

Bradley Heights Filing #1

Traffic Impact Analysis

Prepared for:
Challenger Homes
8605 Explorer Drive, Suite 250
Colorado Springs, CO 80920

Contact: Mr. Jim Byers

APRIL 5, 2021

LSC Transportation Consultants
Prepared by: Colleen Guillotte, P.E.
Reviewed by: Jeffrey C. Hodsdon, P.E.

LSC #S214180



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April 5, 2021

Mr. Jim Byers
Challenger Homes
8605 Explorer Drive, Suite 250
Colorado Springs, CO 80920

RE: Bradley Heights Filing #1
Traffic Impact Analysis
Colorado Springs, CO
LSC #214180

Dear Mr. Byers,

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact and access analysis for Bradley Heights Filing #1. As shown in Figure 1, the site is located south of the intersection of Bradley Road and Foreign Trade Zone Boulevard in Colorado Springs, Colorado. This report has been prepared for submittal to the City of Colorado Springs.

REPORT CONTENTS

This report has been prepared to address the project's traffic impact at the proposed access points and study intersections.

This report contains the following:

- An inventory of existing roadway and traffic conditions on the adjacent and nearby roadway system, including: surface conditions, functional classification, widths, pavement markings, traffic control signs, posted speed limits, intersection and access spacing, roadway and intersection alignments, roadway grades, and auxiliary turn lanes;
- Weekday morning and evening peak-hour turning movement traffic counts at the intersections of:
 - Bradley Road/Powers Boulevard
 - Bradley Road/Foreign Trade Zone Boulevard
 - Bradley Road/Marksheffel Road;
- Estimated current average weekday traffic (AWT) volumes on the study-area streets;

- Projections of short-term and 20-year background traffic volumes on the study-area streets, which includes estimates of traffic from other area development projects and increases in through traffic on the adjacent arterial streets;
- The proposed site land use;
- Estimates of average weekday and weekday peak-hour trip generation for the proposed development;
- The estimated directional distribution of site-generated trips and the projected site-generated traffic volumes;
- Projected resulting short- and long-term total peak-hour intersection traffic volumes at the study intersections;
- Projected short- and long-term total daily (AWT) volumes on the study-area streets;
- Intersection level of service analysis at the study-area intersections for both background and total traffic scenarios; and
- Findings and recommendations.

PREVIOUS TRAFFIC REPORTS COMPLETED IN THE AREA

A list of other traffic studies in the area of study completed within the past five years (that LSC is aware of) is attached for reference. This study accounts for the land use, trip generation, and the roadway network included in these studies. Figure 1 shows the location of the other known developments in the area.

LAND USE AND ACCESS

Land Use

The Bradley Heights Filing #1 site is located south of Bradley Road adjacent to the intersection of Bradley Road/Foreign Trade Zone Boulevard. Figure 2 shows the proposed site plan for the development. As shown, the site is planned to include 327 single-family homes.

Access

Access to Bradley Road is proposed via two full-movement intersections and a right-in/right-out. The first full-movement intersection will become the fourth leg of the existing three-leg Bradley Road/Foreign Trade Zone Boulevard. This roadway will be Bradley Landing Boulevard and provide future access to the entire Bradley Heights development. An access into the east portion of the site will be located approximately 685 feet south of Bradley Road (centerline-to-centerline). In the future, this access will have a fourth leg added for access into the commercial parcel to the west. A T-intersection into the west portion of the site will be located 600 feet further south.

Approximately 1,400 feet east of the Bradley Road/Foreign Trade Zone Boulevard will be a second full-movement intersection providing access to the development called Bliss Road. A

right-in/right-out into the west portion of the site will be located approximately 965 feet west of the Bradley Road/Foreign Trade Zone Boulevard intersection.

Sight Distance

Per the criteria for intersection sight distance contained in Table 1 of the *City of Colorado Springs Engineering Criteria Manual* (ECM), intersections on Bradley Road require a minimum of 555 feet in sight distance. All of the proposed intersections on Bradley Road meet this minimum sight distance requirement. To maintain acceptable lines of sight, the vegetation on the south side of the road and within the median on Bradley Road should be maintained so as to be no taller than 18 inches high.

STREET AND TRAFFIC CONDITIONS

Area Streets

The adjacent streets are shown in Figure 1 and are described below.

- **Powers Boulevard** (State Highway 21) is classified as a Freeway (FW). Powers Boulevard is one of the region's main north/south corridors. Powers Boulevard has a center median and a posted speed limit of 60 miles per hour (mph) north of Crestera Parkway. South of this point, the posted speed limit is 65 mph. Powers Boulevard is ultimately planned to be converted to a Freeway with grade-separated intersections.
- **Bradley Road** is classified as an expressway by the City of Colorado Springs. The roadway is shown with a Minor Arterial classification east of Grinnell Boulevard on the 2016 El Paso County *Major Transportation Corridors Plan* (MTCP). Adjacent to the site, Bradley Road is a four-lane roadway with a 50-mph posted speed limit and has a median, left-turn lanes, and rural paved shoulders. There are short existing sections of raised median approaching Powers Boulevard and Marksheffel Road. The 2040 MTCP includes the construction of Bradley Road between Grinnell Boulevard and Powers Boulevard in the 2040 roadway improvement B list projects.
- **Foreign Trade Zone Boulevard** is shown with a Principal Arterial classification, although it does not currently operate as a Principal Arterial. The roadway is currently a two-lane roadway with parking allowed on both sides.
- **Marksheffel Road** extends north from the Link Road/C&S Road intersection in Fountain, Colorado to north of Woodmen Road. It has recently been upgraded north and south of Bradley Road with a PPRTA project and is shown as a four-lane Expressway on the El Paso County *Major Transportation Corridors Plan* (MTCP). The posted speed limit on Marksheffel Road in the vicinity of Bradley Road is 55 mph.

Existing Traffic Volumes

Traffic counts were conducted by LSC in March 2021 at the following intersections:

- Bradley Road/Powers Boulevard
- Bradley Road/Foreign Trade Zone Boulevard
- Bradley Road/Marksheffel Road;

Figure 3 shows the peak hour traffic volumes at the study intersections. The figure also shows the 2019 Colorado Department of Transportation (CDOT) Average Annual Daily Traffic Volume (AADT) on Powers Boulevard and estimates of the average daily traffic volume on Bradley Road based on the peak-hour traffic counts.

Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from “A” to “F.” LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

Table 1: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections	Unsignalized Intersections
	Average Control Delay (seconds per vehicle)	Average Control Delay (seconds per vehicle) ⁽¹⁾
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more
(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.		

The signalized intersections of Bradley Road/Powers Boulevard and Bradley Road/Marksheffel Road were analyzed using Synchro. The unsignalized intersection of Bradley Road/Foreign Trade Zone Boulevard was analyzed based on the unsignalized intersection analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. Figure 3 shows the level of service analysis results.

The signalized intersections operate at LOS B during both peak hours. All movements at these intersections are currently operating at LOS D or better during the peak hours. The level of service (LOS) reports are attached.

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development's trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by nearby developments, but assumes zero traffic generated by the site.

Figure 4 shows the projected short-term background traffic volumes. These traffic volumes are based on the existing traffic volumes shown in Figure 3. Historical counts showed that the morning peak-hour counts recorded in March 2021 were low. It has been noted that the COVID-19 pandemic continues to impact primarily morning counts. Based on historical count data, a 25 percent increase was applied to all the existing morning count data. The short-term background traffic volumes also include additional traffic projected to be generated by development of The Trails at Aspen Ridge Filing No. 1 and the Trails at Aspen Ridge PUD. The projected additional traffic volumes were taken from a traffic impact study prepared by LSC.

Figure 5 shows the projected 2040 background traffic volumes. The long-term background traffic volumes were based on the *Waterview North Sketch Plan Amendment and RM-12 Rezone Master Traffic Impact Analysis* by LSC dated November 17, 2020. The volumes assume a growth rate of 1 percent per year. This growth rate is an estimate by LSC, based on the Colorado Department of Transportation 20-year factor for Powers Boulevard adjacent to the site. The 20-year factor is 1.07 which calculates to a growth rate of less than 1 percent per year.

The long-term volumes also assume buildout of all adjacent proposed developments including Bradley Heights (other than Filing #1), the Trails at Aspen Ridge Filing No. 1, the Trails at Aspen Ridge PUD, Waterview North, Redemption Hill Church, and the Peak Innovation Park. The long-term background traffic volumes do not include any traffic projected to be generated by Bradley Heights Filing #1. The long-term background volumes assume Bradley Road has been constructed between Goldfield Drive and Powers Boulevard and assumes a connection to the Peak Innovation Park.

TRIP GENERATION

The site-generated vehicle trips were estimated using the nationally published trip-generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 2 below presents a summary of the estimated site trip generation on a typical weekday. The detailed trip-generation estimate for the development, including ITE rates for the proposed land use, is presented in Table 3.

Table 2: Estimated Site Vehicle-Trip Generation

Analysis Period	Total Trips		
	In	Out	Total
A.M. Peak Hour	62	176	238
P.M. Peak Hour	208	117	325
Daily/24-Hour	1,547	1,547	3,094

At buildout, the site is projected to generate about 3,094 new external vehicle trips on the average weekday, with about half entering and half exiting the site. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 62 vehicles would enter and 176 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 208 vehicles would enter and 117 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the adjacent roadway system is one of the most important factors in determining the traffic impacts of the site. Figure 6 shows the short-term and long-term directional distributions of traffic projected to be generated by the development.

The short-term directional distribution estimates were based on the existing area roadway system and the traffic counts. The long-term directional distribution estimates were based on the anticipated regional development and future roadway networks including the construction of Bradley Road between Grinnell Street and Powers Boulevard and a future north/south connection between Bradley Road and Fontaine Boulevard through the Bradley Heights development.

This distribution was estimated with a focus on peak-hour trip assignment, as the intersection analysis is based on peak-hour volumes.

- The distribution percentages to/from the east account for:
 - o Some longer trip lengths by commuters;
 - o The proximity of this development to Marksheffel Road;
 - o Anticipated use of Marksheffel Road north as a viable alternative to Powers to/from many destinations east of and within the Powers Boulevard corridor. Powers Boulevard intersections experience congestion during peak hours. Marksheffel has recently been upgraded north and south of Bradley with a PPRTA project, which has increased its attractiveness as a north/south travel route;
 - o Bradley to/from the east being the route to Schriever Air Force Base and the improved east gate of Peterson Air Force Base; and
 - o Development occurring in the Marksheffel corridor and, over time, the number of trip destinations continuing to increase.

- The distribution percentages to/from the Bradley Heights connection account for the planned alternative street connections within Bradley Heights to Bradley Road and Marksheffel Road (south);
- The percentages to/from the south on Powers Boulevard account for trips from the south and southeast, paired with destinations primarily in Fountain and Fort Carson, as well as the south connection to Interstate 25.
- The percentages to/from the north on Powers primarily account for trips using Milton Proby Parkway and the Powers Boulevard corridor for travel.

When the distribution percentages (from Figure 6) are applied to the trip-generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. Figure 7 and Figure 8 show the projected short-term and long-term site-generated traffic volumes due to development of the Bradley Heights Filing #1.

BUILDOUT TOTAL TRAFFIC

Figure 9 shows the projected short-term total traffic volumes. The short-term total traffic volumes are the sum of the short-term background traffic volumes (from Figure 4) plus the short-term site-generated traffic volumes (from Figure 7).

Figure 10 shows the projected long-term total traffic volumes. The long-term total traffic volumes are the sum of the long-term background traffic volumes (from Figure 5) plus the long-term site-generated traffic volumes (from Figure 8).

ROADWAY CLASSIFICATION

It is recommended that all streets within Bradley Heights Filing #1 be constructed using the local residential classification, based on the estimated average weekday traffic volumes.

PROJECTED LEVELS OF SERVICE

The key area intersections have been analyzed to determine the projected levels of service for the short-term and long-term background and short-term and long-term total traffic volumes. The signalized intersections were analyzed using Synchro. The unsignalized method of analysis from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board was used for all other intersections. Figure 4, Figure 5, Figure 9, and, Figure 10 show the results of the level of service analysis. The level of service reports are attached.

Bradley Road/Powers Boulevard

The intersection of Powers/Bradley is currently signalized and is operating at a satisfactory level of service. All movements at this intersection are projected to operate at LOS D or better during

the peak hours, based on the short-term total traffic volumes. The short-term analysis assumes the addition of a second southbound left-turn lane.

In the long-term it was assumed that the section of Bradley Road between Goldfield Drive and Powers Boulevard would be constructed. Based on the long-term total traffic volumes shown and the lane geometry shown in Figure 10, the intersection is projected to operate at an overall LOS D during the peak hours. However, some of the minor movements are projected to operate at LOS E during the peak hours. It is common for left-turn and side-street through movements to have projected delays in the LOS E or F range, as signal coordination-timing plans generally give priority to moving through traffic. This often results in higher delay for left-turn and side-street movements and can result in movement/approach delays in the E or F range even though they are projected to have sufficient capacity for the projected traffic volumes. Note: This intersection is planned to be converted to a grade-separated interchange in the future.

Bradley Road/Right-In/Right-Out

The northbound right-turning movement at the intersection of Bradley Road and the proposed right-in/right-out is projected to operate at LOS C or better during the peak hours in all future scenarios.

Bradley Road/Foreign Trade Zone Boulevard/Bradley Landing Boulevard

The intersection of Bradley Road/Foreign Trade Zone Boulevard/Bradley Landing Boulevard is projected to have the northbound and southbound left and through movements operating at LOS F in the short-term total scenario as an unsignalized intersection.

It is anticipated that this intersection will meet signal warrants in the long-term future. In the long term, the signalized intersection is expected to operate at an overall LOS C or better both with and without the site-generated traffic. The northbound left-turning movement will require dual left-turn lanes with the addition of the site-generated traffic. This movement is expected to operate at LOS E during the afternoon peak in the long-term total scenario.

Bradley Road/Bliss Road

All movements at the intersection of Bradley Road and the proposed Bliss Road are projected to operate at LOS C or better during the peak hours in the short-term. In the long-term, it is expected that this intersection will meet signal warrants. As a signalized intersection, the overall intersection is projected to operate at LOS B, with all movements operating at LOS D or better.

Bradley Road/Marksheffel Road

The intersection of Marksheffel/Bradley is currently signalized and is operating at a satisfactory level of service (LOS D or better) and will continue to do so in all short-term scenarios.

In the long term, a second eastbound left-turn lane will be needed, due to the high volume of traffic making the eastbound left-turn. The eastbound left-turn movement is projected to operate at LOS E during the peak hours, even with dual eastbound left-turn lanes. The overall intersection and remaining turn movements are expected to operate at LOS D or better in the long-term scenarios.

Site Access Points

In the short-term scenarios, all site access points are projected to operate at acceptable levels of service. In the long-term scenario, all site access points are projected to operate at LOS B or better with the exception of the eastbound left turn at the intersection of Bradley Landing Boulevard and the north site access. During the afternoon peak hour, this movement is anticipated to operate at LOS F if the intersection is operated with two-way stop control. It should be noted that the trip generation for the parcel accessed by the west leg of this intersection is based on prior Bradley Heights traffic studies. The parcel is not part of the currently proposed development. This intersection should be further studied with the development of the west parcel.

TRAFFIC-SIGNAL WARRANT ANALYSIS

It is anticipated that the intersections of Bradley Road/Bradley Landing Boulevard and Bradley Road/Bliss Road will meet the Eight-Hour or Four-Hour Vehicular-Volume Traffic-Signal Warrants in the long-term background and long-term total scenarios. However, it should be noted that neither of these intersections would meet warrants solely based on the site-generated traffic. Warrants would only be met with the addition of the remainder of the Bradley Heights development. Therefore, these intersections should continue to be studied as additional parcels are developed to determine when signal warrants will be met.

RECOMMENDED IMPROVEMENTS

A list of all recommended improvements in the vicinity of the site is presented in Table 4.

* * * * *

Please contact me if you have any questions regarding this report.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.



By _____
Colleen Guillotte, P.E., PTOE
Project Manager

CRG:jas

Enclosures: Tables 3-4
Appendix Table 1
Figures 1-10
Traffic Count Reports
Level of Service Reports

Tables 3-4

Table 3: Detailed Trip Generation Estimate

Land Use Code		Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated				
				Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		
					In	Out	In	Out		In	Out	In	Out	
210	Single-Family Housing		327 DU ⁽²⁾	9.46	0.19	0.54	0.64	0.36	3,093	62	176	208	117	
Notes: (1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE) (2) DU = dwelling unit														
Source: LSC Transportation Consultants, Inc.														

Table 4: Recommended Improvements

Improvement	Timing /"Trigger Point(s)"	Required Length	Responsibility
Access Points to Bradley Road (Future Public Street Intersections)			
Full-movement access to Bradley Road - Bradley Landing Boulevard (aligning with Foreign Trade Zone Boulevard)	With this development	- - -	Applicant
Full-movement access to Bradley Road - Bliss Road (approximately 1,400 feet east of Foreign Trade Zone Boulevard)	With this development	- - -	Applicant
Right-in/Right-out access to Bradley Road (approximately 965 feet west of Foreign Trade Zone Boulevard)	With this development	- - -	Applicant
Traffic Signals			
Traffic Signal Installation - Installation of the traffic signal at Bradley Road/Bradley Landing Boulevard	When signal warrants are met	- - -	To be determined by the City of Colorado Springs
Traffic Signal Installation - Installation of the traffic signal at Bradley Road/Bliss Road	When signal warrants are met	- - -	To be determined by the City of Colorado Springs
Auxiliary Turn Lanes			
Eastbound right turn lane at the Bradley Road/Bradley Landing Boulevard Intersection	With this development	235' deceleration plus 200' taper	Applicant
Northbound left turn lane at the Bradley Road/Bradley Landing Boulevard Intersection	With this development	155' deceleration plus 180' storage plus 160' taper*	Applicant
Northbound right turn lane at the Bradley Road/Bradley Landing Boulevard Intersection	With this development	155' deceleration plus 65' storage plus 160' taper	Applicant
Southbound left turn lane at the Bradley Landing Boulevard/North Site Access	With this development	155' deceleration plus 50' storage plus 160' taper*	Applicant
Eastbound right turn lane at the Bradley Road/Bliss Road Intersection	With this development	235' deceleration plus 200' taper	Applicant
Eastbound right turn lane at the Bradley Road/right-in/right-out	With this development	235' deceleration plus 200' taper	Applicant
Westbound left turn lane at the Bradley Road/Bradley Landing Boulevard Intersection	With this development	235' deceleration plus 200' storage plus 200' taper	Applicant
Westbound left turn lane at the Bradley Road/Bliss Road Intersection	With this development	235' deceleration plus 125' storage plus 200' taper	Applicant
*Tapers can be replaced with bay tapers and reduced by up to 2/3 if necessary			
Source: LSC Transportation Consultants, Inc. (3-31-2021)			

Appendix Table 1

Appendix Table 1
Area Traffic Impact Studies
Bradley Heights

Study	Consultant	Date
Bradley Heights Trip Generation Letter	LSC Transportation Consultants,	September 11, 2014
Springs at Waterview East Preliminary Plan Traffic Impact and Access Analysis	LSC Transportation Consultants,	August 24, 2018
Trails as Aspen Ridge Filing No. 1 and PUD Updated Traffic Impact and Access	LSC Transportation Consultants,	December 12, 2019
Redemption Hill Church Traffic Impact Study	LSC Transportation Consultants,	April 13, 2020
Peak Innovation Park	Kimley Horn and Associates, Inc.	April 2020
Waterview North Sketch Plan Amendment and RM-12 Rezone Master Traffic Impact Analysis	LSC Transportation Consultants, Inc.	November 17, 2020
Trails at Aspen Ridge Planned Unit Development and Site Plan Major Amendment Traffic Impact Study	Matrix	January 28, 2021
<i>Source: LSC Transportation Consultants, Inc. (March 2021)</i>		

Figures 1-10

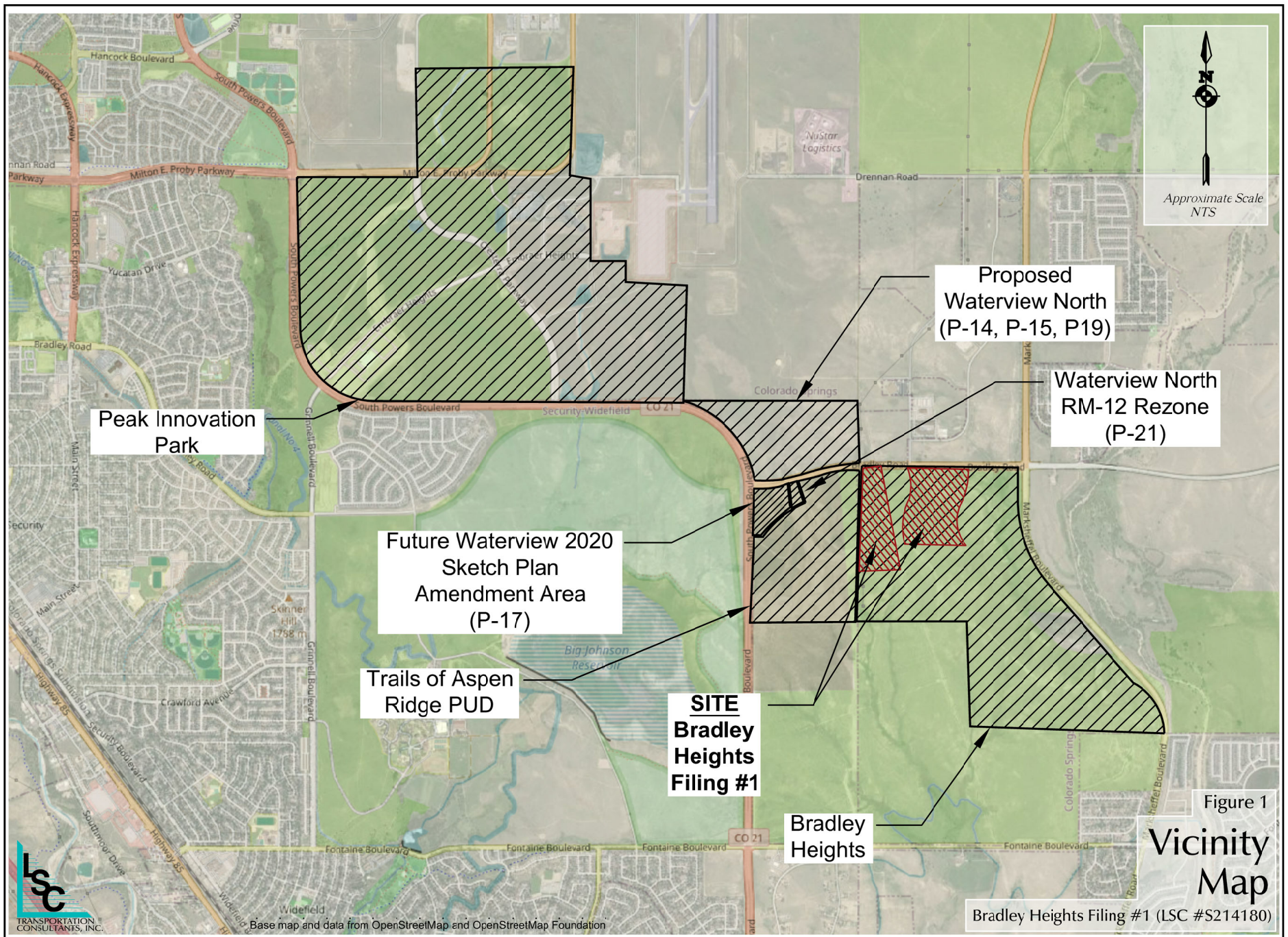
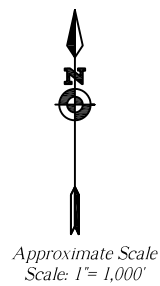
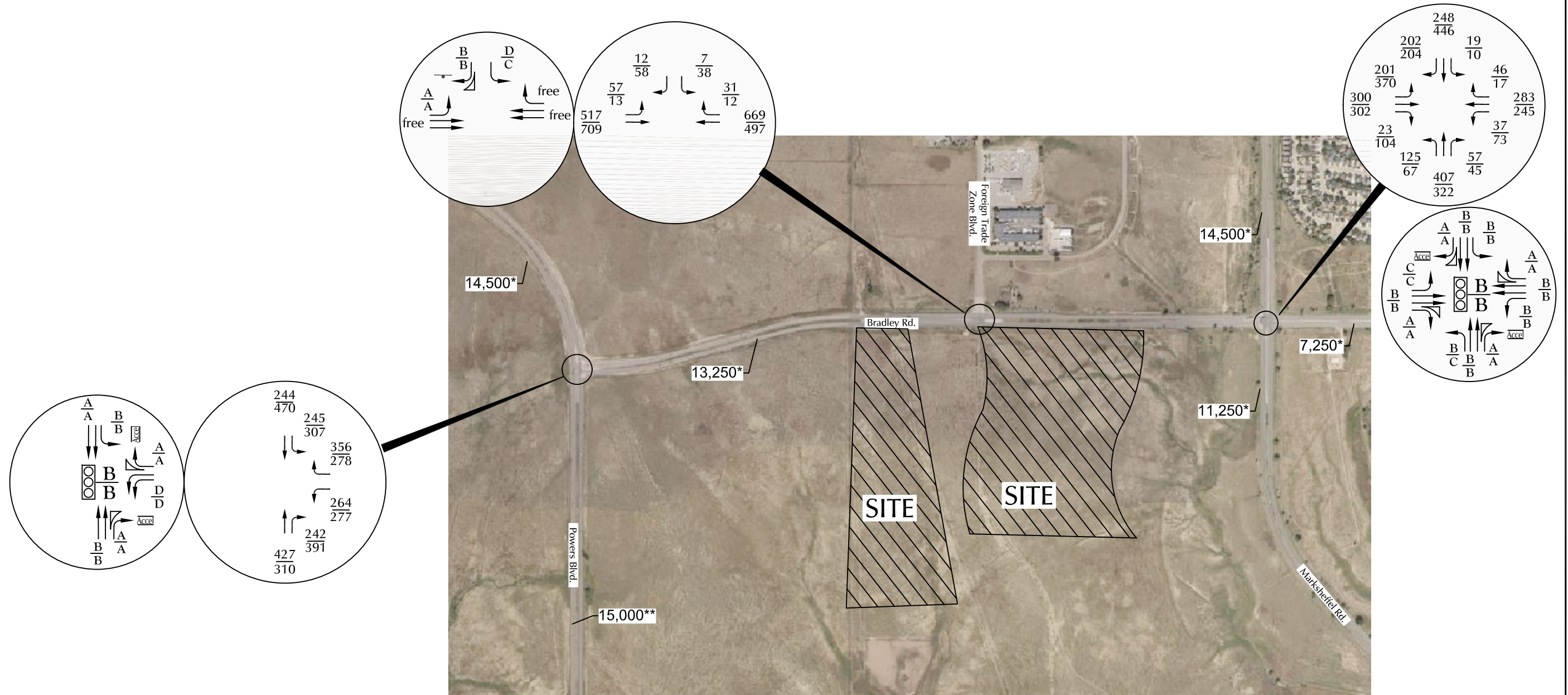




Figure 2
Site Plan

Bradley Heights Filing #1 (LSC #S214180)



LEGEND:

= Traffic Signal = Stop Sign

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)
 $\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service
 $\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service
 $\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service
 $\frac{C}{C}$ = PM Entire Intersection Peak-Hour Level of Service
 X,XXX = Average Daily Traffic (vehicles per day)

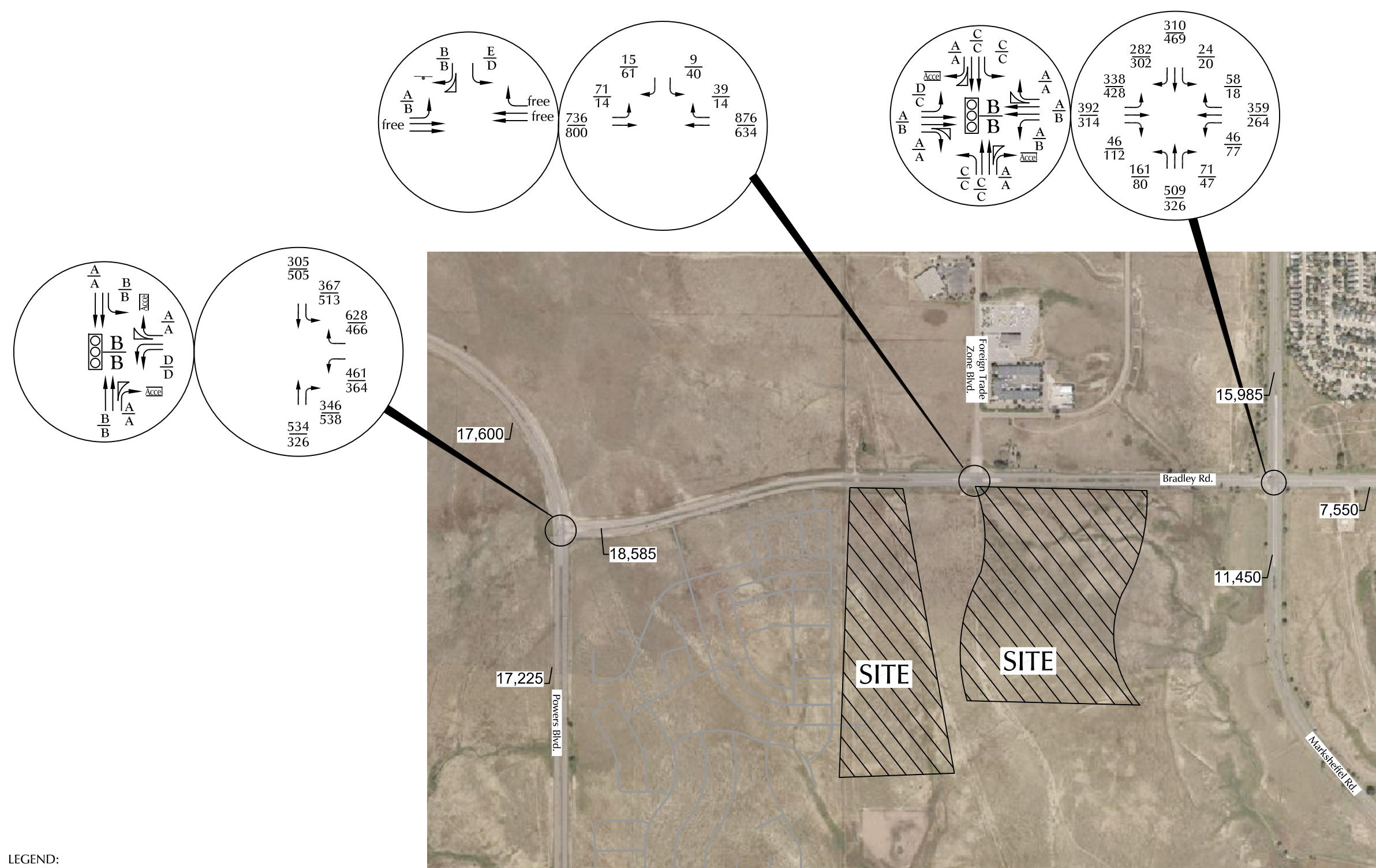
* Estimate by LSC
 ** 2019 AADT CDOT



Figure 3

Existing Traffic, Lane Geometry, Traffic Control and Level of Service

Bradley Heights Filing #1 (LSC #S214180)



LEGEND:

⊥ = Stop Sign

⊞ = Traffic Signal

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour)

$\frac{XX}{XX}$ = PM Weekday Peak-Hour Traffic (vehicles per hour)

$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service

$\frac{A}{B}$ = PM Individual Movement Peak-Hour Level of Service

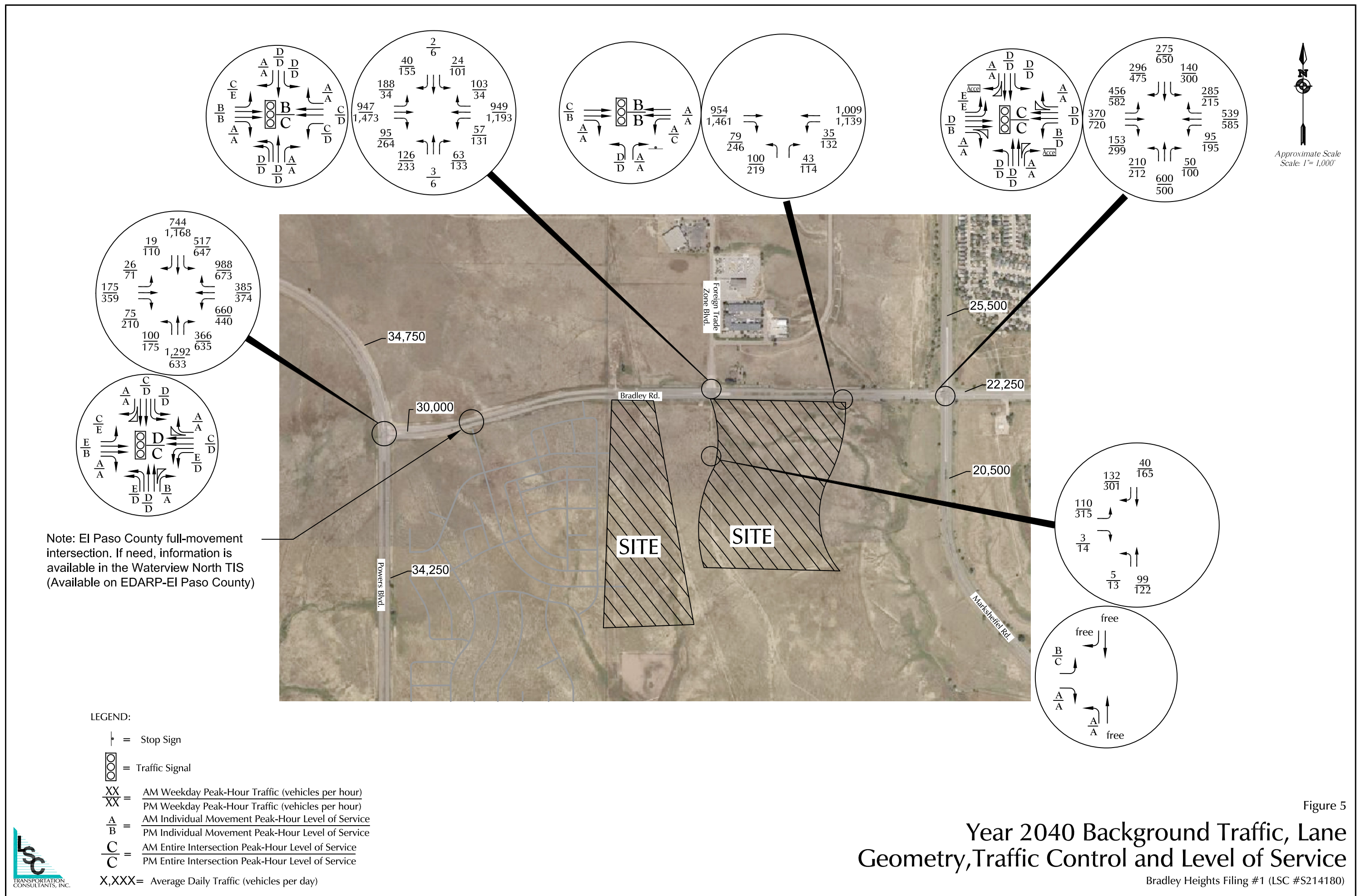
$\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service

$\frac{C}{C}$ = PM Entire Intersection Peak-Hour Level of Service

X,XXX = Average Daily Traffic (vehicles per day)



Figure 4
Short-Term Background Traffic, Lane Geometry, Traffic Control and Level of Service
 Bradley Heights Filing #1 (LSC #S214180)





Approximate Scale
Scale: 1" = 2,000'

Figure 6
**Directional Distribution of
Site Generated Traffic**

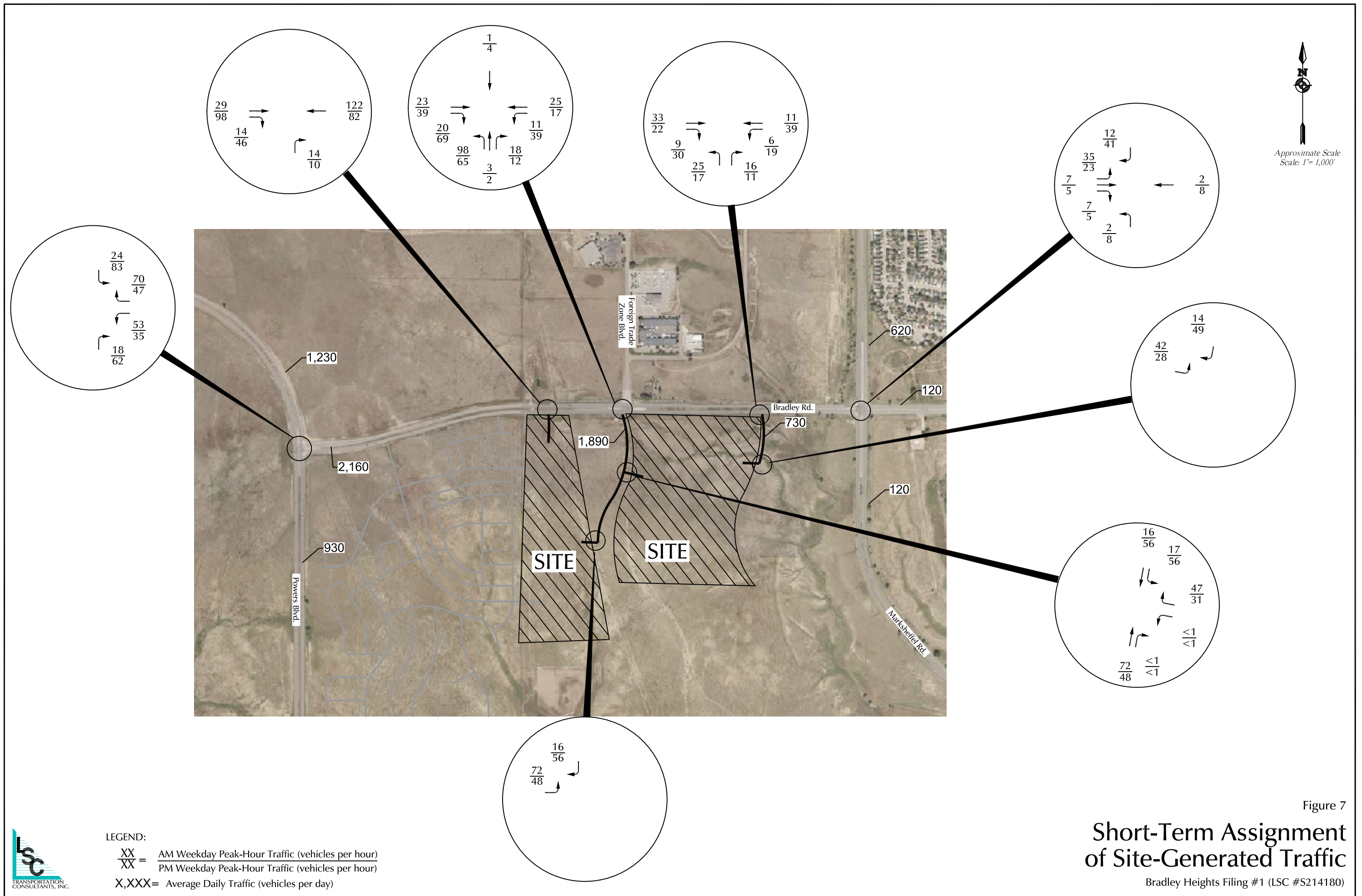
Bradley Heights Filing #1 (LSC #S214180)

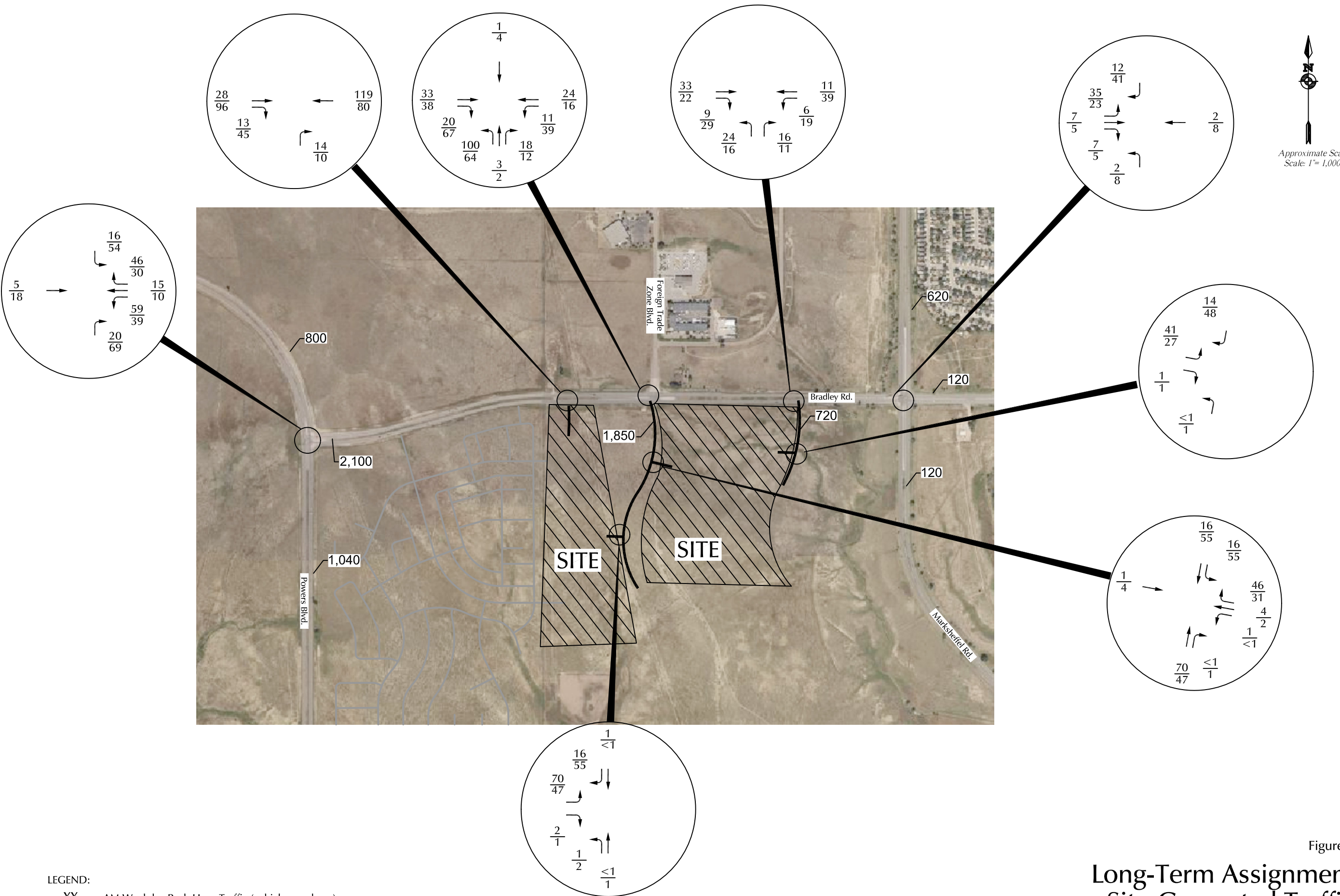


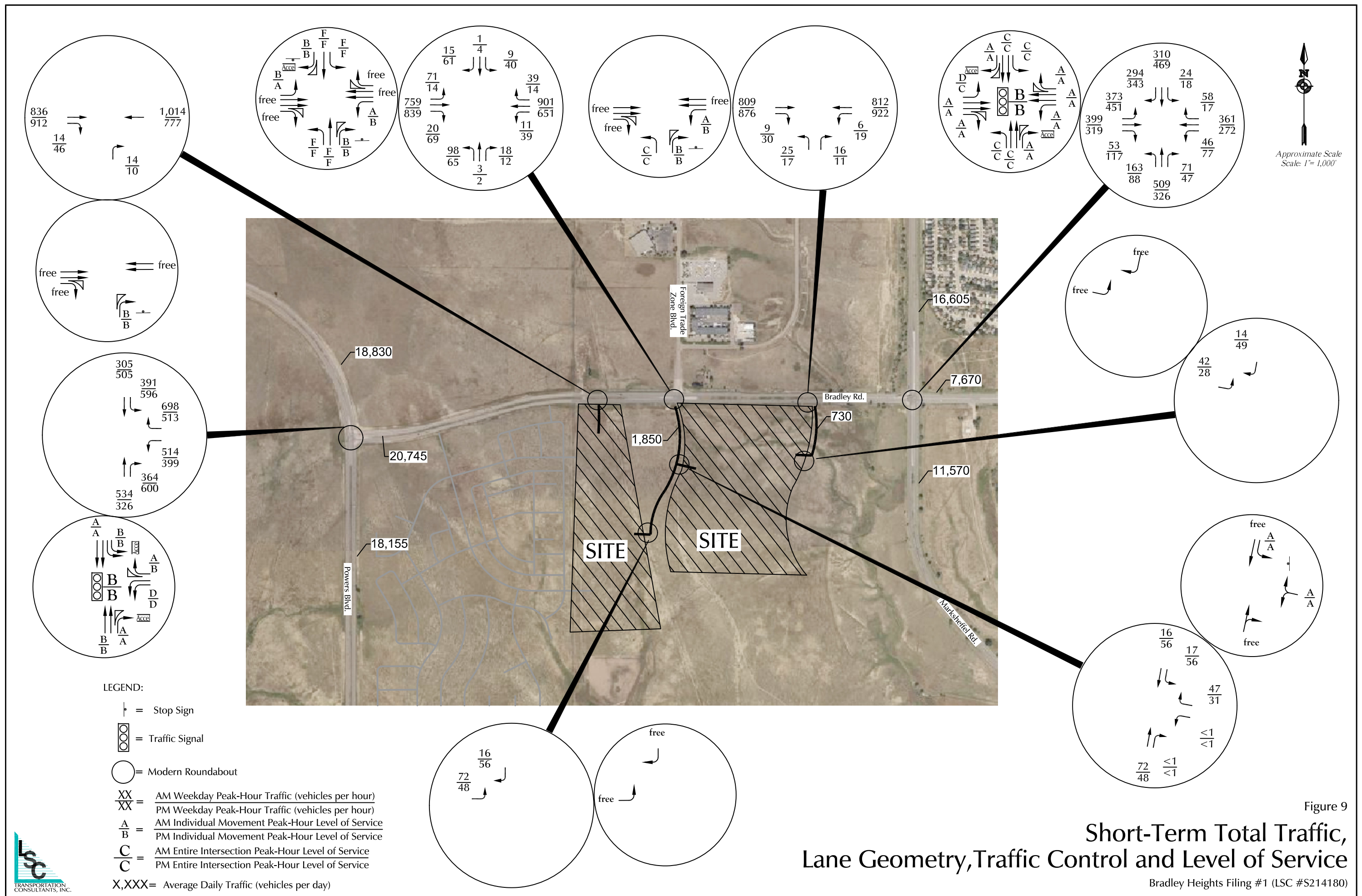
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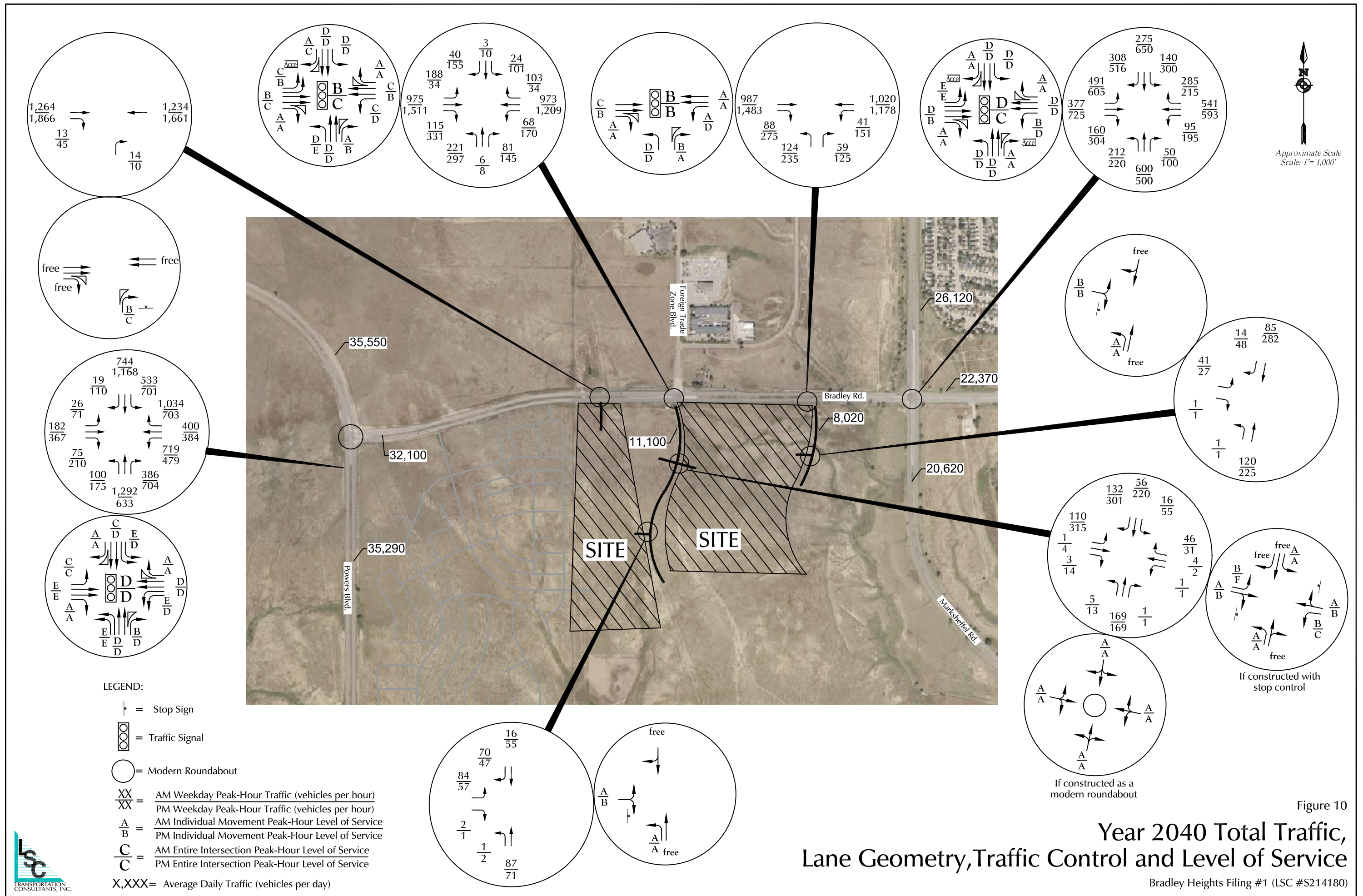
$\frac{XX\%}{XX\%}$

= $\frac{\text{Short-Term Percent Directional Distribution}}{\text{Long-Term Percent Directional Distribution}}$









Traffic Counts

LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Powers Blvd - Bradley Rd AM
Site Code : S214180
Start Date : 3/16/2021
Page No : 1

Groups Printed- Unshifted

	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
07:00 AM	65	72	0	0	137	62	0	89	0	151	0	117	67	0	184	0	0	0	0	0	472
07:15 AM	60	45	0	1	106	71	0	99	0	170	0	115	58	0	173	0	0	0	0	0	449
07:30 AM	64	60	0	0	124	64	0	89	1	154	0	101	70	0	171	0	0	0	0	0	449
07:45 AM	56	67	0	0	123	67	0	79	0	146	0	94	47	0	141	0	0	0	0	0	410
Total	245	244	0	1	490	264	0	356	1	621	0	427	242	0	669	0	0	0	0	0	1780
08:00 AM	55	57	0	0	112	92	0	53	0	145	0	104	57	0	161	0	0	0	0	0	418
08:15 AM	60	67	0	0	127	74	0	46	2	122	0	97	55	0	152	0	0	0	0	0	401
08:30 AM	62	59	0	1	122	67	0	55	0	122	0	71	56	0	127	0	0	0	0	0	371
08:45 AM	59	74	0	0	133	48	0	48	0	96	0	63	38	1	102	0	0	0	0	0	331
Total	236	257	0	1	494	281	0	202	2	485	0	335	206	1	542	0	0	0	0	0	1521
Grand Total	481	501	0	2	984	545	0	558	3	1106	0	762	448	1	1211	0	0	0	0	0	3301
Apprch %	48.9	50.9	0	0.2		49.3	0	50.5	0.3		0	62.9	37	0.1		0	0	0	0		
Total %	14.6	15.2	0	0.1	29.8	16.5	0	16.9	0.1	33.5	0	23.1	13.6	0	36.7	0	0	0	0	0	

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545 E Pikes Peak Ave, Suite 210
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719-633-2868

File Name : Powers Blvd - Bradley Rd AM
Site Code : S214180
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	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 7:00:00 AM to 8:45:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 7:00:00 AM																					
7:00:00 AM	65	72	0	0	137	62	0	89	0	151	0	117	67	0	184	0	0	0	0	0	472
7:15:00 AM	60	45	0	1	106	71	0	99	0	170	0	115	58	0	173	0	0	0	0	0	449
7:30:00 AM	64	60	0	0	124	64	0	89	1	154	0	101	70	0	171	0	0	0	0	0	449
7:45:00 AM	56	67	0	0	123	67	0	79	0	146	0	94	47	0	141	0	0	0	0	0	410
Total Volume	245	244	0	1	490	264	0	356	1	621	0	427	242	0	669	0	0	0	0	0	1780
% App. Total	50	49.8	0	0.2		42.5	0	57.3	0.2		0	63.8	36.2	0		0	0	0	0		
PHF	.942	.847	.000	.250	.894	.930	.000	.899	.250	.913	.000	.912	.864	.000	.909	.000	.000	.000	.000	.000	.943

LSC Transportation Consultants, Inc.

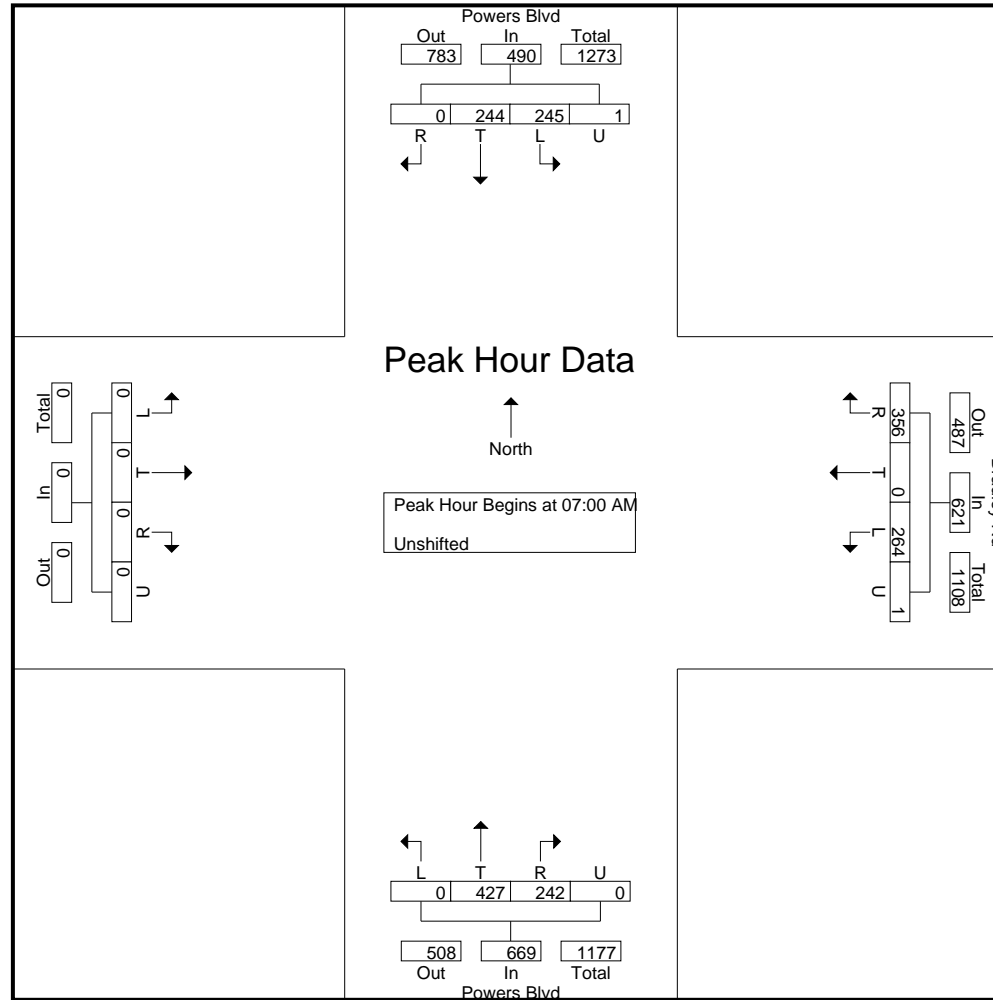
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File Name : Powers Blvd - Bradley Rd AM
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	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 7:00:00 AM to 8:45:00 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	8:00:00 AM					7:00:00 AM					7:00:00 AM					7:00:00 AM					
+0 mins.	55	57	0	0	112	62	0	89	0	151	0	117	67	0	184	0	0	0	0	0	
+5 mins.	60	67	0	0	127	71	0	99	0	170	0	115	58	0	173	0	0	0	0	0	
+10 mins.	62	59	0	1	122	64	0	89	1	154	0	101	70	0	171	0	0	0	0	0	
+15 mins.	59	74	0	0	133	67	0	79	0	146	0	94	47	0	141	0	0	0	0	0	
Total Volume	236	257	0	1	494	264	0	356	1	621	0	427	242	0	669	0	0	0	0	0	
% App. Total	47.8	52	0	0.2		42.5	0	57.3	0.2		0	63.8	36.2	0		0	0	0	0		
PHF	.952	.868	.000	.250	.929	.930	.000	.899	.250	.913	.000	.912	.864	.000	.909	.000	.000	.000	.000	.000	

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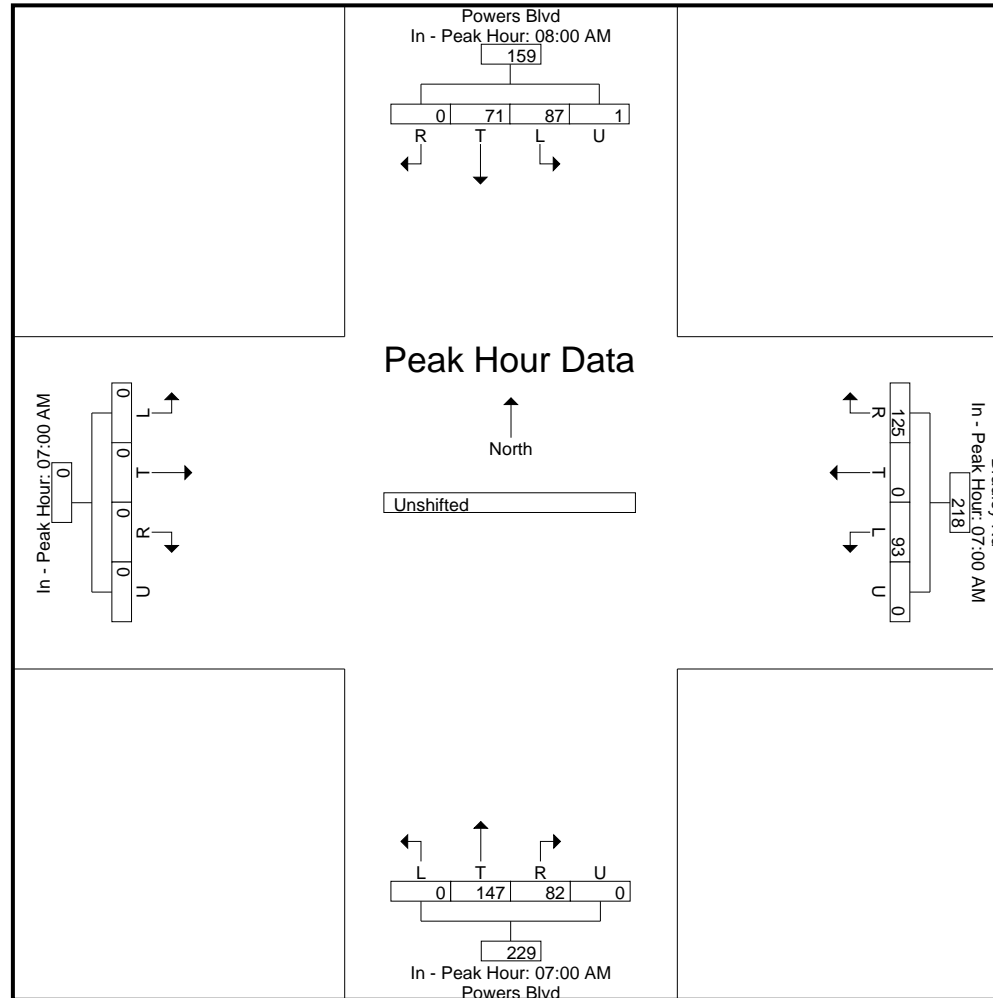
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File Name : Powers Blvd - Bradley Rd PM
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Page No : 1

Groups Printed- Unshifted

	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	72	109	0	0	181	54	0	75	0	129	0	72	75	0	147	0	0	0	0	0	457
04:15 PM	68	105	0	0	173	74	0	82	0	156	0	85	102	0	187	0	0	0	0	0	516
04:30 PM	87	110	0	0	197	72	0	73	1	146	0	78	111	0	189	0	0	0	0	0	532
04:45 PM	69	128	0	0	197	71	0	60	0	131	0	73	100	0	173	0	0	0	0	0	501
Total	296	452	0	0	748	271	0	290	1	562	0	308	388	0	696	0	0	0	0	0	2006
05:00 PM	83	127	0	0	210	60	0	63	0	123	0	74	78	0	152	0	0	0	0	0	485
05:15 PM	75	110	0	0	185	58	0	45	0	103	0	76	102	0	178	0	0	0	0	0	466
05:30 PM	61	111	0	0	172	55	0	49	0	104	0	69	106	0	175	0	0	0	0	0	451
05:45 PM	59	97	0	0	156	52	0	44	0	96	0	86	73	0	159	0	0	0	0	0	411
Total	278	445	0	0	723	225	0	201	0	426	0	305	359	0	664	0	0	0	0	0	1813
Grand Total	574	897	0	0	1471	496	0	491	1	988	0	613	747	0	1360	0	0	0	0	0	3819
Apprch %	39	61	0	0		50.2	0	49.7	0.1		0	45.1	54.9	0		0	0	0	0		
Total %	15	23.5	0	0	38.5	13	0	12.9	0	25.9	0	16.1	19.6	0	35.6	0	0	0	0	0	

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File Name : Powers Blvd - Bradley Rd PM
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	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:15:00 PM																					
4:15:00 PM	68	105	0	0	173	74	0	82	0	156	0	85	102	0	187	0	0	0	0	0	516
4:30:00 PM	87	110	0	0	197	72	0	73	1	146	0	78	111	0	189	0	0	0	0	0	532
4:45:00 PM	69	128	0	0	197	71	0	60	0	131	0	73	100	0	173	0	0	0	0	0	501
5:00:00 PM	83	127	0	0	210	60	0	63	0	123	0	74	78	0	152	0	0	0	0	0	485
Total Volume	307	470	0	0	777	277	0	278	1	556	0	310	391	0	701	0	0	0	0	0	2034
% App. Total	39.5	60.5	0	0		49.8	0	50	0.2		0	44.2	55.8	0		0	0	0	0		
PHF	.882	.918	.000	.000	.925	.936	.000	.848	.250	.891	.000	.912	.881	.000	.927	.000	.000	.000	.000	.000	.956

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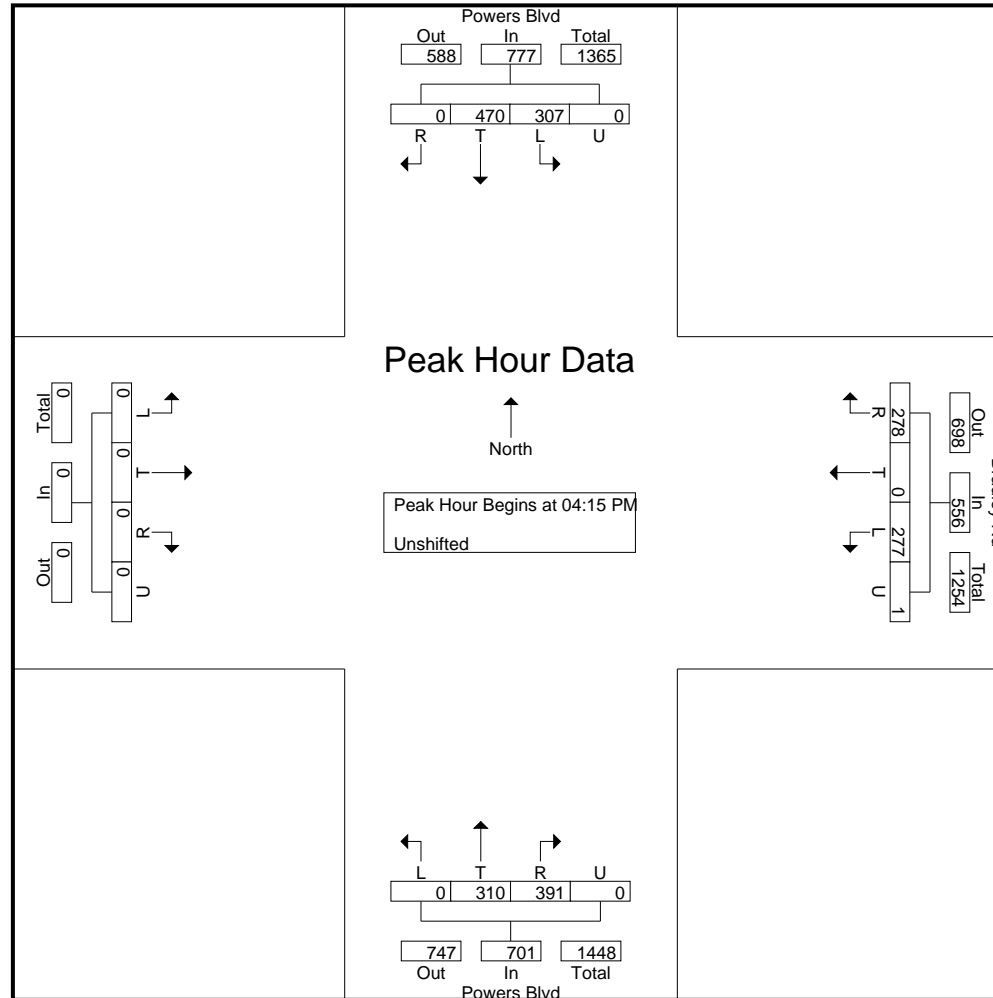
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File Name : Powers Blvd - Bradley Rd PM
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	Powers Blvd Southbound					Bradley Rd Westbound					Powers Blvd Northbound					Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	4:30:00 PM					4:00:00 PM					4:15:00 PM					4:00:00 PM					
+0 mins.	87	110	0	0	197	54	0	75	0	129	0	85	102	0	187	0	0	0	0	0	
+5 mins.	69	128	0	0	197	74	0	82	0	156	0	78	111	0	189	0	0	0	0	0	
+10 mins.	83	127	0	0	210	72	0	73	1	146	0	73	100	0	173	0	0	0	0	0	
+15 mins.	75	110	0	0	185	71	0	60	0	131	0	74	78	0	152	0	0	0	0	0	
Total Volume	314	475	0	0	789	271	0	290	1	562	0	310	391	0	701	0	0	0	0	0	
% App. Total	39.8	60.2	0	0		48.2	0	51.6	0.2		0	44.2	55.8	0		0	0	0	0		
PHF	.902	.928	.000	.000	.939	.916	.000	.884	.250	.901	.000	.912	.881	.000	.927	.000	.000	.000	.000	.000	

LSC Transportation Consultants, Inc.

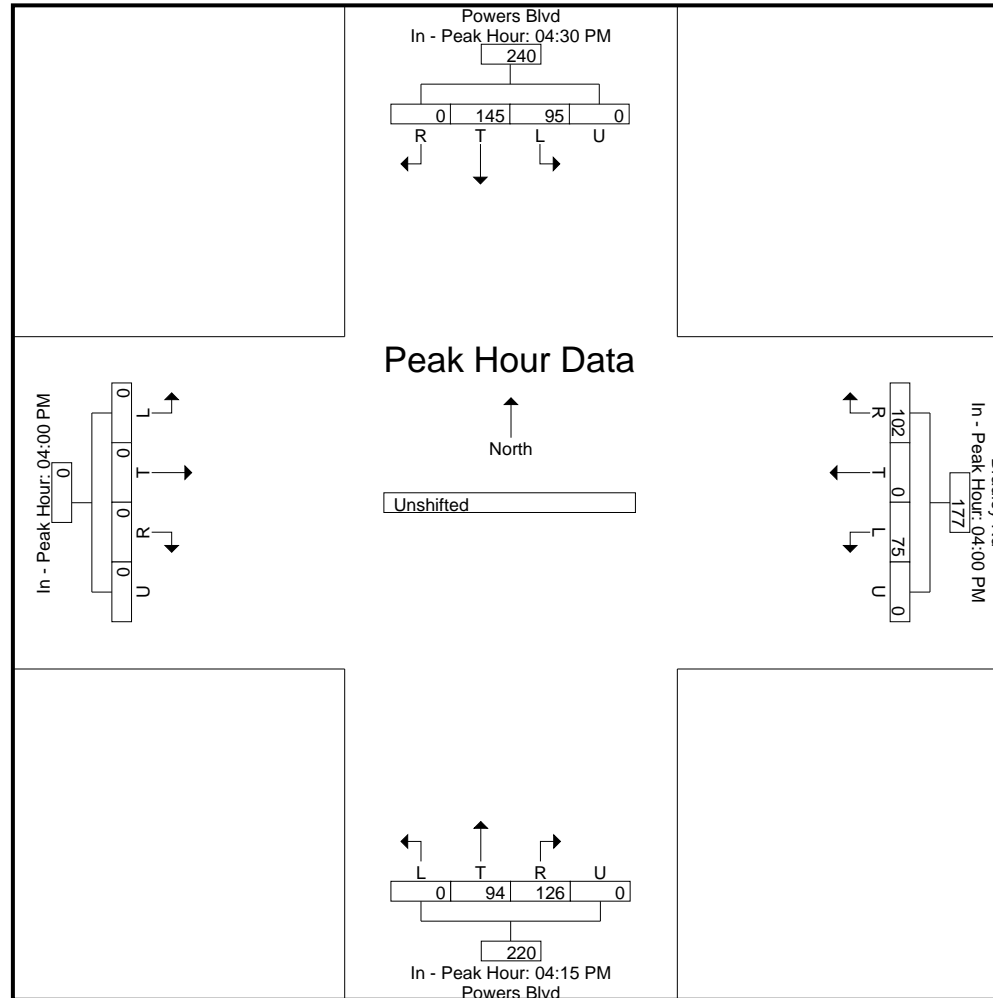
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File Name : Foreign Trade Zone Blvd - Bradley Rd AM
Site Code : S214180
Start Date : 3/10/2021
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Groups Printed- Unshifted

	Foreign Trade Zone Blvd Southbound					Bradley Rd Westbound					Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
07:00 AM	3	0	2	0	5	0	169	10	0	179	0	0	0	0	0	15	140	0	0	155	339
07:15 AM	3	0	3	0	6	0	180	6	0	186	0	0	0	0	0	12	139	0	0	151	343
07:30 AM	0	0	4	0	4	0	161	6	0	167	0	0	0	0	0	20	132	0	0	152	323
07:45 AM	1	0	3	0	4	0	159	9	0	168	0	0	0	0	0	10	106	0	0	116	288
Total	7	0	12	0	19	0	669	31	0	700	0	0	0	0	0	57	517	0	0	574	1293
08:00 AM	2	0	4	0	6	0	136	6	0	142	0	0	0	0	0	19	102	2	0	123	271
08:15 AM	3	0	10	0	13	0	136	4	0	140	0	0	0	0	0	19	79	0	0	98	251
08:30 AM	5	0	22	0	27	0	133	2	0	135	0	0	0	0	0	21	67	0	0	88	250
08:45 AM	4	0	9	0	13	0	87	4	0	91	0	0	0	0	0	18	71	0	0	89	193
Total	14	0	45	0	59	0	492	16	0	508	0	0	0	0	0	77	319	2	0	398	965
Grand Total	21	0	57	0	78	0	1161	47	0	1208	0	0	0	0	0	134	836	2	0	972	2258
Apprch %	26.9	0	73.1	0		0	96.1	3.9	0		0	0	0	0		13.8	86	0.2	0		
Total %	0.9	0	2.5	0	3.5	0	51.4	2.1	0	53.5	0	0	0	0	0	5.9	37	0.1	0	43	

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File Name : Foreign Trade Zone Blvd - Bradley Rd AM
Site Code : S214180
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	Foreign Trade Zone Blvd Southbound					Bradley Rd Westbound					Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 7:00:00 AM to 8:45:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 7:00:00 AM																					
7:00:00 AM	3	0	2	0	5	0	169	10	0	179	0	0	0	0	0	15	140	0	0	155	339
7:15:00 AM	3	0	3	0	6	0	180	6	0	186	0	0	0	0	0	12	139	0	0	151	343
7:30:00 AM	0	0	4	0	4	0	161	6	0	167	0	0	0	0	0	20	132	0	0	152	323
7:45:00 AM	1	0	3	0	4	0	159	9	0	168	0	0	0	0	0	10	106	0	0	116	288
Total Volume	7	0	12	0	19	0	669	31	0	700	0	0	0	0	0	57	517	0	0	574	1293
% App. Total	36.8	0	63.2	0		0	95.6	4.4	0		0	0	0	0		9.9	90.1	0	0		
PHF	.583	.000	.750	.000	.792	.000	.929	.775	.000	.941	.000	.000	.000	.000	.000	.713	.923	.000	.000	.926	.942

LSC Transportation Consultants, Inc.

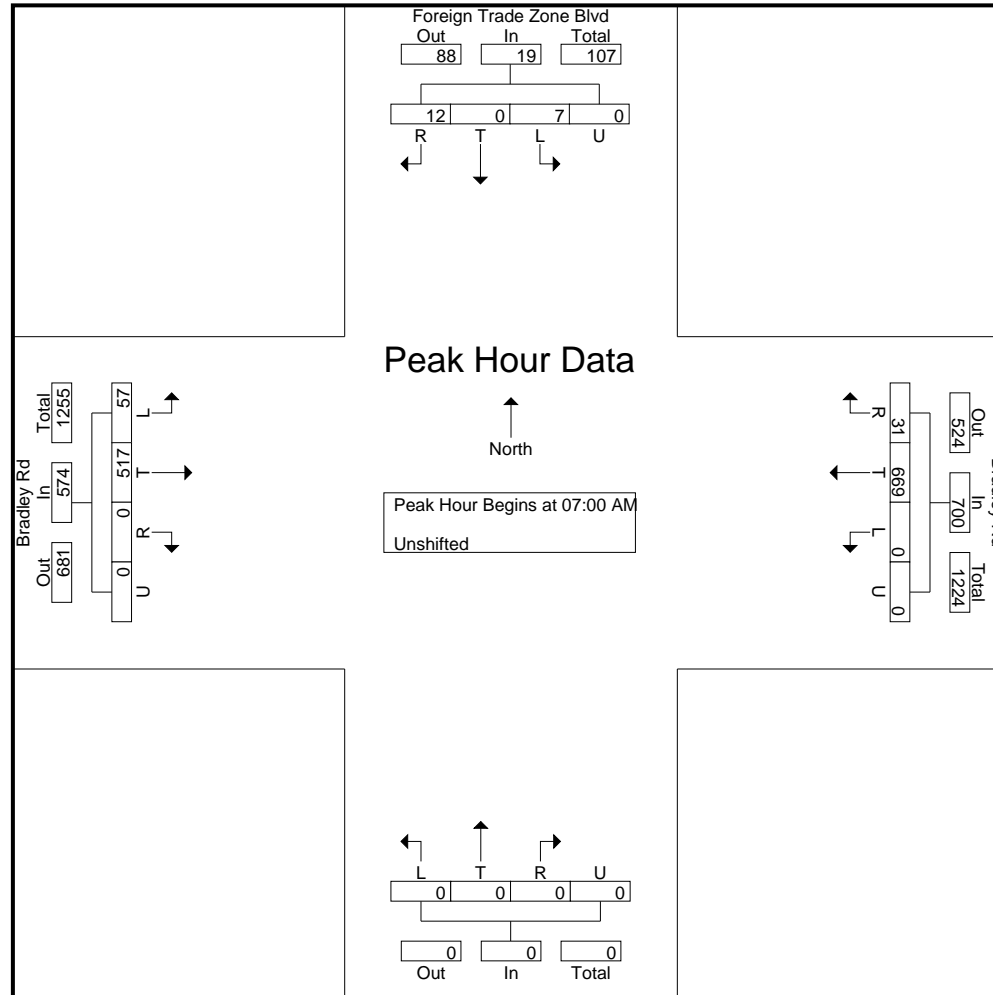
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File Name : Foreign Trade Zone Blvd - Bradley Rd AM
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	Foreign Trade Zone Blvd Southbound					Bradley Rd Westbound					Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 7:00:00 AM to 8:45:00 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	8:00:00 AM					7:00:00 AM					7:00:00 AM					7:00:00 AM					
+0 mins.	2	0	4	0	6	0	169	10	0	179	0	0	0	0	0	15	140	0	0	155	
+5 mins.	3	0	10	0	13	0	180	6	0	186	0	0	0	0	0	12	139	0	0	151	
+10 mins.	5	0	22	0	27	0	161	6	0	167	0	0	0	0	0	20	132	0	0	152	
+15 mins.	4	0	9	0	13	0	159	9	0	168	0	0	0	0	0	10	106	0	0	116	
Total Volume	14	0	45	0	59	0	669	31	0	700	0	0	0	0	0	57	517	0	0	574	
% App. Total	23.7	0	76.3	0		0	95.6	4.4	0		0	0	0	0		9.9	90.1	0	0		
PHF	.700	.000	.511	.000	.546	.000	.929	.775	.000	.941	.000	.000	.000	.000	.000	.713	.923	.000	.000	.926	

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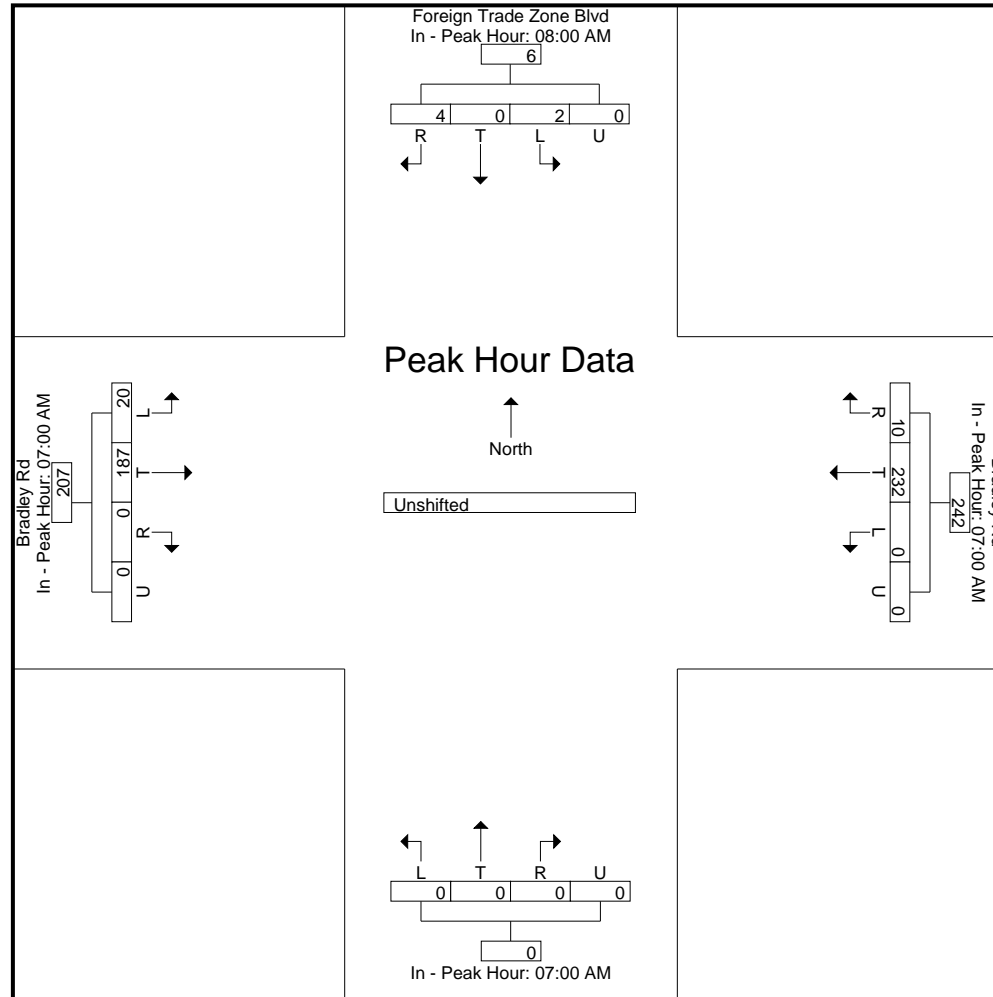
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File Name : Foreign Trade Zone Blvd - Bradley Rd PM
Site Code : S214180
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Page No : 1

Groups Printed- Unshifted

	Foreign Trade Zone Blvd Southbound					Bradley Rd Westbound					Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	9	0	21	0	30	0	109	9	0	118	0	0	0	0	0	4	186	0	0	190	338
04:15 PM	13	0	15	0	28	0	140	2	0	142	0	0	0	0	0	7	180	0	0	187	357
04:30 PM	11	0	21	0	32	0	108	1	0	109	0	0	0	0	0	2	156	0	1	159	300
04:45 PM	5	0	1	0	6	0	140	0	0	140	0	0	0	0	0	0	187	0	1	188	334
Total	38	0	58	0	96	0	497	12	0	509	0	0	0	0	0	13	709	0	2	724	1329
05:00 PM	4	0	3	0	7	0	90	0	0	90	0	0	0	0	0	1	144	0	0	145	242
05:15 PM	2	0	3	0	5	0	109	0	0	109	0	0	0	0	0	1	161	0	0	162	276
05:30 PM	3	0	8	0	11	0	79	0	0	79	0	0	0	0	0	0	153	0	1	154	244
05:45 PM	0	0	7	0	7	0	110	0	0	110	0	0	0	0	0	0	125	0	1	126	243
Total	9	0	21	0	30	0	388	0	0	388	0	0	0	0	0	2	583	0	2	587	1005
Grand Total	47	0	79	0	126	0	885	12	0	897	0	0	0	0	0	15	1292	0	4	1311	2334
Apprch %	37.3	0	62.7	0		0	98.7	1.3	0		0	0	0	0		1.1	98.6	0	0.3		
Total %	2	0	3.4	0	5.4	0	37.9	0.5	0	38.4	0	0	0	0	0	0.6	55.4	0	0.2	56.2	

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File Name : Foreign Trade Zone Blvd - Bradley Rd PM
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	Foreign Trade Zone Blvd Southbound					Bradley Rd Westbound					Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:00:00 PM																					
4:00:00 PM	9	0	21	0	30	0	109	9	0	118	0	0	0	0	0	4	186	0	0	190	338
4:15:00 PM	13	0	15	0	28	0	140	2	0	142	0	0	0	0	0	7	180	0	0	187	357
4:30:00 PM	11	0	21	0	32	0	108	1	0	109	0	0	0	0	0	2	156	0	1	159	300
4:45:00 PM	5	0	1	0	6	0	140	0	0	140	0	0	0	0	0	0	187	0	1	188	334
Total Volume	38	0	58	0	96	0	497	12	0	509	0	0	0	0	0	13	709	0	2	724	1329
% App. Total	39.6	0	60.4	0		0	97.6	2.4	0		0	0	0	0		1.8	97.9	0	0.3		
PHF	.731	.000	.690	.000	.750	.000	.888	.333	.000	.896	.000	.000	.000	.000	.000	.464	.948	.000	.500	.953	.931

LSC Transportation Consultants, Inc.

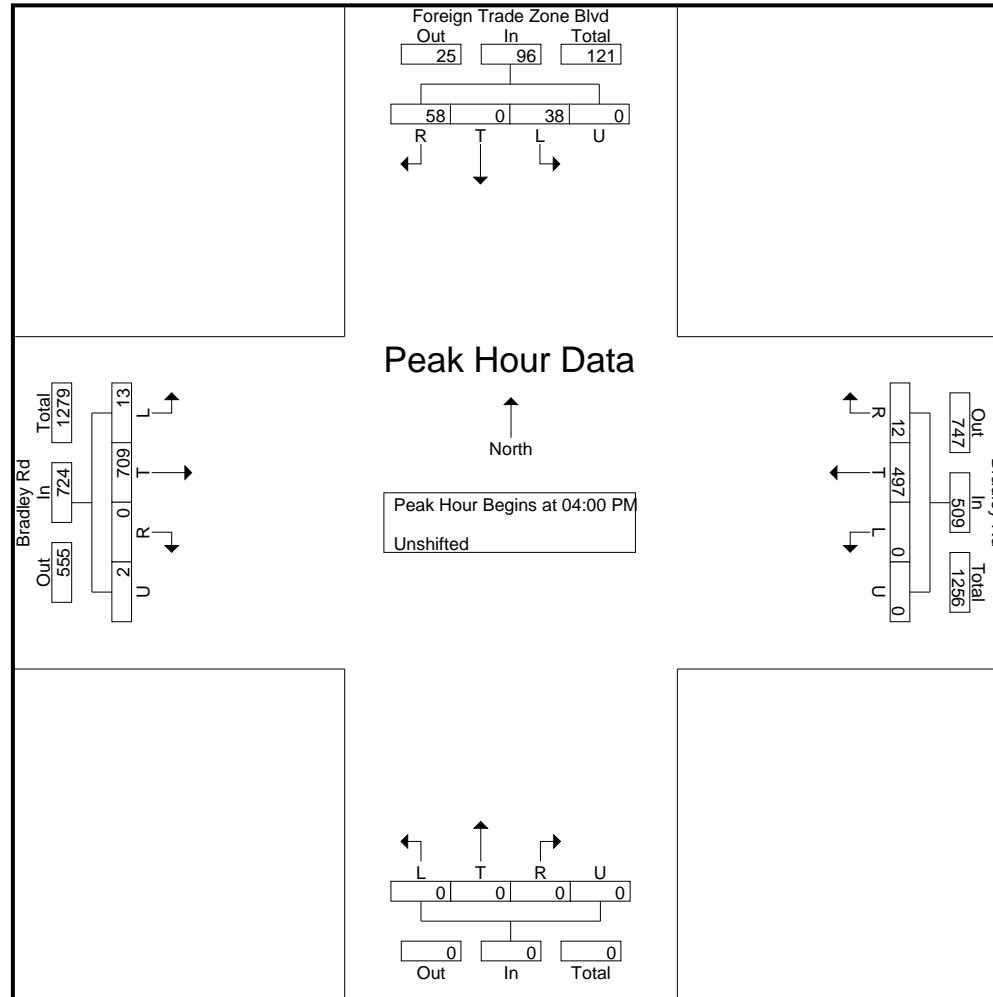
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File Name : Foreign Trade Zone Blvd - Bradley Rd PM

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File Name : Foreign Trade Zone Blvd - Bradley Rd PM
Site Code : S214180
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	Foreign Trade Zone Blvd Southbound					Bradley Rd Westbound					Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	4:00:00 PM					4:00:00 PM					4:00:00 PM					4:00:00 PM					
+0 mins.	9	0	21	0	30	0	109	9	0	118	0	0	0	0	0	4	186	0	0	190	
+5 mins.	13	0	15	0	28	0	140	2	0	142	0	0	0	0	0	7	180	0	0	187	
+10 mins.	11	0	21	0	32	0	108	1	0	109	0	0	0	0	0	2	156	0	1	159	
+15 mins.	5	0	1	0	6	0	140	0	0	140	0	0	0	0	0	0	187	0	1	188	
Total Volume	38	0	58	0	96	0	497	12	0	509	0	0	0	0	0	13	709	0	2	724	
% App. Total	39.6	0	60.4	0		0	97.6	2.4	0		0	0	0	0		1.8	97.9	0	0.3		
PHF	.731	.000	.690	.000	.750	.000	.888	.333	.000	.896	.000	.000	.000	.000	.000	.464	.948	.000	.500	.953	

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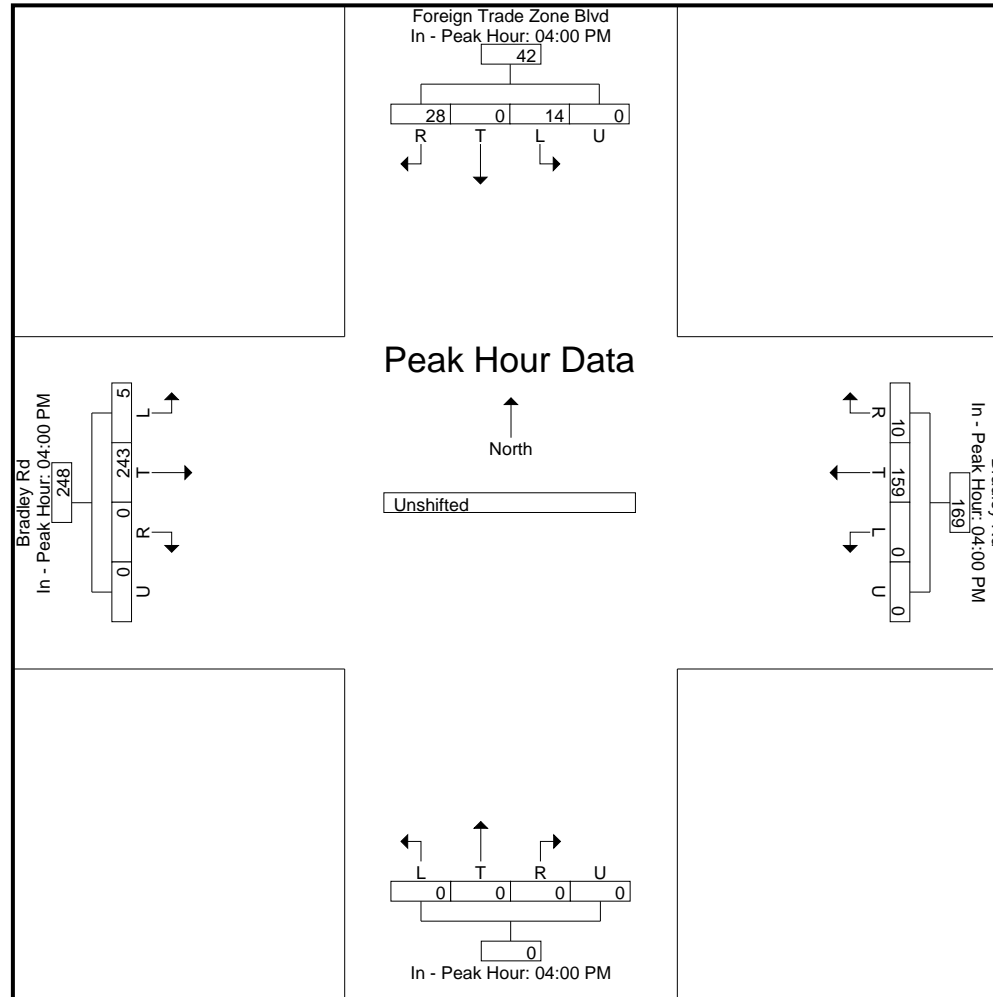
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Colorado Springs, CO 80905
719-633-2868

File Name : Foreign Trade Zone Blvd - Bradley Rd PM

Site Code : S214180

Start Date : 3/10/2021

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545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Marksheffel Rd - Bradley Rd AM
Site Code : S214180
Start Date : 3/11/2021
Page No : 1

Groups Printed- Unshifted

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
07:00 AM	9	55	30	0	94	8	82	21	1	112	27	103	20	0	150	25	63	4	0	92	448
07:15 AM	7	57	54	2	120	8	49	7	0	64	27	96	14	0	137	47	73	4	0	124	445
07:30 AM	0	71	58	0	129	8	55	7	0	70	43	106	12	0	161	62	86	3	0	151	511
07:45 AM	3	65	60	0	128	13	97	11	0	121	28	102	11	0	141	67	78	12	0	157	547
Total	19	248	202	2	471	37	283	46	1	367	125	407	57	0	589	201	300	23	0	524	1951
08:00 AM	6	53	63	0	122	10	60	3	0	73	16	67	8	0	91	39	67	4	0	110	396
08:15 AM	1	47	52	0	100	4	42	3	0	49	14	63	8	1	86	38	44	5	0	87	322
08:30 AM	3	44	60	1	108	1	46	2	1	50	21	74	9	1	105	32	63	8	0	103	366
08:45 AM	0	30	36	0	66	3	47	9	1	60	14	64	4	1	83	28	70	6	0	104	313
Total	10	174	211	1	396	18	195	17	2	232	65	268	29	3	365	137	244	23	0	404	1397
09:00 AM	0	14	39	0	53	4	34	1	0	39	9	48	1	0	58	19	35	8	0	62	212
Grand Total	29	436	452	3	920	59	512	64	3	638	199	723	87	3	1012	357	579	54	0	990	3560
Apprch %	3.2	47.4	49.1	0.3		9.2	80.3	10	0.5		19.7	71.4	8.6	0.3		36.1	58.5	5.5	0		
Total %	0.8	12.2	12.7	0.1	25.8	1.7	14.4	1.8	0.1	17.9	5.6	20.3	2.4	0.1	28.4	10	16.3	1.5	0	27.8	

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719-633-2868

File Name : Marksheffel Rd - Bradley Rd AM
Site Code : S214180
Start Date : 3/11/2021
Page No : 2

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 7:00:00 AM to 9:00:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 7:00:00 AM																					
7:00:00 AM	9	55	30	0	94	8	82	21	1	112	27	103	20	0	150	25	63	4	0	92	448
7:15:00 AM	7	57	54	2	120	8	49	7	0	64	27	96	14	0	137	47	73	4	0	124	445
7:30:00 AM	0	71	58	0	129	8	55	7	0	70	43	106	12	0	161	62	86	3	0	151	511
7:45:00 AM	3	65	60	0	128	13	97	11	0	121	28	102	11	0	141	67	78	12	0	157	547
Total Volume	19	248	202	2	471	37	283	46	1	367	125	407	57	0	589	201	300	23	0	524	1951
% App. Total	4	52.7	42.9	0.4		10.1	77.1	12.5	0.3		21.2	69.1	9.7	0		38.4	57.3	4.4	0		
PHF	.528	.873	.842	.250	.913	.712	.729	.548	.250	.758	.727	.960	.713	.000	.915	.750	.872	.479	.000	.834	.892

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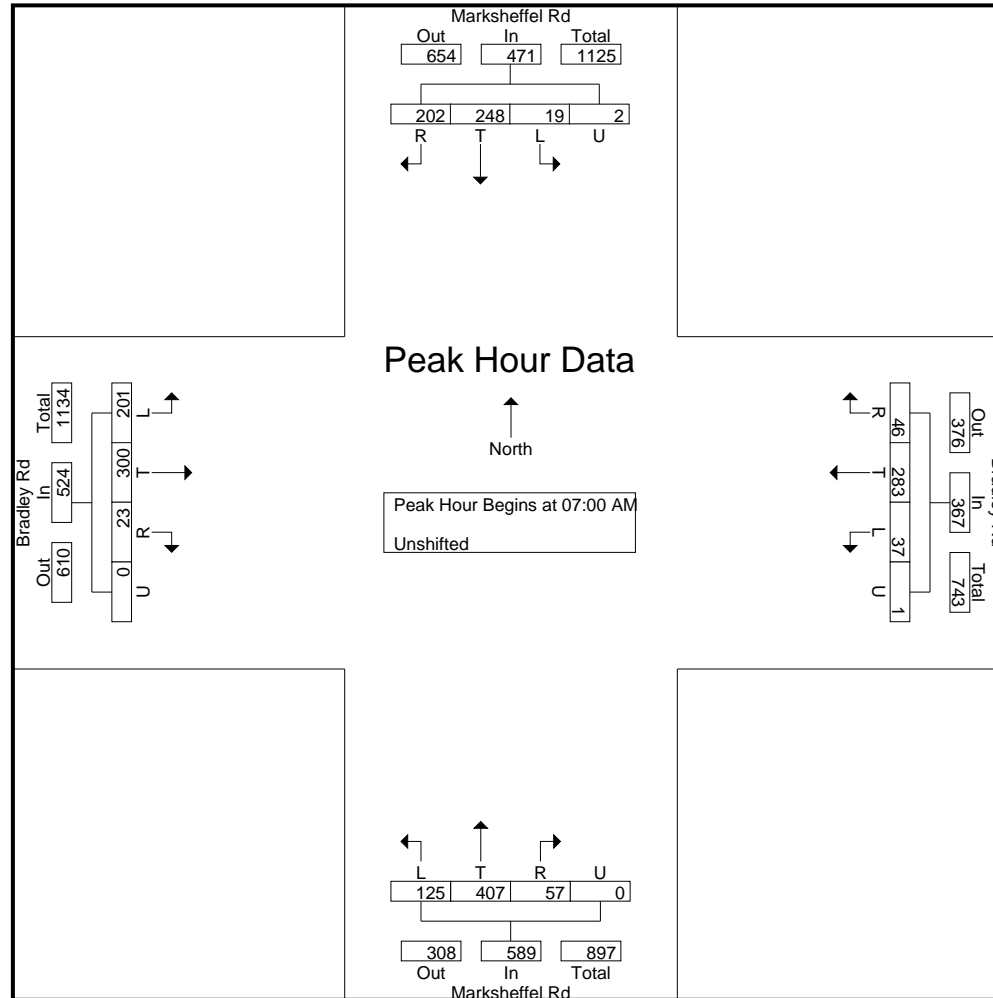
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719-633-2868

File Name : Marksheffel Rd - Bradley Rd AM

Site Code : S214180

Start Date : 3/11/2021

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File Name : Marksheffel Rd - Bradley Rd AM
Site Code : S214180
Start Date : 3/11/2021
Page No : 4

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 7:00:00 AM to 9:00:00 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	7:15:00 AM					7:00:00 AM					7:00:00 AM					7:15:00 AM					
+0 mins.	7	57	54	2	120	8	82	21	1	112	27	103	20	0	150	47	73	4	0	124	
+5 mins.	0	71	58	0	129	8	49	7	0	64	27	96	14	0	137	62	86	3	0	151	
+10 mins.	3	65	60	0	128	8	55	7	0	70	43	106	12	0	161	67	78	12	0	157	
+15 mins.	6	53	63	0	122	13	97	11	0	121	28	102	11	0	141	39	67	4	0	110	
Total Volume	16	246	235	2	499	37	283	46	1	367	125	407	57	0	589	215	304	23	0	542	
% App. Total	3.2	49.3	47.1	0.4		10.1	77.1	12.5	0.3		21.2	69.1	9.7	0		39.7	56.1	4.2	0		
PHF	.571	.866	.933	.250	.967	.712	.729	.548	.250	.758	.727	.960	.713	.000	.915	.802	.884	.479	.000	.863	

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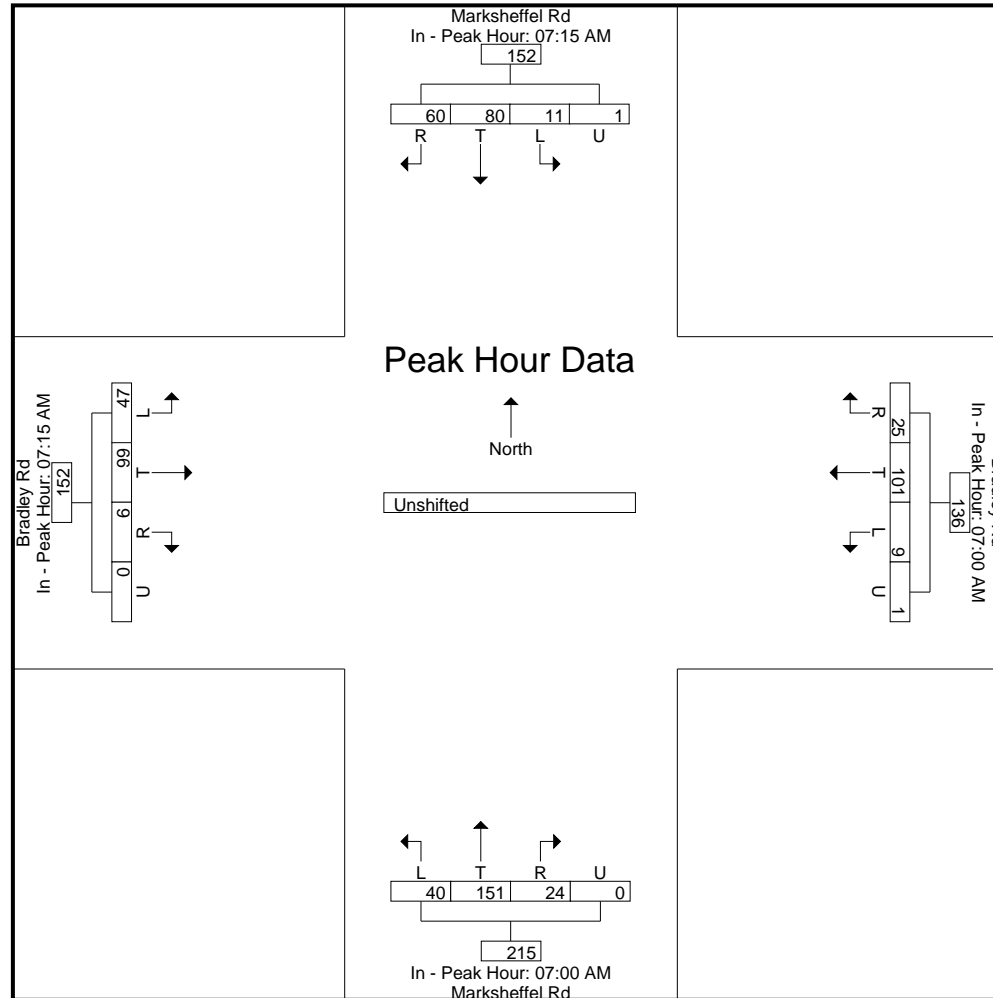
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719-633-2868

File Name : Marksheffel Rd - Bradley Rd AM

Site Code : S214180

Start Date : 3/11/2021

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LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Marksheffel Rd - Bradley Rd PM
Site Code : S214180
Start Date : 3/18/2021
Page No : 1

Groups Printed- Unshifted

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	3	83	50	3	139	13	52	4	0	69	17	89	12	0	118	75	69	22	0	166	492
04:15 PM	1	110	34	2	147	32	66	4	0	102	27	93	16	0	136	90	68	26	1	185	570
04:30 PM	2	108	66	1	177	13	47	5	0	65	16	55	6	0	77	104	80	28	0	212	531
04:45 PM	4	100	59	0	163	20	69	6	0	95	16	92	15	0	123	88	78	23	0	189	570
Total	10	401	209	6	626	78	234	19	0	331	76	329	49	0	454	357	295	99	1	752	2163
05:00 PM	3	128	45	0	176	8	63	2	0	73	8	82	8	2	100	88	76	27	0	191	540
05:15 PM	4	113	65	0	182	12	42	3	0	57	18	95	10	0	123	102	59	16	0	177	539
05:30 PM	5	97	47	0	149	9	45	4	0	58	8	79	11	1	99	69	53	19	0	141	447
05:45 PM	5	119	36	0	160	7	38	5	0	50	15	78	15	1	109	50	66	19	1	136	455
Total	17	457	193	0	667	36	188	14	0	238	49	334	44	4	431	309	254	81	1	645	1981
Grand Total	27	858	402	6	1293	114	422	33	0	569	125	663	93	4	885	666	549	180	2	1397	4144
Apprch %	2.1	66.4	31.1	0.5		20	74.2	5.8	0		14.1	74.9	10.5	0.5		47.7	39.3	12.9	0.1		
Total %	0.7	20.7	9.7	0.1	31.2	2.8	10.2	0.8	0	13.7	3	16	2.2	0.1	21.4	16.1	13.2	4.3	0	33.7	

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File Name : Marksheffel Rd - Bradley Rd PM
Site Code : S214180
Start Date : 3/18/2021
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	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:15:00 PM																					
4:15:00 PM	1	110	34	2	147	32	66	4	0	102	27	93	16	0	136	90	68	26	1	185	570
4:30:00 PM	2	108	66	1	177	13	47	5	0	65	16	55	6	0	77	104	80	28	0	212	531
4:45:00 PM	4	100	59	0	163	20	69	6	0	95	16	92	15	0	123	88	78	23	0	189	570
5:00:00 PM	3	128	45	0	176	8	63	2	0	73	8	82	8	2	100	88	76	27	0	191	540
Total Volume	10	446	204	3	663	73	245	17	0	335	67	322	45	2	436	370	302	104	1	777	2211
% App. Total	1.5	67.3	30.8	0.5		21.8	73.1	5.1	0		15.4	73.9	10.3	0.5		47.6	38.9	13.4	0.1		
PHF	.625	.871	.773	.375	.936	.570	.888	.708	.000	.821	.620	.866	.703	.250	.801	.889	.944	.929	.250	.916	.970

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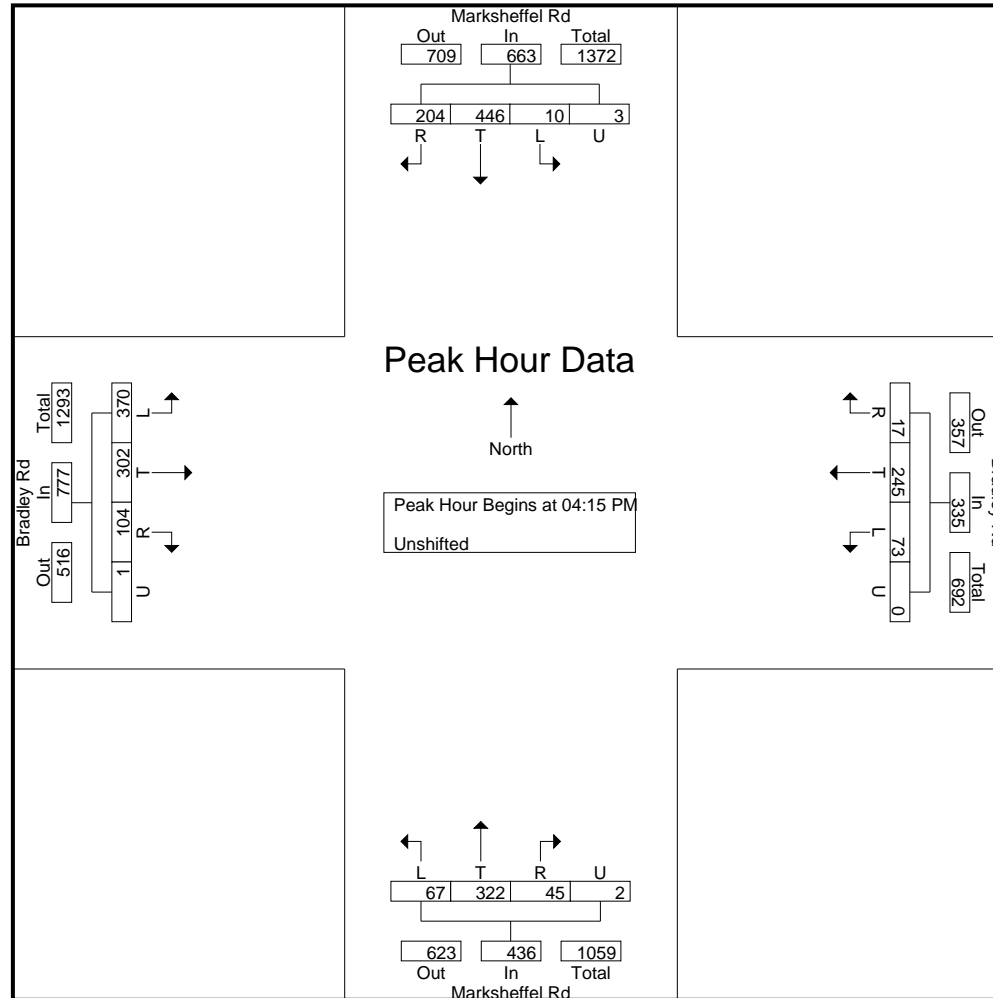
545 E Pikes Peak Ave, Suite 210
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719-633-2868

File Name : Marksheffel Rd - Bradley Rd PM

Site Code : S214180

Start Date : 3/18/2021

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545 E Pikes Peak Ave, Suite 210
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719-633-2868

File Name : Marksheffel Rd - Bradley Rd PM
Site Code : S214180
Start Date : 3/18/2021
Page No : 4

	Marksheffel Rd Southbound					Bradley Rd Westbound					Marksheffel Rd Northbound					Bradley Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total

Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	4:30:00 PM					4:15:00 PM					4:00:00 PM					4:15:00 PM				
+0 mins.	2	108	66	1	177	32	66	4	0	102	17	89	12	0	118	90	68	26	1	185
+5 mins.	4	100	59	0	163	13	47	5	0	65	27	93	16	0	136	104	80	28	0	212
+10 mins.	3	128	45	0	176	20	69	6	0	95	16	55	6	0	77	88	78	23	0	189
+15 mins.	4	113	65	0	182	8	63	2	0	73	16	92	15	0	123	88	76	27	0	191
Total Volume	13	449	235	1	698	73	245	17	0	335	76	329	49	0	454	370	302	104	1	777
% App. Total	1.9	64.3	33.7	0.1		21.8	73.1	5.1	0		16.7	72.5	10.8	0		47.6	38.9	13.4	0.1	
PHF	.813	.877	.890	.250	.959	.570	.888	.708	.000	.821	.704	.884	.766	.000	.835	.889	.944	.929	.250	.916

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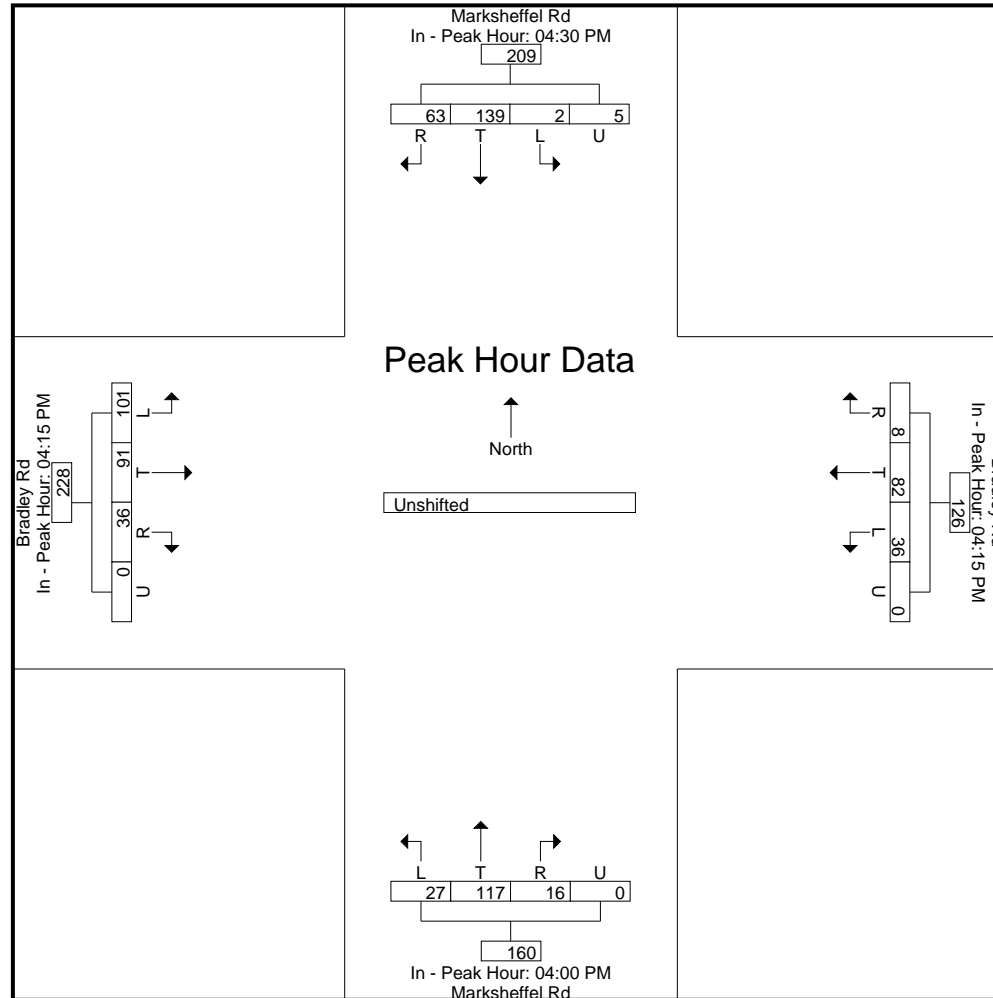
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File Name : Marksheffel Rd - Bradley Rd PM

Site Code : S214180

Start Date : 3/18/2021

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Levels of Service

Lanes, Volumes, Timings

3: Powers & Bradley

Existing
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	264	356	427	242	245	244
Future Volume (vph)	264	356	427	242	245	244
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.420	
Satd. Flow (perm)	1770	1583	3539	1583	782	3539
Satd. Flow (RTOR)		391		266		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.89	0.89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	391	469	266	275	274
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	25.0	25.0	54.0	54.0	21.0	75.0
Total Split (%)	25.0%	25.0%	54.0%	54.0%	21.0%	75.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effect Green (s)	22.1	22.1	52.8	52.8	68.9	68.9
Actuated g/C Ratio	0.22	0.22	0.53	0.53	0.69	0.69
v/c Ratio	0.74	0.60	0.25	0.28	0.42	0.11
Control Delay	47.5	7.2	14.9	3.0	8.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	7.2	14.9	3.0	8.6	6.0
LOS	D	A	B	A	A	A
Approach Delay	24.4		10.6			7.3
Approach LOS	C		B			A

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 51.3%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 3: Powers & Bradley



Lanes, Volumes, Timings

5: Marksheffel & Bradley

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	300	23	37	283	46	125	407	57	19	248	202
Future Volume (vph)	201	300	23	37	283	46	125	407	57	19	248	202
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.510			0.519			0.584			0.490		
Satd. Flow (perm)	950	3539	1583	967	3539	1583	1088	3539	1583	913	3539	1583
Satd. Flow (RTOR)			28			61			63			222
Peak Hour Factor	0.83	0.83	0.83	0.76	0.76	0.76	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	361	28	49	372	61	137	447	63	21	273	222
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	51.0	51.0	51.0	51.0	51.0	51.0	39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	56.7%	56.7%	56.7%	56.7%	56.7%	56.7%	43.3%	43.3%	43.3%	43.3%	43.3%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	22.5	22.5	22.5	22.5	22.5	22.5	35.1	35.1	35.1	35.1	35.1	35.1
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	0.34	0.53	0.53	0.53	0.53	0.53	0.53
v/c Ratio	0.76	0.30	0.05	0.15	0.31	0.11	0.24	0.24	0.07	0.04	0.15	0.24
Control Delay	34.7	16.1	5.3	15.1	16.2	4.3	12.9	10.8	4.1	11.6	10.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	16.1	5.3	15.1	16.2	4.3	12.9	10.8	4.1	11.6	10.4	2.8
LOS	C	B	A	B	B	A	B	B	A	B	B	A
Approach Delay		22.7			14.6			10.6			7.2	
Approach LOS		C			B			B			A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 66.7

Natural Cycle: 45

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 14.0

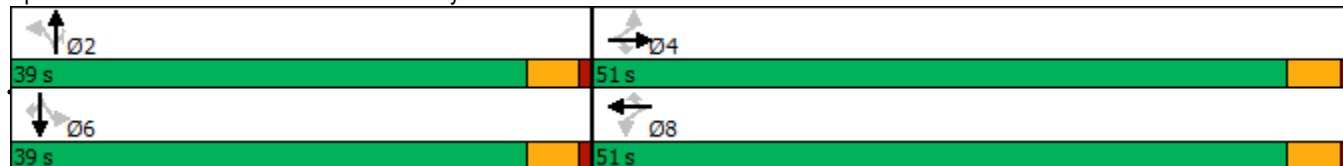
Intersection LOS: B

Intersection Capacity Utilization 49.4%

ICU Level of Service A







Analysis Period (min) 15

Splits and Phases: 5: Marksheffel & Bradley



HCM 6th TWSC
8: Bradley & Foreign Trade Zone













Existing
AM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	57	517	669	31	7	12
Future Vol, veh/h	57	517	669	31	7	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	575	-	-	550	0	250
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	94	94	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	556	712	33	9	15
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	745	0	-	0	1112	356
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	400	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	859	-	-	-	203	640
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	646	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	859	-	-	-	189	640
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	415	-
Stage 2	-	-	-	-	646	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		16		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	859	-	-	-	189	640
HCM Lane V/C Ratio	0.071	-	-	-	0.047	0.024
HCM Control Delay (s)	9.5	-	-	-	25	10.8
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.1

Lanes, Volumes, Timings

3: Powers & Bradley

Existing
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	277	278	310	391	307	470
Future Volume (vph)	277	278	310	391	307	470
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.480	
Satd. Flow (perm)	1770	1583	3539	1583	894	3539
Satd. Flow (RTOR)		312		420		
Peak Hour Factor	0.89	0.89	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	311	312	333	420	330	505
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	20.0	20.0	50.0	50.0	20.0	70.0
Total Split (%)	22.2%	22.2%	55.6%	55.6%	22.2%	77.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effect Green (s)	24.4	24.4	38.6	38.6	56.6	56.6
Actuated g/C Ratio	0.27	0.27	0.43	0.43	0.63	0.63
v/c Ratio	0.65	0.47	0.22	0.46	0.48	0.23
Control Delay	35.8	5.6	17.9	4.0	10.5	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	5.6	17.9	4.0	10.5	7.8
LOS	D	A	B	A	B	A
Approach Delay	20.7		10.2			8.8
Approach LOS	C		B			A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

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

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 12.6

Intersection LOS: B

Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 3: Powers & Bradley



Lanes, Volumes, Timings

5: Marksheffel & Bradley

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	370	302	104	73	245	17	67	322	45	10	446	204
Future Volume (vph)	370	302	104	73	245	17	67	322	45	10	446	204
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.569			0.557			0.439			0.497		
Satd. Flow (perm)	1060	3539	1583	1038	3539	1583	818	3539	1583	926	3539	1583
Satd. Flow (RTOR)			111			21			56			222
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.80	0.80	0.80	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	394	321	111	89	299	21	84	403	56	11	485	222
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	55.0	55.0	55.0	55.0	55.0	55.0	35.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	32.8	32.8	32.8	32.8	32.8	32.8	31.3	31.3	31.3	31.3	31.3	31.3
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.45	0.45	0.43	0.43	0.43	0.43	0.43	0.43
v/c Ratio	0.83	0.20	0.14	0.19	0.19	0.03	0.24	0.27	0.08	0.03	0.32	0.28
Control Delay	33.0	11.7	2.6	11.9	11.5	4.1	20.4	16.8	6.1	18.0	17.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	11.7	2.6	11.9	11.5	4.1	20.4	16.8	6.1	18.0	17.2	4.1
LOS	C	B	A	B	B	A	C	B	A	B	B	A
Approach Delay		20.6			11.2			16.2			13.2	
Approach LOS		C			B			B			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 73.3

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 16.0

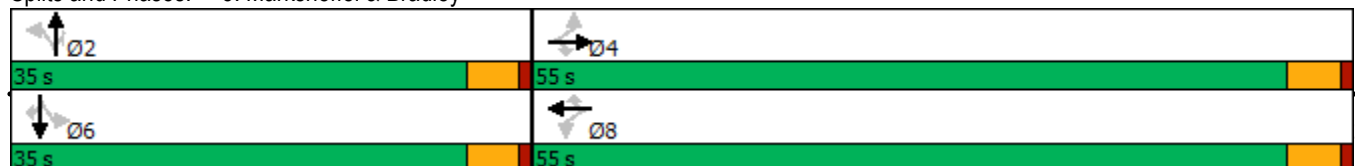
Intersection LOS: B

Intersection Capacity Utilization 58.8%

ICU Level of Service B







Analysis Period (min) 15

Splits and Phases: 5: Marksheffel & Bradley



HCM 6th TWSC
8: Bradley & Foreign Trade Zone
















Existing
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	709	497	12	38	58
Future Vol, veh/h	13	709	497	12	38	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	575	-	-	550	0	250
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	90	90	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	746	552	13	51	77
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	565	0	-	0	953	276
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	401	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1003	-	-	-	257	721
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1003	-	-	-	253	721
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	645	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		15.4		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1003	-	-	-	253	721
HCM Lane V/C Ratio	0.014	-	-	-	0.2	0.107
HCM Control Delay (s)	8.6	-	-	-	22.8	10.6
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0.4

Lanes, Volumes, Timings

3: Powers & Bradley

Short Term Background
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	461	628	534	346	367	305
Future Volume (vph)	461	628	534	346	367	305
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.349	
Satd. Flow (perm)	3433	1583	3539	1583	650	3539
Satd. Flow (RTOR)		636		380		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.89	0.89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	507	690	587	380	412	343
Turn Type	Prot	Free	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		Free		2	6	
Detector Phase	8		2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	9.5	22.5
Total Split (s)	31.0		48.0	48.0	21.0	69.0
Total Split (%)	31.0%		48.0%	48.0%	21.0%	69.0%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		C-Min	C-Min	None	C-Min
Act Effect Green (s)	20.0	100.0	50.2	50.2	71.0	71.0
Actuated g/C Ratio	0.20	1.00	0.50	0.50	0.71	0.71
v/c Ratio	0.74	0.44	0.33	0.39	0.64	0.14
Control Delay	44.3	0.9	17.0	3.3	10.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	0.9	17.0	3.3	10.9	5.2
LOS	D	A	B	A	B	A
Approach Delay	19.2		11.6			8.3
Approach LOS	B		B			A

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 13.9

Intersection LOS: B

Intersection Capacity Utilization 59.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Powers & Bradley



























Lanes, Volumes, Timings

5: Marksheffel & Bradley

Short Term Background

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	338	392	46	46	359	58	161	509	71	24	310	282
Future Volume (vph)	338	392	46	46	359	58	161	509	71	24	310	282
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.465			0.465			0.526			0.359		
Satd. Flow (perm)	866	3539	1583	866	3539	1583	980	3539	1583	669	3539	1583
Satd. Flow (RTOR)			55			76			78			310
Peak Hour Factor	0.83	0.83	0.83	0.76	0.76	0.76	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	407	472	55	61	472	76	177	559	78	26	341	310
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	58.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	64.4%	64.4%	64.4%	64.4%	64.4%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	41.2	41.2	41.2	41.2	41.2	41.2	28.2	28.2	28.2	28.2	28.2	28.2
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.52	0.52	0.36	0.36	0.36	0.36	0.36	0.36
v/c Ratio	0.90	0.25	0.06	0.13	0.25	0.09	0.50	0.44	0.13	0.11	0.27	0.40
Control Delay	40.6	9.9	2.5	9.3	9.9	2.3	29.9	23.0	6.4	23.3	21.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	9.9	2.5	9.3	9.9	2.3	29.9	23.0	6.4	23.3	21.2	4.8
LOS	D	A	A	A	A	A	C	C	A	C	C	A
Approach Delay		22.9			8.9			22.9			13.8	
Approach LOS		C			A			C			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 78.6

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 18.1

Intersection LOS: B







Intersection Capacity Utilization 61.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Marksheffel & Bradley


















Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	71	736	876	39	9	15
Future Vol, veh/h	71	736	876	39	9	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	575	-	-	550	0	250
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	94	94	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	791	932	41	11	19
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	973	0	-	0	1480	466
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	548	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	704	-	-	-	116	543
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	704	-	-	-	103	543
Mov Cap-2 Maneuver	-	-	-	-	103	-
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	543	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		24.1		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	704	-	-	-	103	543
HCM Lane V/C Ratio	0.108	-	-	-	0.111	0.035
HCM Control Delay (s)	10.7	-	-	-	44.3	11.9
HCM Lane LOS	B	-	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.4	0.1

Lanes, Volumes, Timings

3: Powers & Bradley

Existing
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	364	466	326	538	513	503
Future Volume (vph)	364	466	326	538	513	503
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.482	
Satd. Flow (perm)	3433	1583	3539	1583	898	3539
Satd. Flow (RTOR)		524		578		
Peak Hour Factor	0.89	0.89	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	409	524	351	578	552	541
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	31.0	31.0	38.0	38.0	31.0	69.0
Total Split (%)	31.0%	31.0%	38.0%	38.0%	31.0%	69.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effect Green (s)	18.4	18.4	49.1	49.1	72.6	72.6
Actuated g/C Ratio	0.18	0.18	0.49	0.49	0.73	0.73
v/c Ratio	0.65	0.73	0.20	0.54	0.67	0.21
Control Delay	42.3	9.7	17.2	4.2	10.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	9.7	17.2	4.2	10.7	5.1
LOS	D	A	B	A	B	A
Approach Delay	24.0		9.1			7.9
Approach LOS	C		A			A

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 13.4

Intersection LOS: B

Intersection Capacity Utilization 69.2%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 3: Powers & Bradley



Lanes, Volumes, Timings

5: Marksheffel & Bradley

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	428	314	112	77	264	18	80	626	47	20	469	302
Future Volume (vph)	428	314	112	77	264	18	80	626	47	20	469	302
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.557			0.550			0.404			0.241		
Satd. Flow (perm)	1038	3539	1583	1025	3539	1583	753	3539	1583	449	3539	1583
Satd. Flow (RTOR)			119			22			59			328
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.80	0.80	0.80	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	455	334	119	94	322	22	100	783	59	22	510	328
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	55.0	55.0	55.0	55.0	55.0	55.0	35.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%	38.9%	38.9%	38.9%	38.9%	38.9%	38.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	39.7	39.7	39.7	39.7	39.7	39.7	31.1	31.1	31.1	31.1	31.1	31.1
Actuated g/C Ratio	0.50	0.50	0.50	0.50	0.50	0.50	0.39	0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.88	0.19	0.14	0.18	0.18	0.03	0.34	0.57	0.09	0.13	0.37	0.40
Control Delay	37.9	10.8	2.3	11.1	10.7	3.9	25.4	23.2	6.3	22.5	20.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	10.8	2.3	11.1	10.7	3.9	25.4	23.2	6.3	22.5	20.5	4.3
LOS	D	B	A	B	B	A	C	C	A	C	C	A
Approach Delay		23.3			10.5			22.4			14.4	
Approach LOS		C			B			C			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 79.9

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 18.8

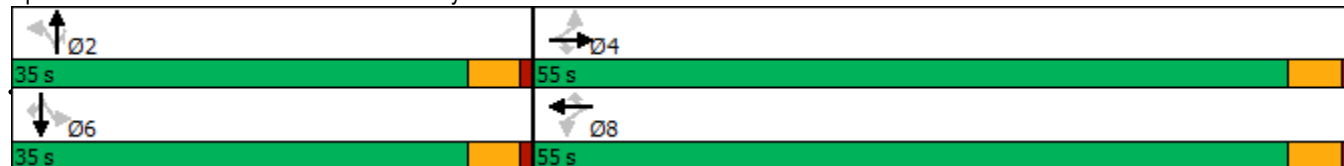
Intersection LOS: B

Intersection Capacity Utilization 67.5%

ICU Level of Service C







Analysis Period (min) 15

Splits and Phases: 5: Marksheffel & Bradley



HCM 6th TWSC
8: Bradley & Foreign Trade Zone

Existing
PM Peak Hour

























Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	800	634	14	40	61
Future Vol, veh/h	14	800	634	14	40	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	575	-	-	550	0	250
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	90	90	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	842	704	16	53	81
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	720	0	-	0	1155	352
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	451	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	877	-	-	-	190	644
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	609	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	877	-	-	-	187	644
Mov Cap-2 Maneuver	-	-	-	-	187	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	609	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		19.5		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	877	-	-	-	187	644
HCM Lane V/C Ratio	0.017	-	-	-	0.285	0.126
HCM Control Delay (s)	9.2	-	-	-	31.8	11.4
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1	0.4

Lanes, Volumes, Timings

1: Powers & Bradley

Long Term Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	175	75	660	385	988	100	1292	386	517	744	19
Future Volume (vph)	26	175	75	660	385	988	100	1292	386	517	744	19
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.518			0.950			0.950			0.950		
Satd. Flow (perm)	965	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Satd. Flow (RTOR)			227			520			278			143
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	184	79	680	397	1019	103	1332	398	533	767	20
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	15.0		9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	16.0	19.0		34.0	37.0		15.0	54.0	54.0	23.0	62.0	62.0
Total Split (%)	12.3%	14.6%		26.2%	28.5%		11.5%	41.5%	41.5%	17.7%	47.7%	47.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-1.0		-1.0	-2.0	0.0	-2.0	-2.0	-1.0
Total Lost Time (s)	4.0	4.0		3.0	4.0		4.0	3.0	5.0	3.0	3.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	None	C-Max	None	None
Act Effect Green (s)	20.9	13.0	130.0	30.0	38.5	130.0	9.9	51.0	49.0	23.0	63.1	62.1
Actuated g/C Ratio	0.16	0.10	1.00	0.23	0.30	1.00	0.08	0.39	0.38	0.18	0.49	0.48
v/c Ratio	0.13	0.52	0.05	0.86	0.38	0.64	0.39	0.96	0.52	0.88	0.45	0.02
Control Delay	30.4	60.7	0.1	58.4	29.7	5.4	61.5	55.0	11.6	69.2	23.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	60.7	0.1	58.4	29.7	5.4	61.5	55.0	11.6	69.2	23.7	0.1
LOS	C	E	A	E	C	A	E	D	B	E	C	A
Approach Delay		41.4			27.2			45.9			41.7	
Approach LOS		D			C			D			D	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 125 (96%), Referenced to phase 1:SBL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 37.6

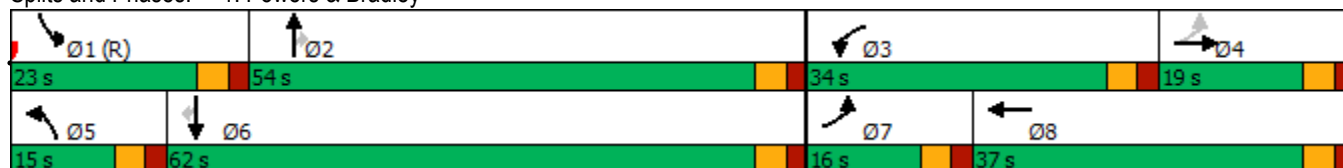
Intersection LOS: D

Intersection Capacity Utilization 91.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Powers & Bradley



























Lanes, Volumes, Timings

4: Bradley Landing Blvd & Bradley

Long Term Background Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	947	95	57	949	103	126	3	63	24	2	40
Future Volume (vph)	188	947	95	57	949	103	126	3	63	24	2	40
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1863	1583	1770	1863	1583
Flt Permitted	0.135			0.267			0.950			0.756		
Satd. Flow (perm)	251	3539	1583	497	3539	1583	3433	1863	1583	1408	1863	1583
Satd. Flow (RTOR)			126			126			126			164
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	204	1029	103	62	1032	112	137	3	68	26	2	43
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	26.0	70.0	70.0	16.0	60.0	60.0	27.0	34.4	34.4	9.6	17.0	17.0
Total Split (%)	20.0%	53.8%	53.8%	12.3%	46.2%	46.2%	20.8%	26.5%	26.5%	7.4%	13.1%	13.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	72.5	72.5	72.5	66.1	66.1	66.1	18.7	29.9	29.9	17.6	12.5	12.5
Actuated g/C Ratio	0.56	0.56	0.56	0.51	0.51	0.51	0.14	0.23	0.23	0.14	0.10	0.10
v/c Ratio	0.65	0.52	0.11	0.18	0.57	0.13	0.28	0.01	0.15	0.13	0.01	0.14
Control Delay	22.0	11.4	0.8	21.7	23.1	6.9	50.0	39.0	0.7	35.7	53.5	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	11.4	0.8	21.7	23.1	6.9	50.0	39.0	0.7	35.7	53.5	1.0
LOS	C	B	A	C	C	A	D	D	A	D	D	A
Approach Delay		12.2			21.5			33.7			15.2	
Approach LOS		B			C			C			B	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 102 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 17.8

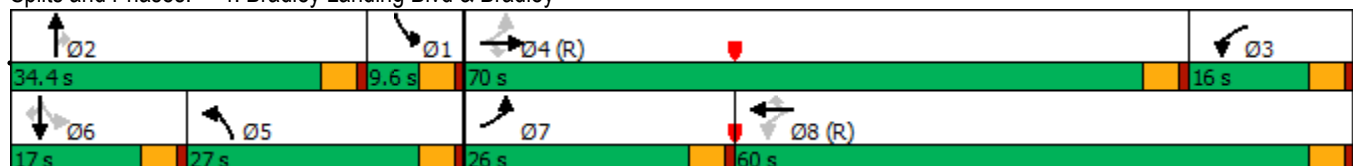
Intersection LOS: B

Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Bradley Landing Blvd & Bradley



Lanes, Volumes, Timings
7: East Collector & Bradley

Long Term Background Traffic
AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	954	79	35	1009	100	43
Future Volume (vph)	954	79	35	1009	100	43
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.211		0.950	
Satd. Flow (perm)	3539	1583	393	3539	1770	1583
Satd. Flow (RTOR)		86				47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1037	86	38	1097	109	47
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	83.0	83.0	14.0	97.0	33.0	33.0
Total Split (%)	63.8%	63.8%	10.8%	74.6%	25.4%	25.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effct Green (s)	83.7	83.7	92.5	92.5	28.5	28.5
Actuated g/C Ratio	0.64	0.64	0.71	0.71	0.22	0.22
v/c Ratio	0.46	0.08	0.11	0.44	0.28	0.12
Control Delay	21.0	5.4	6.1	8.0	44.6	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	5.4	6.1	8.0	44.6	11.9
LOS	C	A	A	A	D	B
Approach Delay	19.8			7.9	34.7	
Approach LOS	B			A	C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 15.2

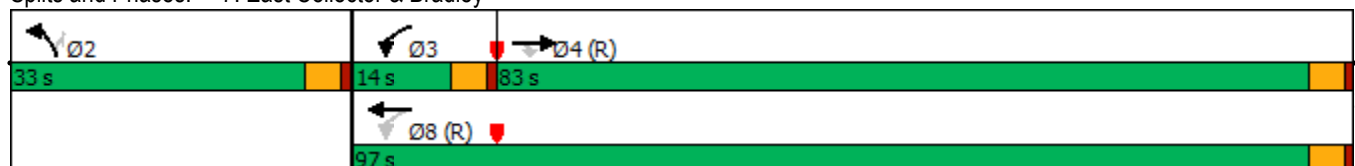
Intersection LOS: B

Intersection Capacity Utilization 42.1%

ICU Level of Service A







Analysis Period (min) 15

Splits and Phases: 7: East Collector & Bradley



HCM 6th TWSC
9: Bradley Landing Blvd & North Access

























Long Term Background Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	110	3	5	99	40	132
Future Vol, veh/h	110	3	5	99	40	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	3	5	108	43	143
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	161	43	186	0	-	0
Stage 1	43	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	830	1027	1388	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	827	1027	1388	-	-	-
Mov Cap-2 Maneuver	827	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	907	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.1	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1388	-	827	1027	-	-
HCM Lane V/C Ratio	0.004	-	0.145	0.003	-	-
HCM Control Delay (s)	7.6	-	10.1	8.5	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	0	-	-

Lanes, Volumes, Timings

101: Marksheffel Rd & Bradley

Long Term Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	456	370	153	95	539	285	210	600	50	140	275	296
Future Volume (vph)	456	370	153	95	539	285	210	600	50	140	275	296
Satd. Flow (prot)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.522			0.511			0.226		
Satd. Flow (perm)	3433	3539	1583	972	3539	1583	952	3539	1583	421	3539	1583
Satd. Flow (RTOR)			185			300			185			312
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	480	389	161	100	567	300	221	632	53	147	289	312
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	27.0	64.4		10.0	47.4		15.0	40.6		15.0	40.6	
Total Split (%)	20.8%	49.5%		7.7%	36.5%		11.5%	31.2%		11.5%	31.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	21.1	59.4	130.0	48.3	43.3	130.0	45.9	35.9	130.0	45.3	35.6	130.0
Actuated g/C Ratio	0.16	0.46	1.00	0.37	0.33	1.00	0.35	0.28	1.00	0.35	0.27	1.00
v/c Ratio	0.86	0.24	0.10	0.26	0.48	0.19	0.56	0.65	0.03	0.60	0.30	0.20
Control Delay	75.5	39.3	0.1	19.7	36.3	0.3	35.2	45.2	0.0	37.6	38.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.5	39.3	0.1	19.7	36.3	0.3	35.2	45.2	0.0	37.6	38.4	0.3
LOS	E	D	A	B	D	A	D	D	A	D	D	A
Approach Delay		50.1			23.4			40.1			22.3	
Approach LOS		D			C			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 34.9

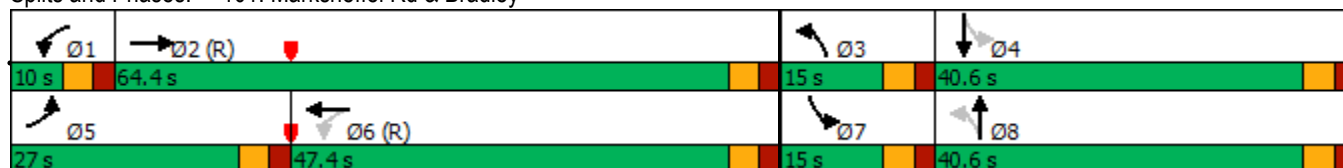
Intersection LOS: C

Intersection Capacity Utilization 68.9%

ICU Level of Service C

























Analysis Period (min) 15

Splits and Phases: 101: Marksheffel Rd & Bradley



Lanes, Volumes, Timings
1: Powers & Bradley

Long Term Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	359	210	440	374	673	175	633	635	647	1168	110
Future Volume (vph)	71	359	210	440	374	673	175	633	635	647	1168	110
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.523			0.950			0.950			0.950		
Satd. Flow (perm)	974	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Satd. Flow (RTOR)			185			626			424			143
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	378	221	454	386	694	180	653	655	667	1204	113
Turn Type	pm+pt	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			Free			2			6
Detector Phase	7	4	4	3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	10.0	26.0	26.0	34.0	50.0		15.0	40.0	40.0	30.0	55.0	55.0
Total Split (%)	7.7%	20.0%	20.0%	26.2%	38.5%		11.5%	30.8%	30.8%	23.1%	42.3%	42.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	0.0	-1.0	-1.0		-1.0	-1.0	0.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	5.0	4.0	4.0		4.0	4.0	5.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	C-Max	Max	Max
Act Effect Green (s)	26.5	20.5	19.5	23.4	39.8	130.0	11.8	36.0	35.0	34.2	58.3	58.3
Actuated g/C Ratio	0.20	0.16	0.15	0.18	0.31	1.00	0.09	0.28	0.27	0.26	0.45	0.45
v/c Ratio	0.32	0.68	0.56	0.74	0.36	0.44	0.58	0.67	0.89	0.74	0.76	0.14
Control Delay	31.2	57.8	16.6	50.0	42.5	0.7	64.4	45.6	31.3	50.8	35.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	57.8	16.6	50.0	42.5	0.7	64.4	45.6	31.3	50.8	35.2	2.2
LOS	C	E	B	D	D	A	E	D	C	D	D	A
Approach Delay		41.3			25.8			41.6			38.6	
Approach LOS		D			C			D			D	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 1 (1%), Referenced to phase 1:SBL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 36.3

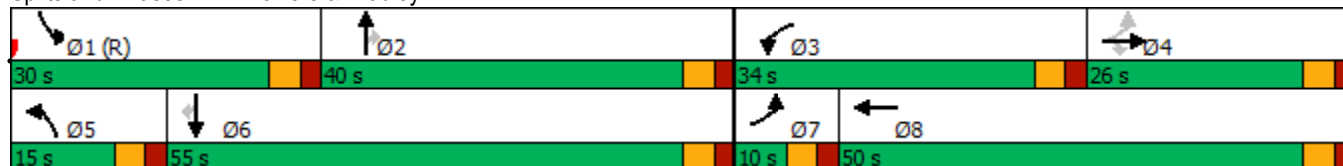
Intersection LOS: D

Intersection Capacity Utilization 78.5%

ICU Level of Service D

Analysis Period (min) 15

























Splits and Phases: 1: Powers & Bradley



Lanes, Volumes, Timings
4: Bradley Landing Blvd & Bradley

Long Term Background Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1473	264	131	1193	34	233	6	133	101	6	155
Future Volume (vph)	34	1473	264	131	1193	34	233	6	133	101	6	155
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1863	1583	1770	1863	1583
Flt Permitted	0.104			0.066			0.950			0.753		
Satd. Flow (perm)	194	3539	1583	123	3539	1583	3433	1863	1583	1403	1863	1583
Satd. Flow (RTOR)			248			88			145			126
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	1601	287	142	1297	37	253	7	145	110	7	168
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	6.5	60.5	60.5	21.5	75.5	75.5	31.0	18.0	18.0	30.0	17.0	17.0
Total Split (%)	5.0%	46.5%	46.5%	16.5%	58.1%	58.1%	23.8%	13.8%	13.8%	23.1%	13.1%	13.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	67.6	67.6	67.6	79.7	79.7	79.7	14.9	13.5	13.5	26.4	12.5	12.5
Actuated g/C Ratio	0.52	0.52	0.52	0.61	0.61	0.61	0.11	0.10	0.10	0.20	0.10	0.10
v/c Ratio	0.20	0.87	0.30	0.49	0.60	0.04	0.65	0.04	0.49	0.34	0.04	0.63
Control Delay	13.2	22.3	1.2	42.5	14.5	0.2	62.5	53.0	14.4	43.0	54.0	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	22.3	1.2	42.5	14.5	0.2	62.5	53.0	14.4	43.0	54.0	28.2
LOS	B	C	A	D	B	A	E	D	B	D	D	C
Approach Delay		19.0			16.8			45.2			34.5	
Approach LOS		B			B			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 72 (55%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 21.9









Intersection LOS: C

Intersection Capacity Utilization 72.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Bradley Landing Blvd & Bradley

 Ø2	 Ø1	 Ø4 (R)	 Ø3
18 s	30 s	60.5 s	21.5 s
 Ø6	 Ø5	 Ø7	 Ø8 (R)
17 s	31 s	6.5 s	75.5 s

Lanes, Volumes, Timings
7: East Collector & Bradley

Long Term Background Traffic
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	1461	246	132	1139	219	114
Future Volume (vph)	1461	246	132	1139	219	114
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.063		0.950	
Satd. Flow (perm)	3539	1583	117	3539	1770	1583
Satd. Flow (RTOR)		267				124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1588	267	143	1238	238	124
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	75.0	75.0	20.0	95.0	35.0	35.0
Total Split (%)	57.7%	57.7%	15.4%	73.1%	26.9%	26.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effct Green (s)	74.9	74.9	90.5	90.5	30.5	30.5
Actuated g/C Ratio	0.58	0.58	0.70	0.70	0.23	0.23
v/c Ratio	0.78	0.26	0.64	0.50	0.57	0.27
Control Delay	16.3	3.4	33.6	7.2	50.4	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	3.4	33.6	7.2	50.4	8.2
LOS	B	A	C	A	D	A
Approach Delay	14.5			9.9	35.9	
Approach LOS	B			A	D	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 55 (42%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 14.9

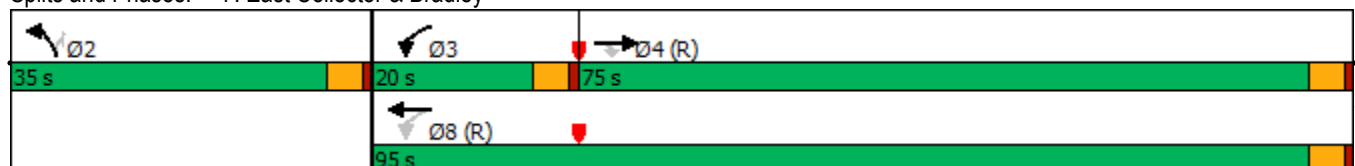
Intersection LOS: B

Intersection Capacity Utilization 71.1%

ICU Level of Service C







Analysis Period (min) 15

Splits and Phases: 7: East Collector & Bradley



























HCM 6th TWSC
9: Bradley Landing Blvd & North Access

Long Term Background Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	315	14	13	122	165	301
Future Vol, veh/h	315	14	13	122	165	301
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	342	15	14	133	179	327
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	340	179	506	0	-	0
Stage 1	179	-	-	-	-	-
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	656	864	1059	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	868	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	647	864	1059	-	-	-
Mov Cap-2 Maneuver	647	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	868	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.3	0.8		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1059	-	647	864	-	-
HCM Lane V/C Ratio	0.013	-	0.529	0.018	-	-
HCM Control Delay (s)	8.4	-	16.6	9.2	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0	-	3.1	0.1	-	-

Lanes, Volumes, Timings
101: Marksheffel Rd & Bradley

Long Term Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	582	720	299	195	585	215	212	500	100	300	650	475
Future Volume (vph)	582	720	299	195	585	215	212	500	100	300	650	475
Satd. Flow (prot)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.358			0.181			0.213		
Satd. Flow (perm)	3433	3539	1583	667	3539	1583	337	3539	1583	397	3539	1583
Satd. Flow (RTOR)			315			226			185			500
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	613	758	315	205	616	226	223	526	105	316	684	500
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	35.0	55.0		15.0	35.0		30.0	30.0		30.0	30.0	
Total Split (%)	26.9%	42.3%		11.5%	26.9%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	27.2	50.0	130.0	42.8	32.8	130.0	46.0	28.6	130.0	53.9	32.6	130.0
Actuated g/C Ratio	0.21	0.38	1.00	0.33	0.25	1.00	0.35	0.22	1.00	0.41	0.25	1.00
v/c Ratio	0.85	0.56	0.20	0.67	0.69	0.14	0.72	0.68	0.07	0.81	0.77	0.32
Control Delay	64.8	10.1	0.2	35.4	49.4	0.2	41.1	52.3	0.1	45.0	52.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	10.1	0.2	35.4	49.4	0.2	41.1	52.3	0.1	45.0	52.6	0.5
LOS	E	B	A	D	D	A	D	D	A	D	D	A
Approach Delay		28.1			36.0			42.9			33.6	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 33.9

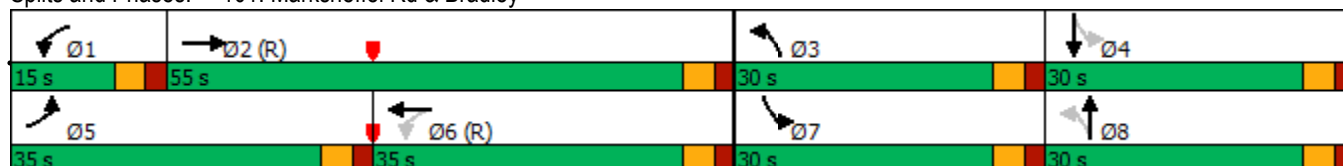
Intersection LOS: C

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15
















Splits and Phases: 101: Marksheffel Rd & Bradley



Lanes, Volumes, Timings

3: Powers & Bradley

Short Term Total
AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	514	698	534	364	391	305
Future Volume (vph)	514	698	534	364	391	305
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.338	
Satd. Flow (perm)	3433	1583	3539	1583	630	3539
Satd. Flow (RTOR)		636		400		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.89	0.89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	565	767	587	400	439	343
Turn Type	Prot	Free	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		Free		2	6	
Detector Phase	8		2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	9.5	22.5
Total Split (s)	31.0		48.0	48.0	21.0	69.0
Total Split (%)	31.0%		48.0%	48.0%	21.0%	69.0%
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5		4.5	4.5	4.5	4.5
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None		C-Min	C-Min	None	C-Min
Act Effect Green (s)	21.7	100.0	46.7	46.7	69.3	69.3
Actuated g/C Ratio	0.22	1.00	0.47	0.47	0.69	0.69
v/c Ratio	0.76	0.48	0.36	0.42	0.68	0.14
Control Delay	43.4	1.1	19.6	3.8	12.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.4	1.1	19.6	3.8	12.9	5.8
LOS	D	A	B	A	B	A
Approach Delay	19.0		13.2			9.8
Approach LOS	B		B			A

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B

























Analysis Period (min) 15

Splits and Phases: 3: Powers & Bradley



Lanes, Volumes, Timings 5: Marksheffel & Bradley

Short Term Total
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	399	53	46	361	58	163	509	71	24	310	294
Future Volume (vph)	373	399	53	46	361	58	163	509	71	24	310	294
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.465			0.462			0.514			0.342		
Satd. Flow (perm)	866	3539	1583	861	3539	1583	957	3539	1583	637	3539	1583
Satd. Flow (RTOR)			64			76			78			323
Peak Hour Factor	0.83	0.83	0.83	0.76	0.76	0.76	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	449	481	64	61	475	76	179	559	78	26	341	323
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	58.0	58.0	58.0	58.0	58.0	58.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	64.4%	64.4%	64.4%	64.4%	64.4%	64.4%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	46.5	46.5	46.5	46.5	46.5	46.5	27.9	27.9	27.9	27.9	27.9	27.9
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.56	0.56	0.33	0.33	0.33	0.33	0.33	0.33
v/c Ratio	0.93	0.24	0.07	0.13	0.24	0.08	0.56	0.47	0.13	0.12	0.29	0.43
Control Delay	45.8	9.4	2.4	8.9	9.4	2.2	33.7	25.3	6.5	24.5	23.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	9.4	2.4	8.9	9.4	2.2	33.7	25.3	6.5	24.5	23.1	5.0
LOS	D	A	A	A	A	A	C	C	A	C	C	A
Approach Delay		25.4			8.5			25.3			14.7	
Approach LOS		C			A			C			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.5

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Marksheffel & Bradley



HCM 6th TWSC
8: Bradley Landing Blvd/Foreign Trade Zone & Bradley

Short Term Total
AM Peak Hour

Intersection												
Int Delay, s/veh	18.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰	↰	↰	↰↰	↰	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	71	759	20	11	901	39	98	3	18	9	1	15
Future Vol, veh/h	71	759	20	11	901	39	98	3	18	9	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	575	-	350	350	-	550	0	-	250	0	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	92	92	94	94	92	92	92	79	92	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	816	22	12	959	41	107	3	20	11	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1000	0	0	838	0	0	1472	1992	408	1545	1973	480
Stage 1	-	-	-	-	-	-	968	968	-	983	983	-
Stage 2	-	-	-	-	-	-	504	1024	-	562	990	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	688	-	-	792	-	-	~ 88	60	593	78	62	532
Stage 1	-	-	-	-	-	-	273	330	-	267	325	-
Stage 2	-	-	-	-	-	-	518	311	-	479	323	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	688	-	-	792	-	-	~ 76	53	593	65	54	532
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 76	53	-	65	54	-
Stage 1	-	-	-	-	-	-	243	294	-	238	320	-
Stage 2	-	-	-	-	-	-	490	306	-	407	287	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	281.8	35.8
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	76	53	593	688	-	-	792	-	-	65	54	532
HCM Lane V/C Ratio	1.402	0.062	0.033	0.111	-	-	0.015	-	-	0.175	0.02	0.036
HCM Control Delay (s)	\$ 337.8	77.3	11.3	10.9	-	-	9.6	-	-	71.8	73	12
HCM Lane LOS	F	F	B	B	-	-	A	-	-	F	F	B
HCM 95th %tile Q(veh)	8.5	0.2	0.1	0.4	-	-	0	-	-	0.6	0.1	0.1

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

HCM 6th TWSC
11: East Collector & Bradley

Short Term Total
AM Peak Hour

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	809	9	6	812	25	16
Future Vol, veh/h	809	9	6	812	25	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	350	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	879	10	7	883	27	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	889
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	758
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	758
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.7
HCM LOS			C





Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	268	565	-	-	758	-
HCM Lane V/C Ratio	0.101	0.031	-	-	0.009	-
HCM Control Delay (s)	19.9	11.6	-	-	9.8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-

HCM 6th TWSC
13: North Access & Bradley Landing Blvd

Short Term Total
AM Peak Hour

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	47	86	0	17	30
Future Vol, veh/h	0	47	86	0	17	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	51	93	0	18	33

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	162	93	0
Stage 1	93	-	-
Stage 2	69	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	829	964	-
Stage 1	931	-	-
Stage 2	954	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	819	964	-
Mov Cap-2 Maneuver	819	-	-
Stage 1	931	-	-
Stage 2	943	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	2.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	964	1501
HCM Lane V/C Ratio	-	-	0.053	0.012
HCM Control Delay (s)	-	-	8.9	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0
















HCM 6th TWSC
15: Right-in/Right-Out & Bradley

Short Term Total
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Vol, veh/h	836	14	0	1014	0	14
Future Vol, veh/h	836	14	0	1014	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	550	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	909	15	0	1102	0	15
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	455
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	552
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	552
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		11.7		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	552	-	-	-		
HCM Lane V/C Ratio	0.028	-	-	-		
HCM Control Delay (s)	11.7	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

Lanes, Volumes, Timings
3: Powers & Bradley

Short Term Total
PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	399	513	326	600	596	505
Future Volume (vph)	399	513	326	600	596	505
Satd. Flow (prot)	3433	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.475	
Satd. Flow (perm)	3433	1583	3539	1583	885	3539
Satd. Flow (RTOR)		324		545		
Peak Hour Factor	0.89	0.89	0.93	0.93	0.93	0.93
Shared Lane Traffic (%)						
Lane Group Flow (vph)	448	576	351	645	641	543
Turn Type	Prot	pm+ov	NA	Perm	pm+pt	NA
Protected Phases	8	1	2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	1	2	2	1	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	35.0	42.0	42.0	35.0	77.0
Total Split (%)	23.0%	35.0%	42.0%	42.0%	35.0%	77.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag		Lead	Lag	Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effect Green (s)	17.3	45.0	46.0	46.0	73.7	73.7
Actuated g/C Ratio	0.17	0.45	0.46	0.46	0.74	0.74
v/c Ratio	0.76	0.65	0.22	0.63	0.75	0.21
Control Delay	48.0	11.3	18.4	7.3	11.8	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	11.3	18.4	7.3	11.8	4.5
LOS	D	B	B	A	B	A
Approach Delay	27.3		11.2			8.5
Approach LOS	C		B			A

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 15.4

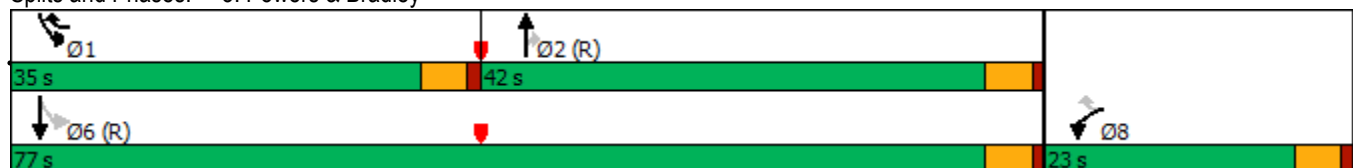
Intersection LOS: B

Intersection Capacity Utilization 77.7%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 3: Powers & Bradley



Lanes, Volumes, Timings
5: Marksheffel & Bradley

Short Term Total
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	451	319	117	77	272	18	88	326	47	20	469	343
Future Volume (vph)	451	319	117	77	272	18	88	326	47	20	469	343
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.551			0.548			0.389			0.469		
Satd. Flow (perm)	1026	3539	1583	1021	3539	1583	725	3539	1583	874	3539	1583
Satd. Flow (RTOR)			91			22			59			373
Peak Hour Factor	0.94	0.94	0.94	0.82	0.82	0.82	0.80	0.80	0.80	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	480	339	124	94	332	22	110	408	59	22	510	373
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	61.0	61.0	61.0	61.0	61.0	61.0	29.0	29.0	29.0	29.0	29.0	29.0
Total Split (%)	67.8%	67.8%	67.8%	67.8%	67.8%	67.8%	32.2%	32.2%	32.2%	32.2%	32.2%	32.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Act Effect Green (s)	40.1	40.1	40.1	40.1	40.1	40.1	25.3	25.3	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.54	0.54	0.34	0.34	0.34	0.34	0.34	0.34
v/c Ratio	0.87	0.18	0.14	0.17	0.18	0.03	0.45	0.34	0.10	0.07	0.42	0.48
Control Delay	32.2	8.3	3.0	8.5	8.2	2.8	32.1	22.5	7.6	23.7	23.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	8.3	3.0	8.5	8.2	2.8	32.1	22.5	7.6	23.7	23.3	5.3
LOS	C	A	A	A	A	A	C	C	A	C	C	A
Approach Delay		19.8			8.0			22.8			15.9	
Approach LOS		B			A			C			B	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 74.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 17.3

Intersection LOS: B

Intersection Capacity Utilization 65.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 5: Marksheffel & Bradley



HCM 6th TWSC
8: Bradley Landing Blvd/Foreign Trade Zone & Bradley

Short Term Total
PM Peak Hour





Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱↱	↰	↰	↱↱	↰	↰	↱	↰	↰	↱	↰
Traffic Vol, veh/h	14	839	69	39	651	14	65	2	12	40	4	61
Future Vol, veh/h	14	839	69	39	651	14	65	2	12	40	4	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Yield
Storage Length	575	-	350	350	-	550	0	-	250	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	90	90	92	92	92	75	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	883	75	42	723	16	71	2	13	53	4	81
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	739	0	0	958	0	0	1361	1736	442	1280	1795	362
Stage 1	-	-	-	-	-	-	913	913	-	807	807	-
Stage 2	-	-	-	-	-	-	448	823	-	473	988	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	863	-	-	714	-	-	107	87	563	123	80	635
Stage 1	-	-	-	-	-	-	294	350	-	341	392	-
Stage 2	-	-	-	-	-	-	560	386	-	541	323	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	863	-	-	714	-	-	84	80	563	111	74	635
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	80	-	111	74	-
Stage 1	-	-	-	-	-	-	289	344	-	335	369	-
Stage 2	-	-	-	-	-	-	454	363	-	516	318	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.6			121.9			33.2		
HCM LOS							F			D		
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	84	80	563	863	-	-	714	-	-	111	74	635
HCM Lane V/C Ratio	0.841	0.027	0.023	0.017	-	-	0.059	-	-	0.48	0.059	0.128
HCM Control Delay (s)	144.4	51.3	11.5	9.2	-	-	10.4	-	-	64.3	56.7	11.5
HCM Lane LOS	F	F	B	A	-	-	B	-	-	F	F	B
HCM 95th %tile Q(veh)	4.4	0.1	0.1	0.1	-	-	0.2	-	-	2.1	0.2	0.4

HCM 6th TWSC
11: North Access & Bradley Landing Blvd

Short Term Total
PM Peak Hour

Intersection

Int Delay, s/veh 2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	31	58	0	56	102
Future Vol, veh/h	0	31	58	0	56	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	34	63	0	61	111

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	296	63	0
Stage 1	63	-	-
Stage 2	233	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	695	1002	-
Stage 1	960	-	-
Stage 2	806	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	667	1002	-
Mov Cap-2 Maneuver	667	-	-
Stage 1	960	-	-
Stage 2	774	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	2.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1002	1540
HCM Lane V/C Ratio	-	-	0.034	0.04
HCM Control Delay (s)	-	-	8.7	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1

HCM 6th TWSC
13: East Collector & Bradley

Short Term Total
PM Peak Hour

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	876	30	19	922	17	11
Future Vol, veh/h	876	30	19	922	17	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	350	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	952	33	21	1002	18	12

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	985
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	697
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	697
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	235	535	-	-	697	-
HCM Lane V/C Ratio	0.079	0.022	-	-	0.03	-
HCM Control Delay (s)	21.6	11.9	-	-	10.3	-
HCM Lane LOS	C	B	-	-	B	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-

HCM 6th TWSC
15: Right-In/Right-Out & Bradley

Short Term Total
PM Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	912	46	0	777	0	10
Future Vol, veh/h	912	46	0	777	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	550	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	991	50	0	845	0	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 496
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.32
Pot Cap-1 Maneuver	-	-	0 - 0 519
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 519
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.1
HCM LOS			B

























Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	519	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-
HCM Control Delay (s)	12.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Lanes, Volumes, Timings

1: Powers & Bradley

Long Term Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	182	75	719	400	1034	100	1292	386	533	744	19
Future Volume (vph)	26	182	75	719	400	1034	100	1292	386	533	744	19
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.510			0.950			0.950			0.950		
Satd. Flow (perm)	950	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Satd. Flow (RTOR)			227			520			278			143
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	192	79	741	412	1066	103	1332	398	549	767	20
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	10.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	15.0		9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	16.0	19.0		34.0	37.0		15.0	54.0	54.0	23.0	62.0	62.0
Total Split (%)	12.3%	14.6%		26.2%	28.5%		11.5%	41.5%	41.5%	17.7%	47.7%	47.7%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-2.0	-1.0		-1.0	-2.0	0.0	-2.0	-2.0	-1.0
Total Lost Time (s)	4.0	4.0		3.0	4.0		4.0	3.0	5.0	3.0	3.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	None	None	C-Max	None	None
Act Effect Green (s)	21.0	13.2	130.0	30.7	39.4	130.0	9.9	51.0	49.0	22.1	62.2	61.2
Actuated g/C Ratio	0.16	0.10	1.00	0.24	0.30	1.00	0.08	0.39	0.38	0.17	0.48	0.47
v/c Ratio	0.13	0.53	0.05	0.91	0.38	0.67	0.39	0.96	0.52	0.94	0.45	0.02
Control Delay	30.3	60.9	0.1	64.4	31.5	5.6	61.5	55.0	11.6	78.7	24.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	60.9	0.1	64.4	31.5	5.6	61.5	55.0	11.6	78.7	24.2	0.1
LOS	C	E	A	E	C	A	E	D	B	E	C	A
Approach Delay		42.0			30.1			45.9			46.2	
Approach LOS		D			C			D			D	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 125 (96%), Referenced to phase 1:SBL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 39.6

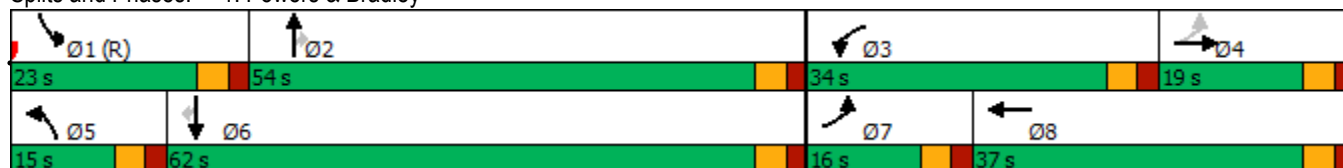
Intersection LOS: D

Intersection Capacity Utilization 93.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: Powers & Bradley



























HCM 6th TWSC
3: Right-in/Right-out & Bradley

Long Term Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Vol, veh/h	1264	13	0	1234	0	14
Future Vol, veh/h	1264	13	0	1234	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	550	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1374	14	0	1341	0	15
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	687
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*547
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*547
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		11.8	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	547	-	-	-		
HCM Lane V/C Ratio	0.028	-	-	-		
HCM Control Delay (s)	11.8	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Lanes, Volumes, Timings
4: Bradley Landing Blvd & Bradley

Long Term Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	975	115	69	973	103	221	6	81	24	3	40
Future Volume (vph)	188	975	115	69	973	103	221	6	81	24	3	40
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1863	1583	1770	1863	1583
Flt Permitted	0.126			0.254			0.950			0.753		
Satd. Flow (perm)	235	3539	1583	473	3539	1583	3433	1863	1583	1403	1863	1583
Satd. Flow (RTOR)			126			126			126			164
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	204	1060	125	75	1058	112	240	7	88	26	3	43
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	26.0	70.0	70.0	16.0	60.0	60.0	27.0	34.4	34.4	9.6	17.0	17.0
Total Split (%)	20.0%	53.8%	53.8%	12.3%	46.2%	46.2%	20.8%	26.5%	26.5%	7.4%	13.1%	13.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	72.5	72.5	72.5	66.1	66.1	66.1	18.7	29.9	29.9	17.6	12.5	12.5
Actuated g/C Ratio	0.56	0.56	0.56	0.51	0.51	0.51	0.14	0.23	0.23	0.14	0.10	0.10
v/c Ratio	0.67	0.54	0.13	0.22	0.59	0.13	0.49	0.02	0.19	0.13	0.02	0.14
Control Delay	23.6	11.9	0.9	22.5	22.9	6.6	54.0	39.0	3.1	35.7	53.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	11.9	0.9	22.5	22.9	6.6	54.0	39.0	3.1	35.7	53.7	1.0
LOS	C	B	A	C	C	A	D	D	A	D	D	A
Approach Delay		12.7			21.4			40.3			15.7	
Approach LOS		B			C			D			B	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 102 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 19.3

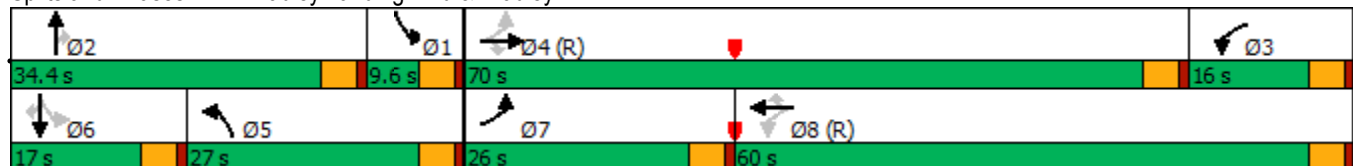
Intersection LOS: B

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Bradley Landing Blvd & Bradley



Lanes, Volumes, Timings
7: East Collector & Bradley

Long Term Total Traffic
AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	987	88	41	1020	124	59
Future Volume (vph)	987	88	41	1020	124	59
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.200		0.950	
Satd. Flow (perm)	3539	1583	373	3539	1770	1583
Satd. Flow (RTOR)		96				64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1073	96	45	1109	135	64
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	83.0	83.0	14.0	97.0	33.0	33.0
Total Split (%)	63.8%	63.8%	10.8%	74.6%	25.4%	25.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effct Green (s)	83.5	83.5	92.5	92.5	28.5	28.5
Actuated g/C Ratio	0.64	0.64	0.71	0.71	0.22	0.22
v/c Ratio	0.47	0.09	0.13	0.44	0.35	0.16
Control Delay	21.1	5.2	6.4	8.0	45.9	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	5.2	6.4	8.0	45.9	10.6
LOS	C	A	A	A	D	B
Approach Delay	19.8			8.0	34.5	
Approach LOS	B			A	C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 15.5

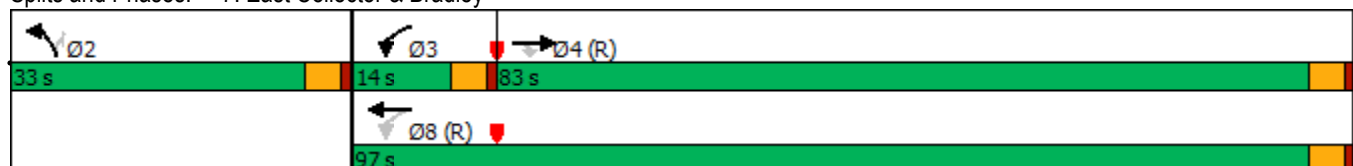
Intersection LOS: B

Intersection Capacity Utilization 48.4%

ICU Level of Service A










Analysis Period (min) 15

Splits and Phases: 7: East Collector & Bradley



HCM 6th TWSC
9: Bradley Landing Blvd & North Access

Long Term Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	1	3	1	4	46	5	169	1	16	56	132
Future Vol, veh/h	110	1	3	1	4	46	5	169	1	16	56	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	250	-	-	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	120	1	3	1	4	50	5	184	1	17	61	143






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	317	290	61	364	433	185	204	0	0	185	0	0
Stage 1	95	95	-	195	195	-	-	-	-	-	-	-
Stage 2	222	195	-	169	238	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	636	620	1004	592	516	857	1368	-	-	1390	-	-
Stage 1	912	816	-	807	739	-	-	-	-	-	-	-
Stage 2	780	739	-	833	708	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	588	610	1004	582	508	857	1368	-	-	1390	-	-
Mov Cap-2 Maneuver	588	610	-	582	508	-	-	-	-	-	-	-
Stage 1	908	806	-	804	736	-	-	-	-	-	-	-
Stage 2	727	736	-	819	700	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.6		9.8		0.2		0.6	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1368	-	-	588	864	582	812	1390	-	-
HCM Lane V/C Ratio	0.004	-	-	0.203	0.005	0.002	0.067	0.013	-	-
HCM Control Delay (s)	7.6	-	-	12.7	9.2	11.2	9.8	7.6	-	-
HCM Lane LOS	A	-	-	B	A	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0	0	0.2	0	-	-





HCM 6th TWSC
13: Bradley Landing Blvd & South Access

Long Term Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	2	1	87	27	16
Future Vol, veh/h	70	2	1	87	27	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	2	1	95	29	17
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	135	38	46	0	-	0
Stage 1	38	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	859	1034	1562	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	858	1034	1562	-	-	-
Mov Cap-2 Maneuver	858	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.6	0.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1562	-	862	-	-	
HCM Lane V/C Ratio	0.001	-	0.091	-	-	
HCM Control Delay (s)	7.3	-	9.6	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.3	-	-	

























HCM 6th TWSC
15: East Collector & Access

Long Term Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	1	1	120	85	14
Future Vol, veh/h	41	1	1	120	85	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	1	1	130	92	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	232	100	107	0	-	0
Stage 1	100	-	-	-	-	-
Stage 2	132	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	756	956	1484	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	755	956	1484	-	-	-
Mov Cap-2 Maneuver	755	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	894	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10	0.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1484	-	759	-	-	
HCM Lane V/C Ratio	0.001	-	0.06	-	-	
HCM Control Delay (s)	7.4	-	10	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Lanes, Volumes, Timings
101: Marksheffel Rd & Bradley

Long Term Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	491	377	160	95	541	285	212	600	50	140	275	308
Future Volume (vph)	491	377	160	95	541	285	212	600	50	140	275	308
Satd. Flow (prot)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.518			0.511			0.226		
Satd. Flow (perm)	3433	3539	1583	965	3539	1583	952	3539	1583	421	3539	1583
Satd. Flow (RTOR)			185			300			185			324
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	517	397	168	100	569	300	223	632	53	147	289	324
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	27.0	64.4		10.0	47.4		15.0	40.6		15.0	40.6	
Total Split (%)	20.8%	49.5%		7.7%	36.5%		11.5%	31.2%		11.5%	31.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	21.6	59.4	130.0	47.8	42.8	130.0	45.9	35.9	130.0	45.3	35.6	130.0
Actuated g/C Ratio	0.17	0.46	1.00	0.37	0.33	1.00	0.35	0.28	1.00	0.35	0.27	1.00
v/c Ratio	0.91	0.25	0.11	0.26	0.49	0.19	0.56	0.65	0.03	0.60	0.30	0.20
Control Delay	79.5	39.5	0.1	19.8	36.7	0.3	35.4	45.2	0.0	37.6	38.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.5	39.5	0.1	19.8	36.7	0.3	35.4	45.2	0.0	37.6	38.4	0.3
LOS	E	D	A	B	D	A	D	D	A	D	D	A
Approach Delay		52.5			23.7			40.2			22.0	
Approach LOS		D			C			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 35.7

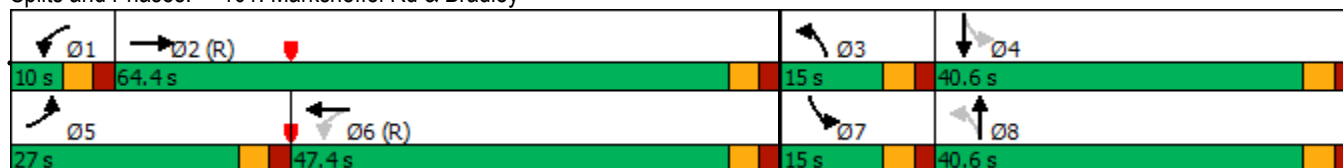
Intersection LOS: D

Intersection Capacity Utilization 70.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 101: Marksheffel Rd & Bradley



HCM 6th Roundabout
9: Bradley Landing Blvd & North Access

























Long Term Total Traffic - Roundabout
AM Peak Hour

Intersection				
Intersection Delay, s/veh	4.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	124	55	190	221
Demand Flow Rate, veh/h	126	56	194	225
Vehicles Circulating, veh/h	80	315	140	10
Vehicles Exiting, veh/h	155	19	66	361
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	4.2	4.5	4.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	126	56	194	225
Cap Entry Lane, veh/h	1272	1001	1196	1366
Entry HV Adj Factor	0.984	0.981	0.981	0.981
Flow Entry, veh/h	124	55	190	221
Cap Entry, veh/h	1251	981	1174	1340
V/C Ratio	0.099	0.056	0.162	0.165
Control Delay, s/veh	3.7	4.2	4.5	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Lanes, Volumes, Timings

1: Powers & Bradley

Long Term Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	367	210	479	384	703	175	633	704	701	1168	110
Future Volume (vph)	71	367	210	479	384	703	175	633	704	701	1168	110
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.518			0.950			0.950			0.950		
Satd. Flow (perm)	965	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Satd. Flow (RTOR)			227			626			422			143
Peak Hour Factor	0.95	0.95	0.95	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	386	221	494	396	725	180	653	726	723	1204	113
Turn Type	pm+pt	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free			Free			2			6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0		9.0	9.0		9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	10.0	26.0		34.0	50.0		15.0	40.0	40.0	30.0	55.0	55.0
Total Split (%)	7.7%	20.0%		26.2%	38.5%		11.5%	30.8%	30.8%	23.1%	42.3%	42.3%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	5.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Max	Max	C-Max	Max	Max
Act Effect Green (s)	25.7	19.7	130.0	24.8	40.5	130.0	11.8	36.0	35.0	33.5	57.7	57.7
Actuated g/C Ratio	0.20	0.15	1.00	0.19	0.31	1.00	0.09	0.28	0.27	0.26	0.44	0.44
v/c Ratio	0.33	0.72	0.14	0.76	0.36	0.46	0.58	0.67	0.99	0.82	0.77	0.14
Control Delay	31.5	60.5	0.2	50.2	42.7	0.8	64.4	45.6	50.8	54.7	35.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	60.5	0.2	50.2	42.7	0.8	64.4	45.6	50.8	54.7	35.9	2.2
LOS	C	E	A	D	D	A	E	D	D	D	D	A
Approach Delay		37.8			26.2			50.2			40.7	
Approach LOS		D			C			D			D	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 1 (1%), Referenced to phase 1:SBL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 38.9

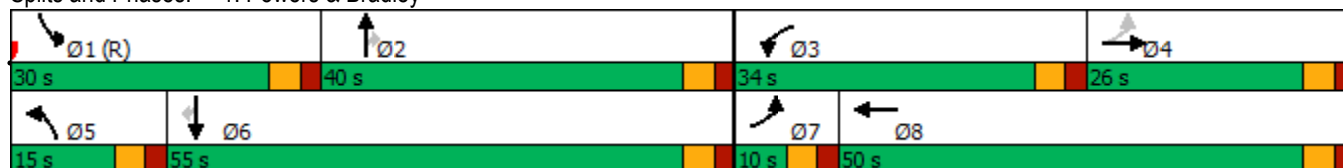
Intersection LOS: D

Intersection Capacity Utilization 84.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Powers & Bradley



























HCM 6th TWSC
3: Right-in/Right-out & Bradley

Long Term Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Vol, veh/h	1866	45	0	1661	0	10
Future Vol, veh/h	1866	45	0	1661	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	550	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2028	49	0	1805	0	11
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	1014
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	236
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	236
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		21		
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	236	-	-	-		
HCM Lane V/C Ratio	0.046	-	-	-		
HCM Control Delay (s)	21	-	-	-		
HCM Lane LOS	C	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

Lanes, Volumes, Timings
4: Bradley Landing Blvd & Bradley

Long Term Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	1511	331	170	1209	34	297	8	145	101	10	155
Future Volume (vph)	34	1511	331	170	1209	34	297	8	145	101	10	155
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	1863	1583	1770	1863	1583
Flt Permitted	0.090			0.068			0.950			0.752		
Satd. Flow (perm)	168	3539	1583	127	3539	1583	3433	1863	1583	1401	1863	1583
Satd. Flow (RTOR)			304			88			158			126
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	1642	360	185	1314	37	323	9	158	110	11	168
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	6.5	60.5	60.5	21.5	75.5	75.5	31.0	18.0	18.0	30.0	17.0	17.0
Total Split (%)	5.0%	46.5%	46.5%	16.5%	58.1%	58.1%	23.8%	13.8%	13.8%	23.1%	13.1%	13.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effect Green (s)	65.0	65.0	65.0	77.5	77.5	77.5	17.5	13.5	13.5	29.0	12.5	12.5
Actuated g/C Ratio	0.50	0.50	0.50	0.60	0.60	0.60	0.13	0.10	0.10	0.22	0.10	0.10
v/c Ratio	0.23	0.93	0.38	0.64	0.62	0.04	0.70	0.05	0.52	0.31	0.06	0.63
Control Delay	14.7	28.5	1.4	50.7	16.4	0.2	61.9	53.2	14.5	40.0	54.4	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	28.5	1.4	50.7	16.4	0.2	61.9	53.2	14.5	40.0	54.4	28.2
LOS	B	C	A	D	B	A	E	D	B	D	D	C
Approach Delay		23.5			20.1			46.4			33.7	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 72 (55%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 25.6









Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Bradley Landing Blvd & Bradley

 Ø2	 Ø1	 Ø4 (R)	 Ø3
18 s	30 s	60.5 s	21.5 s
 Ø6	 Ø5	 Ø7	 Ø8 (R)
17 s	31 s	6.5 s	75.5 s

Lanes, Volumes, Timings
7: East Collector & Bradley

Long Term Total Traffic
PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↗
Traffic Volume (vph)	1483	275	151	1178	235	125
Future Volume (vph)	1483	275	151	1178	235	125
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.056		0.950	
Satd. Flow (perm)	3539	1583	104	3539	1770	1583
Satd. Flow (RTOR)		299				136
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1612	299	164	1280	255	136
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	75.0	75.0	20.0	95.0	35.0	35.0
Total Split (%)	57.7%	57.7%	15.4%	73.1%	26.9%	26.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effct Green (s)	73.8	73.8	90.5	90.5	30.5	30.5
Actuated g/C Ratio	0.57	0.57	0.70	0.70	0.23	0.23
v/c Ratio	0.80	0.29	0.72	0.52	0.61	0.29
Control Delay	19.0	4.1	42.7	7.3	51.9	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	4.1	42.7	7.3	51.9	8.0
LOS	B	A	D	A	D	A
Approach Delay	16.7			11.3	36.6	
Approach LOS	B			B	D	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 55 (42%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.7

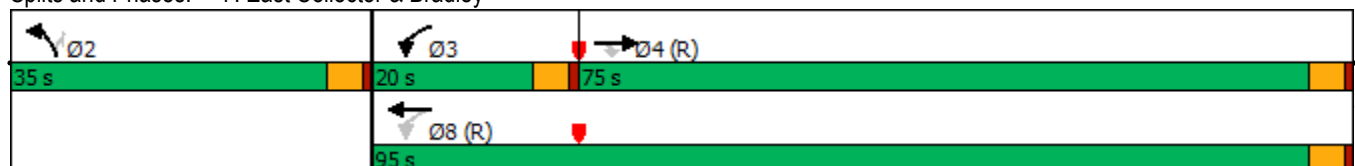
Intersection LOS: B

Intersection Capacity Utilization 73.6%

ICU Level of Service D










Analysis Period (min) 15

Splits and Phases: 7: East Collector & Bradley



HCM 6th TWSC
9: Bradley Landing Blvd & North Access

Long Term Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	20.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	315	4	14	1	2	31	13	169	1	55	265	301
Future Vol, veh/h	315	4	14	1	2	31	13	169	1	55	265	301
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	250	-	-	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	342	4	15	1	2	34	14	184	1	60	288	327






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	639	621	288	794	948	185	615	0	0	185	0	0
Stage 1	408	408	-	213	213	-	-	-	-	-	-	-
Stage 2	231	213	-	581	735	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	389	403	751	306	261	857	965	-	-	1390	-	-
Stage 1	620	597	-	789	726	-	-	-	-	-	-	-
Stage 2	772	726	-	499	425	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	355	380	751	284	246	857	965	-	-	1390	-	-
Mov Cap-2 Maneuver	355	380	-	284	246	-	-	-	-	-	-	-
Stage 1	611	571	-	777	715	-	-	-	-	-	-	-
Stage 2	729	715	-	464	407	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	70.6		10.3		0.6		0.7	
HCM LOS	F		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	965	-	-	355	617	284	745	1390	-	-
HCM Lane V/C Ratio	0.015	-	-	0.964	0.032	0.004	0.048	0.043	-	-
HCM Control Delay (s)	8.8	-	-	74	11	17.7	10.1	7.7	-	-
HCM Lane LOS	A	-	-	F	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	10.6	0.1	0	0.2	0.1	-	-

HCM 6th TWSC
13: Bradley Landing Blvd & South Access

Long Term Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	1	2	71	114	55
Future Vol, veh/h	47	1	2	71	114	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	1	2	77	124	60






Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	235	154	184	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	753	892	1391	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	942	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	752	892	1391	-	-	-
Mov Cap-2 Maneuver	752	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	942	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1391	-	754	-	-
HCM Lane V/C Ratio	0.002	-	0.069	-	-
HCM Control Delay (s)	7.6	-	10.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th TWSC
15: East Collector & Access

Long Term Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	1	1	225	282	48
Future Vol, veh/h	27	1	1	225	282	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	1	1	245	307	52

























Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	580	333	359	0	-	0
Stage 1	333	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	477	709	1200	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	709	1200	-	-	-
Mov Cap-2 Maneuver	477	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1200	-	483	-	-
HCM Lane V/C Ratio	0.001	-	0.063	-	-
HCM Control Delay (s)	8	-	13	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lanes, Volumes, Timings
101: Marksheffel Rd & Bradley

Long Term Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	605	725	304	195	593	215	220	500	100	300	650	516
Future Volume (vph)	605	725	304	195	593	215	220	500	100	300	650	516
Satd. Flow (prot)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.360			0.173			0.216		
Satd. Flow (perm)	3433	3539	1583	671	3539	1583	322	3539	1583	402	3539	1583
Satd. Flow (RTOR)			317			226			185			542
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	637	763	320	205	624	226	232	526	105	316	684	543
Turn Type	Prot	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free	6		Free	8		Free	4		Free
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0		5.0	4.0		5.0	4.0		5.0	4.0	
Minimum Split (s)	10.0	21.0		10.0	21.0		10.0	21.0		10.0	21.0	
Total Split (s)	35.0	55.0		15.0	35.0		30.0	30.0		30.0	30.0	
Total Split (%)	26.9%	42.3%		11.5%	26.9%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	Max		None	Max	
Act Effect Green (s)	27.8	50.0	130.0	42.2	32.2	130.0	46.5	28.6	130.0	53.5	32.1	130.0
Actuated g/C Ratio	0.21	0.38	1.00	0.32	0.25	1.00	0.36	0.22	1.00	0.41	0.25	1.00
v/c Ratio	0.87	0.56	0.20	0.68	0.71	0.14	0.74	0.68	0.07	0.81	0.78	0.34
Control Delay	64.8	10.1	0.2	35.7	50.4	0.2	42.9	52.3	0.1	45.1	53.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.8	10.1	0.2	35.7	50.4	0.2	42.9	52.3	0.1	45.1	53.7	0.6
LOS	E	B	A	D	D	A	D	D	A	D	D	A
Approach Delay		28.5			36.8			43.4			33.2	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

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

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 34.1

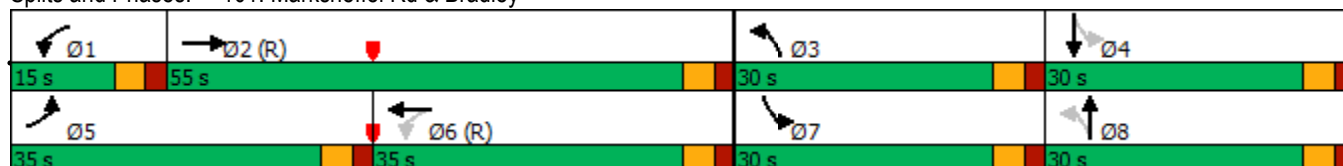
Intersection LOS: C

Intersection Capacity Utilization 80.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 101: Marksheffel Rd & Bradley



HCM 6th Roundabout
9: Bradley Landing Blvd & North Access

Long Term Total Traffic - Roundabout
PM Peak Hour

Intersection				
Intersection Delay, s/veh	7.7			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	361	37	199	675
Demand Flow Rate, veh/h	368	38	203	689
Vehicles Circulating, veh/h	356	551	414	17
Vehicles Exiting, veh/h	350	66	310	572
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	8.1	5.2	6.3	8.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	368	38	203	689
Cap Entry Lane, veh/h	960	787	905	1356
Entry HV Adj Factor	0.981	0.973	0.982	0.980
Flow Entry, veh/h	361	37	199	675
Cap Entry, veh/h	941	765	888	1329
V/C Ratio	0.383	0.048	0.224	0.508
Control Delay, s/veh	8.1	5.2	6.3	8.0
LOS	A	A	A	A
95th %tile Queue, veh	2	0	1	3