

TRAILS AT ASPEN RIDGE

PLANNED UNIT DEVELOPMENT AND SITE PLAN MAJOR AMENDMENT - TRAFFIC IMPACT STUDY

Prepared for:

El Paso County, CO

Prepared by:



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On Behalf of:

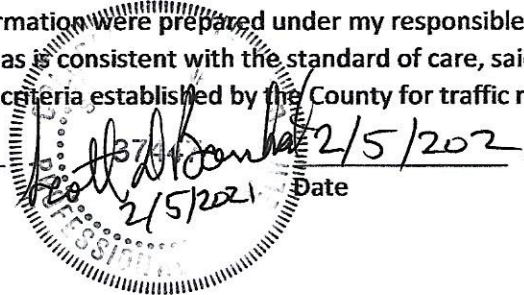
Colorado Land Acquisition dba Aspen View Homes
555 Middle Parkway, Suite 500
Colorado Springs, CO 80921

Traffic Engineer's Statement

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

A handwritten signature in black ink that reads "Scott D. Barnhart".

Scott D. Barnhart, P.E. #37447



Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

A handwritten signature in black ink that reads "Tim Buscha".

Tim Buscha: DIRECTOR
Colorado Land Acquisition dba Aspen View Homes

555 Middle Creek Parkway, Suite 500 Colorado Springs, CO 80921
January 28, 2021

1/5/21
Date



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1.0 Introduction

Trails at Aspen Ridge is a residential development contained within the Springs at Waterview East Preliminary Plan. It consists of 852 single family lots in six different filings.

The project lies to the south of Bradley Road and to the east of Powers Boulevard.

Figure 1 shows the vicinity of the project location. This document will serve as an addendum to the Trails at Aspen Ridge Filing No. 1 Traffic Impact and Access Analysis prepared by LSC and dated October 15, 2019. The development was estimated for 786 single family units at the time. This document will review the “with project” scenarios for build-out and the horizon year only since the existing conditions and no project scenarios will be the same as the previous study.

Introduction – Describes the purpose and intent of this study.

Project Traffic – Describes the proposed development and its location, as well as the expected number of daily and peak hour trips that will be generated by Corvallis. The expected external trip distribution is also shown.

Traffic Analysis

Project Buildout Year Traffic Analysis – Will analyze the study area background traffic (no-build scenario) and total traffic (with project scenario) for the projected 2030 buildout year.

Horizon Year Traffic Analysis – Will analyze the study area background and total traffic for the projected 2040 horizon year.

Findings and Conclusions – identifies any deficiencies in the study area roadway network with or without the project and mitigation measures that will alleviate any identified deficiencies.

Recommendations – Provides a summary of the study findings.

The only existing intersection in the study area is the intersection of Powers Boulevard and Bradley Road.

Figure 1 - Vicinity Map



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PLANNED UNIT DEVELOPMENT
TRAFFIC IMPACT STUDY

FIGURE 1
Vicinity Map

Intersection & Roadway Capacity Analysis

To determine how efficiently and effectively the perimeter street system accommodates the existing traffic volumes, the key intersections in the vicinity of the proposed development were analyzed using Synchro 10 software. The results are shown as Levels of Service (LOS). LOS is a qualitative measure used to describe the condition of traffic flow and delay, ranging from excellent conditions at LOS A to very poor conditions at LOS F. In general, agencies try to maintain a minimum of LOS D for intersection and approach operations. This report will show movement LOS for informational and illustrative purposes, but mitigation will only be triggered by an intersection or approach falling below LOS D.

Table 1 provides a description of conditions for each LOS at a signalized intersection.

Table 1 - Signalized Intersection Level of Service Criteria

Level of Service	Average Stopped Delay (seconds per vehicle)	Description
A	≤ 10	Very low delay. Most vehicles do not stop.
B	> 10 to 20	Generally good progression. Slight delays.
C	> 20 to 35	Increased number of stopped vehicles
D	> 35 to 55	Noticeable congestion.
E	> 55 to 80	High delays and frequent cycle failures.
F	> 80	Forced flow. Extensive queuing.

Source: HCM2010 Highway Capacity Manual (Transportation Research Board, 2010)

For unsignalized (side-street stop controlled) intersections, Synchro 10 software was used again. The software applies the Transportation Research Board's Highway Capacity Manual 6th Edition (HCM) methodology for unsignalized intersections to determine average control delay per vehicle (measured in seconds) for each stop-controlled movement. The method incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side street stop-controlled intersections, delay is represented as the average delay per vehicle for the worst approach, not the overall intersection.

Table 2 summarizes the relationship between delay and level of service for an unsignalized intersection.

Table 2 - Unsignalized Intersection Level of Service Criteria

Level of Service	Average Total Delay (seconds per vehicle)	Description
A	≤ 10	Little or no conflicting traffic for minor street approach.
B	> 10 to 15	Minor street begins to notice absence of available gaps.
C	> 15 to 25	Minor street begins experiencing delay for available gaps.
D	> 25 to 35	Minor street starts to experience queuing.
E	> 35 to 50	Extensive minor street queuing due to insufficient gaps.
F	> 50	Insufficient gaps to allow minor street traffic to cross safely through the major street traffic stream.

Source: HCM2010 Highway Capacity Manual (Transportation Research Board, 2010)

2.0 Project Traffic

Project Description, Location & Accessibility

Trails at Aspen Ridge is located near the southeast corner of Powers Boulevard and Bradley Road. It will provide 852 single-family lots. The development will be accessible from Bradley Road via a community collector called Legacy Hill Drive. Figure 2 shows the overall development plan, including the general layout of interior roadways and where they access the roadway network.

What is corvallis?
Update header

Figure 2 - Site Plan



Trip Generation

Vehicle trips associated with Trails at Aspen Ridge were calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, Tenth Edition*. This methodology consists of choosing an independent variable for the land use for a time of day (e.g. AM or PM peak hours). The independent variable correlates to the variation in trip ends and is related to the land use. The value of the independent variable is either multiplied by a weighted average or used in a regression equation to calculate the trips generated by the land use. The *ITE Trip Generation Manual* provides guidance on when to use the weighted average versus the regression equation. In most cases, the regression equations are recommended when there are adequate study data points. ITE land use code 210 was used for “single-family detached housing.” Values in Table 3 show the trips that are expected to be generated by Trails at Aspen Ridge at build out. The trip generation tables in Appendix A show the exact percentages and which parcels were affected by these calculations.

Trip Distribution

Site trips were distributed along the existing and future roadway network to match the previously approved trip distribution in the previous study. Most traffic will travel to/from the west to access Powers Boulevard.

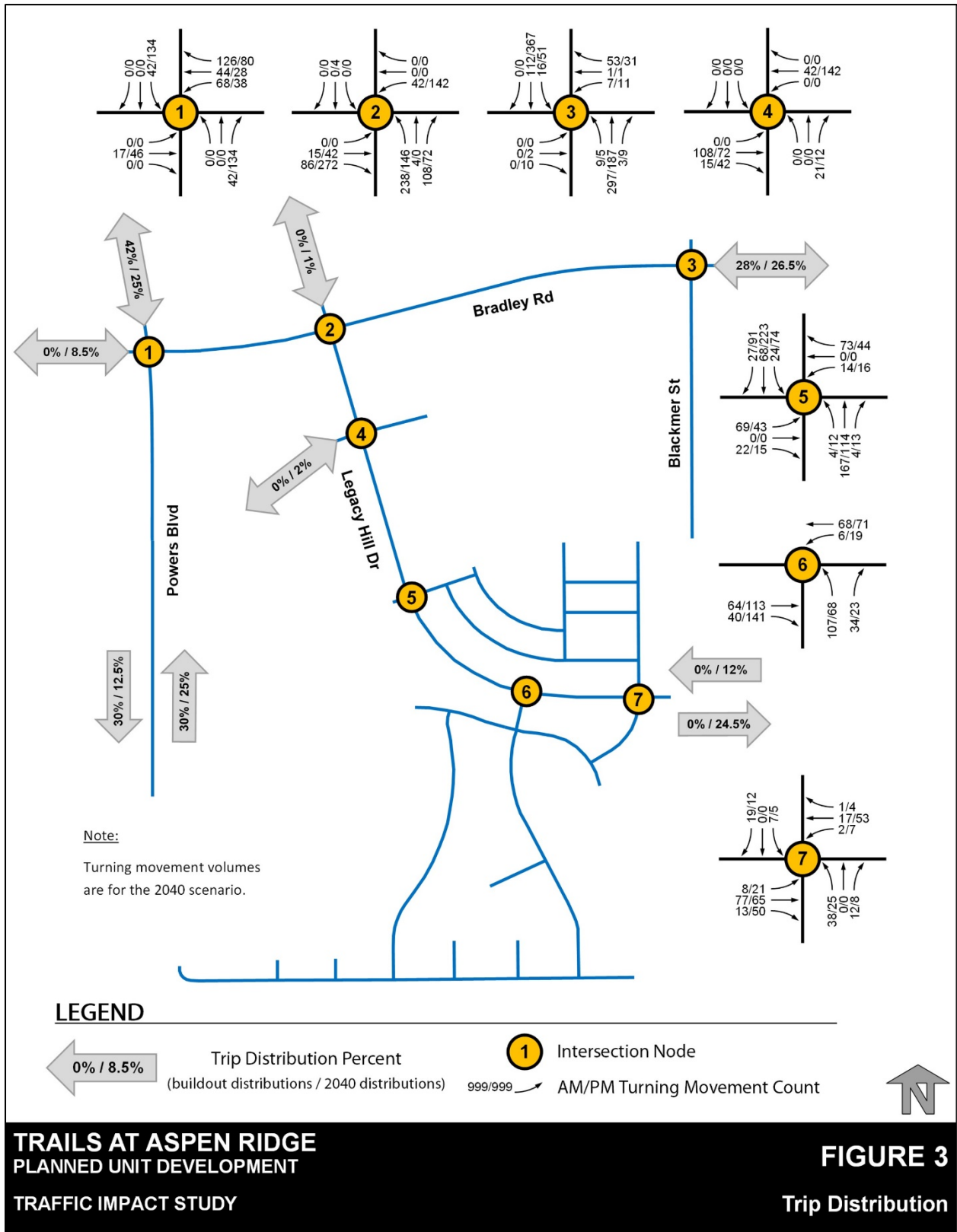
Figure 3 shows the expected external and internal trip distribution of travel for the site-generated trips. The trip distribution is different between the build-out and 2040 projections due to the extension of Bradley Road west of Powers Boulevard.

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Table 3 - Trails at Aspen Ridge Trip Generation

Parcel Name	Size (ac)	DU/KSF	Land Use Code – Land Use Description	AM VEHICLE TRIPS			PM VEHICLE TRIPS			DAILY VEHICLE TRIPS		
				Entry	Exit	Total	Entry	Exit	Total	Entry	Exit	Total
Single Family Residential												
Filing 1	181	181	210 - Single-Family Detached Housing	33	100	133	113	66	179	897	897	1794
Filing 2	98	98	210(1) - Single-Family Detached Housing	19	56	75	63	37	100	510	510	1020
Filing 3	195	195	210(2) - Single-Family Detached Housing	36	107	143	122	71	193	961	961	1922
Filing 4	132	132	210(3) - Single-Family Detached Housing	25	74	99	84	49	133	671	671	1342
Filing 5	140	140	210(4) - Single-Family Detached Housing	26	78	104	88	52	140	709	709	1418
Filing 6	106	106	210(5) - Single-Family Detached Housing	20	60	80	68	40	108	549	549	1098
TOTAL SINGLE-FAMILY DU			SINGLE-FAMILY RESIDENTIAL TRIPS	159	475	634	538	315	853	4297	4297	8594
TOTAL PEAK HOUR TRIPS				159	475	634	538	315	853	4297	4297	8594

Figure 3 - Trails at Aspen Ridge Site Trips & Trip Distribution



3.0 Traffic Analysis

Traffic conditions with the project have been analyzed for the project buildout and the horizon year of 2040. It was assumed that adjacent developments scheduled to be constructed prior to 2030 will have been constructed to their buildout volumes. The background traffic volumes for both scenarios were taken directly from the previous study.

Buildout Year Traffic Analysis

The buildout background volumes were used and site trips were added to this background to analyze the “with project” (total traffic) scenario. This analysis also takes into consideration any roadway improvements which are anticipated to be in place during this time.

With Project (Total Traffic)

Figure 4 shows the total traffic volumes which include the Trails at Aspen Ridge site-generated trips added to the background volumes.

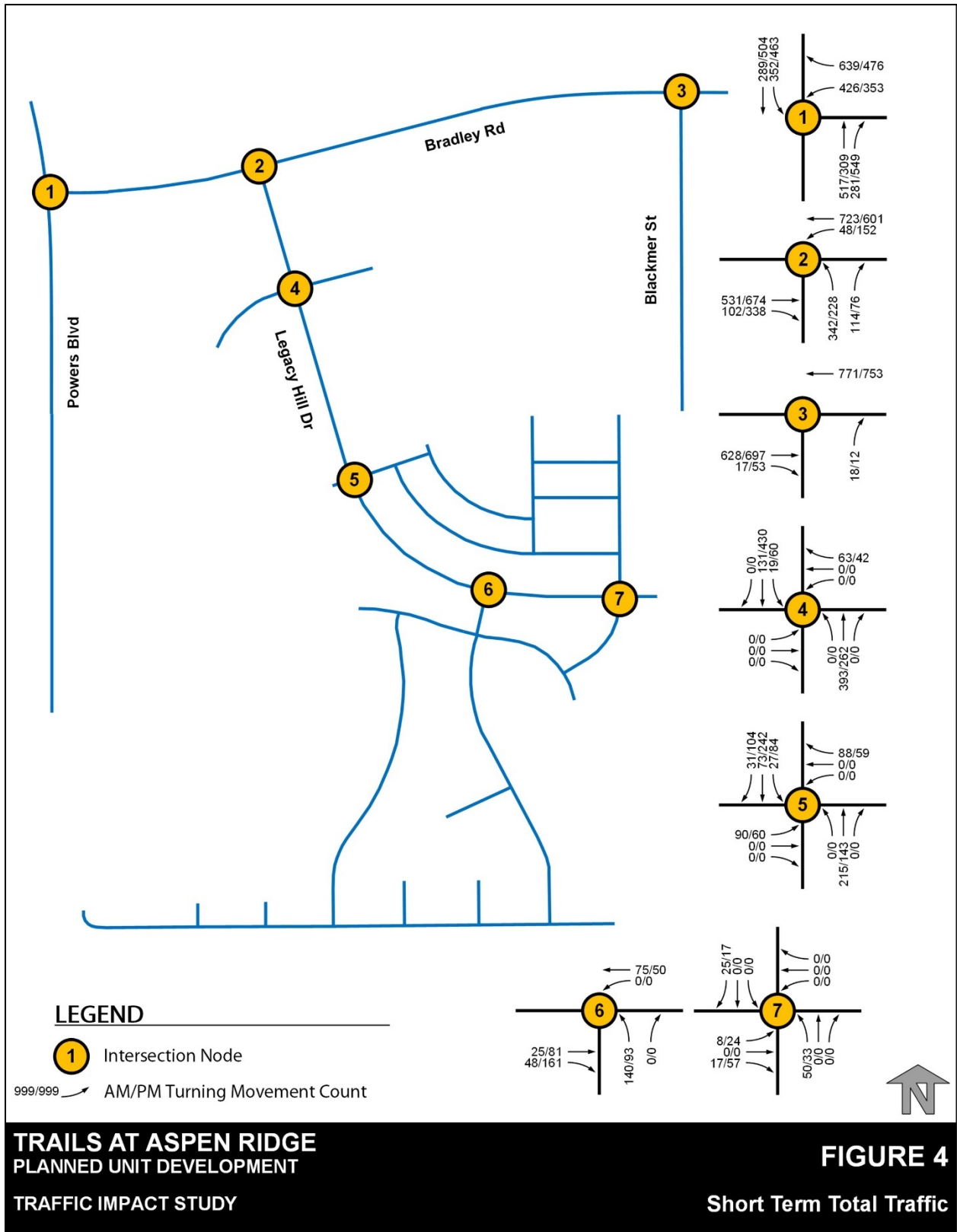
Table 4 shows the LOS results and Table 5 shows the storage and 95th percentile queue lengths for the study intersections. The full analysis software printout is provided in Appendix B. Figure 5 shows the road lane configurations and traffic control for the buildout total traffic, as well as any required lane/traffic control mitigations.

By 2030, all intersections in the study area operate at an acceptable level of service without any mitigation.

Since the prior study application a sketch plan amendment and rezone has been submitted which may impact the assumed background traffic volumes and trip distribution within this TIS.

See PCD File No.'s SKP202 and P202. If no changes are made based on these proposed amended use & rezone then provide narrative with justification.

Figure 4 - Buildout Year Total Traffic with Project



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Table 4 - Buildout Year Total LOS with Project

Int ID	Intersection	Control	AM Peak Hour Results			PM Peak Hour Results		
			Intersection LOS	Approach	Approach LOS	Intersection LOS	Approach	Approach LOS
1	Powers Blvd. & Bradley Rd.	Signalized	B	WB	B	B	WB	B
				NB	B		NB	A
				SB	C		SB	B
2	Bradley Rd. & Legacy Hill Dr.	Signalized	A	EB	A	A	EB	A
				WB	A		WB	A
				NB	B		NB	B
3	Blackmer St & Bradley Rd.	TWSC	B	EB	-	B	EB	-
				WB	-		WB	-
				NB	B		NB	B
4	Frontside Dr. & Legacy Hill Dr.	Roundabout	A	EB	-	A	EB	-
				WB	A		WB	A
				NB	A		NB	A
				SB	A		SB	A
5	Moose Meadow St. & Legacy Hill Dr.	TWSC	B	EB	B	C	EB	C
				WB	B		WB	A
				NB	-		NB	-
				SB	-		SB	-
6	Sunday Gulch Dr. & Legacy Hill Dr.	TWSC	A	EB	-	A	EB	-
				WB	-		WB	-
				NB	A		NB	A
7	Big Johnson Dr. & Legacy Hill Dr.	TWSC	A	EB	-	A	EB	-
				WB	-		WB	-
				NB	A		NB	A
				SB	A		SB	A

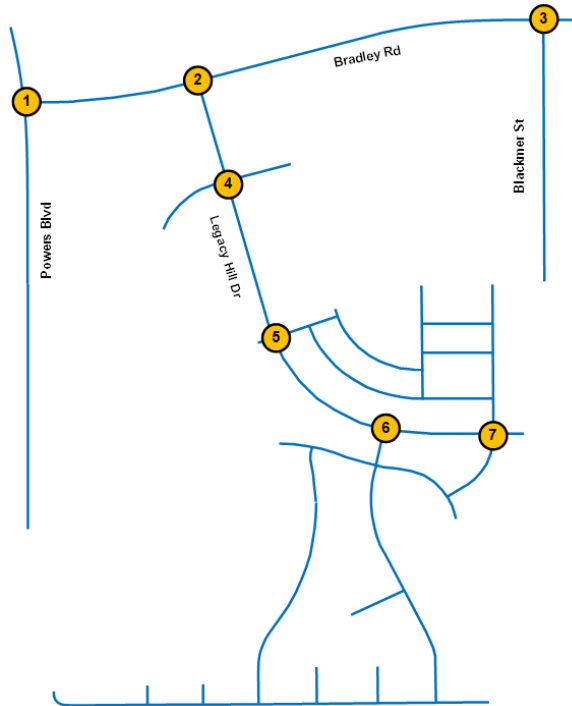
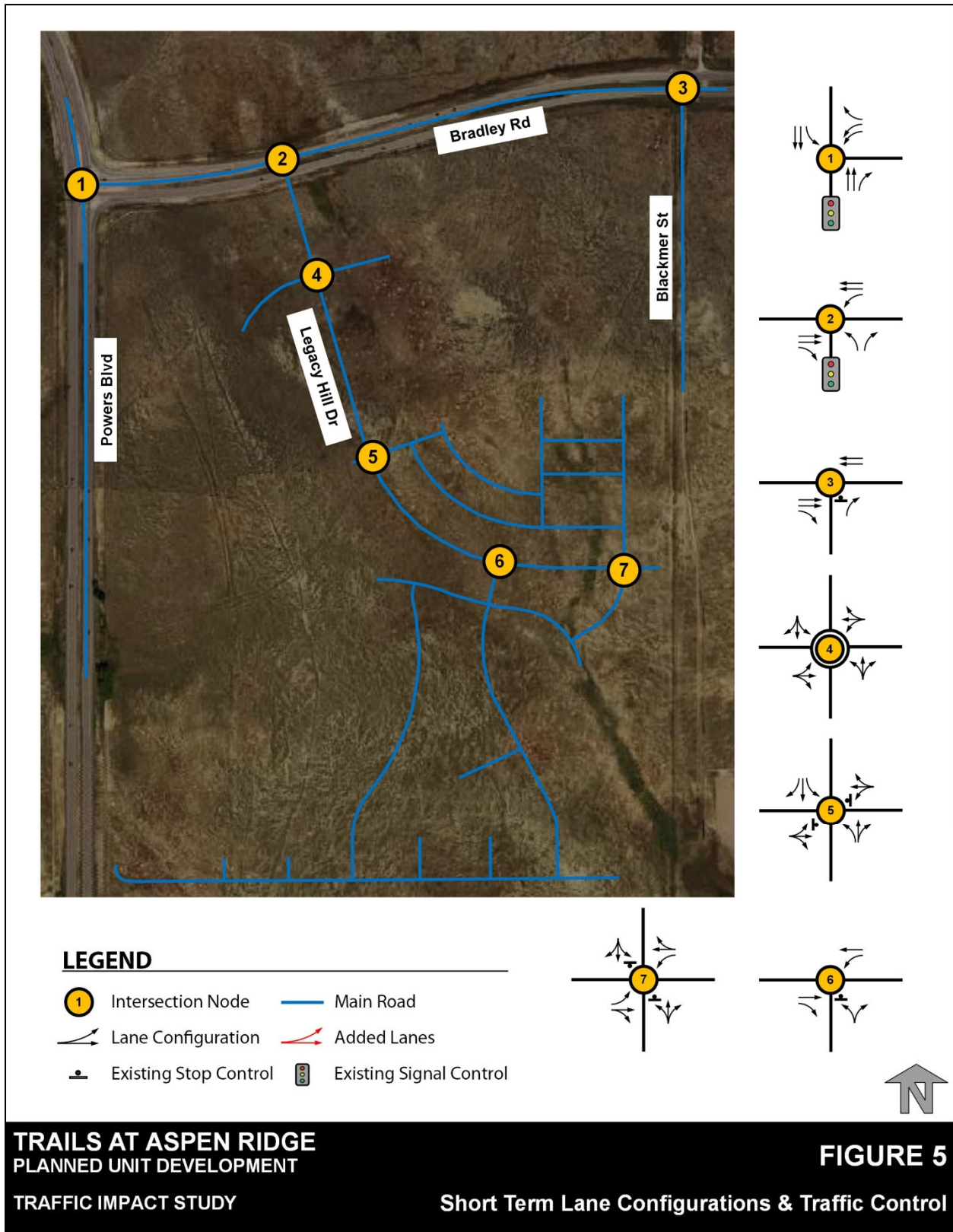


Table 5 - Buildout Year Total Traffic 95th Percentile Queue Lengths with Project

Int ID	Intersection	Movement	Turn Lane Storage (ft)	AM Peak Hour	PM Peak Hour
				Queue Length (ft)	Queue Length (ft)
1	Powers Blvd. & Bradley Rd.	WBL	N/A*	118	98
		WBR	625	0	65
		NBR	580	51	35
		SBL	675	293	340
2	Bradley Rd. & Legacy Hill Dr.	EBR	N/A*	16	31
		WBL	686	20	79
		NBL	200	165	115
		NBR	200	24	23
3	Blackmer St & Bradley Rd.	EBR	N/A*	0	0
		NBR	N/A*	2	2
5	Moose Meadow St. & Legacy Hill Dr.	NBL	205	-	-
		SBL	205	2	5
		SBR	155	0	0
6	Sunday Gulch Dr. & Legacy Hill Dr.	EBR	155	0	0
		WBL	N/A*	-	-
7	Big Johnson Dr. & Legacy Hill Dr.	EBL	N/A*	0	1
		WBL	205	-	-

Figure 5 shows the lane configurations and traffic control for the build-out total traffic scenario.

Figure 5 - Buildout Total Lane Configurations & Traffic Control



Horizon Year (2040) Traffic Analysis

The calculated 2040 background volumes were used and site trips were added to this background to analyze the with project (total traffic) scenario. This analysis also takes into consideration any roadway improvements which are anticipated to be in place during this time.

With Project (Total Traffic)

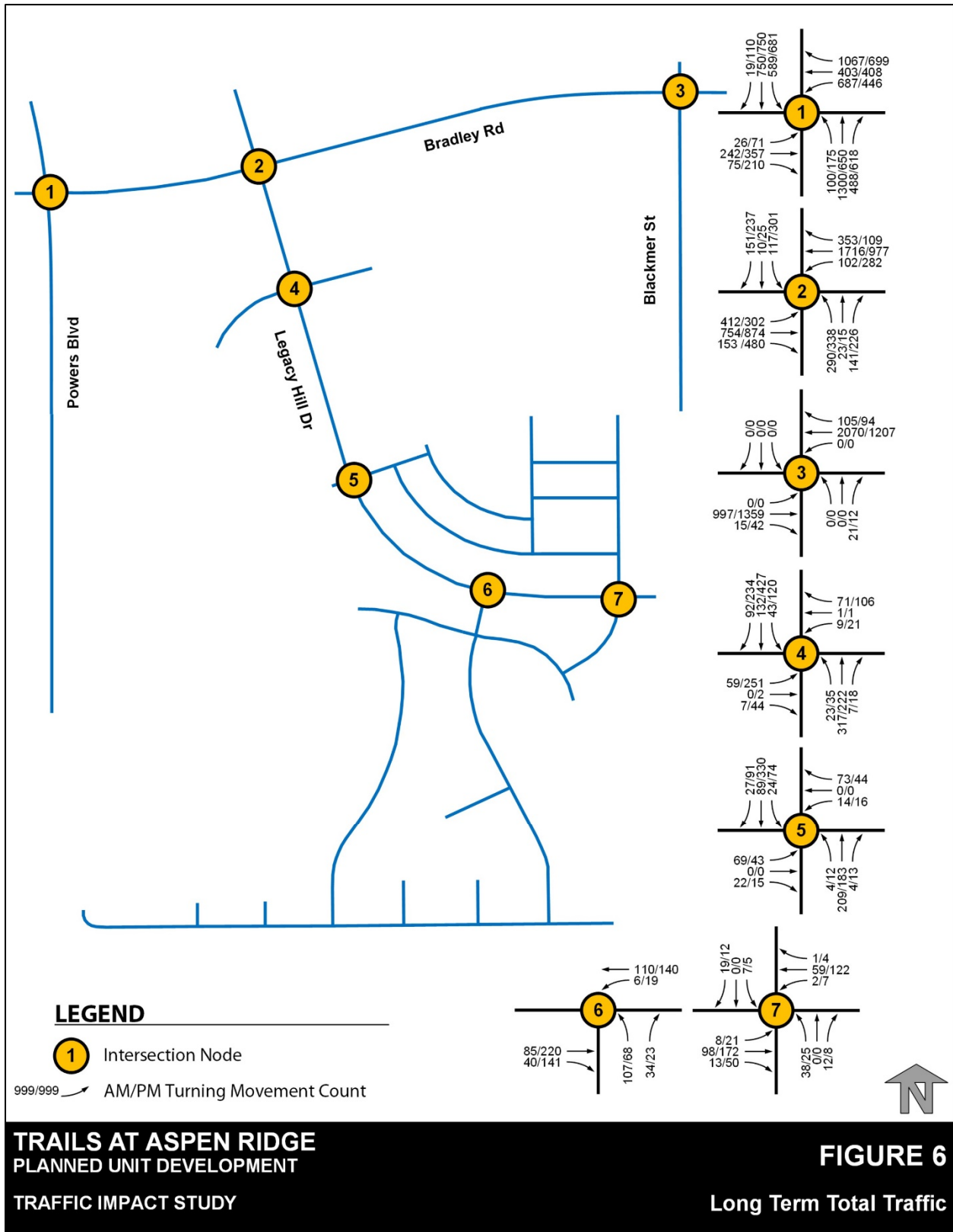
Figure 6 shows the total traffic volumes which include the Trails at Aspen Ridge site-generated trips added into the previously calculated background volumes. Table 6 shows the LOS and Table 7 shows the 95th percentile queue lengths for the study intersections. The full analysis software printout is provided in Appendix C.

The Powers Boulevard/Bradley Road intersection operates at LOS D overall during the AM and PM peak hours. However, the EB, NB and SB approaches all operate at LOS E during the AM peak hour. This intersection is project to be a grade separated interchange in the future that would resolve this issue. Additionally, a third northbound and southbound through lane would mitigate the deficient LOS during the AM peak hour without a grade separated interchange.

The Trails at Aspen Ridge contributes 5.90% of the total trips through the Powers Boulevard/Bradley Road intersection during the AM peak hour and 6.30% of the total trips in the PM peak hour. The total weighted average of project trips during both peak hours is 6.09%.

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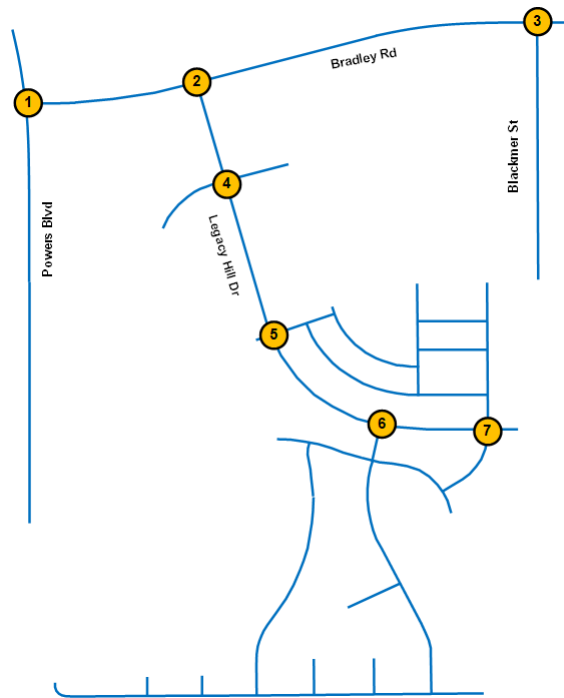
Figure 6 - Horizon Year (2040) Total Traffic with Project



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Table 6 - Horizon Year (2040) Total LOS with Project

Int ID	Intersection	Control	AM Peak Hour Results			PM Peak Hour Results		
			Intersection LOS	Approach	Approach LOS	Intersection LOS	Approach	Approach LOS
1	Powers Blvd. & Bradley Rd.	Signalized	D	EB	E	D	EB	C
				WB	D		WB	D
				NB	E		NB	D
				SB	E		SB	D
2	Bradley Rd. & Legacy Hill Dr.	Signalized	D	EB	C	C	EB	C
				WB	D		WB	C
				NB	D		NB	C
				SB	C		SB	C
3	Blackmer St & Bradley Rd.	TWSC	B	EB	-	C	EB	-
				WB	-		WB	-
				NB	B		NB	C
				SB	-		SB	-
4	Frontside Dr. & Legacy Hill Dr.	Roundabout	A	EB	A	B	EB	B
				WB	A		WB	A
				NB	A		NB	A
				SB	A		SB	B
5	Moose Meadow St. & Legacy Hill Dr.	TWSC	B	EB	B	C	EB	C
				WB	B		WB	B
				NB	-		NB	-
				SB	-		SB	-
6	Sunday Gulch Dr. & Legacy Hill Dr.	TWSC	B	EB	-	B	EB	-
				WB	-		WB	-
				NB	B		NB	B
				SB	-		SB	-
7	Big Johnson Dr. & Legacy Hill Dr.	TWSC	B	EB	-	B	EB	-
				WB	-		WB	-
				NB	B		NB	B
				SB	A		SB	A



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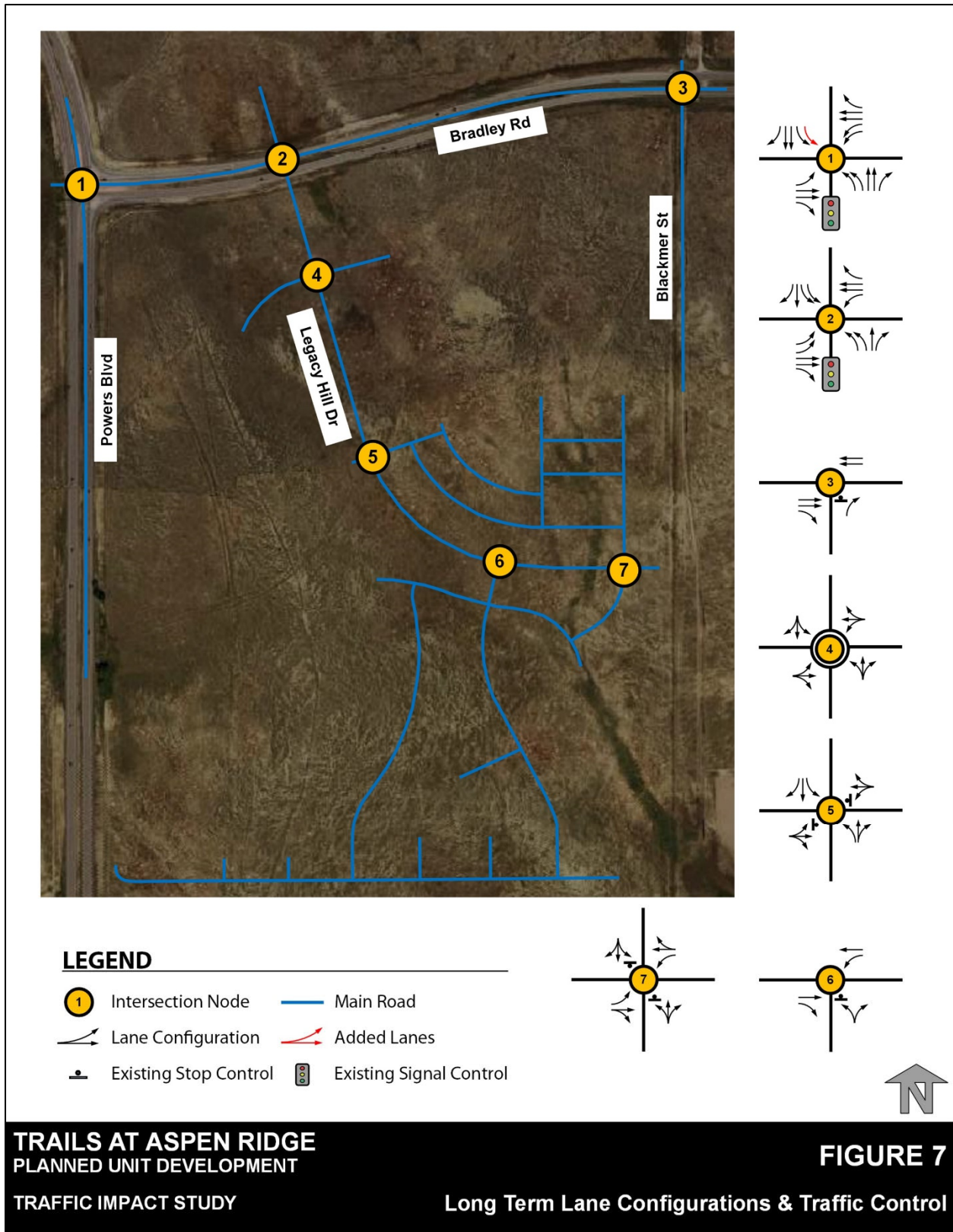
Table 7 - Horizon Year (2040) Total Traffic 95th Percentile Queue Lengths with Project

Int ID	Intersection	Movement	Turn Lane Storage (ft)	AM Peak Hour	PM Peak Hour
				Queue Length (ft)	Queue Length (ft)
1	Powers Blvd. & Bradley Rd.	EBL	300	42	60
		EBR	300	0	63
		WBL	N/A*	544	222
		WBR	N/A*	0	495
		NBL	580	88	96
		NBR	580	0	509
		SBL	675	477	381
		SBR	300	0	17
2	Bradley Rd. & Legacy Hill Dr.	EBL	400	313	137
		EBR	N/A*	33	72
		WBL	686	161	298
		WBR	200	151	40
		NBL	200	196	152
		NBR	200	67	65
		SBL	200	93	141
		SBR	200	0	69
3	Blackmer St & Bradley Rd.	EBR	N/A*	0	0
		NBR	N/A*	3	1
5	Moose Meadow St. & Legacy Hill Dr.	NBL	205	0	1
		SBL	205	1	5
		SBR	155	0	0
6	Sunday Gulch Dr. & Legacy Hill Dr.	EBR	155	0	0
		WBL	205	0	1
7	Big Johnson Dr. & Legacy Hill Dr.	EBL	205	0	1
		WBL	205	0	0

Figure 7 shows the road lane configurations and traffic control for the 2040 total traffic scenario.

Ad a footnote on the table describing the (*) symbol

Figure 7 - 2040 Total Lane Configurations & Traffic Control



Per discussion with Lori at the County Attorney's office because the signal was approved as an Eligible Intersection Improvement in the Fee Program, the entity that builds it will be eligible from the Program. Other developments thus no longer need to provide escrow funds, as a portion of the Impact Fee they pay will constitute their contribution to the intersection. If we have previously collected any escrow for that intersection, that escrow can be returned.

4.0 Findings

This report finds that the proposed development on Powers Boulevard at either the utility easement or northbound approach to the intersection during AM and PM peak hours.

Remove the traffic signal escrow contribution. Include a narrative regarding the April 2020 Road Impact Fee Advisory Committee meeting results.

See the Credits and Reimbursements section of the Road Impact Fee Implementation document for additional process required in the future. This is initiated by the applicant, not PCD Staff. For questions regarding establishing credits and credit agreement contact Victoria Chavez at EPC Department of Public Works.

5.0 Recommendations

The following are recommended improvements for this analysis period:

Total Buildout Traffic (with Project)

The following are recommended improvements for this analysis period:

- Bradley Road/Legacy Hill Drive
 - This intersection should be signalized by the time the project is built-out as it will meet MUTCD traffic signal warrants. The developer is in the process of finalizing a traffic signal design for this location that will sit on the shelf until El Paso County determines that the warrants are met. Table 4 of the previous TIS should be updated as follows:
 - Trails at Aspen Ridge PUD; 41% of minor approach volume; \$143,500 contribution towards \$350,000 traffic signal escrow account
 - Springs at Waterview East Commercial; 18% of minor approach volume; \$63,000 contribution towards \$350,000 traffic signal escrow account
 - Waterview North of Bradley Road; 41% of minor approach volume; \$143,500 contribution towards \$350,000 traffic signal escrow account
- All other recommendations from the previous TIS carry forward

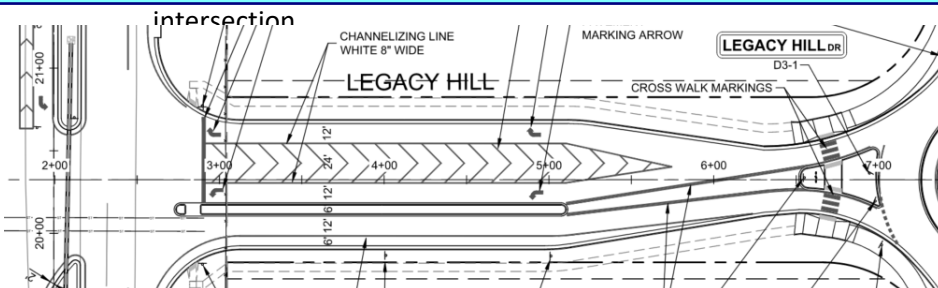
Total Traffic 2040 (with Project)

The following are recommended improvements for this analysis period:

- Bradley Road/Legacy Hill Drive
 - This intersection has two possible mitigation options:
 - Construct ultimate grade-separated intersection
 - Add a third northbound and southbound through lane to Powers Boulevard through the intersection
- This can be built as an auxiliary through lane for several hundred feet on Powers Boulevard through the intersection

Update. These recommendations appear to be for Bradley Road/Powers Blvd

Provide recommendation for the intersection lane configuration at Bradley/Legacy Hill, specifically the chevron area.



Add a section or bullet point regarding the roundabout at Frontside Dr/Sidewinder Dr.

1. Identify that final design/analysis still needs to be completed with the final plat application constructing the roundabout. Design and analysis will be per the Wisconsin DOT Roundabout design criteria
2. Describe the plan/timing for the roundabout and frontside drive. This section of street is located on top of the propertyline between the Future commercial and Trails at Aspen Ridge residential. Is there an agreement already in place between developers

Per ECM Appendix B.8:

1. Add a reference section listing other traffic studies in the area of study within the past five years and state whether the current study is consistent with those studies and explain any discrepancies.
2. State what the current applicable Transportation Impact Fees are and what option the developer will be selecting for payment (No PID, PID #1 or PID#2).
3. State whether the MTCP calls for the construction of improvements in the immediate area.
4. State whether the recommended improvements are reimbursable under the current MTCP/Road Impact Fee program.
5. Provide an exhibit with the recommended street classification for the proposed internal roads.
6. Provide trigger points for the construction of all the recommended improvements. Trigger point is typically based on the subdivision filing. Update the improvement table (table 5) from the previous TIS and include in the appendix.

PROJECT DETAILS

Project Name:	Trails at Aspen Ranch PUD Revision	Type of Project:	Single Family Residential
Project No:	20.886.028	City:	El Paso County
Country:		Built-up Area(Sq.ft):	
Analyst Name:	Scott Barnhart	Clients Name:	COLA
Date:	1/13/2021	ZIP/Postal Code:	
State/Province:	Colorado	No. of Scenarios:	3
Analysis Region:			

SCENARIO SUMMARY

Scenarios	Name	No. of Land Uses	Phases of Development	No. of Years to Project Traffic	User Group	Estimated New Vehicle Trips		
						Entry	Exit	Total
Scenario - 1	Weekday	6	1	0		4297	4297	8594
Scenario - 2	AM Peak Hour	6	1	0		159	475	634
Scenario - 3	PM Peak Hour	6	1	0		538	315	853

Scenario - 1

Scenario Name: Weekday

User Group:
No. of Years to Project 0
Traffic :

Dev. phase: 1

Analyst Note: Filings 1 - 6

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
210 - Single-Family Detached Housing	General	Dwelling Units	181	Weekday	Best Fit (LOG)	897	897	1794
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban				$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	
210(1) - Single-Family Detached Housing	General	Dwelling Units	98	Weekday	Best Fit (LOG)	510	510	1020
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban				$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	
210(2) - Single-Family Detached Housing	General	Dwelling Units	195	Weekday	Best Fit (LOG)	961	961	1922
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban				$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	
210(3) - Single-Family Detached Housing	General	Dwelling Units	132	Weekday	Best Fit (LOG)	671	671	1342
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban				$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	
210(4) - Single-Family Detached Housing	General	Dwelling Units	140	Weekday	Best Fit (LOG)	709	709	1418
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban				$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	
210(5) - Single-Family Detached Housing	General	Dwelling Units	106	Weekday	Best Fit (LOG)	549	549	1098
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban				$\ln(T) = 0.92\ln(X) + 2.71$	50%	50%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	50	50
210(1) - Single-Family Detached Housing	100	100	1	1	50	50
210(2) - Single-Family Detached Housing	100	100	1	1	50	50
210(3) - Single-Family Detached Housing	100	100	1	1	50	50
210(4) - Single-Family Detached Housing	100	100	1	1	50	50
210(5) - Single-Family Detached Housing	100	100	1	1	50	50

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	897	897	0	0	897	897
	1794		0		1794	
210(1) - Single-Family Detached Housing	510	510	0	0	510	510
	1020		0		1020	
210(2) - Single-Family Detached Housing	961	961	0	0	961	961
	1922		0		1922	
210(3) - Single-Family Detached Housing	671	671	0	0	671	671
	1342		0		1342	
210(4) - Single-Family Detached Housing	709	709	0	0	709	709
	1418		0		1418	
210(5) - Single-Family Detached Housing	549	549	0	0	549	549
	1098		0		1098	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	897	897	1794
210(1) - Single-Family Detached Housing	510	510	1020
210(2) - Single-Family Detached Housing	961	961	1922
210(3) - Single-Family Detached Housing	671	671	1342
210(4) - Single-Family Detached Housing	709	709	1418
210(5) - Single-Family Detached Housing	549	549	1098

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	4297	4297	8594
External Vehicle Trips	4297	4297	8594
New Vehicle Trips	4297	4297	8594

Scenario - 2

Scenario Name: AM Peak Hour

User Group:

Dev. phase: 1

No. of Years to Project 0

Traffic :

Analyst Note: Filings 1 - 6

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
210 - Single-Family Detached Housing	General	Dwelling Units	181	Weekday, Peak Hour of	Best Fit (LIN)	33	100	133
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$T = 0.71(X) + 4.80$	25%	75%	
210(1) - Single-Family Detached Housing	General	Dwelling Units	98	Weekday, Peak Hour of	Best Fit (LIN)	19	56	75
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$T = 0.71(X) + 4.80$	25%	75%	
210(2) - Single-Family Detached Housing	General	Dwelling Units	195	Weekday, Peak Hour of	Best Fit (LIN)	36	107	143
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$T = 0.71(X) + 4.80$	25%	75%	
210(3) - Single-Family Detached Housing	General	Dwelling Units	132	Weekday, Peak Hour of	Best Fit (LIN)	25	74	99
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$T = 0.71(X) + 4.80$	25%	75%	
210(4) - Single-Family Detached Housing	General	Dwelling Units	140	Weekday, Peak Hour	Best Fit (LIN)	26	78	104
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			of Adjacent Street	$T = 0.71(X) + 4.80$	25%	75%	
210(5) - Single-Family Detached Housing	General	Dwelling Units	106	Weekday, Peak Hour of	Best Fit (LIN)	20	60	80
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$T = 0.71(X) + 4.80$	25%	75%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	25	75
210(1) - Single-Family Detached Housing	100	100	1	1	25	75
210(2) - Single-Family Detached Housing	100	100	1	1	25	75
210(3) - Single-Family Detached Housing	100	100	1	1	25	75
210(4) - Single-Family Detached Housing	100	100	1	1	25	75
210(5) - Single-Family Detached Housing	100	100	1	1	25	75

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	33	100	0	0	33	100
	133		0		133	
210(1) - Single-Family Detached Housing	19	56	0	0	19	56
	75		0		75	
210(2) - Single-Family Detached Housing	36	107	0	0	36	107
	143		0		143	
210(3) - Single-Family Detached Housing	25	74	0	0	25	74
	99		0		99	
210(4) - Single-Family Detached Housing	26	78	0	0	26	78
	104		0		104	
210(5) - Single-Family Detached Housing	20	60	0	0	20	60
	80		0		80	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	33	100	133
210(1) - Single-Family Detached Housing	19	56	75
210(2) - Single-Family Detached Housing	36	107	143
210(3) - Single-Family Detached Housing	25	74	99
210(4) - Single-Family Detached Housing	26	78	104
210(5) - Single-Family Detached Housing	20	60	80

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	159	475	634
External Vehicle Trips	159	475	634
New Vehicle Trips	159	475	634

Scenario - 3

Scenario Name: PM Peak Hour

User Group:
No. of Years to Project 0
Traffic :

Dev. phase: 1

Analyst Note: Filings 1 - 6

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
210 - Single-Family Detached Housing	General	Dwelling Units	181	Weekday, Peak Hour of	Best Fit (LOG)	113	66	179
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	
210(1) - Single-Family Detached Housing	General	Dwelling Units	98	Weekday, Peak Hour of	Best Fit (LOG)	63	37	100
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	
210(2) - Single-Family Detached Housing	General	Dwelling Units	195	Weekday, Peak Hour of	Best Fit (LOG)	122	71	193
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	
210(3) - Single-Family Detached Housing	General	Dwelling Units	132	Weekday, Peak Hour of	Best Fit (LOG)	84	49	133
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	
210(4) - Single-Family Detached Housing	General	Dwelling Units	140	Weekday, Peak Hour	Best Fit (LOG)	88	52	140
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			of Adjacent Street	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	
210(5) - Single-Family Detached Housing	General	Dwelling Units	106	Weekday, Peak Hour of	Best Fit (LOG)	68	40	108
Data Source: Trip Gen Manual, 10th Ed	Urban/Suburban			Adjacent Street Traffic,	$\ln(T) = 0.96\ln(X) + 0.20$	63%	37%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
210 - Single-Family Detached Housing	100	100	1	1	63	37
210(1) - Single-Family Detached Housing	100	100	1	1	63	37
210(2) - Single-Family Detached Housing	100	100	1	1	63	37
210(3) - Single-Family Detached Housing	100	100	1	1	63	37
210(4) - Single-Family Detached Housing	100	100	1	1	63	37
210(5) - Single-Family Detached Housing	100	100	1	1	63	37

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Person Trips by Vehicle		Person Trips by Other Modes		Total Baseline Site Person Trips	
	Entry	Exit	Entry	Exit	Entry	Exit
210 - Single-Family Detached Housing	113	66	0	0	113	66
	179		0		179	
210(1) - Single-Family Detached Housing	63	37	0	0	63	37
	100		0		100	
210(2) - Single-Family Detached Housing	122	71	0	0	122	71
	193		0		193	
210(3) - Single-Family Detached Housing	84	49	0	0	84	49
	133		0		133	
210(4) - Single-Family Detached Housing	88	52	0	0	88	52
	140		0		140	
210(5) - Single-Family Detached Housing	68	40	0	0	68	40
	108		0		108	

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
210 - Single-Family Detached Housing	113	66	179
210(1) - Single-Family Detached Housing	63	37	100
210(2) - Single-Family Detached Housing	122	71	193
210(3) - Single-Family Detached Housing	84	49	133
210(4) - Single-Family Detached Housing	88	52	140
210(5) - Single-Family Detached Housing	68	40	108

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	538	315	853
External Vehicle Trips	538	315	853
New Vehicle Trips	538	315	853

Appendix B

BUILDOUT TOTAL TRAFFIC LEVEL OF SERVICE OUTPUT

Volume

1: Powers Bl & Bradley Rd

01/21/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	284	439	517	232	282	289
Future Volume (vph)	426	639	517	281	352	289
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	463	695	562	305	383	314
Shared Lane Traffic (%)						
Lane Group Flow (vph)	463	695	562	305	383	314
Intersection Summary						

Timings

1: Powers Bl & Bradley Rd

01/21/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↙	↕↕	↘	↙	↕↕
Traffic Volume (vph)	284	439	517	232	282	289
Future Volume (vph)	426	639	517	281	352	289
Turn Type	Prot	Free	NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		Free		2		
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)	22.5		22.5	22.5	20.0	42.5
Total Split (%)	34.6%		34.6%	34.6%	30.8%	65.4%
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		Max	Max	None	Max
Act Effect Green (s)	13.2	60.3	18.4	18.4	15.2	38.1
Actuated g/C Ratio	0.22	1.00	0.31	0.31	0.25	0.63
v/c Ratio	0.62	0.44	0.52	0.44	0.86	0.14
Control Delay	25.0	0.9	20.1	4.9	43.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	0.9	20.1	4.9	43.9	5.1
LOS	C	A	C	A	D	A
Approach Delay	10.5		14.8			26.5
Approach LOS	B		B			C

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 60.3
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 15.9
 Intersection LOS: B
 Intersection Capacity Utilization 49.3%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: Powers Bl & Bradley Rd



Phasings

1: Powers Bl & Bradley Rd

01/21/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		Free		2		
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)	22.5		22.5	22.5	20.0	42.5
Total Split (%)	34.6%		34.6%	34.6%	30.8%	65.4%
Maximum Green (s)	18.0		18.0	18.0	15.5	38.0
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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	None		Max	Max	None	Max
Walk Time (s)	7.0		7.0	7.0		7.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
90th %ile Green (s)	17.4		18.0	18.0	15.5	38.0
90th %ile Term Code	Gap		MaxR	MaxR	Max	MaxR
70th %ile Green (s)	14.8		18.0	18.0	15.5	38.0
70th %ile Term Code	Gap		MaxR	MaxR	Max	MaxR
50th %ile Green (s)	13.2		18.0	18.0	15.5	38.0
50th %ile Term Code	Gap		MaxR	MaxR	Max	MaxR
30th %ile Green (s)	11.6		18.0	18.0	15.5	38.0
30th %ile Term Code	Gap		MaxR	MaxR	Max	MaxR
10th %ile Green (s)	9.5		19.5	19.5	14.0	38.0
10th %ile Term Code	Gap		Hold	Hold	Gap	MaxR

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 60.3

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 64.4

70th %ile Actuated Cycle: 61.8

50th %ile Actuated Cycle: 60.2

30th %ile Actuated Cycle: 58.6

10th %ile Actuated Cycle: 56.5

Queues

1: Powers Bl & Bradley Rd

01/21/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	463	695	562	305	383	314
v/c Ratio	0.62	0.44	0.52	0.44	0.86	0.14
Control Delay	25.0	0.9	20.1	4.9	43.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	0.9	20.1	4.9	43.9	5.1
Queue Length 50th (ft)	78	0	88	0	132	20
Queue Length 95th (ft)	118	0	145	51	#293	41
Internal Link Dist (ft)	944		1477			1066
Turn Bay Length (ft)		500		700	1000	
Base Capacity (vph)	1026	1583	1077	694	455	2234
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.44	0.52	0.44	0.84	0.14

Intersection Summary

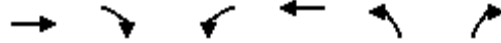
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 6th Edition methodology does not support free right turn mode.

Volume

3: Legacy Hill Dr. & Bradley Rd

01/21/2021

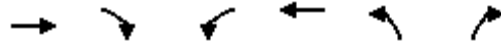


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	514	0	0	723	0	0
Future Volume (vph)	531	102	48	723	342	114
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	577	111	52	786	372	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	577	111	52	786	372	124
Intersection Summary						

Timings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021

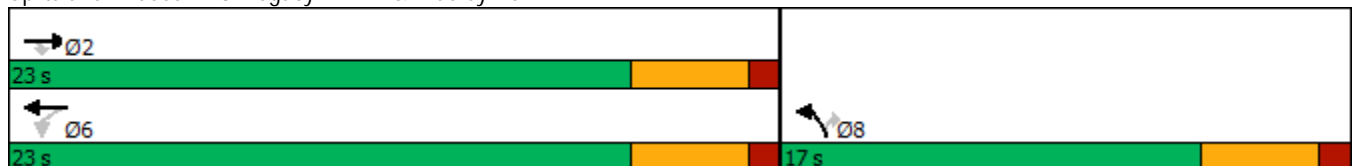


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	514	0	0	723	0	0
Future Volume (vph)	531	102	48	723	342	114
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	2			6	8	
Permitted Phases		2	6			8
Detector Phase	2	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	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	9.5
Total Split (s)	23.0	23.0	23.0	23.0	17.0	17.0
Total Split (%)	57.5%	57.5%	57.5%	57.5%	42.5%	42.5%
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 Optimize?						
Recall Mode	Min	Min	None	None	None	None
Act Effect Green (s)	15.5	15.5	15.5	15.5	11.1	11.1
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.31	0.31
v/c Ratio	0.38	0.15	0.15	0.51	0.68	0.21
Control Delay	7.9	2.4	7.7	9.0	19.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	2.4	7.7	9.0	19.2	3.9
LOS	A	A	A	A	B	A
Approach Delay	7.0			8.9	15.4	
Approach LOS	A			A	B	

Intersection Summary

Cycle Length: 40
 Actuated Cycle Length: 35.7
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 9.8
 Intersection LOS: A
 Intersection Capacity Utilization 23.7%
 ICU Level of Service A
 Analysis Period (min) 15

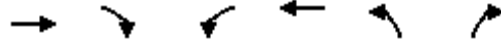
Splits and Phases: 3: Legacy Hill Dr. & Bradley Rd



Phasings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	2			6	8	
Permitted Phases		2	6			8
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	9.5
Total Split (s)	23.0	23.0	23.0	23.0	17.0	17.0
Total Split (%)	57.5%	57.5%	57.5%	57.5%	42.5%	42.5%
Maximum Green (s)	18.5	18.5	18.5	18.5	12.5	12.5
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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Min	Min	None	None	None	None
Walk Time (s)	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
90th %ile Green (s)	18.5	18.5	18.5	18.5	12.5	12.5
90th %ile Term Code	Hold	Hold	Max	Max	Max	Max
70th %ile Green (s)	17.0	17.0	17.0	17.0	12.5	12.5
70th %ile Term Code	Hold	Hold	Gap	Gap	Max	Max
50th %ile Green (s)	14.3	14.3	14.3	14.3	12.5	12.5
50th %ile Term Code	Hold	Hold	Gap	Gap	Max	Max
30th %ile Green (s)	11.6	11.6	11.6	11.6	10.1	10.1
30th %ile Term Code	Hold	Hold	Gap	Gap	Gap	Gap
10th %ile Green (s)	16.5	16.5	16.5	16.5	8.2	8.2
10th %ile Term Code	Dwell	Dwell	Dwell	Dwell	Gap	Gap

Intersection Summary

Cycle Length: 40

Actuated Cycle Length: 35.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 40

70th %ile Actuated Cycle: 38.5

50th %ile Actuated Cycle: 35.8

30th %ile Actuated Cycle: 30.7

10th %ile Actuated Cycle: 33.7

Queues

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	577	111	52	786	372	124
v/c Ratio	0.38	0.15	0.15	0.51	0.68	0.21
Control Delay	7.9	2.4	7.7	9.0	19.2	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	2.4	7.7	9.0	19.2	3.9
Queue Length 50th (ft)	38	0	6	57	56	0
Queue Length 95th (ft)	64	16	20	91	#165	24
Internal Link Dist (ft)	944			1230	477	
Turn Bay Length (ft)			495		100	
Base Capacity (vph)	1848	879	423	1848	624	638
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.13	0.12	0.43	0.60	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (veh/h)	514	0	0	723	0	0
Future Volume (veh/h)	531	102	48	723	342	114
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	577	111	52	786	372	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1394	622	466	1394	506	450
Arrive On Green	0.39	0.39	0.39	0.39	0.28	0.28
Sat Flow, veh/h	3647	1585	755	3647	1781	1585
Grp Volume(v), veh/h	577	111	52	786	372	124
Grp Sat Flow(s),veh/h/ln	1777	1585	755	1777	1781	1585
Q Serve(g_s), s	3.3	1.3	1.5	4.8	5.3	1.7
Cycle Q Clear(g_c), s	3.3	1.3	4.8	4.8	5.3	1.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1394	622	466	1394	506	450
V/C Ratio(X)	0.41	0.18	0.11	0.56	0.74	0.28
Avail Cap(c_a), veh/h	2365	1055	672	2365	801	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.1	5.5	7.9	6.6	9.0	7.7
Incr Delay (d2), s/veh	0.2	0.1	0.1	0.4	2.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	0.1	0.6	1.4	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	5.7	8.0	7.0	11.1	8.1
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	688			838	496	
Approach Delay, s/veh	6.2			7.0	10.3	
Approach LOS	A			A	B	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		15.4			15.4	12.4
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		18.5			18.5	12.5
Max Q Clear Time (g_c+I1), s		5.3			6.8	7.3
Green Ext Time (p_c), s		3.2			4.1	0.8
Intersection Summary						
HCM 6th Ctrl Delay			7.6			
HCM 6th LOS			A			

Volume

5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	63	0	393	0	19	131	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	0	68	0	427	0	21	142	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	68	0	0	427	0	0	163	0
Intersection Summary												

HCM 6th Roundabout
 5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021

Intersection				
Intersection Delay, s/veh	5.0			
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	0	68	427	163
Demand Flow Rate, veh/h	0	69	436	166
Vehicles Circulating, veh/h	166	436	21	0
Vehicles Exiting, veh/h	0	21	145	505
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	4.9	5.6	3.6
Approach LOS	-	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	0	69	436	166
Cap Entry Lane, veh/h	1165	885	1351	1380
Entry HV Adj Factor	1.000	0.986	0.980	0.983
Flow Entry, veh/h	0	68	427	163
Cap Entry, veh/h	1165	872	1324	1356
V/C Ratio	0.000	0.078	0.323	0.120
Control Delay, s/veh	3.1	4.9	5.6	3.6
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0

Volume

6: Blackmer St & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	514	0	0	723	0	0
Future Volume (vph)	628	17	0	771	0	18
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	683	18	0	838	0	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	683	18	0	838	0	20
Intersection Summary						

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	514	0	0	723	0	0
Future Vol, veh/h	628	17	0	771	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	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	683	18	0	838	0	20

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	342
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	654
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	654
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	654	-	-	-
HCM Lane V/C Ratio	0.03	-	-	-
HCM Control Delay (s)	10.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Volume

11: Legacy Hill Dr./Legacy Hill Dr & Moose Meadow Street

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	90	0	0	0	0	88	0	215	0	27	73	31
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	98	0	0	0	0	96	0	234	0	29	79	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	96	0	0	234	0	29	79	34
Intersection Summary												

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	90	0	0	0	0	88	0	215	0	27	73	31
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	-	-	-	-	-	-	205	-	-	205	-	155
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	98	0	0	0	0	96	0	234	0	29	79	34

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	419	371	79	388	405	234	113	0	0	234	0	0
Stage 1	137	137	-	234	234	-	-	-	-	-	-	-
Stage 2	282	234	-	154	171	-	-	-	-	-	-	-
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	544	559	981	571	535	805	1476	-	-	1333	-	-
Stage 1	866	783	-	769	711	-	-	-	-	-	-	-
Stage 2	725	711	-	848	757	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	472	547	981	561	523	805	1476	-	-	1333	-	-
Mov Cap-2 Maneuver	472	547	-	561	523	-	-	-	-	-	-	-
Stage 1	866	766	-	769	711	-	-	-	-	-	-	-
Stage 2	639	711	-	830	740	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	14.6		10.1		0			1.6		
HCM LOS	B		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1476	-	-	472	805	1333	-
HCM Lane V/C Ratio	-	-	-	0.207	0.119	0.022	-
HCM Control Delay (s)	0	-	-	14.6	10.1	7.8	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.4	0.1	-

Volume

14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	25	48	0	75	140	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	27	52	0	82	152	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	52	0	82	152	0
Intersection Summary						

HCM 6th TWSC
 14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	25	48	0	75	140	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	205	-	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	27	52	0	82	152	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	79	0	109
Stage 1	-	-	-	-	27
Stage 2	-	-	-	-	82
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1519	-	888
Stage 1	-	-	-	-	996
Stage 2	-	-	-	-	941
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1519	-	888
Mov Cap-2 Maneuver	-	-	-	-	888
Stage 1	-	-	-	-	996
Stage 2	-	-	-	-	941

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	888	-	-	1519	-
HCM Lane V/C Ratio	0.171	-	-	-	-
HCM Control Delay (s)	9.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Volume

16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	8	0	17	0	0	0	50	0	0	0	0	25
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	9	0	18	0	0	0	54	0	0	0	0	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	18	0	0	0	0	0	54	0	0	27	0
Intersection Summary												

HCM 6th TWSC
 16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	8	0	17	0	0	0	50	0	0	0	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	-	-	-	-	-	-
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	9	0	18	0	0	0	54	0	0	0	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	18	0	0	42	28	9	28	37	1
Stage 1	-	-	-	-	-	-	27	27	-	1	1	-
Stage 2	-	-	-	-	-	-	15	1	-	27	36	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1599	-	-	961	865	1073	981	855	1084
Stage 1	-	-	-	-	-	-	990	873	-	1022	895	-
Stage 2	-	-	-	-	-	-	1005	895	-	990	865	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1599	-	-	933	860	1073	977	850	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	933	860	-	977	850	-
Stage 1	-	-	-	-	-	-	984	868	-	1016	895	-
Stage 2	-	-	-	-	-	-	980	895	-	985	860	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0	9.1	8.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	933	1622	-	-	1599	-	-	1084
HCM Lane V/C Ratio	0.058	0.005	-	-	-	-	-	0.025
HCM Control Delay (s)	9.1	7.2	-	-	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Volume

1: Powers Bl & Bradley Rd

01/21/2021


















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	257	344	309	387	234	504
Future Volume (vph)	353	476	309	549	463	504
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	384	517	336	597	503	548
Shared Lane Traffic (%)						
Lane Group Flow (vph)	384	517	336	597	503	548
Intersection Summary						

Timings

1: Powers Bl & Bradley Rd

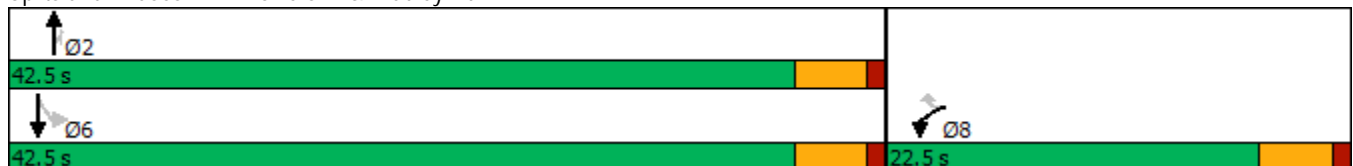
01/21/2021

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	257	344	309	387	234	504
Future Volume (vph)	353	476	309	549	463	504
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	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	22.5	22.5
Total Split (s)	22.5	22.5	42.5	42.5	42.5	42.5
Total Split (%)	34.6%	34.6%	65.4%	65.4%	65.4%	65.4%
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						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effect Green (s)	13.0	13.0	38.1	38.1	38.1	38.1
Actuated g/C Ratio	0.22	0.22	0.63	0.63	0.63	0.63
v/c Ratio	0.52	0.69	0.15	0.49	0.78	0.24
Control Delay	23.2	7.7	5.2	2.1	20.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	7.7	5.2	2.1	20.5	5.6
LOS	C	A	A	A	C	A
Approach Delay	14.3		3.2			12.7
Approach LOS	B		A			B

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 60.1	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 44.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Powers Bl & Bradley Rd



Phasings

1: Powers Bl & Bradley Rd

01/21/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2			6
Permitted Phases		8		2	6	
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	22.5	22.5
Total Split (s)	22.5	22.5	42.5	42.5	42.5	42.5
Total Split (%)	34.6%	34.6%	65.4%	65.4%	65.4%	65.4%
Maximum Green (s)	18.0	18.0	38.0	38.0	38.0	38.0
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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	18.0	18.0	38.0	38.0	38.0	38.0
90th %ile Term Code	Max	Max	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	15.1	15.1	38.0	38.0	38.0	38.0
70th %ile Term Code	Gap	Gap	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	12.7	12.7	38.0	38.0	38.0	38.0
50th %ile Term Code	Gap	Gap	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	11.3	11.3	38.0	38.0	38.0	38.0
30th %ile Term Code	Gap	Gap	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	8.5	8.5	38.0	38.0	38.0	38.0
10th %ile Term Code	Gap	Gap	MaxR	MaxR	MaxR	MaxR

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 60.1

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 65

70th %ile Actuated Cycle: 62.1

50th %ile Actuated Cycle: 59.7

30th %ile Actuated Cycle: 58.3

10th %ile Actuated Cycle: 55.5

Queues

1: Powers Bl & Bradley Rd

01/21/2021



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	384	517	336	597	503	548
v/c Ratio	0.52	0.69	0.15	0.49	0.78	0.24
Control Delay	23.2	7.7	5.2	2.1	20.5	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	7.7	5.2	2.1	20.5	5.6
Queue Length 50th (ft)	63	0	21	0	108	37
Queue Length 95th (ft)	98	65	45	35	#340	73
Internal Link Dist (ft)	944		1477			1066
Turn Bay Length (ft)		500		700	1000	
Base Capacity (vph)	1030	837	2243	1222	648	2243
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.62	0.15	0.49	0.78	0.24
















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Powers Bl & Bradley Rd

01/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	257	344	309	387	234	504
Future Volume (veh/h)	353	476	309	549	463	504
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	517	336	597	503	548
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	957	439	2078	927	436	2078
Arrive On Green	0.28	0.28	0.58	0.58	0.58	0.58
Sat Flow, veh/h	3456	1585	3647	1585	600	3647
Grp Volume(v), veh/h	384	517	336	597	503	548
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1585	600	1777
Q Serve(g_s), s	5.9	18.0	2.8	16.3	35.2	4.9
Cycle Q Clear(g_c), s	5.9	18.0	2.8	16.3	38.0	4.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	957	439	2078	927	436	2078
V/C Ratio(X)	0.40	1.18	0.16	0.64	1.15	0.26
Avail Cap(c_a), veh/h	957	439	2078	927	436	2078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	23.5	6.2	9.0	19.4	6.6
Incr Delay (d2), s/veh	0.3	101.5	0.2	3.4	92.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	18.5	0.9	5.3	17.8	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.4	125.0	6.4	12.4	112.2	6.9
LnGrp LOS	B	F	A	B	F	A
Approach Vol, veh/h	901		933			1051
Approach Delay, s/veh	80.0		10.3			57.3
Approach LOS	E		B			E
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		42.5			42.5	22.5
Change Period (Y+Rc), s		4.5			4.5	4.5
Max Green Setting (Gmax), s		38.0			38.0	18.0
Max Q Clear Time (g_c+I1), s		18.3			40.0	20.0
Green Ext Time (p_c), s		4.6			0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			49.2			
HCM 6th LOS			D			

Volume

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	621	0	0	601	0	0
Future Volume (vph)	674	338	152	601	228	76
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	733	367	165	653	248	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	367	165	653	248	83
Intersection Summary						

Timings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021

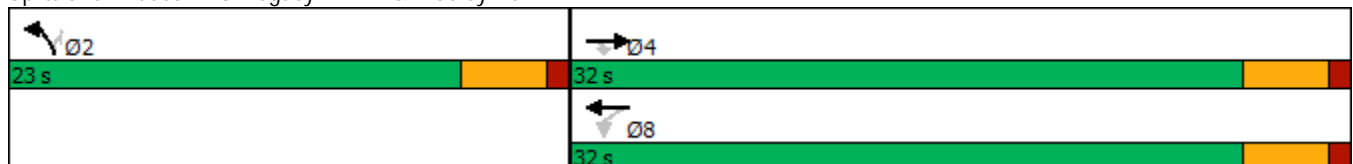


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (vph)	621	0	0	601	0	0
Future Volume (vph)	674	338	152	601	228	76
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Detector Phase	4	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	32.0	32.0	32.0	32.0	23.0	23.0
Total Split (%)	58.2%	58.2%	58.2%	58.2%	41.8%	41.8%
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						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Min	Min
Act Effect Green (s)	17.8	17.8	17.8	17.8	11.1	11.1
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.29	0.29
v/c Ratio	0.45	0.40	0.54	0.40	0.49	0.16
Control Delay	8.1	2.4	15.8	7.7	16.4	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	2.4	15.8	7.7	16.4	4.8
LOS	A	A	B	A	B	A
Approach Delay	6.2			9.3	13.5	
Approach LOS	A			A	B	

Intersection Summary

Cycle Length: 55	
Actuated Cycle Length: 38.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 20.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Legacy Hill Dr. & Bradley Rd



Phasings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Protected Phases	4			8	2	
Permitted Phases		4	8			2
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	22.5	22.5
Total Split (s)	32.0	32.0	32.0	32.0	23.0	23.0
Total Split (%)	58.2%	58.2%	58.2%	58.2%	41.8%	41.8%
Maximum Green (s)	27.5	27.5	27.5	27.5	18.5	18.5
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
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
90th %ile Green (s)	27.5	27.5	27.5	27.5	17.2	17.2
90th %ile Term Code	Max	Max	Max	Max	Gap	Gap
70th %ile Green (s)	23.5	23.5	23.5	23.5	13.6	13.6
70th %ile Term Code	Hold	Hold	Gap	Gap	Gap	Gap
50th %ile Green (s)	17.5	17.5	17.5	17.5	10.5	10.5
50th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Gap
30th %ile Green (s)	14.0	14.0	14.0	14.0	8.6	8.6
30th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Gap
10th %ile Green (s)	9.2	9.2	9.2	9.2	6.6	6.6
10th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Gap

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 38.6

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 53.7

70th %ile Actuated Cycle: 46.1

50th %ile Actuated Cycle: 37

30th %ile Actuated Cycle: 31.6

10th %ile Actuated Cycle: 24.8

Queues

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	733	367	165	653	248	83
v/c Ratio	0.45	0.40	0.54	0.40	0.49	0.16
Control Delay	8.1	2.4	15.8	7.7	16.4	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	2.4	15.8	7.7	16.4	4.8
Queue Length 50th (ft)	45	0	21	40	41	0
Queue Length 95th (ft)	101	31	79	88	115	23
Internal Link Dist (ft)	944			1230	477	
Turn Bay Length (ft)			495		100	
Base Capacity (vph)	2634	1272	489	2634	912	856
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.29	0.34	0.25	0.27	0.10

Intersection Summary

HCM 6th Signalized Intersection Summary

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑	↵	↵
Traffic Volume (veh/h)	621	0	0	601	0	0
Future Volume (veh/h)	674	338	152	601	228	76
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	733	367	165	653	248	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1985	885	418	1985	362	322
Arrive On Green	0.56	0.56	0.56	0.56	0.20	0.20
Sat Flow, veh/h	3647	1585	513	3647	1781	1585
Grp Volume(v), veh/h	733	367	165	653	248	83
Grp Sat Flow(s),veh/h/ln	1777	1585	513	1777	1781	1585
Q Serve(g_s), s	4.3	5.0	10.0	3.8	4.9	1.7
Cycle Q Clear(g_c), s	4.3	5.0	14.3	3.8	4.9	1.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1985	885	418	1985	362	322
V/C Ratio(X)	0.37	0.41	0.39	0.33	0.69	0.26
Avail Cap(c_a), veh/h	2590	1155	506	2590	873	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.6	4.8	8.6	4.5	13.9	12.6
Incr Delay (d2), s/veh	0.1	0.3	0.6	0.1	2.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	0.8	0.7	1.8	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.7	5.1	9.2	4.6	16.2	13.1
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h	1100			818	331	
Approach Delay, s/veh	4.9			5.5	15.4	
Approach LOS	A			A	B	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		12.2		25.6		25.6
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		18.5		27.5		27.5
Max Q Clear Time (g_c+I1), s		6.9		7.0		16.3
Green Ext Time (p_c), s		0.8		6.6		4.8
Intersection Summary						
HCM 6th Ctrl Delay			6.7			
HCM 6th LOS			A			

Volume

5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	42	0	262	0	60	430	0
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	0	0	0	0	46	0	285	0	65	467	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	46	0	0	285	0	0	532	0
Intersection Summary												

HCM 6th Roundabout
 5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021

Intersection				
Intersection Delay, s/veh	5.7			
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	0	46	285	532
Demand Flow Rate, veh/h	0	47	291	542
Vehicles Circulating, veh/h	542	291	66	0
Vehicles Exiting, veh/h	0	66	476	338
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	0.0	4.0	4.8	6.3
Approach LOS	-	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	0	47	291	542
Cap Entry Lane, veh/h	794	1026	1290	1380
Entry HV Adj Factor	1.000	0.979	0.980	0.981
Flow Entry, veh/h	0	46	285	532
Cap Entry, veh/h	794	1004	1265	1354
V/C Ratio	0.000	0.046	0.226	0.393
Control Delay, s/veh	4.5	4.0	4.8	6.3
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	2

Volume

6: Blackmer St & Bradley Rd

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	621	0	0	601	0	0
Future Volume (vph)	697	53	0	753	0	12
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	758	58	0	818	0	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	758	58	0	818	0	13
Intersection Summary						

HCM 6th TWSC
6: Blackmer St & Bradley Rd

01/21/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	621	0	0	601	0	0
Future Vol, veh/h	697	53	0	753	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	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	758	58	0	818	0	13

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	-	-	379
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	619
Stage 1	-	0	-	0	-
Stage 2	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	619
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	619	-	-	-
HCM Lane V/C Ratio	0.021	-	-	-
HCM Control Delay (s)	10.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Volume

11: Legacy Hill Dr./Legacy Hill Dr & Moose Meadow Street

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	60	0	0	0	0	59	0	143	0	84	242	104
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	65	0	0	0	0	64	0	155	0	91	263	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	64	0	0	155	0	91	263	113
Intersection Summary												

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	60	0	0	0	0	59	0	143	0	84	242	104
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	-	-	-	-	-	-	205	-	-	205	-	155
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	65	0	0	0	0	64	0	155	0	91	263	113

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	632	600	263	657	713	155	376	0	0	155	0	0
Stage 1	445	445	-	155	155	-	-	-	-	-	-	-
Stage 2	187	155	-	502	558	-	-	-	-	-	-	-
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	393	415	776	378	357	891	1182	-	-	1425	-	-
Stage 1	592	575	-	847	769	-	-	-	-	-	-	-
Stage 2	815	769	-	552	512	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	347	388	776	359	334	891	1182	-	-	1425	-	-
Mov Cap-2 Maneuver	347	388	-	359	334	-	-	-	-	-	-	-
Stage 1	592	538	-	847	769	-	-	-	-	-	-	-
Stage 2	756	769	-	517	479	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.8		9.4		0		1.5	
HCM LOS	C		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1182	-	-	347	891	1425	-
HCM Lane V/C Ratio	-	-	-	0.188	0.072	0.064	-
HCM Control Delay (s)	0	-	-	17.8	9.4	7.7	-
HCM Lane LOS	A	-	-	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	0.2	-

Volume

14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	81	161	0	50	93	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	88	175	0	54	101	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	175	0	54	101	0
Intersection Summary						

HCM 6th TWSC
 14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	81	161	0	50	93	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	205	-	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	88	175	0	54	101	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	263	0	142
Stage 1	-	-	-	-	88
Stage 2	-	-	-	-	54
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1301	-	851
Stage 1	-	-	-	-	935
Stage 2	-	-	-	-	969
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1301	-	851
Mov Cap-2 Maneuver	-	-	-	-	851
Stage 1	-	-	-	-	935
Stage 2	-	-	-	-	969

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	851	-	-	1301	-
HCM Lane V/C Ratio	0.119	-	-	-	-
HCM Control Delay (s)	9.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Volume

16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	24	0	57	0	0	0	33	0	0	0	0	17
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	26	0	62	0	0	0	36	0	0	0	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	62	0	0	0	0	0	36	0	0	18	0
Intersection Summary												

HCM 6th TWSC
 16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	24	0	57	0	0	0	33	0	0	0	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	-	-	-	-	-	-
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	26	0	62	0	0	0	36	0	0	0	0	18

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1	0	0	62	0	0	93	84	31	84	115	1
Stage 1	-	-	-	-	-	-	83	83	-	1	1	-
Stage 2	-	-	-	-	-	-	10	1	-	83	114	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1541	-	-	891	806	1043	903	775	1084
Stage 1	-	-	-	-	-	-	925	826	-	1022	895	-
Stage 2	-	-	-	-	-	-	1011	895	-	925	801	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1541	-	-	865	793	1043	892	763	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	865	793	-	892	763	-
Stage 1	-	-	-	-	-	-	910	813	-	1006	895	-
Stage 2	-	-	-	-	-	-	994	895	-	910	788	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	9.3	8.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	865	1622	-	-	1541	-	-	1084
HCM Lane V/C Ratio	0.041	0.016	-	-	-	-	-	0.017
HCM Control Delay (s)	9.3	7.3	-	-	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Appendix C

2040 TOTAL TRAFFIC LEVEL OF SERVICE OUTPUT

Volume

1: Powers Bl & /Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	26	225	75	619	359	941	100	1300	446	547	750	19
Future Volume (vph)	26	242	75	687	403	1067	100	1300	488	589	750	19
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	28	263	82	747	438	1160	109	1413	530	640	815	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	263	82	747	438	1160	109	1413	530	640	815	21
Intersection Summary												

Timings

1: Powers Bl & /Bradley Rd

01/21/2021

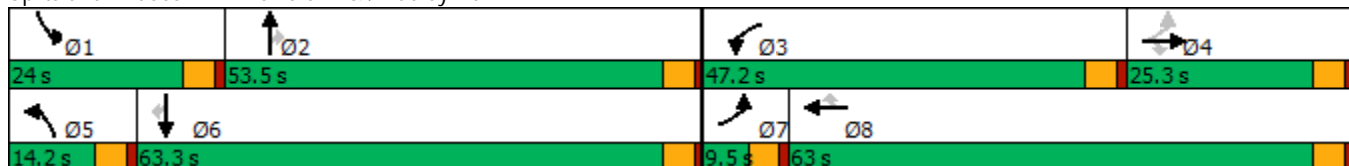


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	225	75	619	359	941	100	1300	446	547	750	19
Future Volume (vph)	26	242	75	687	403	1067	100	1300	488	589	750	19
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			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	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	25.3	25.3	47.2	63.0	63.0	14.2	53.5	53.5	24.0	63.3	63.3
Total Split (%)	6.3%	16.9%	16.9%	31.5%	42.0%	42.0%	9.5%	35.7%	35.7%	16.0%	42.2%	42.2%
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	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	27.9	22.9	22.9	36.7	58.6	58.6	9.0	49.1	49.1	19.5	59.6	59.6
Actuated g/C Ratio	0.19	0.16	0.16	0.25	0.40	0.40	0.06	0.34	0.34	0.13	0.41	0.41
v/c Ratio	0.14	0.47	0.22	0.87	0.31	1.43	0.52	1.19	0.60	1.40	0.57	0.03
Control Delay	30.2	60.3	1.4	63.8	31.2	227.3	76.2	136.4	6.0	236.3	35.9	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	30.2	60.3	1.4	63.8	31.2	227.3	76.2	136.4	6.0	236.3	35.9	0.1
LOS	C	E	A	E	C	F	E	F	A	F	D	A
Approach Delay		45.1			138.6			99.5			122.3	
Approach LOS		D			F			F			F	

Intersection Summary

Cycle Length: 150	
Actuated Cycle Length: 146.2	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.43	
Intersection Signal Delay: 116.3	Intersection LOS: F
Intersection Capacity Utilization 109.6%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Powers Bl & /Bradley Rd



Phasings

1: Powers Bl & /Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
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	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	25.3	25.3	47.2	63.0	63.0	14.2	53.5	53.5	24.0	63.3	63.3
Total Split (%)	6.3%	16.9%	16.9%	31.5%	42.0%	42.0%	9.5%	35.7%	35.7%	16.0%	42.2%	42.2%
Maximum Green (s)	5.0	20.8	20.8	42.7	58.5	58.5	9.7	49.0	49.0	19.5	58.8	58.8
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0	0		0	0
90th %ile Green (s)	5.0	20.8	20.8	42.7	58.5	58.5	9.7	49.0	49.0	19.5	58.8	58.8
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	5.0	22.1	22.1	41.4	58.5	58.5	9.7	49.0	49.0	19.5	58.8	58.8
70th %ile Term Code	Max	Hold	Hold	Gap	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	5.0	24.9	24.9	38.6	58.5	58.5	9.7	49.0	49.0	19.5	58.8	58.8
50th %ile Term Code	Max	Hold	Hold	Gap	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	0.0	21.4	21.4	32.6	58.5	58.5	8.7	49.0	49.0	19.5	59.8	59.8
30th %ile Term Code	Skip	Hold	Hold	Gap	Max	Max	Gap	MaxR	MaxR	Max	Hold	Hold
10th %ile Green (s)	0.0	25.3	25.3	28.7	58.5	58.5	7.2	49.0	49.0	19.5	61.3	61.3
10th %ile Term Code	Skip	Hold	Hold	Gap	Max	Max	Gap	MaxR	MaxR	Max	Hold	Hold

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 146.2

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 150

70th %ile Actuated Cycle: 150

50th %ile Actuated Cycle: 150

30th %ile Actuated Cycle: 140.5

10th %ile Actuated Cycle: 140.5

Queues

1: Powers Bl & /Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	28	263	82	747	438	1160	109	1413	530	640	815	21
v/c Ratio	0.14	0.47	0.22	0.87	0.31	1.43	0.52	1.19	0.60	1.40	0.57	0.03
Control Delay	30.2	60.3	1.4	63.8	31.2	227.3	76.2	136.4	6.0	236.3	35.9	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	30.2	60.3	1.4	63.8	31.2	227.3	76.2	136.4	6.0	236.3	35.9	0.1
Queue Length 50th (ft)	15	123	0	360	156	~1367	54	~891	0	~436	329	0
Queue Length 95th (ft)	35	177	0	422	201	#1636	88	#1031	90	#561	399	0
Internal Link Dist (ft)		976			944			1477			1066	
Turn Bay Length (ft)	300		300	300		500	300		700	1000		300
Base Capacity (vph)	206	555	368	1003	1417	811	228	1187	883	458	1442	709
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.47	0.22	0.74	0.31	1.43	0.48	1.19	0.60	1.40	0.57	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Powers Bl & /Bradley Rd

01/21/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	225	75	619	359	941	100	1300	446	547	750	19
Future Volume (veh/h)	26	242	75	687	403	1067	100	1300	488	589	750	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	263	82	747	438	0	109	1413	0	640	815	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	345	154	840	1123		159	1328		514	1693	
Arrive On Green	0.02	0.10	0.10	0.24	0.32	0.00	0.05	0.37	0.00	0.15	0.48	0.00
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	28	263	82	747	438	0	109	1413	0	640	815	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	1.8	9.5	6.5	27.4	12.6	0.0	4.1	49.0	0.0	19.5	20.4	0.0
Cycle Q Clear(g_c), s	1.8	9.5	6.5	27.4	12.6	0.0	4.1	49.0	0.0	19.5	20.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	345	154	840	1123		159	1328		514	1693	
V/C Ratio(X)	0.15	0.76	0.53	0.89	0.39		0.68	1.06		1.25	0.48	
Avail Cap(c_a), veh/h	215	564	251	1125	1585		256	1328		514	1693	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.4	57.7	56.4	47.9	35.0	0.0	61.6	41.1	0.0	55.8	23.3	0.0
Incr Delay (d2), s/veh	0.4	3.5	2.8	7.1	0.2	0.0	5.1	43.7	0.0	126.0	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.4	2.7	12.6	5.5	0.0	1.9	29.2	0.0	17.5	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.7	61.2	59.2	55.0	35.2	0.0	66.7	84.8	0.0	181.8	24.3	0.0
LnGrp LOS	D	E	E	E	D		E	F		F	C	
Approach Vol, veh/h		373			1185	A		1522	A		1455	A
Approach Delay, s/veh		60.0			47.7			83.5			93.6	
Approach LOS		E			D			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.0	53.5	36.4	17.2	10.5	67.0	7.7	45.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	19.5	49.0	42.7	20.8	9.7	58.8	5.0	58.5				
Max Q Clear Time (g_c+I1), s	21.5	51.0	29.4	11.5	6.1	22.4	3.8	14.6				
Green Ext Time (p_c), s	0.0	0.0	2.5	1.3	0.1	6.8	0.0	3.3				

Intersection Summary

HCM 6th Ctrl Delay	75.4
HCM 6th LOS	E

Notes

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

Volume

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	412	739	67	60	1716	353	52	19	33	117	10	151
Future Volume (vph)	412	754	153	102	1716	353	290	23	141	117	10	151
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	448	820	166	111	1865	384	315	25	153	127	11	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	448	820	166	111	1865	384	315	25	153	127	11	164
Intersection Summary												

Timings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	412	739	67	60	1716	353	52	19	33	117	10	151
Future Volume (vph)	412	754	153	102	1716	353	290	23	141	117	10	151
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
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	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	24.1	94.0	94.0	11.0	80.9	80.9	22.5	30.3	30.3	14.7	22.5	22.5
Total Split (%)	16.1%	62.7%	62.7%	7.3%	53.9%	53.9%	15.0%	20.2%	20.2%	9.8%	15.0%	15.0%
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	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	None	Min	Min	Min	Min	Min	None	Min	Min
Act Effect Green (s)	19.6	89.7	89.7	83.0	76.5	76.5	16.6	15.0	15.0	9.5	7.8	7.8
Actuated g/C Ratio	0.14	0.65	0.65	0.60	0.55	0.55	0.12	0.11	0.11	0.07	0.06	0.06
v/c Ratio	0.92	0.36	0.15	0.26	0.95	0.40	0.76	0.12	0.50	0.54	0.10	0.67
Control Delay	84.2	12.2	1.8	9.0	42.2	9.2	72.3	56.8	13.9	72.1	63.9	23.0
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	84.2	12.2	1.8	9.0	42.2	9.2	72.3	56.8	13.9	72.1	63.9	23.0
LOS	F	B	A	A	D	A	E	E	B	E	E	C
Approach Delay		33.5			35.3			53.4			45.1	
Approach LOS		C			D			D			D	

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 138.6
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 37.3
 Intersection LOS: D
 Intersection Capacity Utilization 80.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Legacy Hill Dr. & Bradley Rd



Phasings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
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	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	24.1	94.0	94.0	11.0	80.9	80.9	22.5	30.3	30.3	14.7	22.5	22.5
Total Split (%)	16.1%	62.7%	62.7%	7.3%	53.9%	53.9%	15.0%	20.2%	20.2%	9.8%	15.0%	15.0%
Maximum Green (s)	19.6	89.5	89.5	6.5	76.4	76.4	18.0	25.8	25.8	10.2	18.0	18.0
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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Min	Min	Min	None	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0	0	0	0		0	0
90th %ile Green (s)	19.6	89.5	89.5	6.5	76.4	76.4	18.0	21.3	21.3	10.2	13.5	13.5
90th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Hold	Hold	Max	Gap	Gap
70th %ile Green (s)	19.6	89.5	89.5	6.5	76.4	76.4	18.0	16.5	16.5	10.2	8.7	8.7
70th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Hold	Hold	Max	Gap	Gap
50th %ile Green (s)	19.6	89.5	89.5	6.5	76.4	76.4	18.0	14.0	14.0	10.2	6.2	6.2
50th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Hold	Hold	Max	Gap	Gap
30th %ile Green (s)	19.6	89.5	89.5	6.5	76.4	76.4	16.0	12.3	12.3	9.3	5.6	5.6
30th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Gap	Hold	Hold	Gap	Gap	Gap
10th %ile Green (s)	19.6	89.7	89.7	6.3	76.4	76.4	13.3	11.2	11.2	7.6	5.5	5.5
10th %ile Term Code	Max	Hold	Hold	Gap	Max	Max	Gap	Hold	Hold	Gap	Gap	Gap

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 138.6
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 145.5
70th %ile Actuated Cycle: 140.7
50th %ile Actuated Cycle: 138.2
30th %ile Actuated Cycle: 135.6
10th %ile Actuated Cycle: 132.8

Queues

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	448	820	166	111	1865	384	315	25	153	127	11	164
v/c Ratio	0.92	0.36	0.15	0.26	0.95	0.40	0.76	0.12	0.50	0.54	0.10	0.67
Control Delay	84.2	12.2	1.8	9.0	42.2	9.2	72.3	56.8	13.9	72.1	63.9	23.0
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	84.2	12.2	1.8	9.0	42.2	9.2	72.3	56.8	13.9	72.1	63.9	23.0
Queue Length 50th (ft)	207	166	0	26	804	78	141	21	0	57	10	0
Queue Length 95th (ft)	#331	236	29	53	#1103	165	204	50	66	96	30	72
Internal Link Dist (ft)		944			1230			477			355	
Turn Bay Length (ft)	400			495			100					
Base Capacity (vph)	486	2289	1082	435	1953	967	446	347	419	252	242	348
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.36	0.15	0.26	0.95	0.40	0.71	0.07	0.37	0.50	0.05	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑	↖	↖	↑↑	↖	↖↗	↑	↖	↖↗	↑	↖↗
Traffic Volume (veh/h)	412	739	67	60	1716	353	52	19	33	117	10	151
Future Volume (veh/h)	412	754	153	102	1716	353	290	23	141	117	10	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	448	820	166	111	1865	384	315	25	153	127	11	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	495	2350	1048	446	1987	886	372	211	179	177	106	
Arrive On Green	0.14	0.66	0.66	0.04	0.56	0.56	0.11	0.11	0.11	0.05	0.06	0.00
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	448	820	166	111	1865	384	315	25	153	127	11	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1870	1585	1728	1870	1585
Q Serve(g_s), s	17.2	13.7	5.3	3.6	65.6	19.0	12.0	1.6	12.8	4.9	0.8	0.0
Cycle Q Clear(g_c), s	17.2	13.7	5.3	3.6	65.6	19.0	12.0	1.6	12.8	4.9	0.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	495	2350	1048	446	1987	886	372	211	179	177	106	
V/C Ratio(X)	0.91	0.35	0.16	0.25	0.94	0.43	0.85	0.12	0.86	0.72	0.10	
Avail Cap(c_a), veh/h	503	2363	1054	459	2017	900	462	358	304	262	250	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	56.8	10.0	8.6	11.5	27.5	17.3	59.0	53.7	58.6	62.9	60.3	0.0
Incr Delay (d2), s/veh	19.8	0.1	0.1	0.3	9.2	0.3	11.6	0.2	11.3	5.3	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	5.2	1.8	1.5	29.2	7.0	5.9	0.8	5.7	2.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.5	10.1	8.7	11.8	36.7	17.6	70.6	53.9	69.9	68.2	60.7	0.0
LnGrp LOS	E	B	A	B	D	B	E	D	E	E	E	
Approach Vol, veh/h		1434			2360			493			138	A
Approach Delay, s/veh		30.7			32.4			69.5			67.6	
Approach LOS		C			C			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	93.5	19.0	12.1	23.8	79.8	11.4	19.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	89.5	18.0	18.0	19.6	76.4	10.2	25.8				
Max Q Clear Time (g_c+I1), s	5.6	15.7	14.0	2.8	19.2	67.6	6.9	14.8				
Green Ext Time (p_c), s	0.0	8.0	0.4	0.0	0.1	7.7	0.1	0.4				

Intersection Summary

HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

Notes

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

Volume

5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	59	0	7	2	0	18	14	20	4	27	20	92
Future Volume (vph)	59	0	7	9	1	71	23	317	7	43	132	92
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	64	0	8	10	1	77	25	345	8	47	143	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	0	0	88	0	0	378	0	0	290	0
Intersection Summary												

HCM 6th Roundabout
 5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021

Intersection				
Intersection Delay, s/veh	5.2			
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	72	88	378	290
Demand Flow Rate, veh/h	73	90	386	296
Vehicles Circulating, veh/h	204	442	113	36
Vehicles Exiting, veh/h	128	56	164	496
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.8	5.2	5.9	4.7
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	73	90	386	296
Cap Entry Lane, veh/h	1121	879	1230	1330
Entry HV Adj Factor	0.986	0.978	0.980	0.980
Flow Entry, veh/h	72	88	378	290
Cap Entry, veh/h	1105	859	1204	1304
V/C Ratio	0.065	0.102	0.314	0.223
Control Delay, s/veh	3.8	5.2	5.9	4.7
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1

Volume

6: Blackmer St & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	889	0	0	2028	105	0	0	0	0	0	101
Future Volume (vph)	0	997	15	0	2070	105	0	0	21	0	0	101
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1084	16	0	2250	114	0	0	23	0	0	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1084	16	0	2364	0	0	0	23	0	0	110
Intersection Summary												

HCM 6th TWSC
6: Blackmer St & Bradley Rd

01/21/2021

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑				↑			↑
Traffic Vol, veh/h	0	889	0	0	2028	105	0	0	0	0	0	101
Future Vol, veh/h	0	997	15	0	2070	105	0	0	21	0	0	101
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	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	0	1084	16	0	2250	114	0	0	23	0	0	110

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	-	-	0	-	-	542	-	-	1182
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	485	0	0	182
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	485	-	-	182
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	12.8	51
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	485	-	-	-	-	182
HCM Lane V/C Ratio	0.047	-	-	-	-	0.603
HCM Control Delay (s)	12.8	-	-	-	-	51
HCM Lane LOS	B	-	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	-	3.3

Volume

11: Legacy Hill Dr./Legacy Hill Dr & Moose Meadow Street

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	42	0	0	21	0
Future Volume (vph)	69	0	22	14	0	73	4	209	4	24	89	27
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	75	0	24	15	0	79	4	227	4	26	97	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	0	0	94	0	4	231	0	26	97	29
Intersection Summary												

HCM 6th TWSC

11: Legacy Hill Dr./Legacy Hill Dr & Moose Meadow Street

01/21/2021

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	0	0	0	0	0	0	0	42	0	0	21	0
Future Vol, veh/h	69	0	22	14	0	73	4	209	4	24	89	27
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	-	-	-	-	-	-	205	-	-	205	-	155
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	75	0	24	15	0	79	4	227	4	26	97	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	426	388	97	413	415	229	126	0	0	231	0	0
Stage 1	149	149	-	237	237	-	-	-	-	-	-	-
Stage 2	277	239	-	176	178	-	-	-	-	-	-	-
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	539	547	959	549	528	810	1460	-	-	1337	-	-
Stage 1	854	774	-	766	709	-	-	-	-	-	-	-
Stage 2	729	708	-	826	752	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	478	535	959	526	516	810	1460	-	-	1337	-	-
Mov Cap-2 Maneuver	478	535	-	526	516	-	-	-	-	-	-	-
Stage 1	851	759	-	764	707	-	-	-	-	-	-	-
Stage 2	656	706	-	790	738	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB			
HCM Control Delay, s	13.1		10.5		0.1		1.3			
HCM LOS	B		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1460	-	-	544	745	1337	-
HCM Lane V/C Ratio	0.003	-	-	0.182	0.127	0.02	-
HCM Control Delay (s)	7.5	-	-	13.1	10.5	7.7	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.4	0.1	-

Volume

14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	21	0	0	42	0	0
Future Volume (vph)	85	40	6	110	107	34
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	92	43	7	120	116	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	43	7	120	153	0
Intersection Summary						

HCM 6th TWSC
 14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021

Intersection						
Int Delay, s/veh	4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	21	0	0	42	0	0
Future Vol, veh/h	85	40	6	110	107	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	205	-	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	92	43	7	120	116	37

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	135	0	226
Stage 1	-	-	-	-	92
Stage 2	-	-	-	-	134
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1449	-	762
Stage 1	-	-	-	-	932
Stage 2	-	-	-	-	892
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1449	-	758
Mov Cap-2 Maneuver	-	-	-	-	758
Stage 1	-	-	-	-	932
Stage 2	-	-	-	-	888

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	799	-	-	1449	-
HCM Lane V/C Ratio	0.192	-	-	0.005	-
HCM Control Delay (s)	10.6	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Volume

16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	21	0	0	42	0	0	0	0	0	0	0
Future Volume (vph)	8	98	13	2	59	1	38	0	12	7	0	19
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	9	107	14	2	64	1	41	0	13	8	0	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	121	0	2	65	0	0	54	0	0	29	0
Intersection Summary												

HCM 6th TWSC
 16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	0	21	0	0	42	0	0	0	0	0	0	0
Future Vol, veh/h	8	98	13	2	59	1	38	0	12	7	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	-	-	-	-	-	-
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	9	107	14	2	64	1	41	0	13	8	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	65	0	0	121	0	0	211	201	114	208	208	65
Stage 1	-	-	-	-	-	-	132	132	-	69	69	-
Stage 2	-	-	-	-	-	-	79	69	-	139	139	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1537	-	-	1467	-	-	746	695	939	749	689	999
Stage 1	-	-	-	-	-	-	871	787	-	941	837	-
Stage 2	-	-	-	-	-	-	930	837	-	864	782	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1537	-	-	1467	-	-	727	690	939	735	684	999
Mov Cap-2 Maneuver	-	-	-	-	-	-	727	690	-	735	684	-
Stage 1	-	-	-	-	-	-	866	782	-	935	836	-
Stage 2	-	-	-	-	-	-	910	836	-	847	777	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.2			10			9.1		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	769	1537	-	-	1467	-	-	911
HCM Lane V/C Ratio	0.071	0.006	-	-	0.001	-	-	0.031
HCM Control Delay (s)	10	7.4	-	-	7.5	-	-	9.1
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Volume

1: Powers Bl & /Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	71	311	210	408	380	619	175	650	484	547	750	110
Future Volume (vph)	71	357	210	446	408	699	175	650	618	681	750	110
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	77	388	228	485	443	760	190	707	672	740	815	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	388	228	485	443	760	190	707	672	740	815	120
Intersection Summary												

Timings

1: Powers Bl & /Bradley Rd

01/21/2021

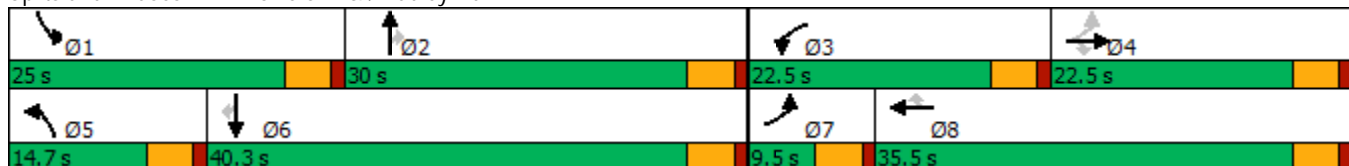


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗
Traffic Volume (vph)	71	311	210	408	380	619	175	650	484	547	750	110
Future Volume (vph)	71	357	210	446	408	699	175	650	618	681	750	110
Turn Type	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			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	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	22.5	22.5	22.5	35.5	35.5	14.7	30.0	30.0	25.0	40.3	40.3
Total Split (%)	9.5%	22.5%	22.5%	22.5%	35.5%	35.5%	14.7%	30.0%	30.0%	25.0%	40.3%	40.3%
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	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	21.7	16.6	16.6	17.0	30.7	30.7	9.5	25.6	25.6	20.5	36.6	36.6
Actuated g/C Ratio	0.22	0.17	0.17	0.17	0.31	0.31	0.10	0.26	0.26	0.21	0.37	0.37
v/c Ratio	0.31	0.64	0.50	0.81	0.40	0.95	0.57	0.76	1.02	1.03	0.62	0.17
Control Delay	24.1	43.3	9.1	51.1	28.0	35.8	49.7	40.3	59.1	80.1	28.1	2.0
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	24.1	43.3	9.1	51.1	28.0	35.8	49.7	40.3	59.1	80.1	28.1	2.0
LOS	C	D	A	D	C	D	D	D	E	F	C	A
Approach Delay		29.9			38.2			49.5			49.2	
Approach LOS		C			D			D			D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 97.8
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 43.6
 Intersection LOS: D
 Intersection Capacity Utilization 71.7%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Powers Bl & /Bradley Rd



Phasings

1: Powers Bl & /Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4			8			2			6
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	22.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	22.5	22.5	22.5	35.5	35.5	14.7	30.0	30.0	25.0	40.3	40.3
Total Split (%)	9.5%	22.5%	22.5%	22.5%	35.5%	35.5%	14.7%	30.0%	30.0%	25.0%	40.3%	40.3%
Maximum Green (s)	5.0	18.0	18.0	18.0	31.0	31.0	10.2	25.5	25.5	20.5	35.8	35.8
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0	0		0	0
90th %ile Green (s)	5.0	18.0	18.0	18.0	31.0	31.0	10.2	25.5	25.5	20.5	35.8	35.8
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	5.0	18.0	18.0	18.0	31.0	31.0	10.2	25.5	25.5	20.5	35.8	35.8
70th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	5.0	18.0	18.0	18.0	31.0	31.0	10.2	25.5	25.5	20.5	35.8	35.8
50th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	5.0	18.5	18.5	17.5	31.0	31.0	9.6	25.5	25.5	20.5	36.4	36.4
30th %ile Term Code	Max	Hold	Hold	Gap	Max	Max	Gap	MaxR	MaxR	Max	Hold	Hold
10th %ile Green (s)	0.0	11.2	11.2	13.7	29.4	29.4	7.6	25.5	25.5	20.5	38.4	38.4
10th %ile Term Code	Skip	Gap	Gap	Gap	Hold	Hold	Gap	MaxR	MaxR	Max	Hold	Hold

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 97.8

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 100

70th %ile Actuated Cycle: 100

50th %ile Actuated Cycle: 100

30th %ile Actuated Cycle: 100

10th %ile Actuated Cycle: 88.9

Queues

1: Powers Bl & /Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	388	228	485	443	760	190	707	672	740	815	120
v/c Ratio	0.31	0.64	0.50	0.81	0.40	0.95	0.57	0.76	1.02	1.03	0.62	0.17
Control Delay	24.1	43.3	9.1	51.1	28.0	35.8	49.7	40.3	59.1	80.1	28.1	2.0
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	24.1	43.3	9.1	51.1	28.0	35.8	49.7	40.3	59.1	80.1	28.1	2.0
Queue Length 50th (ft)	30	121	0	153	116	227	60	221	~287	~267	225	0
Queue Length 95th (ft)	60	171	63	#222	161	#495	96	290	#509	#381	291	17
Internal Link Dist (ft)		976			944			1477			1066	
Turn Bay Length (ft)	300		300	300		500	300		700	1000		300
Base Capacity (vph)	247	656	479	633	1124	808	359	925	661	721	1323	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.59	0.48	0.77	0.39	0.94	0.53	0.76	1.02	1.03	0.62	0.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Powers Bl & /Bradley Rd

01/21/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗	↘↗	↑↑	↗
Traffic Volume (veh/h)	71	311	210	408	380	619	175	650	484	547	750	110
Future Volume (veh/h)	71	357	210	446	408	699	175	650	618	681	750	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	388	228	485	443	0	190	707	0	740	815	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	603	269	565	1010		262	944		738	1434	
Arrive On Green	0.05	0.17	0.17	0.16	0.28	0.00	0.08	0.27	0.00	0.21	0.40	0.00
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	77	388	228	485	443	0	190	707	0	740	815	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	3.4	9.8	13.4	13.1	9.8	0.0	5.2	17.5	0.0	20.5	17.0	0.0
Cycle Q Clear(g_c), s	3.4	9.8	13.4	13.1	9.8	0.0	5.2	17.5	0.0	20.5	17.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	323	603	269	565	1010		262	944		738	1434	
V/C Ratio(X)	0.24	0.64	0.85	0.86	0.44		0.72	0.75		1.00	0.57	
Avail Cap(c_a), veh/h	328	667	297	648	1148		367	944		738	1434	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.6	37.1	38.6	39.1	28.1	0.0	43.4	32.3	0.0	37.7	22.2	0.0
Incr Delay (d2), s/veh	0.4	1.8	18.6	10.1	0.3	0.0	4.2	5.4	0.0	33.7	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.3	6.5	6.3	4.1	0.0	2.3	8.1	0.0	11.9	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	39.0	57.2	49.2	28.4	0.0	47.6	37.7	0.0	71.4	23.8	0.0
LnGrp LOS	C	D	E	D	C		D	D		F	C	
Approach Vol, veh/h		693			928	A		897	A		1555	A
Approach Delay, s/veh		44.1			39.3			39.8			46.5	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	30.0	20.2	20.8	11.8	43.2	9.2	31.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	20.5	25.5	18.0	18.0	10.2	35.8	5.0	31.0				
Max Q Clear Time (g_c+I1), s	22.5	19.5	15.1	15.4	7.2	19.0	5.4	11.8				
Green Ext Time (p_c), s	0.0	2.4	0.6	0.9	0.2	5.3	0.0	2.8				

Intersection Summary

HCM 6th Ctrl Delay	43.0
HCM 6th LOS	D

Notes

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

Volume

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	302	832	208	140	977	109	192	15	154	301	21	237
Future Volume (vph)	302	874	480	282	977	109	338	15	226	301	25	237
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	328	950	522	307	1062	118	367	16	246	327	27	258
Shared Lane Traffic (%)												
Lane Group Flow (vph)	328	950	522	307	1062	118	367	16	246	327	27	258
Intersection Summary												

Timings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021

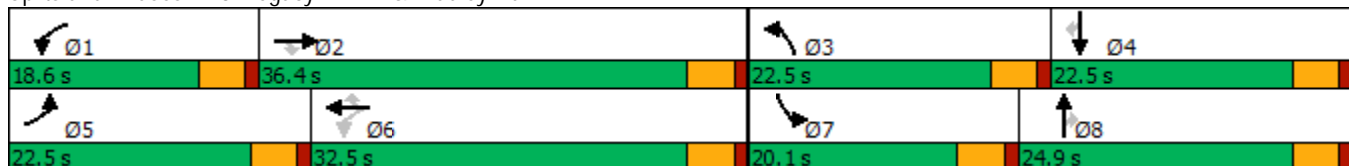


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↖	↗	↕	↖	↖↗	↕	↖	↖↗	↕	↖
Traffic Volume (vph)	302	832	208	140	977	109	192	15	154	301	21	237
Future Volume (vph)	302	874	480	282	977	109	338	15	226	301	25	237
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
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	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	36.4	36.4	18.6	32.5	32.5	22.5	24.9	24.9	20.1	22.5	22.5
Total Split (%)	22.5%	36.4%	36.4%	18.6%	32.5%	32.5%	22.5%	24.9%	24.9%	20.1%	22.5%	22.5%
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	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	Min	Min	None	Min	Min	Min	Min	Min	None	Min	Min
Act Effect Green (s)	13.4	30.3	30.3	44.9	30.9	30.9	14.1	9.2	9.2	13.0	8.0	8.0
Actuated g/C Ratio	0.16	0.36	0.36	0.53	0.37	0.37	0.17	0.11	0.11	0.15	0.09	0.09
v/c Ratio	0.61	0.75	0.58	0.80	0.82	0.18	0.64	0.08	0.63	0.62	0.15	0.67
Control Delay	38.9	29.1	5.1	36.7	32.7	5.8	39.3	35.5	12.8	40.1	38.3	14.5
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	38.9	29.1	5.1	36.7	32.7	5.8	39.3	35.5	12.8	40.1	38.3	14.5
LOS	D	C	A	D	C	A	D	D	B	D	D	B
Approach Delay		23.9			31.4			28.8			29.2	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 84.6
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 27.8
 Intersection LOS: C
 Intersection Capacity Utilization 62.1%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 3: Legacy Hill Dr. & Bradley Rd



Phasings

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
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	9.5	22.5	22.5	22.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	22.5	36.4	36.4	18.6	32.5	32.5	22.5	24.9	24.9	20.1	22.5	22.5
Total Split (%)	22.5%	36.4%	36.4%	18.6%	32.5%	32.5%	22.5%	24.9%	24.9%	20.1%	22.5%	22.5%
Maximum Green (s)	18.0	31.9	31.9	14.1	28.0	28.0	18.0	20.4	20.4	15.6	18.0	18.0
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
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	Min	Min	Min	None	Min	Min	Min	Min	Min	None	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0	0	0	0		0	0
90th %ile Green (s)	18.0	31.9	31.9	14.1	28.0	28.0	18.0	16.6	16.6	15.6	14.2	14.2
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Hold	Hold	Max	Gap	Gap
70th %ile Green (s)	15.1	31.9	31.9	14.1	30.9	30.9	16.1	9.7	9.7	15.2	8.8	8.8
70th %ile Term Code	Gap	Max	Max	Max	Hold	Hold	Gap	Hold	Hold	Gap	Gap	Gap
50th %ile Green (s)	13.3	31.9	31.9	14.1	32.7	32.7	14.2	7.6	7.6	13.3	6.7	6.7
50th %ile Term Code	Gap	Max	Max	Max	Hold	Hold	Gap	Hold	Hold	Gap	Gap	Gap
30th %ile Green (s)	11.7	31.2	31.2	14.1	33.6	33.6	12.6	6.8	6.8	11.7	5.9	5.9
30th %ile Term Code	Gap	Gap	Gap	Max	Hold	Hold	Gap	Hold	Hold	Gap	Gap	Gap
10th %ile Green (s)	9.5	24.5	24.5	13.0	28.0	28.0	10.2	6.2	6.2	9.5	5.5	5.5
10th %ile Term Code	Gap	Hold	Hold	Gap	Max	Max	Gap	Hold	Hold	Gap	Gap	Gap

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 84.6
Control Type: Actuated-Uncoordinated
90th %ile Actuated Cycle: 96.2
70th %ile Actuated Cycle: 88.9
50th %ile Actuated Cycle: 84.9
30th %ile Actuated Cycle: 81.8
10th %ile Actuated Cycle: 71.2

Queues

3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	328	950	522	307	1062	118	367	16	246	327	27	258
v/c Ratio	0.61	0.75	0.58	0.80	0.82	0.18	0.64	0.08	0.63	0.62	0.15	0.67
Control Delay	38.9	29.1	5.1	36.7	32.7	5.8	39.3	35.5	12.8	40.1	38.3	14.5
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	38.9	29.1	5.1	36.7	32.7	5.8	39.3	35.5	12.8	40.1	38.3	14.5
Queue Length 50th (ft)	85	223	0	98	256	1	95	8	0	85	14	0
Queue Length 95th (ft)	137	355	72	#298	#496	40	152	26	65	141	39	69
Internal Link Dist (ft)		944			1230			477			355	
Turn Bay Length (ft)	400			495			100					
Base Capacity (vph)	737	1347	925	390	1293	652	737	453	571	639	400	542
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.71	0.56	0.79	0.82	0.18	0.50	0.04	0.43	0.51	0.07	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 3: Legacy Hill Dr. & Bradley Rd

01/21/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↖	↑↑	↗	↔↔	↑	↗	↔↔	↑	↗
Traffic Volume (veh/h)	302	832	208	140	977	109	192	15	154	301	21	237
Future Volume (veh/h)	302	874	480	282	977	109	338	15	226	301	25	237
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	328	950	522	307	1062	118	367	16	246	327	27	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	427	1279	570	364	1310	584	466	334	283	420	309	
Arrive On Green	0.12	0.36	0.36	0.13	0.37	0.37	0.13	0.18	0.18	0.12	0.17	0.00
Sat Flow, veh/h	3456	3554	1585	1781	3554	1585	3456	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	328	950	522	307	1062	118	367	16	246	327	27	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1781	1777	1585	1728	1870	1585	1728	1870	1585
Q Serve(g_s), s	8.0	20.2	27.2	9.2	23.3	4.4	8.9	0.6	13.1	8.0	1.1	0.0
Cycle Q Clear(g_c), s	8.0	20.2	27.2	9.2	23.3	4.4	8.9	0.6	13.1	8.0	1.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	427	1279	570	364	1310	584	466	334	283	420	309	
V/C Ratio(X)	0.77	0.74	0.92	0.84	0.81	0.20	0.79	0.05	0.87	0.78	0.09	
Avail Cap(c_a), veh/h	718	1308	583	418	1310	584	718	440	373	622	388	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.8	24.2	26.5	18.3	24.6	18.7	36.3	29.5	34.6	36.9	30.6	0.0
Incr Delay (d2), s/veh	2.9	2.3	19.0	13.1	4.0	0.2	3.2	0.1	15.5	3.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	8.5	12.7	4.8	10.1	1.6	3.9	0.3	6.1	3.5	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	26.5	45.4	31.5	28.6	18.8	39.5	29.5	50.0	40.7	30.7	0.0
LnGrp LOS	D	C	D	C	C	B	D	C	D	D	C	
Approach Vol, veh/h		1800			1487			629			354	A
Approach Delay, s/veh		34.4			28.4			43.4			39.9	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	35.7	16.2	18.8	15.2	36.4	15.0	20.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	14.1	31.9	18.0	18.0	18.0	28.0	15.6	20.4				
Max Q Clear Time (g_c+I1), s	11.2	29.2	10.9	3.1	10.0	25.3	10.0	15.1				
Green Ext Time (p_c), s	0.3	2.0	0.8	0.1	0.7	1.8	0.6	0.4				

Intersection Summary

HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Notes

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

Volume

5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	251	0	34	10	0	75	30	35	9	69	60	234
Future Volume (vph)	251	2	44	21	1	106	35	222	18	120	427	234
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	273	2	48	23	1	115	38	241	20	130	464	254
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	323	0	0	139	0	0	299	0	0	848	0
Intersection Summary												

HCM 6th Roundabout
 5: Legacy Hill Dr/Legacy Hill Dr. & Frontside Dr./Fronside Dr.

01/21/2021

Intersection				
Intersection Delay, s/veh	10.5			
Intersection LOS	B			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	323	139	299	848
Demand Flow Rate, veh/h	329	141	305	865
Vehicles Circulating, veh/h	629	563	413	63
Vehicles Exiting, veh/h	299	155	545	641
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.4	6.6	7.8	11.7
Approach LOS	B	A	A	B
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	329	141	305	865
Cap Entry Lane, veh/h	726	777	906	1294
Entry HV Adj Factor	0.982	0.986	0.981	0.980
Flow Entry, veh/h	323	139	299	848
Cap Entry, veh/h	713	766	888	1268
V/C Ratio	0.453	0.181	0.337	0.668
Control Delay, s/veh	11.4	6.6	7.8	11.7
LOS	B	A	A	B
95th %tile Queue, veh	2	1	1	5

Volume

6: Blackmer St & Bradley Rd

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	1287	0	0	1065	94	0	0	0	0	0	158
Future Volume (vph)	0	1359	42	0	1207	94	0	0	12	0	0	158
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1477	46	0	1312	102	0	0	13	0	0	172
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1477	46	0	1414	0	0	0	13	0	0	172
Intersection Summary												

HCM 6th TWSC
6: Blackmer St & Bradley Rd

01/21/2021

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑		↑↑				↑			↑
Traffic Vol, veh/h	0	1287	0	0	1065	94	0	0	0	0	0	158
Future Vol, veh/h	0	1359	42	0	1207	94	0	0	12	0	0	158
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	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	0	1477	46	0	1312	102	0	0	13	0	0	172

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	-	-	0	-	-	739	-	-	707
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	360	0	0	378
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	360	-	-	378
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	15.4	22.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	360	-	-	-	-	378
HCM Lane V/C Ratio	0.036	-	-	-	-	0.454
HCM Control Delay (s)	15.4	-	-	-	-	22.2
HCM Lane LOS	C	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	2.3

Volume

11: Legacy Hill Dr./Legacy Hill Dr & Moose Meadow Street

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	0	0	0	0	0	0	69	0	0	107	0
Future Volume (vph)	43	0	15	16	0	44	12	183	13	74	330	91
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	47	0	16	17	0	48	13	199	14	80	359	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	65	0	13	213	0	80	359	99
Intersection Summary												

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	0	0	0	0	0	0	0	69	0	0	107	0
Future Vol, veh/h	43	0	15	16	0	44	12	183	13	74	330	91
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	-	-	-	-	-	-	205	-	-	205	-	155
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	47	0	16	17	0	48	13	199	14	80	359	99

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	775	758	359	809	850	206	458	0	0	213	0	0
Stage 1	519	519	-	232	232	-	-	-	-	-	-	-
Stage 2	256	239	-	577	618	-	-	-	-	-	-	-
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	315	336	685	299	298	835	1103	-	-	1357	-	-
Stage 1	540	533	-	771	713	-	-	-	-	-	-	-
Stage 2	749	708	-	502	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	281	312	685	276	277	835	1103	-	-	1357	-	-
Mov Cap-2 Maneuver	281	312	-	276	277	-	-	-	-	-	-	-
Stage 1	534	502	-	762	704	-	-	-	-	-	-	-
Stage 2	698	700	-	461	453	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.4		12.5		0.5		1.2	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1103	-	-	332	542	1357	-
HCM Lane V/C Ratio	0.012	-	-	0.19	0.12	0.059	-
HCM Control Delay (s)	8.3	-	-	18.4	12.5	7.8	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.4	0.2	-

Volume

14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	107	0	0	69	0	0
Future Volume (vph)	220	141	19	140	68	23
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	239	153	21	152	74	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	239	153	21	152	99	0
Intersection Summary						

HCM 6th TWSC
 14: Sunday Gulch Dr. & Legacy Hill Dr.

01/21/2021

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	107	0	0	69	0	0
Future Vol, veh/h	220	141	19	140	68	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	205	-	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	239	153	21	152	74	25

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	392	0	433
Stage 1	-	-	-	-	239
Stage 2	-	-	-	-	194
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1167	-	580
Stage 1	-	-	-	-	801
Stage 2	-	-	-	-	839
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1167	-	570
Mov Cap-2 Maneuver	-	-	-	-	570
Stage 1	-	-	-	-	801
Stage 2	-	-	-	-	824

Approach	EB	WB	NB
HCM Control Delay, s	0	1	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	615	-	-	1167	-
HCM Lane V/C Ratio	0.161	-	-	0.018	-
HCM Control Delay (s)	12	-	-	8.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

Volume

16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	0	107	0	0	69	0	0	0	0	0	0	0
Future Volume (vph)	21	172	50	7	122	4	25	0	8	5	0	12
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	23	187	54	8	133	4	27	0	9	5	0	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	241	0	8	137	0	0	36	0	0	18	0
Intersection Summary												

HCM 6th TWSC
 16: Big Johnson Dr. & Legacy Hill Dr.

01/21/2021

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	0	107	0	0	69	0	0	0	0	0	0	0
Future Vol, veh/h	21	172	50	7	122	4	25	0	8	5	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	-	-	-	-	-	-
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	23	187	54	8	133	4	27	0	9	5	0	13

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	137	0	0	241	0	0	418	413	214	416	438	135
Stage 1	-	-	-	-	-	-	260	260	-	151	151	-
Stage 2	-	-	-	-	-	-	158	153	-	265	287	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1447	-	-	1326	-	-	545	529	826	547	512	914
Stage 1	-	-	-	-	-	-	745	693	-	851	772	-
Stage 2	-	-	-	-	-	-	844	771	-	740	674	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1447	-	-	1326	-	-	528	517	826	532	501	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	528	517	-	532	501	-
Stage 1	-	-	-	-	-	-	733	682	-	837	767	-
Stage 2	-	-	-	-	-	-	827	766	-	721	663	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			0.4			11.6			9.9		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	579	1447	-	-	1326	-	-	755
HCM Lane V/C Ratio	0.062	0.016	-	-	0.006	-	-	0.024
HCM Control Delay (s)	11.6	7.5	-	-	7.7	-	-	9.9
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Appendix D
INTERSECTION FAIR SHARE CALCULATIONS

Table 4
 Legacy Hill Drive and Bradley Road Signal Escrow Analysis
 Trails Aspen Ridge Filing No. 1

Development	Minor Approach Volume ⁽¹⁾			Fair Share	Signal Escrow Amounts
	AM	PM			
Based on Projected 2040 Total Traffic Volumes					
Trails at Aspen Ridge-Fil No. 1	55	37	6.8%	\$29,781.39	
Trails at Aspen Ridge PUD	176	118	21.7%	\$75,997.05	
Springs at Waterview East Commercial	60	231	21.5%	\$75,221.57	
Waterview North of Bradley Road	220	457	50.0%	\$175,000.00	
				\$350,000	

683
 291
 677

 1651

41% 143,500
 18% 63,000
 41% 143,500

414

269

Notes:

Minor approach volume includes all northbound left-turn and through movements plus 25% of northbound right-turn movements and all southbound left-turn and through movements plus the portion of the southbound right-turn movements anticipated to ultimately travel south on Powers Boulevard

Source: LSC Transportation Consultants, Inc.

10/15/2019

Project Trails @ AR PUDSP
Subject Bradley / Powers Fair Share

Bradley / Powers

2040 Total

AM Peak Hour: 339 Project trips }
5,746 total trips } 5.90%

PM Peak Hour: 326 Project trips }
5,175 total trips } 6.30%

} 6.09%