



LSC TRANSPORTATION CONSULTANTS, INC.

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December 7, 2022

Mr. James Spehalski  
Marathon Land Company  
9750 W. Cambridge Place  
Littleton, CO 80127

Re: E-470 and 6<sup>th</sup> Pkwy FDP  
Aurora, CO  
LSC #180221

Dear Mr. Spehalski:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the proposed E-470 and 6<sup>th</sup> Pkwy FDP development to address City comments. As shown on Figure 1, the site is located south of E. 6<sup>th</sup> Parkway and west of N. Gun Club Road in Aurora, Colorado.

## **REPORT CONTENTS**

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the existing daily traffic volumes in the area; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected short-term and long-term background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate the site's traffic impacts.

## **LAND USE AND ACCESS**

The site is proposed to include a mix of uses. Phase 1 is proposed as a mix of townhomes and commercial uses with full movement and right-in/right-out access to N. Gun Club Road and right-in/right-out access to E. 6<sup>th</sup> Parkway. Figure 2a shows the conceptual site plan. Figure 2b shows the internal circulation plan and traffic control.

## **PEDESTRIAN CONNECTIVITY**

The site plan shows the applicant will connect sidewalks between the proposed uses and the E. 6<sup>th</sup> Parkway/N. Gun Club Road intersection where existing sidewalks connect to the residential areas east of N. Gun Club Road. E. Ellsworth Avenue is a rural roadway with no existing sidewalks so no pedestrian connections are proposed at this location.

## ROADWAY AND TRAFFIC CONDITIONS

### Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **E. 6<sup>th</sup> Parkway** is an east-west, two-lane arterial roadway north of the site. The intersection with N. Gun Club Road is signalized with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 45 mph. The City of Aurora *Northeast Aurora Transportation Study* (NEATS) shows this roadway as a six-lane arterial in the long term so it is assumed to be six lanes by 2040.
- **N. Gun Club Road** is a north-south, two-lane arterial roadway east of the site. The intersection with E. 6<sup>th</sup> Parkway is signalized with auxiliary turn lanes. The posted speed limit is 45 mph in the vicinity of the site. The NEATS shows a four-lane arterial in the long term so it is assumed to be four lanes by 2040.
- **E. Ellsworth Avenue** is an east-west local street, connecting N. Gun Club Road with E. Alameda Avenue. It provides access to a large-lot residential subdivision. It is assumed to remain two lanes through 2040.
- **E. Alameda Avenue** is an east-west roadway southeast of the site. It is planned as a four-lane minor arterial east of E. Gun Club Road. The posted speed limit east of N. Gun Club Road is 35 mph. The intersection with E. Gun Club Road will have traffic signal control over time.

### Existing Traffic Conditions

Figure 3 shows the existing lane geometries, traffic controls, posted speed limits and traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes at Intersection #1 are based on Figure 3 of the *Cross Creek MTIA* by SM Rocha, LLC grown for one year at an annual rate of three percent. The through movements at Intersection #5 were balanced with Intersection #1. The daily volumes were updated based on ten times the afternoon peak-hour volumes.

### 2025 and 2040 Background Traffic

Figures 4a and 5a show the estimated 2025 and 2040 background traffic. The 2025 background traffic is based on a three percent annual growth rate plus the trip assignment from Figure 9 of the *Cross Creek MTIA* by SM Rocha, LLC and from Figure 8 of the *Lamar Landing TIA* by Kimley-Horn. The 2040 background traffic is based on the 2025 background traffic grown at an annual rate of two percent. Figures 4b and 5b show the 2025 and 2040 lane geometry and traffic control.

### Existing, 2025, and 2040 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little con-

gestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for signalized and unsignalized intersections.

The intersections in Figures 3, 4a, and 5a were analyzed to determine the existing, 2025, and 2040 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

1. **E. 6<sup>th</sup> Parkway/N. Gun Club Road:** This signalized intersection is expected to operate at an overall LOS “D” or better during both morning and afternoon peak-hours through 2040 with the recommended improvements.
2. **E. 6<sup>th</sup> Parkway/E-470 SB Ramps:** By 2025, this intersection is expected to operate poorly and require traffic signal control. It is expected to be signalized by others by 2040 and as such is expected to operate at an overall LOS “B” during both peak-hours with the recommended improvements.
3. **E. 6<sup>th</sup> Parkway/E-470 NB Ramp:** By 2025, this intersection is expected to operate poorly and require traffic signal control. It is expected to be signalized by others by 2040 and as such is expected to operate at an overall LOS “C” or better during both peak-hours with the recommended improvements.
4. **N. Gun Club Road/E. Ellsworth Avenue:** All movements at this stop-sign controlled intersection are expected to operate at LOS “C” or better during both morning and afternoon peak-hours through 2040 with the following exception: The westbound approach is expected to operate at LOS “E” or “F” during one or both peak-hours prior to traffic signal control.
5. **N. Gun Club Road/E. Alameda Avenue:** All movements at this stop-sign controlled intersection currently operate at LOS “A” during both morning and afternoon peak-hours and are expected to do so through 2040 with the following exception: The westbound approach currently operates at LOS “F” during both morning and afternoon peak-hours and is expected to do so in the future. Operations will likely improve once N. Gun Club Road is widened to four lanes. This intersection will likely require turn lanes and traffic signal control in the future by others to prevent traffic from westbound E. Alameda Avenue diverting north from E. Alameda Avenue along S. Coolidge Street and E. Ellsworth Avenue to access N. Gun Club Road at the proposed traffic signal at N. Gun Club Road/E. Ellsworth Avenue (#4).

## TRIP GENERATION

Table 2a shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed Phase 1 land use based on the rates from *Trip Generation, 11<sup>th</sup> Edition, 2021* by the Institute of Transportation Engineers (ITE).

Phase 1 of the site is expected to generate about 3,667 external vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 425 vehicles would enter and about 408 vehicles would exit the site. During the afternoon peak-

hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 320 vehicles would enter and about 314 vehicles would exit.

Table 2b shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the buildout land use scenario based on the rates from *Trip Generation, 11<sup>th</sup> Edition, 2021* by the Institute of Transportation Engineers (ITE).

The buildout of the site is expected to generate about 16,113 external vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 1,081 vehicles would enter and about 983 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 1,223 vehicles would enter and about 1,190 vehicles would exit.

Tables 2a and 2b also show the portion of site-generated trips expected to be pass-by trips.

## **DIRECTIONAL DISTRIBUTION**

Figure 6 shows the estimated directional distribution of the primary site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; and the site's proposed land use.

## **TRIP ASSIGNMENT**

Figure 7a shows the estimated assignment of Phase 1 primary site-generated traffic volumes based on the primary trip generation estimate (from Table 2a) and the directional distribution shown in Figure 6.

Figure 7b shows the estimated assignment of Phase 1 pass-by site-generated traffic volumes.

Figure 7c shows the Phase 1 total site-generated traffic volumes which is the sum of the volumes in Figures 7a and 7b.

Figure 8a shows the estimated assignment of primary buildout site-generated traffic volumes based on the primary trip generation estimate (from Table 2b) and the directional distribution shown in Figure 6.

Figure 8b shows the estimated assignment of buildout passby site-generated traffic volumes.

Figure 8c shows the total buildout site-generated traffic volumes which is the sum of the volumes in Figures 8a and 8b.

## **2025 AND 2040 TOTAL TRAFFIC**

Figure 9a shows the estimated Phase 1 2025 total traffic which is the sum of the 2025 background traffic volumes (from Figure 4a) and the Phase 1 site-generated traffic volumes (from Figure 7c). Figure 9b shows the recommended Phase 1 2025 lane geometry and traffic control.

Figure 10a shows the estimated buildout 2040 total traffic which is the sum of the 2040 background traffic volumes (from Figure 5a) and the buildout site-generated traffic volumes (from Figure 8c). Figure 10b shows the recommended 2040 lane geometry and traffic control.

## **PROJECTED LEVELS OF SERVICE**

The intersections in Figures 9a through 10b were analyzed to determine the 2025 and 2040 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

1. **E. 6<sup>th</sup> Parkway/N. Gun Club Road:** This signalized intersection is expected to operate at an overall LOS “D” during both morning and afternoon peak-hours through 2040 with the recommended improvements.
2. **E. 6<sup>th</sup> Parkway/E-470 SB Ramps:** This intersection is expected to be signalized by 2040 and as such is expected to operate at an overall “B” during both morning and afternoon peak-hours with the recommended improvements.
3. **E. 6<sup>th</sup> Parkway/E-470 NB Ramps:** This intersection is expected to be signalized by 2040 and as such is expected to operate at an overall LOS “C” or better in both peak-hours with the recommended improvements.
4. **N. Gun Club Road/E. Ellsworth Avenue/Site Access:** This intersection is expected to be signalized by 2025 and as such is expected to operate at an overall “C” or better during both morning and afternoon peak-hours through 2040 with the recommended improvements.
5. **N. Gun Club Road/E. Alameda Avenue:** All movements at this stop-sign controlled intersection are expected to operate at LOS “B” or better during both morning and afternoon peak-hours through 2040 with the following exception: The westbound approach is expected to operate at LOS “F” during both peak-hours through 2025. Operations will likely improve once N. Gun Club Road is widened to four lanes. This intersection will likely require turn lanes and traffic signal control in the future by others to prevent traffic from westbound E. Alameda Avenue diverting north from E. Alameda Avenue along S. Coolidge Street and E. Ellsworth Avenue to access N. Gun Club Road at the proposed traffic signal at N. Gun Club Road/E. Ellsworth Avenue (#4). As a signalized intersection, it is expected to operate at an overall LOS “B” or better during both morning and afternoon peak-hours through 2040.
6. **E. 6<sup>th</sup> Parkway/RIRO Site Access:** All movements at this unsignalized intersection are expected to operate at LOS “C” or better through 2040.
7. **N. Gun Club Road/RIRO Site Access:** All movements at this unsignalized intersection are expected to operate at LOS “D” or better through 2040.

## **TRAFFIC SIGNAL WARRANT ANALYSIS**

Figures 11 and 12 show the intersections of N. Gun Club Road/E. Ellsworth Avenue (#4) and N. Gun Club Road/E. Alameda Avenue (#5) are expected to clearly meet a four-hour traffic signal warrant by 2025. The proposed traffic signal at Intersection #4 will be constructed by the applicant and at Intersection #5 will be constructed by others.

The peak- and eight-hour warrants are also expected to be met at Intersection #4 due to the commercial nature of the site. The peak-hour threshold of 75 vph will be exceeded and the eight-hour threshold of 53 vph will likely be exceeded for eight hours. It would be appropriate to check for traffic signal warrants at each site development phase.

## **95<sup>TH</sup> PERCENTILE QUEUE LENGTH**

The estimated 95<sup>th</sup> percentile queue lengths for the signalized intersections are shown in Table 3 along with the existing and recommended turn lane lengths.

## **RECOMMENDED IMPROVEMENTS**

The recommended improvements are shown in Figures 9b and 10b and are detailed in Tables 3 and 4.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

1. Phase 1 of the site is expected to generate about 3,667 external vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 425 vehicles would enter and about 408 vehicles would exit the site. During the afternoon peak-hour, about 320 vehicles would enter and about 314 vehicles would exit.
2. The buildout of the site is expected to generate about 16,113 external vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 1,081 vehicles would enter and about 983 vehicles would exit the site. During the afternoon peak-hour, about 1,223 vehicles would enter and about 1,190 vehicles would exit.

### **Projected Levels of Service**

3. All of the signalized intersections analyzed are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the recommended improvements.
4. All movements at the unsignalized intersections analyzed are expected to operate at LOS "D" or better during both morning and afternoon peak-hours through 2040 with the recommended improvements.

## Conclusions

5. The impact of the site can be accommodated by the existing and planned roadway improvements with the following recommended improvements.

## Recommendations

6. The interim improvements recommended for Phase 1 in 2025 are shown in Figure 9b and Table 3 and detailed in Table 4. The recommended 2040 improvements are shown in Figure 10b and Table 3 and are detailed in Table 4.

\* \* \* \* \*

We trust our findings will assist you in gaining approval of the proposed E-470 and 6<sup>th</sup> Pkwy FDP development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By   
Christopher S. McGranahan, PE, PTOE  
Principal

CSM/wc

12-7-22

Enclosures: Tables 1 - 4  
Figures 1 - 12  
Traffic Counts  
Figures 3 and 9 from the *Cross Creek MTIA* by SM Rocha, LLC  
Figure 8 from the *Lamar Landing TIA* by Kimley-Horn  
Level of Service Definitions  
Level of Service Reports  
Queuing Reports

**Table 1 (Page 1 of 2)**  
**Intersection Levels of Service Analysis**  
**E-470 & 6th Pkwy**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Intersection No. & Location	Traffic Control	Existing Traffic				2025 Background Traffic				2025 Total Traffic				2040 Background Traffic				2040 Total Traffic			
		Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay		
		Service	Delay	Service	Delay	Service	Delay	Service	Delay	Service	Delay	Service	Delay	Service	Delay	Service	Delay	Service	Delay		
		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
1) <u>E. 6th Parkway/N. Gun Club Road</u>		Signalized																			
EB Left		B	19.3	C	23.8	C	28.5	D	52.2	D	35.7	E	56.0	E	57.8	E	58.2	E	61.7	E	67.7
EB Through/Right		C	24.2	D	44.7	D	39.2	F	>240	--	--	--	--	--	--	--	--	--	--	--	
EB Through		--	--	--	--	--	--	--	--	C	34.9	D	52.5	D	36.4	D	41.8	D	42.4	D	54.9
EB Right		--	--	--	--	--	--	--	--	D	35.0	D	49.7	A	0.0	A	0.0	A	0.0	A	0.0
EB Approach LOS & Delay		C	23.7	D	43.1	C	34.1	F	188.2	D	35.3	D	53.4	D	48.7	D	49.0	D	53.7	E	60.8
WB Left		B	18.1	C	27.3	C	26.8	D	37.8	C	28.8	D	36.6	D	54.3	D	53.2	E	56.0	E	77.8
WB Through		C	24.0	C	29.3	C	34.9	D	51.3	D	38.1	D	53.6	C	33.0	D	37.9	D	35.2	D	47.1
WB Right		C	22.1	C	27.7	D	35.7	D	50.2	D	38.6	D	52.8	A	0.0	A	0.0	A	0.0	A	0.0
WB Approach LOS & Delay		C	22.5	C	28.4	C	33.4	D	47.8	D	35.9	D	48.4	D	38.2	D	42.2	D	45.3	E	64.5
NB Left		C	25.8	C	31.1	C	20.6	C	31.3	C	21.9	E	57.2	D	55.0	E	55.4	E	61.6	E	72.5
NB Through		F	79.4	C	31.5	D	44.4	C	28.4	D	47.2	B	18.7	D	44.0	D	43.2	D	54.6	D	35.6
NB Right		C	26.1	C	21.9	C	20.2	B	17.9	B	18.9	B	11.6	A	0.0	A	0.0	A	0.0	A	0.0
NB Approach LOS & Delay		E	70.2	C	30.2	D	39.5	C	27.2	D	40.5	C	24.2	D	45.4	D	45.0	E	56.7	D	48.6
SB Left		C	31.6	C	30.6	C	28.1	C	34.5	C	28.9	C	26.1	E	56.2	E	56.2	E	56.2	E	56.2
SB Through or Through/Right		D	36.8	F	70.2	C	26.9	D	47.3	C	25.3	D	51.2	C	33.9	D	43.6	D	49.7	D	46.9
SB Right		--	--	--	--	C	20.9	B	17.6	B	19.2	B	17.3	A	0.0	A	0.0	A	0.0	A	0.0
SB Approach LOS & Delay		D	36.1	E	62.2	C	26.0	D	42.1	C	24.6	D	43.4	D	37.1	D	46.2	D	50.6	D	48.8
Entire Intersection Delay (sec /veh)		45.4		44.9		33.8		77.1		34.9		41.8		42.5		46.0		52.0		54.6	
Entire Intersection LOS		D		D		C		E		C		D		D		D		D		D	
2) <u>E. 6th Parkway/E-470 SB Ramps</u>		TWSC																			
WB Left		A	8.0	A	9.4	A	8.6	B	11.4	A	8.8	B	11.8	--	--	--	--	--	--	--	--
SB Left/Through		D	29.8	C	19.5	F	82.8	F	>240	F	132.7	F	>240	--	--	--	--	--	--	--	--
SB Right		B	13.5	A	9.0	C	15.8	B	12.4	C	16.6	B	12.8	--	--	--	--	--	--	--	--
		Signalized																			
EB Through		--	--	--	--	--	--	--	--	--	--	--	--	B	11.4	B	15.4	B	11.1	B	16.7
EB Right		--	--	--	--	--	--	--	--	--	--	--	--	B	11.2	B	14.6	B	11.3	B	17.4
EB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	B	11.4	B	15.2	B	11.2	B	16.9
WB Left		--	--	--	--	--	--	--	--	--	--	--	--	A	6.5	B	12.4	A	6.9	B	17.5
WB Through		--	--	--	--	--	--	--	--	--	--	--	--	A	0.3	A	0.2	A	0.2	A	0.1
WB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	A	1.8	A	4.0	A	1.7	A	5.3
SB Left/Through		--	--	--	--	--	--	--	--	--	--	--	--	D	44.6	D	52.2	D	45.8	D	53.5
SB Right		--	--	--	--	--	--	--	--	--	--	--	--	D	53.2	D	43.1	D	53.0	D	40.4
SB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	D	49.6	D	48.8	D	49.7	D	49.0
Entire Intersection Delay (sec /veh)		--	--	--	--	--	--	--	--	--	--	--	--	14.4		17.5		13.9		18.3	
Entire Intersection LOS		--	--	--	--	--	--	--	--	--	--	--	--	B		B		B		B	
3) <u>E. 6th Parkway/E-470 NB Ramps</u>		TWSC																			
NB Left/Through		D	26.6	C	17.4	F	215.2	F	>240	F	>240	F	>240	--	--	--	--	--	--	--	--
NB Through/Right		A	9.7	B	12.7	B	11.8	C	22.0	B	12.5	D	25.0	--	--	--	--	--	--	--	--
EB Left		A	9.3	A	7.7	B	10.2	A	9.9	B	10.7	B	10.3	--	--	--	--	--	--	--	--
		Signalized																			
EB Left		--	--	--	--	--	--	--	--	--	--	--	--	A	8.9	A	9.4	A	8.0	A	9.9
EB Through		--	--	--	--	--	--	--	--	--	--	--	--	A	0.2	A	0.4	A	0.1	A	0.2
EB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	A	2.2	A	2.0	A	1.6	A	1.7
WB Through		--	--	--	--	--	--	--	--	--	--	--	--	C	26.8	C	27.9	C	24.8	C	27.9
WB Right		--	--	--	--	--	--	--	--	--	--	--	--	C	21.5	C	21.1	C	22.3	C	23.7
WB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	C	25.9	C	27.1	C	24.4	C	27.3
NB Left/Through		--	--	--	--	--	--	--	--	--	--	--	--	D	52.7	D	42.3	D	52.6	D	39.7
NB Right		--	--	--	--	--	--	--	--	--	--	--	--	D	47.1	E	56.3	D	50.4	E	59.1
NB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	D	50.4	D	51.5	D	51.6	D	53.1
Entire Intersection Delay (sec /veh)		--	--	--	--	--	--	--	--	--	--	--	--	23.5		18.6		22.1		18.8	
Entire Intersection LOS		--	--	--	--	--	--	--	--	--	--	--	--	C		B		C		B	

**Table 1 (Page 2 of 2)**  
**Intersection Levels of Service Analysis**  
**E-470 & 6th Pkwy**  
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Intersection Location	Traffic Control	Existing Traffic				2025 Background Traffic				2025 Total Traffic				2040 Background Traffic				2040 Total Traffic			
		Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay	Level of Service	Move-ment Delay
		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
4) <u>N. Gun Club Road/E. Ellsworth Avenue/</u> <u>Site Access</u>	TWSC																				
NB Left		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB Left		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EB Through/Right		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WB Approach		C	16.3	B	14.8	F	55.5	C	17.0	--	--	--	--	C	17.6	E	48.3	--	--	--	--
SB Left/Through or Left		A	9.0	A	8.6	B	10.1	B	10.1	--	--	--	--	A	9.1	B	11.7	--	--	--	--
	Signalized																				
EB Left		--	--	--	--	--	--	--	--	E	59.6	D	53.8	--	--	--	--	D	51.6	D	49.5
EB Through/Right or Through		--	--	--	--	--	--	--	--	C	34.8	D	37.5	--	--	--	--	D	39.7	D	35.7
EB Right		--	--	--	--	--	--	--	--	D	40.8	D	39.9	--	--	--	--	--	--	--	--
EB Approach LOS & Delay		--	--	--	--	--	--	--	--	D	51.5	D	48.9	--	--	--	--	D	47.6	D	45.6
WB Left/Through/Right		--	--	--	--	--	--	--	--	E	57.8	E	56.1	--	--	--	--	E	56.9	E	56.3
WB Approach LOS & Delay		--	--	--	--	--	--	--	--	E	57.8	E	56.1	--	--	--	--	E	56.9	E	56.3
NB Left		--	--	--	--	--	--	--	--	B	10.3	C	20.4	--	--	--	--	B	14.7	D	35.1
NB Through/Right		--	--	--	--	--	--	--	--	B	18.7	B	17.5	--	--	--	--	A	1.5	A	1.5
NB Approach LOS & Delay		--	--	--	--	--	--	--	--	B	17.5	B	17.8	--	--	--	--	A	4.3	A	9.2
SB Left		--	--	--	--	--	--	--	--	B	13.2	B	11.8	--	--	--	--	B	12.4	B	14.0
SB Through		--	--	--	--	--	--	--	--	B	16.0	B	20.0	--	--	--	--	B	18.9	D	35.8
SB Right		--	--	--	--	--	--	--	--	B	10.6	A	3.7	--	--	--	--	B	17.7	C	21.3
SB Approach LOS & Delay		--	--	--	--	--	--	--	--	B	15.1	B	18.8	--	--	--	--	B	18.6	C	33.4
Entire Intersection Delay (sec /veh)		--	--	--	--	--	--	--	--	23.1		21.7		--	--	--	--	18.4		27.2	
Entire Intersection LOS		--	--	--	--	--	--	--	--	C		C		--	--	--	--	B		C	
5) <u>N. Gun Club Road/E. Alameda Avenue</u>	TWSC																				
WB Approach		F	136.8	F	>240	F	>240	E	44.1	F	>240	F	>240	--	--	--	--	--	--	--	--
SB Left/Through or Left		A	9.6	B	10.2	B	10.5	B	12.1	B	10.6	B	12.1	--	--	--	--	--	--	--	--
	Signalized																				
WB Left		--	--	--	--	--	--	--	--	--	--	--	--	D	52.3	D	54.7	D	52.2	D	54.4
WB Right		--	--	--	--	--	--	--	--	--	--	--	--	D	45.9	D	49.2	D	47.1	D	51.7
WB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	D	50.7	D	52.9	D	50.6	D	53.3
NB Through		--	--	--	--	--	--	--	--	--	--	--	--	A	6.2	A	4.1	A	6.7	A	5.1
NB Right		--	--	--	--	--	--	--	--	--	--	--	--	A	4.2	A	3.5	A	4.2	A	3.5
NB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	A	6.0	A	4.0	A	6.5	A	4.9
SB Left		--	--	--	--	--	--	--	--	--	--	--	--	B	10.4	B	10.8	A	4.2	B	10.3
SB Through		--	--	--	--	--	--	--	--	--	--	--	--	A	5.4	A	5.0	A	0.4	A	0.3
SB Approach LOS & Delay		--	--	--	--	--	--	--	--	--	--	--	--	A	5.6	A	5.3	A	0.6	A	1.0
Entire Intersection Delay (sec /veh)		--	--	--	--	--	--	--	--	--	--	--	--	11.3		8.1		9.6		6.3	
Entire Intersection LOS		--	--	--	--	--	--	--	--	--	--	--	--	B		A		A		A	
6) <u>E. 6th Parkway/RIRO Site Access</u>	TWSC																				
SB Right		--	--	--	--	B	13.0	B	12.2	C	16.6	C	15.4	B	10.9	B	10.8	B	11.1	B	11.2
7) <u>N. Gun Club Road/East RIRO Site Access</u>	TWSC																				
EB Right		--	--	--	--	--	--	--	--	A	9.5	B	10.7	--	--	--	--	C	15.1	D	26.7

**Table 2a**  
**ESTIMATED TRAFFIC GENERATION FOR PHASE 1**  
**E-470 & 6th Pkwy FDP**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Trip Generating Category		Quantity	Trip Generation Rates <sup>(1)</sup>				Vehicle-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
<b><u>Residential</u></b>												
<b>PA-7</b>	Townhomes <sup>(2)</sup>	78 DU <sup>(3)</sup>	6.74	0.096	0.304	0.321	0.189	526	7	24	25	15
<b><u>Commercial</u></b>												
<b>PA-6</b>												
	Fast Food Restaurant <sup>(4)</sup>	4.00 KSF <sup>(5)</sup>	467.48	22.751	21.859	17.176	15.854	1,870	91	87	69	63
	Gas Station w/ Convenience Store <sup>(6)</sup>	4.80 KSF	700.43	28.260	28.260	27.260	27.260	3,362	136	136	131	131
<b>PA-8</b>												
	Coffee Shop <sup>(7)</sup>	4.00 KSF	533.57	43.799	42.081	19.495	19.495	2,134	175	168	78	78
	Bank <sup>(8)</sup>	4.00 KSF	100.35	5.771	4.179	10.505	10.505	401	23	17	42	42
<b>Total Commercial =</b>								<b>7,767</b>	<b>425</b>	<b>408</b>	<b>320</b>	<b>314</b>
<b>Total =</b>								<b>8,293</b>	<b>432</b>	<b>432</b>	<b>345</b>	<b>329</b>
<b>Passby Trips <sup>(9)</sup> =</b>								<b>4,626</b>	<b>266</b>	<b>266</b>	<b>169</b>	<b>169</b>
<b>Primary Trips =</b>								<b>3,667</b>	<b>166</b>	<b>166</b>	<b>176</b>	<b>160</b>

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. 934 - Fast-Food Restaurant with Drive-Through Window
- (5) KSF = 1,000 square feet
- (6) ITE Land Use No. 945 - Super Convenience Market/Gas Station (9-15 Fueling Positions)
- (7) ITE Land Use No. 937 - Coffee/Donut Shop with Drive-Through Window
- (8) ITE Land Use No. 912 - Drive-In Bank
- (9) The following passby trip percentages were assumed based on the information in the ITE *Trip Generation Handbook, 3rd Edition*: Fast-Food Restaurant (50%), Gas Station with Convenience Store (59% ADT, 62% AM, 56% PM), Coffee Shop (80%)

**Table 2b**  
**ESTIMATED TRAFFIC GENERATION FOR BUILDOUT**  
**E-470 & 6th Pkwy FDP**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Trip Generating Category		Quantity	Trip Generation Rates <sup>(1)</sup>				Vehicle-Trips Generated					
			Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
<b><u>Residential</u></b>												
<b>PA-7</b>	Townhomes <sup>(2)</sup>	78 DU <sup>(3)</sup>	6.74	0.096	0.304	0.321	0.189	526	7	24	25	15
<b><u>Commercial</u></b>												
<b>PA-3</b>	Fast Food Restaurant <sup>(4)</sup>	6.10 KSF <sup>(5)</sup>	467.48	22.751	21.859	17.176	15.854	2,852	139	133	105	97
<b>PA-4</b>	Fast Food Restaurant	5.30 KSF	467.48	22.751	21.859	17.176	15.854	2,478	121	116	91	84
	Drug Store <sup>(6)</sup>	6.30 KSF	108.40	1.945	1.795	5.125	5.125	683	12	11	32	32
<b>PA-5</b>	Supermarket <sup>(7)</sup>	120.00 KSF	93.84	1.687	1.173	4.475	4.475	11,261	202	141	537	537
<b>PA-6</b>	Fast Food Restaurant	4.00 KSF	467.48	22.751	21.859	17.176	15.854	1,870	91	87	69	63
	Fast Food Restaurant	4.00 KSF	467.48	22.751	21.859	17.176	15.854	1,870	91	87	69	63
<b>PA-8</b>	Gas Station w/ Convenience Store <sup>(8)</sup>	4.80 KSF	700.43	28.260	28.260	27.260	27.260	3,362	136	136	131	131
	Coffee Shop <sup>(9)</sup>	4.00 KSF	533.57	43.799	42.081	19.495	19.495	2,134	175	168	78	78
	Fast Food Restaurant	4.00 KSF	467.48	22.751	21.859	17.176	15.854	1,870	91	87	69	63
	Bank <sup>(10)</sup>	4.00 KSF	100.35	5.771	4.179	10.505	10.505	401	23	17	42	42
Total Commercial =								28,781	1,081	983	1,223	1,190
Total =								29,307	1,088	1,007	1,248	1,205
Passby Trips <sup>(11)</sup> =								13,194	544	544	520	520
Primary Trips =								16,113	544	463	728	685

**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. 934 - Fast-Food Restaurant with Drive-Through Window
- (5) KSF = 1,000 square feet
- (6) ITE Land Use No. 881 - Pharmacy/Drugstore with drive-through window
- (7) ITE Land Use No. 850 - Supermarket
- (8) ITE Land Use No. 945 - Super Convenience Market/Gas Station (9-15 Fueling Positions)
- (9) ITE Land Use No. 937 - Coffee/Donut Shop with Drive-Through Window
- (10) ITE Land Use No. 912 - Drive-In Bank
- (11) The following passby trip percentages were assumed based on the information in the ITE *Trip Generation Handbook, 3rd Edition*: Fast-Food Restaurant (50%), Gas Station with Convenience Store (59% ADT, 62% AM, 56% PM), Coffee Shop (80%)

**Table 3 (1 of 2)**  
**95th Percentile Queue Lengths**  
**E-470 & 6th Pkwy FDP**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Intersection Location	Assumed Future Posted Speed Limit (mph)	Storage Lengths		2025 Total Traffic		2040 Total Traffic		
		Turn Lane Length (feet) Existing	Recommended	Queue Length (feet) AM	Queue Length (feet) PM	Queue Length (feet) AM	Queue Length (feet) PM	Recommended
			Turn Lane Length (feet) 2025					Turn Lane Length (feet) 2040
1) <u>E. 6th Parkway/N. Gun Club Road</u>								
EB Left	45	130	430	245	431	262	329	2 @ 350
EB Through or Through/Right	45	--	--	104	274	118	239	--
EB Right	45	--	Continuous	7	56	0	0	Continuous
WB Left	45	210	210	173	184	251	319	2 @ 325
WB Through	45	--	--	217	198	164	139	--
WB Right	45	Continuous	Continuous	53	32	0	0	275
NB Left	45	120	200	m112	m192	237	291	2 @ 300
NB Through	45	--	--	836	584	338	244	--
NB Right	45	240	240	m14	m34	0	0	275
SB Left	45	125	175	63	176	73	171	2 @ 175
SB Through or Through/Right	45	--	--	394	938	351	636	--
SB Right	45	--	275	26	19	0	0	275
2) <u>E. 6th Parkway/E-470 SB Ramps</u> <sup>(1)</sup>								
EB Through	45	--	--	--	--	116	264	--
EB Right	45	355	355	--	--	33	53	275
WB Left	45	210	210	--	--	129	182	210
WB Through	45	--	--	--	--	73	34	--
SB Left/Through	--	--	--	--	--	231	351	--
SB Right	--	235	235	--	--	153	54	235
3) <u>E. 6th Parkway/E-470 NB Ramps</u> <sup>(1)</sup>								
EB Left	45	230	230	--	--	62	140	230
EB Through	45	--	--	--	--	79	109	--
WB Through	45	--	--	--	--	295	m312	--
WB Right	45	285	285	--	--	m79	m36	275
NB Left/Through	--	--	--	--	--	277	143	--
NB Right	--	130	130	--	--	61	239	250

**Notes:**

(1) These are off-site intersections that will require significant regional improvements over time to accommodate growth in background traffic.  
m = metered by upstream intersection or adjacent movement.

**Table 3 (2 of 2)**  
**95th Percentile Queue Lengths**  
**E-470 & 6th Pkwy FDP**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Intersection Location	Assumed Future Posted Speed Limit (mph)	Storage Lengths		2025 Total Traffic		2040 Total Traffic		
		Turn Lane Length (feet) Existing	Turn Lane Length (feet) 2025	Queue Length (feet) AM	Queue Length (feet) PM	Queue Length (feet) AM	Queue Length (feet) PM	Recommended Turn Lane Length (feet) 2040
4) <u>N. Gun Club Road/Ellsworth Avenue/ Site Access</u>								
EB Left	25	--	250	227	181	200	248	2 @ 250
EB Through/Right or Through	25	--	--	8	8	53	56	--
EB Right	25	--	--	48	38	--	--	--
WB Left/Through/Right	25	--	--	47	32	57	50	--
NB Left	45	--	275	69	97	228	260	275
NB Through/Right	45	--	--	865	863	184	250	--
SB Left	45	--	Back-to-back	m2	m12	m2	m6	Back-to-Back
SB Through	45	--	--	511	m1099	217	m797	--
SB Right	45	--	275	5	m3	m24	m20	275
5) <u>N. Gun Club Road/E. Alameda Avenue</u>								
WB Left	40	--	--	--	--	248	181	250
WB Right	40	--	--	--	--	83	107	--
NB Through	45	--	--	--	--	334	334	--
NB Right	45	--	--	--	--	20	23	275
SB Left	45	--	--	--	--	m9	m59	275
SB Through	45	--	--	--	--	47	247	--

**Notes:**

m = metered by upstream intersection or adjacent movement.

**Table 4 (Page 1 of 2)**  
**Recommended Improvements to Public Street Network**  
**E-470 & 6th Parkway**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Inter-section					
No.	Intersection Location	Recommended Improvements by 2025 <sup>(1) (2) (3) (4)</sup>	Responsibility	Recommended Improvements by 2040 <sup>(1) (2) (3) (4)</sup>	Responsibility
#1	E. 6th Parkway/N. Gun Club Road	EB RT = Add Lane - Continuous lane back to #6	Applicant	EB LT = 2 @ 350 feet	Applicant
		EB LT = Add lane - 1 @ 430 feet	Applicant	EB Through - 3 through lanes	Applicant
		NB LT = Lengthen from 120 feet to 200 feet	Others	EB RT - Continuous lane back to #6	Applicant
		SB LT = Lengthen from 125 feet to 175 feet	Applicant/Others	WB LT = 2 @ 325 feet	Others
		SB RT = Add Lane - 1 @ 275 feet	Others	WB Through = 3 through lanes	Others
			Others	WB RT = Add lane - 275 feet	Others
				NB LT = 2 @ 300 feet	Applicant/Others
				NB Through = 2 through lanes	Others
				NB RT = 275 feet	Others
				SB LT = 2 @ 175 feet	Others
				SB Through = 2 through lanes	Applicant/Others
				Traffic Signal Modifications over time	Applicant/Others
#2	E. 6th Parkway/E-470 SB Ramps	Traffic Signal Control when warranted	Others	EB RT = 275 feet	Others
				EB Through - 3 through lanes	Others
				WB Through = 3 through lanes	Others
#3	E. 6th Parkway/E-470 NB Ramps	Traffic Signal Control when warranted	Others	EB Through - 3 through lanes	Others
				WB Through = 3 through lanes	Others
				NB to EB Accel Lane - Continuous Lane to #6	Others
				NB RT = Lengthen from 130 feet to 250 feet	Others

- (1) An appropriate redirect taper for 45 mph is 45:1; for 40 mph is 30:1, and for 25 mph is 15:1  
(2) An appropriate transition taper for 45 mph is 13.5:1, for 40 mph is 12:1, and for 25 mph is 7.5:1  
(3) Some of the right-turn deceleration and acceleration lane termini are close enough that a continuous right-turn lane may be appropriate between intersections.  
(4) Turn lanes are based on the CDOT NR-B classification which requires deceleration lanes for posted speed limits above 40 mph.

**Table 4 (Page 2 of 2)**  
**Recommended Improvements to Public Street Network**  
**E-470 & 6th Parkway**  
**Aurora, CO**  
**LSC #180221; December, 2022**

Inter-section					
No.	Intersection Location	Recommended Improvements by 2025 <sup>(1) (2) (3) (4)</sup>	Responsibility	Recommended Improvements by 2040 <sup>(1) (2) (3) (4)</sup>	Responsibility
#4	N. Gun Club Road/E. Ellsworth Avenue/Site Access	EB LT = Add lane - 1 @ 250 feet <sup>(5)</sup>	Applicant	EB LT - Add second lane - 2 @ 250 feet	Applicant
		NB LT = Add lane - 275 feet	Applicant	NB Through = 2 through lanes	Others
		SB LT - Back-to-back with #1	Applicant	SB Through = 2 through lanes	Applicant
		SB RT = Add Lane - 275 feet	Applicant		
		Traffic Signal Control when warranted	Applicant		
#5	N. Gun Club Road/E. Alameda Avenue			WB LT = Add lane - 250 feet	Others
				NB RT = Add lane - 275 feet	Others
				SB LT = Add lane - 275 feet	Others
				NB Through = 2 through lanes	Others
				SB Through = 2 through lanes	Others
				Traffic Signal Control when warranted	Others
#6	E. 6th Parkway/RIRO Site Access	EB RT = Add Lane - 275 feet	Applicant	EB RT = Continuous back to #3	Others
		NB to EB Accel Lane - Continuous Lane to #1	Applicant	EB Through - 3 through lanes	Applicant
				WB Through = 3 through lanes	Others
#7	N. Gun Club Road/RIRO Site Access	SB RT = Add Lane - Continuous lane back to #1	Applicant	NB Through = 2 through lanes	Others
		SB Through = 2 through lanes	Applicant		

(1) An appropriate redirect taper for 45 mph is 45:1; for 40 mph is 30:1, and for 25 mph is 15:1

(2) An appropriate transition taper for 45 mph is 13.5:1, for 40 mph is 12:1, and for 25 mph is 7.5:1

(3) Some of the right-turn deceleration and acceleration lane termini are close enough that a continuous right-turn lane may be appropriate between intersections.

(4) Turn lanes are based on the CDOT NR-B classification which requires deceleration lanes for posted speed limits above 40 mph.

(5) This is the lane configuration once traffic signal control is provided. The City has indicated the interim lane geometry prior to traffic signal control is a shared left/through lane and a dedicated right-turn lane

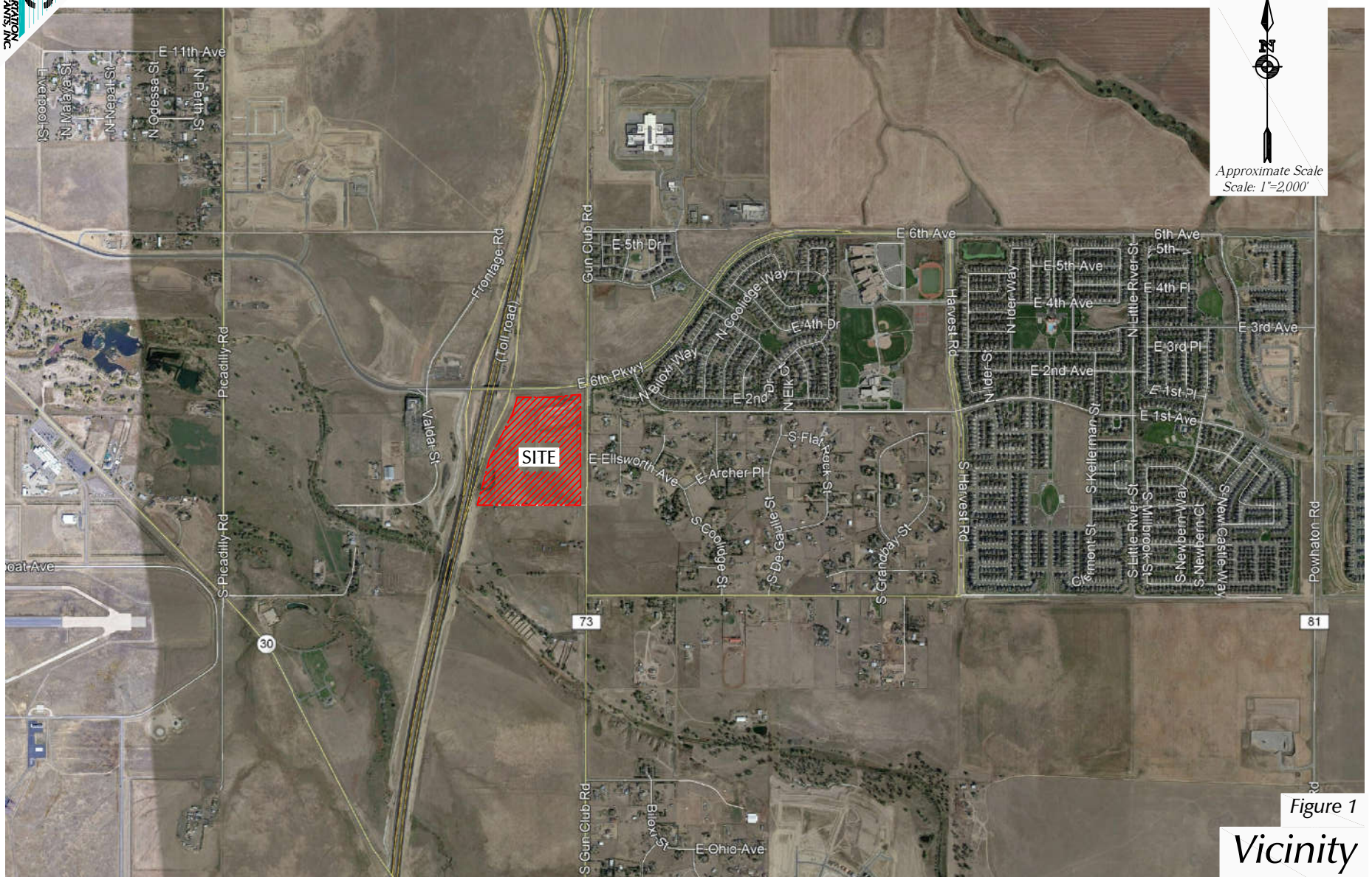


Figure 1

# Vicinity Map

E-470 and 6th Parkway FDP (LSC #180221)

Figure 2a

## Site Plan

E-470 and 6th Parkway FDP (LSC #180221)

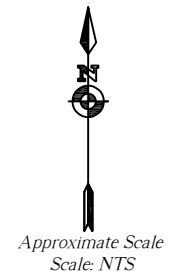
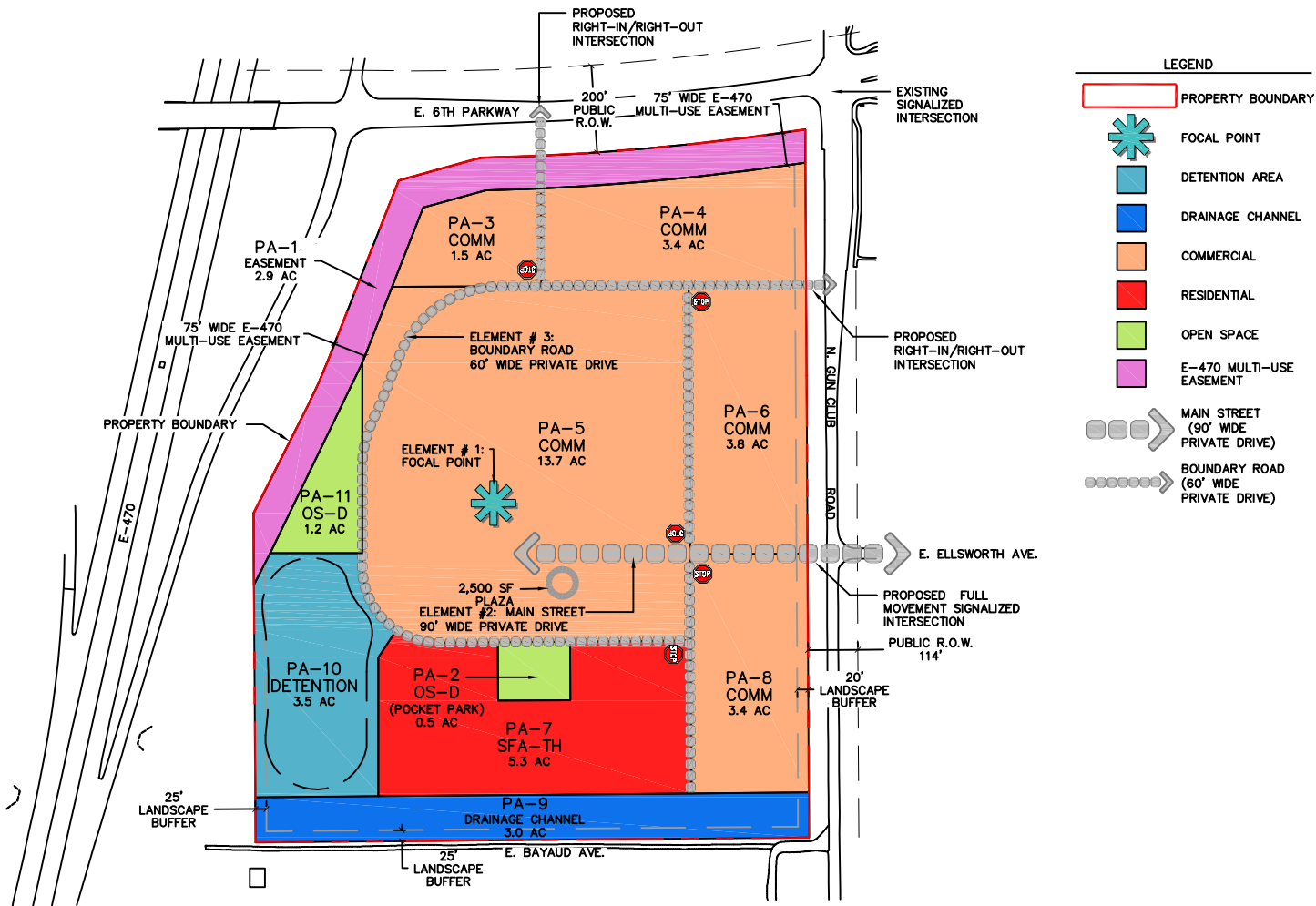


Figure 2b  
*Internal Circulation and Stop Sign Locations*  
E-470 and 6th Parkway FDP (LSC #180221)

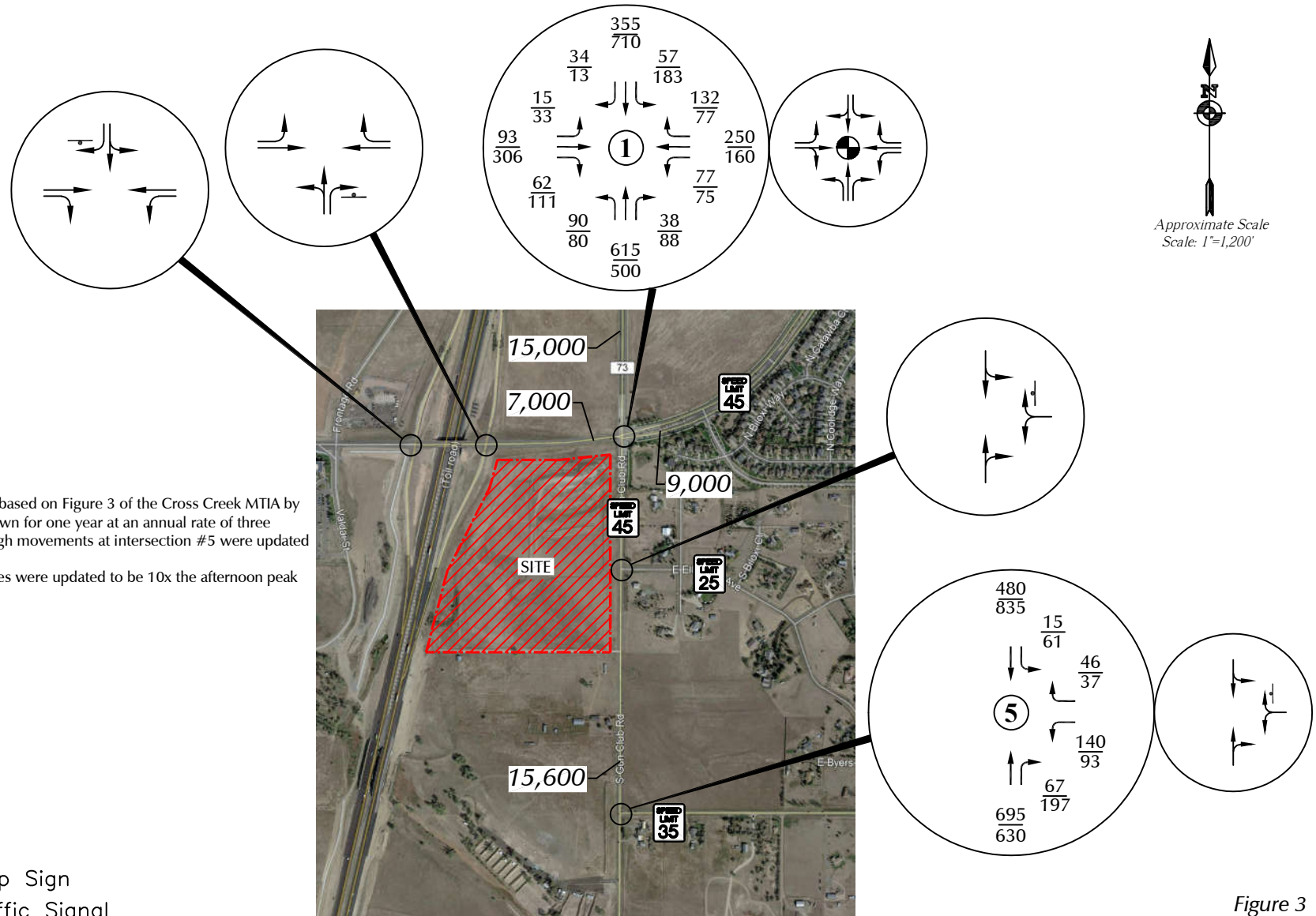
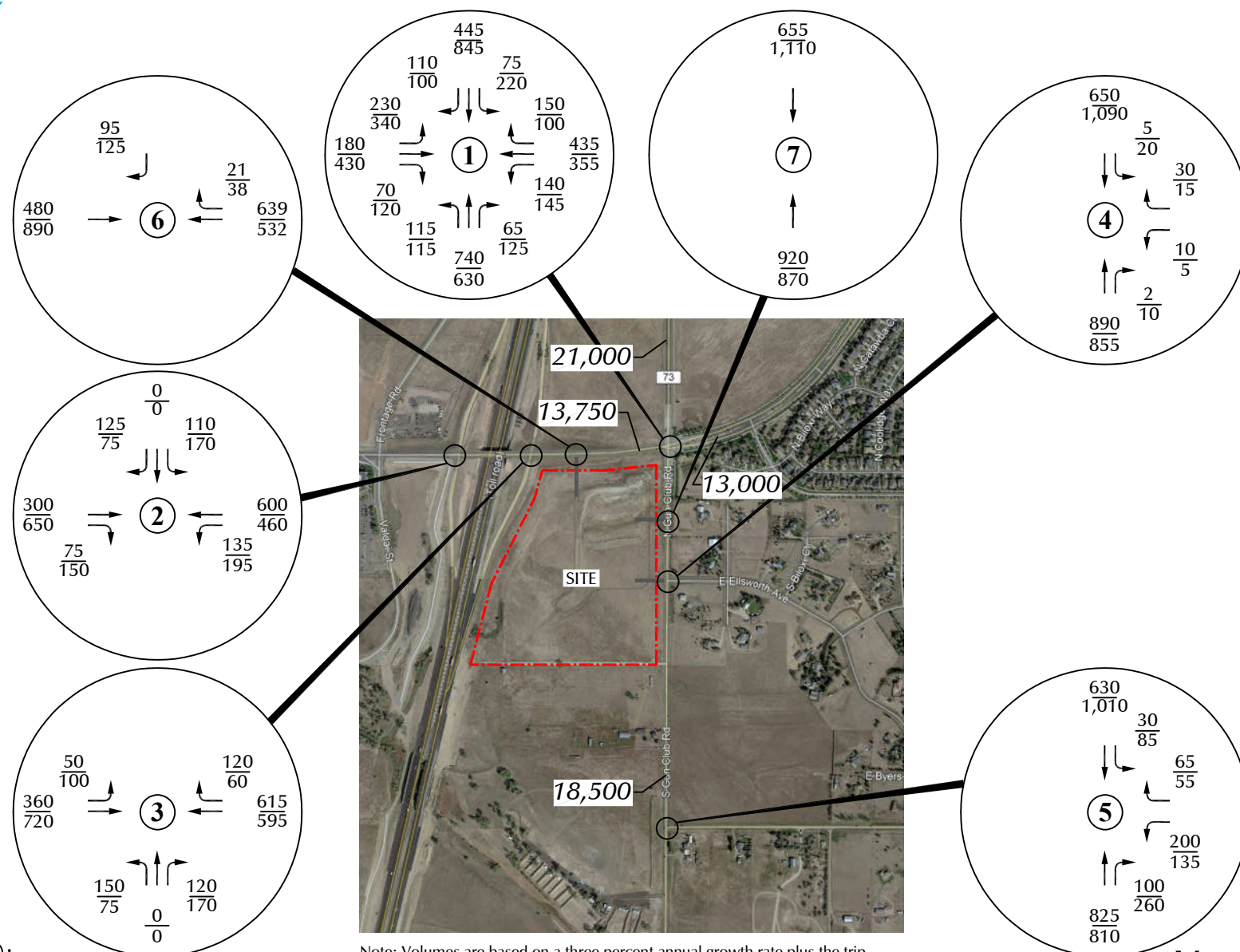


Figure 3

## Existing 2022 Traffic, Lane Geometry and Traffic Control

E-470 and 6th Parkway FDP (LSC #180221)



LEGEND:

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

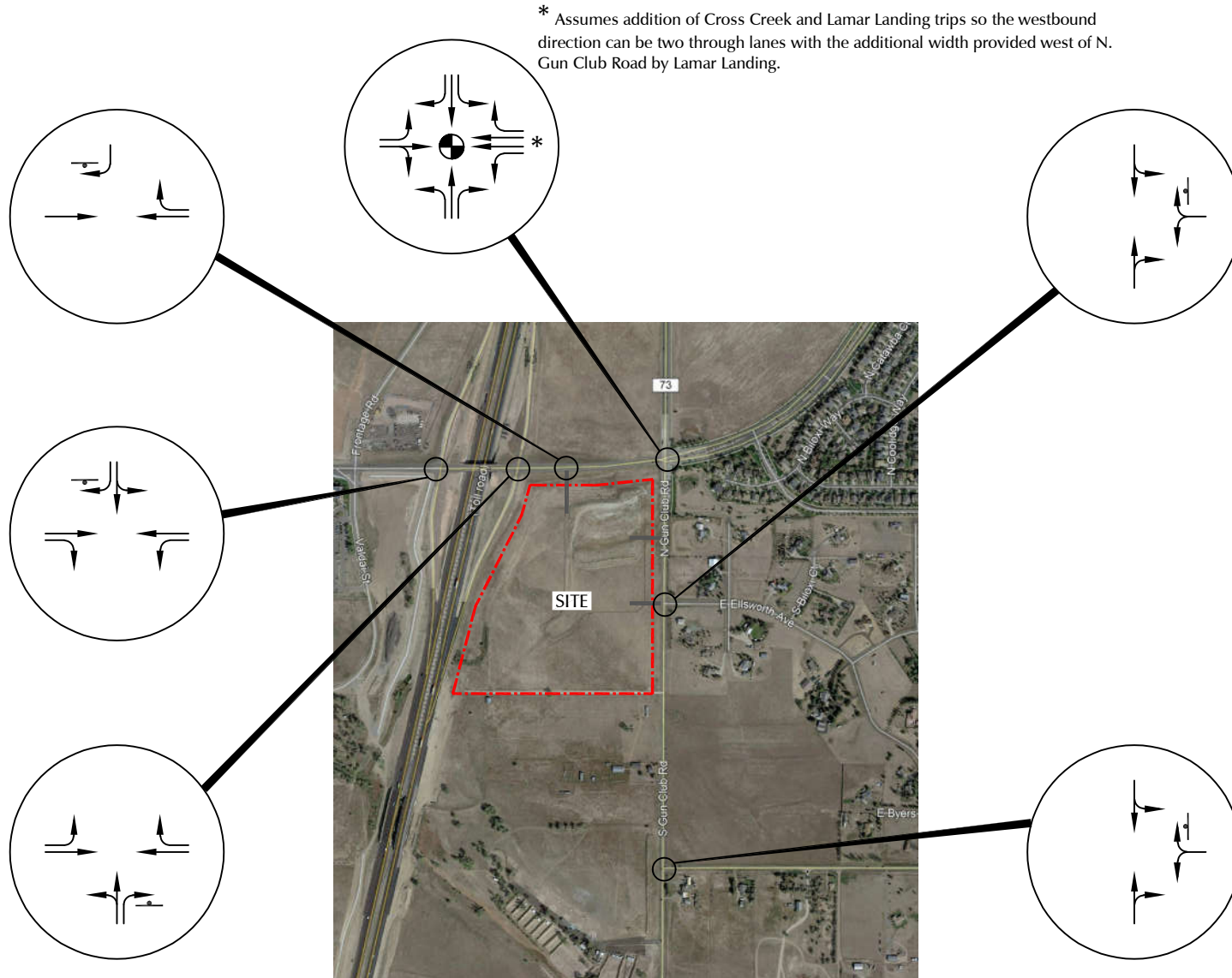
1,000 = Average Daily Traffic

Note: Volumes are based on a three percent annual growth rate plus the trip assignment from the Cross Creek MTIA (Figure 9) by SM Rocha, LLC and the Lamar Landing MTIA (Figure 8) by Kimley Horn.

Figure 4a

**Year 2025**  
**Background Traffic**

E-470 and 6th Parkway FDP (LSC #180221)



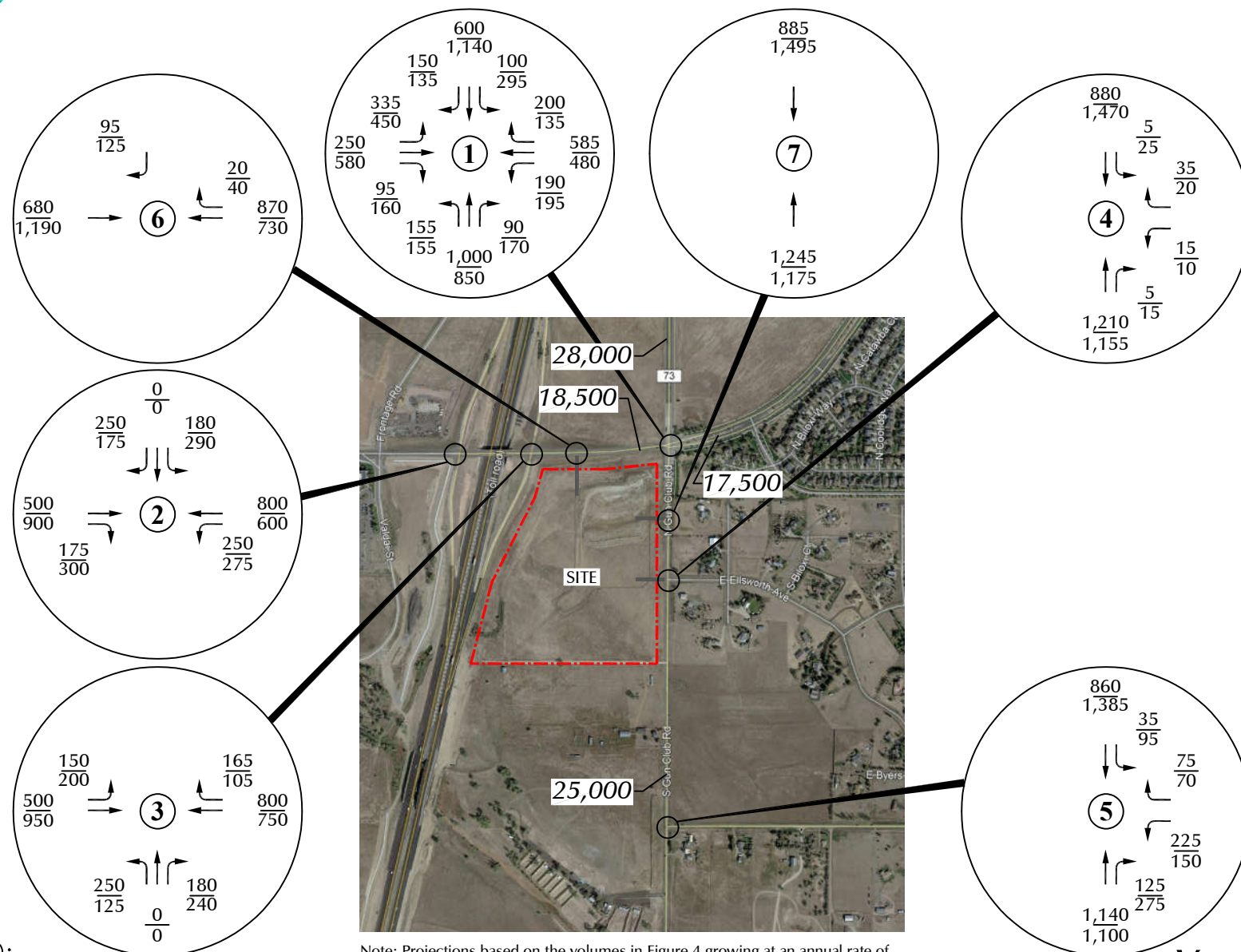
LEGEND:

- ⊥ = Stop Sign
- = Traffic Signal

Figure 4b

# *Year 2025 Background Lane Geometry and Traffic Control*

E-470 and 6th Parkway FDP (LSC #180221)



LEGEND:

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

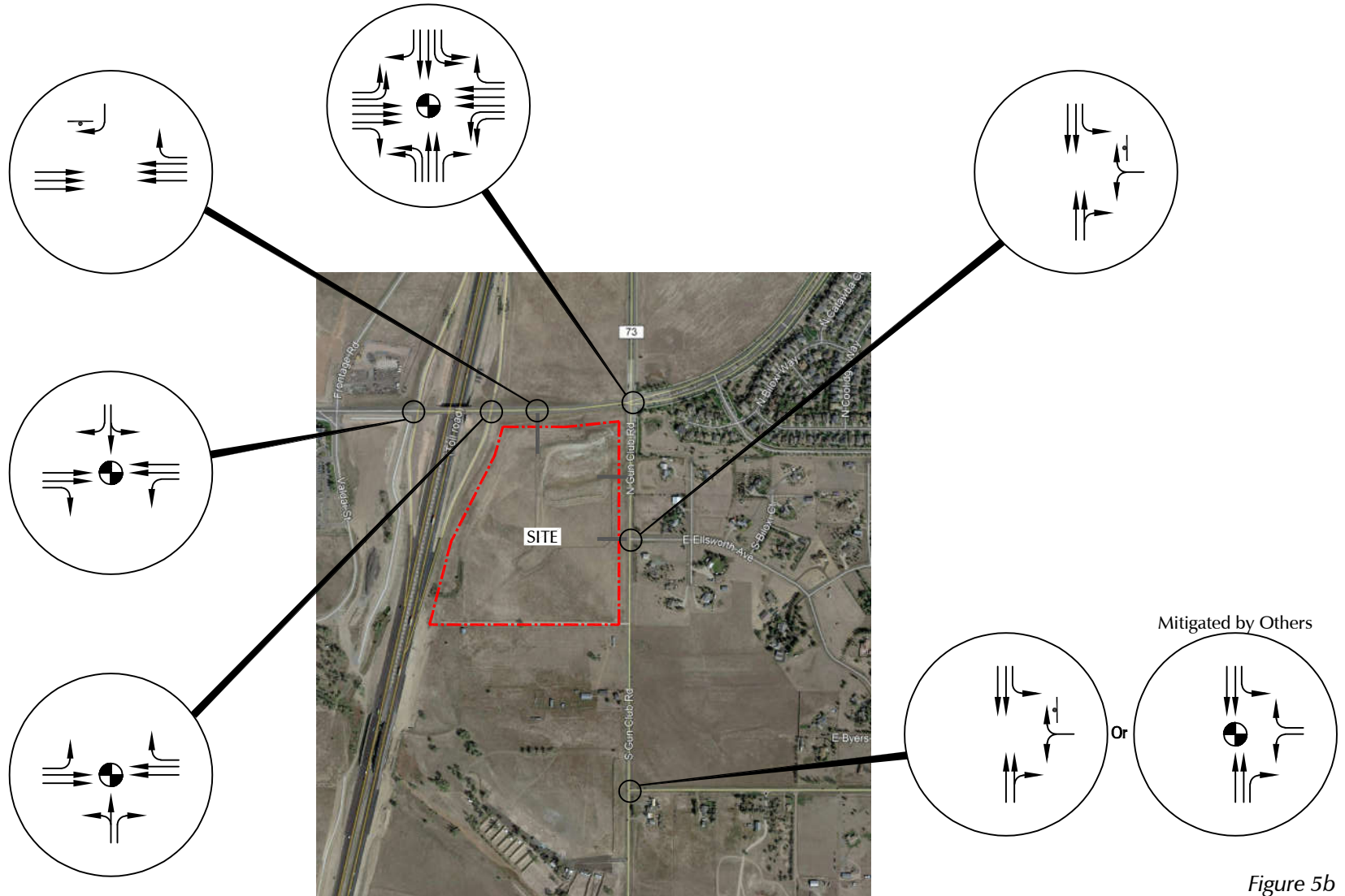
1,000 = Average Daily Traffic

Note: Projections based on the volumes in Figure 4 growing at an annual rate of two percent except for movements serving built-out developments.

Figure 5a

**Year 2040**  
**Background Traffic**

E-470 and 6th Parkway FDP (LSC #180221)



LEGEND:

- ┆ = Stop Sign
- = Traffic Signal

*Year 2040 Background Lane  
Geometry and Traffic Control*

E-470 and 6th Parkway FDP (LSC #180221)

Figure 5b



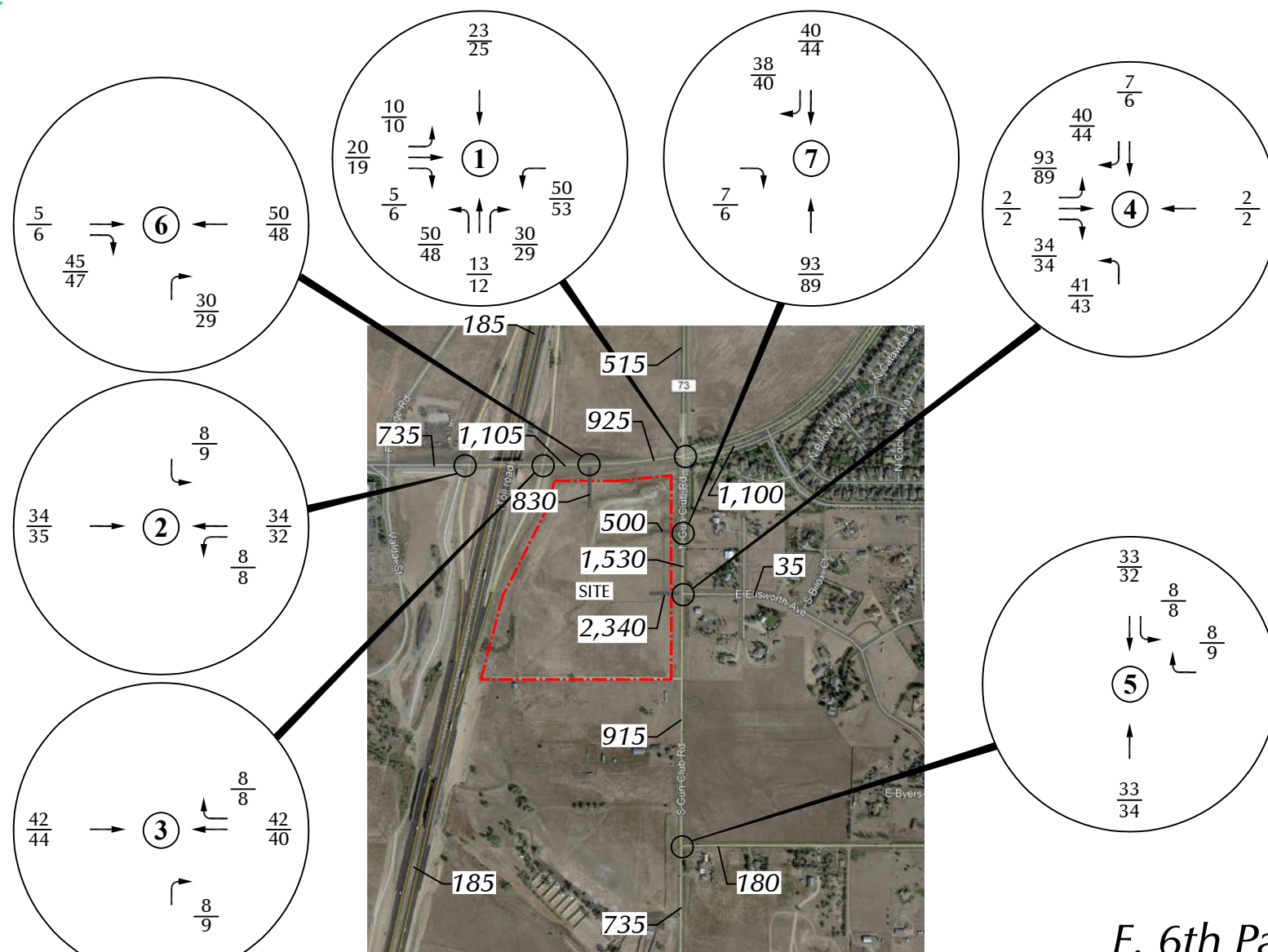
LEGEND:

↔ = Percent Directional Distribution

Figure 6

# *Directional Distribution of Primary Site-Generated Traffic*

E-470 and 6th Parkway FDP (LSC #180221)



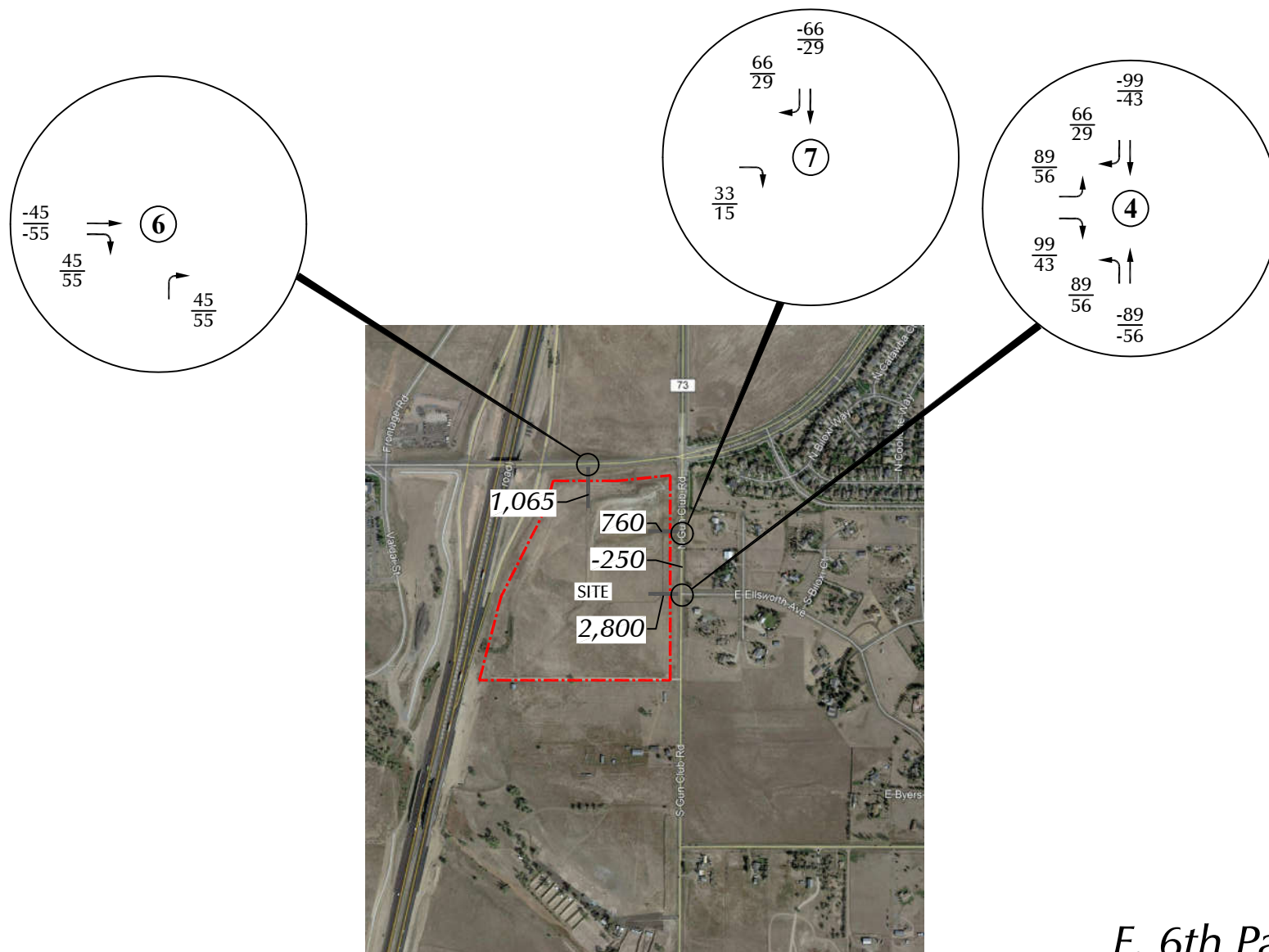
LEGEND:

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

1,000 = Average Daily Traffic

Figure 7a  
*E. 6th Parkway  
Assignment of Phase 1  
Primary Site-Generated Traffic*

E-470 and 6th Parkway FDP (LSC #180221)



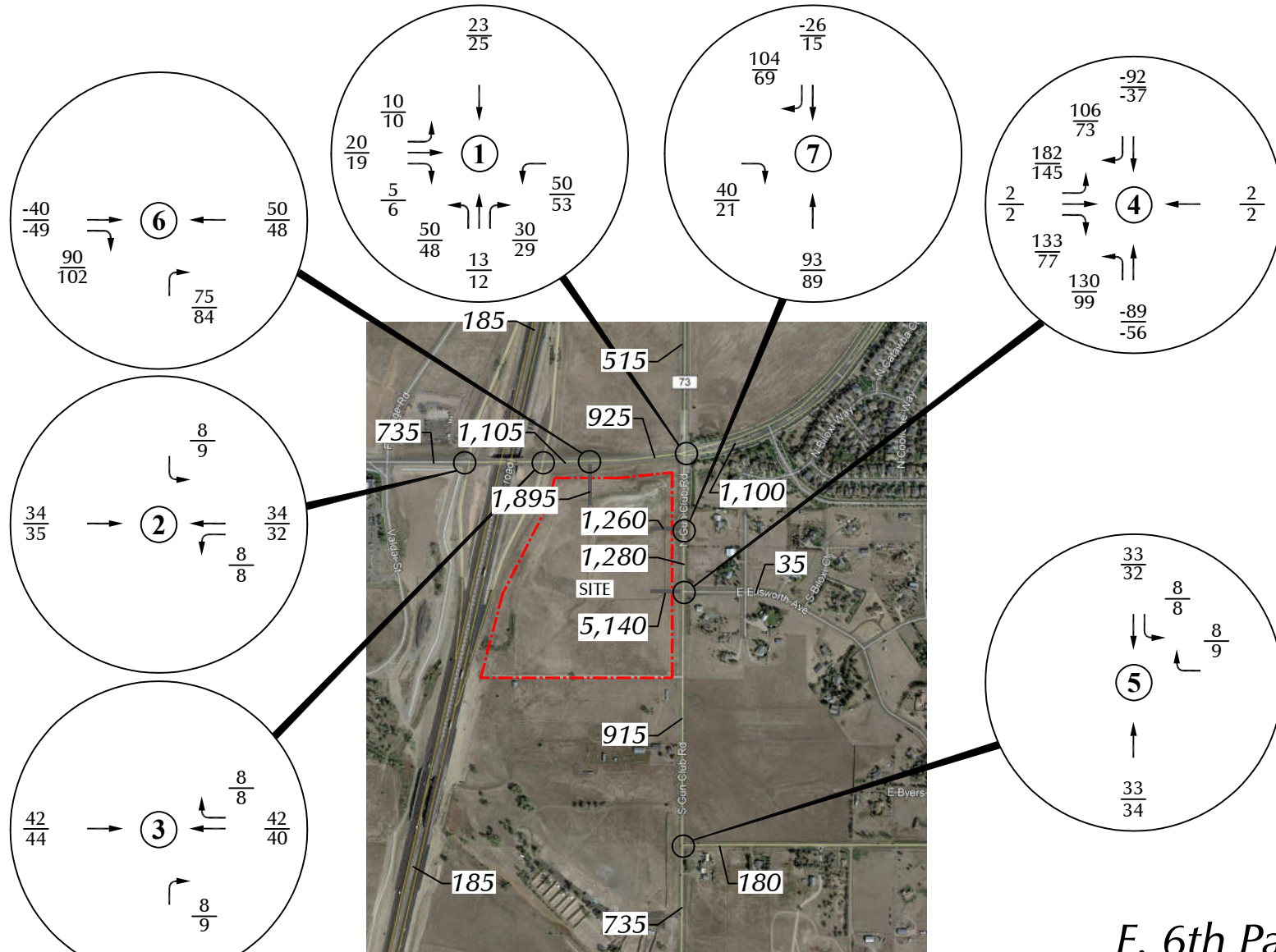
LEGEND:

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

1,000 = Average Daily Traffic

Figure 7b  
*E. 6th Parkway  
Assignment of Phase 1  
Passby Site-Generated Traffic*

E-470 and 6th Parkway FDP (LSC #180221)



Note: These volumes are the sum of the volumes in Figures 7a and 7b.

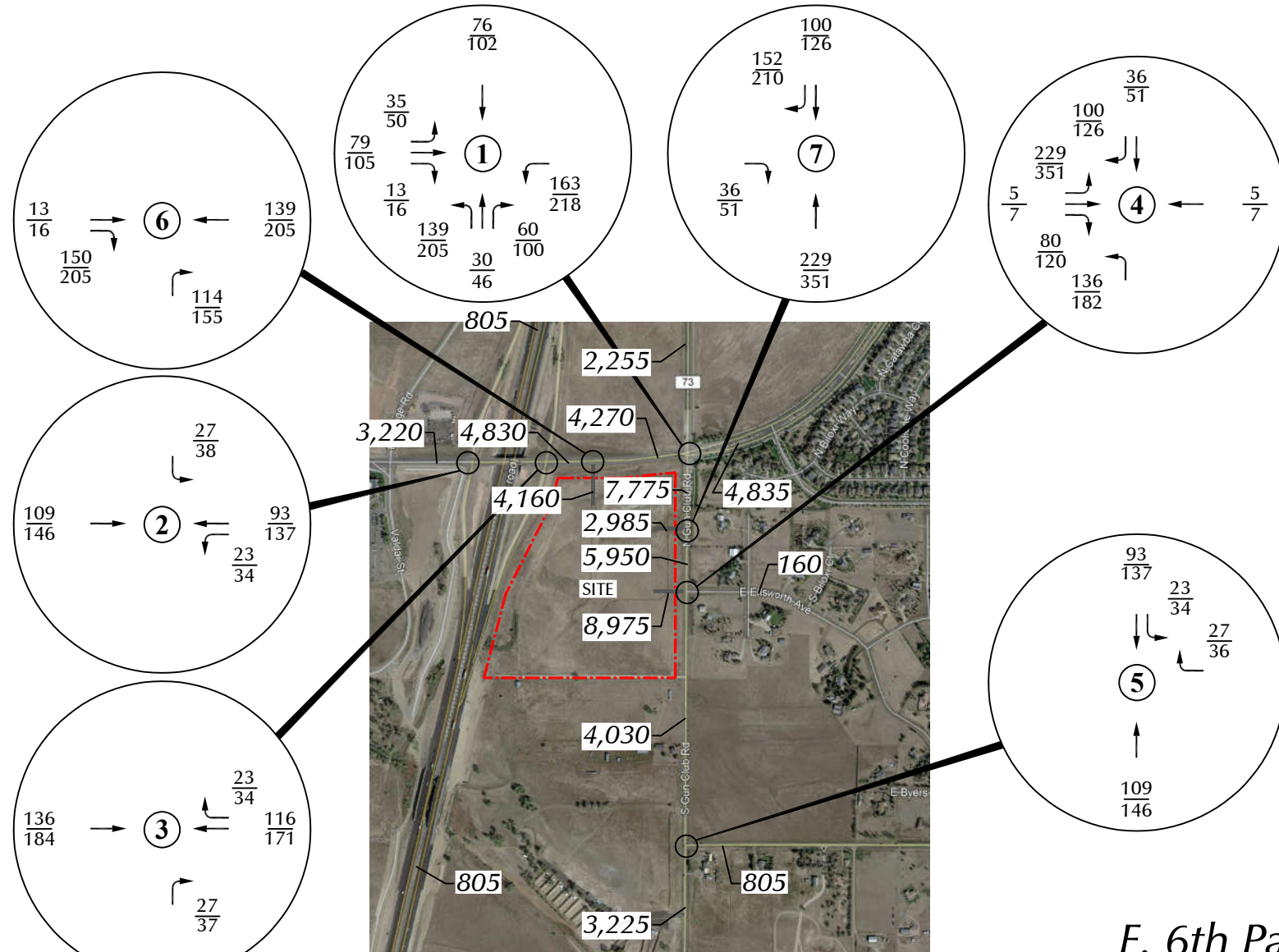
LEGEND:

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

1,000 = Average Daily Traffic

Figure 7c  
**E. 6th Parkway  
Assignment of Phase 1  
Total Site-Generated Traffic**

E-470 and 6th Parkway FDP (LSC #180221)



LEGEND:

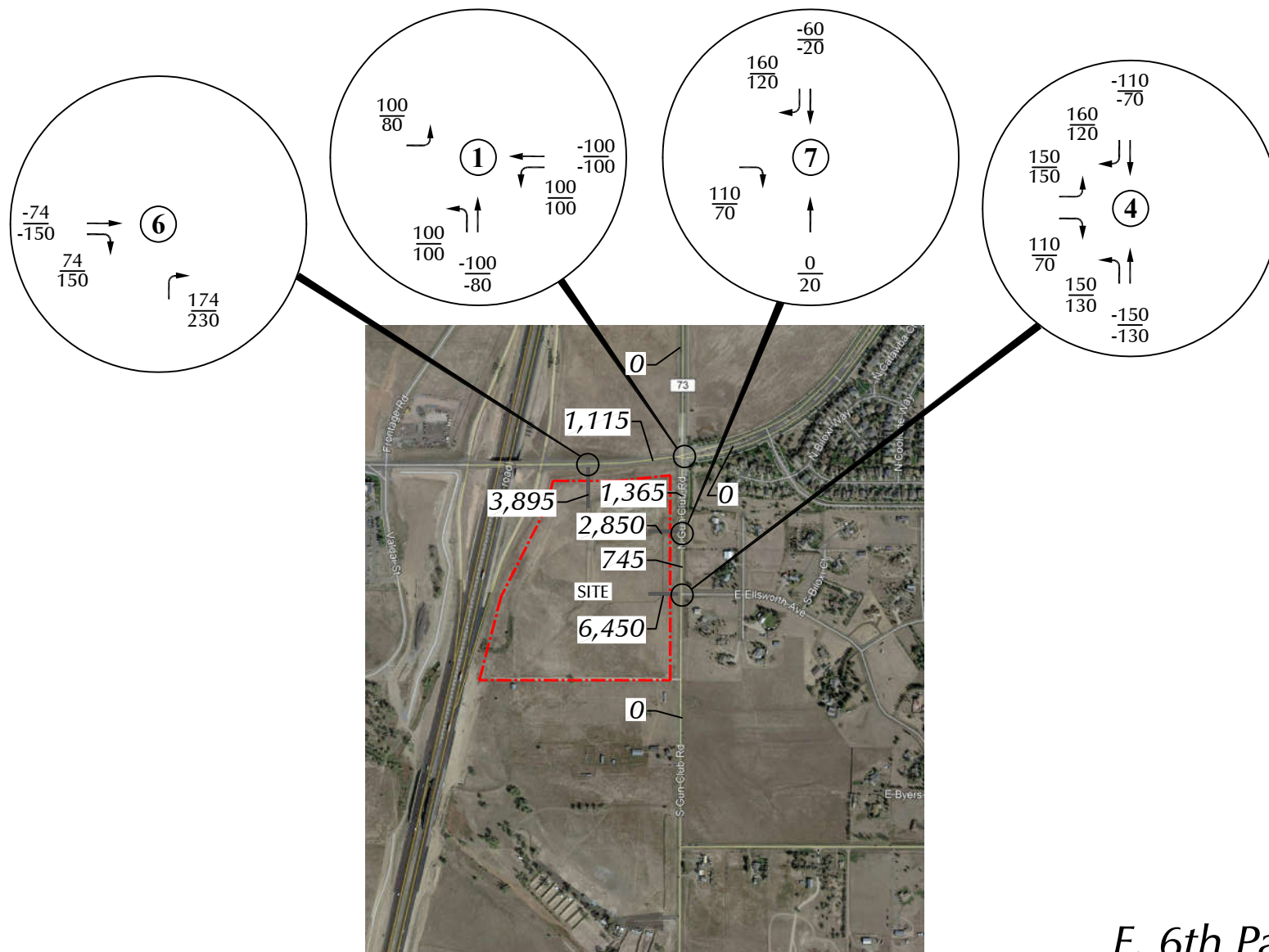
$\frac{26}{35}$  = AM Peak Hour Traffic  
PM Peak Hour Traffic

1,000 = Average Daily Traffic

Figure 8a

# *E. 6th Parkway Assignment of Buildout Primary Site-Generated Traffic*

E-470 and 6th Parkway FDP (LSC #180221)



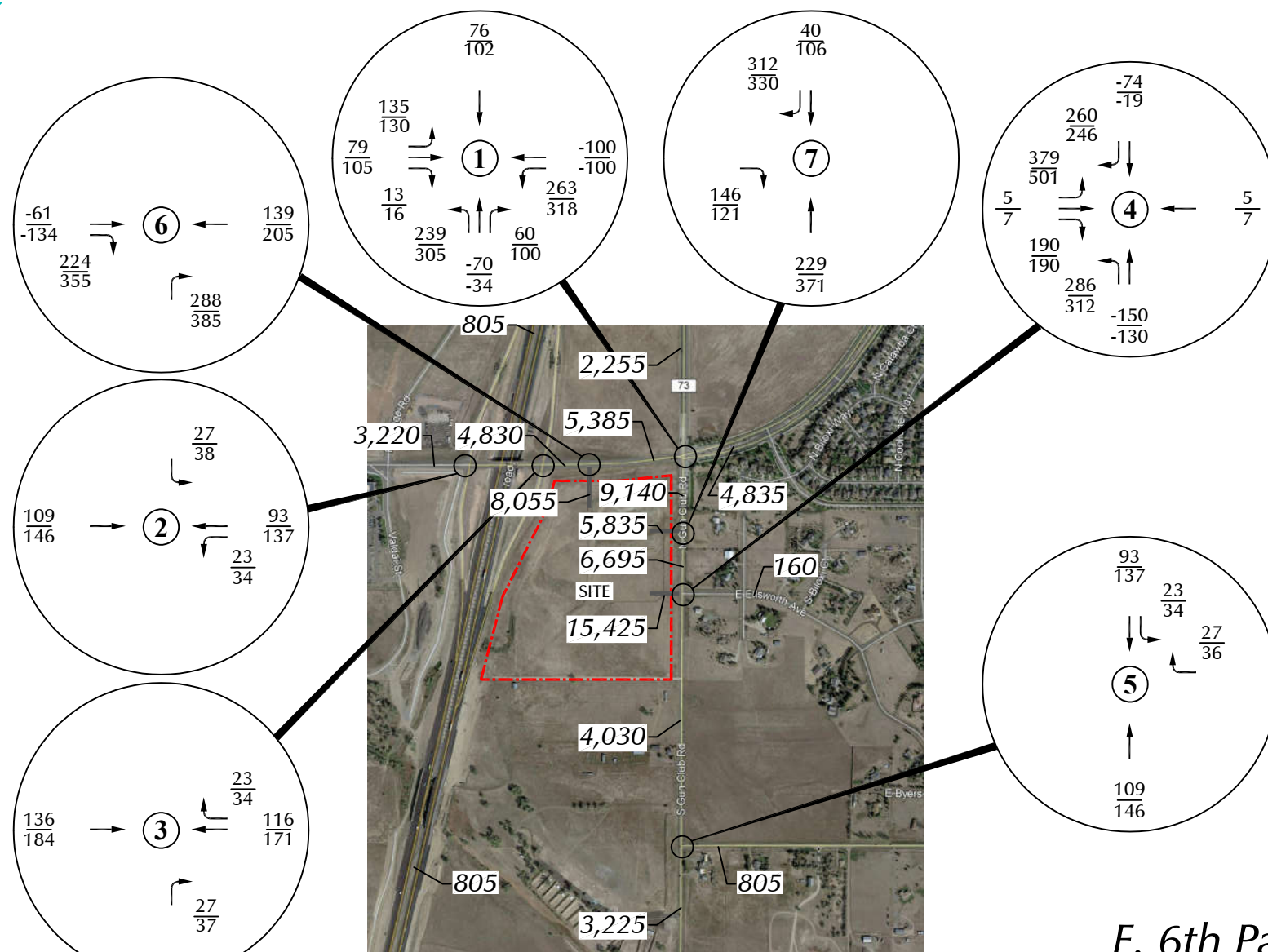
LEGEND:

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

1,000 = Average Daily Traffic

Figure 8b  
*E. 6th Parkway  
Assignment of Buildout  
Passby Site-Generated Traffic*

E-470 and 6th Parkway FDP (LSC #180221)



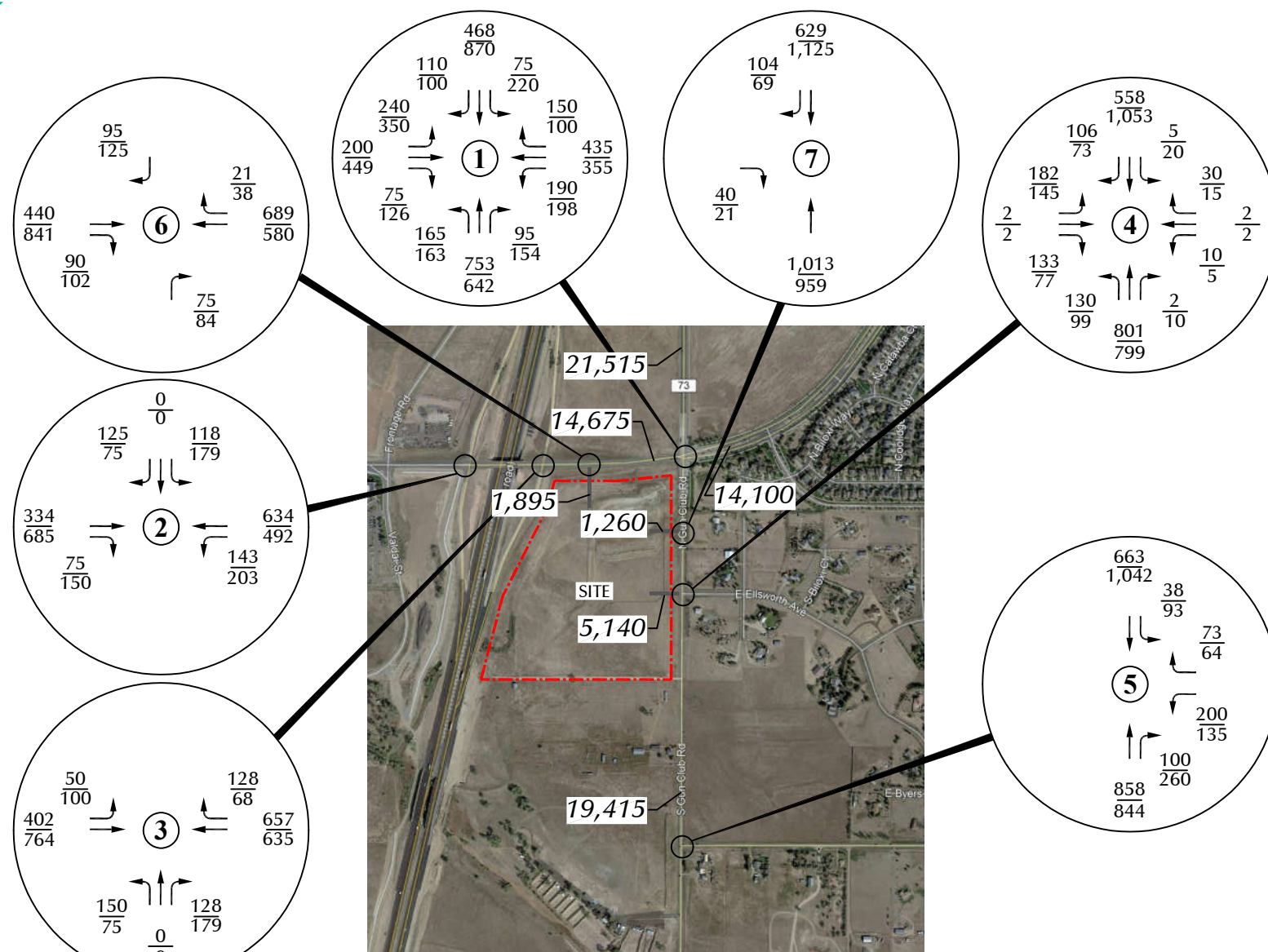
LEGEND:

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

1,000 = Average Daily Traffic

Figure 8c  
**E. 6th Parkway  
Assignment of Buildout  
Total Site-Generated Traffic**

E-470 and 6th Parkway FDP (LSC #180221)



LEGEND:

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

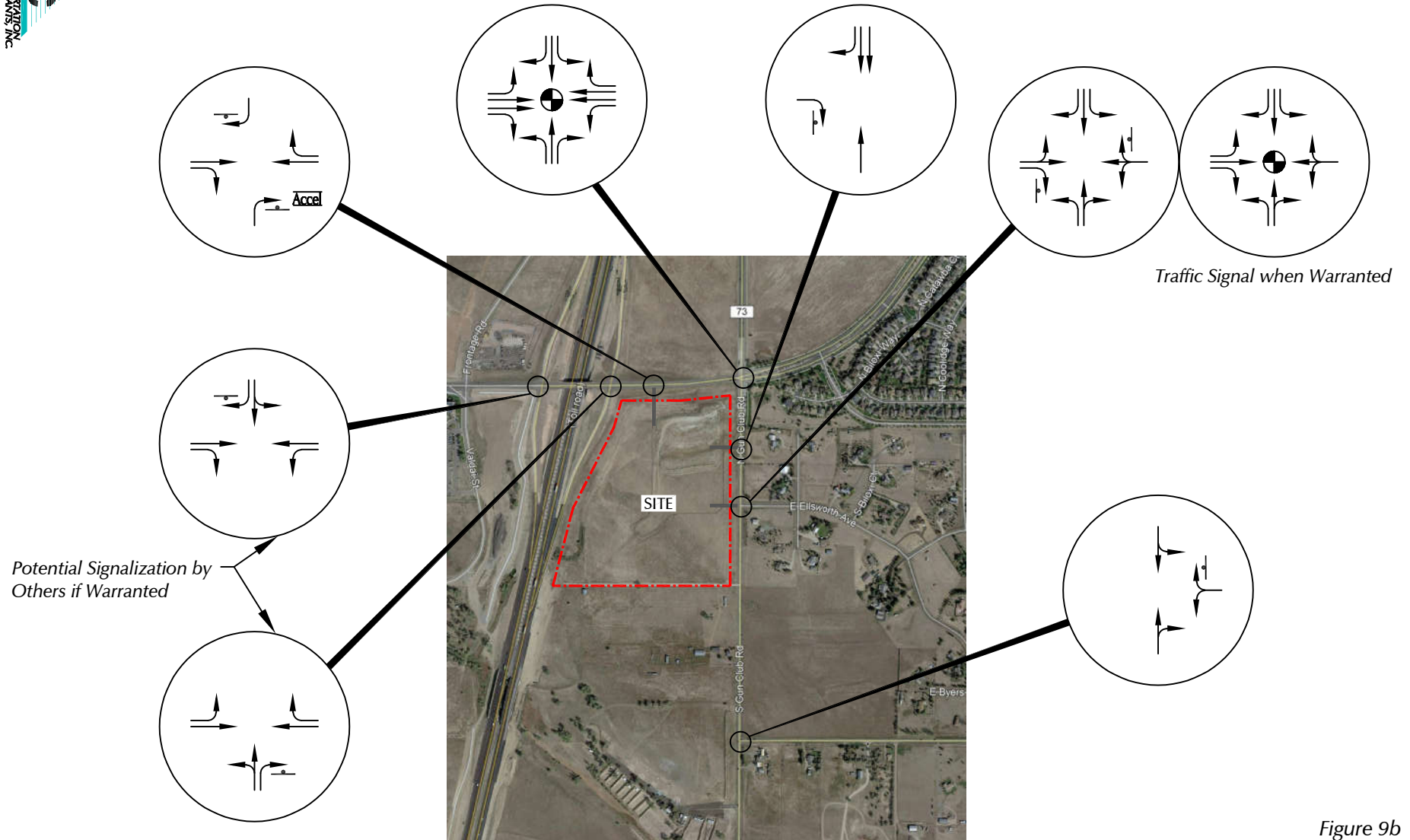
1,000 = Average Daily Traffic

Note: These volumes are the sum of the volumes in Figures 4a and 7c.

Figure 9a

**Year 2025**  
**Phase 1 Total Traffic**

E-470 and 6th Parkway FDP (LSC #180221)



Potential Signalization by Others if Warranted

Traffic Signal when Warranted

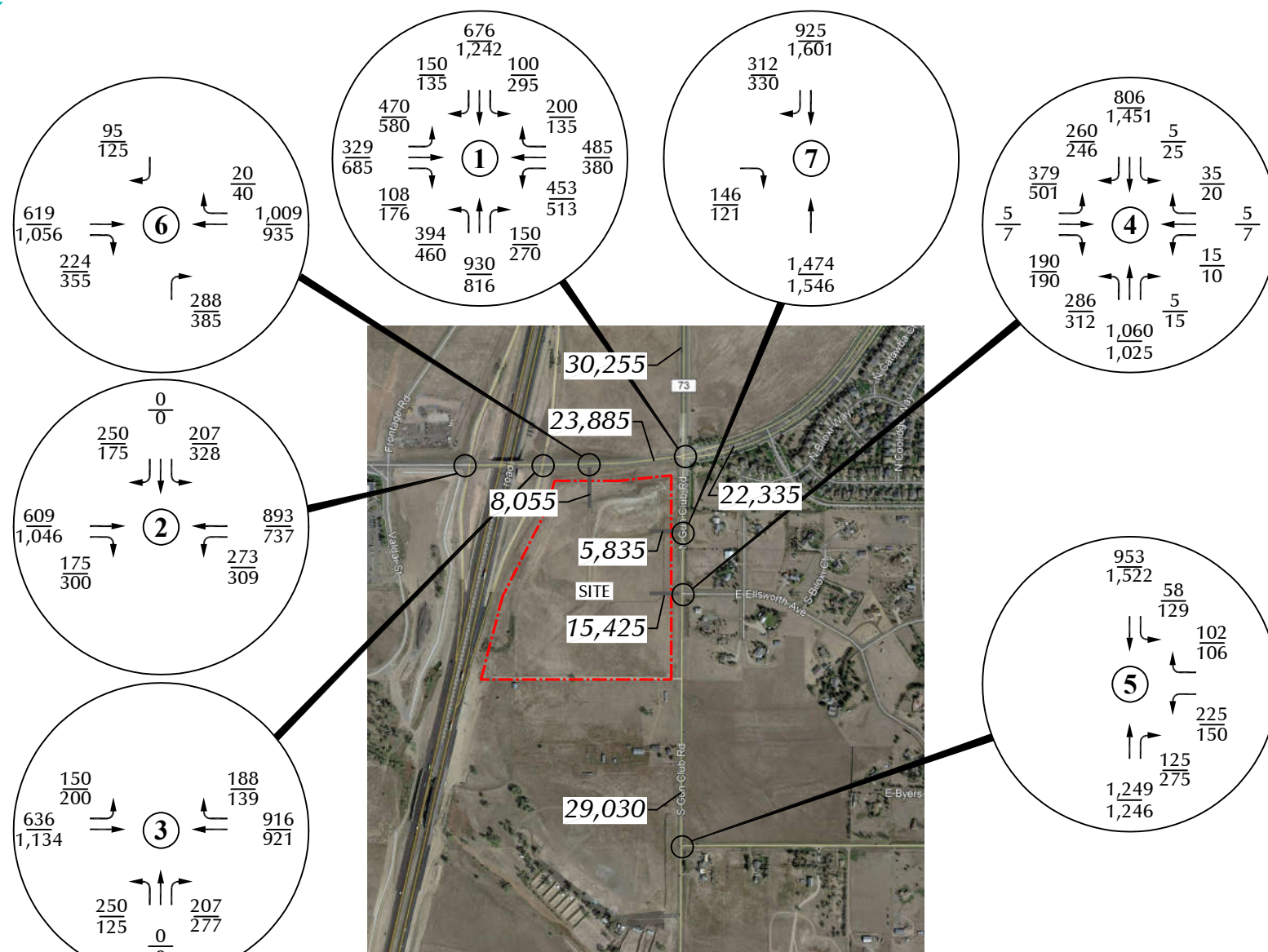
# LEGEND:

- ┆ = Stop Sign
- = Traffic Signal

## Year 2025 Phase 1 Total Lane Geometry and Traffic Control

E-470 and 6th Parkway FDP (LSC #180221)

Figure 9b



Note: These volumes are the sum of the volumes in Figures 5a and 8c.

LEGEND:

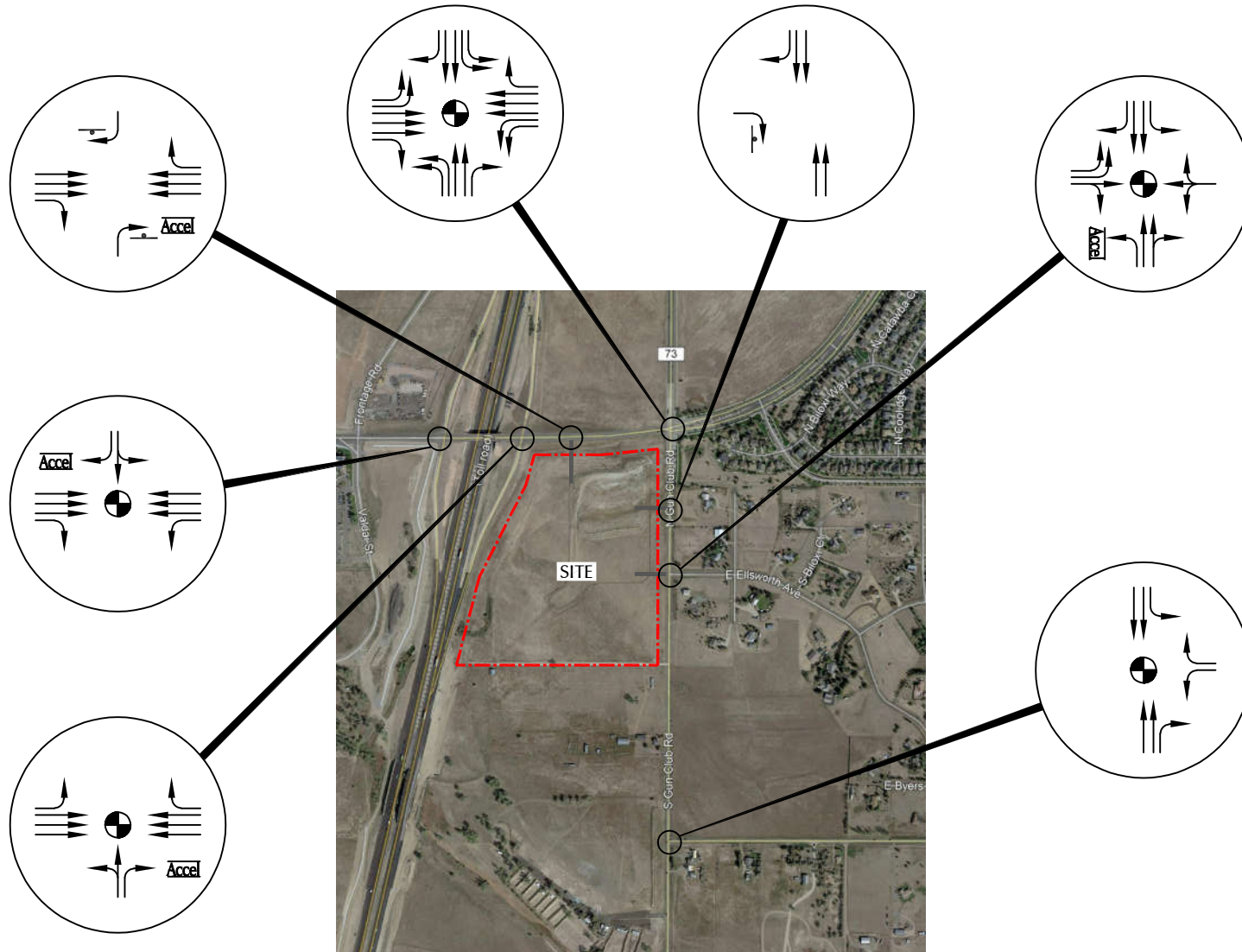
$\frac{26}{35}$  = AM Peak Hour Traffic  
 PM Peak Hour Traffic

1,000 = Average Daily Traffic

Figure 10a

Year 2040  
 Total Traffic

E-470 and 6th Parkway FDP (LSC #180221)



LEGEND:

- T = Stop Sign
- = Traffic Signal

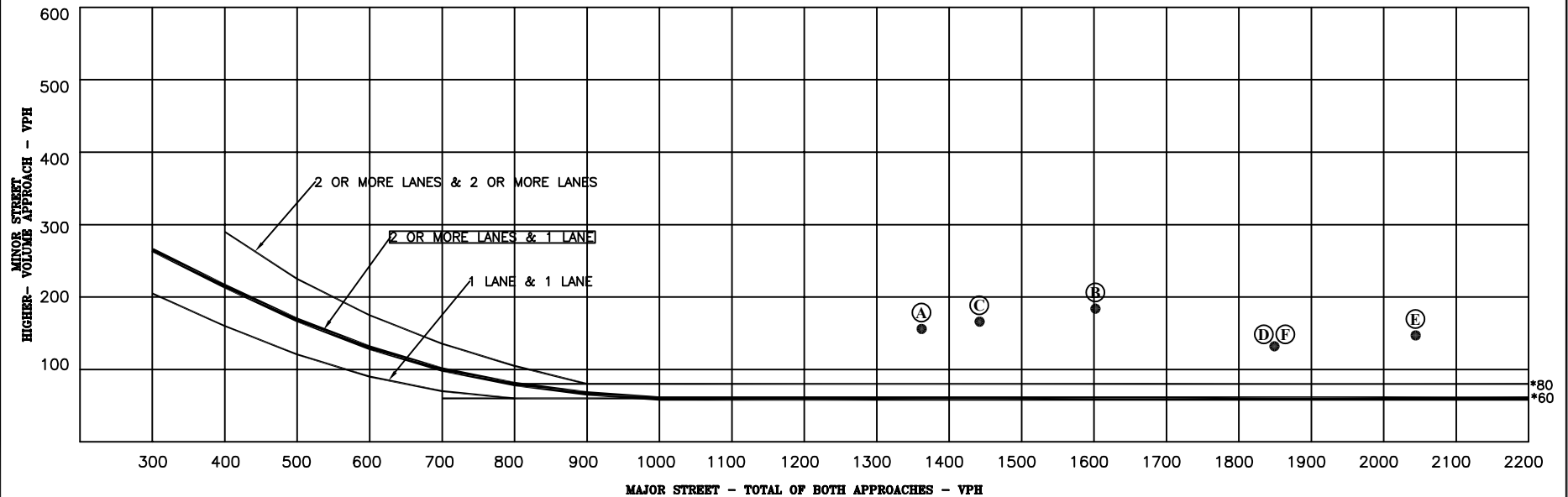
Figure 10b

# *Year 2040 Total Lane Geometry and Traffic Control*

E-470 and 6th Parkway FDP (LSC #180221)



**Figure 4C-2. Warrant 2 Four-Hour Vehicular Volume (70% Factor)**  
(Community Less than 10,000 population or above 40 mph on Major Street)



\* Note: 80 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Data Points = (Major Street, Minor Street)  
2025 Total Traffic

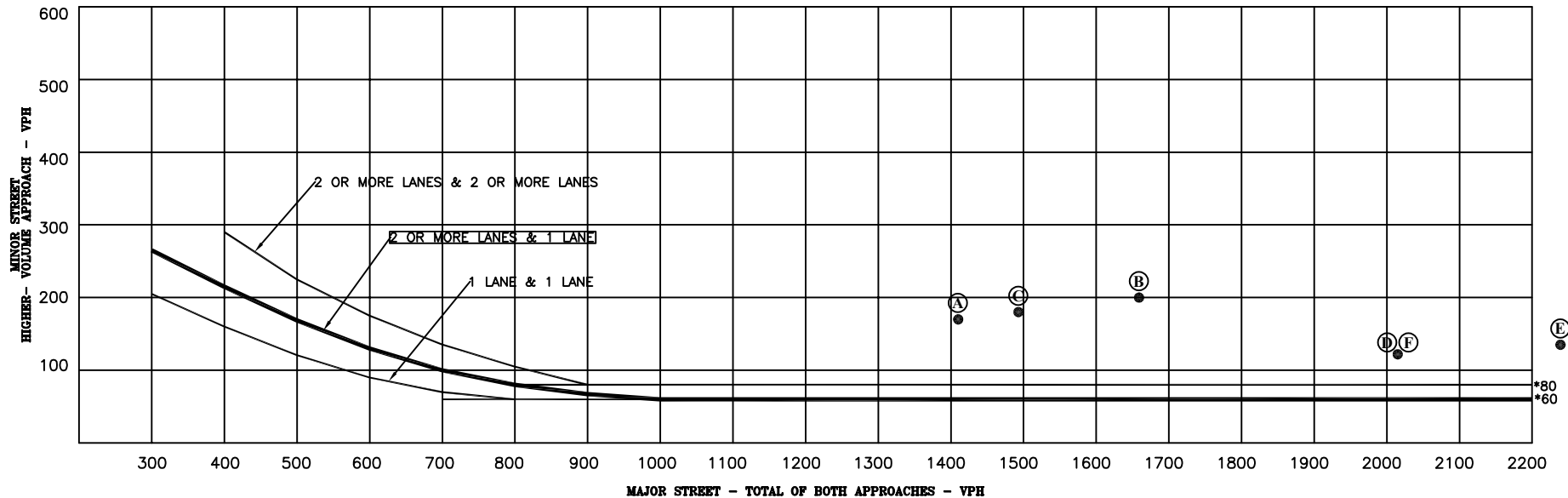
- Ⓐ Hour Before AM Peak Hour (85%) = (1362,156)
- Ⓑ AM Peak Hour = (1602,184)
- Ⓒ Hour After AM Peak Hour (90%) = (1442,166)
- Ⓓ Hour Before PM Peak Hour (90%) = (1849,132)
- Ⓔ PM Peak Hour = (2054,147)
- Ⓕ Hour After PM Peak Hour (90%) = (1849,132)

Figure 11

## Warrant 2 - Four-Hour Vehicular Volume N. Gun Club Road/E. Ellsworth Avenue

E-470 and 6th Parkway FDP (LSC #180221)

**Figure 4C-2. Warrant 2 Four-Hour Vehicular Volume (70% Factor)**  
(Community Less than 10,000 population or above 40 mph on Major Street)



\* Note: 80 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Data Points = (Major Street, Minor Street)  
2025 Total Traffic

- Ⓐ Hour Before AM Peak Hour (85%) = (1410,170)
- Ⓑ AM Peak Hour = (1659,200)
- Ⓒ Hour After AM Peak Hour (90%) = (1493,180)
- Ⓓ Hour Before PM Peak Hour (90%) = (2015,122)
- Ⓔ PM Peak Hour = (2239,135)
- Ⓕ Hour After PM Peak Hour (90%) = (2015,122)

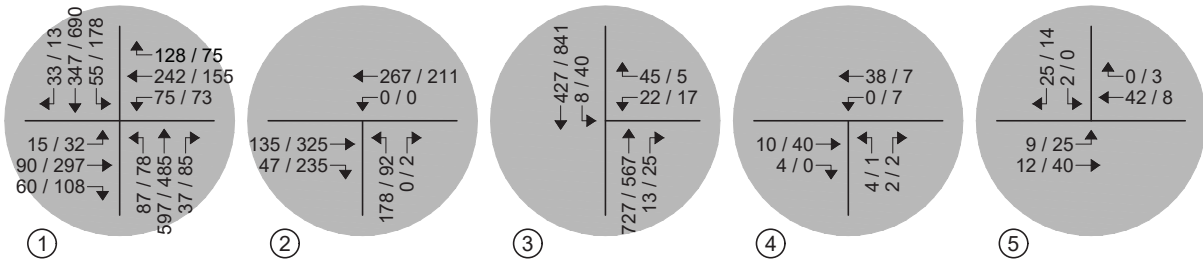
Figure 12

## Warrant 2 - Four-Hour Vehicular Volume N. Gun Club Road/E. Alameda Avenue

E-470 and 6th Parkway FDP (LSC #180221)



Not to Scale



### LEGEND



Study Intersection Volumes



Development Site

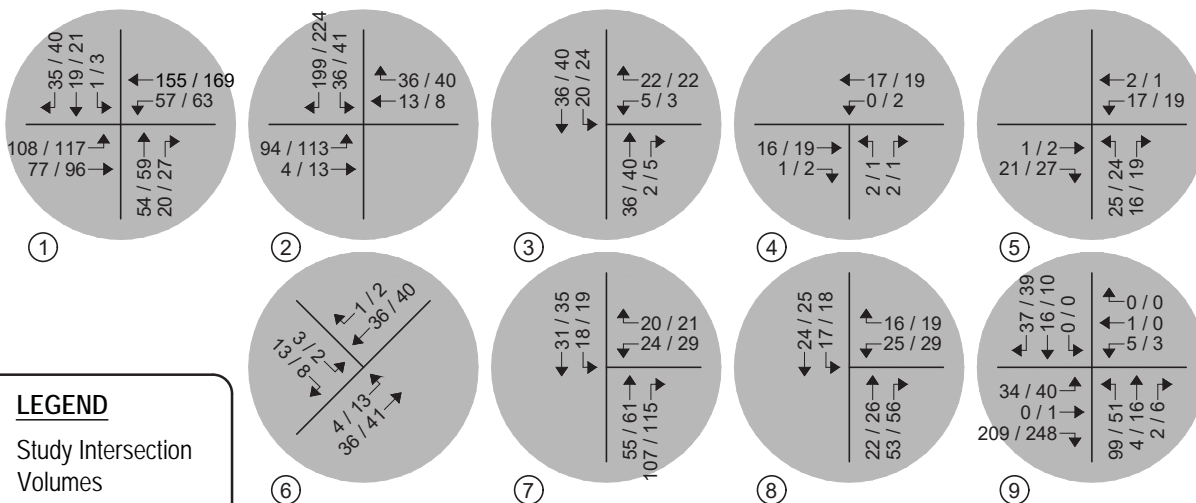


**CROSS CREEK**  
Master Traffic Impact Study

**SM ROCHA, LLC**  
Traffic and Transportation Consultants

**Figure 3**  
**EXISTING TRAFFIC**  
Volumes

AM / PM Peak Hour  
(ADT) : Average Daily Traffic

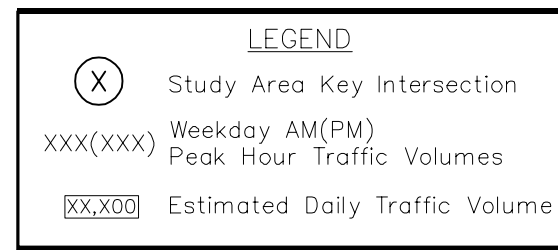
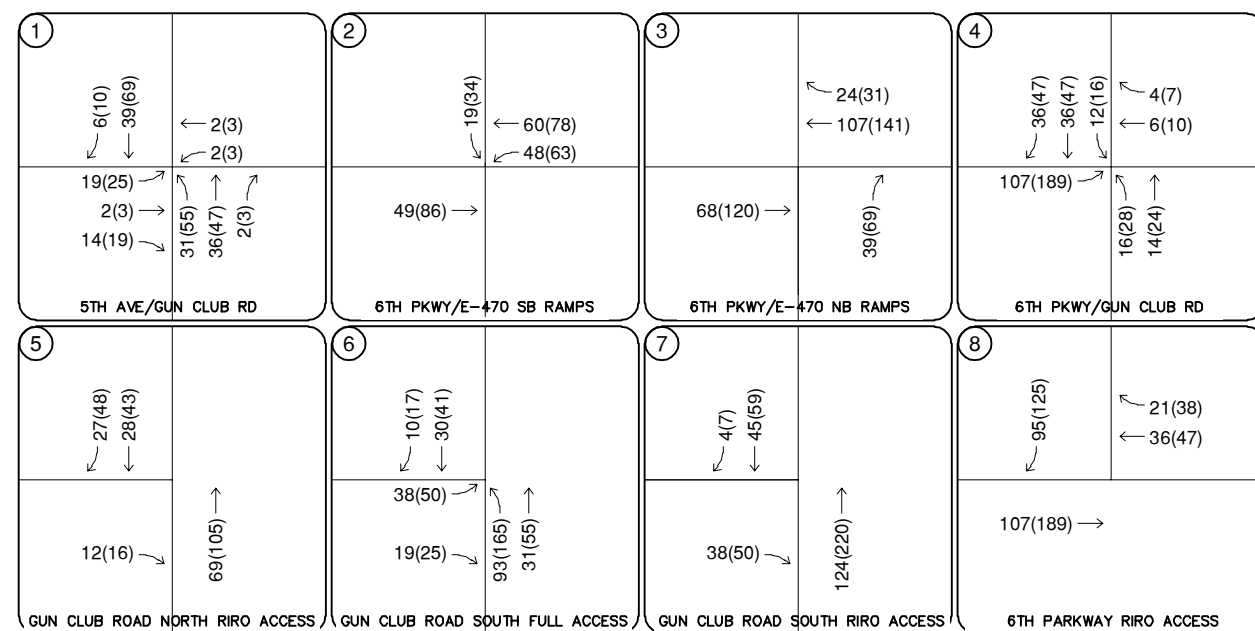
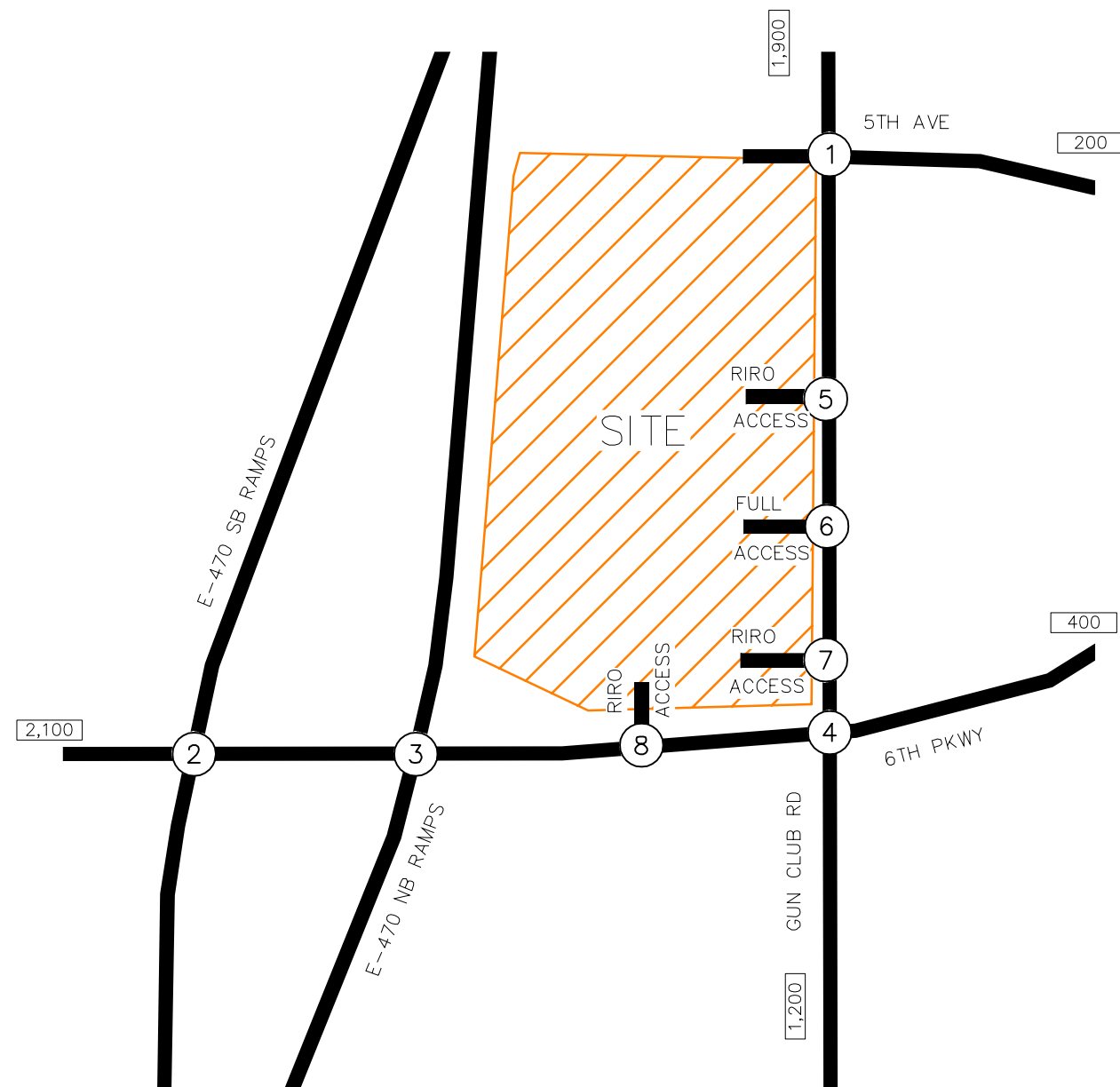


#### LEGEND

- Study Intersection Volumes
- Development Site

**Figure 9**  
**SITE DEVELOPMENT DISTRIBUTION**  
(%) : Overall  
**SITE-GENERATED**  
AM / PM Peak Hour





LAMAR LANDING SUBDIVISION  
 AURORA, CO  
 PROJECT TRAFFIC ASSIGNMENT

FIGURE 8

## LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2016, 6th Edition

### SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

<b>LOS</b>	<b><u>Average Vehicle Delay</u> sec/vehicle</b>	<b><u>Operational Characteristics</u></b>
<b>A</b>	<10 seconds	Describes operations with low control delay, up to 10 sec/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
<b>B</b>	10 to 20 seconds	Describes operations with control delay greater than 10 seconds and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
<b>C</b>	20 to 35 seconds	Describes operations with control delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
<b>D</b>	35 to 55 seconds	Describes operations with control delay greater than 35 and up to 55 sec/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
<b>E</b>	55 to 80 seconds	Describes operations with control delay greater than 55 and up to 80 sec/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
<b>F</b>	>80 seconds	Describes operations with control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

## LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2016, 6th Edition

### 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.

# Lanes, Volumes, Timings

## 1: N Gun Club Road & E 6th Parkway

Existing  
AM Peak













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	93	62	77	250	132	90	615	38	57	355	34
Future Volume (vph)	15	93	62	77	250	132	90	615	38	57	355	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		190	135		0	140		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.940				0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1751	0	1770	1863	1583	1770	1863	1583	1770	1839	0
Flt Permitted	0.504			0.566			0.295			0.090		
Satd. Flow (perm)	939	1751	0	1054	1863	1583	550	1863	1583	168	1839	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				143			136		5	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			590			252			358	
Travel Time (s)		15.4			8.9			3.8			5.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	101	67	84	272	143	98	668	41	62	386	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	168	0	84	272	143	98	668	41	62	423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		

Synchro 10 Report

# Lanes, Volumes, Timings

## 1: N Gun Club Road & E 6th Parkway

Existing  
AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	
Total Split (s)	12.0	48.0		12.0	48.0	48.0	12.0	46.0	46.0	14.0	48.0	
Total Split (%)	10.0%	40.0%		10.0%	40.0%	40.0%	10.0%	38.3%	38.3%	11.7%	40.0%	
Maximum Green (s)	6.0	42.0		6.0	42.0	42.0	6.0	40.0	40.0	8.0	42.0	
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)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effect Green (s)	53.3	47.0		55.0	51.8	51.8	50.9	44.5	44.5	52.7	43.4	
Actuated g/C Ratio	0.44	0.39		0.46	0.43	0.43	0.42	0.37	0.37	0.44	0.36	
v/c Ratio	0.03	0.24		0.16	0.34	0.19	0.31	0.97	0.06	0.31	0.63	
Control Delay	17.6	22.0		18.8	25.8	4.7	21.2	65.5	0.2	22.1	36.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	17.6	22.0		18.8	25.8	4.7	21.2	65.5	0.2	22.1	36.3	
LOS	B	C		B	C	A	C	E	A	C	D	
Approach Delay		21.7			18.6			56.8			34.4	
Approach LOS		C			B			E			C	

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 110 (92%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 38.4

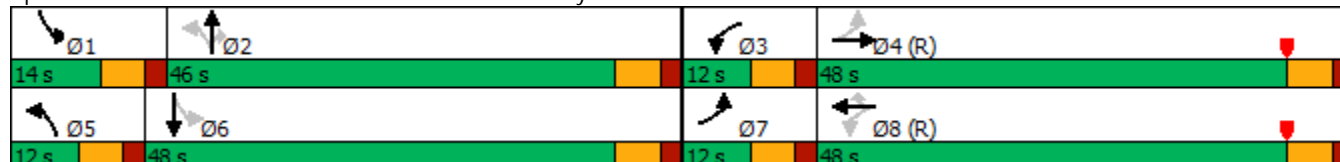
Intersection LOS: D

Intersection Capacity Utilization 67.2%

ICU Level of Service C

Analysis Period (min) 15

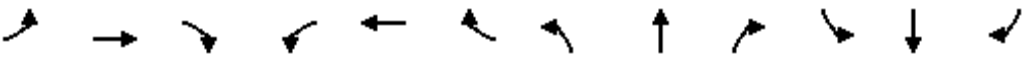











Splits and Phases: 1: N Gun Club Road & E 6th Parkway









# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

Existing  
AM Peak




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	93	62	77	250	132	90	615	38	57	355	34
Future Volume (veh/h)	15	93	62	77	250	132	90	615	38	57	355	34
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	16	101	67	84	272	143	98	668	41	62	386	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	443	427	283	580	804	681	312	655	555	155	566	54
Arrive On Green	0.03	0.41	0.41	0.06	0.43	0.43	0.07	0.35	0.35	0.05	0.34	0.34
Sat Flow, veh/h	1781	1049	696	1781	1870	1585	1781	1870	1585	1781	1680	161
Grp Volume(v), veh/h	16	0	168	84	272	143	98	668	41	62	0	423
Grp Sat Flow(s),veh/h/ln	1781	0	1745	1781	1870	1585	1781	1870	1585	1781	0	1841
Q Serve(g_s), s	0.6	0.0	7.6	3.1	11.6	6.8	4.2	42.0	2.1	2.6	0.0	23.7
Cycle Q Clear(g_c), s	0.6	0.0	7.6	3.1	11.6	6.8	4.2	42.0	2.1	2.6	0.0	23.7
Prop In Lane	1.00		0.40	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	443	0	709	580	804	681	312	655	555	155	0	620
V/C Ratio(X)	0.04	0.00	0.24	0.14	0.34	0.21	0.31	1.02	0.07	0.40	0.00	0.68
Avail Cap(c_a), veh/h	502	0	709	597	804	681	313	655	555	208	0	675
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	23.4	18.0	22.8	21.4	25.2	39.0	26.0	29.9	0.0	34.2
Incr Delay (d2), s/veh	0.0	0.0	0.8	0.1	1.1	0.7	0.6	40.4	0.1	1.7	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	3.2	1.3	5.2	2.6	1.7	25.6	0.8	1.1	0.0	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	24.2	18.1	24.0	22.1	25.8	79.4	26.1	31.6	0.0	36.8
LnGrp LOS	B	A	C	B	C	C	C	F	C	C	A	D
Approach Vol, veh/h		184			499			807			485	
Approach Delay, s/veh		23.7			22.5			70.2			36.1	
Approach LOS		C			C			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	46.0	10.8	52.8	11.9	44.4	8.1	55.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	8.0	40.0	6.0	42.0	6.0	42.0	6.0	42.0				
Max Q Clear Time (g_c+I1), s	4.6	44.0	5.1	9.6	6.2	25.7	2.6	13.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.9	0.0	2.1	0.0	1.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			45.4									
HCM 6th LOS			D									

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑						↑	↑
Traffic Vol, veh/h	0	150	40	165	565	0	0	0	0	40	1	65
Future Vol, veh/h	0	150	40	165	565	0	0	0	0	40	1	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	220	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	163	43	179	614	0	0	0	0	43	1	71
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	206	0	0				1157	1178	614
Stage 1	-	-	-	-	-	-				972	972	-
Stage 2	-	-	-	-	-	-				185	206	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1365	-	0				217	191	492
Stage 1	0	-	-	-	-	0				367	331	-
Stage 2	0	-	-	-	-	0				847	731	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1365	-	-				189	0	492
Mov Cap-2 Maneuver	-	-	-	-	-	-				189	0	-
Stage 1	-	-	-	-	-	-				367	0	-
Stage 2	-	-	-	-	-	-				736	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			1.8			19.8					
HCM LOS							C					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	1365	-	189	492						
HCM Lane V/C Ratio	-	-	0.131	-	0.236	0.144						
HCM Control Delay (s)	-	-	8	-	29.8	13.5						
HCM Lane LOS	-	-	A	-	D	B						
HCM 95th %tile Q(veh)	-	-	0.5	-	0.9	0.5						

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	175	0	0	580	65	150	1	75	0	0	0
Future Vol, veh/h	15	175	0	0	580	65	150	1	75	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	230	-	-	-	-	285	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	190	0	0	630	71	163	1	82	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	701	0	-	-	-	0	888	923	190			
Stage 1	-	-	-	-	-	-	222	222	-			
Stage 2	-	-	-	-	-	-	666	701	-			
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-			
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318			
Pot Cap-1 Maneuver	852	-	0	0	-	-	333	274	852			
Stage 1	-	-	0	0	-	-	815	720	-			
Stage 2	-	-	0	0	-	-	561	464	-			
Platoon blocked, %	1	-			-	-	1	1				
Mov Cap-1 Maneuver	852	-	-	-	-	-	327	0	852			
Mov Cap-2 Maneuver	-	-	-	-	-	-	327	0	-			
Stage 1	-	-	-	-	-	-	800	0	-			
Stage 2	-	-	-	-	-	-	561	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.7			0			21					
HCM LOS							C					
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	WBT	WBR						
Capacity (veh/h)	327 852		852	-	-	-						
HCM Lane V/C Ratio	0.502 0.096		0.019	-	-	-						
HCM Control Delay (s)	26.6 9.7		9.3	-	-	-						
HCM Lane LOS	D A		A	-	-	-						
HCM 95th %tile Q(veh)	2.7 0.3		0.1	-	-	-						




# HCM 6th TWSC 4: N Gun Club Road & Ellsworth Avenue

Existing  
AM Peak

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	640	2	5	360
Future Vol, veh/h	10	30	640	2	5	360
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	33	696	2	5	391
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1098	697	0	0	698	0
Stage 1	697	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	235	441	-	-	898	-
Stage 1	494	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	233	441	-	-	898	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	494	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.3	0		0.1		
HCM LOS	C					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)		-	-	361	898	-
HCM Lane V/C Ratio		-	-	0.12	0.006	-
HCM Control Delay (s)		-	-	16.3	9	0
HCM Lane LOS		-	-	C	A	A
HCM 95th %tile Q(veh)		-	-	0.4	0	-

HCM 6th TWSC  
5: N Gun Club Road & E Alameda Avenue

Existing  
AM Peak

Intersection						
Int Delay, s/veh	17.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	140	46	695	67	15	480
Future Vol, veh/h	140	46	695	67	15	480
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	152	50	755	73	16	522

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1346	792	0	0	828
Stage 1	792	-	-	-	-
Stage 2	554	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	167	389	-	-	803
Stage 1	446	-	-	-	-
Stage 2	575	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	162	389	-	-	803
Mov Cap-2 Maneuver	162	-	-	-	-
Stage 1	446	-	-	-	-
Stage 2	559	-	-	-	-


Approach	WB	NB	SB
HCM Control Delay, s	136.8	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	189	803
HCM Lane V/C Ratio	-	-	1.07	0.02
HCM Control Delay (s)	-	-	136.8	9.6
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	9.6	0.1

# Lanes, Volumes, Timings

## 1: N Gun Club Road & E 6th Parkway













Existing  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	306	111	75	160	77	80	500	88	183	710	13
Future Volume (vph)	33	306	111	75	160	77	80	500	88	183	710	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		190	135		0	140		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.960				0.850			0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1788	0	1770	1863	1583	1770	1863	1583	1770	1857	0
Flt Permitted	0.594			0.219			0.080			0.219		
Satd. Flow (perm)	1106	1788	0	408	1863	1583	149	1863	1583	408	1857	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16				136			136		1	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			590			252			358	
Travel Time (s)		15.4			8.9			3.8			5.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	333	121	82	174	84	87	543	96	199	772	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	454	0	82	174	84	87	543	96	199	786	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		

# Lanes, Volumes, Timings

## 1: N Gun Club Road & E 6th Parkway

Existing  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0	24.0	11.0	24.0	24.0	11.0	24.0	
Total Split (s)	11.0	44.0		11.0	44.0	44.0	11.0	54.0	54.0	11.0	54.0	
Total Split (%)	9.2%	36.7%		9.2%	36.7%	36.7%	9.2%	45.0%	45.0%	9.2%	45.0%	
Maximum Green (s)	5.0	38.0		5.0	38.0	38.0	5.0	48.0	48.0	5.0	48.0	
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)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None	None	None	None	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0			0	0		0	0		0	
Act Effect Green (s)	47.8	42.2		48.6	44.4	44.4	57.0	50.0	50.0	57.0	50.0	
Actuated g/C Ratio	0.40	0.35		0.40	0.37	0.37	0.48	0.42	0.42	0.48	0.42	
v/c Ratio	0.08	0.71		0.34	0.25	0.13	0.53	0.70	0.13	0.73	1.02	
Control Delay	20.8	40.5		24.9	28.9	1.2	28.8	34.7	1.6	35.5	71.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.8	40.5		24.9	28.9	1.2	28.8	34.7	1.6	35.5	71.5	
LOS	C	D		C	C	A	C	C	A	D	E	
Approach Delay		39.1			21.1			29.6			64.2	
Approach LOS		D			C			C			E	

### Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 94 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 43.7

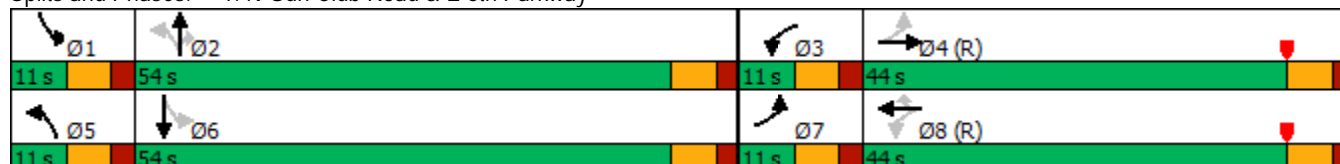
Intersection LOS: D

Intersection Capacity Utilization 82.9%

ICU Level of Service E

Analysis Period (min) 15
























Splits and Phases: 1: N Gun Club Road & E 6th Parkway









# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

Existing  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	306	111	75	160	77	80	500	88	183	710	13
Future Volume (veh/h)	33	306	111	75	160	77	80	500	88	183	710	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	333	121	82	174	84	87	543	96	199	772	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	455	437	159	264	648	549	163	779	660	304	763	14
Arrive On Green	0.05	0.33	0.33	0.06	0.35	0.35	0.06	0.42	0.42	0.06	0.42	0.42
Sat Flow, veh/h	1781	1309	476	1781	1870	1585	1781	1870	1585	1781	1831	33
Grp Volume(v), veh/h	36	0	454	82	174	84	87	543	96	199	0	786
Grp Sat Flow(s),veh/h/ln	1781	0	1785	1781	1870	1585	1781	1870	1585	1781	0	1864
Q Serve(g_s), s	1.5	0.0	27.3	3.5	8.0	4.4	3.2	28.7	4.5	7.0	0.0	50.0
Cycle Q Clear(g_c), s	1.5	0.0	27.3	3.5	8.0	4.4	3.2	28.7	4.5	7.0	0.0	50.0
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	455	0	596	264	648	549	163	779	660	304	0	777
V/C Ratio(X)	0.08	0.00	0.76	0.31	0.27	0.15	0.53	0.70	0.15	0.65	0.00	1.01
Avail Cap(c_a), veh/h	477	0	596	264	648	549	164	779	660	304	0	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	35.7	26.6	28.3	27.1	27.8	28.8	21.8	25.6	0.0	35.0
Incr Delay (d2), s/veh	0.1	0.0	8.9	0.7	1.0	0.6	3.3	2.7	0.1	5.0	0.0	35.2
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	0.6	0.0	12.8	1.5	3.7	1.7	1.4	12.7	1.6	3.5	0.0	28.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	0.0	44.7	27.3	29.3	27.7	31.1	31.5	21.9	30.6	0.0	70.2
LnGrp LOS	C	A	D	C	C	C	C	C	C	C	A	F
Approach Vol, veh/h		490			340			726			985	
Approach Delay, s/veh		43.1			28.4			30.2			62.2	
Approach LOS		D			C			C			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	54.0	11.0	44.0	11.0	54.0	9.5	45.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	48.0	5.0	38.0	5.0	48.0	5.0	38.0				
Max Q Clear Time (g_c+I1), s	9.0	30.7	5.5	29.3	5.2	52.0	3.5	10.0				
Green Ext Time (p_c), s	0.0	3.2	0.0	1.7	0.0	0.0	0.0	1.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			44.9									
HCM 6th LOS			D									

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑						↑	↗
Traffic Vol, veh/h	0	500	150	65	130	0	0	0	0	30	1	15
Future Vol, veh/h	0	500	150	65	130	0	0	0	0	30	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	220	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	543	163	71	141	0	0	0	0	33	1	16
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	706	0	0				908	989	141
Stage 1	-	-	-	-	-	-				283	283	-
Stage 2	-	-	-	-	-	-				625	706	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	892	-	0				306	247	907
Stage 1	0	-	-	-	-	0				765	677	-
Stage 2	0	-	-	-	-	0				534	439	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	892	-	-				282	0	907
Mov Cap-2 Maneuver	-	-	-	-	-	-				282	0	-
Stage 1	-	-	-	-	-	-				765	0	-
Stage 2	-	-	-	-	-	-				491	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			3.1			16.1					
HCM LOS							C					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	892	-	282	907						
HCM Lane V/C Ratio	-	-	0.079	-	0.119	0.018						
HCM Control Delay (s)	-	-	9.4	-	19.5	9						
HCM Lane LOS	-	-	A	-	C	A						
HCM 95th %tile Q(veh)	-	-	0.3	-	0.4	0.1						

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	480	0	0	155	25	40	1	80	0	0	0
Future Vol, veh/h	50	480	0	0	155	25	40	1	80	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	230	-	-	-	-	285	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	522	0	0	168	27	43	1	87	0	0	0





Major/Minor	Major1		Major2		Minor1					
Conflicting Flow All	195	0	-	-	-	0	812	825	522	
Stage 1	-	-	-	-	-	-	630	630	-	
Stage 2	-	-	-	-	-	-	182	195	-	
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22	
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-	
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318	
Pot Cap-1 Maneuver	1400	-	0	0	-	-	348	306	555	
Stage 1	-	-	0	0	-	-	531	475	-	
Stage 2	-	-	0	0	-	-	888	768	-	
Platoon blocked, %	1	-			-	-	1	1		
Mov Cap-1 Maneuver	1400	-	-	-	-	-	334	0	555	
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	0	-	
Stage 1	-	-	-	-	-	-	510	0	-	
Stage 2	-	-	-	-	-	-	888	0	-	

Approach	EB	WB	NB
HCM Control Delay, s	0.7	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	334	555	1400	-	-	-
HCM Lane V/C Ratio	0.133	0.157	0.039	-	-	-
HCM Control Delay (s)	17.4	12.7	7.7	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.5	0.6	0.1	-	-	-




HCM 6th TWSC  
4: N Gun Club Road & Ellsworth Avenue

Existing  
PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	500	10	20	510
Future Vol, veh/h	5	15	500	10	20	510
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	16	543	11	22	554
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1147	549	0	0	554	0
Stage 1	549	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	220	535	-	-	1016	-
Stage 1	579	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	215	535	-	-	1016	-
Mov Cap-2 Maneuver	215	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.8	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	390	1016	-	
HCM Lane V/C Ratio	-	-	0.056	0.021	-	
HCM Control Delay (s)	-	-	14.8	8.6	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

HCM 6th TWSC  
5: N Gun Club Road & E Alameda Avenue

Existing  
PM Peak

Intersection						
Int Delay, s/veh	27.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	93	37	630	197	61	835
Future Vol, veh/h	93	37	630	197	61	835
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	40	685	214	66	908

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1832	792	0	0	899	0
Stage 1	792	-	-	-	-	-
Stage 2	1040	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 84	389	-	-	756	-
Stage 1	446	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 69	389	-	-	756	-
Mov Cap-2 Maneuver	~ 69	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	281	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s\$	384.7	0	0.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	90	756
HCM Lane V/C Ratio	-	-	1.57	0.088
HCM Control Delay (s)	-	-	\$ 384.7	10.2
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	11.2	0.3























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

# Timings

## 1: N Gun Club Road & E 6th Parkway

2025 Background

AM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	230	180	140	435	150	115	740	65	75	445	110
Future Volume (vph)	230	180	140	435	150	115	740	65	75	445	110
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	24.0	10.0	24.0	24.0	10.0	24.0	24.0
Total Split (s)	15.0	35.0	15.0	35.0	35.0	10.0	60.0	60.0	10.0	60.0	60.0
Total Split (%)	12.5%	29.2%	12.5%	29.2%	29.2%	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%
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)	-3.0	-2.0	-2.0	-3.0	-2.0	-2.0	-3.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effect Green (s)	49.3	35.5	45.7	35.7	34.7	58.3	54.5	53.5	57.5	51.5	51.5
Actuated g/C Ratio	0.41	0.30	0.38	0.30	0.29	0.49	0.45	0.45	0.48	0.43	0.43
v/c Ratio	0.63	0.51	0.40	0.42	0.28	0.39	0.89	0.09	0.55	0.61	0.16
Control Delay	33.5	38.6	27.4	36.7	6.7	18.0	44.1	0.2	29.4	29.3	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	38.6	27.4	36.7	6.7	18.0	44.1	0.2	29.4	29.3	2.7
LOS	C	D	C	D	A	B	D	A	C	C	A
Approach Delay		36.2		28.4			37.4			24.7	
Approach LOS		D		C			D			C	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 31.8









Intersection LOS: C

Intersection Capacity Utilization 81.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: N Gun Club Road & E 6th Parkway
























			
Ø1	Ø2	Ø3	Ø4 (R)
10 s	60 s	15 s	35 s
			
Ø5	Ø6	Ø7	Ø8 (R)
10 s	60 s	15 s	35 s

# HCM 6th Signalized Intersection Summary







## 1: N Gun Club Road & E 6th Parkway

2025 Background

AM Peak




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	180	70	140	435	150	115	740	65	75	445	110
Future Volume (veh/h)	230	180	70	140	435	150	115	740	65	75	445	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	242	196	76	152	444	163	125	755	71	82	484	120
Peak Hour Factor	0.95	0.92	0.92	0.92	0.98	0.92	0.92	0.98	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	375	145	404	1064	462	342	827	688	186	811	688
Arrive On Green	0.10	0.29	0.29	0.09	0.30	0.29	0.05	0.44	0.43	0.05	0.43	0.43
Sat Flow, veh/h	1781	1283	498	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	242	0	272	152	444	163	125	755	71	82	484	120
Grp Sat Flow(s),veh/h/ln	1781	0	1781	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.3	0.0	15.3	6.9	12.0	9.7	4.7	45.3	3.2	3.0	23.7	5.6
Cycle Q Clear(g_c), s	11.3	0.0	15.3	6.9	12.0	9.7	4.7	45.3	3.2	3.0	23.7	5.6
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	400	0	520	404	1064	462	342	827	688	186	811	688
V/C Ratio(X)	0.60	0.00	0.52	0.38	0.42	0.35	0.37	0.91	0.10	0.44	0.60	0.17
Avail Cap(c_a), veh/h	400	0	520	406	1064	462	342	888	740	186	873	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	35.5	26.2	33.6	33.6	20.0	31.3	20.1	26.5	25.9	20.8
Incr Delay (d2), s/veh	2.6	0.0	3.7	0.6	1.2	2.1	0.7	13.1	0.1	1.6	1.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	7.0	2.9	5.2	3.9	1.9	22.0	1.1	1.3	10.2	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	0.0	39.2	26.8	34.9	35.7	20.6	44.4	20.2	28.1	26.9	20.9
LnGrp LOS	C	A	D	C	C	D	C	D	C	C	C	C
Approach Vol, veh/h		514			759			951			686	
Approach Delay, s/veh		34.1			33.4			39.5			26.0	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	56.1	14.9	39.1	10.0	56.1	15.0	38.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	54.0	9.0	29.0	4.0	54.0	9.0	29.0				
Max Q Clear Time (g_c+I1), s	5.0	47.3	8.9	17.3	6.7	25.7	13.3	14.0				
Green Ext Time (p_c), s	0.0	2.7	0.0	1.1	0.0	3.3	0.0	2.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			33.8									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑						↖	↗
Traffic Vol, veh/h	0	300	75	135	600	0	0	0	0	110	0	125
Future Vol, veh/h	0	300	75	135	600	0	0	0	0	110	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	220	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	326	82	147	652	0	0	0	0	120	0	136
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	408	0	0				1313	1354	652
Stage 1	-	-	-	-	-	-				946	946	-
Stage 2	-	-	-	-	-	-				367	408	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1151	-	0				175	150	468
Stage 1	0	-	-	-	-	0				377	340	-
Stage 2	0	-	-	-	-	0				701	597	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1151	-	-				153	0	468
Mov Cap-2 Maneuver	-	-	-	-	-	-				153	0	-
Stage 1	-	-	-	-	-	-				377	0	-
Stage 2	-	-	-	-	-	-				611	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			1.6			47.2					
HCM LOS	E											
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	1151	-	153	468						
HCM Lane V/C Ratio	-	-	0.127	-	0.781	0.29						
HCM Control Delay (s)	-	-	8.6	-	82.8	15.8						
HCM Lane LOS	-	-	A	-	F	C						
HCM 95th %tile Q(veh)	-	-	0.4	-	4.9	1.2						

Intersection												
Int Delay, s/veh	24.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	360	0	0	615	120	150	0	120	0	0	0
Future Vol, veh/h	50	360	0	0	615	120	150	0	120	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	230	-	-	-	-	285	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	391	0	0	668	130	163	0	130	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	798	0	-	-	-	-	0	1232	1297	391		
Stage 1	-	-	-	-	-	-	-	499	499	-		
Stage 2	-	-	-	-	-	-	-	733	798	-		
Critical Hdwy	4.12	-	-	-	-	-	-	6.42	6.52	6.22		
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.42	5.52	-		
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.42	5.52	-		
Follow-up Hdwy	2.218	-	-	-	-	-	-	3.518	4.018	3.318		
Pot Cap-1 Maneuver	743	-	0	0	-	-	~ 144	109	658			
Stage 1	-	-	0	0	-	-	610	544	-			
Stage 2	-	-	0	0	-	-	517	401	-			
Platoon blocked, %	1	-			-	-	1	1				
Mov Cap-1 Maneuver	743	-	-	-	-	-	~ 133	0	658			
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 133	0	-			
Stage 1	-	-	-	-	-	-	565	0	-			
Stage 2	-	-	-	-	-	-	517	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	1.2			0			124.8					
HCM LOS							F					
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	WBT	WBR						
Capacity (veh/h)	133	658	743	-	-	-						
HCM Lane V/C Ratio	1.226	0.198	0.073	-	-	-						
HCM Control Delay (s)	215.2	11.8	10.2	-	-	-						
HCM Lane LOS	F	B	B	-	-	-						
HCM 95th %tile Q(veh)	9.9	0.7	0.2	-	-	-						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			




HCM 6th TWSC  
4: N Gun Club Road & Ellsworth Avenue

2025 Background  
AM Peak

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	890	2	5	655
Future Vol, veh/h	10	30	890	2	5	655
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	33	967	2	5	712
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1690	968	0	0	969	0
Stage 1	968	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	*39	308	-	-	711	-
Stage 1	*368	-	-	-	-	-
Stage 2	*511	-	-	-	-	-
Platoon blocked, %	1	-	-	-	-	-
Mov Cap-1 Maneuver	*39	308	-	-	711	-
Mov Cap-2 Maneuver	*39	-	-	-	-	-
Stage 1	*368	-	-	-	-	-
Stage 2	*505	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	55.5	0		0.1		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	113	711	-	
HCM Lane V/C Ratio	-	-	0.385	0.008	-	
HCM Control Delay (s)	-	-	55.5	10.1	0	
HCM Lane LOS	-	-	F	B	A	
HCM 95th %tile Q(veh)	-	-	1.6	0	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC  
5: N Gun Club Road & E Alameda Avenue

2025 Background  
AM Peak

Intersection						
Int Delay, s/veh	355.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	200	65	825	100	30	630
Future Vol, veh/h	200	65	825	100	30	630
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	71	897	109	33	685
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1703	952	0	0	1006	0
Stage 1	952	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 40	315	-	-	689	-
Stage 1	375	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	~ 37	315	-	-	689	-
Mov Cap-2 Maneuver	~ 37	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, \$	2477.6	0		0.5		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	47	689	-	
HCM Lane V/C Ratio	-	-	6.129	0.047	-	
HCM Control Delay (s)	-	\$	2477.6	10.5	0	
HCM Lane LOS	-	-	F	B	A	
HCM 95th %tile Q(veh)	-	-	33.4	0.1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC  
6: E 6th Parkway & RIRO Access























2025 Background  
AM Peak

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	480	639	21	0	95
Future Vol, veh/h	0	480	639	21	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	522	695	23	0	103
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	695
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	*555
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*555
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	555		
HCM Lane V/C Ratio	-	-	-	0.186		
HCM Control Delay (s)	-	-	-	13		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.7		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings

## 1: N Gun Club Road & E 6th Parkway


2025 Background  
PM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	340	430	145	355	100	115	630	125	220	845	100
Future Volume (vph)	340	430	145	355	100	115	630	125	220	845	100
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases	4		8		8	2		2	6		6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	23.0	11.0	21.0	21.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	23.0	23.0	22.0	22.0	22.0	13.0	63.0	63.0	12.0	62.0	62.0
Total Split (%)	19.2%	19.2%	18.3%	18.3%	18.3%	10.8%	52.5%	52.5%	10.0%	51.7%	51.7%
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)	-3.0	-3.0	-3.0	-3.0	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0	-2.0
Total Lost Time (s)	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effect Green (s)	42.0	23.8	34.8	19.0	18.0	67.4	58.4	58.4	65.4	58.4	57.4
Actuated g/C Ratio	0.35	0.20	0.29	0.16	0.15	0.56	0.49	0.49	0.54	0.49	0.48
v/c Ratio	0.98	1.64	0.54	0.69	0.31	0.64	0.73	0.16	0.83	0.95	0.13
Control Delay	76.9	329.4	35.3	54.9	6.3	35.7	30.3	3.2	39.5	50.4	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	329.4	35.3	54.9	6.3	35.7	30.3	3.2	39.5	50.4	1.8
LOS	E	F	D	D	A	D	C	A	D	D	A
Approach Delay		232.8		42.0			27.1			43.9	
Approach LOS		F		D			C			D	

### Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.64
Intersection Signal Delay: 88.1
Intersection Capacity Utilization 102.1%
Analysis Period (min) 15
Intersection LOS: F
ICU Level of Service G

Splits and Phases: 1: N Gun Club Road & E 6th Parkway
























			
Ø1	Ø2	Ø3	Ø4 (R)
12 s	63 s	22 s	23 s
			
Ø5	Ø6	Ø7	Ø8 (R)
13 s	62 s	23 s	22 s

# HCM 6th Signalized Intersection Summary







## 1: N Gun Club Road & E 6th Parkway

2025 Background

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	430	120	145	355	100	115	630	125	220	845	100
Future Volume (veh/h)	340	430	120	145	355	100	115	630	125	220	845	100
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	370	467	130	158	386	109	125	663	136	239	862	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.98	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	420	317	88	260	607	258	203	896	759	310	911	759
Arrive On Green	0.17	0.23	0.22	0.11	0.17	0.16	0.07	0.48	0.48	0.07	0.49	0.48
Sat Flow, veh/h	1781	1408	392	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	370	0	597	158	386	109	125	663	136	239	862	109
Grp Sat Flow(s),veh/h/ln	1781	0	1800	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	20.0	0.0	27.0	8.4	12.1	7.4	4.1	34.3	5.9	8.0	52.6	4.6
Cycle Q Clear(g_c), s	20.0	0.0	27.0	8.4	12.1	7.4	4.1	34.3	5.9	8.0	52.6	4.6
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	420	0	405	260	607	258	203	896	759	310	911	759
V/C Ratio(X)	0.88	0.00	1.47	0.61	0.64	0.42	0.62	0.74	0.18	0.77	0.95	0.14
Avail Cap(c_a), veh/h	420	0	405	342	607	258	217	920	779	310	920	766
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(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	0.0	46.6	35.6	46.3	45.2	26.6	25.2	17.8	23.2	29.3	17.5
Incr Delay (d2), s/veh	19.0	0.0	225.9	2.3	5.0	5.0	4.7	3.1	0.1	11.3	18.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	0.0	37.1	3.7	5.6	0.4	1.8	15.0	2.1	4.2	26.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	0.0	272.5	37.8	51.3	50.2	31.3	28.4	17.9	34.5	47.3	17.6
LnGrp LOS	D	A	F	D	D	D	C	C	B	C	D	B
Approach Vol, veh/h	967		653				924				1210	
Approach Delay, s/veh	188.2		47.8				27.2				42.1	
Approach LOS	F		D				C				D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	61.5	16.5	30.0	12.0	61.4	23.0	23.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	57.0	16.0	17.0	7.0	56.0	17.0	16.0				
Max Q Clear Time (g_c+I1), s	10.0	36.3	10.4	29.0	6.1	54.6	22.0	14.1				
Green Ext Time (p_c), s	0.0	4.5	0.2	0.0	0.0	0.8	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay	77.1											
HCM 6th LOS	E											




Intersection												
Int Delay, s/veh	85.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑						↕	↗
Traffic Vol, veh/h	0	650	150	195	460	0	0	0	0	170	0	75
Future Vol, veh/h	0	650	150	195	460	0	0	0	0	170	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	220	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	707	163	212	500	0	0	0	0	185	0	82
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	870	0	0				1713	1794	500
Stage 1	-	-	-	-	-	-				924	924	-
Stage 2	-	-	-	-	-	-				789	870	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	775	-	0				~ 99	80	571
Stage 1	0	-	-	-	-	0				387	348	-
Stage 2	0	-	-	-	-	0				448	369	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	775	-	-				~ 72	0	571
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 72	0	-
Stage 1	-	-	-	-	-	-				387	0	-
Stage 2	-	-	-	-	-	-				325	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			3.4			\$ 582.5					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	775	-	72	571						
HCM Lane V/C Ratio	-	-	0.273	-	2.566	0.143						
HCM Control Delay (s)	-	-	11.4	-	\$ 834	12.4						
HCM Lane LOS	-	-	B	-	F	B						
HCM 95th %tile Q(veh)	-	-	1.1	-	18	0.5						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection												
Int Delay, s/veh	33.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	720	0	0	595	60	75	0	170	0	0	0
Future Vol, veh/h	100	720	0	0	595	60	75	0	170	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	230	-	-	-	-	285	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	109	783	0	0	647	65	82	0	185	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	712	0	-	-	-	-	0	1681	1713	783		
Stage 1	-	-	-	-	-	-	-	1001	1001	-		
Stage 2	-	-	-	-	-	-	-	680	712	-		
Critical Hdwy	4.12	-	-	-	-	-	-	6.42	6.52	6.22		
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.42	5.52	-		
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.42	5.52	-		
Follow-up Hdwy	2.218	-	-	-	-	-	-	3.518	4.018	3.318		
Pot Cap-1 Maneuver	845	-	0	0	-	-	~ 46	38	394			
Stage 1	-	-	0	0	-	-	355	321	-			
Stage 2	-	-	0	0	-	-	559	462	-			
Platoon blocked, %	1	-					-	1	1			
Mov Cap-1 Maneuver	845	-	-	-	-	-	~ 40	0	394			
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 40	0	-			
Stage 1	-	-	-	-	-	-	309	0	-			
Stage 2	-	-	-	-	-	-	559	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	1.2			0			229.2					
HCM LOS							F					
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	WBT	WBR						
Capacity (veh/h)	40 394		845	-	-	-						
HCM Lane V/C Ratio	2.038 0.469		0.129	-	-	-						
HCM Control Delay (s)	\$ 698.8		22	9.9	-	-						
HCM Lane LOS	F		C	A	-	-						
HCM 95th %tile Q(veh)	8.7		2.4	0.4	-	-						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

# HCM 6th TWSC




## 4: N Gun Club Road & Ellsworth Avenue

2025 Background  
PM Peak

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	855	10	20	1090
Future Vol, veh/h	5	15	855	10	20	1090
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	16	929	11	22	1185
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2164	935	0	0	940	0
Stage 1	935	-	-	-	-	-
Stage 2	1229	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	*0	322	-	-	729	-
Stage 1	*382	-	-	-	-	-
Stage 2	*174	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	*0	322	-	-	729	-
Mov Cap-2 Maneuver	*0	-	-	-	-	-
Stage 1	*382	-	-	-	-	-
Stage 2	*159	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	17		0		0.2	
HCM LOS	C					
Minor Lane/Major Mvmt			NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)			-	-	322	729
HCM Lane V/C Ratio			-	-	0.068	0.03
HCM Control Delay (s)			-	-	17	10.1
HCM Lane LOS			-	-	C	B
HCM 95th %tile Q(veh)			-	-	0.2	0.1
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# HCM 6th TWSC 5: N Gun Club Road & E Alameda Avenue

2025 Background  
PM Peak

Intersection						
Int Delay, s/veh	4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	135	55	810	260	85	1010
Future Vol, veh/h	135	55	810	260	85	1010
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	147	60	880	283	92	1098
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2304	1022	0	0	1163	0
Stage 1	1022	-	-	-	-	-
Stage 2	1282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	0	287	-	-	601	-
Stage 1	347	-	-	-	-	-
Stage 2	~ 133	-	-	-	-	-
Platoon blocked, %	1		-	-		-
Mov Cap-1 Maneuver	0	287	-	-	601	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	~ 81	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	44.1	0		0.9		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)		-	-	287	601	-
HCM Lane V/C Ratio		-	-	0.72	0.154	-
HCM Control Delay (s)		-	-	44.1	12.1	0
HCM Lane LOS		-	-	E	B	A
HCM 95th %tile Q(veh)		-	-	5.1	0.5	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC  
6: E 6th Parkway & RIRO Access

2025 Background  
PM Peak

























Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	890	532	38	0	125
Future Vol, veh/h	0	890	532	38	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	967	578	41	0	136
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	578
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	*633
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*633
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		12.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	633		
HCM Lane V/C Ratio	-	-	-	0.215		
HCM Control Delay (s)	-	-	-	12.2		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.8		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings

2025 Total

## 1: N Gun Club Road & E 6th Parkway

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	240	200	75	190	435	150	165	753	95	75	468	110
Future Volume (vph)	240	200	75	190	435	150	165	753	95	75	468	110
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	11.0	24.0	24.0	10.0	24.0	24.0	10.0	24.0	24.0
Total Split (s)	15.0	35.0	35.0	15.0	35.0	35.0	10.0	60.0	60.0	10.0	60.0	60.0
Total Split (%)	12.5%	29.2%	29.2%	12.5%	29.2%	29.2%	8.3%	50.0%	50.0%	8.3%	50.0%	50.0%
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	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	2.0
Lost Time Adjust (s)	-3.0	-2.0	-2.0	-2.0	-3.0	-2.0	-2.0	-3.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0	4.0	4.0
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)	47.4	33.8	33.8	44.4	34.4	33.4	59.9	56.1	55.1	59.1	53.1	53.1
Actuated g/C Ratio	0.40	0.28	0.28	0.37	0.29	0.28	0.50	0.47	0.46	0.49	0.44	0.44
v/c Ratio	0.73	0.22	0.15	0.44	0.47	0.29	0.55	0.94	0.13	0.55	0.62	0.15
Control Delay	40.2	34.9	1.4	29.0	37.9	6.8	19.6	42.2	3.2	29.5	28.9	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0	0.1	0.0
Total Delay	40.2	34.9	1.4	29.0	37.9	6.8	19.6	60.4	3.2	29.5	29.0	2.7
LOS	D	C	A	C	D	A	B	E	A	C	C	A
Approach Delay		32.5			29.7			48.4			24.6	
Approach LOS		C			C			D			C	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 35.5
















Intersection LOS: D

Intersection Capacity Utilization 82.4%

ICU Level of Service E

Analysis Period (min) 15




























Splits and Phases: 1: N Gun Club Road & E 6th Parkway

														
Ø1	Ø2		Ø3		Ø4 (R)				Ø5		Ø6		Ø7	Ø8 (R)
10 s	60 s		15 s		35 s				10 s		60 s		15 s	35 s







# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

2025 Total  
AM Peak




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	240	200	75	190	435	150	165	753	95	75	468	110
Future Volume (veh/h)	240	200	75	190	435	150	165	753	95	75	468	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	261	217	82	207	473	163	179	818	103	82	509	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	368	948	423	460	978	423	353	873	726	176	857	726
Arrive On Green	0.10	0.27	0.27	0.09	0.28	0.27	0.05	0.47	0.46	0.05	0.46	0.46
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	261	217	82	207	473	163	179	818	103	82	509	120
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	12.0	5.7	4.8	10.1	13.4	10.1	6.0	49.8	4.5	2.8	24.3	5.3
Cycle Q Clear(g_c), s	12.0	5.7	4.8	10.1	13.4	10.1	6.0	49.8	4.5	2.8	24.3	5.3
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	368	948	423	460	978	423	353	873	726	176	857	726
V/C Ratio(X)	0.71	0.23	0.19	0.45	0.48	0.39	0.51	0.94	0.14	0.47	0.59	0.17
Avail Cap(c_a), veh/h	368	948	423	460	978	423	353	888	740	176	873	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	34.4	34.0	28.1	36.4	36.0	20.7	30.3	18.8	27.0	24.2	19.1
Incr Delay (d2), s/veh	6.2	0.6	1.0	0.7	1.7	2.6	1.2	16.9	0.1	1.9	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	2.5	1.9	4.3	5.8	4.1	2.7	24.8	1.6	1.2	10.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.7	34.9	35.0	28.8	38.1	38.6	21.9	47.2	18.9	28.9	25.3	19.2
LnGrp LOS	D	C	D	C	D	D	C	D	B	C	C	B
Approach Vol, veh/h		560			843			1100			711	
Approach Delay, s/veh		35.3			35.9			40.5			24.6	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	59.0	15.0	36.0	10.0	59.0	15.0	36.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	4.0	54.0	9.0	29.0	4.0	54.0	9.0	29.0				
Max Q Clear Time (g_c+I1), s	4.8	51.8	12.1	7.7	8.0	26.3	14.0	15.4				
Green Ext Time (p_c), s	0.0	1.2	0.0	1.4	0.0	3.5	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			34.9									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	13.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑	↑	↑						↑	↑
Traffic Vol, veh/h	0	334	75	143	634	0	0	0	0	118	0	125
Future Vol, veh/h	0	334	75	143	634	0	0	0	0	118	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	220	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	363	82	155	689	0	0	0	0	128	0	136
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	445	0	0				1403	1444	689
Stage 1	-	-	-	-	-	-				999	999	-
Stage 2	-	-	-	-	-	-				404	445	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1115	-	0				154	132	446
Stage 1	0	-	-	-	-	0				356	321	-
Stage 2	0	-	-	-	-	0				674	575	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1115	-	-				133	0	446
Mov Cap-2 Maneuver	-	-	-	-	-	-				133	0	-
Stage 1	-	-	-	-	-	-				356	0	-
Stage 2	-	-	-	-	-	-				580	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			1.6			73					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	1115	-	133	446						
HCM Lane V/C Ratio	-	-	0.139	-	0.964	0.305						
HCM Control Delay (s)	-	-	8.8	-	132.7	16.6						
HCM Lane LOS	-	-	A	-	F	C						
HCM 95th %tile Q(veh)	-	-	0.5	-	6.6	1.3						

Intersection												
Int Delay, s/veh	40.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	402	0	0	657	128	150	0	128	0	0	0
Future Vol, veh/h	50	402	0	0	657	128	150	0	128	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	230	-	-	-	-	285	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	437	0	0	714	139	163	0	139	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	853	0	-	-	-	0	1329	1398	437			
Stage 1	-	-	-	-	-	-	545	545	-			
Stage 2	-	-	-	-	-	-	784	853	-			
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-			
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318			
Pot Cap-1 Maneuver	682	-	0	0	-	-	~ 109	81	620			
Stage 1	-	-	0	0	-	-	581	519	-			
Stage 2	-	-	0	0	-	-	477	366	-			
Platoon blocked, %	1	-			-	-	1	1				
Mov Cap-1 Maneuver	682	-	-	-	-	-	~ 100	0	620			
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 100	0	-			
Stage 1	-	-	-	-	-	-	535	0	-			
Stage 2	-	-	-	-	-	-	477	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	1.2			0			220.8					
HCM LOS							F					
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	WBT	WBR						
Capacity (veh/h)	100	620	682	-	-	-						
HCM Lane V/C Ratio	1.63	0.224	0.08	-	-	-						
HCM Control Delay (s)	\$ 398.6	12.5	10.7	-	-	-						
HCM Lane LOS	F	B	B	-	-	-						
HCM 95th %tile Q(veh)	12.7	0.9	0.3	-	-	-						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

# Timings 4: N Gun Club Road & Site Access/Ellsworth Avenue

2025 Total  
AM Peak

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	182	2	133	10	2	130	801	5	558	106
Future Volume (vph)	182	2	133	10	2	130	801	5	558	106
Turn Type	Prot	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2	1	6	
Permitted Phases			4	8		2		6		6
Detector Phase	7	4	4	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	20.0	20.0	11.0	24.0	11.0	24.0	24.0
Total Split (s)	25.0	45.0	45.0	20.0	20.0	12.0	63.0	12.0	63.0	63.0
Total Split (%)	20.8%	37.5%	37.5%	16.7%	16.7%	10.0%	52.5%	10.0%	52.5%	52.5%
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)	-2.0	-2.0	0.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
Act Effect Green (s)	18.9	29.7	27.7		9.1	82.3	79.9	75.4	67.7	67.7
Actuated g/C Ratio	0.16	0.25	0.23		0.08	0.69	0.67	0.63	0.56	0.56
v/c Ratio	0.71	0.00	0.30		0.31	0.31	0.70	0.02	0.58	0.12
Control Delay	62.3	29.5	7.0		29.0	9.6	19.6	7.0	15.3	0.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.5	0.0	0.6	0.0
Total Delay	62.3	29.5	7.0		29.0	9.6	20.0	7.0	15.9	0.8
LOS	E	C	A		C	A	C	A	B	A
Approach Delay		38.9			29.0		18.6		13.5	
Approach LOS		D			C		B		B	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 57 (48%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15






















Splits and Phases: 4: N Gun Club Road & Site Access/Ellsworth Avenue



# HCM 6th Signalized Intersection Summary




## 4: N Gun Club Road & Site Access/Ellsworth Avenue

2025 Total  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	2	133	10	2	30	130	801	2	5	558	106
Future Volume (veh/h)	182	2	133	10	2	30	130	801	2	5	558	106
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	198	2	145	11	2	33	141	871	2	5	607	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	446	351	54	11	69	467	1191	3	305	1124	952
Arrive On Green	0.14	0.24	0.22	0.05	0.06	0.05	0.06	0.64	0.64	0.02	0.60	0.60
Sat Flow, veh/h	1781	1870	1585	260	175	1104	1781	1865	4	1781	1870	1585
Grp Volume(v), veh/h	198	2	145	46	0	0	141	0	873	5	607	115
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1539	0	0	1781	0	1870	1781	1870	1585
Q Serve(g_s), s	12.9	0.1	9.4	2.0	0.0	0.0	3.3	0.0	38.0	0.1	23.0	3.7
Cycle Q Clear(g_c), s	12.9	0.1	9.4	3.5	0.0	0.0	3.3	0.0	38.0	0.1	23.0	3.7
Prop In Lane	1.00		1.00	0.24		0.72	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	446	351	108	0	0	467	0	1194	305	1124	952
V/C Ratio(X)	0.78	0.00	0.41	0.42	0.00	0.00	0.30	0.00	0.73	0.02	0.54	0.12
Avail Cap(c_a), veh/h	312	639	515	214	0	0	478	0	1194	383	1124	952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	34.8	40.0	55.2	0.0	0.0	10.0	0.0	14.7	13.2	14.1	10.3
Incr Delay (d2), s/veh	9.9	0.0	0.8	2.6	0.0	0.0	0.4	0.0	4.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	3.8	1.5	0.0	0.0	1.1	0.0	15.2	0.0	9.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	34.8	40.8	57.8	0.0	0.0	10.3	0.0	18.7	13.2	16.0	10.6
LnGrp LOS	E	C	D	E	A	A	B	A	B	B	B	B
Approach Vol, veh/h	345			46			1014			727		
Approach Delay, s/veh	51.5			57.8			17.5			15.1		
Approach LOS	D			E			B			B		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	80.6		32.6	11.3	76.1	21.1	11.5				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	57.0		39.0	6.0	57.0	19.0	14.0				
Max Q Clear Time (g_c+I1), s	2.1	40.0		11.4	5.3	25.0	14.9	5.5				
Green Ext Time (p_c), s	0.0	5.6		0.5	0.0	4.4	0.2	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	23.1											
HCM 6th LOS	C											

HCM 6th TWSC  
5: N Gun Club Road & E Alameda Avenue

2025 Total  
AM Peak

Intersection						
Int Delay, s/veh	124.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	200	73	828	100	38	623
Future Vol, veh/h	200	73	828	100	38	623
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	79	900	109	41	677
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1714	955	0	0	1009	0
Stage 1	955	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 99	313	-	-	687	-
Stage 1	374	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 89	313	-	-	687	-
Mov Cap-2 Maneuver	~ 89	-	-	-	-	-
Stage 1	374	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s\$ 850.5			0		0.6	
HCM LOS	F					
Minor Lane/Major Mvmt	NBT		NBRWBLn1		SBL	SBT
Capacity (veh/h)	-		- 110		687	-
HCM Lane V/C Ratio	-		- 2.698		0.06	-
HCM Control Delay (s)	-		-\$ 850.5		10.6	0
HCM Lane LOS	-		- F		B	A
HCM 95th %tile Q(veh)	-		- 27.4		0.2	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

HCM 6th TWSC  
6: RIRO Access & E 6th Parkway

2025 Total  
AM Peak

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↑	↗			↗			↗
Traffic Vol, veh/h	0	440	90	0	689	21	0	0	75	0	0	95
Future Vol, veh/h	0	440	90	0	689	21	0	0	75	0	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	478	98	0	749	23	0	0	82	0	0	103
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	-	-	-	749
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	0	0	0	412
Stage 1	0	-	-	0	-	-	0	0	0	0	0	-
Stage 2	0	-	-	0	-	-	0	0	0	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	412
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			16.6		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	-	-	-	-	-	-	412					
HCM Lane V/C Ratio	-	-	-	-	-	-	0.251					
HCM Control Delay (s)	0	-	-	-	-	-	16.6					
HCM Lane LOS	A	-	-	-	-	-	C					
HCM 95th %tile Q(veh)	-	-	-	-	-	-	1					

HCM 6th TWSC  
7: N Gun Club Road & RIRO Access

2025 Total  
AM Peak

























Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↑↑	↗
Traffic Vol, veh/h	0	40	0	1013	629	104
Future Vol, veh/h	0	40	0	1013	629	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	0	1101	684	113
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	342	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	*840	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*840	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	9.5		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT		SBR	
Capacity (veh/h)	- 840		-		-	
HCM Lane V/C Ratio	- 0.052		-		-	
HCM Control Delay (s)	- 9.5		-		-	
HCM Lane LOS	- A		-		-	
HCM 95th %tile Q(veh)	- 0.2		-		-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings

2025 Total

## 1: N Gun Club Road & E 6th Parkway

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	449	126	198	355	100	163	642	154	220	870	100
Future Volume (vph)	350	449	126	198	355	100	163	642	154	220	870	100
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	23.0	23.0	11.0	21.0	21.0	11.0	24.0	24.0	11.0	24.0	24.0
Total Split (s)	23.0	23.0	23.0	22.0	22.0	22.0	13.0	63.0	63.0	12.0	62.0	62.0
Total Split (%)	19.2%	19.2%	19.2%	18.3%	18.3%	18.3%	10.8%	52.5%	52.5%	10.0%	51.7%	51.7%
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	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	2.0
Lost Time Adjust (s)	-3.0	-3.0	-2.0	-3.0	-3.0	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0	-2.0
Total Lost Time (s)	3.0	3.0	4.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0
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)	40.9	21.7	20.7	36.4	19.0	18.0	68.0	59.0	59.0	66.0	59.0	58.0
Actuated g/C Ratio	0.34	0.18	0.17	0.30	0.16	0.15	0.57	0.49	0.49	0.55	0.49	0.48
v/c Ratio	0.99	0.76	0.36	0.65	0.67	0.31	0.91	0.74	0.19	0.84	0.97	0.13
Control Delay	79.0	56.1	10.1	39.5	54.1	6.3	67.4	24.5	3.4	40.8	53.9	1.8
Queue Delay	0.0	0.0	0.9	12.3	0.0	0.0	0.0	6.6	0.0	0.0	1.4	0.0
Total Delay	79.0	56.1	11.0	51.8	54.1	6.3	67.4	31.1	3.4	40.8	55.4	1.8
LOS	E	E	B	D	D	A	E	C	A	D	E	A
Approach Delay		58.3			45.9			32.8			47.8	
Approach LOS		E			D			C			D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 46.3



Intersection LOS: D

Intersection Capacity Utilization 97.4%

ICU Level of Service F

Analysis Period (min) 15

























Splits and Phases: 1: N Gun Club Road & E 6th Parkway

							
Ø1	Ø2	Ø3	Ø4 (R)	Ø5	Ø6	Ø7	Ø8 (R)
12 s	63 s	22 s	23 s	13 s	62 s	23 s	22 s







# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

2025 Total  
PM Peak




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	449	126	198	355	100	163	642	154	220	870	100
Future Volume (veh/h)	350	449	126	198	355	100	163	642	154	220	870	100
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	368	488	137	208	374	109	177	676	167	239	888	109
Peak Hour Factor	0.95	0.92	0.92	0.95	0.95	0.92	0.92	0.95	0.92	0.92	0.98	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	411	671	286	350	563	238	207	920	779	342	920	766
Arrive On Green	0.17	0.19	0.18	0.14	0.16	0.15	0.10	0.65	0.65	0.07	0.49	0.48
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	368	488	137	208	374	109	177	676	167	239	888	109
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	20.0	15.5	9.3	11.2	11.9	7.5	6.7	28.9	5.1	8.0	55.1	4.6
Cycle Q Clear(g_c), s	20.0	15.5	9.3	11.2	11.9	7.5	6.7	28.9	5.1	8.0	55.1	4.6
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	411	671	286	350	563	238	207	920	779	342	920	766
V/C Ratio(X)	0.90	0.73	0.48	0.59	0.66	0.46	0.85	0.74	0.21	0.70	0.97	0.14
Avail Cap(c_a), veh/h	411	671	286	390	563	238	207	920	779	342	920	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	45.8	44.1	34.6	47.5	46.6	29.5	15.6	11.4	20.0	29.5	17.2
Incr Delay (d2), s/veh	21.5	6.8	5.6	2.0	6.1	6.2	27.8	3.1	0.1	6.1	21.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	7.3	4.0	4.9	5.6	3.3	3.8	9.6	1.7	3.7	28.1	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.0	52.5	49.7	36.6	53.6	52.8	57.2	18.7	11.6	26.1	51.2	17.3
LnGrp LOS	E	D	D	D	D	D	E	B	B	C	D	B
Approach Vol, veh/h		993			691			1020			1236	
Approach Delay, s/veh		53.4			48.4			24.2			43.4	
Approach LOS		D			D			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.0	63.0	19.3	25.7	13.0	62.0	23.0	22.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	57.0	16.0	17.0	7.0	56.0	17.0	16.0				
Max Q Clear Time (g_c+I1), s	10.0	30.9	13.2	17.5	8.7	57.1	22.0	13.9				
Green Ext Time (p_c), s	0.0	5.0	0.1	0.0	0.0	0.0	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			41.8									
HCM 6th LOS			D									

Intersection												
Int Delay, s/veh	115.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑						↖	↗
Traffic Vol, veh/h	0	685	150	203	492	0	0	0	0	179	0	75
Future Vol, veh/h	0	685	150	203	492	0	0	0	0	179	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	350	220	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	745	163	221	535	0	0	0	0	195	0	82
Major/Minor	Major1			Major2			Minor2					
Conflicting Flow All	-	0	0	908	0	0				1804	1885	535
Stage 1	-	-	-	-	-	-				977	977	-
Stage 2	-	-	-	-	-	-				827	908	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	750	-	0				~ 87	71	545
Stage 1	0	-	-	-	-	0				365	329	-
Stage 2	0	-	-	-	-	0				430	354	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	750	-	-				~ 61	0	545
Mov Cap-2 Maneuver	-	-	-	-	-	-				~ 61	0	-
Stage 1	-	-	-	-	-	-				365	0	-
Stage 2	-	-	-	-	-	-				303	0	-
Approach	EB			WB			SB					
HCM Control Delay, s	0			3.4			\$ 799.3					
HCM LOS							F					
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2						
Capacity (veh/h)	-	-	750	-	61	545						
HCM Lane V/C Ratio	-	-	0.294	-	3.19	0.15						
HCM Control Delay (s)	-	-	11.8		\$ 1128.9	12.8						
HCM Lane LOS	-	-	B	-	F	B						
HCM 95th %tile Q(veh)	-	-	1.2	-	20.3	0.5						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon				

Intersection												
Int Delay, s/veh	50.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	764	0	0	635	68	75	0	179	0	0	0
Future Vol, veh/h	100	764	0	0	635	68	75	0	179	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	230	-	-	-	-	285	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	109	830	0	0	690	74	82	0	195	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	764	0	-	-	-	0	1775	1812	830			
Stage 1	-	-	-	-	-	-	1048	1048	-			
Stage 2	-	-	-	-	-	-	727	764	-			
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-			
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318			
Pot Cap-1 Maneuver	785	-	0	0	-	-	~ 33	27	370			
Stage 1	-	-	0	0	-	-	338	305	-			
Stage 2	-	-	0	0	-	-	523	427	-			
Platoon blocked, %	1	-			-	-	1	1				
Mov Cap-1 Maneuver	785	-	-	-	-	-	~ 28	0	370			
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 28	0	-			
Stage 1	-	-	-	-	-	-	291	0	-			
Stage 2	-	-	-	-	-	-	523	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	1.2			0			\$ 359.6					
HCM LOS							F					
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	WBT	WBR						
Capacity (veh/h)	28 370		785	-	-	-						
HCM Lane V/C Ratio	2.911 0.526		0.138	-	-	-						
HCM Control Delay (s)	\$ 1158.2		25 10.3	-	-	-						
HCM Lane LOS	F D		B	-	-	-						
HCM 95th %tile Q(veh)	9.8 2.9		0.5	-	-	-						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

# Timings 4: N Gun Club Road & Site Access/Ellsworth Avenue

2025 Total  
PM Peak

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	145	2	77	5	2	99	799	20	1053	73
Future Volume (vph)	145	2	77	5	2	99	799	20	1053	73
Turn Type	Prot	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4			8	5	2	1	6	
Permitted Phases			4	8		2		6		6
Detector Phase	7	4	4	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	15.0	15.0	11.0	24.0	11.0	24.0	24.0
Total Split (s)	25.0	40.0	40.0	15.0	15.0	13.0	68.0	12.0	67.0	67.0
Total Split (%)	20.8%	33.3%	33.3%	12.5%	12.5%	10.8%	56.7%	10.0%	55.8%	55.8%
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)	-3.0	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-3.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0		4.0	4.0	4.0	4.0	3.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
Act Effect Green (s)	18.4	25.3	25.3		8.5	85.6	79.4	81.2	74.2	73.2
Actuated g/C Ratio	0.15	0.21	0.21		0.07	0.71	0.66	0.68	0.62	0.61
v/c Ratio	0.59	0.01	0.21		0.18	0.53	0.71	0.07	0.96	0.08
Control Delay	55.7	31.0	7.9		31.5	27.7	21.7	11.4	43.6	2.9
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.3	0.0	42.4	0.0
Total Delay	55.7	31.0	7.9		31.5	27.7	21.9	11.4	86.0	2.9
LOS	E	C	A		C	C	C	B	F	A
Approach Delay		39.1			31.5		22.6		79.2	
Approach LOS		D			C		C		E	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 15 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 52.1

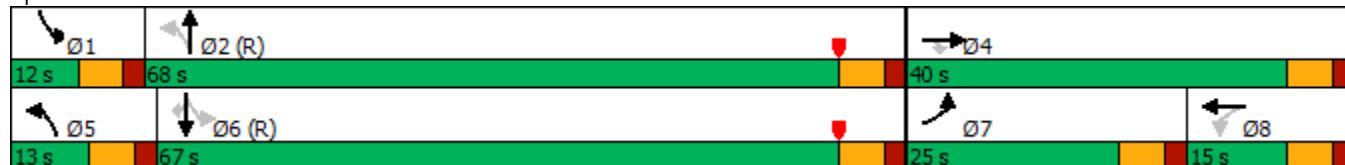
Intersection LOS: D

Intersection Capacity Utilization 85.6%

ICU Level of Service E

Analysis Period (min) 15






















Splits and Phases: 4: N Gun Club Road & Site Access/Ellsworth Avenue



# HCM 6th Signalized Intersection Summary




## 4: N Gun Club Road & Site Access/Ellsworth Avenue

2025 Total  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	2	77	5	2	15	99	799	10	20	1053	73
Future Volume (veh/h)	145	2	77	5	2	15	99	799	10	20	1053	73
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	158	2	84	5	2	16	108	868	11	22	1108	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	393	333	49	15	63	266	1201	15	344	1199	1003
Arrive On Green	0.13	0.21	0.21	0.04	0.06	0.04	0.06	0.65	0.65	0.05	0.85	0.84
Sat Flow, veh/h	1781	1870	1585	218	262	1099	1781	1843	23	1781	1870	1585
Grp Volume(v), veh/h	158	2	84	23	0	0	108	0	879	22	1108	79
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1580	0	0	1781	0	1866	1781	1870	1585
Q Serve(g_s), s	10.2	0.1	5.3	0.0	0.0	0.0	2.4	0.0	37.2	0.5	49.4	1.0
Cycle Q Clear(g_c), s	10.2	0.1	5.3	1.6	0.0	0.0	2.4	0.0	37.2	0.5	49.4	1.0
Prop In Lane	1.00		1.00	0.22		0.70	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	228	393	333	101	0	0	266	0	1216	344	1199	1003
V/C Ratio(X)	0.69	0.01	0.25	0.23	0.00	0.00	0.41	0.00	0.72	0.06	0.92	0.08
Avail Cap(c_a), veh/h	327	561	476	153	0	0	298	0	1216	394	1199	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	37.5	39.5	55.0	0.0	0.0	19.4	0.0	13.8	11.7	6.8	3.6
Incr Delay (d2), s/veh	3.8	0.0	0.4	1.1	0.0	0.0	1.0	0.0	3.7	0.1	13.2	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	4.8	0.0	2.1	0.7	0.0	0.0	1.5	0.0	14.7	0.2	9.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	37.5	39.9	56.1	0.0	0.0	20.4	0.0	17.5	11.8	20.0	3.7
LnGrp LOS	D	D	D	E	A	A	C	A	B	B	B	A
Approach Vol, veh/h	244		23				987				1209	
Approach Delay, s/veh	48.9		56.1				17.8				18.8	
Approach LOS	D		E				B				B	
Timer - Assigned Phs	1	2	4		5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	82.2	29.2		10.9	79.9	18.3	10.9				
Change Period (Y+Rc), s	6.0	6.0	6.0		6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	62.0	34.0		7.0	61.0	19.0	9.0				
Max Q Clear Time (g_c+I1), s	2.5	39.2	7.3		4.4	51.4	12.2	3.6				
Green Ext Time (p_c), s	0.0	6.4	0.2		0.1	5.7	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	21.7											
HCM 6th LOS	C											
Notes												

HCM 6th TWSC  
5: N Gun Club Road & E Alameda Avenue

2025 Total  
PM Peak

Intersection						
Int Delay, s/veh	218					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	135	64	794	260	93	992
Future Vol, veh/h	135	64	794	260	93	992
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	147	70	863	283	101	1078
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2285	1005	0	0	1146	0
Stage 1	1005	-	-	-	-	-
Stage 2	1280	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 43	293	-	-	610	-
Stage 1	354	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 25	293	-	-	610	-
Mov Cap-2 Maneuver	~ 25	-	-	-	-	-
Stage 1	354	-	-	-	-	-
Stage 2	153	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, \$	2555.8		0		1	
HCM LOS	F					
Minor Lane/Major Mvmt	NBT		NBRWBLn1		SBL	SBT
Capacity (veh/h)	-		-		35	610
HCM Lane V/C Ratio	-		-		6.18	0.166
HCM Control Delay (s)	-		\$		2555.8	12.1
HCM Lane LOS	-		-		F	B
HCM 95th %tile Q(veh)	-		-		25.8	0.6
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon





HCM 6th TWSC  
6: RIRO Access & E 6th Parkway

2025 Total  
PM Peak

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗		↑	↗			↗			↗
Traffic Vol, veh/h	0	841	102	0	580	38	0	0	84	0	0	125
Future Vol, veh/h	0	841	102	0	580	38	0	0	84	0	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	914	111	0	630	41	0	0	91	0	0	136
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	-	-	-	630
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	0	0	0	482
Stage 1	0	-	-	0	-	-	0	0	0	0	0	-
Stage 2	0	-	-	0	-	-	0	0	0	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	482
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			15.4		
HCM LOS							A			C		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	-	-	-	-	-	-	482					
HCM Lane V/C Ratio	-	-	-	-	-	-	0.282					
HCM Control Delay (s)	0	-	-	-	-	-	15.4					
HCM Lane LOS	A	-	-	-	-	-	C					
HCM 95th %tile Q(veh)	-	-	-	-	-	-	1.1					

HCM 6th TWSC  
7: N Gun Club Road & RIRO Access

























2025 Total  
PM Peak

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	0	959	1125	69
Future Vol, veh/h	0	21	0	959	1125	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	1042	1223	75
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	612	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.93	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	-	-	-	-
Pot Cap-1 Maneuver	0	*650	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*650	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	10.7		0		0	
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT		SBR	
Capacity (veh/h)	- 650		-		-	
HCM Lane V/C Ratio	- 0.035		-		-	
HCM Control Delay (s)	- 10.7		-		-	
HCM Lane LOS	- B		-		-	
HCM 95th %tile Q(veh)	- 0.1		-		-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings

## 1: N Gun Club Road & E 6th Parkway

2040 Background  
AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	335	250	95	190	585	200	155	1000	90	100	600	150
Future Volume (vph)	335	250	95	190	585	200	155	1000	90	100	600	150
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	27.0	34.0		26.0	33.0		24.0	48.0		12.0	36.0	
Total Split (%)	22.5%	28.3%		21.7%	27.5%		20.0%	40.0%		10.0%	30.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	19.6	38.9	120.0	14.5	33.8	120.0	13.2	42.6	120.0	8.0	37.4	120.0
Actuated g/C Ratio	0.16	0.32	1.00	0.12	0.28	1.00	0.11	0.36	1.00	0.07	0.31	1.00
v/c Ratio	0.65	0.17	0.07	0.50	0.44	0.14	0.45	0.87	0.06	0.48	0.59	0.10
Control Delay	43.7	30.4	0.1	53.2	37.5	0.2	55.0	43.6	0.1	61.4	37.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	30.4	0.1	53.2	37.5	0.2	55.0	43.6	0.1	61.4	37.6	0.1
LOS	D	C	A	D	D	A	D	D	A	E	D	A
Approach Delay		32.8			32.9			41.9			33.8	
Approach LOS		C			C			D			C	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 87 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 36.1

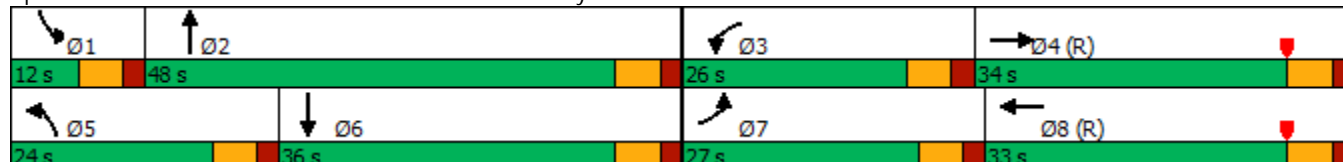
Intersection LOS: D

Intersection Capacity Utilization 66.0%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 1: N Gun Club Road & E 6th Parkway



# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

2040 Background  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	335	250	95	190	585	200	155	1000	90	100	600	150
Future Volume (veh/h)	335	250	95	190	585	200	155	1000	90	100	600	150
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	364	272	0	207	636	0	168	1087	0	109	652	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	495	1849		328	1603		286	1233		217	1162	
Arrive On Green	0.05	0.12	0.00	0.09	0.31	0.00	0.08	0.35	0.00	0.06	0.33	0.00
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	364	272	0	207	636	0	168	1087	0	109	652	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	12.5	5.7	0.0	6.9	11.7	0.0	5.6	34.5	0.0	3.7	18.1	0.0
Cycle Q Clear(g_c), s	12.5	5.7	0.0	6.9	11.7	0.0	5.6	34.5	0.0	3.7	18.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	495	1849		328	1603		286	1233		217	1162	
V/C Ratio(X)	0.74	0.15		0.63	0.40		0.59	0.88		0.50	0.56	
Avail Cap(c_a), veh/h	662	1849		634	1603		576	1303		230	1162	
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.9	36.2	0.0	52.3	32.3	0.0	53.1	36.9	0.0	54.4	33.3	0.0
Incr Delay (d2), s/veh	2.9	0.2	0.0	2.0	0.7	0.0	1.9	7.1	0.0	1.8	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	2.4	0.0	3.0	4.8	0.0	2.5	15.5	0.0	1.6	7.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	36.4	0.0	54.3	33.0	0.0	55.0	44.0	0.0	56.2	33.9	0.0
LnGrp LOS	E	D		D	C		D	D		E	C	
Approach Vol, veh/h	636		A	843		A	1255		A	761		A
Approach Delay, s/veh	48.7			38.2			45.4			37.1		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	45.6	15.4	47.5	13.9	43.2	21.2	41.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	42.0	20.0	28.0	18.0	30.0	21.0	27.0				
Max Q Clear Time (g_c+I1), s	5.7	36.5	8.9	7.7	7.6	20.1	14.5	13.7				
Green Ext Time (p_c), s	0.0	3.1	0.5	1.5	0.3	2.8	0.7	3.3				

### Intersection Summary

HCM 6th Ctrl Delay 42.5  
HCM 6th LOS D

### Notes

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

# Timings

2040 Background

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

AM Peak



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	500	175	250	800	0	250
Future Volume (vph)	500	175	250	800	0	250
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		3	8	6	
Permitted Phases		4	8			6
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	70.0	70.0	15.0	85.0	35.0	35.0
Total Split (%)	58.3%	58.3%	12.5%	70.8%	29.2%	29.2%
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)	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	3.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effect Green (s)	74.7	74.7	91.1	91.1	20.9	21.9
Actuated g/C Ratio	0.62	0.62	0.76	0.76	0.17	0.18
v/c Ratio	0.25	0.18	0.40	0.32	0.64	0.60
Control Delay	11.4	2.2	8.6	5.7	54.8	17.7
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	11.4	2.2	8.6	5.8	54.8	17.7
LOS	B	A	A	A	D	B
Approach Delay	9.0			6.4	33.2	
Approach LOS	A			A	C	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.6

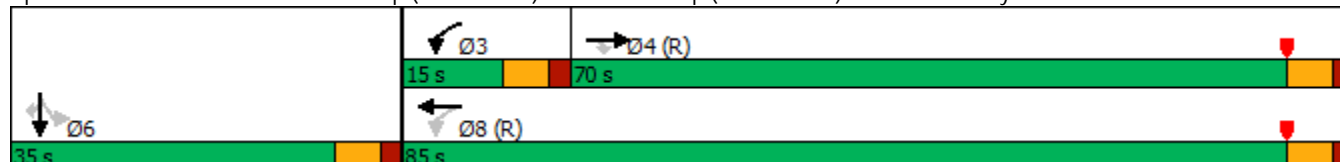
Intersection LOS: B

Intersection Capacity Utilization 54.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

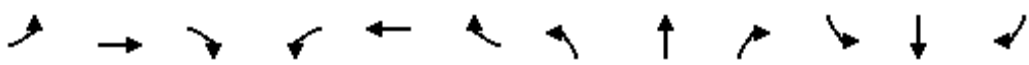


# HCM 6th Signalized Intersection Summary

2040 Background

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

AM Peak

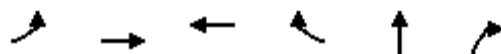
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (veh/h)	0	500	175	250	800	0	0	0	0	180	0	250
Future Volume (veh/h)	0	500	175	250	800	0	0	0	0	180	0	250
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	543	190	272	870	0				196	0	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2144	956	606	2584	0				367	0	340
Arrive On Green	0.00	0.60	0.60	0.18	1.00	0.00				0.19	0.00	0.21
Sat Flow, veh/h	0	3647	1585	1781	3647	0				1781	0	1585
Grp Volume(v), veh/h	0	543	190	272	870	0				196	0	272
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1781	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	8.6	6.5	6.9	0.0	0.0				11.9	0.0	19.5
Cycle Q Clear(g_c), s	0.0	8.6	6.5	6.9	0.0	0.0				11.9	0.0	19.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2144	956	606	2584	0				367	0	340
V/C Ratio(X)	0.00	0.25	0.20	0.45	0.34	0.00				0.53	0.00	0.80
Avail Cap(c_a), veh/h	0	2144	956	608	2584	0				460	0	423
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.92	0.92	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.2	10.7	6.1	0.0	0.0				43.4	0.0	44.7
Incr Delay (d2), s/veh	0.0	0.3	0.5	0.5	0.3	0.0				1.2	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.2	2.2	1.8	0.1	0.0				5.3	0.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.4	11.2	6.5	0.3	0.0				44.6	0.0	53.2
LnGrp LOS	A	B	B	A	A	A				D	A	D
Approach Vol, veh/h		733			1142						468	
Approach Delay, s/veh		11.4			1.8						49.6	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			14.9	76.4		28.7		91.3				
Change Period (Y+Rc), s			6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s			9.0	64.0		29.0		79.0				
Max Q Clear Time (g_c+I1), s			8.9	10.6		21.5		2.0				
Green Ext Time (p_c), s			0.0	4.3		1.2		6.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			14.4									
HCM 6th LOS			B									

# Timings

2040 Background

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Traffic Volume (vph)	150	500	800	165	0	180
Future Volume (vph)	150	500	800	165	0	180
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		2	
Permitted Phases	4			8		2
Detector Phase	7	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	85.0	60.0	60.0	35.0	35.0
Total Split (%)	20.8%	70.8%	50.0%	50.0%	29.2%	29.2%
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)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	3.8	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	86.7	86.7	71.6	71.6	25.5	25.3
Actuated g/C Ratio	0.72	0.72	0.60	0.60	0.21	0.21
v/c Ratio	0.34	0.21	0.40	0.18	0.73	0.40
Control Delay	8.8	5.7	18.6	8.1	55.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	5.7	18.6	8.1	55.0	7.4
LOS	A	A	B	A	D	A
Approach Delay		6.4	16.7		35.1	
Approach LOS		A	B		D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 17.3

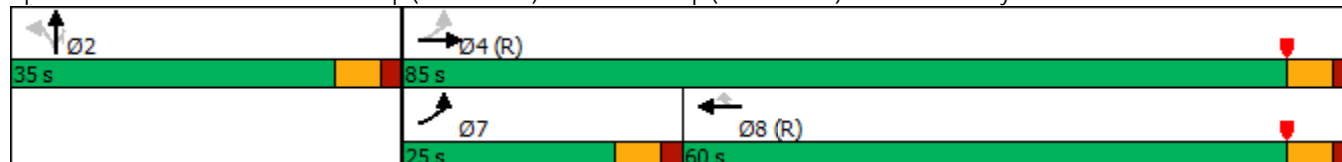
Intersection LOS: B

Intersection Capacity Utilization 54.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway





















# HCM 6th Signalized Intersection Summary

2040 Background

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway





AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	500	0	0	800	165	250	0	180	0	0	0
Future Volume (veh/h)	150	500	0	0	800	165	250	0	180	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	163	543	0	0	842	179	272	0	196			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.95	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	419	2637	0	0	2290	1021	344	0	303			
Arrive On Green	0.13	1.00	0.00	0.00	0.21	0.21	0.19	0.00	0.19			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	1585			
Grp Volume(v), veh/h	163	543	0	0	842	179	272	0	196			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1585			
Q Serve(g_s), s	3.4	0.0	0.0	0.0	24.3	11.1	17.5	0.0	13.7			
Cycle Q Clear(g_c), s	3.4	0.0	0.0	0.0	24.3	11.1	17.5	0.0	13.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	419	2637	0	0	2290	1021	344	0	303			
V/C Ratio(X)	0.39	0.21	0.00	0.00	0.37	0.18	0.79	0.00	0.65			
Avail Cap(c_a), veh/h	616	2637	0	0	2290	1021	463	0	409			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	8.3	0.0	0.0	0.0	26.4	21.2	46.2	0.0	44.8			
Incr Delay (d2), s/veh	0.6	0.2	0.0	0.0	0.5	0.4	6.6	0.0	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			
%ile BackOfQ(50%),veh/ln	1.0	0.1	0.0	0.0	11.6	4.5	8.1	0.0	5.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	0.2	0.0	0.0	26.8	21.5	52.7	0.0	47.1			
LnGrp LOS	A	A	A	A	C	C	D	A	D			
Approach Vol, veh/h	706			1021			468					
Approach Delay, s/veh	2.2			25.9			50.4					
Approach LOS	A			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	27.0			93.0			11.7			81.3		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	29.0			79.0			19.0			54.0		
Max Q Clear Time (g_c+I1), s	19.5			2.0			5.4			26.3		
Green Ext Time (p_c), s	1.5			3.7			0.3			6.6		
Intersection Summary												
HCM 6th Ctrl Delay	23.5											
HCM 6th LOS	C											

# HCM 6th TWSC













## 4: N Gun Club Road & Ellsworth Avenue

2040 Background  
AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	35	1210	5	5	880
Future Vol, veh/h	15	35	1210	5	5	880
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	38	1315	5	5	957
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1807	660	0	0	1320	0
Stage 1	1318	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	*171	*593	-	-	*887	-
Stage 1	*560	-	-	-	-	-
Stage 2	*582	-	-	-	-	-
Platoon blocked, %	1	1	-	-	1	-
Mov Cap-1 Maneuver	*170	*593	-	-	*887	-
Mov Cap-2 Maneuver	*170	-	-	-	-	-
Stage 1	*560	-	-	-	-	-
Stage 2	*579	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	17.6	0		0.1		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	340	* 887	-	
HCM Lane V/C Ratio	-	-	0.16	0.006	-	
HCM Control Delay (s)	-	-	17.6	9.1	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	0.6	0	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings 5: N Gun Club Road & E Alameda Avenue

2040 Background  
AM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	225	75	1140	125	35	860
Future Volume (vph)	225	75	1140	125	35	860
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)	23.9	21.9	87.1	87.1	87.1	87.1
Actuated g/C Ratio	0.20	0.18	0.73	0.73	0.73	0.73
v/c Ratio	0.69	0.23	0.48	0.11	0.15	0.36
Control Delay	54.6	11.6	8.3	1.3	1.6	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	11.6	8.3	1.3	1.6	1.1
LOS	D	B	A	A	A	A
Approach Delay	43.8		7.6			1.1
Approach LOS	D		A			A

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 73 (61%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 9.7

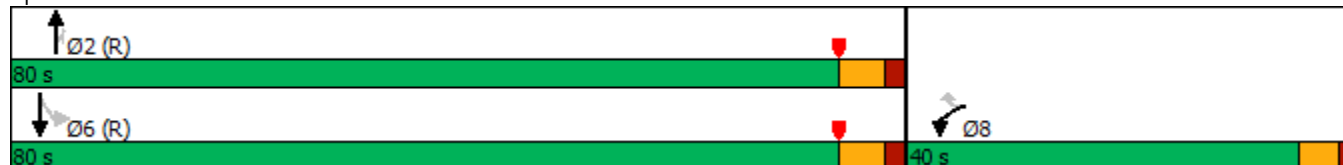
Intersection LOS: A

Intersection Capacity Utilization 52.3%

ICU Level of Service A













Analysis Period (min) 15

Splits and Phases: 5: N Gun Club Road & E Alameda Avenue



# HCM 6th Signalized Intersection Summary 5: N Gun Club Road & E Alameda Avenue

2040 Background  
AM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	225	75	1140	125	35	860
Future Volume (veh/h)	225	75	1140	125	35	860
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	82	1239	136	38	935
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	308	247	2674	1193	305	2674
Arrive On Green	0.17	0.16	0.75	0.75	0.75	0.75
Sat Flow, veh/h	1781	1585	3647	1585	395	3647
Grp Volume(v), veh/h	245	82	1239	136	38	935
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	395	1777
Q Serve(g_s), s	15.8	5.5	15.9	2.8	4.9	10.6
Cycle Q Clear(g_c), s	15.8	5.5	15.9	2.8	20.8	10.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	308	247	2674	1193	305	2674
V/C Ratio(X)	0.80	0.33	0.46	0.11	0.12	0.35
Avail Cap(c_a), veh/h	549	462	2674	1193	305	2674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	45.1	5.6	4.0	9.6	5.0
Incr Delay (d2), s/veh	4.7	0.8	0.6	0.2	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	2.2	4.7	0.8	0.5	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.3	45.9	6.2	4.2	10.4	5.4
LnGrp LOS	D	D	A	A	B	A
Approach Vol, veh/h	327		1375			973
Approach Delay, s/veh	50.7		6.0			5.6
Approach LOS	D		A			A
Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	96.3		96.3		23.7	
Change Period (Y+Rc), s	6.0		6.0		5.0	
Max Green Setting (Gmax), s	74.0		74.0		35.0	
Max Q Clear Time (g_c+I1), s	17.9		22.8		17.8	
Green Ext Time (p_c), s	12.2		8.3		0.9	
Intersection Summary						
HCM 6th Ctrl Delay			11.3			
HCM 6th LOS			B			

HCM 6th TWSC  
6: E 6th Parkway & RIRO Access

























2040 Background  
AM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑	↑↑↑↑	↗		↗
Traffic Vol, veh/h	0	680	870	20	0	95
Future Vol, veh/h	0	680	870	20	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	739	946	22	0	103
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	473
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	*712
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*712
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	712		
HCM Lane V/C Ratio	-	-	-	0.145		
HCM Control Delay (s)	-	-	-	10.9		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.5		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings

## 1: N Gun Club Road & E 6th Parkway

2040 Background  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	450	580	160	195	480	135	155	850	170	295	1140	135
Future Volume (vph)	450	580	160	195	480	135	155	850	170	295	1140	135
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	23.0		11.0	22.0		11.0	24.0		11.0	24.0	
Total Split (s)	27.0	28.0		22.0	23.0		21.0	52.0		18.0	49.0	
Total Split (%)	22.5%	23.3%		18.3%	19.2%		17.5%	43.3%		15.0%	40.8%	
Yellow Time (s)	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	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	22.8	31.4	120.0	15.2	23.9	120.0	14.0	46.4	120.0	15.0	47.4	120.0
Actuated g/C Ratio	0.19	0.26	1.00	0.13	0.20	1.00	0.12	0.39	1.00	0.12	0.40	1.00
v/c Ratio	0.73	0.45	0.11	0.46	0.50	0.09	0.40	0.65	0.11	0.73	0.86	0.09
Control Delay	47.2	37.7	0.1	51.6	45.9	0.1	55.9	28.0	0.1	61.2	40.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	37.7	0.1	51.6	45.9	0.1	55.9	28.0	0.1	61.2	40.6	0.1
LOS	D	D	A	D	D	A	E	C	A	E	D	A
Approach Delay		36.2			39.5			27.6			41.0	
Approach LOS		D			D			C			D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 87 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 36.2

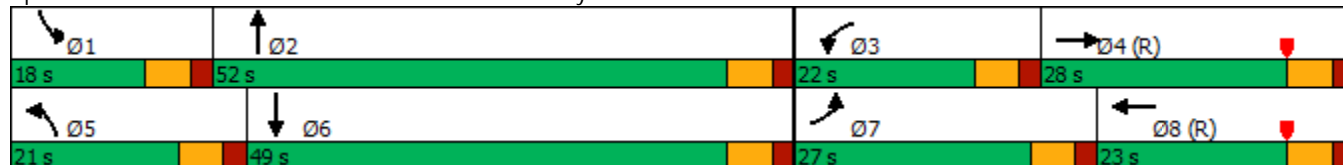
Intersection LOS: D

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 1: N Gun Club Road & E 6th Parkway



# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

2040 Background  
PM Peak

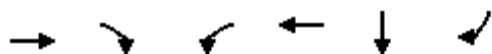
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	450	580	160	195	480	135	155	850	170	295	1140	135
Future Volume (veh/h)	450	580	160	195	480	135	155	850	170	295	1140	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		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	474	604	0	199	505	0	161	895	0	311	1200	0
Peak Hour Factor	0.95	0.96	0.95	0.98	0.95	0.95	0.96	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	626	1716		344	1299		307	1206		432	1335	
Arrive On Green	0.06	0.11	0.00	0.10	0.25	0.00	0.06	0.23	0.00	0.13	0.38	0.00
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	474	604	0	199	505	0	161	895	0	311	1200	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	16.2	13.1	0.0	6.6	9.8	0.0	5.4	28.1	0.0	10.4	38.2	0.0
Cycle Q Clear(g_c), s	16.2	13.1	0.0	6.6	9.8	0.0	5.4	28.1	0.0	10.4	38.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	626	1716		344	1299		307	1206		432	1335	
V/C Ratio(X)	0.76	0.35		0.58	0.39		0.52	0.74		0.72	0.90	
Avail Cap(c_a), veh/h	691	1716		547	1299		518	1451		432	1362	
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.8	41.3	0.0	51.6	37.0	0.0	54.0	41.5	0.0	50.5	35.3	0.0
Incr Delay (d2), s/veh	4.4	0.6	0.0	1.5	0.9	0.0	1.4	1.7	0.0	5.7	8.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	6.0	0.0	2.9	4.1	0.0	2.4	12.9	0.0	4.7	17.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.2	41.8	0.0	53.2	37.9	0.0	55.4	43.2	0.0	56.2	43.6	0.0
LnGrp LOS	E	D		D	D		E	D		E	D	
Approach Vol, veh/h	1078		A	704		A	1056		A	1511		A
Approach Delay, s/veh	49.0			42.2			45.0			46.2		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	43.7	14.9	43.3	13.7	48.1	24.7	33.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	46.0	16.0	22.0	15.0	43.0	21.0	17.0				
Max Q Clear Time (g_c+I1), s	12.4	30.1	8.6	15.1	7.4	40.2	18.2	11.8				
Green Ext Time (p_c), s	0.0	5.2	0.3	2.1	0.3	1.9	0.5	1.4				
Intersection Summary												
HCM 6th Ctrl Delay	46.0											
HCM 6th LOS	D											

# Timings

2040 Background

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

PM Peak



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (vph)	900	300	275	600	0	175
Future Volume (vph)	900	300	275	600	0	175
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		3	8	6	
Permitted Phases		4	8			6
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	56.0	56.0	24.0	80.0	40.0	40.0
Total Split (%)	46.7%	46.7%	20.0%	66.7%	33.3%	33.3%
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)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effect Green (s)	63.9	63.9	83.5	83.5	28.5	28.5
Actuated g/C Ratio	0.53	0.53	0.70	0.70	0.24	0.24
v/c Ratio	0.50	0.33	0.67	0.26	0.75	0.36
Control Delay	20.8	3.1	18.3	5.0	53.3	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	3.1	18.3	5.0	53.3	6.6
LOS	C	A	B	A	D	A
Approach Delay	16.3			9.2	35.7	
Approach LOS	B			A	D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 17.4

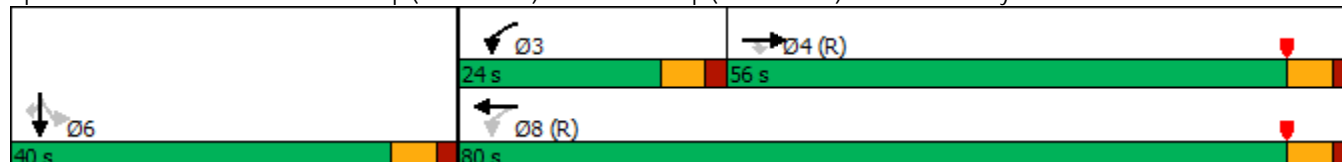
Intersection LOS: B

Intersection Capacity Utilization 66.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

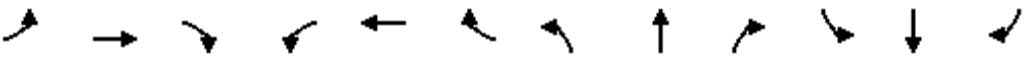


# HCM 6th Signalized Intersection Summary

2040 Background

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

PM Peak

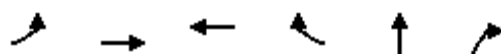
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (veh/h)	0	900	300	275	600	0	0	0	0	290	0	175
Future Volume (veh/h)	0	900	300	275	600	0	0	0	0	290	0	175
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	947	326	299	652	0				315	0	190
Peak Hour Factor	0.92	0.95	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2052	915	431	2543	0				388	0	345
Arrive On Green	0.00	0.58	0.58	0.21	1.00	0.00				0.20	0.00	0.22
Sat Flow, veh/h	0	3647	1585	1781	3647	0				1781	0	1585
Grp Volume(v), veh/h	0	947	326	299	652	0				315	0	190
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1781	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	18.4	13.1	8.1	0.0	0.0				20.3	0.0	12.8
Cycle Q Clear(g_c), s	0.0	18.4	13.1	8.1	0.0	0.0				20.3	0.0	12.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2052	915	431	2543	0				388	0	345
V/C Ratio(X)	0.00	0.46	0.36	0.69	0.26	0.00				0.81	0.00	0.55
Avail Cap(c_a), veh/h	0	2052	915	541	2543	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.94	0.94	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.6	13.5	9.8	0.0	0.0				45.6	0.0	41.7
Incr Delay (d2), s/veh	0.0	0.7	1.1	2.6	0.2	0.0				6.6	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.0	4.6	2.3	0.1	0.0				9.5	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.4	14.6	12.4	0.2	0.0				52.2	0.0	43.1
LnGrp LOS	A	B	B	B	A	A				D	A	D
Approach Vol, veh/h		1273			951						505	
Approach Delay, s/veh		15.2			4.0						48.8	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			16.6	73.3		30.1		89.9				
Change Period (Y+Rc), s			6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s			18.0	50.0		34.0		74.0				
Max Q Clear Time (g_c+I1), s			10.1	20.4		22.3		3.0				
Green Ext Time (p_c), s			0.5	8.4		1.9		4.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			17.5									
HCM 6th LOS			B									

# Timings

2040 Background

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

PM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Traffic Volume (vph)	200	950	750	105	0	240
Future Volume (vph)	200	950	750	105	0	240
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		2	
Permitted Phases	4			8		2
Detector Phase	7	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	85.0	60.0	60.0	35.0	35.0
Total Split (%)	20.8%	70.8%	50.0%	50.0%	29.2%	29.2%
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)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	94.0	94.0	78.5	78.5	18.0	18.0
Actuated g/C Ratio	0.78	0.78	0.65	0.65	0.15	0.15
v/c Ratio	0.40	0.37	0.35	0.11	0.51	0.72
Control Delay	8.1	3.4	7.8	1.4	52.4	32.2
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	8.1	3.6	7.8	1.4	52.4	32.2
LOS	A	A	A	A	D	C
Approach Delay		4.4	7.0		39.1	
Approach LOS		A	A		D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 10.7

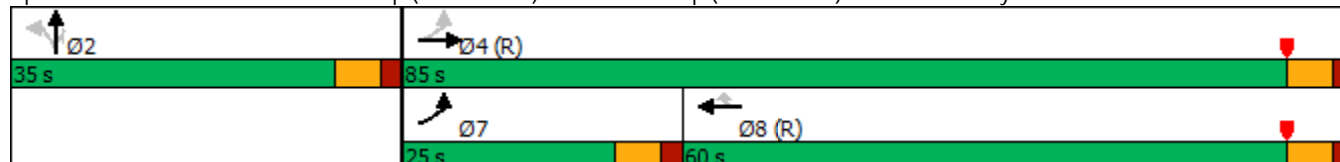
Intersection LOS: B

Intersection Capacity Utilization 66.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway





















# HCM 6th Signalized Intersection Summary

2040 Background

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway





PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	950	0	0	750	105	125	0	240	0	0	0
Future Volume (veh/h)	200	950	0	0	750	105	125	0	240	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	217	1033	0	0	815	114	136	0	261			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	456	2608	0	0	2210	986	355	0	316			
Arrive On Green	0.16	1.00	0.00	0.00	0.21	0.21	0.20	0.00	0.20			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	1585			
Grp Volume(v), veh/h	217	1033	0	0	815	114	136	0	261			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1585			
Q Serve(g_s), s	5.0	0.0	0.0	0.0	23.7	7.0	7.9	0.0	18.9			
Cycle Q Clear(g_c), s	5.0	0.0	0.0	0.0	23.7	7.0	7.9	0.0	18.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	456	2608	0	0	2210	986	355	0	316			
V/C Ratio(X)	0.48	0.40	0.00	0.00	0.37	0.12	0.38	0.00	0.83			
Avail Cap(c_a), veh/h	628	2608	0	0	2210	986	460	0	409			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(l)	0.86	0.86	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	8.8	0.0	0.0	0.0	27.4	20.8	41.6	0.0	46.0			
Incr Delay (d2), s/veh	0.7	0.4	0.0	0.0	0.5	0.2	0.7	0.0	10.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.4	0.1	0.0	0.0	11.3	2.6	3.5	0.0	8.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	0.4	0.0	0.0	27.9	21.1	42.3	0.0	56.3			
LnGrp LOS	A	A	A	A	C	C	D	A	E			
Approach Vol, veh/h	1250			929			397					
Approach Delay, s/veh	2.0			27.1			51.5					
Approach LOS	A			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	27.9			92.1			13.4			78.6		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	29.0			79.0			19.0			54.0		
Max Q Clear Time (g_c+I1), s	20.9			2.0			7.0			25.7		
Green Ext Time (p_c), s	1.0			8.6			0.4			6.1		
Intersection Summary												
HCM 6th Ctrl Delay				18.6								
HCM 6th LOS				B								

# HCM 6th TWSC

## 4: N Gun Club Road & Ellsworth Avenue

2040 Background  
PM Peak

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	20	1155	15	25	1470
Future Vol, veh/h	10	20	1155	15	25	1470
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	21	1216	16	26	1547
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	2050	616	0	0	1232	0
Stage 1	1224	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	48	433	-	-	561	-
Stage 1	241	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	46	433	-	-	561	-
Mov Cap-2 Maneuver	46	-	-	-	-	-
Stage 1	241	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	48.3	0		0.2		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	114	561	-	
HCM Lane V/C Ratio	-	-	0.277	0.047	-	
HCM Control Delay (s)	-	-	48.3	11.7	-	
HCM Lane LOS	-	-	E	B	-	
HCM 95th %tile Q(veh)	-	-	1	0.1	-	

# Timings 5: N Gun Club Road & E Alameda Avenue

2040 Background  
PM Peak

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	150	70	1100	275	95	1385
Future Volume (vph)	150	70	1100	275	95	1385
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.5	3.5
All-Red Time (s)	1.5	1.5	2.0	2.0	1.5	1.5
Lost Time Adjust (s)	-2.0	-2.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	3.0	6.0	6.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)	18.4	18.4	92.6	92.6	93.6	93.6
Actuated g/C Ratio	0.15	0.15	0.77	0.77	0.78	0.78
v/c Ratio	0.60	0.25	0.44	0.23	0.33	0.55
Control Delay	56.1	11.0	5.7	1.0	3.0	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	11.0	5.7	1.0	3.0	1.6
LOS	E	B	A	A	A	A
Approach Delay	41.8		4.8			1.6
Approach LOS	D		A			A

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 74 (62%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 5.9

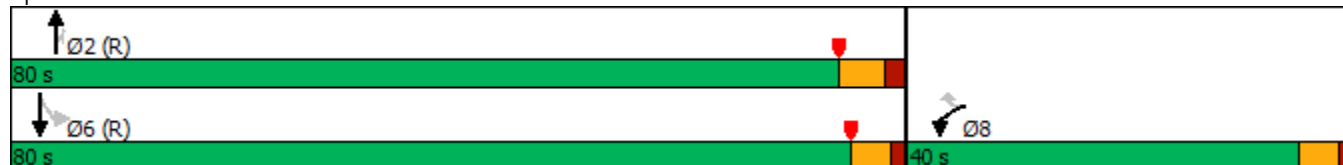
Intersection LOS: A

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15













Splits and Phases: 5: N Gun Club Road & E Alameda Avenue



# HCM 6th Signalized Intersection Summary

## 5: N Gun Club Road & E Alameda Avenue

2040 Background  
PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	150	70	1100	275	95	1385
Future Volume (veh/h)	150	70	1100	275	95	1385
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	76	1196	299	103	1505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	226	201	2837	1265	305	2837
Arrive On Green	0.13	0.13	0.80	0.80	0.80	0.80
Sat Flow, veh/h	1781	1585	3647	1585	352	3647
Grp Volume(v), veh/h	163	76	1196	299	103	1505
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	352	1777
Q Serve(g_s), s	10.6	5.3	12.3	5.6	15.1	17.8
Cycle Q Clear(g_c), s	10.6	5.3	12.3	5.6	27.4	17.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	226	201	2837	1265	305	2837
V/C Ratio(X)	0.72	0.38	0.42	0.24	0.34	0.53
Avail Cap(c_a), veh/h	549	489	2837	1265	305	2837
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.4	48.1	3.7	3.0	7.8	4.2
Incr Delay (d2), s/veh	4.3	1.2	0.5	0.4	3.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	2.1	3.0	1.3	1.2	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.7	49.2	4.1	3.5	10.8	5.0
LnGrp LOS	D	D	A	A	B	A
Approach Vol, veh/h	239		1495			1608
Approach Delay, s/veh	52.9		4.0			5.3
Approach LOS	D		A			A
Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	101.8		101.8		18.2	
Change Period (Y+Rc), s	6.0		* 6		5.0	
Max Green Setting (Gmax), s	74.0		* 75		35.0	
Max Q Clear Time (g_c+I1), s	14.3		29.4		12.6	
Green Ext Time (p_c), s	12.7		19.2		0.7	
Intersection Summary						
HCM 6th Ctrl Delay			8.1			
HCM 6th LOS			A			
Notes						

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

HCM 6th TWSC  
6: E 6th Parkway & RIRO Access

2040 Background  
PM Peak

























Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑	↑↑↑↑	↗		↗
Traffic Vol, veh/h	0	1190	730	40	0	125
Future Vol, veh/h	0	1190	730	40	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1293	793	43	0	136
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	397
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	*756
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*756
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		10.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	756		
HCM Lane V/C Ratio	-	-	-	0.18		
HCM Control Delay (s)	-	-	-	10.8		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.7		
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

# Timings

2040 Total

## 1: N Gun Club Road & E 6th Parkway

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	470	329	108	453	485	200	394	930	150	100	676	150
Future Volume (vph)	470	329	108	453	485	200	394	930	150	100	676	150
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	24.0		11.0	24.0		11.0	24.0		11.0	24.0	
Total Split (s)	27.0	34.0		26.0	33.0		24.0	48.0		12.0	36.0	
Total Split (%)	22.5%	28.3%		21.7%	27.5%		20.0%	40.0%		10.0%	30.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	22.3	32.6	120.0	21.5	31.8	120.0	19.4	41.9	120.0	8.0	30.5	120.0
Actuated g/C Ratio	0.19	0.27	1.00	0.18	0.26	1.00	0.16	0.35	1.00	0.07	0.25	1.00
v/c Ratio	0.80	0.26	0.07	0.80	0.39	0.14	0.77	0.82	0.10	0.48	0.82	0.10
Control Delay	51.6	37.0	0.1	58.1	38.0	0.2	61.7	38.6	0.1	61.4	50.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	51.6	37.0	0.1	58.1	38.0	0.2	61.7	39.3	0.1	61.4	50.3	0.1
LOS	D	D	A	E	D	A	E	D	A	E	D	A
Approach Delay		40.2			39.3			41.3			43.4	
Approach LOS		D			D			D			D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 87 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 41.0

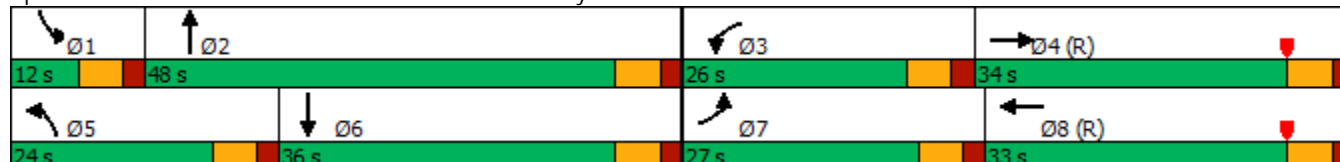
Intersection LOS: D

Intersection Capacity Utilization 66.0%

ICU Level of Service C

Analysis Period (min) 15

























Splits and Phases: 1: N Gun Club Road & E 6th Parkway



# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

2040 Total  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	329	108	453	485	200	394	930	150	100	676	150
Future Volume (veh/h)	470	329	108	453	485	200	394	930	150	100	676	150
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	511	358	0	492	527	0	428	1011	0	109	735	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	629	1484		599	1438		545	1209		217	871	
Arrive On Green	0.06	0.10	0.00	0.17	0.28	0.00	0.05	0.11	0.00	0.06	0.25	0.00
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	511	358	0	492	527	0	428	1011	0	109	735	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	17.5	7.8	0.0	16.5	9.9	0.0	14.7	33.4	0.0	3.7	23.6	0.0
Cycle Q Clear(g_c), s	17.5	7.8	0.0	16.5	9.9	0.0	14.7	33.4	0.0	3.7	23.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	629	1484		599	1438		545	1209		217	871	
V/C Ratio(X)	0.81	0.24		0.82	0.37		0.79	0.84		0.50	0.84	
Avail Cap(c_a), veh/h	662	1484		634	1438		576	1303		230	948	
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.4	42.0	0.0	47.8	34.5	0.0	54.9	50.0	0.0	54.4	43.1	0.0
Incr Delay (d2), s/veh	7.3	0.4	0.0	8.2	0.7	0.0	6.7	4.6	0.0	1.8	6.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	3.4	0.0	7.6	4.1	0.0	7.3	16.6	0.0	1.6	10.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.7	42.4	0.0	56.0	35.2	0.0	61.6	54.6	0.0	56.2	49.7	0.0
LnGrp LOS	E	D		E	D		E	D		E	D	
Approach Vol, veh/h	869			1019			1439			844		
Approach Delay, s/veh	53.7			45.3			56.7			50.6		
Approach LOS	D			D			E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.5	44.8	24.8	38.9	22.9	33.4	25.9	37.8				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	42.0	20.0	28.0	18.0	30.0	21.0	27.0				
Max Q Clear Time (g_c+I1), s	5.7	35.4	18.5	9.8	16.7	25.6	19.5	11.9				
Green Ext Time (p_c), s	0.0	3.4	0.3	2.0	0.2	1.8	0.3	2.8				
Intersection Summary												
HCM 6th Ctrl Delay	52.0											
HCM 6th LOS	D											

# Timings

2040 Total

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

AM Peak



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	609	175	273	893	0	250
Future Volume (vph)	609	175	273	893	0	250
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		3	8	6	
Permitted Phases		4	8			6
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	70.0	70.0	15.0	85.0	35.0	35.0
Total Split (%)	58.3%	58.3%	12.5%	70.8%	29.2%	29.2%
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)	-2.0	-2.0	-2.0	-2.0	-2.0	-3.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	3.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effect Green (s)	72.6	72.6	89.2	89.2	22.8	23.8
Actuated g/C Ratio	0.60	0.60	0.74	0.74	0.19	0.20
v/c Ratio	0.22	0.18	0.49	0.26	0.67	0.61
Control Delay	11.8	2.3	14.7	5.0	54.5	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	2.3	14.7	5.0	54.5	22.3
LOS	B	A	B	A	D	C
Approach Delay	9.6			7.3	36.9	
Approach LOS	A			A	D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 13.7

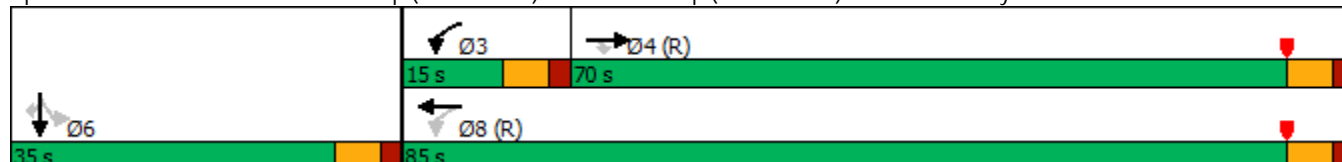
Intersection LOS: B

Intersection Capacity Utilization 49.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

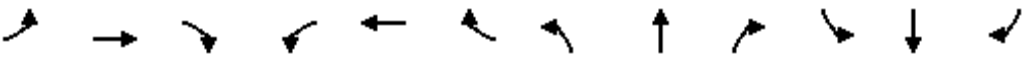


# HCM 6th Signalized Intersection Summary

2040 Total

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

AM Peak

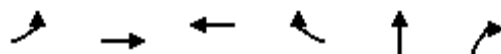
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑						↑	↑
Traffic Volume (veh/h)	0	609	175	273	893	0	0	0	0	207	0	250
Future Volume (veh/h)	0	609	175	273	893	0	0	0	0	207	0	250
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	662	190	297	971	0				225	0	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	3071	953	574	3709	0				368	0	341
Arrive On Green	0.00	0.60	0.60	0.18	1.00	0.00				0.19	0.00	0.22
Sat Flow, veh/h	0	5274	1585	1781	5274	0				1781	0	1585
Grp Volume(v), veh/h	0	662	190	297	971	0				225	0	272
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1702	0				1781	0	1585
Q Serve(g_s), s	0.0	7.1	6.5	7.8	0.0	0.0				13.9	0.0	19.5
Cycle Q Clear(g_c), s	0.0	7.1	6.5	7.8	0.0	0.0				13.9	0.0	19.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	3071	953	574	3709	0				368	0	341
V/C Ratio(X)	0.00	0.22	0.20	0.52	0.26	0.00				0.61	0.00	0.80
Avail Cap(c_a), veh/h	0	3071	953	574	3709	0				460	0	423
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.95	0.95	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.9	10.8	6.1	0.0	0.0				44.2	0.0	44.6
Incr Delay (d2), s/veh	0.0	0.2	0.5	0.8	0.2	0.0				1.6	0.0	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.2	2.0	0.1	0.0				6.2	0.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.1	11.3	6.9	0.2	0.0				45.8	0.0	53.0
LnGrp LOS	A	B	B	A	A	A				D	A	D
Approach Vol, veh/h		852			1268						497	
Approach Delay, s/veh		11.2			1.7						49.7	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			15.0	76.2		28.8		91.2				
Change Period (Y+Rc), s			6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s			9.0	64.0		29.0		79.0				
Max Q Clear Time (g_c+I1), s			9.8	9.1		21.5		2.0				
Green Ext Time (p_c), s			0.0	5.4		1.3		7.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			13.9									
HCM 6th LOS			B									

# Timings

2040 Total

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Traffic Volume (vph)	150	636	916	188	0	207
Future Volume (vph)	150	636	916	188	0	207
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		2	
Permitted Phases	4			8		2
Detector Phase	7	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	85.0	60.0	60.0	35.0	35.0
Total Split (%)	20.8%	70.8%	50.0%	50.0%	29.2%	29.2%
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)	-2.0	-2.0	-2.0	-2.0	-2.2	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	3.8	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	86.7	86.7	71.6	71.6	25.5	25.3
Actuated g/C Ratio	0.72	0.72	0.60	0.60	0.21	0.21
v/c Ratio	0.38	0.19	0.33	0.20	0.73	0.44
Control Delay	10.3	5.1	15.2	7.2	55.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	5.1	15.2	7.2	55.0	7.4
LOS	B	A	B	A	D	A
Approach Delay		6.1	13.9		33.4	
Approach LOS		A	B		C	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.1

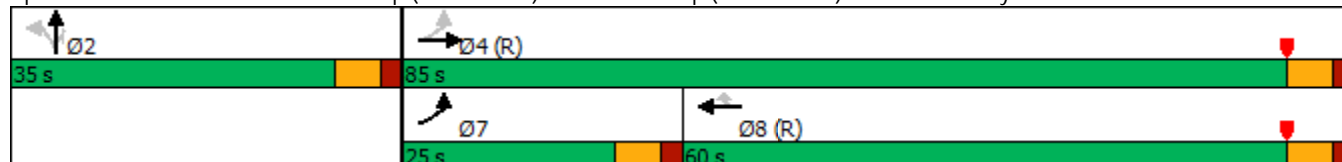
Intersection LOS: B

Intersection Capacity Utilization 49.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

























# HCM 6th Signalized Intersection Summary

2040 Total

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	150	636	0	0	916	188	250	0	207	0	0	0
Future Volume (veh/h)	150	636	0	0	916	188	250	0	207	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	163	691	0	0	996	204	272	0	225			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	398	3786	0	0	3286	1020	345	0	304			
Arrive On Green	0.13	1.00	0.00	0.00	0.21	0.21	0.19	0.00	0.19			
Sat Flow, veh/h	1781	5274	0	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	163	691	0	0	996	204	272	0	225			
Grp Sat Flow(s),veh/h/ln	1781	1702	0	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	3.4	0.0	0.0	0.0	19.7	12.7	17.4	0.0	16.0			
Cycle Q Clear(g_c), s	3.4	0.0	0.0	0.0	19.7	12.7	17.4	0.0	16.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	398	3786	0	0	3286	1020	345	0	304			
V/C Ratio(X)	0.41	0.18	0.00	0.00	0.30	0.20	0.79	0.00	0.74			
Avail Cap(c_a), veh/h	595	3786	0	0	3286	1020	463	0	409			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.99	0.99	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	7.4	0.0	0.0	0.0	24.6	21.8	46.1	0.0	45.7			
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.0	0.2	0.4	6.5	0.0	4.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.0	9.0	5.4	8.1	0.0	6.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.0	0.1	0.0	0.0	24.8	22.3	52.6	0.0	50.4			
LnGrp LOS	A	A	A	A	C	C	D	A	D			
Approach Vol, veh/h	854			1200			497					
Approach Delay, s/veh	1.6			24.4			51.6					
Approach LOS	A			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	27.0			93.0			11.7			81.2		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	29.0			79.0			19.0			54.0		
Max Q Clear Time (g_c+I1), s	19.4			2.0			5.4			21.7		
Green Ext Time (p_c), s	1.6			5.0			0.3			8.3		
Intersection Summary												
HCM 6th Ctrl Delay	22.1											
HCM 6th LOS	C											

# Timings

2040 Total

## 4: N Gun Club Road & Site Access/Ellsworth Avenue

AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←←	→	←	→	←	→	←	→	←
Traffic Volume (vph)	379	5	15	5	286	1060	5	806	260
Future Volume (vph)	379	5	15	5	286	1060	5	806	260
Turn Type	Prot	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	5	2	1	6	
Permitted Phases			8		2		6		6
Detector Phase	7	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	20.0	20.0	11.0	24.0	11.0	24.0	24.0
Total Split (s)	30.0	50.0	20.0	20.0	20.0	58.0	12.0	50.0	50.0
Total Split (%)	25.0%	41.7%	16.7%	16.7%	16.7%	48.3%	10.0%	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)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Act Effect Green (s)	21.5	32.9		9.7	79.1	76.7	64.8	57.1	57.1
Actuated g/C Ratio	0.18	0.27		0.08	0.66	0.64	0.54	0.48	0.48
v/c Ratio	0.67	0.36		0.40	0.68	0.51	0.02	0.52	0.31
Control Delay	51.4	5.8		31.5	33.0	10.7	9.4	13.9	1.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	51.4	5.8		31.5	33.0	10.7	9.4	14.0	1.9
LOS	D	A		C	C	B	A	B	A
Approach Delay		35.9		31.5		15.4		11.1	
Approach LOS		D		C		B		B	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 51 (43%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 18.0

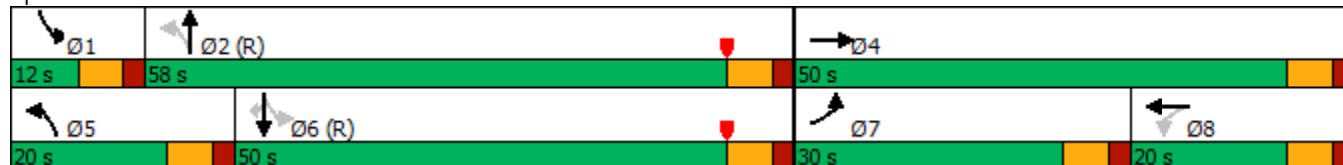
Intersection LOS: B

Intersection Capacity Utilization 65.6%

ICU Level of Service C





















Analysis Period (min) 15

Splits and Phases: 4: N Gun Club Road & Site Access/Ellsworth Avenue










# HCM 6th Signalized Intersection Summary 4: N Gun Club Road & Site Access/Ellsworth Avenue

2040 Total  
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	379	5	190	15	5	35	286	1060	5	5	806	260
Future Volume (veh/h)	379	5	190	15	5	35	286	1060	5	5	806	260
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	412	5	207	16	5	38	311	1152	5	5	876	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	539	10	405	59	18	70	444	2235	10	355	1860	830
Arrive On Green	0.16	0.26	0.24	0.06	0.07	0.07	0.23	1.00	1.00	0.02	0.52	0.52
Sat Flow, veh/h	3456	38	1553	295	246	978	1781	3629	16	1781	3554	1585
Grp Volume(v), veh/h	412	0	212	59	0	0	311	564	593	5	876	283
Grp Sat Flow(s),veh/h/ln	1728	0	1591	1518	0	0	1781	1777	1868	1781	1777	1585
Q Serve(g_s), s	13.7	0.0	13.8	2.8	0.0	0.0	9.6	0.0	0.0	0.2	18.7	12.4
Cycle Q Clear(g_c), s	13.7	0.0	13.8	4.5	0.0	0.0	9.6	0.0	0.0	0.2	18.7	12.4
Prop In Lane	1.00		0.98	0.27		0.64	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	539	0	415	122	0	0	444	1094	1150	355	1860	830
V/C Ratio(X)	0.76	0.00	0.51	0.48	0.00	0.00	0.70	0.52	0.52	0.01	0.47	0.34
Avail Cap(c_a), veh/h	749	0	610	212	0	0	476	1094	1150	433	1860	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.85	0.85	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	0.0	38.7	54.0	0.0	0.0	11.1	0.0	0.0	12.4	18.1	16.6
Incr Delay (d2), s/veh	3.1	0.0	1.0	3.0	0.0	0.0	3.6	1.5	1.4	0.0	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	5.6	1.9	0.0	0.0	3.0	0.4	0.4	0.1	7.4	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.6	0.0	39.7	56.9	0.0	0.0	14.7	1.5	1.4	12.4	18.9	17.7
LnGrp LOS	D	A	D	E	A	A	B	A	A	B	B	B
Approach Vol, veh/h	624			59			1468			1164		
Approach Delay, s/veh	47.6			56.9			4.3			18.6		
Approach LOS	D			E			A			B		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	77.9		35.3	17.9	66.8	22.7	12.6				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	52.0		44.0	14.0	44.0	24.0	14.0				
Max Q Clear Time (g_c+I1), s	2.2	2.0		15.8	11.6	20.7	15.7	6.5				
Green Ext Time (p_c), s	0.0	8.7		1.5	0.2	7.0	1.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay	18.4											
HCM 6th LOS	B											

# Timings 5: N Gun Club Road & E Alameda Avenue

2040 Total  
AM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	225	102	1249	125	58	953
Future Volume (vph)	225	102	1249	125	58	953
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	3.5	3.5	4.0	4.0	4.0	4.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)	23.9	21.9	87.1	87.1	87.1	87.1
Actuated g/C Ratio	0.20	0.18	0.73	0.73	0.73	0.73
v/c Ratio	0.69	0.33	0.53	0.11	0.29	0.40
Control Delay	54.6	23.2	8.9	1.3	4.7	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	23.2	8.9	1.3	4.7	1.7
LOS	D	C	A	A	A	A
Approach Delay	44.8		8.2			1.9
Approach LOS	D		A			A

## Intersection Summary













Cycle Length: 120
Actuated Cycle Length: 120
Offset: 73 (61%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 10.3
Intersection Capacity Utilization 64.5%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service C

Splits and Phases: 5: N Gun Club Road & E Alameda Avenue



# HCM 6th Signalized Intersection Summary 5: N Gun Club Road & E Alameda Avenue

2040 Total  
AM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	225	102	1249	125	58	953
Future Volume (veh/h)	225	102	1249	125	58	953
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	111	1358	136	63	1036
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	309	248	2671	1191	270	2671
Arrive On Green	0.17	0.16	0.75	0.75	1.00	1.00
Sat Flow, veh/h	1781	1585	3647	1585	352	3647
Grp Volume(v), veh/h	245	111	1358	136	63	1036
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	352	1777
Q Serve(g_s), s	15.8	7.6	18.4	2.8	5.8	0.0
Cycle Q Clear(g_c), s	15.8	7.6	18.4	2.8	24.2	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	309	248	2671	1191	270	2671
V/C Ratio(X)	0.79	0.45	0.51	0.11	0.23	0.39
Avail Cap(c_a), veh/h	549	462	2671	1191	270	2671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.84	0.84
Uniform Delay (d), s/veh	47.5	45.9	6.0	4.0	2.5	0.0
Incr Delay (d2), s/veh	4.6	1.3	0.7	0.2	1.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	3.1	5.5	0.8	0.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.2	47.1	6.7	4.2	4.2	0.4
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	356		1494			1099
Approach Delay, s/veh	50.6		6.5			0.6
Approach LOS	D		A			A
Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	96.2		96.2		23.8	
Change Period (Y+Rc), s	6.0		6.0		5.0	
Max Green Setting (Gmax), s	74.0		74.0		35.0	
Max Q Clear Time (g_c+I1), s	20.4		26.2		17.8	
Green Ext Time (p_c), s	14.1		10.5		1.0	
Intersection Summary						
HCM 6th Ctrl Delay			9.6			
HCM 6th LOS			A			





HCM 6th TWSC  
6: North RIRO Site Access/RIRO Access & E 6th Parkway

2040 Total  
AM Peak

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑	↑		↑↑↑↑	↑			↑			↑
Traffic Vol, veh/h	0	619	224	0	1009	20	0	0	288	0	0	95
Future Vol, veh/h	0	619	224	0	1009	20	0	0	288	0	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	673	243	0	1097	22	0	0	313	0	0	103
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	-	-	-	549
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	0	0	0	*697
Stage 1	0	-	-	0	-	-	0	0	0	0	0	-
Stage 2	0	-	-	0	-	-	0	0	0	0	0	-
Platoon blocked, %		-	-		-	-						1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	*697
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			11.1		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	-	-	-	-	-	697						
HCM Lane V/C Ratio	-	-	-	-	-	0.148						
HCM Control Delay (s)	0	-	-	-	-	11.1						
HCM Lane LOS	A	-	-	-	-	B						
HCM 95th %tile Q(veh)	-	-	-	-	-	0.5						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

HCM 6th TWSC  
7: N Gun Club Road & East RIRO Site Access

2040 Total  
AM Peak

























Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	146	0	1474	925	312
Future Vol, veh/h	0	146	0	1474	925	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	159	0	1602	1005	339
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	503	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	514	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	514	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.1	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 514		-	-		
HCM Lane V/C Ratio	- 0.309		-	-		
HCM Control Delay (s)	- 15.1		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 1.3		-	-		

# Timings

2040 Total

## 1: N Gun Club Road & E 6th Parkway

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	580	685	176	513	380	135	460	816	270	295	1242	135
Future Volume (vph)	580	685	176	513	380	135	460	816	270	295	1242	135
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	11.0	23.0		11.0	22.0		11.0	24.0		11.0	24.0	
Total Split (s)	27.0	28.0		22.0	23.0		21.0	52.0		18.0	49.0	
Total Split (%)	22.5%	23.3%		18.3%	19.2%		17.5%	43.3%		15.0%	40.8%	
Yellow Time (s)	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	
Lost Time Adjust (s)	-3.0	-3.0		-3.0	-3.0		-3.0	-3.0		-3.0	-3.0	
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effect Green (s)	24.0	25.0	120.0	19.0	20.0	120.0	18.0	49.0	120.0	15.0	46.0	120.0
Actuated g/C Ratio	0.20	0.21	1.00	0.16	0.17	1.00	0.15	0.41	1.00	0.12	0.38	1.00
v/c Ratio	0.89	0.66	0.11	0.96	0.47	0.09	0.91	0.59	0.17	0.73	0.93	0.09
Control Delay	57.2	46.3	0.1	80.9	47.3	0.1	70.2	26.0	0.2	61.2	49.1	0.1
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.3	0.0	0.0	44.9	0.0
Total Delay	57.2	46.3	0.1	81.8	47.3	0.1	70.2	26.4	0.2	61.2	94.0	0.1
LOS	E	D	A	F	D	A	E	C	A	E	F	A
Approach Delay		45.2			58.2			34.7			80.5	
Approach LOS		D			E			C			F	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 87 (73%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 55.0

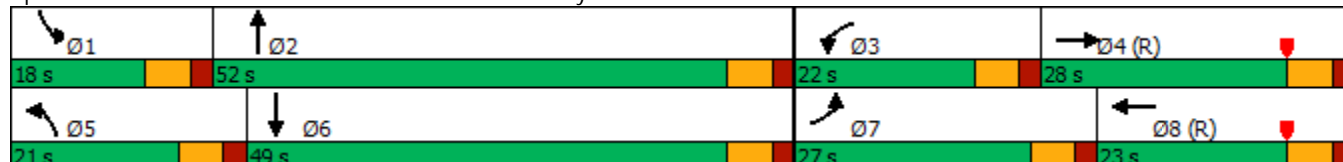
Intersection LOS: D

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

























Splits and Phases: 1: N Gun Club Road & E 6th Parkway



# HCM 6th Signalized Intersection Summary

## 1: N Gun Club Road & E 6th Parkway

2040 Total  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	580	685	176	513	380	135	460	816	270	295	1242	135
Future Volume (veh/h)	580	685	176	513	380	135	460	816	270	295	1242	135
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	611	699	0	523	400	0	469	859	0	311	1267	0
Peak Hour Factor	0.95	0.98	0.98	0.98	0.95	0.98	0.98	0.95	0.98	0.95	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	691	1064		547	851		518	1451		432	1362	
Arrive On Green	0.07	0.07	0.00	0.16	0.17	0.00	0.10	0.27	0.00	0.13	0.38	0.00
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	611	699	0	523	400	0	469	859	0	311	1267	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1777	1585	1728	1777	1585
Q Serve(g_s), s	21.0	16.0	0.0	18.0	8.5	0.0	16.1	25.1	0.0	10.4	41.0	0.0
Cycle Q Clear(g_c), s	21.0	16.0	0.0	18.0	8.5	0.0	16.1	25.1	0.0	10.4	41.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	691	1064		547	851		518	1451		432	1362	
V/C Ratio(X)	0.88	0.66		0.96	0.47		0.90	0.59		0.72	0.93	
Avail Cap(c_a), veh/h	691	1064		547	851		518	1451		432	1362	
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.7	51.7	0.0	50.1	45.2	0.0	53.1	34.9	0.0	50.5	35.5	0.0
Incr Delay (d2), s/veh	13.0	3.2	0.0	27.7	1.9	0.0	19.3	0.6	0.0	5.7	11.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	7.6	0.0	9.6	3.6	0.0	8.5	11.3	0.0	4.7	18.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.7	54.9	0.0	77.8	47.1	0.0	72.5	35.6	0.0	56.2	46.9	0.0
LnGrp LOS	E	D		E	D		E	D		E	D	
Approach Vol, veh/h	1310		A	923		A	1328		A	1578		A
Approach Delay, s/veh	60.8			64.5			48.6			48.8		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	52.0	22.0	28.0	21.0	49.0	27.0	23.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	12.0	46.0	16.0	22.0	15.0	43.0	21.0	17.0				
Max Q Clear Time (g_c+I1), s	12.4	27.1	20.0	18.0	18.1	43.0	23.0	10.5				
Green Ext Time (p_c), s	0.0	5.3	0.0	1.6	0.0	0.0	0.0	1.3				

### Intersection Summary

HCM 6th Ctrl Delay 54.6  
HCM 6th LOS D

### Notes

User approved pedestrian interval to be less than phase max green.

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

# Timings

2040 Total

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

PM Peak



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑↑↑	↑	↑	↑↑↑	↑	↑
Traffic Volume (vph)	1046	300	309	737	0	175
Future Volume (vph)	1046	300	309	737	0	175
Turn Type	NA	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		3	8	6	
Permitted Phases		4	8			6
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	56.0	56.0	24.0	80.0	40.0	40.0
Total Split (%)	46.7%	46.7%	20.0%	66.7%	33.3%	33.3%
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)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effect Green (s)	60.0	60.0	81.3	81.3	30.7	30.7
Actuated g/C Ratio	0.50	0.50	0.68	0.68	0.26	0.26
v/c Ratio	0.43	0.34	0.77	0.23	0.79	0.35
Control Delay	21.1	3.3	30.5	4.1	54.4	6.3
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	21.1	3.3	30.7	4.1	54.4	6.3
LOS	C	A	C	A	D	A
Approach Delay	17.0			12.0	37.6	
Approach LOS	B			B	D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 18.8

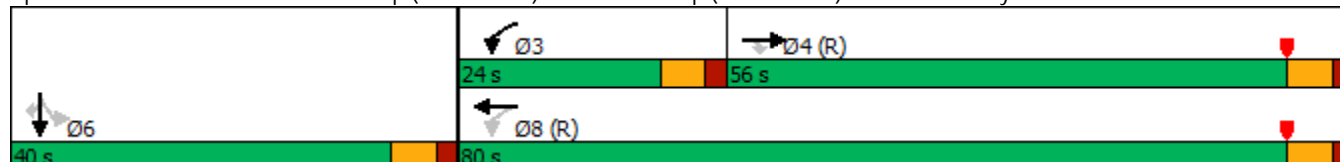
Intersection LOS: B

Intersection Capacity Utilization 65.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

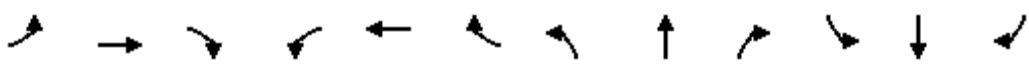


# HCM 6th Signalized Intersection Summary

2040 Total

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) & E 6th Parkway

PM Peak

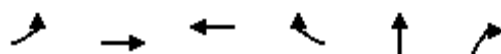
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑						↑	↑
Traffic Volume (veh/h)	0	1046	300	309	737	0	0	0	0	328	0	175
Future Volume (veh/h)	0	1046	300	309	737	0	0	0	0	328	0	175
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1101	326	336	801	0				357	0	190
Peak Hour Factor	0.92	0.95	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2749	853	432	3541	0				427	0	380
Arrive On Green	0.00	0.54	0.54	0.24	1.00	0.00				0.22	0.00	0.24
Sat Flow, veh/h	0	5274	1585	1781	5274	0				1781	0	1585
Grp Volume(v), veh/h	0	1101	326	336	801	0				357	0	190
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1702	0				1781	0	1585
Q Serve(g_s), s	0.0	15.2	14.3	10.1	0.0	0.0				23.0	0.0	12.4
Cycle Q Clear(g_c), s	0.0	15.2	14.3	10.1	0.0	0.0				23.0	0.0	12.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2749	853	432	3541	0				427	0	380
V/C Ratio(X)	0.00	0.40	0.38	0.78	0.23	0.00				0.84	0.00	0.50
Avail Cap(c_a), veh/h	0	2749	853	511	3541	0				534	0	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.96	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.3	16.1	11.4	0.0	0.0				44.4	0.0	39.4
Incr Delay (d2), s/veh	0.0	0.4	1.3	6.1	0.1	0.0				9.2	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	5.7	5.2	3.2	0.0	0.0				11.0	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.7	17.4	17.5	0.1	0.0				53.5	0.0	40.4
LnGrp LOS	A	B	B	B	A	A				D	A	D
Approach Vol, veh/h		1427			1137						547	
Approach Delay, s/veh		16.9			5.3						49.0	
Approach LOS		B			A						D	
Timer - Assigned Phs			3	4		6		8				
Phs Duration (G+Y+Rc), s			18.6	68.6		32.8		87.2				
Change Period (Y+Rc), s			6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s			18.0	50.0		34.0		74.0				
Max Q Clear Time (g_c+I1), s			12.1	17.2		25.0		3.0				
Green Ext Time (p_c), s			0.5	10.1		1.8		6.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			18.3									
HCM 6th LOS			B									

# Timings

2040 Total

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

PM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Traffic Volume (vph)	200	1134	921	139	0	277
Future Volume (vph)	200	1134	921	139	0	277
Turn Type	pm+pt	NA	NA	Perm	NA	Perm
Protected Phases	7	4	8		2	
Permitted Phases	4			8		2
Detector Phase	7	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	85.0	60.0	60.0	35.0	35.0
Total Split (%)	20.8%	70.8%	50.0%	50.0%	29.2%	29.2%
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)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Act Effect Green (s)	88.8	88.8	72.6	72.6	23.2	23.2
Actuated g/C Ratio	0.74	0.74	0.60	0.60	0.19	0.19
v/c Ratio	0.48	0.33	0.33	0.15	0.40	0.78
Control Delay	16.9	4.3	9.9	3.8	44.2	44.8
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	16.9	4.4	9.9	3.8	44.2	44.8
LOS	B	A	A	A	D	D
Approach Delay		6.3	9.1		44.6	
Approach LOS		A	A		D	

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 12.9

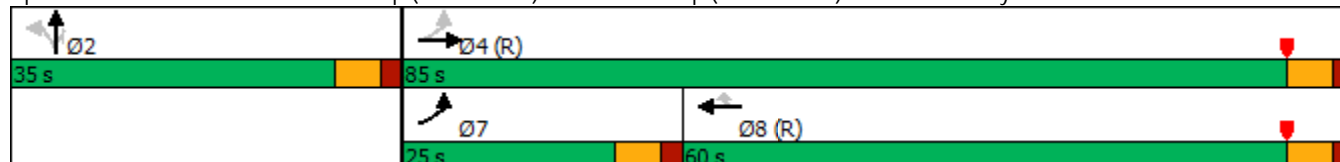
Intersection LOS: B

Intersection Capacity Utilization 65.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

























# HCM 6th Signalized Intersection Summary

2040 Total






















## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) & E 6th Parkway

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	200	1134	0	0	921	139	125	0	277	0	0	0
Future Volume (veh/h)	200	1134	0	0	921	139	125	0	277	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	217	1233	0	0	1001	151	136	0	301			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	414	3630	0	0	3042	944	396	0	353			
Arrive On Green	0.16	1.00	0.00	0.00	0.20	0.20	0.22	0.00	0.22			
Sat Flow, veh/h	1781	5274	0	0	5274	1585	1781	0	1585			
Grp Volume(v), veh/h	217	1233	0	0	1001	151	136	0	301			
Grp Sat Flow(s),veh/h/ln	1781	1702	0	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	5.4	0.0	0.0	0.0	20.2	9.5	7.7	0.0	21.9			
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.0	20.2	9.5	7.7	0.0	21.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	414	3630	0	0	3042	944	396	0	353			
V/C Ratio(X)	0.52	0.34	0.00	0.00	0.33	0.16	0.34	0.00	0.85			
Avail Cap(c_a), veh/h	580	3630	0	0	3042	944	460	0	409			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	9.0	0.0	0.0	0.0	27.6	23.3	39.2	0.0	44.8			
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.0	0.3	0.4	0.5	0.0	14.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.6	0.1	0.0	0.0	9.2	3.8	3.3	0.0	9.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.9	0.2	0.0	0.0	27.9	23.7	39.7	0.0	59.1			
LnGrp LOS	A	A	A	A	C	C	D	A	E			
Approach Vol, veh/h	1450			1152			437					
Approach Delay, s/veh	1.7			27.3			53.1					
Approach LOS	A			C			D					
Timer - Assigned Phs	2			4			7			8		
Phs Duration (G+Y+Rc), s	30.7			89.3			13.8			75.5		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	29.0			79.0			19.0			54.0		
Max Q Clear Time (g_c+I1), s	23.9			2.0			7.4			22.2		
Green Ext Time (p_c), s	0.8			11.0			0.4			8.1		
Intersection Summary												
HCM 6th Ctrl Delay	18.8											
HCM 6th LOS	B											

# Timings 4: N Gun Club Road & Site Access/Ellsworth Avenue

2040 Total  
PM Peak

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	 			 		 		 	
Traffic Volume (vph)	501	7	10	7	312	1025	25	1451	246
Future Volume (vph)	501	7	10	7	312	1025	25	1451	246
Turn Type	Prot	NA	Perm	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		8	5	2	1	6	
Permitted Phases			8		2		6		6
Detector Phase	7	4	8	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	13.0	24.0	20.0	20.0	11.0	24.0	11.0	24.0	24.0
Total Split (s)	32.0	44.0	12.0	12.0	30.0	64.0	12.0	46.0	46.0
Total Split (%)	26.7%	36.7%	10.0%	10.0%	25.0%	53.3%	10.0%	38.3%	38.3%
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)	-3.0	-3.0		-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Total Lost Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	C-Max
Act Effect Green (s)	25.9	33.3		9.0	80.7	73.4	63.9	55.1	55.1
Actuated g/C Ratio	0.22	0.28		0.08	0.67	0.61	0.53	0.46	0.46
v/c Ratio	0.71	0.35		0.31	0.83	0.51	0.08	0.91	0.31
Control Delay	49.1	6.0		36.8	53.7	12.5	9.8	30.4	3.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	4.5	0.0
Total Delay	49.1	6.0		36.8	53.7	12.5	9.8	34.9	3.5
LOS	D	A		D	D	B	A	C	A
Approach Delay		37.0		36.8		22.0		29.9	
Approach LOS		D		D		C		C	

## Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 57 (48%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 28.4

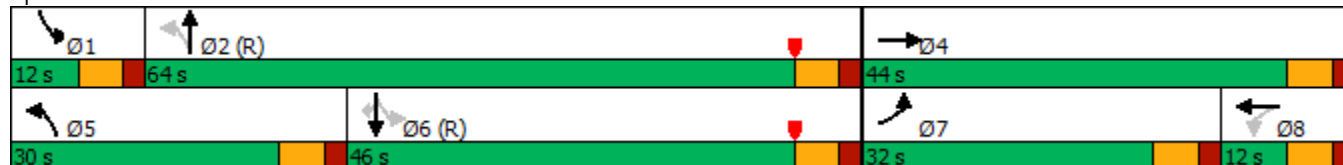
Intersection LOS: C

Intersection Capacity Utilization 88.4%

ICU Level of Service E

Analysis Period (min) 15





















Splits and Phases: 4: N Gun Club Road & Site Access/Ellsworth Avenue



# HCM 6th Signalized Intersection Summary













## 4: N Gun Club Road & Site Access/Ellsworth Avenue

2040 Total  
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	501	7	190	10	7	20	312	1025	15	25	1451	246
Future Volume (veh/h)	501	7	190	10	7	20	312	1025	15	25	1451	246
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	527	7	200	11	7	21	328	1079	16	26	1481	259
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.98	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	678	16	443	60	26	55	381	2108	31	391	1677	748
Arrive On Green	0.20	0.29	0.29	0.04	0.07	0.07	0.33	1.00	1.00	0.05	0.47	0.47
Sat Flow, veh/h	3456	54	1539	320	387	825	1781	3584	53	1781	3554	1585
Grp Volume(v), veh/h	527	0	207	39	0	0	328	535	560	26	1481	259
Grp Sat Flow(s),veh/h/ln	1728	0	1593	1532	0	0	1781	1777	1861	1781	1777	1585
Q Serve(g_s), s	17.4	0.0	12.8	1.7	0.0	0.0	14.2	0.0	0.0	0.9	45.3	12.4
Cycle Q Clear(g_c), s	17.4	0.0	12.8	2.9	0.0	0.0	14.2	0.0	0.0	0.9	45.3	12.4
Prop In Lane	1.00		0.97	0.28		0.54	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	678	0	459	102	0	0	381	1045	1094	391	1677	748
V/C Ratio(X)	0.78	0.00	0.45	0.38	0.00	0.00	0.86	0.51	0.51	0.07	0.88	0.35
Avail Cap(c_a), veh/h	835	0	544	115	0	0	487	1045	1094	437	1677	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	0.00	0.81	0.81	0.81	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	35.0	54.0	0.0	0.0	25.1	0.0	0.0	14.0	28.7	20.0
Incr Delay (d2), s/veh	3.8	0.0	0.7	2.3	0.0	0.0	10.1	1.5	1.4	0.1	7.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	5.1	1.2	0.0	0.0	8.0	0.4	0.4	0.3	19.5	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.5	0.0	35.7	56.3	0.0	0.0	35.1	1.5	1.4	14.0	35.8	21.3
LnGrp LOS	D	A	D	E	A	A	D	A	A	B	D	C
Approach Vol, veh/h	734			39			1423			1766		
Approach Delay, s/veh	45.6			56.3			9.2			33.4		
Approach LOS	D			E			A			C		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	73.6		37.5	22.8	59.6	26.5	11.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	6.0	58.0		38.0	24.0	40.0	26.0	6.0				
Max Q Clear Time (g_c+I1), s	2.9	2.0		14.8	16.2	47.3	19.4	4.9				
Green Ext Time (p_c), s	0.0	8.1		1.3	0.6	0.0	1.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	27.2											
HCM 6th LOS	C											

# Timings 5: N Gun Club Road & E Alameda Avenue

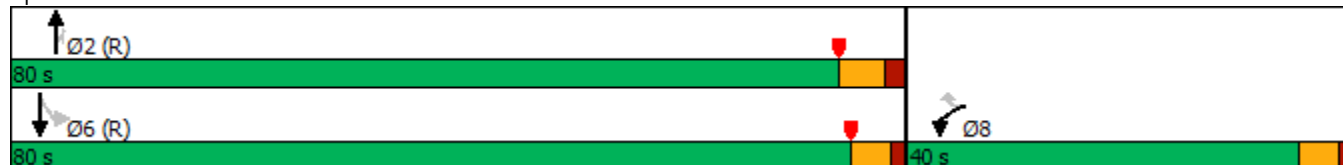
2040 Total  
PM Peak

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	150	106	1426	275	129	1692
Future Volume (vph)	150	106	1426	275	129	1692
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	40.0	40.0	80.0	80.0	80.0	80.0
Total Split (%)	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	3.5	3.5	4.0	4.0	3.5	3.5
All-Red Time (s)	1.5	1.5	2.0	2.0	1.5	1.5
Lost Time Adjust (s)	-2.0	-2.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	3.0	6.0	6.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)	18.4	18.4	92.6	92.6	93.6	93.6
Actuated g/C Ratio	0.15	0.15	0.77	0.77	0.78	0.78
v/c Ratio	0.60	0.42	0.57	0.23	0.72	0.67
Control Delay	56.1	34.4	7.0	1.0	33.1	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	34.4	7.0	1.0	33.1	9.0
LOS	E	C	A	A	C	A
Approach Delay	47.1		6.1			10.7
Approach LOS	D		A			B

## Intersection Summary















Cycle Length: 120
Actuated Cycle Length: 120
Offset: 74 (62%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 11.1
Intersection Capacity Utilization 67.4%
Analysis Period (min) 15
Intersection LOS: B
ICU Level of Service C

Splits and Phases: 5: N Gun Club Road & E Alameda Avenue



# HCM 6th Signalized Intersection Summary 5: N Gun Club Road & E Alameda Avenue

2040 Total  
PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (veh/h)	150	106	1426	275	129	1692
Future Volume (veh/h)	150	106	1426	275	129	1692
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	115	1550	299	140	1839
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	228	203	2833	1264	220	2833
Arrive On Green	0.13	0.13	0.80	0.80	1.00	1.00
Sat Flow, veh/h	1781	1585	3647	1585	250	3647
Grp Volume(v), veh/h	163	115	1550	299	140	1839
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	250	1777
Q Serve(g_s), s	10.5	8.2	18.8	5.7	44.7	0.0
Cycle Q Clear(g_c), s	10.5	8.2	18.8	5.7	63.5	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	228	203	2833	1264	220	2833
V/C Ratio(X)	0.72	0.57	0.55	0.24	0.64	0.65
Avail Cap(c_a), veh/h	549	489	2833	1264	220	2833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.29	0.29
Uniform Delay (d), s/veh	50.2	49.2	4.4	3.0	6.3	0.0
Incr Delay (d2), s/veh	4.2	2.5	0.8	0.4	4.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	3.4	4.7	1.3	1.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.4	51.7	5.1	3.5	10.3	0.3
LnGrp LOS	D	D	A	A	B	A
Approach Vol, veh/h	278		1849			1979
Approach Delay, s/veh	53.3		4.9			1.0
Approach LOS	D		A			A
Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	101.7		101.7		18.3	
Change Period (Y+Rc), s	6.0		* 6		5.0	
Max Green Setting (Gmax), s	74.0		* 75		35.0	
Max Q Clear Time (g_c+I1), s	20.8		65.5		12.5	
Green Ext Time (p_c), s	19.2		8.2		0.8	
Intersection Summary						
HCM 6th Ctrl Delay			6.3			
HCM 6th LOS			A			
Notes						

HCM 6th TWSC  
6: North RIRO Site Access/RIRO Access & E 6th Parkway

2040 Total  
PM Peak

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑	↑		↑↑↑↑	↑			↑			↑
Traffic Vol, veh/h	0	1056	355	0	935	40	0	0	385	0	0	125
Future Vol, veh/h	0	1056	355	0	935	40	0	0	385	0	0	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Free	-	-	None
Storage Length	-	-	0	-	-	0	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1148	386	0	1016	43	0	0	418	0	0	136
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	-	-	-	508
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	0	0	0	*718
Stage 1	0	-	-	0	-	-	0	0	0	0	0	-
Stage 2	0	-	-	0	-	-	0	0	0	0	0	-
Platoon blocked, %		-	-		-	-						1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	-	-	-	*718
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			0			11.2		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1						
Capacity (veh/h)	-	-	-	-	-	718						
HCM Lane V/C Ratio	-	-	-	-	-	0.189						
HCM Control Delay (s)	0	-	-	-	-	11.2						
HCM Lane LOS	A	-	-	-	-	B						
HCM 95th %tile Q(veh)	-	-	-	-	-	0.7						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

HCM 6th TWSC  
7: N Gun Club Road & East RIRO Site Access

2040 Total  
PM Peak













Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	↗
Traffic Vol, veh/h	0	121	0	1546	1601	330
Future Vol, veh/h	0	121	0	1546	1601	330
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	132	0	1680	1740	359
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	870	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	295	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	295	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	26.7	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 295		-	-		
HCM Lane V/C Ratio	- 0.446		-	-		
HCM Control Delay (s)	- 26.7		-	-		
HCM Lane LOS	- D		-	-		
HCM 95th %tile Q(veh)	- 2.2		-	-		

## Queues

2025 Total

## 1: N Gun Club Road &amp; E 6th Parkway

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	261	217	82	207	473	163	179	818	103	82	509	120
v/c Ratio	0.73	0.22	0.15	0.44	0.47	0.29	0.55	0.94	0.13	0.55	0.62	0.15
Control Delay	40.2	34.9	1.4	29.0	37.9	6.8	19.6	42.2	3.2	29.5	28.9	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0	0.1	0.0
Total Delay	40.2	34.9	1.4	29.0	37.9	6.8	19.6	60.4	3.2	29.5	29.0	2.7
Queue Length 50th (ft)	143	70	0	111	163	0	54	609	1	29	282	0
Queue Length 95th (ft)	#245	104	7	173	217	53	m112	#836	m14	63	394	26
Internal Link Dist (ft)		675			510			172			278	
Turn Bay Length (ft)				175		190	135			140		
Base Capacity (vph)	356	998	543	467	1013	557	323	884	811	149	869	811
Starvation Cap Reductn	0	0	0	0	0	0	0	87	0	0	0	0
Spillback Cap Reductn	0	0	1	0	0	0	0	0	0	0	21	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.22	0.15	0.44	0.47	0.29	0.55	1.03	0.13	0.55	0.60	0.15

## 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

2025 Total

## 4: N Gun Club Road &amp; Site Access/Ellsworth Avenue

AM Peak



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	198	2	145	46	141	873	5	607	115
v/c Ratio	0.71	0.00	0.30	0.31	0.31	0.70	0.02	0.58	0.12
Control Delay	62.3	29.5	7.0	29.0	9.6	19.6	7.0	15.3	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.6	0.0
Total Delay	62.3	29.5	7.0	29.0	9.6	20.0	7.0	15.9	0.8
Queue Length 50th (ft)	145	1	0	10	37	398	1	285	0
Queue Length 95th (ft)	227	8	48	47	69	#865	m2	511	5
Internal Link Dist (ft)		445		495		760		200	
Turn Bay Length (ft)									
Base Capacity (vph)	309	636	612	234	453	1241	303	1051	952
Starvation Cap Reductn	0	0	0	0	0	0	0	162	0
Spillback Cap Reductn	0	0	0	1	0	96	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.00	0.24	0.20	0.31	0.76	0.02	0.68	0.12

## 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

2025 Total

## 1: N Gun Club Road &amp; E 6th Parkway

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	368	488	137	208	374	109	177	676	167	239	888	109
v/c Ratio	0.99	0.76	0.36	0.65	0.67	0.31	0.91	0.74	0.19	0.84	0.97	0.13
Control Delay	79.0	56.1	10.1	39.5	54.1	6.3	67.4	24.5	3.4	40.8	53.9	1.8
Queue Delay	0.0	0.0	0.9	12.3	0.0	0.0	0.0	6.6	0.0	0.0	1.4	0.0
Total Delay	79.0	56.1	11.0	51.8	54.1	6.3	67.4	31.1	3.4	40.8	55.4	1.8
Queue Length 50th (ft)	232	194	0	118	145	0	77	440	27	83	648	0
Queue Length 95th (ft)	#431	#274	56	184	198	32	m#192	584	m34	#176	#938	19
Internal Link Dist (ft)		675			510			172			278	
Turn Bay Length (ft)				175		190	135			140		
Base Capacity (vph)	371	638	385	342	560	353	195	915	859	284	915	835
Starvation Cap Reductn	0	0	0	0	0	0	0	191	0	0	0	0
Spillback Cap Reductn	0	0	95	109	0	0	0	0	0	0	8	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.76	0.47	0.89	0.67	0.31	0.91	0.93	0.19	0.84	0.98	0.13

## 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

2025 Total

## 4: N Gun Club Road &amp; Site Access/Ellsworth Avenue

PM Peak



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	158	2	84	23	108	879	22	1108	79
v/c Ratio	0.59	0.01	0.21	0.18	0.53	0.71	0.07	0.96	0.08
Control Delay	55.7	31.0	7.9	31.5	27.7	21.7	11.4	43.6	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.3	0.0	42.4	0.0
Total Delay	55.7	31.0	7.9	31.5	27.7	21.9	11.4	86.0	2.9
Queue Length 50th (ft)	115	1	0	5	31	507	8	~907	0
Queue Length 95th (ft)	181	8	38	32	97	#863	m12	m#1099	m3
Internal Link Dist (ft)		445		495		760		200	
Turn Bay Length (ft)									
Base Capacity (vph)	324	558	533	157	208	1230	311	1152	1018
Starvation Cap Reductn	0	0	0	0	0	0	0	179	0
Spillback Cap Reductn	0	0	0	0	0	57	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.00	0.16	0.15	0.52	0.75	0.07	1.14	0.08

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.













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

## Queues

2040 Total

## 1: N Gun Club Road &amp; E 6th Parkway

AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	511	358	117	492	527	217	428	1011	163	109	735	163
v/c Ratio	0.80	0.26	0.07	0.80	0.39	0.14	0.77	0.82	0.10	0.48	0.82	0.10
Control Delay	51.6	37.0	0.1	58.1	38.0	0.2	61.7	38.6	0.1	61.4	50.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0
Total Delay	51.6	37.0	0.1	58.1	38.0	0.2	61.7	39.3	0.1	61.4	50.3	0.1
Queue Length 50th (ft)	199	90	0	189	127	0	159	310	0	42	277	0
Queue Length 95th (ft)	262	118	0	251	164	0	237	338	0	73	351	0
Internal Link Dist (ft)		613			510			172			546	
Turn Bay Length (ft)				175		190	135			140		
Base Capacity (vph)	657	1381	1583	630	1346	1583	572	1297	1583	228	943	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	80	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	0.78	0.26	0.07	0.78	0.39	0.14	0.75	0.83	0.10	0.48	0.78	0.10
Intersection Summary												

## Queues

2040 Total

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) &amp; E 6th Parkway

AM Peak



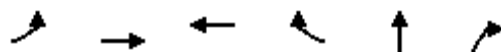
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	662	190	297	971	225	272
v/c Ratio	0.22	0.18	0.49	0.26	0.67	0.61
Control Delay	11.8	2.3	14.7	5.0	54.5	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	2.3	14.7	5.0	54.5	22.3
Queue Length 50th (ft)	81	0	65	63	164	73
Queue Length 95th (ft)	116	33	129	73	231	153
Internal Link Dist (ft)	683			418	310	
Turn Bay Length (ft)		350	220			
Base Capacity (vph)	3075	1032	605	3780	457	543
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.18	0.49	0.26	0.49	0.50
Intersection Summary						

## Queues

2040 Total

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) &amp; E 6th Parkway

AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	163	691	996	204	272	225
v/c Ratio	0.38	0.19	0.33	0.20	0.73	0.44
Control Delay	10.3	5.1	15.2	7.2	55.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	5.1	15.2	7.2	55.0	7.4
Queue Length 50th (ft)	35	61	161	38	197	0
Queue Length 95th (ft)	62	79	295	m79	277	61
Internal Link Dist (ft)		418	624		327	
Turn Bay Length (ft)	230			285		
Base Capacity (vph)	545	3674	3034	1026	460	575
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.19	0.33	0.20	0.59	0.39

## Intersection Summary

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

## Queues

2040 Total

## 4: N Gun Club Road &amp; Site Access/Ellsworth Avenue

AM Peak



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	412	212	59	311	1157	5	876	283
v/c Ratio	0.67	0.36	0.40	0.68	0.51	0.02	0.52	0.31
Control Delay	51.4	5.8	31.5	33.0	10.7	9.4	13.9	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	51.4	5.8	31.5	33.0	10.7	9.4	14.0	1.9
Queue Length 50th (ft)	155	3	16	112	152	1	90	1
Queue Length 95th (ft)	200	53	57	228	184	m2	217	m24
Internal Link Dist (ft)		445	495		760		200	
Turn Bay Length (ft)								
Base Capacity (vph)	743	737	222	468	2259	310	1684	901
Starvation Cap Reductn	0	0	0	0	0	0	212	0
Spillback Cap Reductn	0	0	0	0	5	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.29	0.27	0.66	0.51	0.02	0.60	0.31

## Intersection Summary

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

## Queues

2040 Total

## 5: N Gun Club Road &amp; E Alameda Avenue

AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	245	111	1358	136	63	1036
v/c Ratio	0.69	0.33	0.53	0.11	0.29	0.40
Control Delay	54.6	23.2	8.9	1.3	4.7	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	23.2	8.9	1.3	4.7	1.7
Queue Length 50th (ft)	178	36	217	0	3	24
Queue Length 95th (ft)	248	83	334	20	m9	47
Internal Link Dist (ft)	498		558			760
Turn Bay Length (ft)						
Base Capacity (vph)	545	502	2567	1185	221	2567
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.22	0.53	0.11	0.29	0.40

## Intersection Summary













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

## Queues

2040 Total

## 1: N Gun Club Road &amp; E 6th Parkway

PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	611	699	180	523	400	138	469	859	276	311	1267	138
v/c Ratio	0.89	0.66	0.11	0.96	0.47	0.09	0.91	0.59	0.17	0.73	0.93	0.09
Control Delay	57.2	46.3	0.1	80.9	47.3	0.1	70.2	26.0	0.2	61.2	49.1	0.1
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.3	0.0	0.0	44.9	0.0
Total Delay	57.2	46.3	0.1	81.8	47.3	0.1	70.2	26.4	0.2	61.2	94.0	0.1
Queue Length 50th (ft)	245	190	0	209	103	0	200	188	0	121	490	0
Queue Length 95th (ft)	#329	239	0	#319	139	0	#291	244	0	171	#636	0
Internal Link Dist (ft)		610			510			172			516	
Turn Bay Length (ft)				175		190	135			140		
Base Capacity (vph)	686	1059	1583	543	847	1583	514	1446	1583	429	1356	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	176	0	0	0	0
Spillback Cap Reductn	0	0	111	3	0	0	0	0	0	0	227	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.66	0.12	0.97	0.47	0.09	0.91	0.68	0.17	0.72	1.12	0.09

## Intersection Summary

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

Queue shown is maximum after two cycles.

## Queues

2040 Total

## 2: E-470 On Ramp (Northbound)/E-470 Off Ramp (Southbound) &amp; E 6th Parkway

PM Peak



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1101	326	336	801	357	190
v/c Ratio	0.43	0.34	0.77	0.23	0.79	0.35
Control Delay	21.1	3.3	30.5	4.1	54.4	6.3
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	21.1	3.3	30.7	4.1	54.4	6.3
Queue Length 50th (ft)	202	0	47	29	257	0
Queue Length 95th (ft)	264	53	#182	34	351	54
Internal Link Dist (ft)	548			418	310	
Turn Bay Length (ft)		350	220			
Base Capacity (vph)	2543	954	467	3446	531	607
Starvation Cap Reductn	0	0	7	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.34	0.73	0.23	0.67	0.31

## Intersection Summary

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

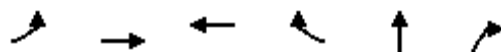
Queue shown is maximum after two cycles.

## Queues

2040 Total

## 3: E-470 Off Ramp (Northbound)/E-470 On Ramp (Southbound) &amp; E 6th Parkway

PM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	217	1233	1001	151	136	301
v/c Ratio	0.48	0.33	0.33	0.15	0.40	0.78
Control Delay	16.9	4.3	9.9	3.8	44.2	44.8
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	16.9	4.4	9.9	3.8	44.2	44.8
Queue Length 50th (ft)	33	82	135	14	92	153
Queue Length 95th (ft)	140	109	m312	m36	143	239
Internal Link Dist (ft)		418	627		327	
Turn Bay Length (ft)	230			285		
Base Capacity (vph)	552	3762	3075	1017	457	480
Starvation Cap Reductn	0	925	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.43	0.33	0.15	0.30	0.63

## Intersection Summary

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

## Queues

2040 Total

## 4: N Gun Club Road &amp; Site Access/Ellsworth Avenue

PM Peak



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	527	207	39	328	1095	26	1481	259
v/c Ratio	0.71	0.35	0.31	0.83	0.51	0.08	0.91	0.31
Control Delay	49.1	6.0	36.8	53.7	12.5	9.8	30.4	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.0
Total Delay	49.1	6.0	36.8	53.7	12.5	9.8	34.9	3.5
Queue Length 50th (ft)	194	4	13	147	310	5	-659	12
Queue Length 95th (ft)	248	56	50	260	250	m6	m#797	m20
Internal Link Dist (ft)		445	495		760		200	
Turn Bay Length (ft)								
Base Capacity (vph)	829	675	130	458	2162	333	1624	829
Starvation Cap Reductn	0	0	0	0	0	0	101	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.31	0.30	0.72	0.51	0.08	0.97	0.31

## Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

## Queues

2040 Total

## 5: N Gun Club Road &amp; E Alameda Avenue

PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	163	115	1550	299	140	1839
v/c Ratio	0.60	0.42	0.57	0.23	0.72	0.67
Control Delay	56.1	34.4	7.0	1.0	33.1	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	34.4	7.0	1.0	33.1	9.0
Queue Length 50th (ft)	119	54	216	0	23	104
Queue Length 95th (ft)	181	107	334	23	m59	247
Internal Link Dist (ft)	498		464			760
Turn Bay Length (ft)						
Base Capacity (vph)	545	513	2730	1289	195	2760
Starvation Cap Reductn	0	0	0	0	0	60
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.22	0.57	0.23	0.72	0.68

## Intersection Summary

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