffic is instead only related to the proposed site and the associated trip generation. These internal intersections include:

- Street 'A' (north) and Newpark Mall Road
- N Magazine Street and Newpark Mall Road
- S Magazine Street and Newpark Mall Road
- Street 'A' (south) and Newpark Mall Road

AM & PM PEAK HOUR APPROXIMATIONS

At the Mowry Avenue and Alpenrose Court intersection, AM and PM peak hour traffic counts were already collected prior to the pandemic. At all other intersections, AM, PM and Saturday data was collected while the pandemic was occurring. Traffic counts collected while the pandemic was occurring are referred to as "pandemic counts" in this report for simplicity and context.

To calibrate/adjust the collected pandemic counts to a more typical non-pandemic level, the geographically closest and most recent pre-pandemic traffic data was referenced. This data can be found in the Newark Area 4 Level of Service Update dated June 14, 2019 prepared by Hexagon Transportation Consultants.

This contained AM and PM counts for the following intersections:

- Mowry Avenue and Cedar Boulevard
- Stevenson Boulevard and Cedar Boulevard
- Stevenson Boulevard and Balentine Drive

For comparison purposes, AM and PM pandemic counts were collected here as well. Pandemic traffic counts at project intersections were then scaled up using a calibration ratio

(CR) based on the comparison of historical data vs. pandemic count. The calibration ratio was calculated as:

$$CR_{AM,PM} = \frac{\text{Historical 2018 Traffic Data}}{\text{2020 Pandemic Traffic Count}}$$

For project intersections along Cedar Boulevard, the average calibration ratio was calculated using applicable movements from both the Mowry Avenue and Cedar Boulevard and Stevenson Boulevard and Cedar Boulevard intersections. For the project intersection along Balentine Drive, the calibration ratio was calculated from the applicable movements at the Stevenson Boulevard and Balentine Drive intersection.

Figure 1 provides an overview of the available historical 2018 data and the collected traffic counts.

SATURDAY PEAK HOUR APPROXIMATIONS

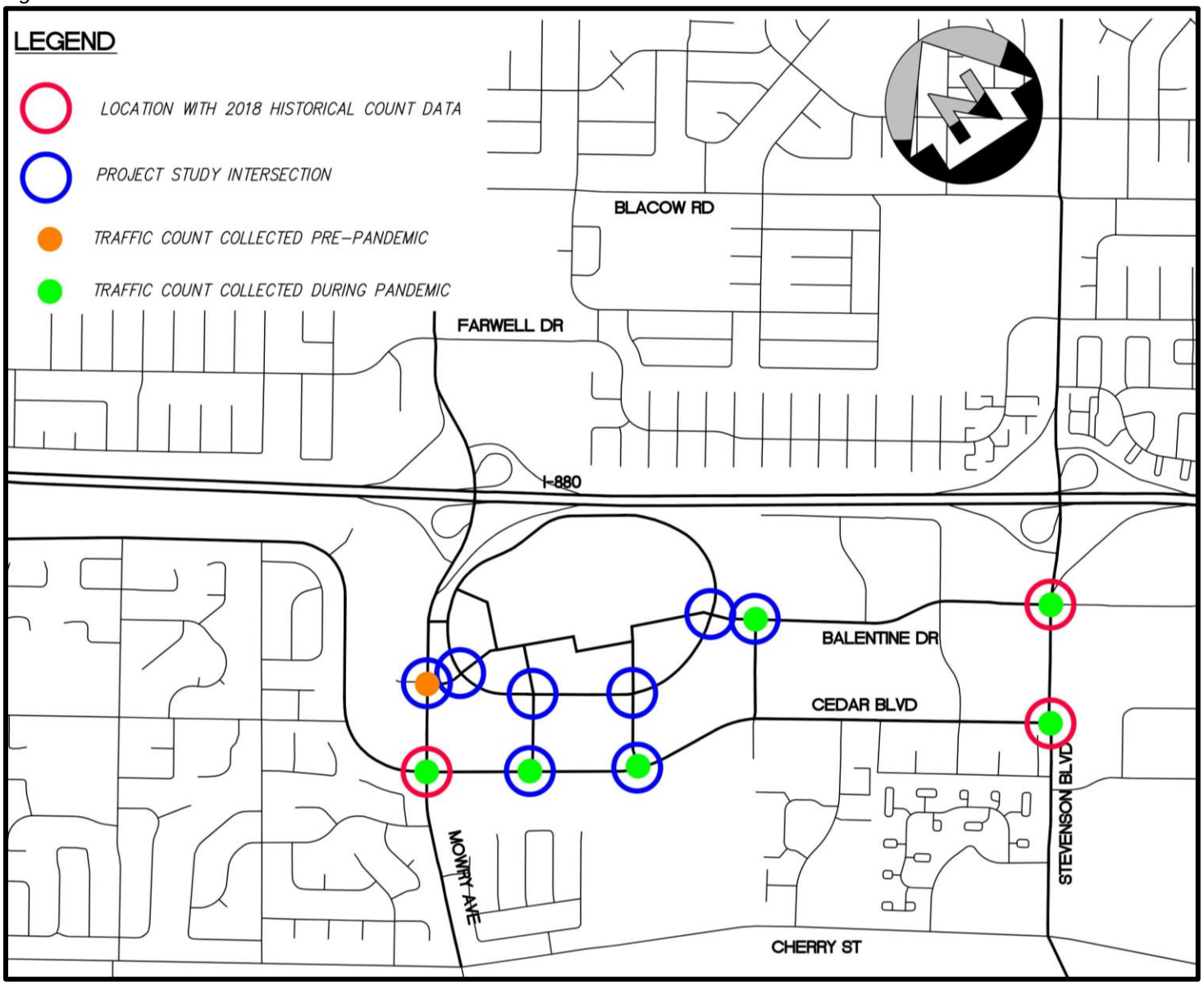
Pandemic Saturday Counts were collected at all four of the external project intersections. Historical intersection data was not available for Saturday peak hour at project intersections.

To determine a calibration factor for the Saturday peak hour, Caltrans Performance Measurement System (PeMS) data on the adjacent segment of I-880 was consulted. Data from 2019 on Saturdays from August to October from 11:00 AM to 2:00 PM was collected as a representation of pre-COVID Saturday midday peak volumes. The resulting average peak hour volume from this data was 6,444 vehicles. Data from 2020 on Saturdays from August to October from 11:00 AM to 2:00 PM was collected as a representation of current Saturday midday volumes. The resulting average peak hour volume from this data was 5,433 vehicles. The Saturday CR was calculated as:

$$CR_{SAT} = \frac{2019 \quad \text{I880 PeMS data}}{2020 \quad \text{I880 PeMS data}} = \frac{6444}{5433} = 1.186$$

Based on this result, an 18.6% increase was applied to the collected pandemic Saturday peak hour counts to represent typical existing background traffic.

Figure 1: Available Historical Count Data and Collected Pre-Pandemic and Mid-Pandemic Traffic Counts

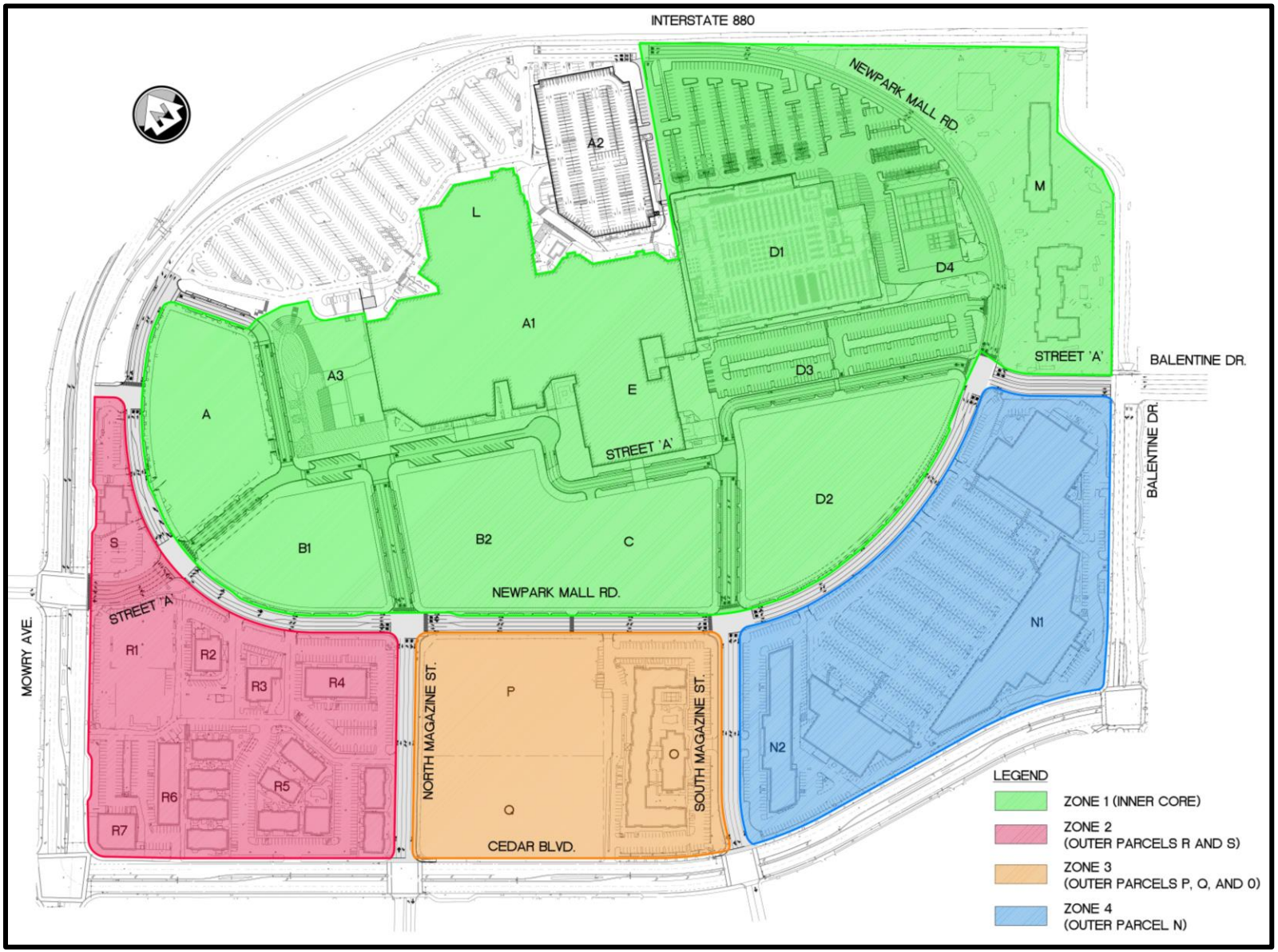


TRIP GENERATION

To forecast the anticipated number of trips expected for the project, land use trip generation rates from the Institute of Transportation Engineers' (ITE), Trip Generation Manual, 10th Edition were used. This publication provides trip equations for various land uses and allows future trips to be forecasted for various facility types. A trip generation calculation was performed for the entire site using the below methodology.

- The site was divided into four zones as shown in Figure 2. These zones are intended to represent areas that operate as a single cohesive site with significant internalization expected to occur between developments within the same zone. Internalization may also occur from one zone to another. However, this was considered to be negligible for this analysis.
- Square footages for each land use in each zone were totaled to determine cumulative square footage for each zone.
- An ITE Trip Generation was then performed for each land use category in each zone.
- The trip results for each zone were then input into the NCHRP Report 684 spreadsheet (one spreadsheet per zone) to determine the total internalization occurring in each zone of the site.
- The internalized NCHRP 684 results were then recorded.
- A 5% multi-modal reduction was applied to the NCHRP 684 results to account for the availability of alternative modes including bus, bicycling, and walking. The results from this step were considered to be the final adjusted overall project trips for the proposed site.

Figure 2: Site internalization Zones



TRIP DISTRIBUTION

REGIONAL TRIP DISTRIBUTION

To determine where trips to/from the site will originate/end at from the region, the surrounding regional context was examined. Figure 3A identifies the significant factors considered when determining the appropriate distribution of trips for the project site.

The site access was divided into northern vs. southern access. Project trips were then divided amongst these two general hemispheres. 67% of the project trips were attributed to the northern hemisphere because the City of Newark and a large portion of the City of Fremont are north of the project site and there is not a large number of similar regional shopping destinations in the area. The remaining 33% of project trips was attributed to the southern hemisphere. This hemisphere is expected to have comparatively less of the project traffic because there are already other similar regional shopping destinations given that will take some portion of the shopping demand generated by the southern neighborhoods. In addition, the neighborhoods adjacent to the project on the southern side are generally less extensive than the neighborhood coverage on the northern side.

LOCAL TRIP DISTRIBUTION

Based on this initial distribution, the project traffic was further distributed onto the surrounding arterials that provide access to the site. Figures 3B (inbound) and 3C (outbound) show these distributions. Below is a summary of the rational used for the distribution percentages determined for each roadway.

Northern Access Routes

- 25% of the project traffic was attributed to Mowry Avenue (east of I-880) due to Mowry Avenue providing the most direct access to central Fremont.
- 18% of the project traffic was attributed to Cedar Avenue (north of Mowry Avenue) because Cedar Boulevard provides the most direct access to central Newark.
- 22% of the project traffic was attributed to I-880 (north of Mowry Avenue) because I-880 provides regional access to the surrounding areas including Hayward and Oakland.
- 2% of the project traffic was attributed to Mowry Avenue (west of Cedar Boulevard) because this portion of Mowry Avenue serves a comparatively much smaller area and ends approximately one mile from the Cedar Boulevard intersection.

Southern Access Routes

- 15% of the project traffic was attributed to Stevenson Boulevard (east of I-880) because Stevenson Boulevard provides arterial access to much of Fremont
- 15% of the project traffic was attributed to I-880 (south of Stevenson Boulevard) because I-880 provides regional access to the surrounding areas including San Jose.
- 3% of the project traffic was attributed to Stevenson Boulevard (west of Cedar Boulevard) because this portion of Stevenson Boulevard serves a comparatively much smaller area.

Based on the distribution methodology described above, the trip percentages were carried through intersections, aggregated together as appropriate and then further routed to their ultimate project access points. Below is a summary of the resulting distribution percentages at each of the project access points.

- 46% of the project traffic was attributed to the Street 'A' (North) access point.
- 20% of the project traffic was attributed to the Street 'A' (South) access point.
- 3% of the project traffic was attributed to the North Magazine Street access point.
- 3% of the project traffic was attributed to the South Magazine Street access point.
- 1% to 5% of the project traffic was attributed to each of the various driveways that provide access along the surrounding arterial roadways. The distribution percentage at each driveway was determined based on the project traffic attributed to the specific parcel where the driveway is located and is furthermore determined based on the percentage of that parcel's traffic which is assumed to use this external access driveway vs. access points available along the project's internal ring road (Newpark Mall Road). The resulting total percent of project traffic that is assumed to access their destination via external driveway is 28%.

Figure 3B (inbound) and 3C (outbound) show the results of this distribution. In most cases the outbound pattern mirrors the inbound pattern. However, along Cedar Boulevard, inbound and outbound patterns have minor differences due to multiple right-in/right-out site access points which require drivers to enter/exit in a slightly circuitous manner.

Figure 3A Regional Trip Distribution

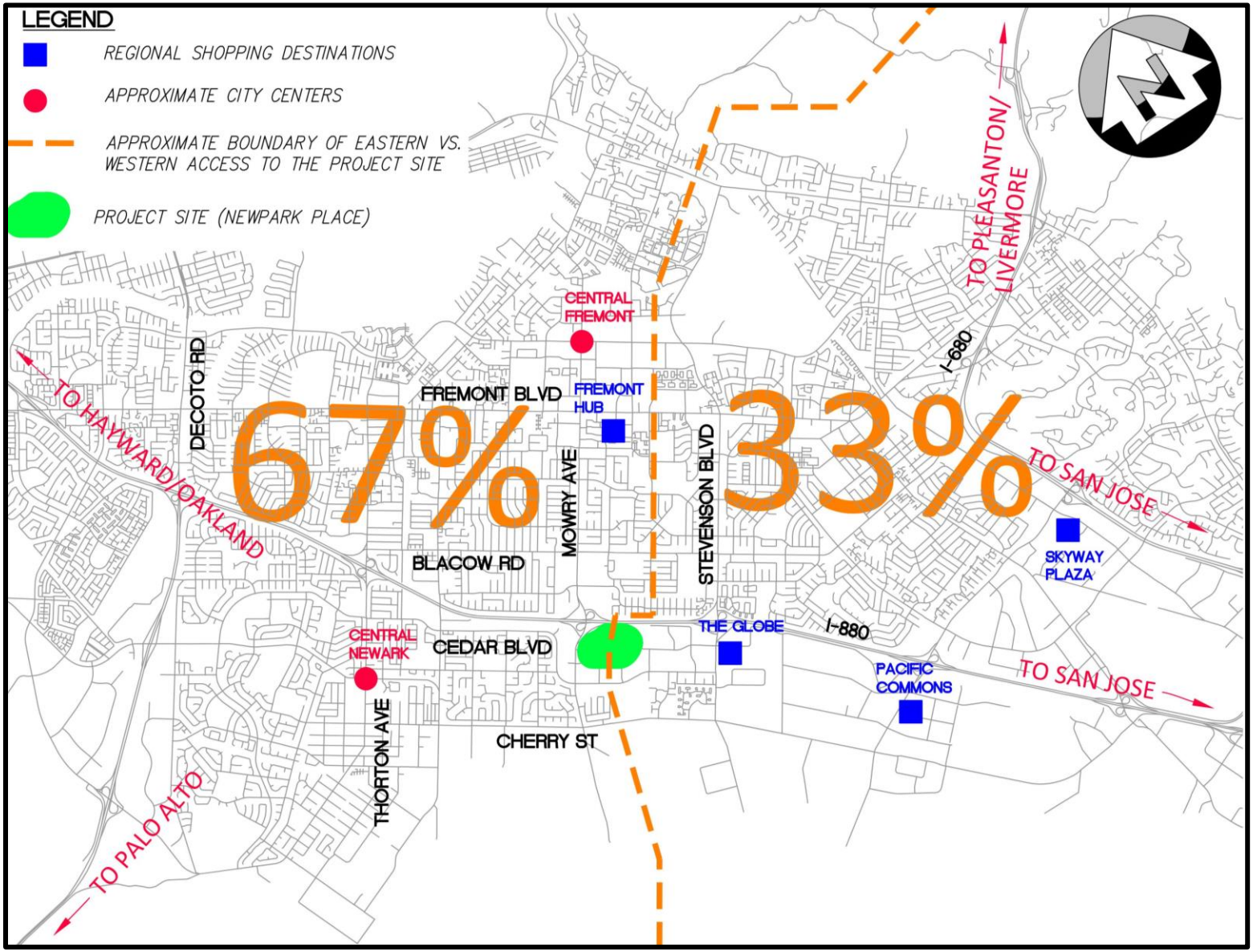


Figure 3B Local Trip Distribution (Inbound)

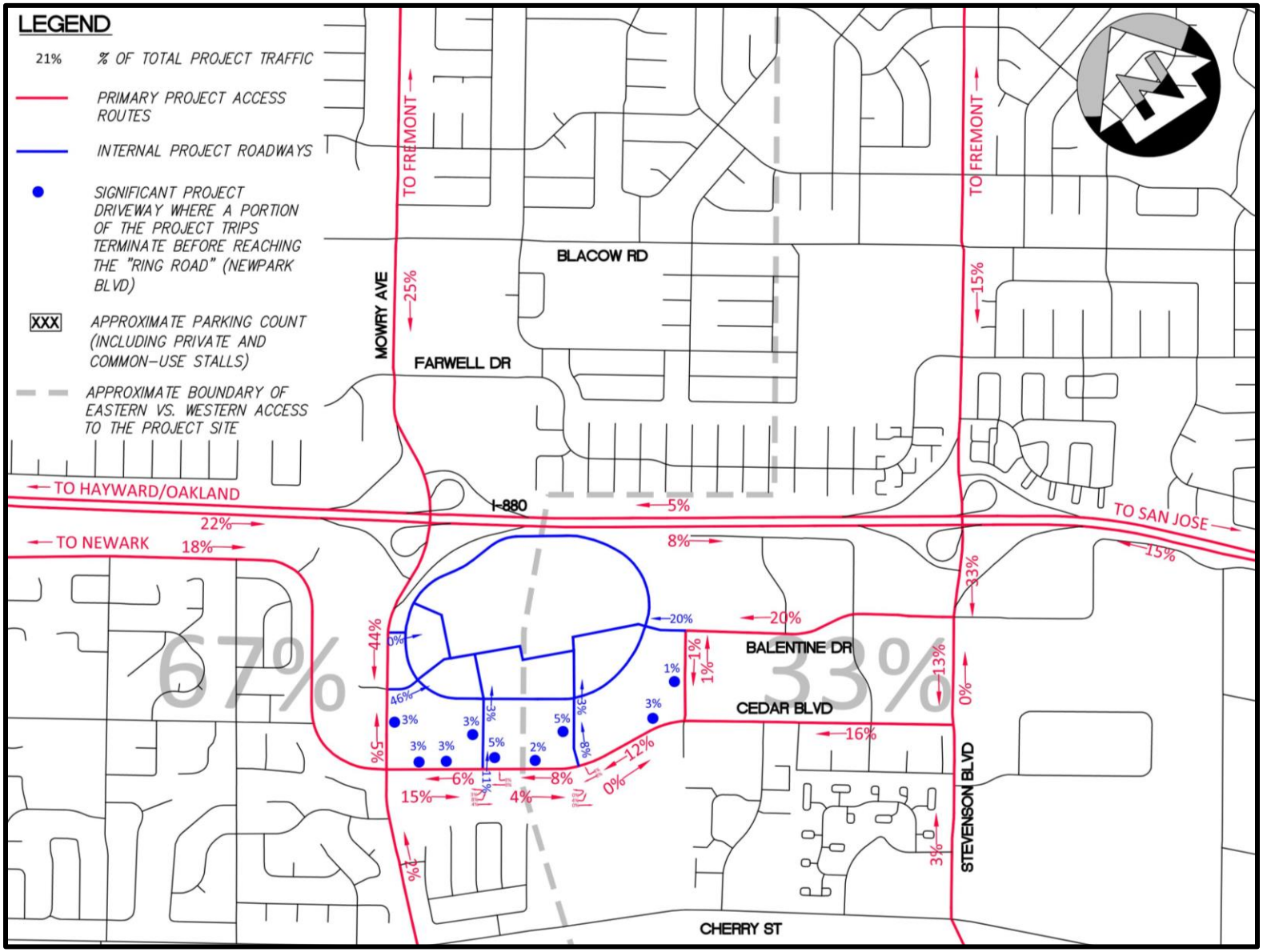
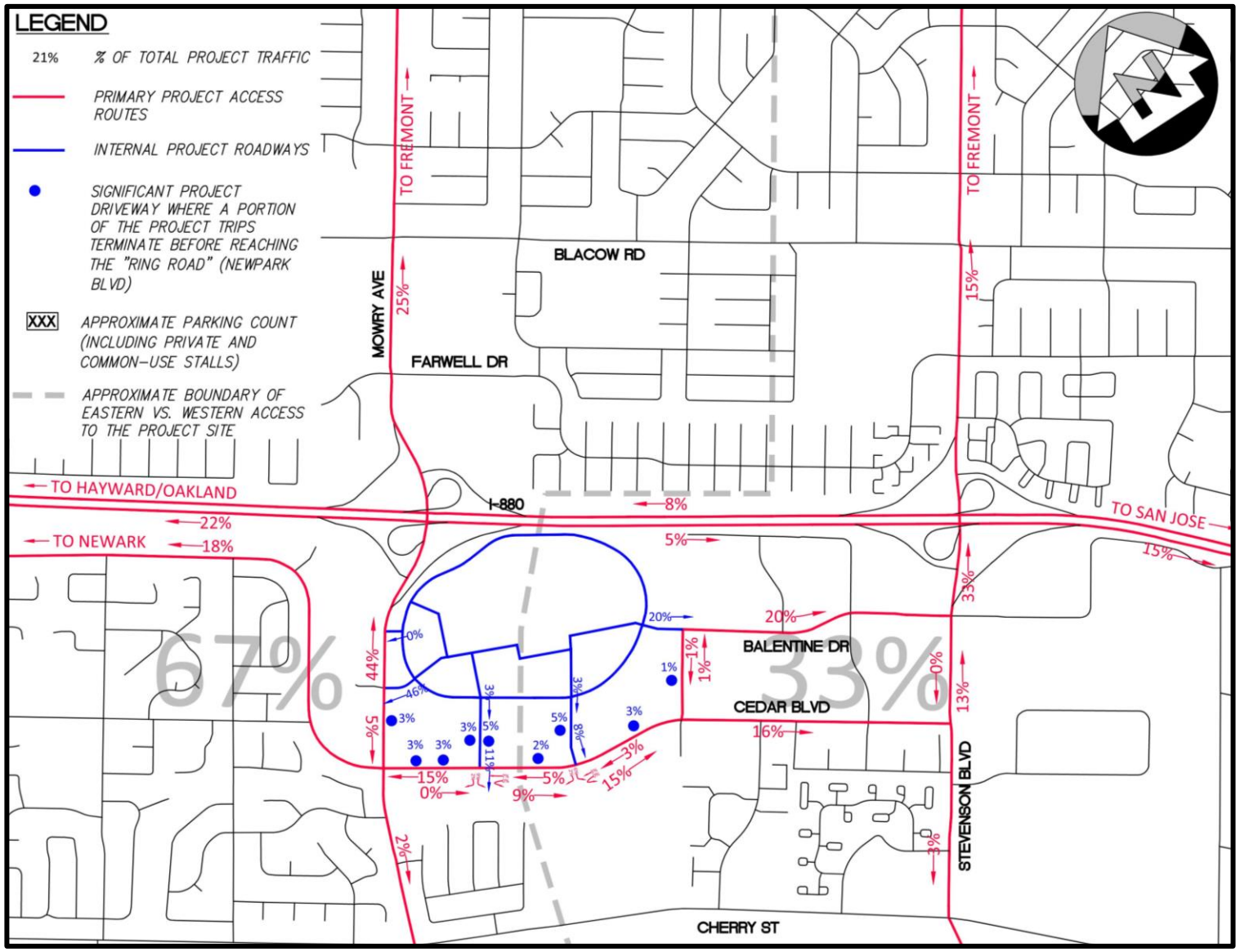


Figure 3C Local Trip Distribution (Outbound)



INTERNAL SITE TRIP DISTRIBUTION
After determining what percentage of traffic will access the site from each of the four access points, final specific destination of each trip within the broader overall site was determined.

TRIP DISTRIBUTION TO PARCELS/LOCATIONS
To do this, trips were assigned to specific parcels/locations using the methodology below.

- Trips bound for the common-use parking areas were isolated from the other project trips. These common-use trips consisted of the trips associated with retail, restaurant and theater uses from internalization Zone 1. These common-use trips were then proportionally routed to the multiple common-use parking areas based on the number of stalls each area provides. Figure 4A shows the common use parking areas associated with this step in the distribution.
- Trips associated with the residential land use were separated out. These trips were then routed to parcels containing residential land use proportional to the number of residential units provided on each parcel. Figure 4B shows the residential units associated with this step in the distribution.
- The outer ring internalization zone trips were routed to their respective parcels. As these outer ring zones are already associated with a very specific location within the site, further location refinement was not required.
- The trips that will be completed via external driveways along the surrounding arterial roadways were removed from the internal site trip count since these trips will not utilize the internal site roadways to reach their destination.

The above methodology yielded the total number of trips using the internal site roadways and the percentage of these trips associated with different parcels/locations throughout the site.

Figure 4A Common Use Parking

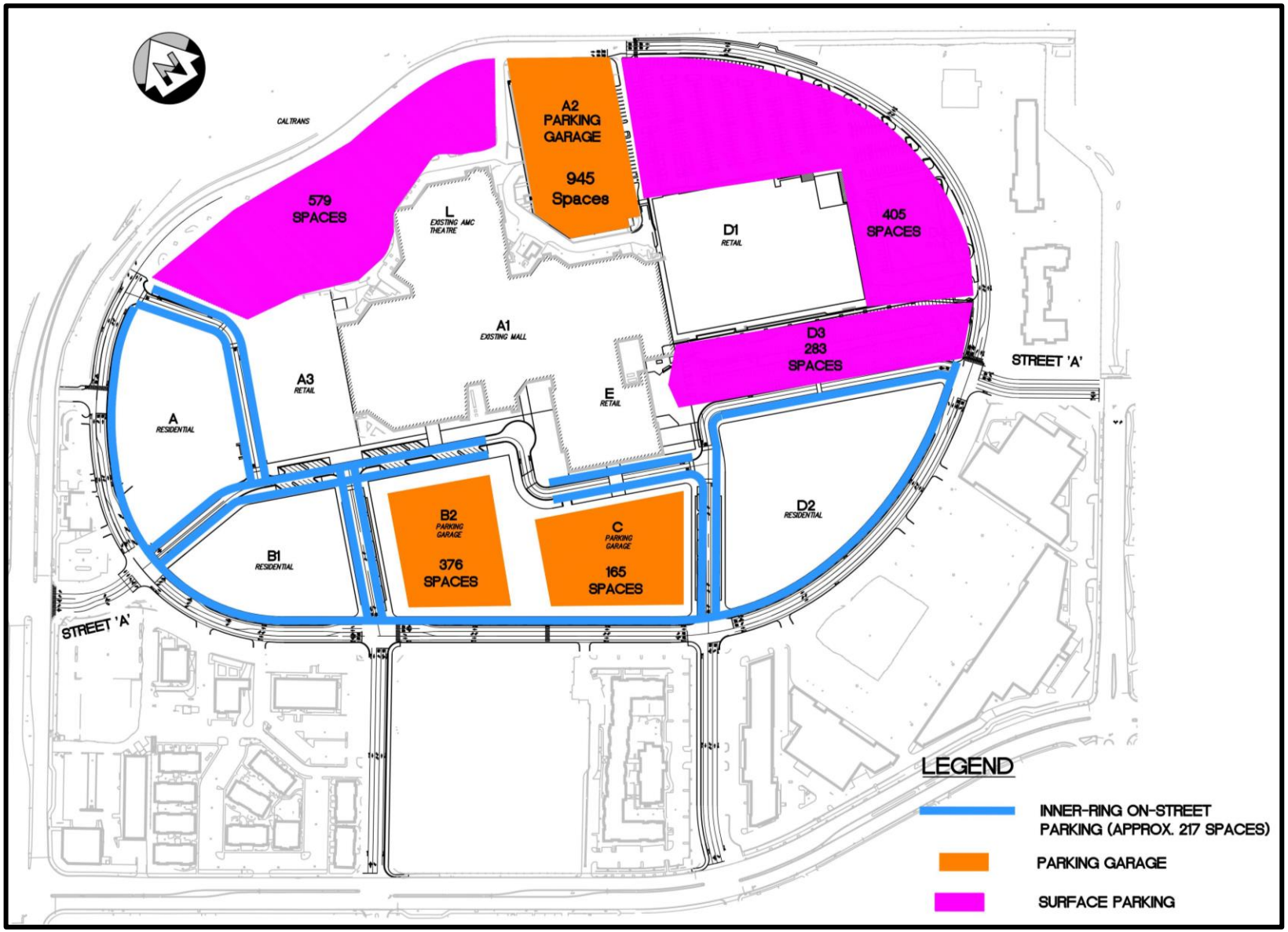
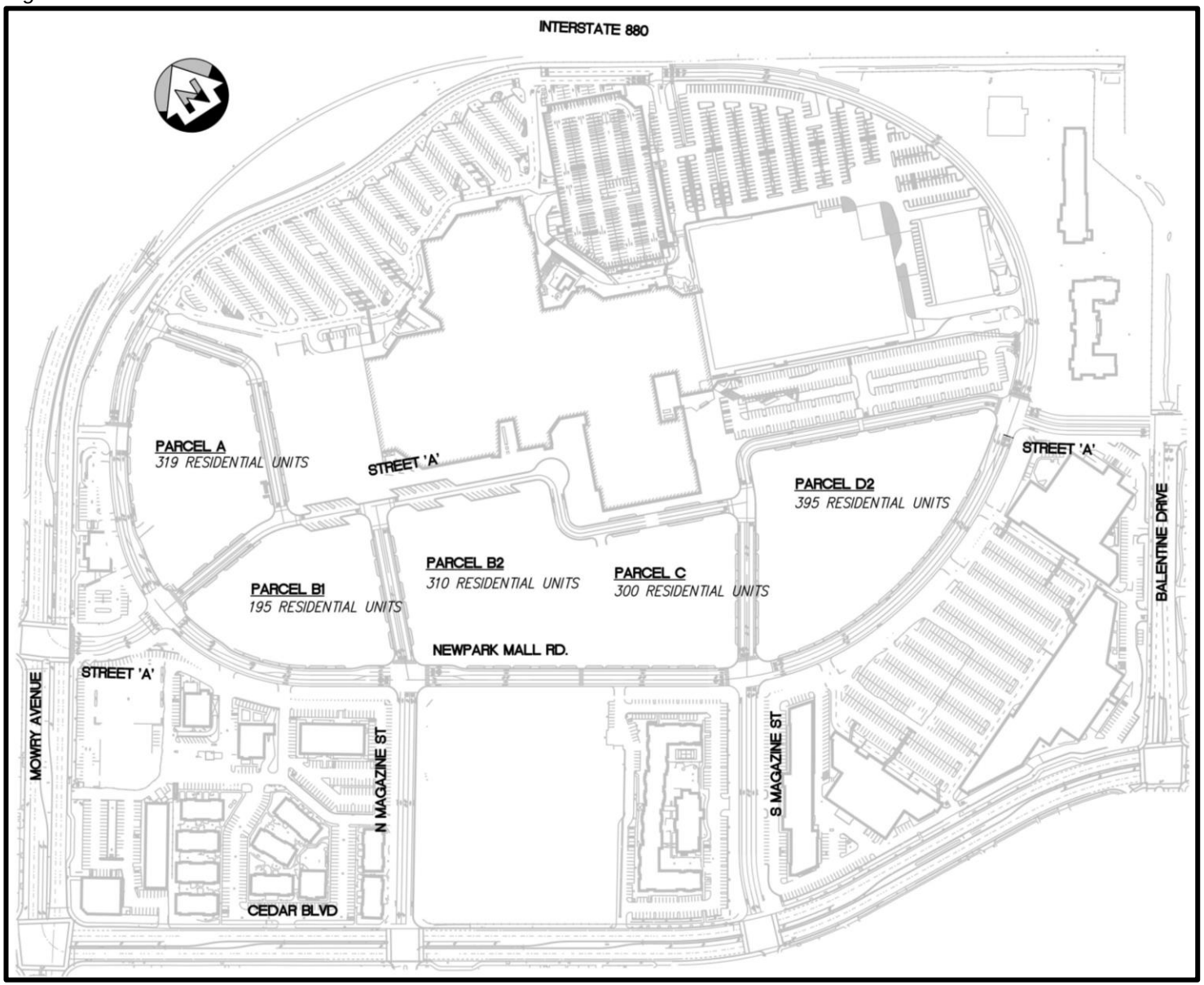


Figure 4B Residential Units



ASSOCIATING INTERNAL DISTRIBUTIONS WITH LOCAL ACCESS POINT DISTRIBUTIONS

The internal destination assumptions needed to be used in association with the broader local access point distributions to fully model internal traffic patterns. Table 1 and Figure 5 below provide a summary of the percent of total project traffic vs. percent of internal project traffic for each access point.

Table 1: Access Point Distributions (Percent of Project Traffic vs. Percent of Internal Site Traffic)

Access Point	% of Project traffic	% of Internal Site Traffic
Mowry Ave	46%	63.9%
North Magazine St	3%	4.2%
South Magazine St	3%	4.2%
Balentine Dr	20%	27.8%
Exterior Driveways & Access Points	28%	NA (Traffic accesses site without using internal roadways)

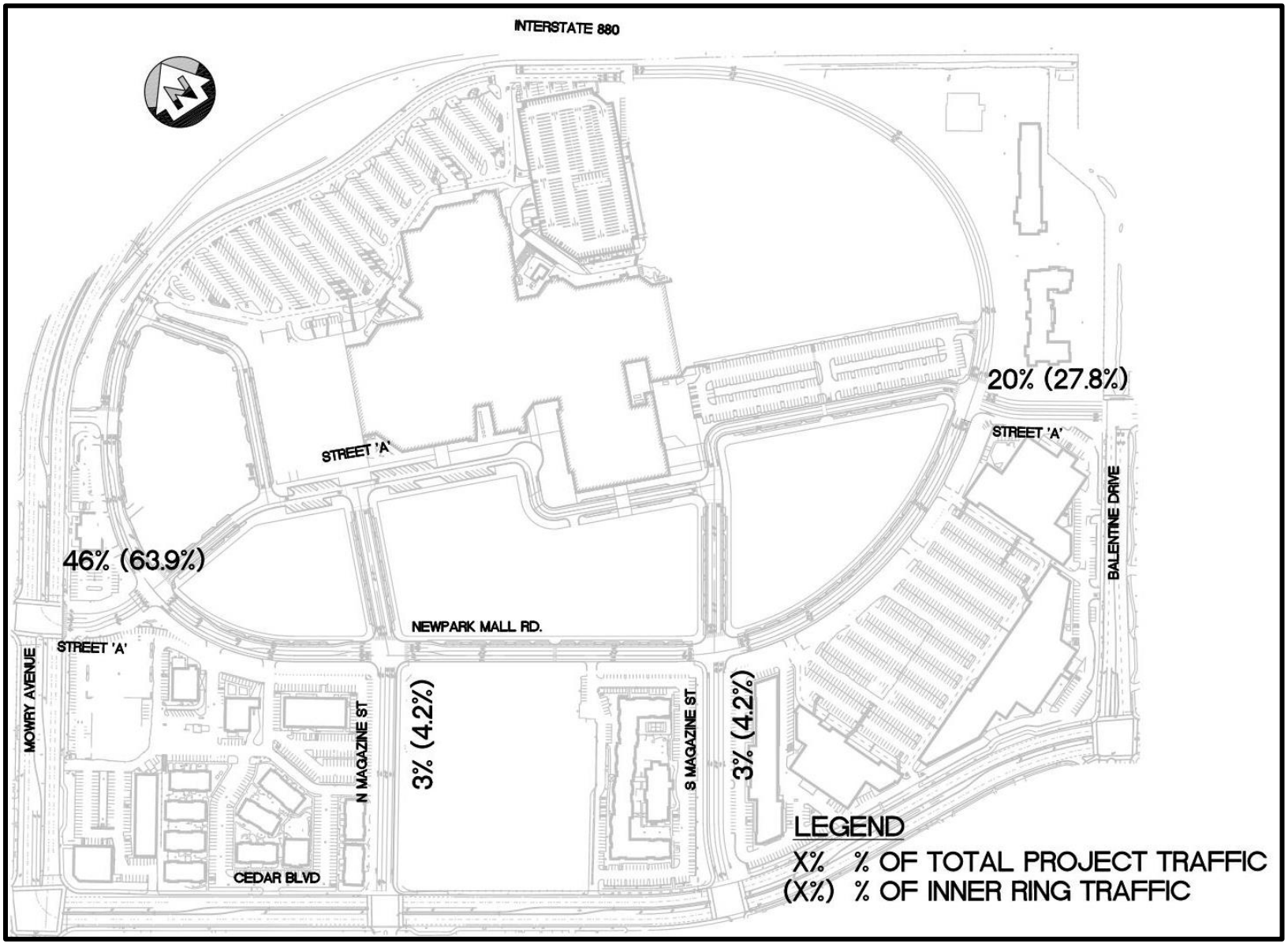
To get a trip count for every unique internal route through the site between a particular destination and access point the below equation was used:

$$\%IT\ using\ particular\ route\ = \%IT\ associated\ with\ parcel * \%IT\ associated\ with\ access\ point$$

%IT = percentage of internal traffic

This effectively disperses both trips entering the site from each access point and trips leaving the site from each parcel.

Figure 5 Access Point Distributions (Percent of Project Traffic vs. Percent of Internal Site Traffic)



COSTCO SPECIFIC ACCESS POINT REDISTRIBUTION/CORRECTION

The result of all of the previous assumptions is that for each individual inner ring parcel:

- 63.9% of that parcel's traffic comes from/goes to the Mowry access.
- 4.2% of that parcel's traffic comes from/goes to the N Magazine Street.
- 4.2% of that parcel's traffic comes from/goes to the S Magazine Street.
- 27.8% of that parcel's traffic comes from/goes to the Ballentine Drive.

This is reasonable for a majority of the parcels. However, for the Costco development the access distribution will likely not match that of the overall site. It will instead be more heavily weighted towards the nearest adjacent access point (Ballentine Drive). To address this, the below methodology was used to more heavily weight Costco traffic to the Balentine access point.

1. First the total trips attributable to Costco was determined. To calculate the trips attributable to Costco, the uninternalized trips for the Costco development from the ITE trip generation were taken and a 5% multi-modal reduction was applied to make them more comparable to the final trip results. Based on this, the percentages of project traffic in Table 2 were determined.

Table 2: Costco Traffic as a Percent of Total Project Traffic

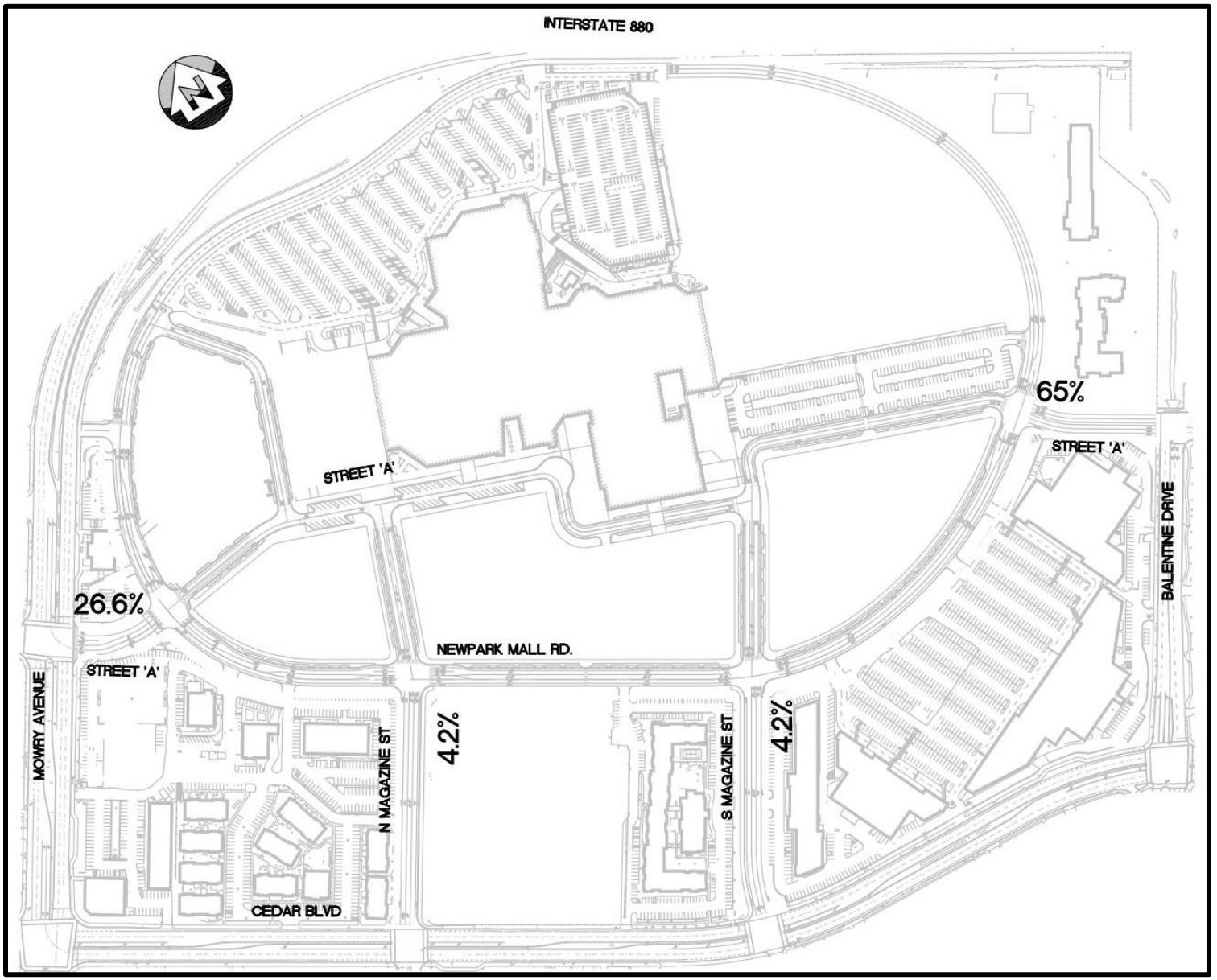
	AM		PM		SAT	
	Entering	**Exiting**	**Entering**	**Exiting**	**Entering**	**Exiting**
% of Total Project Traffic attributable to Costco	9.2%	12.5%	16.8%	17.9%	19.7%	21.1%

2. Next access point distributions were assumed for the Costco Development specifically. Table 3 and Figure 6 summarize the Costco specific distributions. Balentine Drive was identified as the primary access point for the Costco and given the highest percentage of 65%.

Table 3: Costco Access Point Distributions

Access Point	% of Costco Traffic
Mowry Ave	26.6 %
North Magazine St	4.2%
South Magazine St	4.2%
Ballentine Dr	65%

Figure 6: Costco Access Point Distributions



3. The parking area serving Costco was assumed to be composed of the parking on Parcels D1, A2 and L.
4. Using these assumptions, Costco trips were redistributed to be mostly heavily concentrated at the Ballentine Access.
5. Redistribution of Costco trips caused the overall project's access distribution to deviate from the previously determined percentages. To correct this and rebalance access point distributions, other parcels were conversely weighted away from the Balentine access and towards the Mowry access. Traffic from Parcels A B1, B2, C R and S were redistributed to be heavier on Mowry Avenue to counteract the above Costco Redistributions. This is likely more realistic, as parcels on a particular side of the site will be more heavily weighted towards the adjacent access point and traffic is less likely to drive across the entire site to utilize the less convenient access point.

AM COMMON-USE PARKING ASSUMPTIONS

During the AM peak, the site's common-use parking demand will be far below capacity. Because of this, it is likely that more trips will be focused on the closer, more convenient parking areas and little to no traffic will be headed for the farther out "overflow" parking areas. From an AM Land Used context, Parcels L, A2, D1 were assumed to be the least convenient/ most isolated parking areas as they primarily serve the mall and Costco which would likely be closed during the AM peak.

To account for this disuse, some of the traffic that would have been sent to these areas based simply on the proportional use of common-use parking was instead routed to the center of the project along Street 'A' where the parking supply is smaller but far more convenient.

For the PM and Saturday peaks, this parking disuse was not considered to be a concern. This is both because all businesses will be open during these periods and because parking demand will get much closer to capacity, meaning that each parking area will need to be utilized proportional to its capacity.

APPENDIX E- TRIP GENERATION TABLE

SANDIS CIVIL ENGINEERS SURVEYORS PLANNERS

Trip Generation

Date: 03/26/2021

Zone Number	Parcels	Land Use	ITE Code	Unit Type	Units	AM Peak of Adjacent Street Traffic						
						Rate[1]	Total[4]	In	Out	NCHRP Grouping	NCHRP In	NCHRP Out
1	A, A1, A3, B1, B2,C, D1, D2, E, L & M	Retail	820	KSF	549.343	0.78	427	265	162	Retail	**497**	**393**
		24-HR Fitness	492	KSF	39.720	1.31	53	27	26			
		Costco	NA[2]	Fueling Stations / KSF[3]	32 / 161.8	12.80	410	205	205			
		Restaurant	932	KSF	51.560	9.94	513	282	231	Restaurant	**282**	**231**
		Theater	445	Screens	12	0.00	0	0	0	Cinema/ Entertainment	**0**	**0**
		Residential	221	Dwelling Units	1519	0.32	493	128	365	Residential	**128**	**365**
		Hotel	310	Rooms	224	0.48	107	63	44	Hotel	**63**	**44**
2	R & S	Office	710	KSF	195.276	1.08	211	168	43	Office	**168**	**43**
		Retail	820	KSF	186.681	1.31	246	153	93	Retail	**153**	**93**
		Restaurant	932	KSF	46.615	9.94	464	255	209	Restaurant	**255**	**209**
3	P, O & Q	Office	710	KSF	51.874	1.45	76	45	31	Office	**45**	**31**
		Retail	820	KSF	97.235	2.06	201	125	76	Retail	**125**	**76**
		Restaurant	932	KSF	24.326	9.94	242	133	109	Restaurant	**133**	**109**
		Park	411	Acres	3.18	0.02	1	1	0	Cinema/ Entertainment	**1**	**0**
		Hotel	310	Rooms	476	0.49	233	137	96	Hotel	**137**	**96**
4	N	Office	710	KSF	252.85	1.04	265	217	48	Office	**217**	**48**
		Retail	820	KSF	209.797	1.22	257	159	98	Retail	**159**	**98**
		Restaurant	932	KSF	52.449	9.94	522	287	235	Restaurant	**287**	**235**
NA	A2	Parking Garage	NA	NA	0	0.00	0	0	0	NA	**0**	**0**

4721

Notes:

1. Rate per Unit based on average rate or fitted equation as advised by ITE
2. Costco Specific Trip Generation Rate Based on "Newpark Costco Trip Generation Information" Memo provided by Kittelson & Associates on September 1, 2020
3. Fueling Stations used for AM Peak Hour Costco Trip Generation. KSF used for PM and Saturday Peak Hour Costco Trip Generation. (Full Retail Storefront is not open during AM Peak. Only Fueling stations are open.)
4. Totals have been rounded up to the nearest whole number.
5. ITE Peak hour of generator has been used.
6. Saturday Midday Peak hour of Generator Has Been Used.
7. No ITE Daily Generation rate/equation is available for this land use.

Source: *Trip generation Manual (10th Edition), ITE*

SANDIS | CIVIL ENGINEERS SURVEYORS PLANNERS

Trip Generation

Date: 03/26/2021

Zone Number	Parcels	Land Use	ITE Code	Unit Type	Units	PM Peak of Adjacent Street Traffic						
						Rate[1]	Total[4]	In	Out	NCHRP Grouping	NCHRP In	NCHRP Out
1	A, A1, A3, B1, B2,C, D1, D2, E, L & M	Retail	820	KSF	549.343	3.49	1917	920	997	Retail	**1561**	**1653**
		24-HR Fitness	492	KSF	39.720	3.40	136	78	58			
		Costco	NA[2]	Fueling Stations / KSF[3]	32 / 161.8	7.84	1161	563	598			
		Restaurant	932	KSF	51.560	9.77	504	312	192	Restaurant	**312**	**192**
		Theater	445	Screens	12	13.73	165	84	81	Cinema/ Entertainment	**84**	**81**
		Residential	221	Dwelling Units	1519	0.40	604	368	236	Residential	**368**	**236**
		Hotel	310	Rooms	224	0.63	142	72	70	Hotel	**72**	**70**
2	R & S	Office	710	KSF	195.276	1.10	216	35	181	Office	**35**	**181**
		Retail	820	KSF	186.681	4.62	863	414	449	Retail	**414**	**449**
		Restaurant	932	KSF	46.615	9.77	456	283	173	Restaurant	**283**	**173**
3	P, O & Q	Office	710	KSF	51.874	1.18	62	10	52	Office	**10**	**52**
		Retail	820	KSF	97.235	5.47	533	256	277	Retail	**256**	**277**
		Restaurant	932	KSF	24.326	9.77	238	148	90	Restaurant	**148**	**90**
		Park	411	Acres	3.18	7.17	23	13	10	Cinema/ Entertainment	**13**	**10**
		Hotel	310	Rooms	476	0.70	331	169	162	Hotel	**169**	**162**
4	N	Office	710	KSF	252.85	1.09	275	44	231	Office	**44**	**231**
		Retail	820	KSF	209.797	4.48	941	452	489	Retail	**452**	**489**
		Restaurant	932	KSF	52.449	9.77	513	318	195	Restaurant	**318**	**195**
NA	A2	Parking Garage	NA	NA	0	0.00	0	0	0	NA	**0**	**0**
							9080					

Notes:

1. Rate per Unit based on average rate or fitted equation as advised by ITE
2. Costco Specific Trip Generation Rate Based on "Newpark Costco Trip Generation Information" Memo provided by Kittelson & Associates on September 1, 2020
3. Fueling Stations used for AM Peak Hour Costco Trip Generation. KSF used for PM and Saturday Peak Hour Costco Trip Generation. (Full Retail Storefront is not open during AM Peak. Only Fueling stations are open.)
4. Totals have been rounded up to the nearest whole number.
5. ITE Peak hour of generator has been used.
6. Saturday Midday Peak hour of Generator Has Been Used.
7. No ITE Daily Generation rate/equation is available for this land use.

Source: *Trip generation Manual (10th Edition), ITE*

SANDIS CIVIL ENGINEERS SURVEYORS PLANNERS

Trip Generation

Date: 03/26/2021

Zone Number	Parcels	Land Use	ITE Code	Unit Type	Units	Saturday Midday peak							
						Rate[1]	Total[4]	In	Out	Notes	NCHRP Grouping	NCHRP In	NCHRP Out
1	A, A1, A3, B1, B2,C, D1, D2, E, L & M	Retail	820	KSF	549.343	4.33	2378	1237	1141	5.	Retail	**2107**	**1983**
		24-HR Fitness	492	KSF	39.720	3.19	127	62	65	5.			
		Costco	NA[2]	Fueling Stations / KSF[3]	32 / 161.8	10.70	1585	808	777	2.			
		Restaurant	932	KSF	51.560	11.19	577	294	283	5.	Restaurant	**294**	**283**
		Theater	445	Screens	12	14.56	175	126	49	6.	Cinema/ Entertainment	**126**	**49**
		Residential	221	Dwelling Units	1519	0.42	645	316	329	5.	Residential	**316**	**329**
		Hotel	310	Rooms	224	0.71	159	89	70	5.	Hotel	**89**	**70**
2	R & S	Office	710	KSF	195.276	0.53	104	56	48	5.	Office	**56**	**48**
		Retail	820	KSF	186.681	5.43	1014	527	487	5.	Retail	**527**	**487**
		Restaurant	932	KSF	46.615	11.19	522	266	256	5.	Restaurant	**266**	**256**
3	P, O & Q	Office	710	KSF	51.874	0.53	28	15	13	5.	Office	**15**	**13**
		Retail	820	KSF	97.235	6.23	606	315	291	5.	Retail	**315**	**291**
		Restaurant	932	KSF	24.326	11.19	273	139	134	5.	Restaurant	**139**	**134**
		Park	411	Acres	3.18	8.50	28	15	13	5.	Cinema/ Entertainment	**15**	**13**
		Hotel	310	Rooms	476	0.70	333	186	147	5.	Hotel	**186**	**147**
4	N	Office	710	KSF	252.85	0.53	135	73	62	5.	Office	**73**	**62**
		Retail	820	KSF	209.797	5.30	1112	578	534	5.	Retail	**578**	**534**
		Restaurant	932	KSF	52.449	11.19	587	299	288	5.	Restaurant	**299**	**288**
NA	A2	Parking Garage	NA	NA	0	0.00	0	0	0	NA	NA	**0**	**0**

10388

Notes:

1. Rate per Unit based on average rate or fitted equation as advised by ITE
2. Costco Specific Trip Generation Rate Based on "Newpark Costco Trip Generation Information" Memo provided by Kittelson & Associates on September 1, 2020
3. Fueling Stations used for AM Peak Hour Costco Trip Generation. KSF used for PM and Saturday Peak Hour Costco Trip Generation. (Full Retail Storefront is not open during AM Peak. Only Fueling stations are open.)
4. Totals have been rounded up to the nearest whole number.
5. ITE Peak hour of generator has been used.
6. Saturday Midday Peak hour of Generator Has Been Used.
7. No ITE Daily Generation rate/equation is available for this land use.

Source: *Trip generation Manual (10th Edition), ITE*

SANDIS CIVIL ENGINEERS SURVEYORS PLANNERS

Internalization and Multi-Modal Reduction

Date: 03/26/2021

		Pre-Internalization Trip Totals (NCHRP 684 Methodology Input)						Post-Internalization Trip Totals (NCHRP 684 Methodology Results)						Multi-Modal Reduction	Final Adjusted Trip Totals (Internalization & Multi-Modal Reduction Applied)					
Zone	Grouping	AM		PM		SAT		AM		PM		SAT			AM		PM		SAT	
		Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting	Entering	Exiting		Entering	Exiting	Entering	Exiting	Entering	Exiting
1	Retail	497	393	1561	1653	2107	1983	455	339	1370	1360	1853	1705	5%	433	323	1302	1292	1761	1620
	Restaurant	282	231	312	192	294	283	171	190	160	50	150	73	5%	163	181	152	48	143	70
	Theater	0	0	84	81	126	49	0	0	47	48	70	25	5%	0	0	45	46	67	24
	Residential	128	365	368	236	316	329	119	305	158	108	116	167	5%	114	290	151	103	111	159
	Hotel	63	44	72	70	89	70	60	34	39	43	43	44	5%	57	33	38	41	41	42
2	Office	168	43	35	181	56	48	137	4	21	142	38	36	5%	131	4	20	135	37	35
	Retail	153	93	414	449	527	487	129	74	310	358	412	400	5%	123	71	295	341	392	380
	Restaurant	255	209	283	173	266	256	216	173	195	97	187	143	5%	206	165	186	93	178	136
3	Office	45	31	10	52	15	13	36	2	4	40	6	9	5%	35	2	4	38	6	9
	Retail	125	76	256	277	315	291	101	64	202	214	248	227	5%	96	61	192	204	236	216
	Restaurant	133	109	148	90	139	134	95	90	93	40	87	61	5%	91	86	89	38	83	58
	Park	1	0	13	10	15	13	1	0	6	5	6	6	5%	1	0	6	5	6	6
	Hotel	137	96	169	162	186	147	134	82	149	150	162	134	5%	128	78	142	143	154	128
4	Office	217	48	44	231	73	62	178	5	28	189	53	48	5%	170	5	27	180	51	46
	Retail	159	98	452	489	578	534	133	76	336	387	448	436	5%	127	73	320	368	426	415
	Restaurant	287	235	318	195	299	288	244	192	220	109	210	161	5%	232	183	209	104	200	153
														Total	**2107**	**1555**	**3178**	**3179**	**3892**	**3497**
															3662		**6357**		**7389**	

SANDIS CIVIL ENGINEERS SURVEYORS PLANNERS

Final Adjusted Trip Results

Date: 03/26/2021

Zone Number	Parcels	Land Use	ITE Code	Unit Type	Units	AM		PM		SAT	
						Entering	Exiting	Entering	Exiting	Entering	Exiting
1	A, A1, A3, B1, B2,C, D1, D2, E, L & M	Retail	820	KSF	549.343	433	323	1302	1292	1761	1620
		24-HR Fitness	492	KSF	39.720						
		Costco	NA	Fueling Stations / KSF	32 / 161.8						
		Restaurant	932	KSF	51.560	163	181	152	48	143	70
		Theater	445	Screens	12	0	0	45	46	67	24
		Residential	221	Dwelling Units	1519	114	290	151	103	111	159
		Hotel	310	Rooms	224	57	33	38	41	41	42
2	R & S	Office	710	KSF	195.276	131	4	20	135	37	35
		Retail	820	KSF	186.681	123	71	295	341	392	380
		Restaurant	932	KSF	46.615	206	165	186	93	178	136
3	P, O & Q	Office	710	KSF	51.874	35	2	4	38	6	9
		Retail	820	KSF	97.235	96	61	192	204	236	216
		Restaurant	932	KSF	24.326	91	86	89	38	83	58
		Park	411	Acres	3.18	1	0	6	5	6	6
		Hotel	310	Rooms	476	128	78	142	143	154	128
4	N	Office	710	KSF	252.85	170	5	27	180	51	46
		Retail	820	KSF	209.797	127	73	320	368	426	415
		Restaurant	932	KSF	52.449	232	183	209	104	200	153
NA	A2	Parking Garage	NA	NA	0	0	0	0	0	0	0
					Total	**2107**	**1555**	**3178**	**3179**	**3892**	**3497**
						3662		**6357**		**7389**	

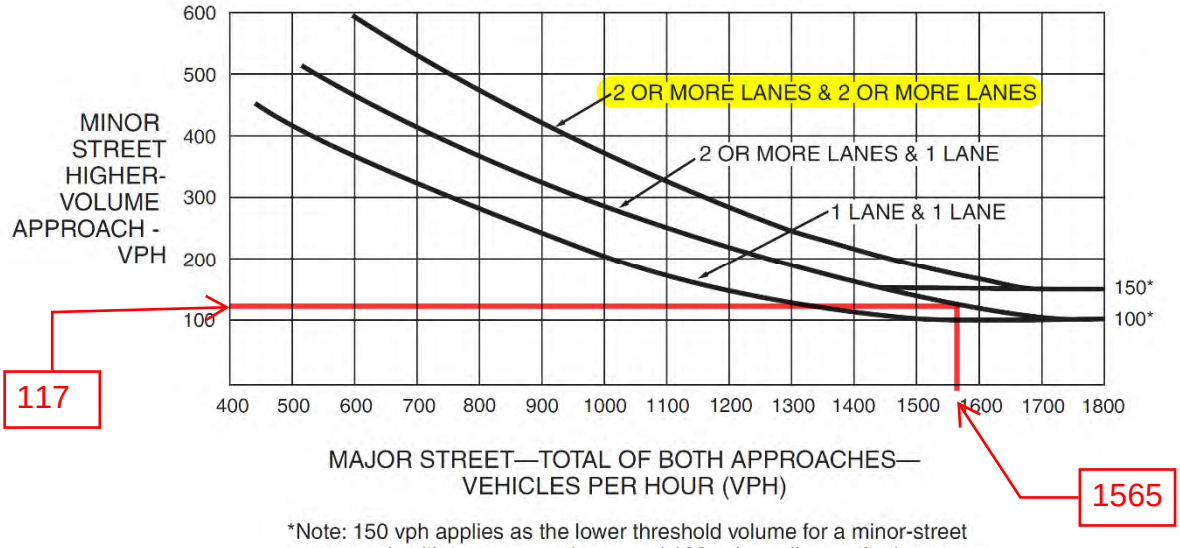
Notes:

1. The above results have internalization and multi-modal reductions applied.

APPENDIX F- CAMUTCD SIGNAL WARRANT 3 ANALYSIS

Newpark and
N Magazine

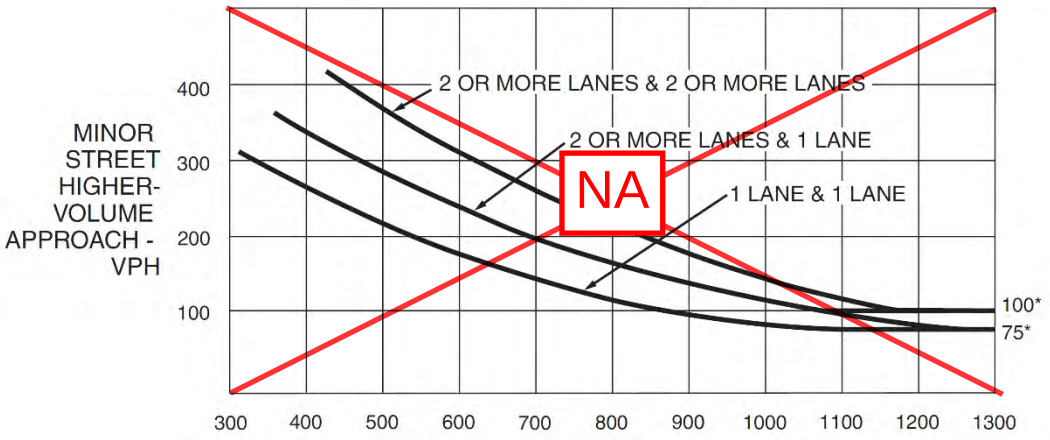
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Newpark and N Magazine

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☒**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☒**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐	No ☒
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

EB North Magazine St delay: 0.0 veh-hr

PART B **SATISFIED YES ☐ NO ☒**

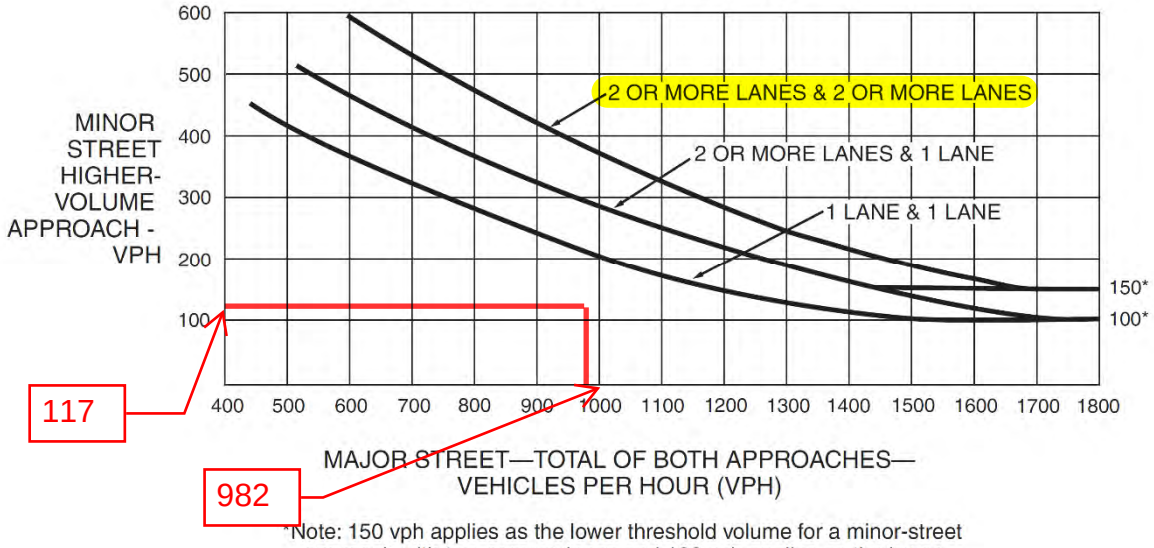
APPROACH LANES	One	2 or More	Hour
Both Approaches - Major Street		X	1565
Higher Approach - Minor Street		X	117

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☒
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Newpark and S Magazine

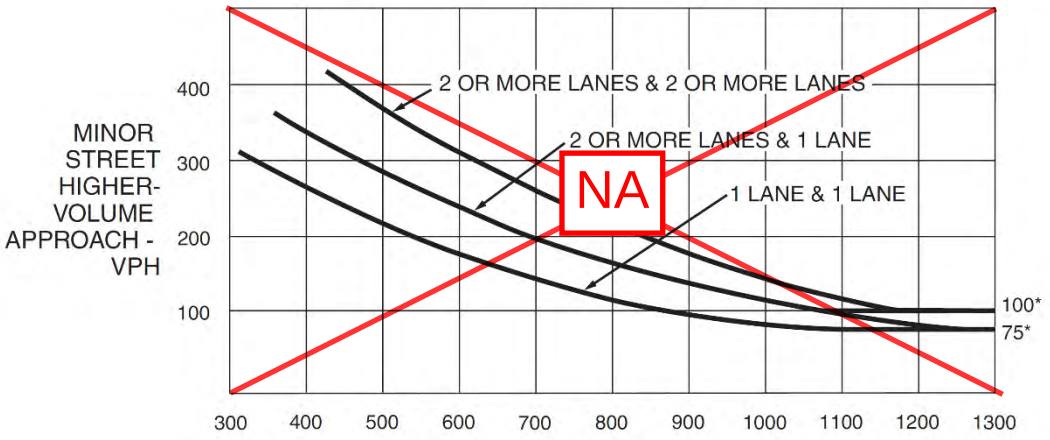
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Newpark and S Magazine

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☒**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☒**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐	No ☒
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

EB South Magazine St delay: 0.0 veh-hr

PART B **SATISFIED YES ☐ NO ☒**

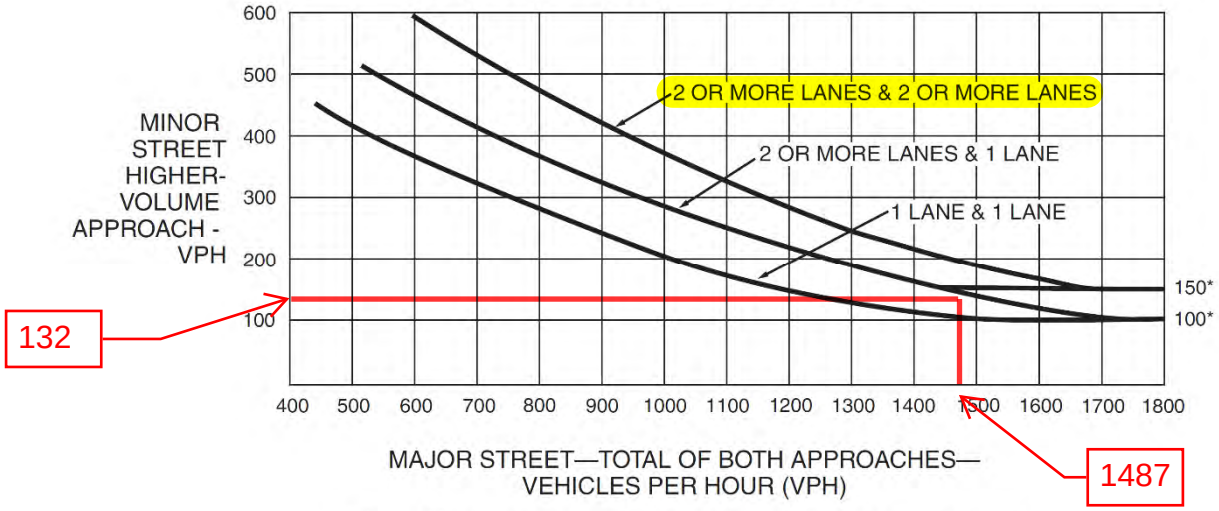
APPROACH LANES	One	2 or More	Hour
Both Approaches - Major Street		X	982
Higher Approach - Minor Street		X	117

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☒
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Balentine and Street 'A' (south)

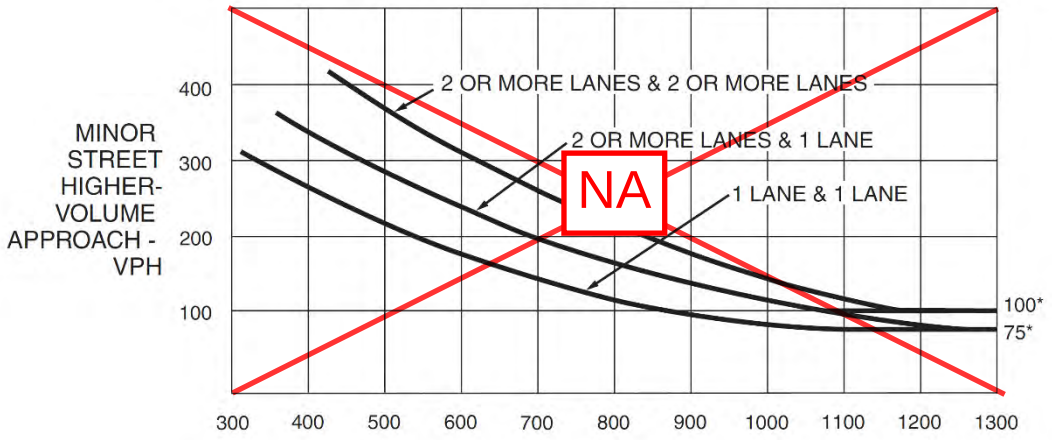
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Balentine and Street 'A' (south)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☒**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☒**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐	No ☒
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

EB Balentine Dr delay: 0.0 veh-hr

PART B **SATISFIED YES ☐ NO ☒**

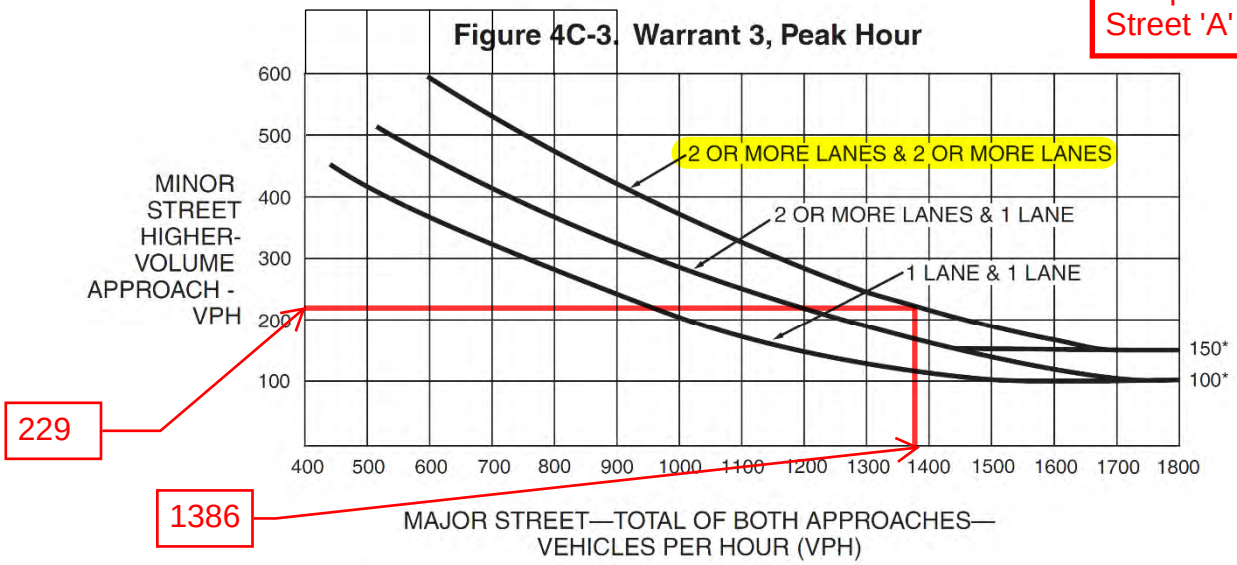
APPROACH LANES	One	2 or More	Hour
Both Approaches - Major Street		X	1487
Higher Approach - Minor Street		X	132

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☒
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Newpark and Street 'A' (south)

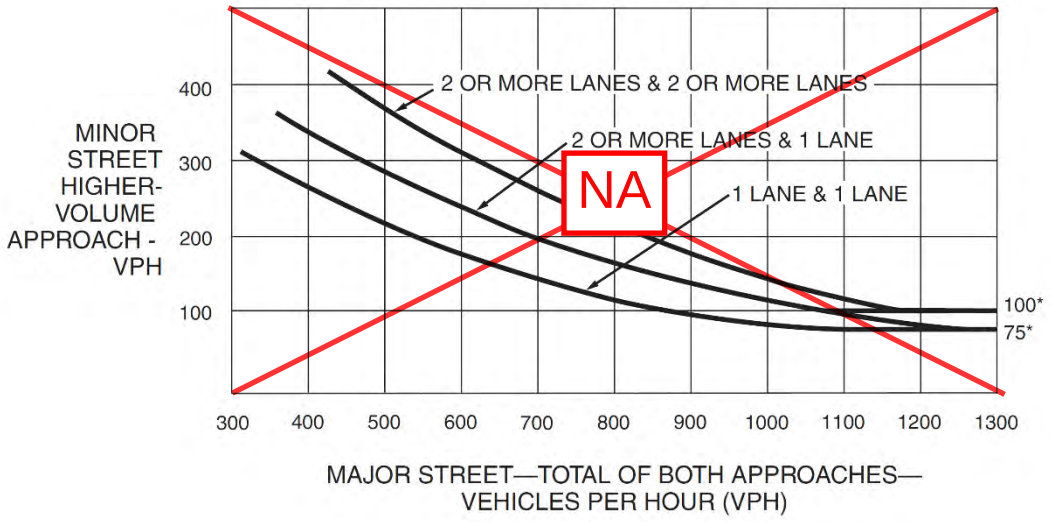
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

Newpark and Street 'A' (south)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☒**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☒**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐	No ☒
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒	No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒	No ☐

EB Newpark Blvd delay: 0.1 veh-hr

PART B **SATISFIED YES ☐ NO ☒**

APPROACH LANES	One	2 or More	Hour
Both Approaches - Major Street		X	1386
Higher Approach - Minor Street		X	229

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☒
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

2: Street 'A' (North)/Alpenrose CT & Mowry Ave Performance by approach

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	1.7	2.2	0.6	0.0	4.6

6: Street 'A' (North)/Street 'A' (North) & Newpark Mall Rd Performance by approach

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	2.2	1.2	0.5	0.4	4.3

11: Cedar Blvd & High School Driveway /South Magazine St Performance by approach

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	0.0	0.3	0.3	0.2	0.8

13: Newpark Mall Rd & South Magazine St/South Magazine St Performance by approach

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	0.0	0.0	0.1	0.2	0.3

14: Newpark Mall Rd /Newpark Mall Rd & North Magazine St/North Magazine St Performance by approa

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	0.0	0.0	0.2	0.2	0.4

15: Cedar Blvd /Cedar Blvd & Driveway/North Magazine St Performance by approach

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	0.2	0.4	0.8	1.2	2.7

18: Street 'A' (South) /Street 'A' (South) & Newpark Mall Rd/Newpark Mall Rd Performance by approach

Approach	EB	WB	NB	SB	All
Stop Delay (hr)	0.1	0.4	0.2	0.0	0.7

21: Balentine Dr & Street 'A' (South) Performance by approach

Approach	EB	NB	SB	All
Stop Delay (hr)	0.0	0.0	0.0	0.1

Total Network Performance

Stop Delay (hr)	14.9