



LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

December 6, 2023

Mr. Matt Burbach
SAV Land Holdings West LLC
233 Park Avenue, Suite 201
Minneapolis, MN 55415

Re: Everlea PA-5
Transportation Memorandum
Aurora, CO
LSC #221010

Dear Mr. Burbach:

In response to your request, LSC Transportation Consultants, Inc. has prepared this transportation memorandum for the proposed Everlea mixed-use development to account for an updated land use plan. As shown on Figure 1, the site is located south of E. 64th Avenue and east of Picadilly Road in Aurora, Colorado. LSC completed a Master Traffic Impact Study (MTIS) for the entire Everlea development dated June 2, 2023. This memorandum presents a comparison of the trip generation estimate based on the change from assisted living to multi-family residential for planning area 5 (PA-5) of the development and updated analysis of key intersections identified by the City of Aurora Public Works department.

LAND USE AND ACCESS

Figure 2 shows the updated conceptual site plan. The June 2, 2023 Everlea MTIS assumed PA-5, located just west of Tibet Road and midway between E. 60th Avenue and E. 64th Avenue, would be developed with 186 assisted living dwelling units. This parcel is now planned for general multifamily residential uses with the same number of dwelling units. There are no other changes proposed to the land uses and access assumed in the Everlea MTIS.

TRIP GENERATION

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for PA-5 based on the rates from Trip Generation, 11th Edition, 2021 by the Institute of Transportation Engineers (ITE) and the currently proposed land use and a comparison to the trip generation estimate for the same planning area assumed in the MTIS.

The currently proposed multifamily residential land use for PA-5 is projected to generate about 1,254 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. This is about 651 more vehicle-trips per day than was assumed in the MTIS for the same planning area. During the morning peak-hour, which generally occurs for

one hour between 6:30 and 8:30 a.m., about 18 vehicles would enter and about 56 vehicles would exit the site. This is about 5 more entering vehicles and 32 more exiting vehicles than was assumed in the MTIS for this same planning area. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:30 p.m., about 60 vehicles would enter and about 35 vehicles would exit the site. This is about 34 more entering vehicles and 14 more exiting vehicles than was assumed in the MTIS for this same planning area.

TRIP DISTRIBUTION

Figure 3 shows the estimated directional distribution of the site-generated traffic volumes on the area roadways. The estimates are consistent with the June, 2023 Everlea MTIS.

TRIP ASSIGNMENT

Figures 4a and 4b show the estimated site-generated traffic volumes for PA-5 based on the directional distribution percentages (from Figure 3) and the trip generation estimate (from Table 1).

Figure 5 shows the change in the site-generated traffic volumes at the intersections of E. 64th Avenue/Tibet Road and E. 60th Avenue/Tibet Road from what was assumed in the June, 2023 Everlea MTIS.

2040 TOTAL TRAFFIC

Figure 6a shows the updated 2040 total traffic volumes at the intersections of E. 64th Avenue/Tibet Road (Intersection #5) and E. 60th Avenue/Tibet Road (Intersection #13). These volumes are the sum of the 2040 total traffic volumes shown on Figure 7a of the June, 2023 Everlea MTIS and the change in site-generated traffic volumes shown in Figure 5 of this memorandum.

Figure 6b shows the recommended 2040 lane geometry and traffic control. This figure is consistent with the June, 2023 Everlea MTIS.

PROJECTED LEVELS OF SERVICE

The intersections of E. 64th Avenue/Tibet Road (Intersection #5) and E. 60th Avenue/Tibet Road (Intersection #13) were analyzed to determine changes in the projected 2040 total levels of service based on the currently proposed land use change for PA-5. Table 2 shows the level of service analysis results with all LOS “E” and “F” values highlighted. Table 2 also shows the level of service analysis results from the June, 2023 Everlea MTIS for comparison. The level of service reports are attached.

- 5. E. 64th Avenue/Tibet Road:** This signalized intersection is expected to operate at an overall LOS “C” during both morning and afternoon peak-hours through 2040. This is consistent with the results of the LOS analysis for this intersection in the June, 2023 Everlea MTIS.

13. Tibet Road/E. 60th Avenue: This signalized intersection is expected to operate at an overall LOS "B" during both morning and afternoon peak-hours. This is consistent with the results of the LOS analysis for this intersection in the June, 2023 Everlea MTIS.

95TH PERCENTILE QUEUE LENGTHS AND RECOMMENDED TURN LANES

The estimated 2040 95th percentile queue lengths for the intersections of E. 64th Avenue/Tibet Road (Intersection #5) and E. 60th Avenue/Tibet Road (Intersection #13) shown in Table 3 are based on the previous analysis from the June, 2023 Everlea MTIS and based on the updated land use for PA-5. Table 3 also shows the recommended turn lane lengths based on the NR-B classification criteria in the *CDOT State Highway Access Code* and the projected 95th percentile queue lengths. No changes were needed to the recommended turn lane lengths based on the updated analysis.

* * * * *

We trust our findings will assist you in gaining approval of the proposed Everlea mixed use development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By

Christopher S. McGranahan, PE
Principal/President



CSM/wc

Enclosures: ¹²⁻⁶⁻²³ Tables 1 - 3
Figures 1 - 6b
Level of Service Definitions
Level of Service Reports
Queuing Reports

Table 1
ESTIMATED TRAFFIC GENERATION
Everlea
Aurora, Colorado
LSC #221010; December, 2023

Planning Area	Trip Generating Category	Quantity	Trip Generation Rates ⁽¹⁾					Total Trips Generated				
			Average Weekday	AM Peak-Hour		PM Peak-Hour		Average Weekday	AM Peak-Hour		PM Peak-Hour	
				In	Out	In	Out		In	Out	In	Out
TRIP GENERATION ESTIMATE BASED ON THE CURRENTLY PROPOSED LAND USE												
<u>PA-5</u>	Multifamily Housing ⁽²⁾	186 DU ⁽³⁾	6.74	0.096	0.304	0.321	0.189	1,254	18	56	60	35
TRIP GENERATION ESTIMATE FROM THE <i>EVERLEA MASTER TRAFFIC IMPACT ANALYSIS</i>, JUNE 2, 2023												
<u>PA-5</u>	Assisted/Senior Living ⁽⁴⁾	186 DU	3.24	0.068	0.132	0.140	0.110	603	13	24	26	21
Change in Trip Generation Estimate =								651	5	32	34	14

Notes:

- (1) Source: *Trip Generation*, Institute of Transportation Engineers, 11th Edition, 2021
- (2) ITE Land Use No. 220 - Multifamily Housing (Low-Rise)
- (3) DU = Dwelling Unit
- (4) ITE Land Use No. 252 - Senior Adult Housing - Multifamily

Table 2
Intersection Levels of Service Analysis
Everlea
Aurora, Colorado
LSC #221010; December, 2023

Everlea Master Traffic Impact Analysis, June 2, 2023						Updated Analysis			
Intersection No. & Location	Traffic Control	2040 Total Traffic				2040 Total Traffic			
		Level of Service AM	Move-ment Delay	Level of Service PM	Move-ment Delay	Level of Service AM	Move-ment Delay	Level of Service PM	Move-ment Delay
5) <u>E. 64th Avenue/Tibet Road</u>									
EB Left		E	57.5	E	57.7	E	57.5	E	57.7
EB Through		C	24.9	D	40.6	C	25.0	D	40.7
EB Right		C	24.4	D	44.2	C	24.4	D	44.5
EB Approach		C	26.7	D	41.9	C	26.7	D	42.1
WB Left		D	48.4	D	46.4	D	48.5	D	46.4
WB Through		A	0.3	A	0.7	A	0.3	A	0.7
WB Right		A	0.3	A	0.1	A	0.3	A	0.1
WB Approach		B	10.3	B	10.8	B	10.3	B	10.9
NB Left		E	63.0	D	54.4	E	63.2	D	54.4
NB Through		D	40.3	D	35.9	D	40.3	D	35.8
NB Right		A	0.0	A	0.0	A	0.0	A	0.0
NB Approach		E	61.4	D	53.9	E	61.6	D	53.9
SB Left		D	41.4	D	43.1	D	41.4	D	43.1
SB Through		D	45.2	D	44.4	D	45.2	D	44.4
SB Right		D	45.7	E	60.1	D	45.7	E	60.1
SB Approach		D	42.8	D	50.5	D	42.8	D	50.5
Entire Intersection Delay (sec /veh)		22.7		30.4		22.7		30.5	
Entire Intersection LOS		C		C		C		C	
13) <u>Tibet Road/E. 60th Avenue</u>									
	Signalized								
EB Left		D	40.8	D	41.4	D	40.8	D	41.4
EB Through/Right		D	50.4	D	54.4	D	50.4	D	54.4
EB Approach		D	48.2	D	52.4	D	48.2	D	52.4
WB Left		D	39.7	D	44.5	D	39.7	D	44.5
WB Through/Right		D	46.3	D	53.4	D	46.3	D	53.4
WB Approach		D	43.1	D	49.7	D	43.1	D	49.7
NB Left		A	7.2	A	7.3	A	7.2	A	7.3
NB Through		B	11.4	B	10.7	B	11.4	B	10.7
NB Right		B	10.5	B	10.7	B	10.5	B	10.7
NB Approach		B	10.8	B	10.1	B	10.8	B	10.2
SB Left		A	6.9	A	7.0	A	6.9	A	7.1
SB Through/Right		A	0.2	A	1.0	A	0.2	A	1.0
SB Approach		A	3.3	A	1.7	A	3.2	A	1.7
Entire Intersection Delay (sec /veh)		17.5		17.5		17.3		17.4	
Entire Intersection LOS		B		B		B		B	

Table 3
95th Percentile Queue Lengths
Everlea
Aurora, Colorado
LSC #221010; December, 2023

Intersection No. & Location	2040 Assumed Posted Speed Limit (mph)	Turn Lane Lengths Proposed ⁽¹⁾ (feet)	95th Percentile Queue Length			
			Everlea Master Traffic Impact Analysis, June 2, 2023		Updated Analysis	
			2040 Total		2040 Total	
			AM Peak (feet)	PM Peak (feet)	AM Peak (feet)	PM Peak (feet)
5) <u>E. 64th Avenue/Tibet Road</u>						
EB Left	45	2 @ 275	m59	m25	m59	m25
EB Through	45	---	320	315	320	316
EB Right	45	275	52	125	52	126
WB Left	45	2 @ 275	148	229	148	231
WB Through	45	---	164	256	164	257
WB Right	45	275	2	3	2	3
NB Left	45	2 @ 275	168	220	170	221
NB Through	45	---	39	m24	39	m24
NB Right	45	275	0	185	0	187
SB Left	45	275	52	191	52	191
SB Through	45	---	14	42	14	42
SB Right	45	275	0	53	0	53
13) <u>Tibet Road/E. 60th Avenue</u>						
EB Left	35	200	66	45	66	45
EB Through/Right	35	---	125	111	125	112
WB Left	35	200	134	183	134	183
WB Through/Right	35	---	86	116	86	116
NB Left	45	275	35	52	35	52
NB Through	45	---	160	125	160	128
NB Right	45	275	29	33	29	33
SB Left	45	275	45	m43	46	m44
SB Through/Right	45	---	31	173	33	174

Notes:

- (1) Auxiliary turn lane lengths on arterial roadways are based on 45 mph and the NR-B classification in the CDOT *State Highway Access Code* and the 95th percentile queue lengths.
Collectors are based on 35 mph and Local Street on 25 mph
A redirect taper of 45:1 is appropriate for 45 mph and 20:1 for 35 mph.
The lengths shown are consistent with the Recommended Improvements shown in the *Everlea Traffic Impact Analysis*, June 2, 2023
m = metered by adjacent traffic signals.

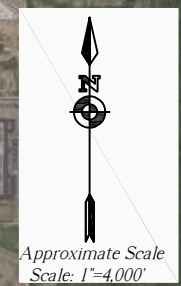
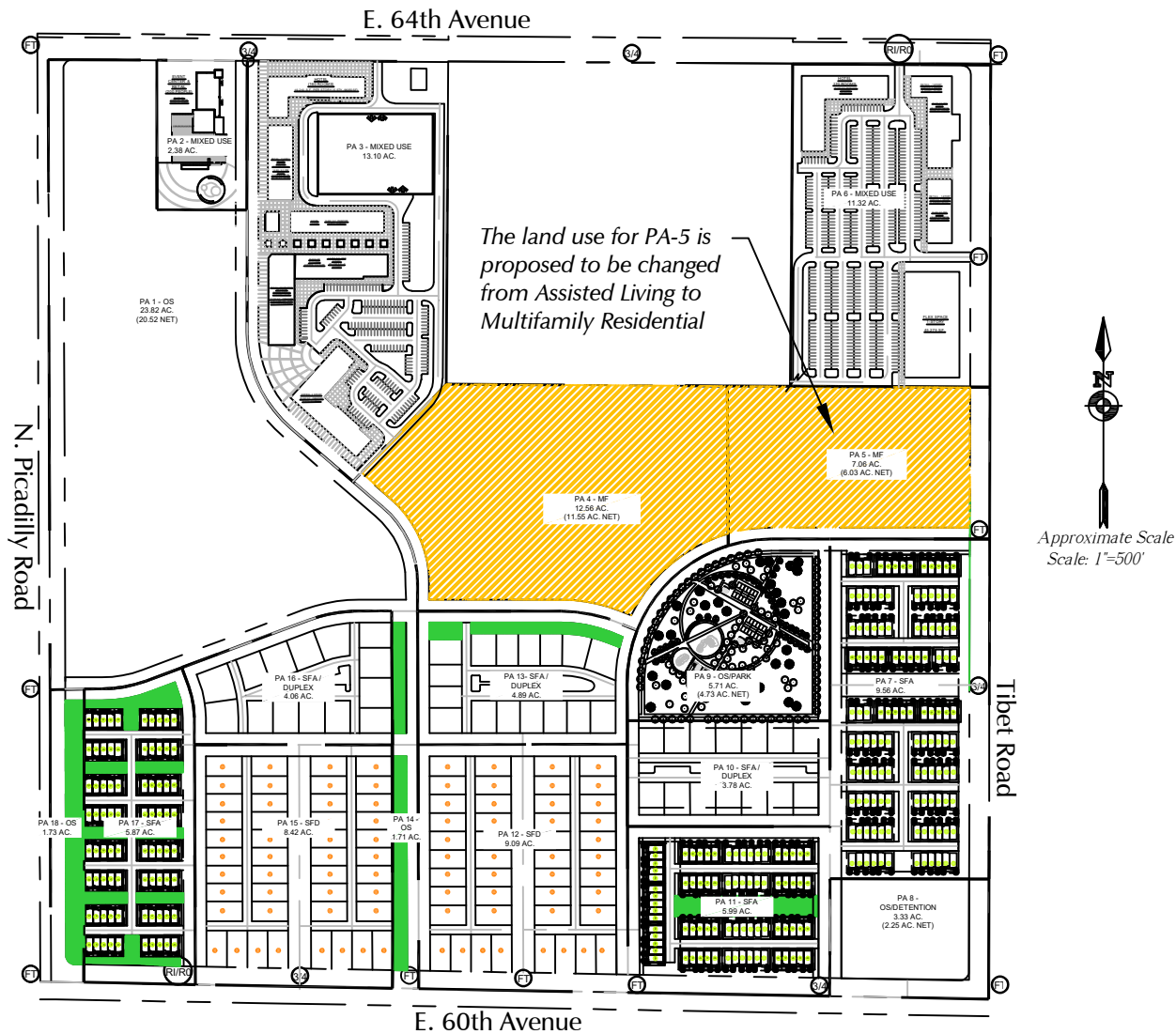


Figure 1
**Vicinity
Map**

Everlea (LSC #221010)

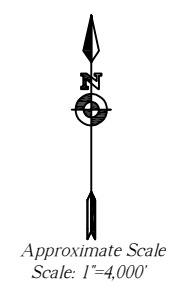
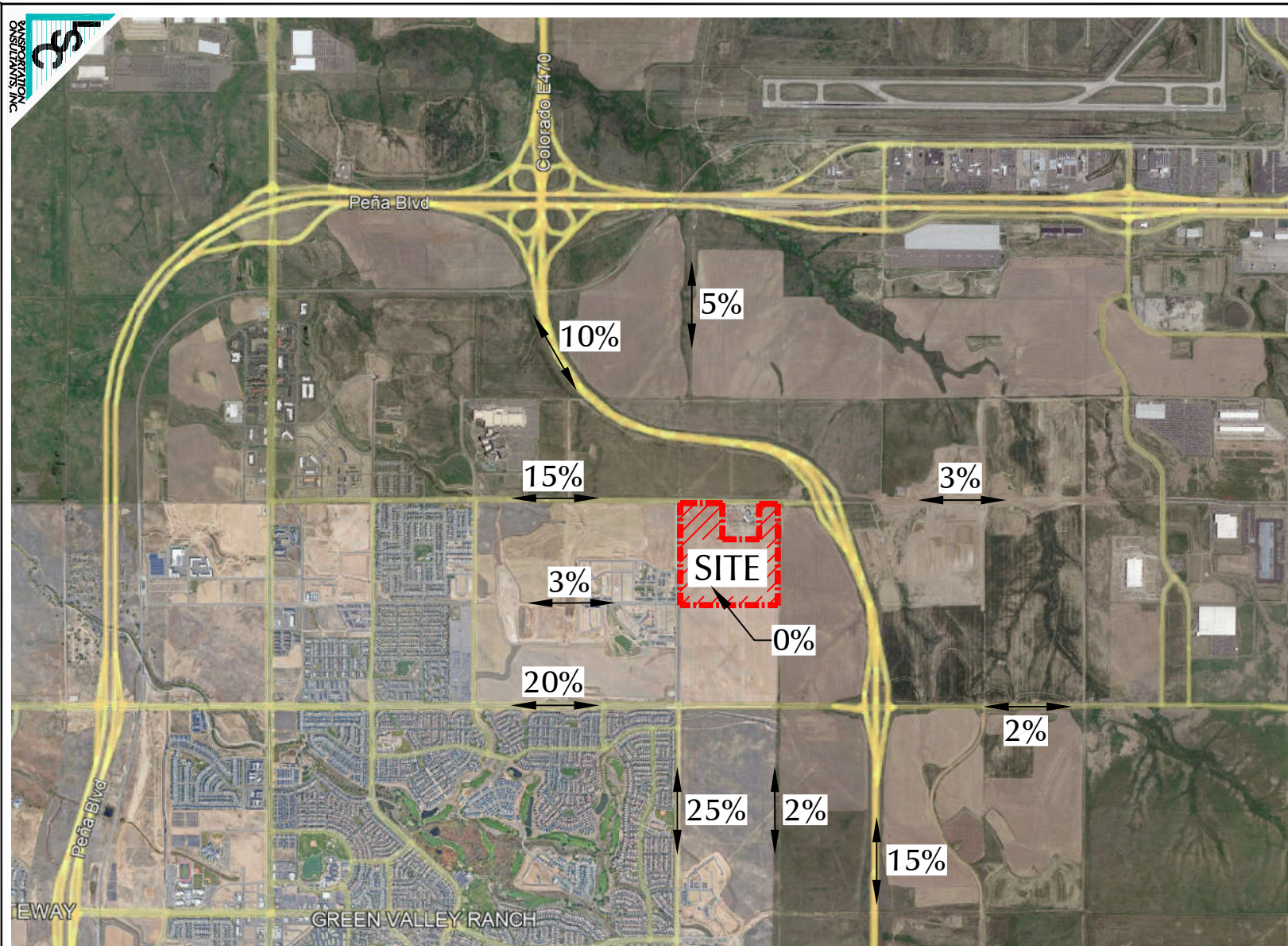


Approximate Scale
Scale: 1"=500'

Figure 2

Site Plan

Everlea (LSC #221010)

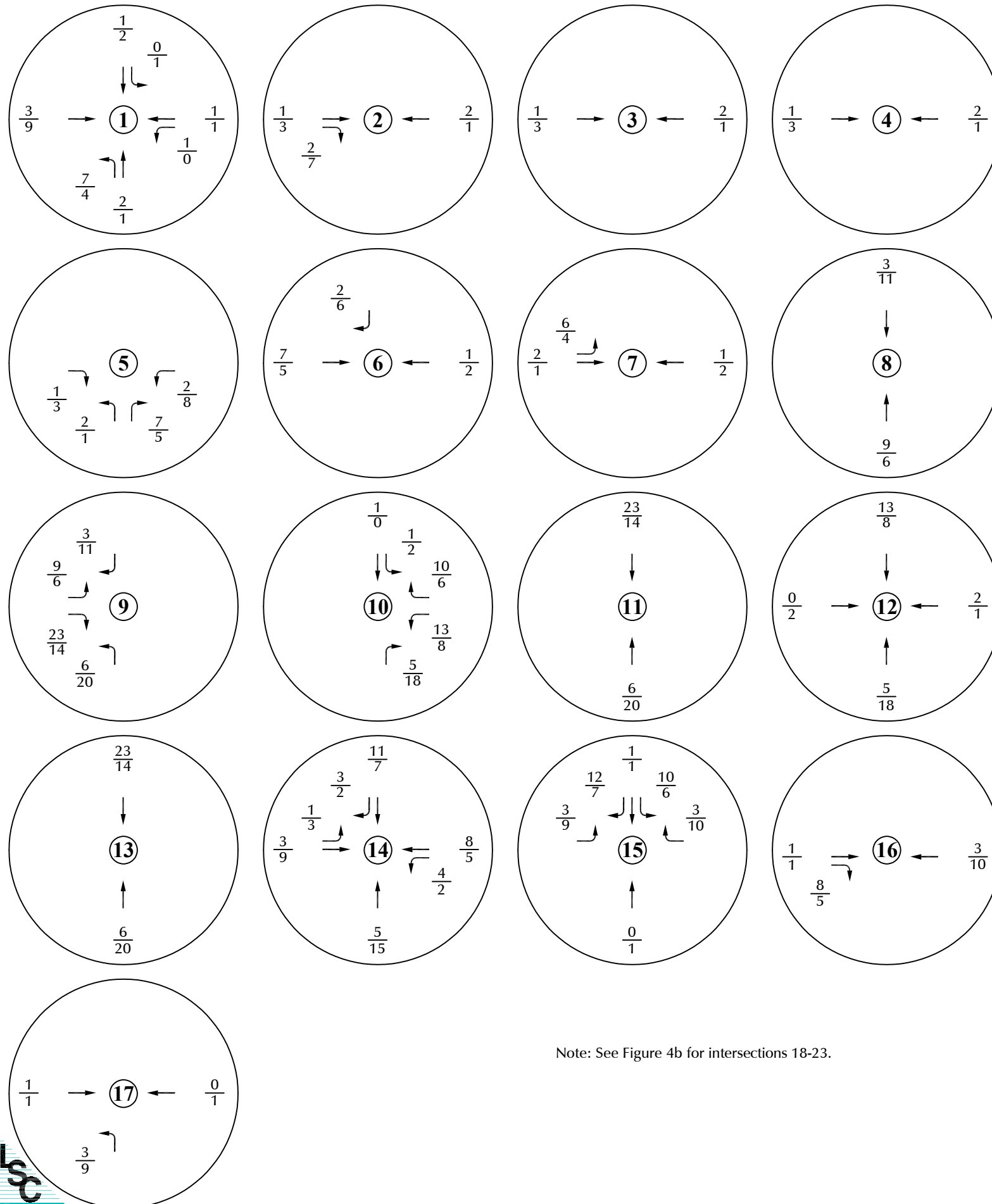


LEGEND:

↔
5% = Residential Percent Directional Distribution

*Year 2040 Directional
Distribution of Site-Generated Traffic*

Everlea (LSC #221010)



Note: See Figure 4b for intersections 18-23.

LEGEND:
 $\frac{26}{35}$ = AM Peak Hour Traffic
 $\frac{35}{26}$ = PM Peak Hour Traffic
 1,000 = Average Daily Traffic

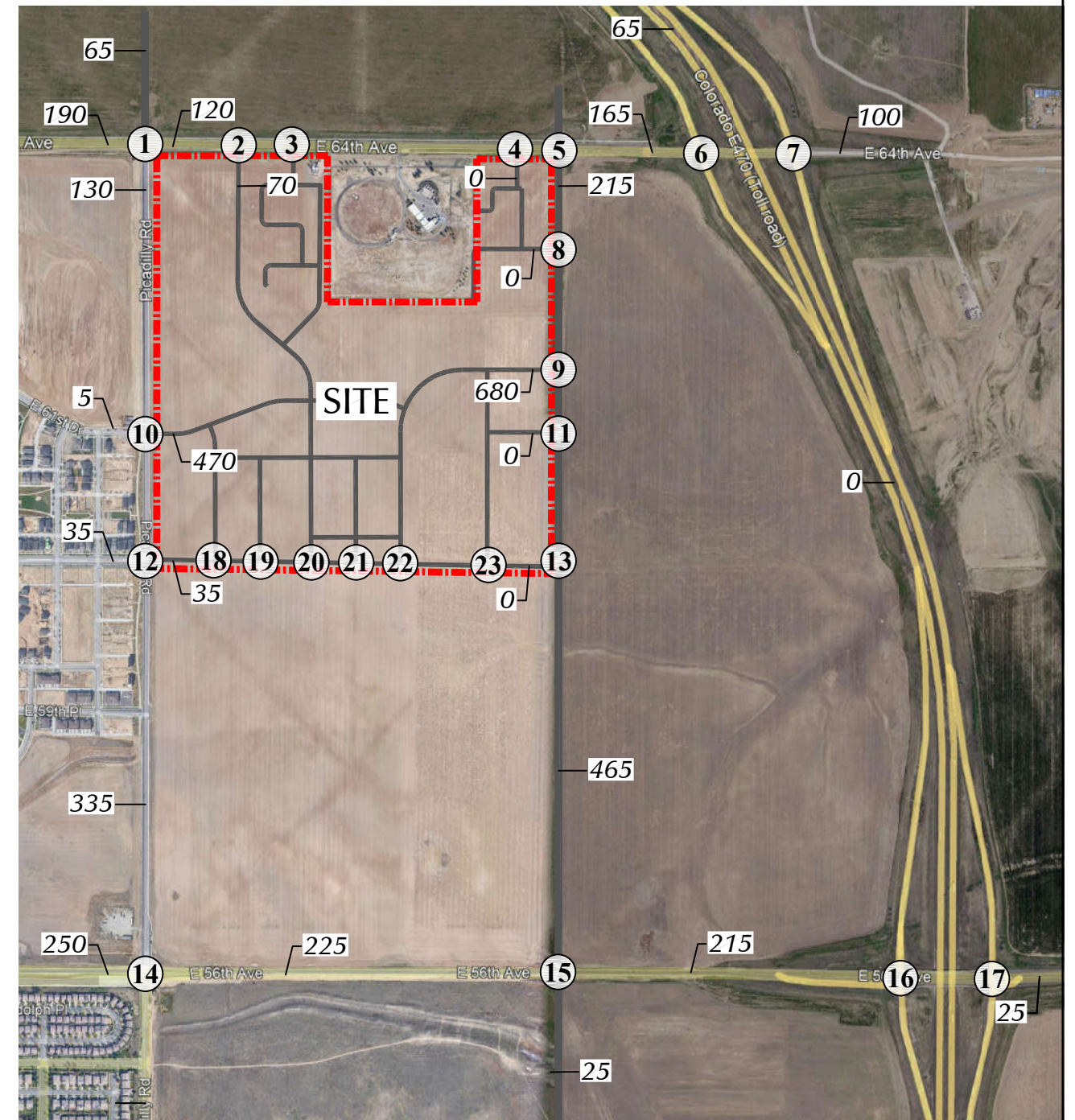
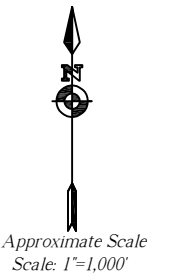
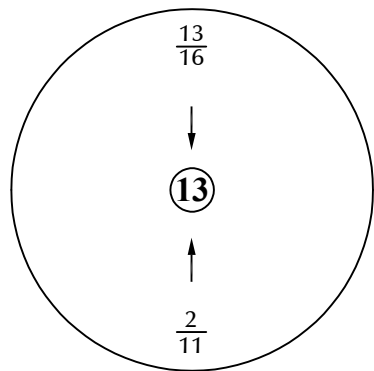
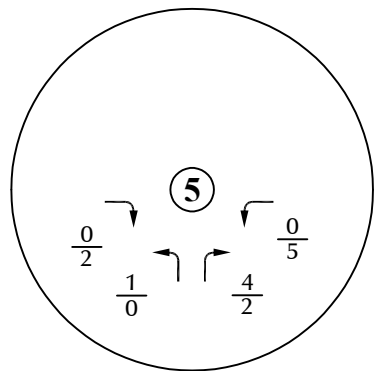


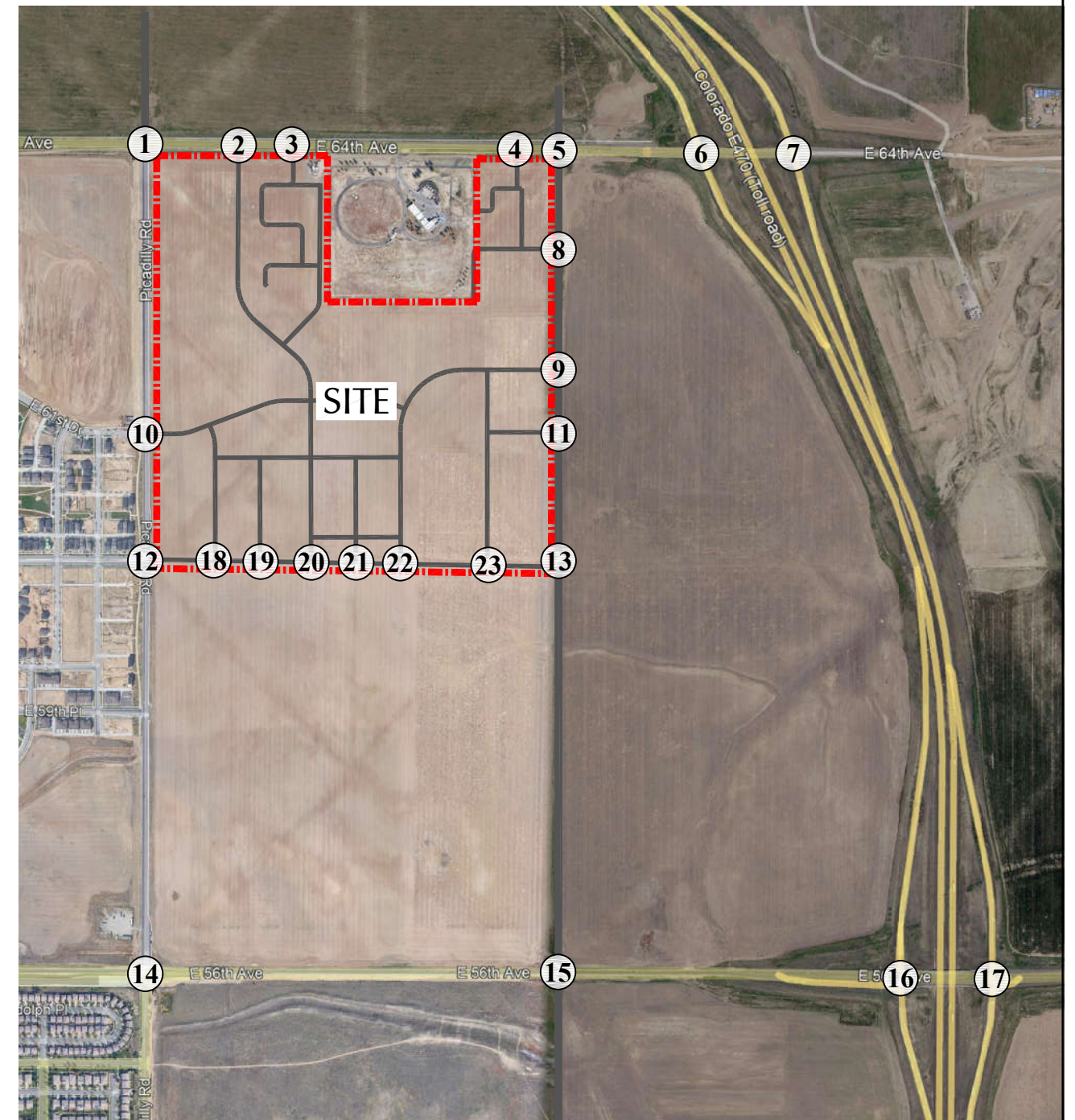
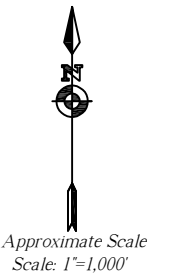
Figure 4a

Year 2040 Assignment of Site-Generated Traffic

Everlea (LSC #221010)



LEGEND:
 $\frac{26}{35}$ = AM Peak Hour Traffic
 $\frac{35}{35}$ = PM Peak Hour Traffic
 1,000 = Average Daily Traffic

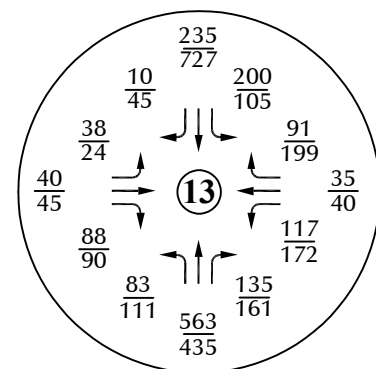
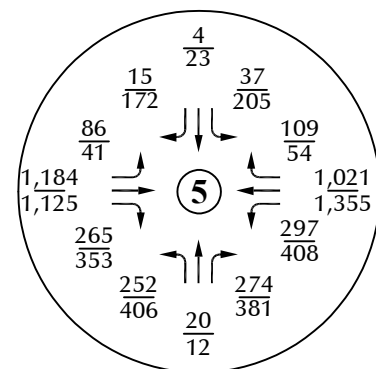


* The volumes shown are the change in 2040 Assignment of Site-Generated Traffic shown in Figure 6b from the *Everlea Master Traffic Impact Analysis*, June, 2023.

Figure 5

Change Year 2040 Assignment
 of PA-5 Site-Generated Traffic*

Everlea (LSC #221010)



LEGEND:

$$\frac{26}{35} = \frac{\text{AM Peak Hour Traffic}}{\text{PM Peak Hour Traffic}}$$

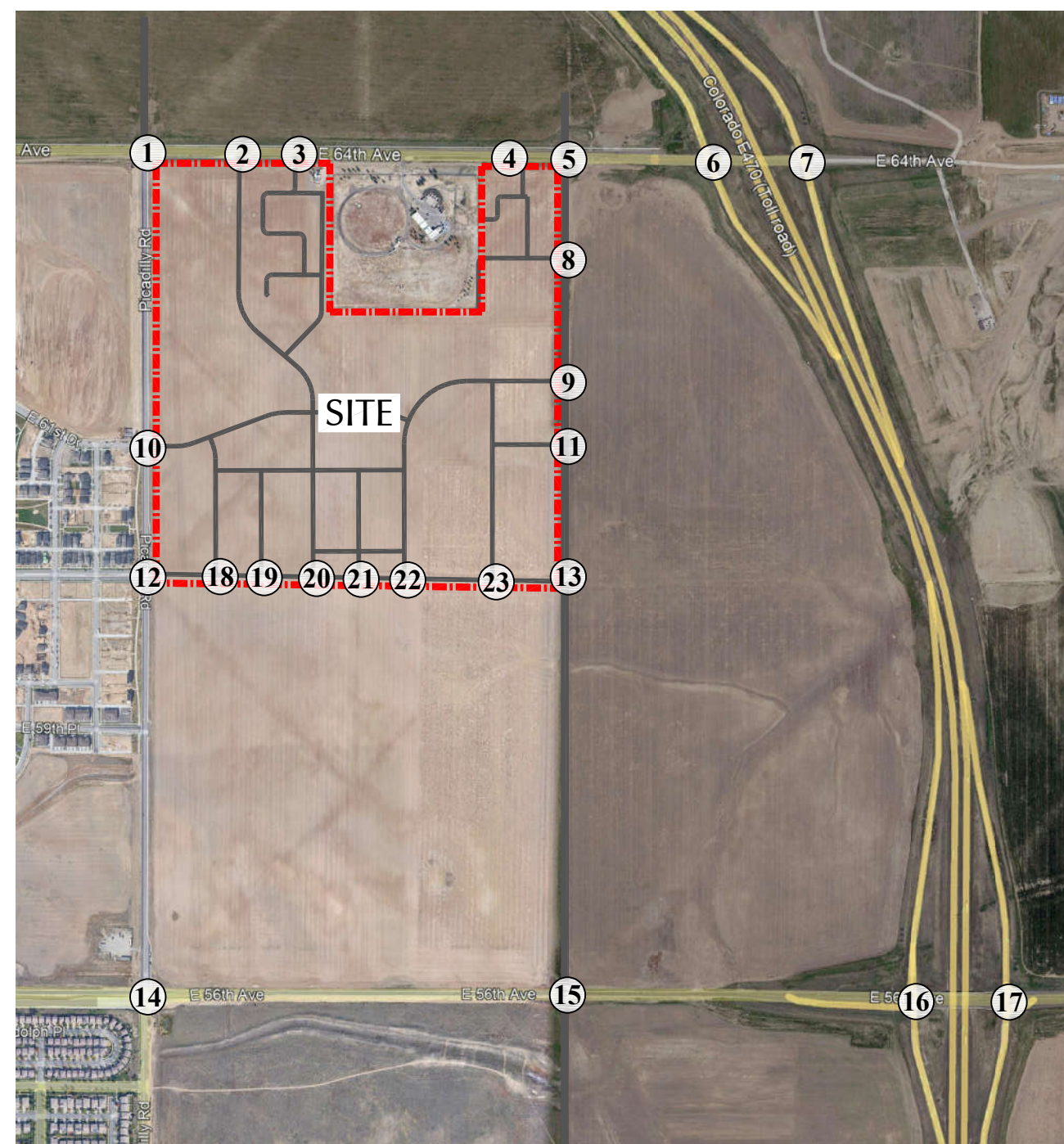
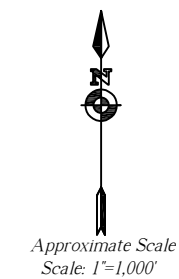
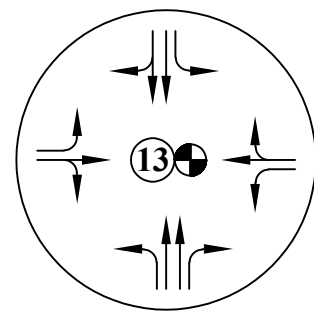
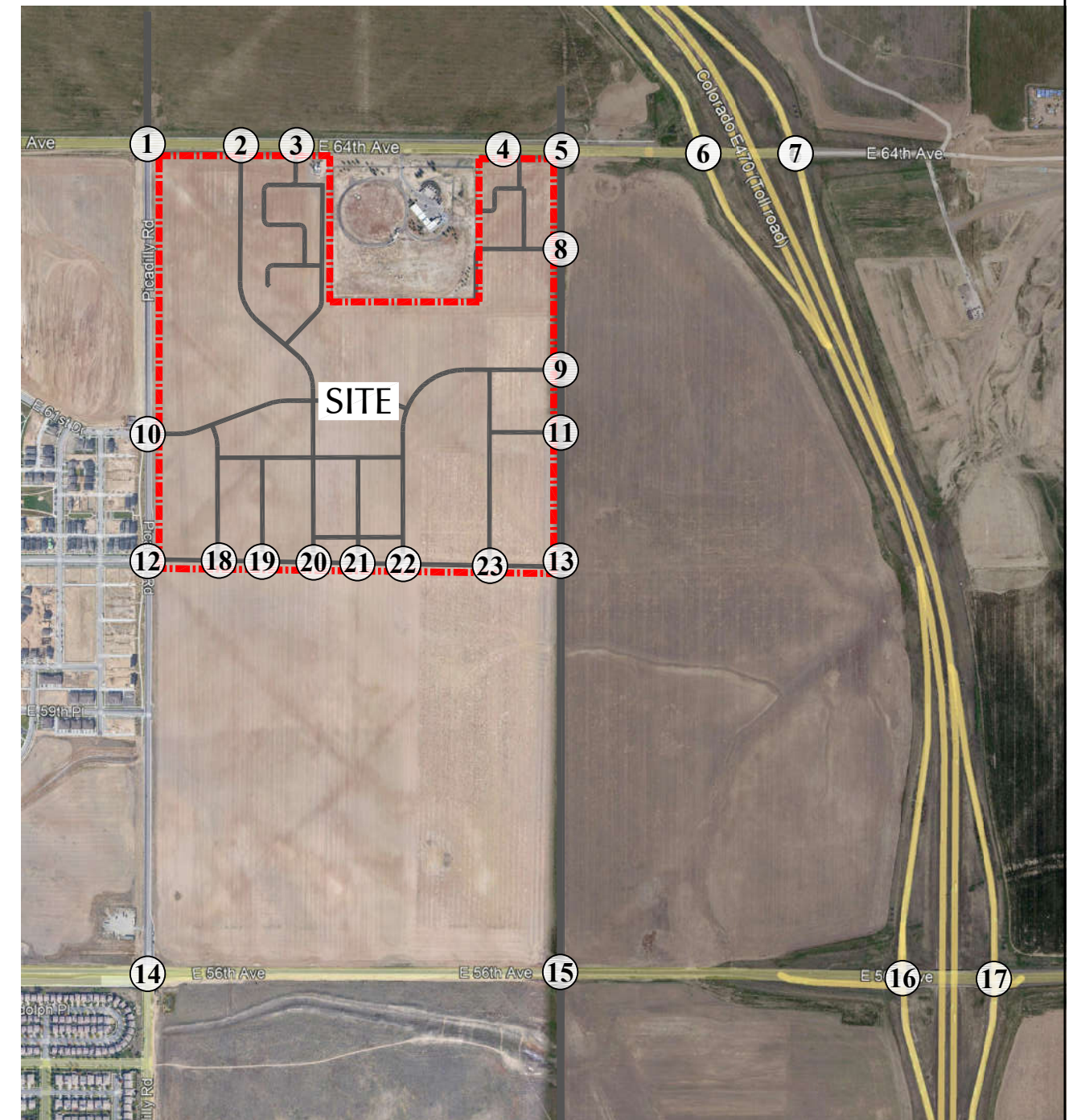
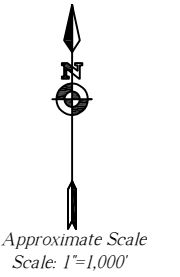
$$1,000 = \text{Average Daily Traffic}$$


Figure 6a

Year 2040
Updated Total Traffic
Everlea (LSC #221010)



 = Stop Sign
 = Traffic Signal



*Year 2040 Total Lane
Geometry and Traffic Control*

LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board

































UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. <u>The delay could be up to 15 seconds.</u> Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. <u>Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.</u>
D	25 to 35 seconds	<u>This is the point at which a traffic signal may be warranted for this intersection.</u> The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. <u>There is a high probability that this intersection will meet traffic signal warrants.</u> The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. <u>The only remedy for these long delays is installing a traffic signal or restricting the accesses.</u> The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Timings
5: Tibet Rd & E. 64th Ave

2040 Total Traffic
AM Peak Hour

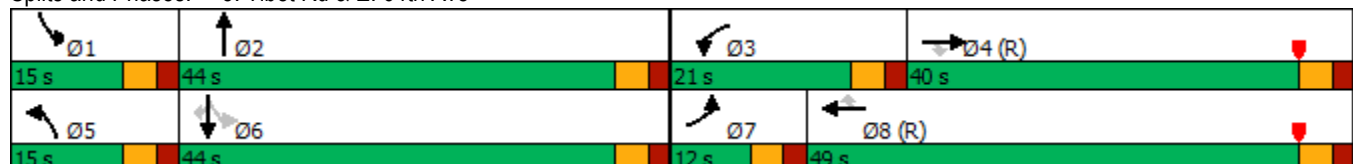
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 			 		
Traffic Volume (vph)	86	1184	265	297	1021	109	252	20	274	37	4	15
Future Volume (vph)	86	1184	265	297	1021	109	252	20	274	37	4	15
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			Free	6		6
Detector Phase	7	4	4	3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	15.0		5.0	15.0	15.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0		10.0	23.0	23.0
Total Split (s)	12.0	40.0	40.0	21.0	49.0	49.0	15.0	44.0		15.0	44.0	44.0
Total Split (%)	10.0%	33.3%	33.3%	17.5%	40.8%	40.8%	12.5%	36.7%		12.5%	36.7%	36.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0		3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	None
Act Effect Green (s)	10.6	70.8	68.8	18.2	78.4	76.4	14.0	17.4	120.0	16.9	17.0	17.0
Actuated g/C Ratio	0.09	0.59	0.57	0.15	0.65	0.64	0.12	0.14	1.00	0.14	0.14	0.14
v/c Ratio	0.30	0.42	0.27	0.61	0.33	0.11	0.67	0.08	0.18	0.17	0.02	0.04
Control Delay	76.6	6.5	1.6	59.1	7.6	0.6	54.4	41.0	0.3	40.4	44.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	6.5	1.6	59.1	7.6	0.6	54.4	41.0	0.3	40.4	44.5	0.3
LOS	E	A	A	E	A	A	D	D	A	D	D	A
Approach Delay		9.6			17.8			26.8			29.8	
Approach LOS		A			B			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 15.8
 Intersection Capacity Utilization 55.2%
 Analysis Period (min) 15

































Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 5: Tibet Rd & E. 64th Ave



HCM 6th Signalized Intersection Summary 5: Tibet Rd & E. 64th Ave

2040 Total Traffic
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 			 		
Traffic Volume (veh/h)	86	1184	265	297	1021	109	252	20	274	37	4	15
Future Volume (veh/h)	86	1184	265	297	1021	109	252	20	274	37	4	15
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	91	1260	282	316	1086	116	268	21	0	39	4	16
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	2786	838	419	3113	940	346	348		329	249	211
Arrive On Green	0.04	0.37	0.35	0.24	1.00	1.00	0.10	0.19	0.00	0.05	0.13	0.13
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	91	1260	282	316	1086	116	268	21	0	39	4	16
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.1	22.5	15.6	10.2	0.0	0.0	9.1	1.1	0.0	2.2	0.2	1.1
Cycle Q Clear(g_c), s	3.1	22.5	15.6	10.2	0.0	0.0	9.1	1.1	0.0	2.2	0.2	1.1
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	198	2786	838	419	3113	940	346	348		329	249	211
V/C Ratio(X)	0.46	0.45	0.34	0.75	0.35	0.12	0.78	0.06		0.12	0.02	0.08
Avail Cap(c_a), veh/h	259	2786	838	518	3113	940	346	639		423	639	542
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.9	24.4	23.3	43.8	0.0	0.0	52.7	40.2	0.0	41.3	45.2	45.6
Incr Delay (d2), s/veh	1.7	0.5	1.1	4.7	0.3	0.3	10.6	0.1	0.0	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	9.6	6.4	4.1	0.1	0.1	4.3	0.5	0.0	1.0	0.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.5	25.0	24.4	48.5	0.3	0.3	63.2	40.3	0.0	41.4	45.2	45.7
LnGrp LOS	E	C	C	D	A	A	E	D		D	D	D
Approach Vol, veh/h	1633				1518				289			
Approach Delay, s/veh	26.7				10.3				61.6			
Approach LOS	C				B				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	25.3	17.6	68.5	15.0	19.0	9.9	76.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	10.0	39.0	16.0	35.0	10.0	39.0	7.0	44.0				
Max Q Clear Time (g_c+l1), s	4.2	3.1	12.2	24.5	11.1	3.1	5.1	2.0				
Green Ext Time (p_c), s	0.0	0.1	0.4	6.3	0.0	0.0	0.0	9.2				

Intersection Summary



















HCM 6th Ctrl Delay 22.7
HCM 6th LOS C

Notes

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

Timings
13: Tibet Rd & 60th Ave

2040 Total Traffic
AM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	38	40	117	35	83	563	135	200	235
Future Volume (vph)	38	40	117	35	83	563	135	200	235
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	10.0	23.0	10.0	23.0	10.0	23.0	23.0	10.0	23.0
Total Split (s)	12.0	35.0	12.0	35.0	12.0	61.0	61.0	12.0	61.0
Total Split (%)	10.0%	29.2%	10.0%	29.2%	10.0%	50.8%	50.8%	10.0%	50.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	25.6	17.0	26.7	19.5	79.0	69.7	69.7	84.6	72.7
Actuated g/C Ratio	0.21	0.14	0.22	0.16	0.66	0.58	0.58	0.70	0.61
v/c Ratio	0.15	0.44	0.49	0.38	0.11	0.29	0.15	0.36	0.12
Control Delay	57.0	49.0	44.8	19.1	5.9	13.4	2.3	6.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	49.0	44.8	19.1	5.9	13.4	2.3	6.2	6.2
LOS	E	D	D	B	A	B	A	A	A
Approach Delay		50.8		31.5		10.7			6.2
Approach LOS		D		C		B			A

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 59.0%

ICU Level of Service B























Analysis Period (min) 15

Splits and Phases: 13: Tibet Rd & 60th Ave



































HCM 6th Signalized Intersection Summary 13: Tibet Rd & 60th Ave

2040 Total Traffic
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	40	88	117	35	91	83	563	135	200	235	10
Future Volume (veh/h)	38	40	88	117	35	91	83	563	135	200	235	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	40	43	94	124	37	97	88	599	144	213	250	11
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	74	162	275	77	203	840	2162	964	573	2175	95
Arrive On Green	0.05	0.14	0.14	0.08	0.17	0.17	0.06	0.61	0.61	0.15	1.00	1.00
Sat Flow, veh/h	1781	523	1142	1781	457	1198	1781	3554	1585	1781	3468	152
Grp Volume(v), veh/h	40	0	137	124	0	134	88	599	144	213	128	133
Grp Sat Flow(s),veh/h/ln	1781	0	1665	1781	0	1655	1781	1777	1585	1781	1777	1843
Q Serve(g_s), s	2.2	0.0	9.2	6.9	0.0	8.8	2.1	9.5	4.7	5.3	0.0	0.0
Cycle Q Clear(g_c), s	2.2	0.0	9.2	6.9	0.0	8.8	2.1	9.5	4.7	5.3	0.0	0.0
Prop In Lane	1.00		0.69	1.00		0.72	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	265	0	236	275	0	280	840	2162	964	573	1114	1156
V/C Ratio(X)	0.15	0.00	0.58	0.45	0.00	0.48	0.10	0.28	0.15	0.37	0.11	0.12
Avail Cap(c_a), veh/h	314	0	444	275	0	441	874	2162	964	573	1114	1156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	0.0	48.2	38.5	0.0	45.1	7.1	11.1	10.1	6.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	2.3	1.2	0.0	1.3	0.1	0.3	0.3	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	3.9	3.0	0.0	3.6	0.7	3.5	1.6	1.5	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.8	0.0	50.4	39.7	0.0	46.3	7.2	11.4	10.5	6.9	0.2	0.2
LnGrp LOS	D	A	D	D	A	D	A	B	B	A	A	A
Approach Vol, veh/h	177			258			831			474		
Approach Delay, s/veh	48.2			43.1			10.8			3.2		
Approach LOS	D			D			B			A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	76.0	12.0	20.0	9.7	78.3	8.7	23.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	56.0	7.0	30.0	7.0	56.0	7.0	30.0				
Max Q Clear Time (g_c+I1), s	7.3	11.5	8.9	11.2	4.1	2.0	4.2	10.8				
Green Ext Time (p_c), s	0.0	4.6	0.0	0.6	0.0	1.4	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	17.3											
HCM 6th LOS	B											

Timings
5: Tibet Rd & E. 64th Ave

2040 Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 			 		
Traffic Volume (vph)	41	1125	353	408	1355	54	406	12	381	205	23	172
Future Volume (vph)	41	1125	353	408	1355	54	406	12	381	205	23	172
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0	10.0	23.0	23.0
Total Split (s)	15.0	45.0	45.0	25.0	55.0	55.0	25.0	38.0	38.0	12.0	25.0	25.0
Total Split (%)	12.5%	37.5%	37.5%	20.8%	45.8%	45.8%	20.8%	31.7%	31.7%	10.0%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	5.0	3.0	3.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
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
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effect Green (s)	9.0	48.1	46.1	22.1	63.3	61.3	20.7	28.8	28.8	26.1	17.1	17.1
Actuated g/C Ratio	0.08	0.40	0.38	0.18	0.53	0.51	0.17	0.24	0.24	0.22	0.14	0.14
v/c Ratio	0.17	0.59	0.45	0.69	0.54	0.06	0.73	0.03	0.66	0.66	0.09	0.46
Control Delay	53.1	22.7	7.7	58.3	16.0	0.6	52.3	33.8	16.8	44.4	45.7	8.9
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	53.1	22.7	7.7	58.3	16.0	0.6	52.3	33.8	16.8	44.4	45.7	8.9
LOS	D	C	A	E	B	A	D	C	B	D	D	A
Approach Delay		20.0			25.1			35.1			29.2	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 25.5

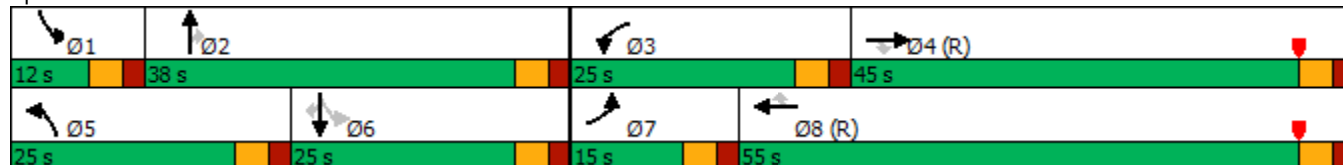
Intersection LOS: C

Intersection Capacity Utilization 66.7%

ICU Level of Service C


































Analysis Period (min) 15

Splits and Phases: 5: Tibet Rd & E. 64th Ave



HCM 6th Signalized Intersection Summary 5: Tibet Rd & E. 64th Ave

2040 Total Traffic
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 			 	 	
Traffic Volume (veh/h)	41	1125	353	408	1355	54	406	12	381	205	23	172
Future Volume (veh/h)	41	1125	353	408	1355	54	406	12	381	205	23	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	1197	376	434	1441	57	432	13	0	218	24	183
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	168	2249	672	534	2789	839	547	430		399	275	233
Arrive On Green	0.02	0.15	0.14	0.31	1.00	1.00	0.16	0.23	0.00	0.08	0.15	0.15
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	44	1197	376	434	1441	57	432	13	0	218	24	183
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.5	26.1	26.6	13.9	0.0	0.0	14.4	0.6	0.0	9.0	1.3	13.4
Cycle Q Clear(g_c), s	1.5	26.1	26.6	13.9	0.0	0.0	14.4	0.6	0.0	9.0	1.3	13.4
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	168	2249	672	534	2789	839	547	430		399	275	233
V/C Ratio(X)	0.26	0.53	0.56	0.81	0.52	0.07	0.79	0.03		0.55	0.09	0.79
Avail Cap(c_a), veh/h	346	2249	672	634	2789	839	634	546		399	343	291
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	39.8	41.2	39.9	0.0	0.0	48.6	35.8	0.0	41.6	44.2	49.4
Incr Delay (d2), s/veh	0.8	0.9	3.4	6.5	0.7	0.1	5.8	0.0	0.0	1.5	0.1	10.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	12.0	11.8	5.3	0.2	0.0	6.5	0.3	0.0	5.8	0.6	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.7	40.7	44.5	46.4	0.7	0.1	54.4	35.8	0.0	43.1	44.4	60.1
LnGrp LOS	E	D	D	D	A	A	D	D		D	D	E
Approach Vol, veh/h	1617				1932				445		425	
Approach Delay, s/veh	42.1				10.9				53.9		50.5	
Approach LOS	D				B				D		D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	30.6	21.5	55.8	22.0	20.6	8.8	68.5				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	33.0	20.0	40.0	20.0	20.0	10.0	50.0				
Max Q Clear Time (g_c+I1), s	11.0	2.6	15.9	28.6	16.4	15.4	3.5	2.0				
Green Ext Time (p_c), s	0.0	0.0	0.6	6.7	0.6	0.3	0.0	13.9				

Intersection Summary



















HCM 6th Ctrl Delay	30.5
HCM 6th LOS	C

Notes

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

Timings
13: Tibet Rd & 60th Ave

2040 Total Traffic
PM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	45	172	40	111	435	161	105	727
Future Volume (vph)	24	45	172	40	111	435	161	105	727
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4	3	8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	15.0	5.0	15.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	10.0	23.0	10.0	23.0	10.0	23.0	23.0	10.0	23.0
Total Split (s)	19.0	44.0	12.0	37.0	12.0	52.0	52.0	12.0	52.0
Total Split (%)	15.8%	36.7%	10.0%	30.8%	10.0%	43.3%	43.3%	10.0%	43.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	27.2	18.2	28.0	22.6	80.9	70.8	70.8	80.6	70.6
Actuated g/C Ratio	0.23	0.15	0.23	0.19	0.67	0.59	0.59	0.67	0.59
v/c Ratio	0.12	0.44	0.71	0.54	0.26	0.22	0.17	0.17	0.40
Control Delay	49.9	40.6	54.6	15.5	7.7	12.4	2.3	6.1	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	40.6	54.6	15.5	7.7	12.4	2.3	6.1	10.8
LOS	D	D	D	B	A	B	A	A	B
Approach Delay		42.1		31.8		9.4			10.3
Approach LOS		D		C		A			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.5

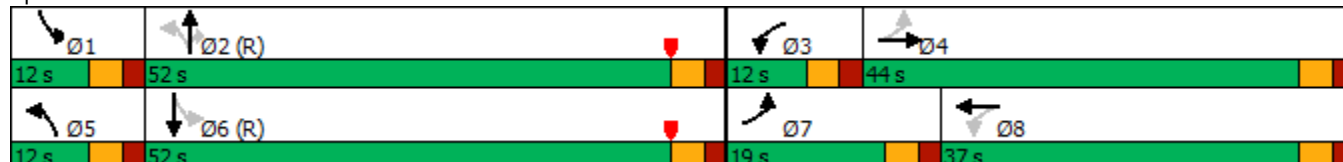
Intersection LOS: B

Intersection Capacity Utilization 63.0%

ICU Level of Service B























Analysis Period (min) 15

Splits and Phases: 13: Tibet Rd & 60th Ave















HCM 6th Signalized Intersection Summary 13: Tibet Rd & 60th Ave

2040 Total Traffic
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	45	90	172	40	199	111	435	161	105	727	45
Future Volume (veh/h)	24	45	90	172	40	199	111	435	161	105	727	45
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	26	48	96	183	43	212	118	463	171	112	773	48
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	88	176	286	53	260	569	2166	966	599	2071	129
Arrive On Green	0.01	0.05	0.05	0.08	0.19	0.19	0.06	0.61	0.61	0.11	1.00	1.00
Sat Flow, veh/h	1781	557	1113	1781	274	1353	1781	3554	1585	1781	3398	211
Grp Volume(v), veh/h	26	0	144	183	0	255	118	463	171	112	404	417
Grp Sat Flow(s),veh/h/ln	1781	0	1670	1781	0	1627	1781	1777	1585	1781	1777	1832
Q Serve(g_s), s	1.5	0.0	10.1	9.0	0.0	18.0	2.8	7.0	5.7	2.7	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	10.1	9.0	0.0	18.0	2.8	7.0	5.7	2.7	0.0	0.0
Prop In Lane	1.00		0.67	1.00		0.83	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	180	0	264	286	0	313	569	2166	966	599	1083	1117
V/C Ratio(X)	0.14	0.00	0.55	0.64	0.00	0.81	0.21	0.21	0.18	0.19	0.37	0.37
Avail Cap(c_a), veh/h	345	0	571	286	0	461	600	2166	966	631	1083	1117
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	52.7	39.7	0.0	46.4	7.1	10.5	10.3	6.9	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	1.8	4.8	0.0	7.0	0.2	0.2	0.4	0.1	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.5	4.7	0.0	7.7	1.0	2.6	1.9	0.9	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	0.0	54.4	44.5	0.0	53.4	7.3	10.7	10.7	7.1	1.0	1.0
LnGrp LOS	D	A	D	D	A	D	A	B	B	A	A	A
Approach Vol, veh/h		170			438			752			933	
Approach Delay, s/veh		52.4			49.7			10.2			1.7	
Approach LOS		D			D			B			A	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	76.1	12.0	22.0	9.9	76.1	7.9	26.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	47.0	7.0	39.0	7.0	47.0	14.0	32.0				
Max Q Clear Time (g_c+I1), s	4.7	9.0	11.0	12.1	4.8	2.0	3.5	20.0				
Green Ext Time (p_c), s	0.0	3.6	0.0	0.7	0.0	5.3	0.0	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			17.4									
HCM 6th LOS			B									

Queues
5: Tibet Rd & E. 64th Ave

2040 Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	91	1260	282	316	1086	116	268	21	291	39	4	16
v/c Ratio	0.30	0.42	0.27	0.61	0.33	0.11	0.67	0.08	0.18	0.17	0.02	0.04
Control Delay	76.6	6.5	1.6	59.1	7.6	0.6	54.4	41.0	0.3	40.4	44.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	6.5	1.6	59.1	7.6	0.6	54.4	41.0	0.3	40.4	44.5	0.3
Queue Length 50th (ft)	38	26	0	123	63	0	107	14	0	28	3	0
Queue Length 95th (ft)	m59	320	52	148	164	2	#170	39	0	52	14	0
Internal Link Dist (ft)		478			826			491			550	
Turn Bay Length (ft)	175		275	200		275	300		500	300		275
Base Capacity (vph)	306	3000	1027	551	3323	1050	400	636	1583	255	636	642
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	0.30	0.42	0.27	0.57	0.33	0.11	0.67	0.03	0.18	0.15	0.01	0.02

Intersection Summary










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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.













Queues
13: Tibet Rd & 60th Ave

2040 Total Traffic
AM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	40	137	124	134	88	599	144	213	261
v/c Ratio	0.15	0.44	0.49	0.38	0.11	0.29	0.15	0.36	0.12
Control Delay	57.0	49.0	44.8	19.1	5.9	13.4	2.3	6.2	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	49.0	44.8	19.1	5.9	13.4	2.3	6.2	6.2
Queue Length 50th (ft)	30	72	79	26	19	116	0	29	23
Queue Length 95th (ft)	66	125	134	86	35	160	29	46	33
Internal Link Dist (ft)		708		576		733			777
Turn Bay Length (ft)	100		400		150		275	150	
Base Capacity (vph)	274	510	251	513	781	2055	979	586	2132
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.27	0.49	0.26	0.11	0.29	0.15	0.36	0.12
Intersection Summary									

Queues
5: Tibet Rd & E. 64th Ave

2040 Total Traffic
PM Peak Hour










												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	44	1197	376	434	1441	57	432	13	405	218	24	183
v/c Ratio	0.17	0.59	0.45	0.69	0.54	0.06	0.73	0.03	0.66	0.66	0.09	0.46
Control Delay	53.1	22.7	7.7	58.3	16.0	0.6	52.3	33.8	16.8	44.4	45.7	8.9
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	53.1	22.7	7.7	58.3	16.0	0.6	52.3	33.8	16.8	44.4	45.7	8.9
Queue Length 50th (ft)	13	246	82	179	184	1	164	8	73	124	16	0
Queue Length 95th (ft)	m25	316	126	231	257	3	221	m24	187	191	42	53
Internal Link Dist (ft)		478			826			491			550	
Turn Bay Length (ft)	175		275	200		275	300		500	300		275
Base Capacity (vph)	343	2040	840	669	2683	884	629	543	677	331	341	453
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	0.13	0.59	0.45	0.65	0.54	0.06	0.69	0.02	0.60	0.66	0.07	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
13: Tibet Rd & 60th Ave

2040 Total Traffic
PM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	26	144	183	255	118	463	171	112	821
v/c Ratio	0.12	0.44	0.71	0.54	0.26	0.22	0.17	0.17	0.40
Control Delay	49.9	40.6	54.6	15.5	7.7	12.4	2.3	6.1	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.9	40.6	54.6	15.5	7.7	12.4	2.3	6.1	10.8
Queue Length 50th (ft)	18	55	121	34	26	81	0	19	103
Queue Length 95th (ft)	45	112	#183	116	52	128	33	m44	174
Internal Link Dist (ft)		708		576		733			777
Turn Bay Length (ft)	100		400		150		275	150	
Base Capacity (vph)	298	632	258	609	454	2086	1003	644	2066
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.23	0.71	0.42	0.26	0.22	0.17	0.17	0.40
Intersection Summary									
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.									
m Volume for 95th percentile queue is metered by upstream signal.									