

BUCKLEY ANNEX REDEVELOPMENT PLAN

TRANSPORTATION ANALYSIS ADDENDUM

Prepared for:

City and County of Denver

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**BUCKLEY ANNEX REDEVELOPMENT PLAN
TRAFFIC ANALYSIS ADDENDUM**

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BUCKLEY ANNEX REDEVELOPMENT PLAN TRAFFIC ANALYSIS ADDENDUM

Introduction

The purpose of this traffic analysis addendum is to analyze the traffic impacts of the refined Buckley Annex land use plan and roadway network included in the General Development Plan (“GDP”) while respecting the guiding principles and work accomplished with the original Buckley Annex Redevelopment Plan dated February 2008 (“Redevelopment Plan”).

Through multiple iterations and public/stakeholder meetings, a number of refinements to the original Redevelopment Plan have been recommended and incorporated into the GDP. Those changes that may have a potential impact to the transportation system have been analyzed in greater detail and include the following items.

1. Land Uses:
 - a. The GDP calls for 800 residential units including 120 single family detached, 230 single family attached, and 450 apartments as well as up to 200,000 square feet of commercial.
2. Roadway Network:
 - a. The proposed section for Lowry Blvd has been reduced from a 5-lane section to a 3-lane section from Monaco Pkwy to Pontiac St in order to create a roadway that provides both mobility and access without creating a barrier to pedestrians and bicyclists.
 - b. The $\frac{3}{4}$ access originally proposed for the intersection of Quebec St & Archer Pl has been converted to a right-in/right-out.
 - c. The right-in/right-out originally proposed at Quebec St & Ellsworth Ave has been removed and Ellsworth Ave has been converted to a pedestrian corridor.
 - d. The $\frac{3}{4}$ access originally proposed at Monaco Pkwy & Bayaud Ave has been removed.
 - e. The right-in/right-out access originally proposed at Monaco Pkwy & Southmoor Dr has been removed.

Updated Land Uses

The GDP includes 800 residential units and up to 200,000 square feet of commercial. The residential units are further subdivided to 120 single family detached homes, 230 single family attached homes, and 450 apartments. At this time it is anticipated that the commercial space will be divided between 83,000 square feet retail and 117,000 square feet of office space.

The vehicle trips associated with the GDP were then calculated using the *ITE Trip Generation Manual, Eighth Edition*. This methodology consists of choosing an independent variable for the land use for a particular time of day. The independent variable is the measurement that appears to be the cause for 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 plugged into 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.

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ITE Land Use Codes 210 – Single Family Detached Housing, 220 - Apartment, 230 – Residential Condominium/Townhouse, 710 - Office, and 814 – Specialty Retail were used to calculate AM, PM, and Daily trips. There is no AM peak hour rate for Specialty Retail so the rate is derived from the PM peak rate and a ratio of the AM/PM rates for the ITE Shopping Center (820) land use. Table 1 shows the trips anticipated to be generated by the site, and Appendix A contains the trip generation calculations.

In mixed-use developments such as this one, a number of the trips will be contained internal to the site. The Trip Generation Handbook – An ITE Recommended Practice provides procedures for calculating the anticipated rate of internal capture and was used for this analysis. It should be noted that the AM peak internal trips are estimates because ITE does not currently have data for this time period. Table 1 shows the anticipated internal capture rates, and Appendix A contains the internal capture calculation.

As shown in Table 1, it is anticipated that the daily trips generated by the site will continue to be less than the 9,500 vehicle trips per day generated by the current government office building when it was fully occupied.

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Table 1 – Trip Generation

ITE Code	Land Use	Quantity	Units	%in	%out	Total	In	Out
AM Peak Hour								
210	Single Family Detached	120	Units	25%	75%	94	23	70
220	Apartment	450	Units	20%	80%	224	45	179
230	Townhomes/Condos	230	Units	17%	83%	101	17	83
710	Office	117	Ksqft	88%	12%	213	187	26
814	Specialty Retail	83	Ksqft	61%	39%	54	33	21
				Subtotal		685	306	380
				2% Internal Capture =		14	6	8
				AM Peak Hour Trips =		672	299	372
PM Peak Hour								
210	Single Family Detached	120	Units	63%	37%	124	78	46
220	Apartment	450	Units	65%	35%	265	172	93
230	Townhomes/Condos	230	Units	67%	33%	119	80	39
710	Office	117	Ksqft	17%	83%	210	36	174
814	Specialty Retail	83	Ksqft	44%	56%	221	97	124
				Subtotal		939	463	476
				7% Internal Capture =		66	32	33
				PM Peak Hour Trips =		873	430	442
Daily								
210	Single Family Detached	120	Units	50%	50%	1,230	615	615
220	Apartment	450	Units	50%	50%	2,851	1,425	1,425
230	Townhomes/Condos	230	Units	50%	50%	1,328	664	664
710	Office	117	Ksqft	50%	50%	1,505	753	753
814	Specialty Retail	83	Ksqft	50%	50%	3,588	1,794	1,794
				Subtotal		10,502	5,251	5,251
				10% Internal Capture =		1,050	525	525
				Daily Trips =		9,452	4,726	4,726

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Adjustments to the Transportation Network

The Buckley Annex GDP calls for a number of adjustments from the original Redevelopment Plan. The most obvious change can be found in the cross section for Lowry Boulevard between Monaco Pkwy and Pontiac St. In order to create a roadway that provides both mobility and access without creating a barrier to pedestrians and bicyclists, the proposed section has been reduced from 5-lanes to 3-lanes.

To determine the potential impact this may cause to the overall roadway system, a screen-line analysis was conducted looking at Lowry Blvd, 1st Ave, and Alameda Ave. Existing traffic volumes were counted on Wednesday, November 7, 2012, and were supplied to the Denver Regional Council of Governments (DRCOG) to obtain calibrated 2025 and 2035 traffic projections. In order to directly compare the future traffic volumes to those used in the original Redevelopment Plan, the 2025 and 2035 DRCOG traffic projections were averaged to find 2030 traffic projections.

The DRCOG model assumes the existing roadway laneage will be present in 2030 and does not include the Buckley Annex Redevelopment. This No-Build condition anticipates the 2-lane 1st Avenue would carry 7,500 vehicles per day and the 6-lane Alameda Avenue would carry 45,300 vehicles per day. Using the generalized daily service volumes for urban street facilities found in the *TRB Highway Capacity Manual, 2010* (HCM 2010), the capacity of these roadways is approximately 59,000 vehicles per day with an anticipated 2030 volume to capacity ratio of 0.89.

Using the traffic counts conducted in 2012 and the updated DRCOG projections, the 2030 traffic volumes were adjusted to account for build-out of the site and the extension of Lowry Boulevard to Monaco Parkway. By reducing the cross section of Lowry Boulevard from 5-lanes to 3-lanes, the capacity of this east-west roadway is also reduced which will cause vehicles to route themselves to roadways with more available capacity. Using a screen-line analysis, it is anticipated that the 2-lane 1st Avenue will carry 6,600 vehicles per day, the 6-lane Alameda Avenue will carry 42,200 vehicles per day, and a 3-lane Lowry Boulevard will now carry 13,500 vehicles per day. Using the HCM 2010, the east-west capacity of these roadways is approximately 74,400 with an anticipated 2030 volume to capacity ratio of 0.84.

Table 2 summarizes the screen-line analysis.

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Table 2 – Screen-line Analysis Summary

Major East/West Streets	2012 Exist Traffic	K-Factor	D-Factor	No-Build ³		2-Lane 1 st / 5-Lane Lowry		2-Lane 1 st / 3-Lane Lowry	
				2030 ADT ¹	Capacity ²	2030 ADT	Capacity ²	2030 ADT	Capacity ²
1 st Avenue	6,100	0.11	0.55	7,500	12,600	6,100	12,600	6,600	12,600
Lowry Boulevard	N/A	0.09	0.55	N/A	N/A	15,200	31,400	13,500	15,400
Alameda Avenue	39,500	0.09	0.55	15,300	46,400	41,000	46,400	42,200	46,400
Screenline Volume	45,600			52,800		62,300		62,300	
Screenline Capacity	59,000			59,000		90,400		74,400	
V/C Ratio	0.77			0.89		0.69		0.84	

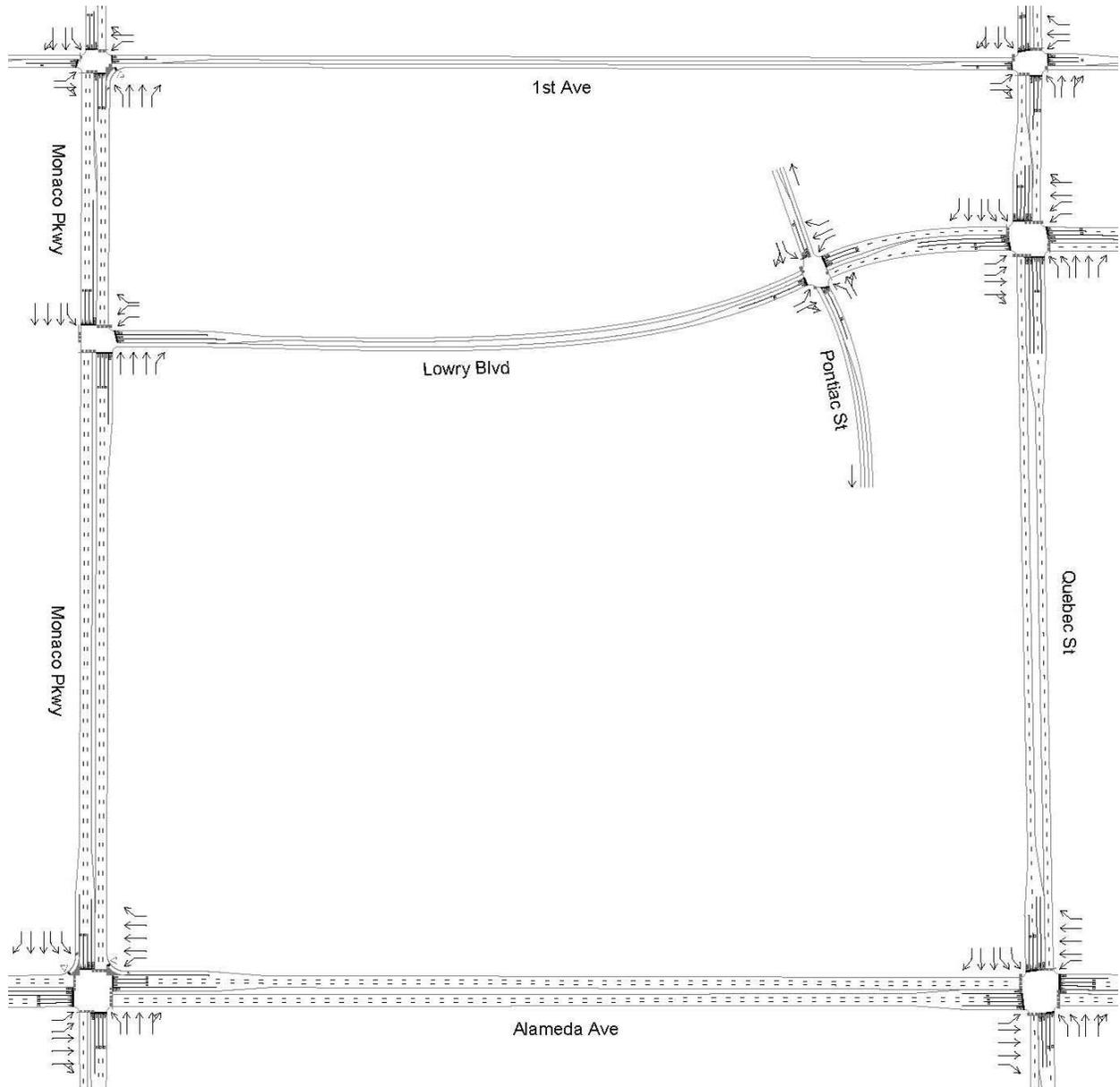
1. 2030 ADT calculated using the average of the calibrated DRCOG Traffic Model outputs for 2025 and 2035.
2. Capacities derived using Exhibit 16-14 in the HCM2010, and LOS D or better for the roadway segment.
3. 2030 No-Build assumes the site remains as-is and Lowry Blvd is not extended.

Additional modifications to the roadway network include changes to the limited access points on Monaco Pkwy and on Quebec St. On Monaco Pkwy, both the ¾ access at Bayaud St and the right-in/right-out access at Southmoor Dr have been removed. On Quebec Street, Ellsworth Ave has been converted to a pedestrian corridor in the GDP so the right-in/right-out access on Quebec St has been removed, and the intersection at Archer Place has been converted from a ¾ access to a right-in/right-out. As discussed in the original Redevelopment Plan, the intersection of Quebec St & Archer Pl was changed from a ¾ access to a right-in/right-out, but the change came late in the design process so it was not incorporated in the traffic analysis. Figure 1 shows the transportation hierarchy in the GDP, and Figure 2 shows the intersection lane geometry.

These changes to the roadway network also predicate the need adjust the site-traffic distribution. Using the traffic distribution created in the original Redevelopment Plan as a starting point, the site traffic has been shifted to the nearest point of access. Figure 3 shows the previous distribution and the updated distribution.

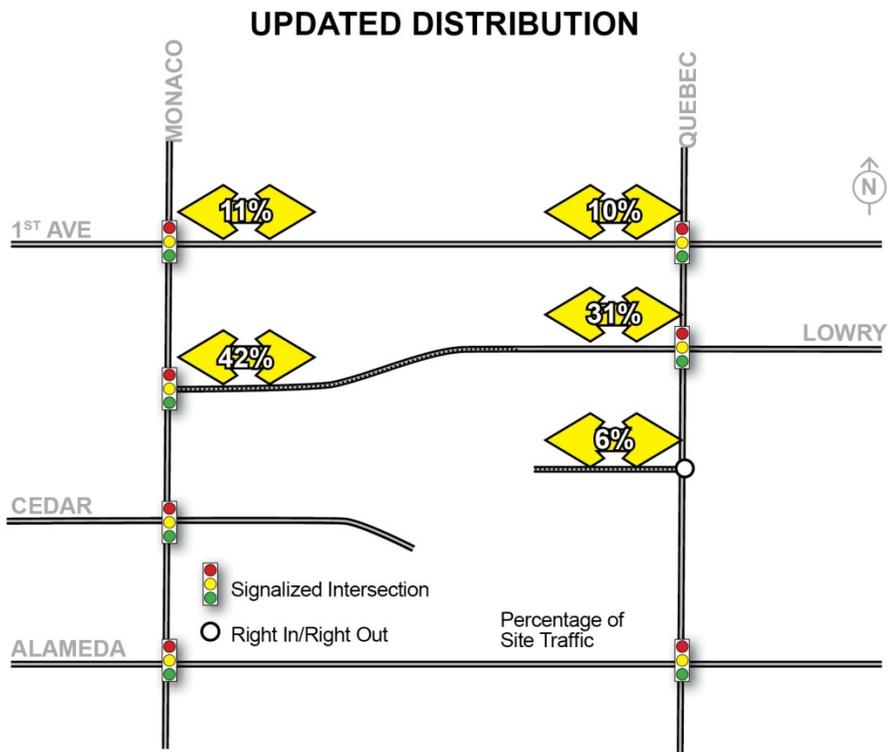
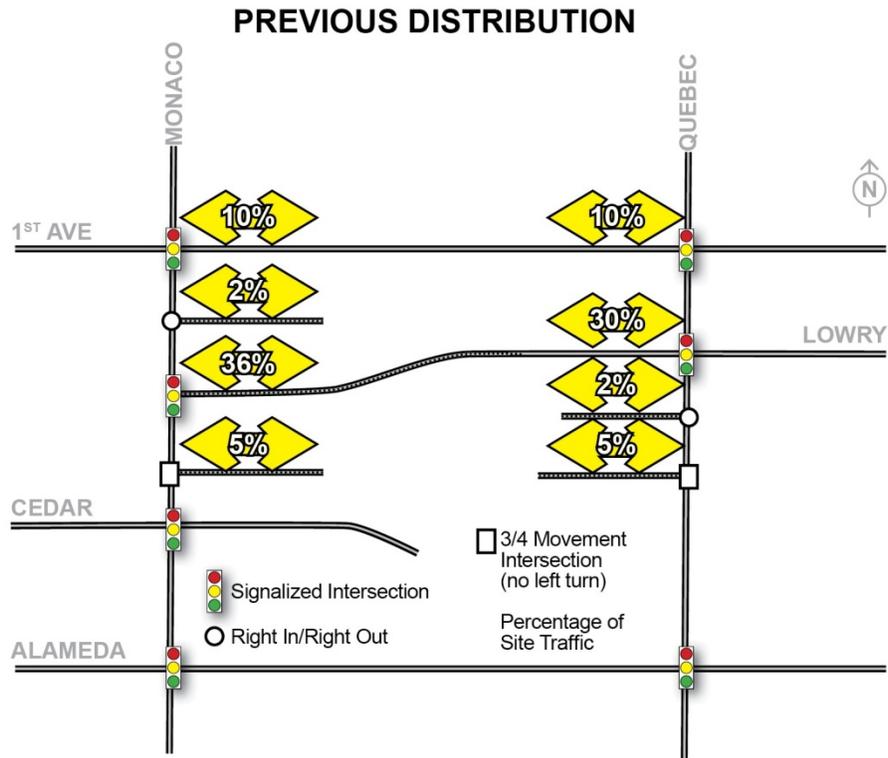
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Figure 2 – 2030 Intersection Lane Geometry



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Figure 3 – Site Traffic Distribution



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Traffic Analysis

The changes discussed previously in this Addendum have been analyzed in greater detail to determine their impacts on the transportation system. The methodology and results of the analysis are discussed below. Subsequent to the traffic analysis being conducted, updated 2030 traffic projections were received from the Denver Regional Council of Governments. Although the updated DRCOG projections show increased volumes in 2030, the peak hour impact to the intersections is only a 1-2% increase in traffic and considered negligible to the results of the analysis.

The traffic analysis begins with the 2030 traffic volumes projected in the original Redevelopment Plan as the basis. Using the results of the screen-line analysis, the ADTs were updated for 1st Ave, Lowry Blvd, and Alameda Ave. The changes in ADT were then used to determine the change in AM and PM peak hour link volume on the three east-west roadways using the conservative assumption that the AM and PM peak hours account for 10% of the ADT each. The changes in peak hour link volumes were then distributed across the roadway network in proportion to the 2030 traffic movement volumes. The resulting turn movement volumes were then adjusted again to account changes in the site traffic distribution. Figure 3 shows the updated 2030 AM traffic volumes, and Figure 4 shows the updated 2030 PM traffic volumes.

The 2030 traffic volumes were then analyzed using Synchro 8 software to determine how efficiently and effectively the street system accommodates the traffic volumes. The results are shown as Levels of Service (LOS) where 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. The City and County of Denver tries to maintain a minimum of LOS D for intersection operations. Table 3 provides a description of conditions for each level of service at a signalized intersection.

Table 3 – Signalized Intersection Level of Service Criteria

Level of Service	Average Stopped Delay*	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.

*Seconds per vehicle.

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

As shown in Table 4, most of the intersection levels of service did not degrade from the original Redevelopment Plan. The lone exception is the intersection of Quebec St & Alameda Ave. In this case, the change from the 2000 Highway Capacity Manual to the 2010 Highway Capacity Manual caused the reduction in level of service from LOS D to LOS E. Figures 4 and 5 show the intersection levels of service for the AM and PM peak hours respectively. Appendix B contains the Synchro output. Appendix C

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contains the reanalysis of Quebec St & Alameda Ave using the 2010 HCM and the 2030 volumes contained in the original Redevelopment Plan.

Table 4 2030 Signalized Intersection Level of Service

Intersection	AM Peak		PM Peak	
	2008 Plan	2012 Plan	2008 Plan	2012 Plan
Monaco & Alameda	D	D	E	E
Monaco & Lowry	B	B	B	A
Monaco & 1 st Ave	B	B	C	C
Quebec & Alameda	D	E*	D	E*
Quebec & Lowry	C	B	C	C
Quebec & 1 st Ave	B	B	C	C
Lowry & Pontiac	n/a	A	n/a	B

* Reduction in LOS caused by the change from the 2000 HCM to the 2010 HCM. See Appendix C.

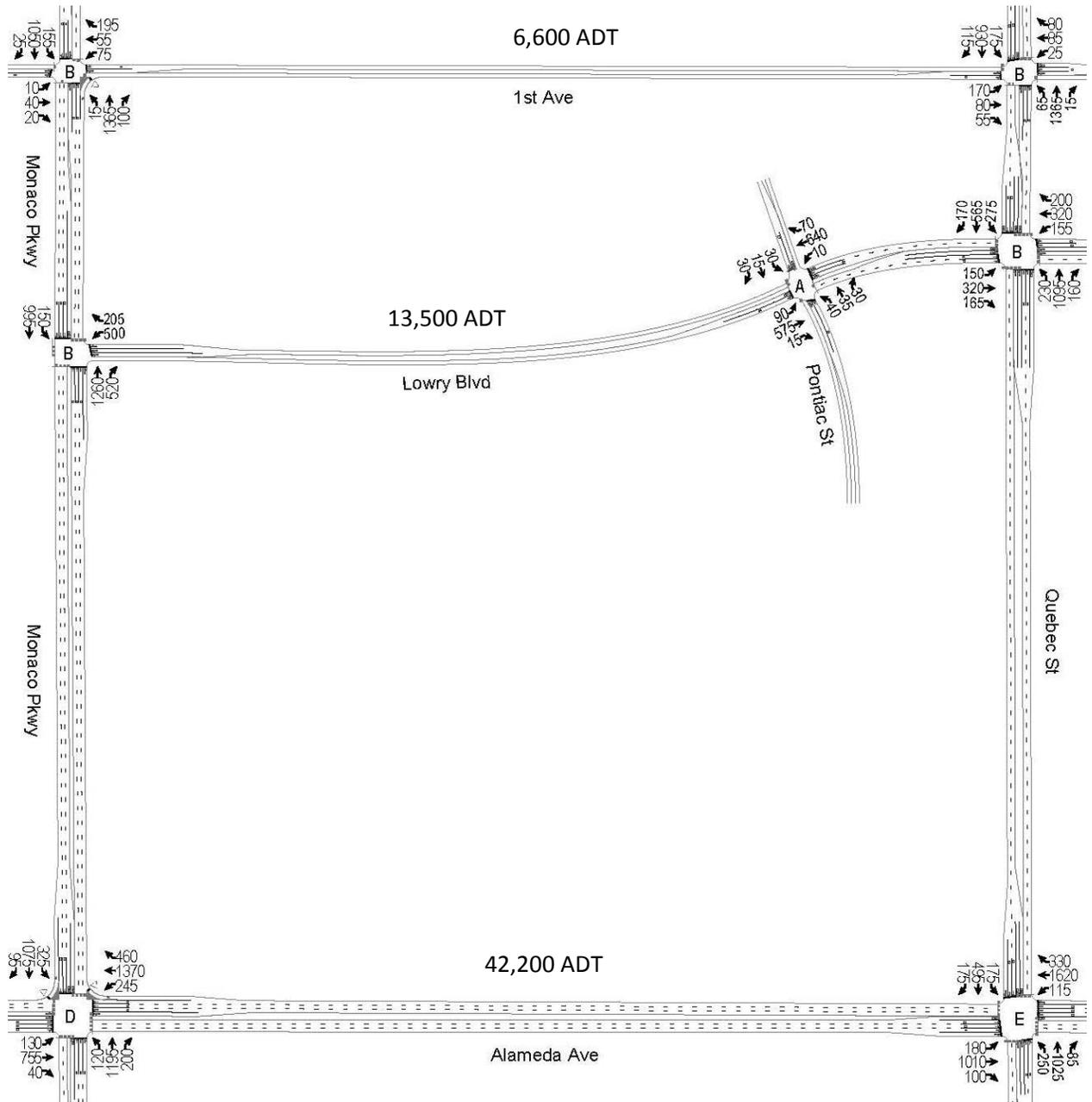
Queuing Analysis

Due to the proximity of Pontiac Street in relation to Quebec Street, the 2030 roadway network was analyzed using SimTraffic simulation software for the AM and PM peak hour periods to confirm the back to back left turn lanes will operate sufficiently. Based on industry guidelines, the simulation was performed using a 5 minute seed time, a 15 minute Peak Hour Factor, and a 45 minute Anti-Peak Hour Factor. Each simulation was run three times and then averaged.

Based on this analysis, the 95th percentile queue length on Lowry Blvd for the dual eastbound left turn lanes at Quebec St is anticipated to be 100 feet while the anticipated 95th percentile queue length for the westbound left turn lane at Pontiac is anticipated to be 25 feet. With a link distance of about 510 feet between intersections, the analysis shows that the design can accommodate the projected left turn queues under the conditions examined. Appendix D contains the SimTraffic queue analysis output.

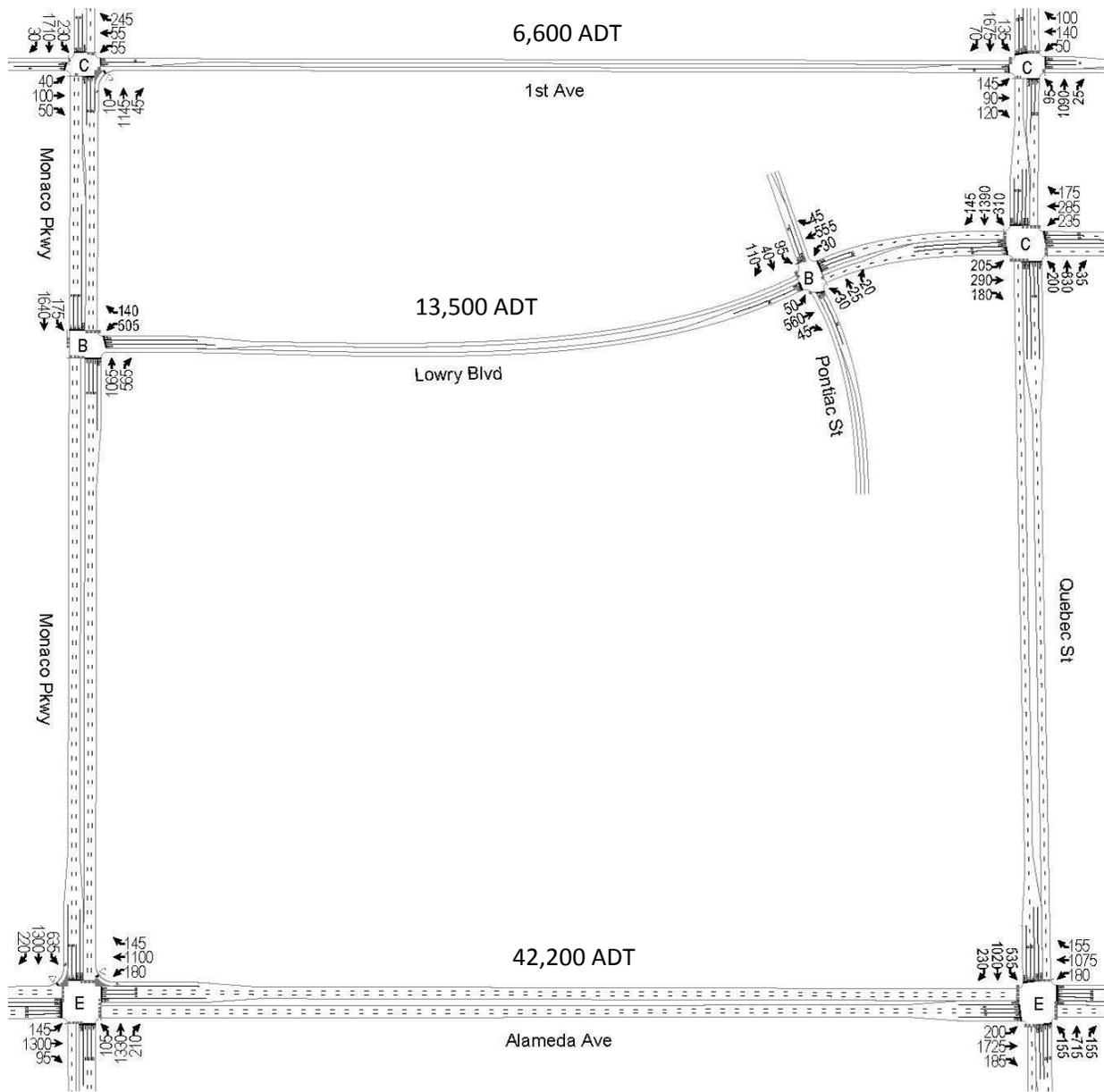
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Figure 4 - 2030 AM Traffic Volumes and Intersection Level of Service



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Figure 5 - 2030 PM Traffic Volumes and Intersection Level of Service



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Conclusions

The purpose of this traffic analysis addendum is to analyze the traffic impacts of the refined Buckley Annex land use plan and roadway network included in the General Development Plan (“GDP”) while respecting the guiding principles and work accomplished with the original Buckley Annex Redevelopment Plan dated February 2008 (“Redevelopment Plan”).

The General Development Plan calls for 800 residential units including 120 single family detached, 230 single family attached, and 450 apartments as well as 83,000 square feet of specialty retail and 117,000 square feet of office. At build-out, it is anticipated that the site will generate approximately 9,500 vehicles per day. This volume is the same as that used in the previous traffic study for the site and is also the same volume of traffic that was historically generated by the existing government office building when it was fully occupied.

In order to create an east-west roadway that provides both mobility and access without creating a barrier to pedestrians and bicyclists, the proposed section for Lowry Boulevard has been reduced from 5-lanes to 3-lanes. A screen-line analysis was conducted for the three east-west roadways in proximity to the project (1st Avenue, Lowry Boulevard, and Alameda Avenue) and showed that the reduced east-west capacity of Lowry Boulevard could be picked up by Alameda Avenue and 1st Avenue.

Additional changes to the land plan include

- a. The conversion of the $\frac{3}{4}$ access originally proposed for the intersection of Quebec St & Archer Pl to a right-in/right-out,
- b. Removal of the right-in/right-out originally proposed at Quebec St & Ellsworth Ave and the conversion of Ellsworth Ave to a pedestrian corridor,
- c. The removal of the $\frac{3}{4}$ access originally proposed at Monaco Pkwy & Bayaud Ave, and
- d. The removal of the right-in/right-out access originally proposed at Monaco Pkwy & Southmoor Dr.

The major signalized intersections in vicinity to the project were then analyzed and compared to the original Redevelopment Plan traffic study. In order to conduct the analysis while respecting the work done previously, the 2030 volumes from the 2008 study were used as a starting point. The volumes were first adjusted based on the results of the screen-line analysis, and then adjusted again to pick up the modified site traffic caused by the changes in access on Monaco Pkwy and Quebec St.

The result of the analysis show that levels of service will not be adversely affected by the changes included in the General Development Plan, and the anticipated 95th percentile queue lengths can be contained within back to back left turn lanes on Lowry Boulevard between Pontiac Street and Quebec Street.

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Appendix A

Trip Generation and Internal Capture Calculations

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Appendix B

Synchro Level of Service Analysis Output

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Appendix C

**Quebec St & Alameda Ave Reanalysis
with Original 2030 Redevelopment Volumes**

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Appendix D

SimTraffic Queuing Analysis Output

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Appendix A

Trip Generation and Internal Capture Calculations

Appendix A

Buckley Annex 2030 Trip Generation

Daily

Year	Code	Land Use	Quantity	Units	%in	%out	Total	In	Out
2030	210	Single-Family Detached Housing	120	UNITS	50%	50%	1,230	615	615
2030	220	Apartments	450	UNITS	50%	50%	2,851	1,425	1,425
2030	230	Townhomes/Condos	230	UNITS	50%	50%	1,328	664	664
2030	710	Office	117	KSQFT	50%	50%	1,505	753	753
2030	814	Specialty Retail	83	KSQFT	50%	50%	3,588	1,794	1,794
							Subtotal	10,502	5,251
					Internal Capture ⁴	10%	1,050	525	525
							TOTAL	9,452	4,726

AM Peak

Year	Code	Land Use	Quantity	Units	%in	%out	Total	In	Out
2030	210	Single-Family Detached Housing	120	UNITS	25%	75%	94	23	70
2030	220	Apartments	450	UNITS	20%	80%	224	45	179
2030	230	Townhomes/Condos	230	UNITS	17%	83%	101	17	83
2030	710	Office	117	KSQFT	88%	12%	213	187	26
2030	814	Specialty Retail ³	83	KSQFT	61%	39%	54	33	21
							Subtotal	685	306
					Internal Capture ⁴	2%	14	6	8
							TOTAL	672	299

PM Peak

Year	Code	Land Use	Quantity	Units	%in	%out	Total	In	Out
2030	210	Single-Family Detached Housing	120	UNITS	63%	37%	124	78	46
2030	220	Apartments	450	UNITS	65%	35%	265	172	93
2030	230	Townhomes/Condos	230	UNITS	67%	33%	119	80	39
2030	710	Office	117	KSQFT	17%	83%	210	36	174
2030	814	Specialty Retail	83	KSQFT	44%	56%	221	97	124
							Subtotal	939	463
					Internal Capture ⁴	7%	66	32	33
							TOTAL	873	442

Notes:

1. The land use information is based on the presentation made to the Lowry Planning/Disposition Subcommittee on 6/21/12.
2. The trip generation values are based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition.
3. There is no AM peak hour rate for Specialty Retail so the rate is derived from the PM peak rate and a ratio of the AM/PM rates for the ITE Shopping Center (820) land use.
4. The internal capture rate is calculated based on the procedures outlined in the Trip Generation Handbook - An ITE Recommended Practice; however, please note that the AM peak internal trips are estimates because ITE does not currently have data for this time period.

Appendix A

Buckley Annex 2030 Trip Generation

For the 4 blocks adjacent to the intersection of Lowry Blvd & Pontiac St

AM Peak

Year	Code	Land Use	Quantity	Units	%in	%out	Total	In	Out	
NE Block										
2030	220	Apartments	0	UNITS	20%	80%	0	0	0	
2030	230	Townhomes/Condos	0	UNITS	17%	83%	0	0	0	
2030	710	Office	110	KSQFT	88%	12%	202	178	24	
2030	814	Specialty Retail ³	36	KSQFT	61%	39%	27	16	10	
							Sub-Total	229	194	35
						Internal Capture ⁴	2%	5	4	1
							NE Block Total	224	190	34
SE Block										
2030	220	Apartments	230	UNITS	20%	80%	116	23	93	
2030	230	Townhomes/Condos	0	UNITS	17%	83%	0	0	0	
2030	710	Office	0	KSQFT	88%	12%	0	0	0	
2030	814	Specialty Retail ³	0	KSQFT	61%	39%	0	0	0	
							Sub-Total	116	23	93
						Internal Capture ⁴	2%	2	0	2
							SE Block Total	114	23	91
NW Block										
2030	220	Apartments	170	UNITS	20%	80%	87	17	70	
2030	230	Townhomes/Condos	0	UNITS	17%	83%	0	0	0	
2030	710	Office	7	KSQFT	88%	12%	22	20	3	
2030	814	Specialty Retail ³	7	KSQFT	61%	39%	27	16	10	
							Sub-Total	136	53	83
						Internal Capture ⁴	2%	3	1	2
							SE Block Total	133	52	81
SW Block										
2030	220	Apartments	0	UNITS	20%	80%	0	0	0	
2030	230	Townhomes/Condos	0	UNITS	17%	83%	0	0	0	
2030	710	Office	0	KSQFT	88%	12%	0	0	0	
2030	814	Specialty Retail ³	22	KSQFT	61%	39%	27	16	10	
							Sub-Total	27	16	10
						Internal Capture ⁴	2%	1	0	0
							SE Block Total	26	16	10

Appendix A

Buckley Annex 2030 Trip Generation

For the 4 blocks adjacent to the intersection of Lowry Blvd & Pontiac St

PM Peak

Year	Code	Land Use	Quantity	Units	%in	%out	Total	In	Out
NE Corner									
2030	220	Apartments	0	UNITS	65%	35%	0	0	0
2030	230	Townhomes/Condos	0	UNITS	67%	33%	0	0	0
2030	710	Office	110	KSQFT	17%	83%	202	34	168
2030	814	Specialty Retail	36	KSQFT	44%	56%	108	47	60
							Subtotal	310	82
							Internal Capture ⁴	7%	22
								6	16
							TOTAL	288	76
								212	
SE Corner									
2030	220	Apartments	230	UNITS	65%	35%	144	94	50
2030	230	Townhomes/Condos	0	UNITS	67%	33%	0	0	0
2030	710	Office	0	KSQFT	17%	83%	0	0	0
2030	814	Specialty Retail	0	KSQFT	44%	56%	0	0	0
							Subtotal	144	94
							Internal Capture ⁴	7%	10
								7	4
							TOTAL	134	87
								47	
NW Corner									
2030	220	Apartments	170	UNITS	65%	35%	111	72	39
2030	230	Townhomes/Condos	0	UNITS	67%	33%	0	0	0
2030	710	Office	7	KSQFT	17%	83%	87	15	72
2030	814	Specialty Retail	7	KSQFT	44%	56%	38	17	21
							Subtotal	236	104
							Internal Capture ⁴	7%	17
								7	9
							TOTAL	220	97
								123	
SW Corner									
2030	220	Apartments	0	UNITS	65%	35%	0	0	0
2030	230	Townhomes/Condos	0	UNITS	67%	33%	0	0	0
2030	710	Office	0	KSQFT	17%	83%	0	0	0
2030	814	Specialty Retail	22	KSQFT	44%	56%	74	33	42
							Subtotal	74	33
							Internal Capture ⁴	7%	5
								2	3
							TOTAL	69	30
								39	

Notes:

1. The land use information is based on the presentation made to the Lowry Planning/Disposition Subcommittee on June 21,
2. The trip generation values are based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition.
3. There is no AM peak hour rate for Specialty Retail so the rate is derived from the PM peak rate and a ratio of the AM/PM rates for the ITE Shopping Center (820) land use.
4. The internal capture rate is calculated based on the procedures outlined in the Trip Generation Handbook - An ITE Recommended Practice; however, please note that the AM peak internal trips are estimates because ITE does not currently have

Appendix A

Buckley Annex Internal Capture Calculation⁴

ITE Land Use (ITE Code)	Quantity	Units	Daily			AM Peak			PM Peak		
			Total	In	Out	Total	In	Out	Total	In	Out
Single-Family Detached Housing (210)	120	DU	1,230	615	615	94	23	70	124	78	46
Apartments (220)	450	DU	2,851	1,425	1,425	224	45	179	265	172	93
Townhomes/Condos (230)	230	DU	1,328	664	664	101	17	83	119	80	39
		<i>Subtotal</i>	<i>5,408</i>	<i>2,704</i>	<i>2,704</i>	<i>419</i>	<i>85</i>	<i>333</i>	<i>508</i>	<i>330</i>	<i>178</i>
Internal		From/To Retail	359	197	161	5	3	2	24	15	9
		From/To Office	15	15	0	1	1	0	3	3	0
Office (710)	117	KSQFT	1,505	753	753	213	187	26	210	36	174
Internal		From/To Residential	15	0	15	1	0	1	3	0	3
		From/To Retail	126	54	72	1	1	0	6	4	2
Specialty Retail (814) ³	83	KSQFT	3,588	1,794	1,794	54	33	21	221	97	124
Internal		From/To Residential	359	161	197	5	2	3	24	9	15
		From/To Office	126	72	54	1	0	1	6	2	4
Sub-Total			10,502	5,251	5,251	685	306	380	939	463	476
Internal Capture			999	499	499	13	7	7	66	33	33
Internal Capture Percentage			10%	10%	10%	2%	2%	2%	7%	7%	7%
Total			9,503	4,751	4,751	672	299	373	873	430	442

Notes:

1. The land use information is based on the presentation made to the Lowry Planning/Disposition Subcommittee on June 21, 2012.
2. The trip generation values are based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition.
3. There is no AM peak hour rate for Specialty Retail so the rate is derived from the PM peak rate and a ratio of the AM/PM rates for the ITE Shopping Center (820) land use.
4. The internal capture rate is calculated based on the procedures outlined in the Trip Generation Handbook - An ITE Recommended Practice; however, please note that the AM peak internal trips are estimates because ITE does not currently have data for this time period.

**BUCKLEY ANNEX REDEVELOPMENT PLAN
TRAFFIC ANALYSIS ADDENDUM**

Appendix B

Synchro Level of Service Analysis Output

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 AM Total w/ Updated Volumes

1: Monaco Pkwy & Alameda Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	755	40	245	1370	460	120	1195	200	325	1075	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	2	3	0	1	3	1	1	3	0	2	2	1
Capacity, veh/h	302	1287	68	337	1783	555	186	1509	253	441	1294	579
Arriving On Green	0.03	0.26	0.26	0.23	0.70	0.00	0.06	0.34	0.34	0.05	0.24	0.00
Sat Flow, veh/h	3441.6	4945.6	261.3	1774.0	1583.3	1583.3	1774.0	4388.9	734.5	3441.6	1583.3	1583.3
Grp Volume(v), veh/h	141.3	561.8	302.3	266.3	1489.1	0.0	130.4	1003.3	513.0	353.3	1168.5	0.0
Grp Sat Flow(s),veh/h/ln	1720.8	1695.1	1816.6	1774.0	1695.1	1583.3	1774.0	1695.1	1733.1	1720.8	1769.6	1583.3
Q Serve(g_s), s	3.0	17.6	17.7	11.6	25.3	0.0	5.7	33.0	33.0	7.5	38.3	0.0
Cycle Q Clear(g_c), s	3.0	17.6	17.7	11.6	25.3	0.0	5.7	33.0	33.0	7.5	38.3	0.0
Proportion In Lane	1.000		0.144	1.000		1.000	1.000		0.424	1.000		1.000
Lane Grp Cap(c), veh/h	301.6	882.4	472.8	336.5	1782.9	555.1	185.5	1165.9	596.0	441.3	1293.9	578.9
V/C Ratio(X)	0.468	0.637	0.639	0.791	0.835	0.000	0.703	0.861	0.861	0.801	0.903	0.000
Avail Cap(c_a), veh/h	301.6	882.4	472.8	383.6	1782.9	555.1	185.5	1165.9	596.0	452.8	1299.9	581.5
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.000	1.000	1.000	0.297	0.297	0.000	1.000	1.000	1.000	0.879	0.879	0.000
Uniform Delay (d), s/veh	35.6	39.3	39.3	21.8	15.4	0.0	29.7	36.6	36.6	28.8	43.2	0.0
Incr Delay (d2), s/veh	1.1	1.5	2.9	3.0	1.1	0.0	11.3	6.7	12.2	8.6	8.1	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
Control Delay (d), s/veh	36.7	40.8	42.2	24.8	16.5	0.0	41.0	43.3	48.8	37.4	51.3	0.0
Movement LOS	D	D	D	C	B		D	D	D	D	D	
Approach Volume, veh/h		1005			1755			1647			1522	
Approach Delay, s/veh		40.7			17.8			44.9			48.0	
Approach LOS		D			B			D			D	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	9.00	37.18		19.82	48.00		13.00	47.20		15.60	49.80	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	3.00	28.00		17.00	42.00		7.00	41.00		10.00	44.00	
Max Q Clear Time (g_c+I1), s	5.00	19.69		13.56	27.30		7.68	35.04		9.53	40.35	
Green Extension Time (p_c)	0.00	7.21		0.26	11.91		0.00	5.53		0.07	3.45	
Intersection Summary												
HCM 2010 Control Delay			36.9									
HCM 2010 Level of Service			D									

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 AM Total w/ Updated Volumes
2: Monaco Pkwy & Lowry Blvd

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	500	205	1260	520	150	995
Number	3	18	2	12	1	6
Initial Queue, 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
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863
Lanes	2	1	3	1	1	3
Capacity, veh/h	663	305	2473	770	476	3546
Arriving On Green	0.19	0.19	0.65	0.65	0.31	1.00
Sat Flow, veh/h	3441.6	1583.3	5252.9	1583.3	1774.0	5252.9
Grp Volume(v), veh/h	543.5	222.8	1369.6	565.2	163.0	1081.5
Grp Sat Flow(s),veh/h/ln	1720.8	1583.3	1695.1	1583.3	1774.0	1695.1
Q Serve(g_s), s	16.5	14.4	16.2	26.2	3.4	0.0
Cycle Q Clear(g_c), s	16.5	14.4	16.2	26.2	3.4	0.0
Proportion In Lane	1.000	1.000		1.000	1.000	
Lane Grp Cap(c), veh/h	662.6	304.8	2473.1	770.0	476.3	3546.3
V/C Ratio(X)	0.820	0.731	0.554	0.734	0.342	0.305
Avail Cap(c_a), veh/h	1010.6	464.9	2473.1	770.0	476.3	3546.3
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	0.848	0.848	0.374	0.374	0.872	0.872
Uniform Delay (d), s/veh	42.2	41.3	12.7	14.5	7.4	0.0
Incr Delay (d2), s/veh	2.8	2.9	0.3	2.4	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	45.0	44.2	13.1	16.9	9.1	0.2
Movement LOS	D	D	B	B	A	A
Approach Volume, veh/h	766		1935			1245
Approach Delay, s/veh	44.8		14.2			1.4
Approach LOS	D		B			A
Timer						
Assigned Phase			2		1	6
Phase Duration (G+Y+Rc), s			59.00		23.00	82.00
Change Period (Y+Rc), s			6.00		6.00	6.00
Max Green Setting (Gmax), s			53.00		17.00	76.00
Max Q Clear Time (g_c+I1), s			28.16		5.39	2.00
Green Extension Time (p_c)			20.72		0.31	46.36
Intersection Summary						
HCM 2010 Control Delay			16.1			
HCM 2010 Level of Service			B			

HCM 2010 Signalized Intersection Summary
 Buckley Annex GDP

2030 AM Total w/ Updated Volumes

3: Monaco Pkwy & 1st Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	40	20	75	55	195	15	1365	100	155	1050	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Capacity, veh/h	106	238	119	293	73	259	306	1798	804	367	2507	60
Arriving On Green	0.20	0.20	0.20	0.07	0.07	0.07	0.68	0.68	0.00	0.13	0.69	0.69
Sat Flow, veh/h	1103.0	1172.8	586.4	1330.9	360.2	1277.1	478.4	3539.2	1583.3	1774.0	3624.0	86.3
Grp Volume(v), veh/h	10.9	0.0	65.2	81.5	0.0	271.7	16.3	1483.7	0.0	168.5	586.5	581.9
Grp Sat Flow(s),veh/h/ln	1103.0	0.0	1759.3	1330.9	0.0	1637.4	478.4	1769.6	1583.3	1774.0	1862.7	1847.5
Q Serve(g_s), s	1.1	0.0	3.5	6.7	0.0	18.7	1.3	35.1	0.0	4.1	16.2	16.2
Cycle Q Clear(g_c), s	19.8	0.0	3.5	10.2	0.0	18.7	1.3	35.1	0.0	4.1	16.2	16.2
Proportion In Lane	1.000		0.333	1.000		0.780	1.000		1.000	1.000		0.047
Lane Grp Cap(c), veh/h	106.4	0.0	357.3	292.6	0.0	332.6	306.0	1797.6	804.2	367.0	1288.6	1278.1
V/C Ratio(X)	0.102	0.000	0.183	0.279	0.000	0.817	0.053	0.825	0.000	0.459	0.455	0.455
Avail Cap(c_a), veh/h	162.5	0.0	446.8	360.2	0.0	415.8	306.0	1797.6	804.2	367.0	1288.6	1278.1
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.000	0.000	1.000	0.953	0.000	0.953	0.763	0.763	0.000	1.000	1.000	1.000
Uniform Delay (d), s/veh	53.2	0.0	37.7	48.9	0.0	51.2	9.3	14.8	0.0	18.4	7.9	7.9
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.5	0.0	9.4	0.3	3.5	0.0	4.1	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	53.6	0.0	37.9	49.4	0.0	60.6	9.6	18.3	0.0	22.5	9.1	9.1
Movement LOS	D		D	D		E	A	B		C	A	A
Approach Volume, veh/h		76			353			1500			1337	
Approach Delay, s/veh		40.1			58.0			18.2			10.8	
Approach LOS		D			E			B			B	
Timer												
Assigned Phase		4			8			2		1		6
Phase Duration (G+Y+Rc), s		29.20			29.20			64.00		21.00		85.00
Change Period (Y+Rc), s		6.00			6.00			6.00		6.00		6.00
Max Green Setting (Gmax), s		29.00			29.00			58.00		15.00		79.00
Max Q Clear Time (g_c+I1), s		21.80			20.71			37.11		6.11		18.18
Green Extension Time (p_c)		1.40			1.53			17.48		0.27		39.12
Intersection Summary												
HCM 2010 Control Delay				20.0								
HCM 2010 Level of Service				B								

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 AM Total w/ Updated Volumes
4: Quebec St & Alameda Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	1010	100	115	1620	330	250	1025	85	175	495	175
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	3	1	1	3	1	2	2	0	2	2	1
Capacity, veh/h	154	1822	567	234	1822	567	333	1132	94	201	1044	467
Arriving On Green	0.03	0.24	0.24	0.05	0.36	0.36	0.10	0.33	0.33	0.02	0.10	0.10
Sat Flow, veh/h	1774.0	1583.3	1583.3	1774.0	1583.3	1583.3	3441.6	3394.6	281.3	3441.6	1583.3	1583.3
Grp Volume(v), veh/h	195.7	1097.8	108.7	125.0	1760.9	358.7	271.7	610.9	595.6	190.2	538.0	190.2
Grp Sat Flow(s),veh/h/ln	1774.0	1695.1	1583.3	1774.0	1695.1	1583.3	1720.8	1862.7	1813.1	1720.8	1769.6	1583.3
Q Serve(g_s), s	6.0	23.0	6.6	5.4	40.8	22.6	9.3	39.0	39.1	6.6	17.3	13.6
Cycle Q Clear(g_c), s	6.0	23.0	6.6	5.4	40.8	22.6	9.3	39.0	39.1	6.6	17.3	13.6
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.155	1.000		1.000
Lane Grp Cap(c), veh/h	153.7	1822.2	567.4	233.9	1822.2	567.4	333.1	620.9	604.4	200.8	1043.6	466.9
V/C Ratio(X)	1.273	0.602	0.192	0.534	0.966	0.632	0.816	0.984	0.985	0.947	0.516	0.407
Avail Cap(c_a), veh/h	153.7	1822.2	567.4	233.9	1822.2	567.4	430.2	620.9	604.4	200.8	1043.6	466.9
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.645	0.645	0.645	1.000	1.000	1.000	1.000	1.000	1.000	0.935	0.935	0.935
Uniform Delay (d), s/veh	33.7	38.0	31.8	25.5	37.8	31.9	53.1	39.7	39.7	58.7	46.0	44.3
Incr Delay (d2), s/veh	151.4	1.0	0.5	2.4	14.0	2.3	9.1	32.4	33.2	46.6	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	185.1	39.0	32.2	27.9	51.8	34.2	62.3	72.1	72.9	105.3	46.4	44.8
Movement LOS	F	D	C	C	D	C	E	E	E	F	D	D
Approach Volume, veh/h		1402			2245			1478			918	
Approach Delay, s/veh		58.8			47.6			70.6			58.3	
Approach LOS		E			D			E			E	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	12.00	49.00		12.00	49.00		17.61	46.00		13.00	41.39	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	6.00	43.00		6.00	43.00		15.00	40.00		7.00	32.00	
Max Q Clear Time (g_c+I1), s	8.00	25.02		7.38	42.79		11.29	41.13		8.63	19.34	
Green Extension Time (p_c)	0.00	16.47		0.00	0.21		0.32	0.00		0.00	8.91	
Intersection Summary												
HCM 2010 Control Delay			57.5									
HCM 2010 Level of Service			E									

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 AM Total w/ Updated Volumes
5: Quebec St & Lowry Blvd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	320	165	155	320	200	230	1095	160	275	565	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	2	2	0	2	2	0	2	2	1	2	2	1
Capacity, veh/h	365	416	353	377	402	342	1010	1746	781	761	1834	820
Arriving On Green	0.02	0.07	0.07	0.05	0.22	0.22	0.07	0.99	0.99	0.12	1.00	1.00
Sat Flow, veh/h	3441.6	1862.7	1583.3	3441.6	1862.7	1583.3	3441.6	1583.3	1583.3	3441.6	1583.3	1583.3
Grp Volume(v), veh/h	163.0	347.8	179.3	168.5	347.8	217.4	250.0	1190.2	173.9	298.9	614.1	184.8
Grp Sat Flow(s),veh/h/ln	1720.8	1862.7	1583.3	1720.8	1862.7	1583.3	1720.8	1769.6	1583.3	1720.8	1769.6	1583.3
Q Serve(g_s), s	4.3	21.7	12.8	4.4	21.2	14.7	4.0	1.6	0.2	4.9	0.0	0.0
Cycle Q Clear(g_c), s	4.3	21.7	12.8	4.4	21.2	14.7	4.0	1.6	0.2	4.9	0.0	0.0
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		1.000	1.000		1.000
Lane Grp Cap(c), veh/h	365.1	415.8	353.4	376.6	402.5	342.1	1009.5	1746.1	781.1	760.7	1833.8	820.4
V/C Ratio(X)	0.447	0.837	0.507	0.447	0.864	0.635	0.248	0.682	0.223	0.393	0.335	0.225
Avail Cap(c_a), veh/h	385.9	443.0	376.6	392.8	427.2	363.1	1009.5	1746.1	781.1	763.0	1833.8	820.4
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.877	0.877	0.877	1.000	1.000	1.000	0.256	0.256	0.256	0.806	0.806	0.806
Uniform Delay (d), s/veh	35.9	52.4	48.3	35.0	44.5	41.9	13.7	0.4	0.4	11.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	11.2	1.0	0.8	16.0	3.3	0.0	0.6	0.2	0.3	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	36.7	63.6	49.3	35.8	60.5	45.3	13.8	1.0	0.6	11.2	0.4	0.5
Movement LOS	D	E	D	D	E	D	B	A	A	B	A	A
Approach Volume, veh/h		690			734			1614			1098	
Approach Delay, s/veh		53.5			50.3			2.9			3.4	
Approach LOS		D			D			A			A	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	12.29	31.28		11.45	30.44		9.00	63.08		11.92	66.00	
Change Period (Y+Rc), s	6.00	5.00		5.00	5.00		5.00	5.00		5.00	5.00	
Max Green Setting (Gmax), s	7.00	28.00		7.00	27.00		4.00	58.00		7.00	61.00	
Max Q Clear Time (g_c+I1), s	6.25	23.70		6.42	23.19		6.00	3.61		6.91	2.00	
Green Extension Time (p_c)	0.04	2.49		0.03	2.25		0.00	24.17		0.01	24.89	
Intersection Summary												
HCM 2010 Control Delay	19.9											
HCM 2010 Level of Service	B											

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 AM Total w/ Updated Volumes

6: Quebec St & 1st Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	80	55	25	85	80	65	1365	15	175	930	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Capacity, veh/h	258	149	102	182	168	143	310	1917	21	378	1811	224
Arriving On Green	0.02	0.05	0.05	0.02	0.09	0.09	0.07	1.00	1.00	0.07	0.56	0.56
Sat Flow, veh/h	1774.0	1029.8	708.0	1774.0	1583.3	1583.3	1774.0	3678.0	40.4	1774.0	3252.6	402.0
Grp Volume(v), veh/h	184.8	0.0	146.7	27.2	92.4	87.0	70.7	751.0	749.0	190.2	578.7	557.2
Grp Sat Flow(s),veh/h/ln	1774.0	0.0	1737.8	1774.0	1862.7	1583.3	1774.0	1862.7	1855.6	1774.0	1862.7	1791.8
Q Serve(g_s), s	7.0	0.0	8.0	1.3	4.6	5.1	1.8	0.0	0.0	4.4	19.4	19.4
Cycle Q Clear(g_c), s	7.0	0.0	8.0	1.3	4.6	5.1	1.8	0.0	0.0	4.4	19.4	19.4
Proportion In Lane	1.000		0.407	1.000		1.000	1.000		0.022	1.000		0.224
Lane Grp Cap(c), veh/h	257.7	0.0	250.9	182.3	168.0	142.8	309.7	970.8	967.1	378.4	1036.9	997.5
V/C Ratio(X)	0.717	0.000	0.585	0.149	0.550	0.609	0.228	0.774	0.774	0.503	0.558	0.559
Avail Cap(c_a), veh/h	257.7	0.0	519.5	278.5	556.9	473.3	359.9	970.8	967.1	548.5	1036.9	997.5
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.955	0.000	0.955	1.000	1.000	1.000	0.692	0.692	0.692	1.000	1.000	1.000
Uniform Delay (d), s/veh	36.4	0.0	43.3	39.2	42.2	42.5	11.1	0.0	0.0	7.7	13.8	13.8
Incr Delay (d2), s/veh	8.8	0.0	2.1	0.4	2.8	4.1	0.3	4.2	4.2	1.0	2.2	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	45.2	0.0	45.4	39.6	45.0	46.6	11.4	4.2	4.2	8.8	16.0	16.1
Movement LOS	D		D	D	D	D	B	A	A	A	B	B
Approach Volume, veh/h		332			207			1571			1326	
Approach Delay, s/veh		45.3			45.0			4.6			15.0	
Approach LOS		D			D			A			B	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	13.00	20.01		7.74	14.75		9.26	56.56		12.70	60.00	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	7.00	29.00		7.00	29.00		6.00	44.00		16.00	54.00	
Max Q Clear Time (g_c+I1), s	9.00	10.02		3.35	7.13		3.80	2.00		6.36	21.41	
Green Extension Time (p_c)	0.00	1.55		0.01	1.62		0.02	29.12		0.34	24.25	
Intersection Summary												
HCM 2010 Control Delay	15.0											
HCM 2010 Level of Service	B											

HCM 2010 Signalized Intersection Summary
 Buckley Annex GDP

2030 AM Total w/ Updated Volumes

7: Pontiac St & Lowry Blvd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	575	15	10	640	70	40	35	30	30	15	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Capacity, veh/h	466	1150	30	501	1185	1008	264	101	87	247	61	121
Arriving On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	746.1	1807.3	47.1	784.8	1862.7	1583.3	1350.7	927.5	795.0	1324.4	555.6	1111.1
Grp Volume(v), veh/h	97.8	0.0	641.3	10.9	695.7	76.1	43.5	0.0	70.7	32.6	0.0	48.9
Grp Sat Flow(s),veh/h/ln	746.1	0.0	1854.4	784.8	1862.7	1583.3	1350.7	0.0	1722.5	1324.4	0.0	1666.7
Q Serve(g_s), s	4.1	0.0	9.1	0.4	10.2	0.9	1.4	0.0	1.8	1.1	0.0	1.3
Cycle Q Clear(g_c), s	14.3	0.0	9.1	9.4	10.2	0.9	2.7	0.0	1.8	2.9	0.0	1.3
Proportion In Lane	1.000		0.025	1.000		1.000	1.000		0.462	1.000		0.667
Lane Grp Cap(c), veh/h	465.8	0.0	1180.1	501.3	1185.4	1007.6	263.7	0.0	187.9	246.7	0.0	181.8
V/C Ratio(X)	0.210	0.000	0.543	0.022	0.587	0.076	0.165	0.000	0.376	0.132	0.000	0.269
Avail Cap(c_a), veh/h	465.8	0.0	1180.1	501.3	1185.4	1007.6	632.1	0.0	657.7	608.0	0.0	636.4
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.836	0.000	0.836	0.824	0.824	0.824	1.000	0.000	1.000	1.000	0.000	1.000
Uniform Delay (d), s/veh	9.1	0.0	4.8	7.4	5.0	3.3	20.5	0.0	19.5	20.9	0.0	19.3
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.0	0.6	0.0	0.3	0.0	1.2	0.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	9.3	0.0	5.2	7.4	5.6	3.3	20.8	0.0	20.8	21.1	0.0	20.1
Movement LOS	A		A	A	A	A	C		C	C		C
Approach Volume, veh/h		739			783			114			82	
Approach Delay, s/veh		5.7			5.4			20.8			20.5	
Approach LOS		A			A			C			C	
Timer												
Assigned Phase		4			8			2			6	
Phase Duration (G+Y+Rc), s		36.00			36.00			11.14			11.14	
Change Period (Y+Rc), s		6.00			6.00			6.00			6.00	
Max Green Setting (Gmax), s		30.00			30.00			18.00			18.00	
Max Q Clear Time (g_c+I1), s		16.35			12.22			4.71			4.90	
Green Extension Time (p_c)		8.33			9.93			0.67			0.67	
Intersection Summary												
HCM 2010 Control Delay			7.3									
HCM 2010 Level of Service			A									

Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes
1: Monaco Pkwy & Alameda Ave

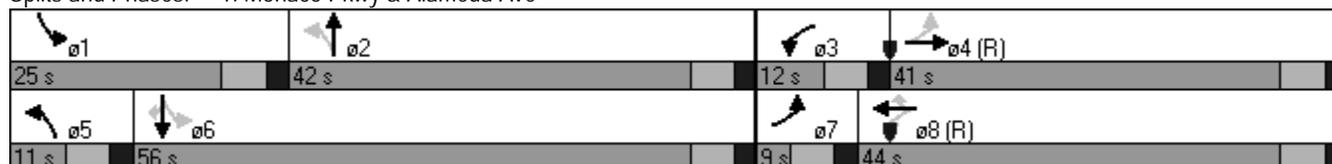


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	145	1300	180	1100	145	105	1330	635	1300	220
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	9.0	41.0	12.0	44.0	44.0	11.0	42.0	25.0	56.0	56.0
Total Split (%)	7.5%	34.2%	10.0%	36.7%	36.7%	9.2%	35.0%	20.8%	46.7%	46.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes									
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Monaco Pkwy & Alameda Ave



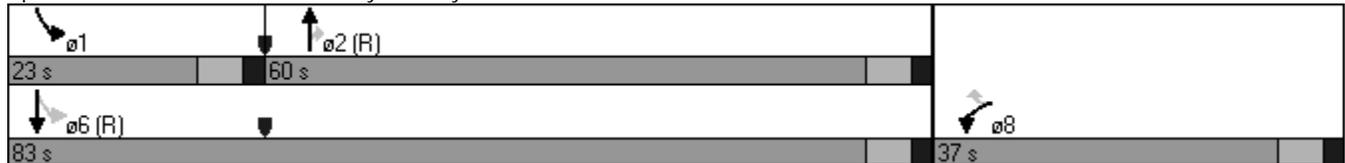
Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes
2: Monaco Pkwy & Lowry Blvd

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	505	140	1065	565	175	1640
Turn Type	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	1	6
Switch Phase						
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0
Total Split (s)	37.0	37.0	60.0	60.0	23.0	83.0
Total Split (%)	30.8%	30.8%	50.0%	50.0%	19.2%	69.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Max	C-Max	Max	C-Max

Intersection Summary
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 11 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 2: Monaco Pkwy & Lowry Blvd



Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes

3: Monaco Pkwy & 1st Ave

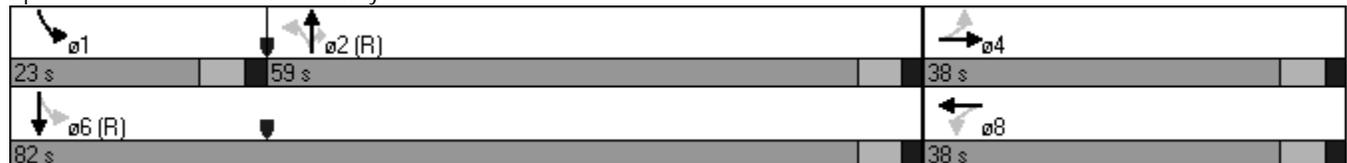


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	40	100	55	55	10	1145	45	230	1710
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		4		8		2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	1	6
Switch Phase									
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	38.0	38.0	38.0	38.0	59.0	59.0	59.0	23.0	82.0
Total Split (%)	31.7%	31.7%	31.7%	31.7%	49.2%	49.2%	49.2%	19.2%	68.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag					Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	Max	C-Max

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Monaco Pkwy & 1st Ave



Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes

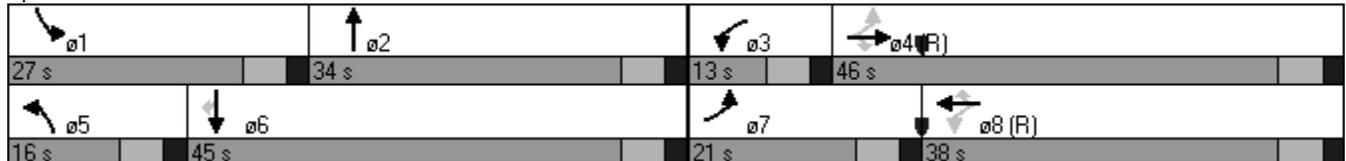
4: Quebec St & Alameda Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Volume (vph)	200	1725	185	180	1075	155	155	715	535	1020	230	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Prot	NA	Perm	
Protected Phases	7	4		3	8		5	2	1	6		
Permitted Phases	4		4	8		8					6	
Detector Phase	7	4	4	3	8	8	5	2	1	6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	
Total Split (s)	21.0	46.0	46.0	13.0	38.0	38.0	16.0	34.0	27.0	45.0	45.0	
Total Split (%)	17.5%	38.3%	38.3%	10.8%	31.7%	31.7%	13.3%	28.3%	22.5%	37.5%	37.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	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)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes											
Recall Mode	Min	C-Max	C-Max	Min	C-Max	C-Max	Min	Max	Max	Max	Max	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Splits and Phases: 4: Quebec St & Alameda Ave



Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes

5: Quebec St & Lowry Blvd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	205	290	235	285	200	830	35	310	1390	145
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	14.0	31.0	15.0	32.0	15.0	59.0	59.0	15.0	59.0	59.0
Total Split (%)	11.7%	25.8%	12.5%	26.7%	12.5%	49.2%	49.2%	12.5%	49.2%	49.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes									
Recall Mode	Max	Min	Max	Min	Max	C-Max	C-Max	Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 116 (97%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Splits and Phases: 5: Quebec St & Lowry Blvd

15 s	59 s	15 s	31 s
15 s	59 s	14 s	32 s

Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes

6: Quebec St & 1st Ave

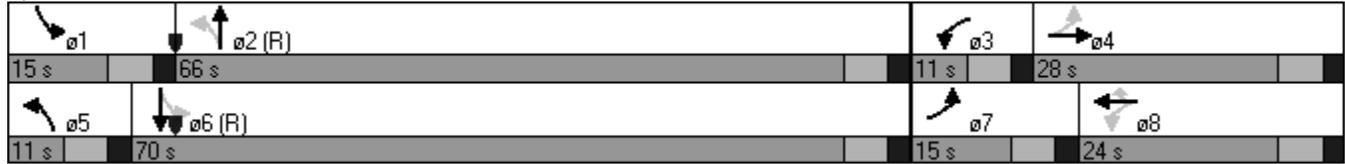


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	145	90	50	140	100	95	1090	135	1675
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	15.0	28.0	11.0	24.0	24.0	11.0	66.0	15.0	70.0
Total Split (%)	12.5%	23.3%	9.2%	20.0%	20.0%	9.2%	55.0%	12.5%	58.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes								
Recall Mode	None	None	None	None	None	None	C-Max	Max	C-Max

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Quebec St & 1st Ave



Timings
Buckley Annex GDP

2030 PM Total w/ Updated Volumes

7: Pontiac St & Lowry Blvd

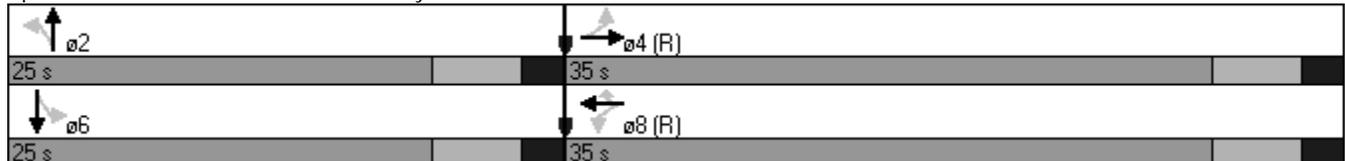


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	50	560	30	555	45	30	25	95	40
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	25.0	25.0	25.0
Total Split (%)	58.3%	58.3%	58.3%	58.3%	58.3%	41.7%	41.7%	41.7%	41.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 24 (40%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 7: Pontiac St & Lowry Blvd



**BUCKLEY ANNEX REDEVELOPMENT PLAN
TRAFFIC ANALYSIS ADDENDUM**

Appendix C

**Quebec St & Alameda Ave Reanalysis
with Original 2030 Redevelopment Volumes**

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 AM Total w/ Original Volumes
4: Quebec St & Alameda Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	910	90	115	1510	340	230	1045	85	185	525	165
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	3	1	1	3	1	2	2	0	2	2	1
Capacity, veh/h	187	1764	549	261	1737	541	310	1133	92	201	1067	477
Arriving On Green	0.02	0.11	0.11	0.06	0.34	0.34	0.09	0.33	0.33	0.02	0.10	0.10
Sat Flow, veh/h	1774.0	1583.3	1583.3	1774.0	1583.3	1583.3	3441.6	3400.4	276.3	3441.6	1583.3	1583.3
Grp Volume(v), veh/h	173.9	989.1	97.8	125.0	1641.3	369.6	250.0	621.7	606.5	201.1	570.7	179.3
Grp Sat Flow(s),veh/h/ln	1774.0	1695.1	1583.3	1774.0	1695.1	1583.3	1720.8	1862.7	1814.0	1720.8	1769.6	1583.3
Q Serve(g_s), s	7.5	22.1	6.7	5.4	37.6	24.1	8.6	40.0	40.0	7.0	18.4	12.7
Cycle Q Clear(g_c), s	7.5	22.1	6.7	5.4	37.6	24.1	8.6	40.0	40.0	7.0	18.4	12.7
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.152	1.000		1.000
Lane Grp Cap(c), veh/h	186.8	1763.8	549.2	261.4	1737.5	541.0	310.4	620.9	604.7	200.8	1067.0	477.4
V/C Ratio(X)	0.931	0.561	0.178	0.478	0.945	0.683	0.806	1.001	1.003	1.002	0.535	0.376
Avail Cap(c_a), veh/h	186.8	1763.8	549.2	300.1	1737.5	541.0	401.5	620.9	604.7	200.8	1067.0	477.4
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.657	0.657	0.657	1.000	1.000	1.000	1.000	1.000	1.000	0.902	0.902	0.902
Uniform Delay (d), s/veh	31.4	44.5	37.7	25.5	38.4	33.9	53.6	40.0	40.0	58.8	46.0	43.5
Incr Delay (d2), s/veh	35.6	0.9	0.5	1.4	11.2	3.5	8.9	36.4	37.4	60.7	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	67.0	45.3	38.1	26.8	49.5	37.4	62.5	76.4	77.4	119.6	46.5	43.9
Movement LOS	E	D	D	C	D	D	E	F	F	F	D	D
Approach Volume, veh/h		1261			2136			1478			951	
Approach Delay, s/veh		47.8			46.1			74.5			61.5	
Approach LOS		D			D			E			E	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	14.00	47.62		13.38	47.00		16.82	46.00		13.00	42.18	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	8.00	39.00		10.00	41.00		14.00	40.00		7.00	33.00	
Max Q Clear Time (g_c+I1), s	9.47	24.09		7.43	39.65		10.55	42.00		9.00	20.40	
Green Extension Time (p_c)	0.00	13.46		0.07	1.31		0.27	0.00		0.00	9.05	
Intersection Summary												
HCM 2010 Control Delay	56.2											
HCM 2010 Level of Service	E											

HCM 2010 Signalized Intersection Summary
Buckley Annex GDP

2030 PM Total w/ Original Volumes
4: Quebec St & Alameda Ave

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	1605	170	180	985	160	145	745	155	550	1045	210
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow Rate	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	3	1	1	3	1	2	2	0	2	2	1
Capacity, veh/h	284	1695	528	168	1516	472	172	748	156	545	1268	567
Arriving On Green	0.19	0.67	0.67	0.06	0.30	0.30	0.05	0.25	0.25	0.21	0.48	0.48
Sat Flow, veh/h	1774.0	1583.3	1583.3	1774.0	1583.3	1583.3	3441.6	2992.9	622.7	3441.6	1583.3	1583.3
Grp Volume(v), veh/h	201.1	1744.6	184.8	195.7	1070.7	173.9	157.6	504.0	474.3	597.8	1135.9	228.3
Grp Sat Flow(s),veh/h/ln	1774.0	1695.1	1583.3	1774.0	1695.1	1583.3	1720.8	1862.7	1752.9	1720.8	1769.6	1583.3
Q Serve(g_s), s	9.0	40.0	6.1	7.0	22.5	10.4	5.5	30.0	30.0	19.0	35.2	11.2
Cycle Q Clear(g_c), s	9.0	40.0	6.1	7.0	22.5	10.4	5.5	30.0	30.0	19.0	35.2	11.2
Proportion In Lane	1.000		1.000	1.000		1.000	1.000		0.355	1.000		1.000
Lane Grp Cap(c), veh/h	284.2	1695.1	527.8	168.1	1515.9	472.0	172.1	465.7	438.2	544.9	1268.2	567.4
V/C Ratio(X)	0.708	1.029	0.350	1.164	0.706	0.368	0.916	1.082	1.082	1.097	0.896	0.402
Avail Cap(c_a), veh/h	354.7	1695.1	527.8	168.1	1515.9	472.0	172.1	465.7	438.2	544.9	1268.2	567.4
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	0.090	0.090	0.090	1.000	1.000	1.000	1.000	1.000	1.000	0.090	0.090	0.090
Uniform Delay (d), s/veh	24.0	20.0	14.3	35.8	37.4	33.2	56.7	45.0	45.0	47.4	29.4	23.1
Incr Delay (d2), s/veh	0.4	15.9	0.2	120.4	1.5	0.5	45.1	65.7	66.9	46.8	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	24.4	35.9	14.5	156.2	39.0	33.7	101.9	110.7	111.9	94.2	30.3	23.1
Movement LOS	C	F	B	F	D	C	F	F	F	F	C	C
Approach Volume, veh/h		2130			1440			1136			1962	
Approach Delay, s/veh		33.0			54.3			110.0			48.9	
Approach LOS		C			D			F			D	
Timer												
Assigned Phase	7	4		3	8		5	2		1	6	
Phase Duration (G+Y+Rc), s	17.23	46.00		13.00	41.77		12.00	36.00		25.00	49.00	
Change Period (Y+Rc), s	6.00	6.00		6.00	6.00		6.00	6.00		6.00	6.00	
Max Green Setting (Gmax), s	16.00	40.00		7.00	31.00		6.00	30.00		19.00	43.00	
Max Q Clear Time (g_c+I1), s	11.01	42.00		9.00	24.46		7.47	32.00		21.00	37.17	
Green Extension Time (p_c)	0.23	0.00		0.00	6.23		0.00	0.00		0.00	5.10	
Intersection Summary												
HCM 2010 Control Delay	55.4											
HCM 2010 Level of Service	E											

**BUCKLEY ANNEX REDEVELOPMENT PLAN
TRAFFIC ANALYSIS ADDENDUM**

Appendix D

SimTraffic Queuing Analysis Output

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded mScheduledIntervals	2	2	2	2
Vehs Entered	9578	9460	9629	9555
Vehs Exited	9432	9281	9312	9342
Starting Vehs	503	508	493	501
Ending Vehs	649	687	810	714
Denied Entry Before	0	6	8	5
Travel Distance (mi)	8823	8633	8842	8766
Travel Time (hr)	729.3	703.5	703.6	712.1
Total Delay (hr)	456.9	436.7	431.0	441.5
Total Stops	22616	21304	22067	21998
Fuel Used (gal)	417.0	406.1	412.5	411.9

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information PHF

Start Time	7:00
End Time	7:15
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	2	3	Avg
Vehs Entered	2576	2585	2603	2585
Vehs Exited	2349	2359	2371	2361
Starting Vehs	503	508	493	501
Ending Vehs	730	734	725	728
Denied Entry Before	0	6	8	5
Travel Distance (mi)	2244	2218	2287	2250
Travel Time (hr)	161.9	164.1	162.2	162.7
Total Delay (hr)	92.6	95.6	91.8	93.3
Total Stops	5528	5516	5604	5553
Fuel Used (gal)	100.5	100.2	101.9	100.9

Interval #2 Information Anti-PHF

Start Time 7:15
 End Time 8:00
 Total Time (min) 45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	Avg
Vehs Entered	7002	6875	7026	6967
Vehs Exited	7083	6922	6941	6984
Starting Vehs	730	734	725	728
Ending Vehs	649	687	810	714
Denied Entry Before	26	4	6	12
Travel Distance (mi)	6578	6415	6555	6516
Travel Time (hr)	567.4	539.4	541.4	549.4
Total Delay (hr)	364.3	341.1	339.2	348.2
Total Stops	17088	15788	16463	16450
Fuel Used (gal)	316.5	305.9	310.6	311.0

Intersection: 1: Monaco Pkwy & Alameda Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	T
Maximum Queue (ft)	271	342	442	414	678	407	1196	1961	1937	355	320	894
Average Queue (ft)	172	217	277	247	207	208	232	306	313	183	250	650
95th Queue (ft)	303	355	455	412	431	391	698	1034	1025	368	426	955
Link Distance (ft)			1189	1189	1189		2488	2488	2488			866
Upstream Blk Time (%)					0			0	0			6
Queuing Penalty (veh)					0			1	0			0
Storage Bay Dist (ft)	220	220				290				270	170	
Storage Blk Time (%)	15	27	17			14	6		9	5	23	64
Queuing Penalty (veh)	37	65	22			62	15		40	23	88	77

Intersection: 1: Monaco Pkwy & Alameda Ave

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	T	R
Maximum Queue (ft)	882	889	224	284	1248	1265	360
Average Queue (ft)	661	689	105	125	322	347	87
95th Queue (ft)	929	952	180	211	696	715	340
Link Distance (ft)	866	866		1726	1726	1726	
Upstream Blk Time (%)	3	7			0	0	
Queuing Penalty (veh)	0	0			0	0	
Storage Bay Dist (ft)			195				210
Storage Blk Time (%)			2	3		26	
Queuing Penalty (veh)			3	4		24	

Intersection: 2: Monaco Pkwy & Lowry Blvd

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	R	L	T	T	T
Maximum Queue (ft)	267	270	191	1259	1268	807	303	175	130	132	119
Average Queue (ft)	162	176	80	262	307	277	166	97	75	79	55
95th Queue (ft)	244	250	156	641	760	548	270	161	123	124	106
Link Distance (ft)		1941		1726	1726	1726			704	704	704
Upstream Blk Time (%)				0	0	0					
Queuing Penalty (veh)				0	0	0					
Storage Bay Dist (ft)	300		250				300	350			
Storage Blk Time (%)	0	1				2	0				
Queuing Penalty (veh)	0	4				11	1				

Intersection: 3: Monaco Pkwy & 1st Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	33	105	275	415	45	753	766	769	211	520	277
Average Queue (ft)	7	40	71	199	10	294	501	275	91	161	115
95th Queue (ft)	25	87	162	335	35	766	1009	868	167	330	216
Link Distance (ft)		891		2516		704	704	704		914	914
Upstream Blk Time (%)						1	5	2		0	
Queuing Penalty (veh)						3	22	9		0	
Storage Bay Dist (ft)	140		125		135				105		
Storage Blk Time (%)		0	1	32		9			5	13	
Queuing Penalty (veh)		0	2	25		1			27	21	

Intersection: 4: Quebec St & Alameda Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (ft)	310	448	299	247	43	355	954	900	917	285	196	295
Average Queue (ft)	216	171	130	123	18	195	558	520	481	232	95	275
95th Queue (ft)	353	420	286	190	39	427	891	843	833	377	160	365
Link Distance (ft)		2488	2488	2488			1016	1016	1016			
Upstream Blk Time (%)							1	0	0			
Queuing Penalty (veh)							0	0	0			
Storage Bay Dist (ft)	160				160	205				135	145	145
Storage Blk Time (%)	60	0		2		0	54		50	13	1	7
Queuing Penalty (veh)	199	0		2		0	62		163	73	6	39

Intersection: 4: Quebec St & Alameda Ave

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	T	R
Maximum Queue (ft)	1051	1059	275	349	823	812	162
Average Queue (ft)	977	972	210	255	370	323	70
95th Queue (ft)	1190	1197	340	423	830	774	125
Link Distance (ft)	1003	1003			1996	1996	
Upstream Blk Time (%)	59	45					
Queuing Penalty (veh)	0	0					
Storage Bay Dist (ft)			200	200			150
Storage Blk Time (%)	66		56	62	1	10	0
Queuing Penalty (veh)	164		135	150	1	17	1

Intersection: 5: Quebec St & Lowry Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	95	104	211	252	159	187	386	400	131	302	1171	1764
Average Queue (ft)	48	55	126	170	40	88	176	195	52	69	170	208
95th Queue (ft)	86	93	195	246	118	161	316	353	100	164	576	725
Link Distance (ft)			513	513			986	986			1996	1996
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											0	1
Storage Bay Dist (ft)	250	250			300	300			270	270		
Storage Blk Time (%)							3				4	4
Queuing Penalty (veh)							4				9	7

Intersection: 5: Quebec St & Lowry Blvd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	189	156	183	184	177	79
Average Queue (ft)	34	83	103	65	66	34
95th Queue (ft)	111	138	158	139	144	72
Link Distance (ft)				407	407	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	270	155	155			130
Storage Blk Time (%)		0	1	0	1	
Queuing Penalty (veh)		0	3	1	1	

Intersection: 6: Quebec St & 1st Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	266	234	69	192	179	74	449	360	282	316	342
Average Queue (ft)	136	99	19	81	49	34	173	172	89	169	146
95th Queue (ft)	222	194	54	151	112	65	322	275	177	286	265
Link Distance (ft)		2516		970			407	407		926	926
Upstream Blk Time (%)							0	0			
Queuing Penalty (veh)							1	0			
Storage Bay Dist (ft)	140		85		85	150			190		
Storage Blk Time (%)	13	3	0	12	3		10		1	6	
Queuing Penalty (veh)	18	4	0	12	3		6		5	10	

Intersection: 7: Pontiac St & Lowry Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	94	175	31	306	244	65	91	71	63
Average Queue (ft)	41	85	6	82	27	26	42	20	26
95th Queue (ft)	78	162	25	191	175	58	77	55	53
Link Distance (ft)		1941		513	513		570		254
Upstream Blk Time (%)				0	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (ft)	200		100			150		150	
Storage Blk Time (%)		0		3					
Queuing Penalty (veh)		0		0					

Network Summary

Network wide Queuing Penalty: 1688

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	4:55	4:55	4:55	4:55
End Time	6:00	6:00	6:00	6:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded mScheduledIntervals	2	2	2	2
Vehs Entered	10381	9685	10510	10192
Vehs Exited	9543	8721	9905	9388
Starting Vehs	582	577	579	576
Ending Vehs	1420	1541	1184	1382
Denied Entry Before	2	0	6	2
Travel Distance (mi)	8935	8242	9181	8786
Travel Time (hr)	1254.6	1375.2	1083.1	1237.6
Total Delay (hr)	979.3	1121.3	800.4	967.0
Total Stops	25899	24193	25709	25269
Fuel Used (gal)	540.2	547.4	509.7	532.4

Interval #0 Information Seeding

Start Time	4:55
End Time	5:00
Total Time (min)	5
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information PHF

Start Time	5:00
End Time	5:15
Total Time (min)	15
Volumes adjusted by PHF, Growth Factors.	

Run Number	1	2	3	Avg
Vehs Entered	2942	2971	2889	2933
Vehs Exited	2569	2627	2579	2590
Starting Vehs	582	577	579	576
Ending Vehs	955	921	889	919
Denied Entry Before	2	0	6	2
Travel Distance (mi)	2438	2479	2424	2447
Travel Time (hr)	212.0	202.6	206.4	207.0
Total Delay (hr)	136.9	126.4	131.7	131.6
Total Stops	6539	6276	6524	6445
Fuel Used (gal)	117.8	116.6	117.0	117.1

Interval #2 Information Anti-PHF

Start Time	5:15
End Time	6:00
Total Time (min)	45
Volumes adjusted by Growth Factors, Anti PHF.	

Run Number	1	2	3	Avg
Vehs Entered	7439	6714	7621	7260
Vehs Exited	6974	6094	7326	6797
Starting Vehs	955	921	889	919
Ending Vehs	1420	1541	1184	1382
Denied Entry Before	115	72	110	96
Travel Distance (mi)	6496	5764	6757	6339
Travel Time (hr)	1042.6	1172.6	876.7	1030.6
Total Delay (hr)	842.5	994.9	668.7	835.4
Total Stops	19360	17917	19185	18820
Fuel Used (gal)	422.4	430.8	392.7	415.3

Intersection: 1: Monaco Pkwy & Alameda Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	T	T	T	R	L	T
Maximum Queue (ft)	219	370	1243	1225	1241	440	2121	1202	1218	56	320	900
Average Queue (ft)	94	313	1067	1042	1000	403	733	546	272	6	238	825
95th Queue (ft)	212	485	1487	1480	1469	511	1515	1208	775	33	425	1031
Link Distance (ft)			1189	1189	1189		2535	2535	2535			866
Upstream Blk Time (%)			47	40	40		0					39
Queuing Penalty (veh)			0	0	0		0					0
Storage Bay Dist (ft)	220	220				290				270	170	
Storage Blk Time (%)	4	11	78			82	0		2		24	73
Queuing Penalty (veh)	15	47	112			298	0		3		102	76

Intersection: 1: Monaco Pkwy & Alameda Ave

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	T	R
Maximum Queue (ft)	907	912	344	1406	1181	880	360
Average Queue (ft)	845	860	244	361	392	393	129
95th Queue (ft)	1028	993	380	849	756	697	390
Link Distance (ft)	866	866		1724	1724	1724	
Upstream Blk Time (%)	56	79		0			
Queuing Penalty (veh)	0	0		0			
Storage Bay Dist (ft)			195				210
Storage Blk Time (%)			33	40		36	0
Queuing Penalty (veh)			106	128		80	0

Intersection: 2: Monaco Pkwy & Lowry Blvd

Movement	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	R	T	T	T	R	L	T	T	T
Maximum Queue (ft)	228	238	100	1214	1222	1221	254	127	85	94	89
Average Queue (ft)	154	173	45	164	197	202	156	56	32	43	39
95th Queue (ft)	227	238	84	562	678	673	233	107	69	78	80
Link Distance (ft)		1941		1724	1724	1724			704	704	704
Upstream Blk Time (%)				0	0	0					
Queuing Penalty (veh)				0	0	0					
Storage Bay Dist (ft)	300		250				300	350			
Storage Blk Time (%)		0									
Queuing Penalty (veh)		1									

Intersection: 3: Monaco Pkwy & 1st Ave

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	T	TR
Maximum Queue (ft)	95	231	222	376	38	729	776	757	255	710	583
Average Queue (ft)	30	102	62	222	7	211	291	60	124	295	261
95th Queue (ft)	73	189	158	336	28	482	684	392	242	536	461
Link Distance (ft)		891		2516		704	704	704		914	914
Upstream Blk Time (%)						0	1	0		0	
Queuing Penalty (veh)						0	3	1		0	
Storage Bay Dist (ft)	140		125		135				105		
Storage Blk Time (%)	0	7	0	25		27			7	24	
Queuing Penalty (veh)	0	3	0	14		3			62	55	

Intersection: 4: Quebec St & Alameda Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	T	R	L	L
Maximum Queue (ft)	309	2301	2329	2304	310	355	952	915	704	221	214	295
Average Queue (ft)	127	734	755	767	109	276	493	451	256	56	81	244
95th Queue (ft)	282	2162	2189	2191	298	449	853	797	508	137	181	395
Link Distance (ft)		2535	2535	2535			1016	1016	1016			
Upstream Blk Time (%)		2	3	3			1	0				
Queuing Penalty (veh)		15	18	21			0	0				
Storage Bay Dist (ft)	160				160	205				135	145	145
Storage Blk Time (%)	3	46		59	0	56	23		21	0	13	20
Queuing Penalty (veh)	19	92		109	1	197	41		32	0	47	69

Intersection: 4: Quebec St & Alameda Ave

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	TR	L	L	T	T	R
Maximum Queue (ft)	1051	1051	275	350	2019	2025	300
Average Queue (ft)	970	965	222	274	751	747	116
95th Queue (ft)	1178	1180	313	404	1978	2008	311
Link Distance (ft)	1003	1003			1988	1988	
Upstream Blk Time (%)	65	58			10	9	
Queuing Penalty (veh)	0	0			89	78	
Storage Bay Dist (ft)			200	200			150
Storage Blk Time (%)	80		42	58	20	37	
Queuing Penalty (veh)	124		209	291	105	86	

Intersection: 5: Quebec St & Lowry Blvd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	TR	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	182	257	324	339	318	373	612	539	150	137	279	302
Average Queue (ft)	81	96	134	184	134	177	202	191	50	64	84	96
95th Queue (ft)	159	192	275	332	292	331	495	466	108	113	204	224
Link Distance (ft)			513	513			985	985			1988	1988
Upstream Blk Time (%)			0	2			2	0				
Queuing Penalty (veh)			1	7			0	0				
Storage Bay Dist (ft)	250	250			300	300			270	270		
Storage Blk Time (%)		0	4		8	10	2				2	2
Queuing Penalty (veh)		0	8		12	14	4				5	1

Intersection: 5: Quebec St & Lowry Blvd

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	R
Maximum Queue (ft)	174	178	305	443	459	280
Average Queue (ft)	10	88	207	348	355	125
95th Queue (ft)	86	181	384	490	487	321
Link Distance (ft)				407	407	
Upstream Blk Time (%)				12	12	
Queuing Penalty (veh)				112	107	
Storage Bay Dist (ft)	270	155	155			130
Storage Blk Time (%)		7	9	56	60	0
Queuing Penalty (veh)		47	60	173	86	0

Intersection: 6: Quebec St & 1st Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	TR	L	T	TR
Maximum Queue (ft)	252	868	195	281	231	120	324	240	340	973	970
Average Queue (ft)	114	245	59	123	66	61	125	132	236	856	844
95th Queue (ft)	204	806	135	219	158	108	248	208	468	1175	1177
Link Distance (ft)		2516		970			407	407		926	926
Upstream Blk Time (%)							0			47	36
Queuing Penalty (veh)							0			0	0
Storage Bay Dist (ft)	140		85		85	150			190		
Storage Blk Time (%)	10	23	9	29	5	0	3		0	57	
Queuing Penalty (veh)	22	33	21	43	10	1	3		1	77	

Intersection: 7: Pontiac St & Lowry Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	157	416	58	480	58	60	65	137	98
Average Queue (ft)	27	126	16	88	11	18	25	55	56
95th Queue (ft)	94	313	45	229	38	45	55	101	97
Link Distance (ft)		1941		513	513		570		254
Upstream Blk Time (%)				0					
Queuing Penalty (veh)				0					
Storage Bay Dist (ft)	200		100			150		150	
Storage Blk Time (%)		3		4				0	
Queuing Penalty (veh)		1		1				0	

Network Summary

Network wide Queuing Penalty: 3602