TRAFFIC IMPACT REPORT

HIGHLANDS AT BRIARGATE
COLORADO SPRINGS, COLORADO

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I. INTRODUCTION

A. Project Overview

Davis Development is proposing to develop a property containing approximately 13.43 acres of undeveloped land situated along the north side of Research Pkwy. and west of Chapel Hills Dr. in Colorado Springs, Colorado. More specifically, the subject property is bound by undeveloped land on the north, Chapel Hills Dr. on the east, Research Pkwy. on the south, and commercial property on the west. Upon build-out, the proposed development will consist of 220 multi-family (mid-rise) residential dwelling units and 26 multi-family (low rise) townhomes. The proposed development will be known as Highlands at Briargate.

Vehicular access for the proposed Highlands at Briargate development will be provided by two access driveways. The north site access driveway will provide full movement access at the intersection of Spring Mountain View and Highlands Ridge Heights, approximately 500 feet west of the centerline of the Spring Mountain View/Dynamic Dr./Chapel Hills Dr. intersection. The south site access driveway will provide ¾ movement (right turn in/out and left turn out) access and intersect Chapel Hills Dr. opposite of the existing T-Mobile Access driveway, approximately 435 feet north of the centerline of the Chapel Hills Dr./Research Pkwy. intersection.

Figure 1 provides a site location map of the proposed project and surrounding transportation system, and Figure 2 graphically illustrates the conceptual site plan and proposed access points for the proposed Highlands at Briargate development.

B. Purpose of Study

The purpose of this study is to evaluate the impact of the vehicular trips projected to be generated by the proposed Highlands at Briargate development on the study area intersections and roadway system. The study includes 2022 (existing), 2025 (year of anticipated project build-out), and 2045 (long-term) analysis horizons.

C. Study Area

The study area encompasses the existing roadway system in the vicinity of the project site. Specifically, the following existing intersections are included in the study:

- Research Pkwy./Chapel Hills Dr.
- Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
- T-Mobile Access/ Chapel Hills Dr.

II. EXISTING CONDITIONS

A. Existing Traffic Volumes

Existing traffic volume counts were collected for this study at the following locations on Wednesday, March 2, 2022:

- Peak Hour Intersection Turning Movement Counts
  - Research Pkwy./Chapel Hills Dr.
  - Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
  - T-Mobile Access/Chapel Hills Dr.

- 24-Hour Directional Counts
  - Chapel Hills Dr. north of Dynamic Dr.
  - Chapel Hills Dr. south of Dynamic Dr.
  - Dynamic Dr. east of Chapel Hills Dr.
  - Research Pkwy. east of Chapel Hills Dr.

A summary of the 2022 existing traffic volume counts used in this study are graphically illustrated in Figure 3. Detailed traffic volume count data can be found in Appendix "A".

B. Existing Roadway System

The existing transportation network in the vicinity of the proposed Highlands at Briargate development is graphically illustrated in Figure 1. The following narrative provides a description of the study area roadways and associated intersections:

Study Area Roadways:

- **Research Pkwy.** – Within the study area, Research Pkwy. is classified as a Principal Arterial roadway under the jurisdiction of the City of Colorado Springs. The roadway section consists of three travel lanes in each direction with a raised center median. There is curb and gutter and detached sidewalks on both sides of the roadway. The posted speed limit is 45 mph.
- **Chapel Hills Dr.** – Within the study area, Chapel Hills Dr. is classified as a Principal Arterial roadway under the jurisdiction of the City of Colorado Springs. The roadway section consists of three travel lanes in each direction with a raised center median. There is curb and gutter along both sides of the roadway. There is a detached sidewalk along the east side of the roadway. The posted speed limit is 35 mph.
- **Dynamic Dr.** – Within the study area, Dynamic Dr. is classified as a Local roadway under the jurisdiction of the City of Colorado Springs. The roadway section consists of one travel lane in each direction. There is curb and gutter and detached sidewalk along both sides of the roadway. The posted speed limit is 25 mph.

Study Area Intersections:

- **Research Pkwy./Chapel Hills Dr. –** The Research Pkwy./Chapel Hills Dr. intersection is a four-legged intersection operating under actuated/coordinated traffic signal control with protected/permitted left turn phasing on all four approaches. The east leg of the intersection has one left turn lane with approximately 320 feet of storage, three through lanes and one right turn lane with approximately 185 feet of storage on the westbound approach, and three eastbound departure lanes. The west leg of the intersection has one left turn lane with approximately 400 feet of storage, three through lanes and one right turn lane with approximately 160 feet of storage on the eastbound approach, and three westbound departure lanes. The north leg of the intersection has one left turn lane with approximately 195 feet of storage, three through lanes and one right turn lane with approximately 185 feet of storage on the southbound approach, and three northbound departure lanes. The south leg of the intersection has one left turn lane with approximately 150 feet of storage, two through lanes and one right turn lane with approximately 330 feet of storage on the northbound approach, and three southbound departure lanes. No existing crash trends were noticed at this intersection.

- **Spring Mountain View/Dynamic Dr./Chapel Hills Dr. –** The Spring Mountain View/Dynamic Dr./Chapel Hills Dr. intersection is a four-legged intersection operating under stop sign control on the eastbound and westbound approaches. The east leg of the intersection has one shared left/through/right turn lane on the westbound approach, and one eastbound departure lane. The west leg of the intersection has one shared left/through/right turn lane on the eastbound approach, and one westbound departure lane. The north leg of the intersection has one left turn lane with approximately 235 feet of storage, three through lanes and one right turn lane with approximately 175 feet of storage on the southbound approach, and three northbound departure lanes. The south leg of the intersection has one left turn lane with approximately 240 feet of storage, three through lanes and one right turn lane with approximately 150 feet of storage on the northbound approach, and three southbound departure lanes. No existing crash trends were noticed at this intersection.
- **T-Mobile Access/Chapel Hills Dr. –** The T-Mobile Access /Chapel Hills Dr. intersection is currently a "T" intersection operating under stop sign control on the westbound approach. The east leg of the intersection has one shared left/right turn lane on the westbound approach, and one eastbound departure lane. The north leg of the intersection has one left turn lane with approximately 210 feet of storage, and three through lanes on the southbound approach, and three northbound departure lanes. The south leg of the intersection has two through lanes and one shared through/right turn lane on the northbound approach, and three southbound departure lanes. No existing crash trends were noticed at this intersection.

C. 2022 Existing Conditions Operational Analysis

In order to establish a base condition in which to evaluate and compare the impacts of the traffic generated by the proposed Highlands at Briargate development on the study area intersections, peak hour capacity analyses were performed for the 2022 existing conditions scenario. These analyses utilized the methodologies contained in the *Highway Capacity Manual 6th Edition* (HCM 6) employing *Synchro 11* software and resulted in a qualitative measure of the operational characteristics of the intersection, described by a letter designation ranging from "A" to "F" known as "Level of Service" (LOS). LOS "A" represents free-flow operating conditions, whereas LOS "F" represents excessive congestion and delay. Unsignalized intersection capacity analysis reports a LOS designation for each impeded intersection movement. Signalized intersection capacity analysis reports the overall LOS designation for the intersection as well as for each lane group and approach. LOS "D" is considered the minimum acceptable standard of operation.

The study area intersections included in the 2022 existing conditions analysis are as follows:

- Research Pkwy./Chapel Hills Dr.
- Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
- T-Mobile Access/Chapel Hills Dr.

Traffic signal timing plans were obtained from the City of Colorado Springs and utilized in the operational analyses of the signalized intersections. These traffic signal timing plans can be found in Appendix "B"

The results of the 2022 existing conditions operational analysis are summarized in Table 1, below. Figure 4 graphically illustrates the results of the 2022 existing conditions analysis and

detailed *Synchro 11* software intersection capacity analysis reports are provided in Appendix "C".

As shown in Table 1, all of the existing study area intersections are shown to be operating at acceptable levels of service (LOS "D" or better). All of the individual lane groups for each intersection are also shown to be operating at acceptable levels of service (LOS "D" or better).

D. 2022 Existing Conditions Queuing Analysis

Queue lengths and associated storage requirements for auxiliary lanes (turn bays) at the existing study area intersections were computed utilizing the *Synchro 11* 95%tile reported queues. Queue length calculations are based on a 25-foot vehicle length and reported as the total cumulative computed queue length for all traffic lanes in the lane group.

Existing storage capacity for auxiliary lane groups (left turn and right turn lanes) is reported as the cumulative capacity of all lanes in the group. Table 2 provides a summary of this analysis and comparison to the actual vehicle storage lengths provided for each of the existing study area intersections.

As shown in Table 2 there are no queue related issues being experienced at the existing study area intersections based on the reported queues in the 2022 existing conditions analysis scenario:

TABLE 1
2022 EXISTING CONDITIONS
SUMMARY OF OPERATIONAL ANALYSIS

INTERSECTION	CONTROL	2022 EXISTING TRAFFIC			
		AM PEAK LOS	AM PEAK DELAY	PM PEAK LOS	PM PEAK DELAY
1. Research Pkwy./Chapel Hills Dr.	**Signal**				
a. EB L (Prot + Perm)		C	21.2	C	21.9
b. EB T		C	24.0	C	31.2
c. EB R		C	22.8	C	24.4
d. WB L (Prot + Perm)		B	19.2	C	25.6
e. WB T		C	24.7	C	25.5
f. WB R		C	22.1	C	23.9
g. NB L (Prot + Perm)		C	33.9	C	33.2
h. NB T		D	36.5	D	37.6
i. NB R		D	37.1	D	41.9
j. SB L (Prot + Perm)		C	31.9	C	30.6
k. SB T		C	33.8	C	32.5
i. SB R		C	34.4	C	32.3
l. INTERSECTION		**C**	**26.1**	**C**	**30.5**
2. Dynamic Dr./Chapel Hills Dr.	**TWSC**				
a. EB LTR	Stop	B	12.0	B	10.2
b. WB LTR	Stop	B	11.8	B	12.6
c. NB L		A	9.7	A	9.5
d. SB L		A	9.3	A	9.7
e. INTERSECTION		**A**	**2.7**	**A**	**2.0**
3. T-Mobile Access/Chapel Hills Dr.	**TWSC**				
a. WB LR	Stop	B	13.0	B	12.6
b. SB L		A	9.9	A	9.6
c. INTERSECTION		**A**	**2.6**	**A**	**2.0**

TABLE 2
2022 EXISTING CONDITIONS
SUMMARY OF QUEUING ANALYSIS

INTERSECTION (# OF LANES IN LANE GROUP)	EXISTING STORAGE (FT)	2022 EXISTING TRAFFIC QUEUE LENGTH (FT) 95TH%	
		AM PEAK	PM PEAK
1. Research Pkwy./Chapel Hills Dr.			
a. EB L (1)	400	59	86
b. EB T (3)	*	300	816
c. EB R (1)	160	0	0
d. WB L (1)	320	136	121
e. WB T (3)	*	734	349
f. WB R (1)	185	41	0
g. NB L (1)	150	24	48
h. NB T (2)	*	122	192
i. NB R (1)	330	4	56
j. SB L (1)	195	83	149
k. SB T (3)	*	186	207
l. SB R (1)	185	10	0
2. Dynamic Dr./Chapel Hills Dr.			
a. EB LTR (1)	*	0	5
b. WB LTR (1)	*	15	8
c. NB L (1)	240	3	3
d. SB L (1)	235	5	5
3. T-Mobile Access/Chapel Hills Dr.			
a. WB LR (1)	*	15	18
b. SB L (1)	210	8	3

* = Extension of approach laneage.

III. BACKGROUND TRAFFIC

A. Background Traffic Volumes

The development of the background traffic models for the 2025 (build-out) and 2045 (long-term) analysis horizons were developed for this study employing the following strategy:

- **2025 (Build-Out) Background Traffic Volumes** - The 2025 (build-out) background traffic volumes were developed assuming that no other significant development or transportation system modifications will come on-line within the study area by build-out of the proposed Highlands at Briargate development.
- **2045 (Long-Term) Background Traffic Volumes** – The 2045 (long-term) background traffic volumes were developed employing a two-step process. The first step of the process was to apply a “regional” background traffic growth factor to the 2022 (existing) traffic volumes to forecast the 2045 (long-term) “regional” background traffic volume component. The second step was to develop a “local” background traffic volume model

component. This component assumes that the remainder of the undeveloped property to the north of Spring Mountain View will be fully developed by the 2045 (long-term) analysis horizon. Forecast traffic volumes generated by the expected development then were distributed and assigned to the study area roadway network. Combining the "regional" and "local" background traffic volume components results in the 2045 (long-term) background traffic volume forecast for this study.

The following describes the methodology utilized in developing the 2025 (build-out) and 2045 (long-term) analysis horizons background traffic models.

- "Regional" Background Traffic Volumes:
  - The *Pikes Peak Area 2045 Moving Forward Plan (2021)* was used to establish the average annual traffic volume growth rate to be used in this study. This average annual traffic volume growth rate is forecast to be 1.40% for all roadways within the study area. This equates to a 3-year (2022 to 2025) growth factor of 1.043 and a 23-year (2022 to 2045) growth factor of 1.38.
  - The appropriate AGRs were applied to the 2022 (existing) traffic volumes in order to develop the forecast 2025 (build-out) and 2045 (long-term) "regional" background traffic volumes.
  - For the purposes of this study, it was assumed that the distribution of intersection approach traffic (left turn, through, right turn) will remain static through the 2045 (long-term) analysis horizon.
  - Figure 5 graphically illustrates the forecast 2025 (build-out) analysis horizon "regional" background traffic volumes on the study area roadways and intersections.
  - Figure 6 graphically illustrates the forecast 2045 (long-term) analysis horizon "regional" background traffic volumes on the study area roadways and intersections.

- "Local" Background Traffic Volumes:
  - In order to account for the influence of the development of the properties adjacent to the study area roadways and intersections a "local" background traffic volume component was developed. This "local" background traffic component was applied separately to the 2025 (build-out) and 2045 (long-term) analysis horizon background traffic models based on the properties that are assumed to be developed prior to each analysis horizon.
  - The first step in developing the "local" background traffic volumes was to identify the location, size and planned land uses for these properties. In order to accomplish this, information from The Keith Corporation providing details about the proposed site to the north of Spring Mountain View was utilized to determine land uses and sizes that were assumed for this parcel. The anticipated build-out year for this parcel meant that it would only be included in the 2045 (long-term) analysis horizon.
  - Once the development parameters of this parcel were identified, vehicular trips were generated, distributed, and assigned to the study area roadway network. Site generated vehicle trips were determined utilizing the *ITE Trip Generation Manual, 11th Edition.* Figure D-3, in Appendix "D" provides a summary of the site generated trip analysis for the parcel. Figure D-4 in Appendix "D" graphically illustrate the site generated trip distribution for the parcel.
  - Figure 7 graphically illustrate the forecast 2045 (long-term) analysis horizon "local" background traffic volumes, respectively, on the study area roadways and intersections.

- 2025 (Build-Out) and 2045 (Long-Term) Total Background Traffic Volumes

- The 2025 (build-out) total background traffic volumes for this study consists solely of the 2025 (build-out) "regional" background traffic volumes since no "local" background traffic volume component was considered. Figure 5 graphically illustrates the 2025 (build-out) total background traffic volumes on the study area roadways and intersections
- The 2045 (long-term) total background traffic volumes for this study consists of the sum of the 2045 (long-term) "regional" background traffic volumes plus the 2045 (long-term) "local" background traffic volumes. Figure 8 graphically illustrates the 2045 (long-term) total background traffic volumes on the study area roadways and intersections.

B. Background Traffic Operational Analysis

The following study area intersections were analyzed for the 2025 (build-out) and 2045 (long-term) total background traffic analysis horizons in order to provide a basis for comparison of their operational characteristics with and without the proposed Highlands at Briargate development:

- Research Pkwy./Chapel Hills Dr.
- Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
- T-Mobile Access/Chapel Hills Dr.

The results of the background traffic operational analyses are summarized graphically for the 2025 (build-out) and 2045 (long-term) background traffic analysis horizons in Figures 9 and 10, respectively. A summary of the results of the intersection capacity analyses is provided in Table 3 and detailed *Synchro 11* software intersection capacity analysis reports in Appendix "C".

As shown in Table 3, all of the existing study area intersections are projected to operate at acceptable levels of service (LOS "D" or better), overall, with the exception of the following:

- Spring Mountain View/Dynamic Dr./Chapel Hills Dr. (TWSC)
  - The EB LTR movement is projected to experience a failing level of service (LOS "F") during the p.m. peak period by the 2045 (long-term) analysis horizon.
  - The WB LTR movement is projected to experience a poor level of service (LOS "E") during the a.m. peak period and a failing level of service (LOS "F") during the p.m. peak period by the 2045 (long-term) analysis horizon.
  - The overall intersection is also projected to experience a failing level of service (LOS "F") during the p.m. peak period by the 2045 (long-term) analysis horizon.

C. Background Traffic Queuing Analysis

Queue lengths and associated storage requirements for auxiliary lanes (turn bays) at the existing study area intersections were computed for the 2025 (build-out) and 2045 (long-term) analysis horizon background traffic scenarios. Table 4 provides a summary of this analysis and comparison to the actual vehicle storage lengths provided for each of the existing study area intersections.

As shown in Table 4, the following queue related issues are projected to be experienced at the study area intersections based on the reported queues in the 2025 (build-out) and 2045 (long-term) analysis horizon background traffic analysis scenarios:

- Research Pkwy./Chapel Hills Dr.

- The southbound left turn lane group is projected to exceed existing storage lane capacity during the p.m. peak hour by the 2045 (long-term) analysis horizon.

- Spring Mountain View/Dynamic Dr./Chapel Hills Dr. (TWSC)
  - The northbound left turn lane group is projected to exceed existing storage lane capacity during the a.m. peak hour by the 2045 (long-term) analysis horizon.
  - The southbound left turn lane group is projected to exceed existing storage lane capacity during the a.m. peak hour by the 2045 (long-term) analysis horizon.

- Spring Mountain View/Dynamic Dr./Chapel Hills Dr. (Signal)
  - The northbound left turn lane group is projected to exceed existing storage lane capacity during the p.m. peak hour by the 2045 (long-term) analysis horizon.

TABLE 3
2025 (BUILD-OUT) & 2045 (LONG-TERM) BACKGROUND TRAFFIC
SUMMARY OF OPERATIONAL ANALYSIS

INTERSECTION	CONTROL	2025 BACKGROUND TRAFFIC				2045 BACKGROUND TRAFFIC			
		AM PEAK LOS	AM PEAK DELAY	PM PEAK LOS	PM PEAK DELAY	AM PEAK LOS	AM PEAK DELAY	PM PEAK LOS	PM PEAK DELAY
1. Research Pkwy./Chapel Hills Dr.	**Signal**								
a. EB L (Prot + Perm)		C	21.5	C	21.9	D	37.9	C	28.5
b. EB T		C	24.2	C	31.6	C	26.7	D	40.0
c. EB R		C	23.0	C	24.4	C	24.9	C	27.2
d. WB L (Prot + Perm)		B	19.6	C	27.3	C	27.0	D	51.4
e. WB T		C	25.2	C	25.8	C	33.1	C	32.4
f. WB R		C	22.5	C	24.2	C	28.7	C	31.1
g. NB L (Prot + Perm)		C	33.8	C	33.2	C	33.6	C	34.0
h. NB T		D	36.6	D	37.7	D	37.9	D	41.2
i. NB R		D	37.2	D	42.2	D	38.0	D	46.8
j. SB L (Prot + Perm)		C	31.8	C	30.8	C	30.6	D	52.7
k. SB T		C	33.9	C	32.6	C	33.2	C	34.6
i. SB R		C	34.5	C	32.5	D	35.2	D	39.1
l. INTERSECTION		**C**	**26.4**	**C**	**30.9**	**C**	**31.8**	**D**	**39.0**
2a. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.	**TWSC**								
a. EB LTR	Stop	B	12.2	B	10.3	C	21.0	F	498.6
b. WB LTR	Stop	B	12.1	B	12.9	E	39.3	F	987.5
c. NB L		A	9.7	A	9.6	B	12.5	B	14.8
d. SB L		A	9.3	A	9.7	A	9.9	B	10.5
e. INTERSECTION		**A**	**2.7**	**A**	**2.0**	**A**	**8.9**	**F**	**174.2**
2b. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.	**Signal**								
a. EB LTR		-	-	-	-	C	29.5	C	29.5
b. WB LTR		-	-	-	-	C	30.7	B	17.7
c. NB L		-	-	-	-	A	1.0	A	4.3
d. NB T		-	-	-	-	A	0.0	A	0.1
e. NB R		-	-	-	-	A	0.0	A	0.0
f. SB L		-	-	-	-	A	2.7	A	7.5
g. SB T		-	-	-	-	A	2.6	A	7.5
h. SB R		-	-	-	-	A	2.4	A	6.9
i. INTERSECTION		**-**	**-**	**-**	**-**	**A**	**7.4**	**B**	**10.9**
3. T-Mobile Access/Chapel Hills Dr.	**TWSC**								
a. WB LR	Stop	B	13.3	B	12.9	C	21.9	D	28.1
b. SB L		A	10.0	A	9.7	B	12.3	B	12.8
c. INTERSECTION		**A**	**2.6**	**A**	**2.0**	**A**	**3.1**	**A**	**2.7**

TABLE 4
2025 (BUILD-OUT) & 2045 (LONG-TERM) BACKGROUND TRAFFIC
SUMMARY OF QUEUING ANALYSIS

INTERSECTION (# OF LANES IN LANE GROUP)	EXISTING STORAGE (FT)	2025 BACKGROUND TRAFFIC QUEUE LENGTH (FT) 95TH%		2045 BACKGROUND TRAFFIC QUEUE LENGTH (FT) 95TH%	
		AM PEAK	PM PEAK	AM PEAK	PM PEAK
1. Research Pkwy./Chapel Hills Dr.					
a. EB L (1)	400	61	89	215	215
b. EB T (3)	*	314	860	410	1316
c. EB R (1)	160	0	0	8	0
d. WB L (1)	320	143	135	189	322
e. WB T (3)	*	770	366	1081	524
f. WB R (1)	185	43	0	84	43
g. NB L (1)	150	26	49	31	61
h. NB T (2)	*	124	200	213	365
i. NB R (1)	330	5	57	24	64
j. SB L (1)	195	85	155	124	282
k. SB T (3)	*	194	216	278	388
l. SB R (1)	185	14	0	49	62
2a. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.					
a. EB LTR (1)	*	0	5	525	820
b. WB LTR (1)	*	15	8	983	278
c. NB L (1)	240	3	3	313	65
d. SB L (1)	235	5	5	248	8
2b. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.					
a. EB LTR (1)	*	-	-	48	101
b. WB LTR (1)	*	-	-	69	55
c. NB L (1)	240	-	-	92	276
d. NB T (3)	*	-	-	112	172
e. NB R (1)	155	-	-	2	0
f. SB L (1)	235	-	-	19	29
g. SB T (3)	*	-	-	82	123
h. SB R (1)	175	-	-	6	11
3. T-Mobile Access/Chapel Hills Dr.					
a. WB LR (1)	*	18	20	45	65
b. SB L (1)	210	8	3	15	8

* = Extension of approach laneage.

IV. PROJECT DEVELOPMENT

A. Trip Generation

The trip generation projections for the proposed Highlands at Briargate development were forecast using the publication *Trip Generation, 11th Edition*, by the Institute of Transportation Engineers (ITE). Estimates of total daily traffic volumes and a.m. and p.m. peak hour traffic volumes were calculated. Trip generation reductions as a result of internal trip capture, transportation demand management or transit use were not considered.

For the purposes of this study, it was assumed that the subject property will be fully developed by 2025 and consist of 220 multi-family (mid-rise) residential dwelling units and 26 multi-family (low rise) townhomes. Based on these parameters, at buildout, the proposed Highlands at Briargate development is projected to generate 1,245 daily vehicle trips of which 116 are projected to be generated during the a.m. peak hour and 118 are projected to be generated during the p.m. peak hour. A summary of the trip generation projections are provided in Table 5.

TABLE 5
HIGHLANDS AT BRIARGATE – TRIP GENERATION SUMMARY

Land Use	Intensity	ITE Code	Daily (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
				Total	In	Out	Total	In	Out
Multifamily Housing (Mid Rise) (3 - 10 Stories)	220 DU	221	1003	85	20	65	86	52	34
Multifamily Housing (Low Rise) (Townhomes)	26 DU	220	242	31	7	24	32	20	12
Total			**1,245**	**116**	**27**	**89**	**118**	**72**	**46**

B. Trip Distribution

The distribution of the projected vehicular trips generated by the proposed Highlands at Briargate development was established based on the following:

- Current and projected future traffic patterns on the surrounding transportation system
- Efficiency of access to principal transportation corridors such as I-25, Voyager Pkwy., and N. Powers Blvd (SH 21).
- Potential trip origins/destinations for the proposed land uses such as surrounding shopping centers, schools, and employment centers.

Figure 11 graphically illustrates the projected trip distribution patterns for the proposed Highlands at Briargate development.

C. Trip Assignment

The vehicular traffic volumes projected to be generated by the proposed Highlands at Briargate development, shown in Table 5, were assigned to the study area roadways and intersections utilizing the trip distribution methodology described above. Figure 12 graphically illustrates the site generated trip assignment for the proposed Highlands at Briargate development.

V. TOTAL TRAFFIC

Total traffic forecasts for the 2025 (build-out) and 2045 (long-term) analysis horizons were computed by combining the associated 2025 (build-out) and 2045 (long-term) background traffic volumes with the projected site generated traffic volumes. Figures 13 & 14 graphically illustrate the total traffic projections for the study area intersections for the 2025 (build-out) and 2045 (long-term) analysis horizons, respectively.

VI. PROJECT ANALYSIS

A. Operational Analysis

In order to evaluate the impact of the proposed Highlands at Briargate development on the study area roadway system, peak hour intersection capacity analyses for the total traffic conditions were performed for the 2025 (build-out) and 2045 (long-term) analysis horizon total traffic scenarios at each of the study area intersections listed below.

- Research Pkwy./Chapel Hills Dr.
- Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
- Site Access/T-Mobile Access/Chapel Hills Dr.

The results of the total traffic operational analyses are summarized in Table 6, below. Figures 15 and 16 graphically illustrate the 2025 (build-out) and 2045 (long-term) analysis horizon total traffic scenarios operational analyses, respectively. Detailed *Synchro 11* software intersection capacity analysis reports are provided in Appendix “C”.

As shown in Table 6, all of the existing study area intersections are projected to operate at acceptable levels of service (LOS “D” or better), overall, with the exception of the following:

- Spring Mountain View/Dynamic Dr./Chapel Hills Dr. (TWSC)
  - The EB LTR movement is projected to experience a failing level of service (LOS “F”) during the p.m. peak period by the 2045 (long-term) analysis horizon.
  - The WB LTR movement is projected to experience a failing level of service (LOS “F”) during both the a.m. and p.m. peak period by the 2045 (long-term) analysis horizon.
  - The overall intersection is also projected to experience a failing level of service (LOS “F”) during the p.m. peak period by the 2045 (long-term) analysis horizon.
- Site Access/T-Mobile Access/Chapel Hills Dr.
  - The WB LTR movement is projected to experience a poor level of service (LOS “E”) during the p.m. peak period by the 2045 (long-term) analysis horizon.

A comparison of the 2025 (build-out) and 2045 (long-term) analysis horizons background and total traffic operational analyses indicates that the addition of the projected site generated vehicle trips from the proposed Highlands at Briargate development has a minimal effect on the overall operational characteristics of all of the study area intersections.

Table 7 provides a comparative summary of the 2025 (build-out) and 2045 (long-term) analysis horizons background and total traffic operational analyses.

B. Queuing Analysis

Queue lengths and associated storage requirements for auxiliary lanes (turn bays) at the study area intersections were computed for the 2025 (build-out) and 2045 (long-term) analysis horizon total traffic scenarios. Table 8 provides a summary of this analysis and comparison to the actual vehicle storage lengths provided for each of the existing study area intersections.

As shown in Table 8, the addition of the projected site generated vehicle trips from the proposed Highlands at Briargate development do not create any additional queuing issues beyond those identified in the background traffic analysis scenarios.

TABLE 6
2025 (BUILD-OUT) & 2045 (LONG-TERM) TOTAL TRAFFIC
SUMMARY OF OPERATIONAL ANALYSIS

INTERSECTION	CONTROL	2025 TOTAL TRAFFIC				2045 TOTAL TRAFFIC			
		AM PEAK LOS	AM PEAK DELAY	PM PEAK LOS	PM PEAK DELAY	AM PEAK LOS	AM PEAK DELAY	PM PEAK LOS	PM PEAK DELAY
1. Research Pkwy./Chapel Hills Dr.	**Signal**								
a. EB L (Prot + Perm)		C	21.8	C	21.8	D	42.1	C	31.3
b. EB T		C	24.5	C	31.6	C	27.0	D	40.0
c. EB R		C	23.3	C	24.4	C	25.2	C	27.2
d. WB L (Prot + Perm)		C	20.2	C	27.3	C	27.5	D	51.4
e. WB T		C	25.9	C	26.4	C	33.5	C	32.4
f. WB R		C	23.1	C	24.9	C	29.2	C	31.4
g. NB L (Prot + Perm)		C	33.8	C	33.2	C	33.6	C	34.7
h. NB T		D	36.6	D	37.9	D	38.0	D	42.4
i. NB R		D	37.2	D	42.2	D	38.0	D	48.1
j. SB L (Prot + Perm)		C	31.3	C	31.0	C	30.5	D	53.5
k. SB T		C	33.6	C	32.7	C	33.0	C	34.7
i. SB R		C	34.8	C	32.8	D	35.7	D	39.7
l. INTERSECTION		**C**	**26.9**	**C**	**31.0**	**C**	**32.4**	**D**	**39.5**
2a. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.	**TWSC**								
a. EB LTR	Stop	B	13.9	B	11.7	D	32.6	F	-
b. WB LTR	Stop	B	12.6	B	14.8	F	50.0	F	4442.9
c. NB L		A	9.9	A	9.9	B	12.8	C	16.4
d. SB L		A	9.4	A	9.8	A	9.9	B	10.5
e. INTERSECTION		**A**	**3.3**	**A**	**2.7**	**B**	**11.6**	**F**	**239.7**
2b. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.	**Signal**								
a. EB LTR		-	-	-	-	C	30.5	C	29.9
b. WB LTR		-	-	-	-	C	30.8	B	17.3
c. NB L		-	-	-	-	A	1.1	A	6.5
d. NB T		-	-	-	-	A	0.0	A	0.1
e. NB R		-	-	-	-	A	0.0	A	0.0
f. SB L		-	-	-	-	A	2.6	A	7.8
g. SB T		-	-	-	-	A	2.6	A	7.8
h. SB R		-	-	-	-	A	2.4	A	7.2
i. INTERSECTION		**-**	**-**	**-**	**-**	**A**	**7.9**	**B**	**11.5**
3. Site Access/T-Mobile Access/Chapel Hills Dr.	**TWSC**								
a. EB LTR	Stop	B	10.8	B	10.7	B	12.5	B	14.3
b. WB LTR	Stop	B	14.7	B	14.5	D	27.9	E	43.9
c. SB L		A	10.1	A	10.0	B	12.4	B	13.2
d. INTERSECTION		**A**	**3.0**	**A**	**2.3**	**A**	**3.9**	**A**	**4.0**

TABLE 7
BACKGROUND & TOTAL TRAFFIC
OPERATIONAL ANALYSIS COMPARISON

INTERSECTION	CONTROL	2025 (BUILD-OUT)				2045 (LONG-RANGE)			
		BACKGROUND		TOTAL		BACKGROUND		TOTAL	
		AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS	AM PEAK LOS	PM PEAK LOS
1. Research Pkwy./Chapel Hills Dr.	**Signal**								
a. EB L (Prot + Perm)		C	C	C	C	D	C	D	C
b. EB T		C	C	C	C	C	D	C	D
c. EB R		C	C	C	C	C	C	C	C
d. WB L (Prot + Perm)		B	C	C	C	C	D	C	D
e. WB T		C	C	C	C	C	C	C	C
f. WB R		C	C	C	C	C	C	C	C
g. NB L (Prot + Perm)		C	C	C	C	C	C	C	C
h. NB T		D	D	D	D	D	D	D	D
i. NB R		D	D	D	D	D	D	D	D
j. SB L (Prot + Perm)		C	C	C	C	C	D	C	D
k. SB T		C	C	C	C	C	C	C	C
i. SB R		C	C	C	C	D	D	D	D
l. INTERSECTION		**C**	**C**	**C**	**C**	**C**	**D**	**C**	**D**
2a. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.	**TWSC**								
a. EB LTR	Stop	B	B	B	B	C	F	D	F
b. WB LTR	Stop	B	B	B	B	E	F	F	F
c. NB L		A	A	A	A	B	B	B	C
d. SB L		A	A	A	A	A	B	A	B
e. INTERSECTION		**A**	**A**	**A**	**A**	**A**	**F**	**B**	**F**
2b. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.	**Signal**								
a. EB LTR		-	-	-	-	C	C	C	C
b. WB LTR		-	-	-	-	C	B	C	B
c. NB L		-	-	-	-	A	A	A	A
d. NB T		-	-	-	-	A	A	A	A
e. NB R		-	-	-	-	A	A	A	A
f. SB L		-	-	-	-	A	A	A	A
g. SB T		-	-	-	-	A	A	A	A
h. SB R		-	-	-	-	A	A	A	A
i. INTERSECTION		**-**	**-**	**-**	**-**	**A**	**B**	**A**	**B**
3. Site Access/T-Mobile Access/Chapel Hills Dr.	**TWSC**								
a. EB LTR	Stop	-	-	B	B	-	-	B	B
b. WB L(T)R	Stop	B	B	B	B	C	D	D	E
c. SB L		A	A	A	A	B	B	B	B
d. INTERSECTION		**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**

TABLE 8
2025 (BUILD-OUT) & 2045 (LONG-TERM) TOTAL TRAFFIC
SUMMARY OF QUEUING ANALYSIS

INTERSECTION (# OF LANES IN LANE GROUP)	EXISTING STORAGE (FT)	2025 TOTAL TRAFFIC QUEUE LENGTH (FT) 95TH%		2045 TOTAL TRAFFIC QUEUE LENGTH (FT) 95TH%	
		AM PEAK	PM PEAK	AM PEAK	PM PEAK
1. Research Pkwy./Chapel Hills Dr.					
a. EB L (1)	400	66	102	234	230
b. EB T (3)	*	314	860	410	1316
c. EB R (1)	160	0	0	8	0
d. WB L (1)	320	143	135	189	322
e. WB T (3)	*	770	366	1081	524
f. WB R (1)	185	43	5	85	45
g. NB L (1)	150	26	49	31	61
h. NB T (2)	*	131	213	219	382
i. NB R (1)	330	5	57	24	65
j. SB L (1)	195	93	159	131	296
k. SB T (3)	*	210	227	295	396
l. SB R (1)	185	34	8	54	64
2a. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.					
a. EB LTR (1)	*	5	8	815	-
b. WB LTR (1)	*	18	13	1250	355
c. NB L (1)	240	5	5	320	83
d. SB L (1)	235	5	5	248	8
2b. Spring Mountain View/Dynamic Dr./Chapel Hills Dr.					
a. EB LTR (1)	*	-	-	58	112
b. WB LTR (1)	*	-	-	71	56
c. NB L (1)	240	-	-	98	354
d. NB T (3)	*	-	-	112	191
e. NB R (1)	155	-	-	2	0
f. SB L (1)	235	-	-	19	30
g. SB T (3)	*	-	-	82	131
h. SB R (1)	175	-	-	6	12
3. Site Access/T-Mobile Access/Chapel Hills Dr.					
a. EB LTR (1)	*	5	3	8	5
b. WB LTR (1)	*	20	23	58	98
c. SB L (1)	210	8	3	18	8

* = Extension of approach laneage.

C. Traffic Signal Warrant Analysis

Existing and forecast traffic volumes were evaluated for satisfying the criteria for the installation of a traffic signal based on the methodology presented in the *Manual on Uniform Traffic Control Devices for Streets and Highways, 2009* at the Spring Mountain View/Dynamic Dr./Chapel Hills Dr. intersection. Warrant 1 – Eight Hour Vehicular Volume, Warrant 2 – Four Hour Vehicular Volume, and Warrant 3 – Peak Hour were evaluated based on existing and projected background and total traffic volumes. Hourly approach volumes were derived assuming the same hourly distribution of the approach volumes from the 24-hour directional counts collected on Wednesday, March 2, 2022.

The hourly background traffic volumes for the 2025 (build-out) and 2045 (long-term) analysis horizons were forecast using the methodology described in Section III of this study. Based on engineering judgement and guidance contained in the *Manual on Uniform Traffic Control Devices for Streets and Highways, 2009*, a 100% reduction in the northbound and southbound right turn volume was applied to the Chapel Hills Dr. (major roadway) approach volumes. The distribution of the intersection approach movement (left turn, right turn) volumes were based on the turn movement distribution (left turn, right turn) of the peak hour volumes that were collected for this study.

Based on these parameters and the analysis performed herein, it was determined that the Spring Mountain View/Dynamic Dr./Chapel Hills Dr. intersection will warrant a traffic signal based on Warrants 1, 2 and 3 by the 2045 (long-term) analysis horizon total traffic scenario.

A summary of the results of the traffic signal warrant analyses is presented in Table 9. Table 10 provides a summary of the proportional contribution of the traffic projected to be generated by the proposed Highlands at Briargate development to the total traffic entering the Spring Mountain View/Dynamic Dr./Chapel Hills Dr. intersection. Detailed peak hour traffic signal warrant analysis worksheets and volume data are provided in Appendix “E”.

TABLE 9
TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY

	Analysis Horizon	Eight Hour - Warrant 1 Met?	Four Hour - Warrant 2 Met?	Peak Hour - Warrant 3 Met?
Spring Mountain View/Dynamic Dr./ Chapel Hills Dr.	2022 Existing Traffic	NO	NO	NO
	2025 Background Traffic	NO	NO	NO
	2025 Total Traffic	NO	NO	NO
	2045 Background Traffic	YES	YES	YES
	2045 Total Traffic	YES	YES	YES

TABLE 10
PROPORTIONAL CONTRIBUTION OF TOTAL ENTERING TRAFFIC VOLUME
SPRING MOUNTAIN VIEW/DYNAMIC DR./CHAPEL HILLS DR. INTERSECTION

Analysis Horizon Total Traffic Scenario	Site Trips (Volume/%)	Background Traffic (Volume/%)	Total Traffic (Volume/%)
2045 (Long-Term) AM Peak Hour	50	1276	1326
	4%	96%	100%
2045 (Long-Term) PM Peak Hour	71	1716	1787
	4%	96%	100%
2045 (Long-Term) Daily Volume	685	13075	17132
	4%	96%	100%

D. Summary of Operational Analysis & Recommended Improvements

Based on the analyses contained in this study, the following improvements are recommended for the study area roadways and intersections in order to mitigate the traffic impacts of the proposed Highlands at Briargate development.

Study Area Roadways:

- **Research Pkwy.** – There are no geometric or operational modifications being recommended for Research Pkwy. within the study area as a result of the of the proposed Highlands at Briargate development.
- **Chapel Hills Dr.** – There are no geometric or operational modifications being recommended for Chapel Hills Dr. within the study area as a result of the of the proposed Highlands at Briargate development.
- **Dynamic Dr.** – There are no geometric or operational modifications being recommended for Dynamic Dr. within the study area as a result of the of the proposed Highlands at Briargate development.

Study Area Intersections:

- **Research Pkwy./Chapel Hills Dr.** – The Research Pkwy./Chapel Hills Dr. intersection is not anticipated to undergo any significant geometric or operational modifications through the 2045 (long-term) analysis horizon. Based on these parameters, it is projected that the intersection, overall, as well as all lane groups will operate at acceptable levels of service (LOS “D” or better) through the 2045 (long-term) analysis horizon total traffic scenario with some minor updates to the signal timing splits as future traffic patterns dictate. Due to the projected queuing issue for the southbound left turn movement by the 2045 (long-term) analysis horizon background traffic scenario, it is recommended that a second southbound left turn lane be added using the existing roadway space available. Therefore, there are no geometric or operational modifications being recommended for the Research Pkwy./Chapel Hills Dr. intersection as a direct result of the of the proposed Highlands at Briargate development.
- **Spring Mountain View/Dynamic Dr./Chapel Hills Dr.** – The Spring Mountain View/Dynamic Dr./Chapel Hill Dr. is not anticipated to undergo any significant geometric or operational modifications through the 2045 (long-term) analysis horizon. Based on

these parameters, it is projected that the intersection, overall, as well as all lane groups will operate at acceptable levels of service (LOS “D” or better) through the 2045 (long-term) analysis horizon total traffic scenario with the exception of the following:

- The overall intersection is projected to experience a failing level of service (LOS “F”) during the p.m. peak hour by the 2045 (long-term) analysis horizon background traffic scenario.
- EB LTR - The EB LTR movement is projected to experience a failing level of service (LOS “F”) during the p.m. peak hour by the 2045 (long-term) analysis horizon background traffic scenario.
- WB LTR – The WB LTR movement is projected to experience a poor level of service (LOS “E”) during the a.m. peak hour and a failing level of service (LOS “F”) during the p.m. peak hour by the 2045 (long-term) analysis horizon background traffic scenario. The movement is projected to deteriorate to a failing level of service (LOS “F”) during the a.m. peak hour by the 2045 (long-term) analysis horizon total traffic scenario.

The traffic signal warrant analysis performed for this intersection found that traffic signal warrants 1, 2, and 3 were met by the 2045 (long-term) analysis horizon background traffic scenario. At such time that the operations of this intersection are converted from two-way stop-control to signalized control, the intersection overall, as well as all lane groups will operate at acceptable levels of service (LOS “D” or better) through the 2045 (long-term) analysis horizon total traffic scenario. Therefore, it is recommended that a signal be installed at this intersection by the 2045 (long-term) analysis horizon or as actual traffic conditions dictate. The cost for this modification can be shared proportionally based on the percentage of traffic projected to be contributing to this intersection by the proposed Highlands at Briargate development. Based on the projected queuing issue for the northbound left turn movement by the 2045 (long-term) analysis horizon background traffic scenario, it is also recommended that the northbound left turn lane be extended to a length of 375 feet by using available space within the median and shortening the entrance taper for the lane.

- **Site Access/T-Mobile Access/Chapel Hills Dr.** – The Site Access/T-Mobile Access/Chapel Hills Dr. intersection is anticipated to be modified along with the construction of the proposed Highlands at Briargate development from a “T” intersection to four-legged intersection. This will be done with addition of the Site Access driveway which will form the west leg of the intersection. This leg will be stop-controlled and have one left turn/through/right turn lane on the eastbound approach and one westbound departure lane. This approach is expected to be a ¾ movement (right turn in/out and left turn out) access. Based on these parameters, it is projected that the intersection, overall, as well as all lane groups will operate at acceptable levels of service (LOS “D” or better) through the 2045 (long-term) analysis horizon total traffic scenario with the exception of the following:
  - WB LTR – The WB LTR movement is projected to experience a poor level of service (LOS “E”) during the p.m. peak hour by the 2045 (long-term) analysis horizon total traffic scenario.

  The high background traffic demand forecast to be experienced at this intersection will impact its ability to adequately serve the minor approach. This is a common issue at a stop-controlled minor approach intersecting a roadway with considerably high volumes. One potential option to mitigate this effect would be to further restrict movements at this

intersection, such as the westbound left turn movement. This would allow the other allowable movements to all operate more efficiently. Other than this potential turn movement restriction, there are no geometric or operational modifications being recommended for the Site Access/T-Mobile Access/Chapel Hills Dr. intersection as a result of the of the proposed Highlands at Briargate development.

VII. CONCLUSIONS

Davis Development is proposing to develop a property containing approximately 13.43 acres of undeveloped land situated along the north side of Research Pkwy. and west of Chapel Hills Dr. in Colorado Springs, Colorado. More specifically, the subject property is bound by undeveloped land on the north, Chapel Hills Dr. on the east, Research Pkwy. on the south, and commercial property on the west. Upon build-out, the proposed development will consist of 220 multi-family (mid-rise) residential dwelling units and 26 multi-family (low rise) townhomes. The proposed development will be known as Highlands at Briargate. Based on these parameters, at buildout, the proposed Creekside Gardens development is projected to generate 1,245 daily vehicle trips of which 116 are projected to be generated during the a.m. peak hour and 118 are projected to be generated during the p.m. peak hour.

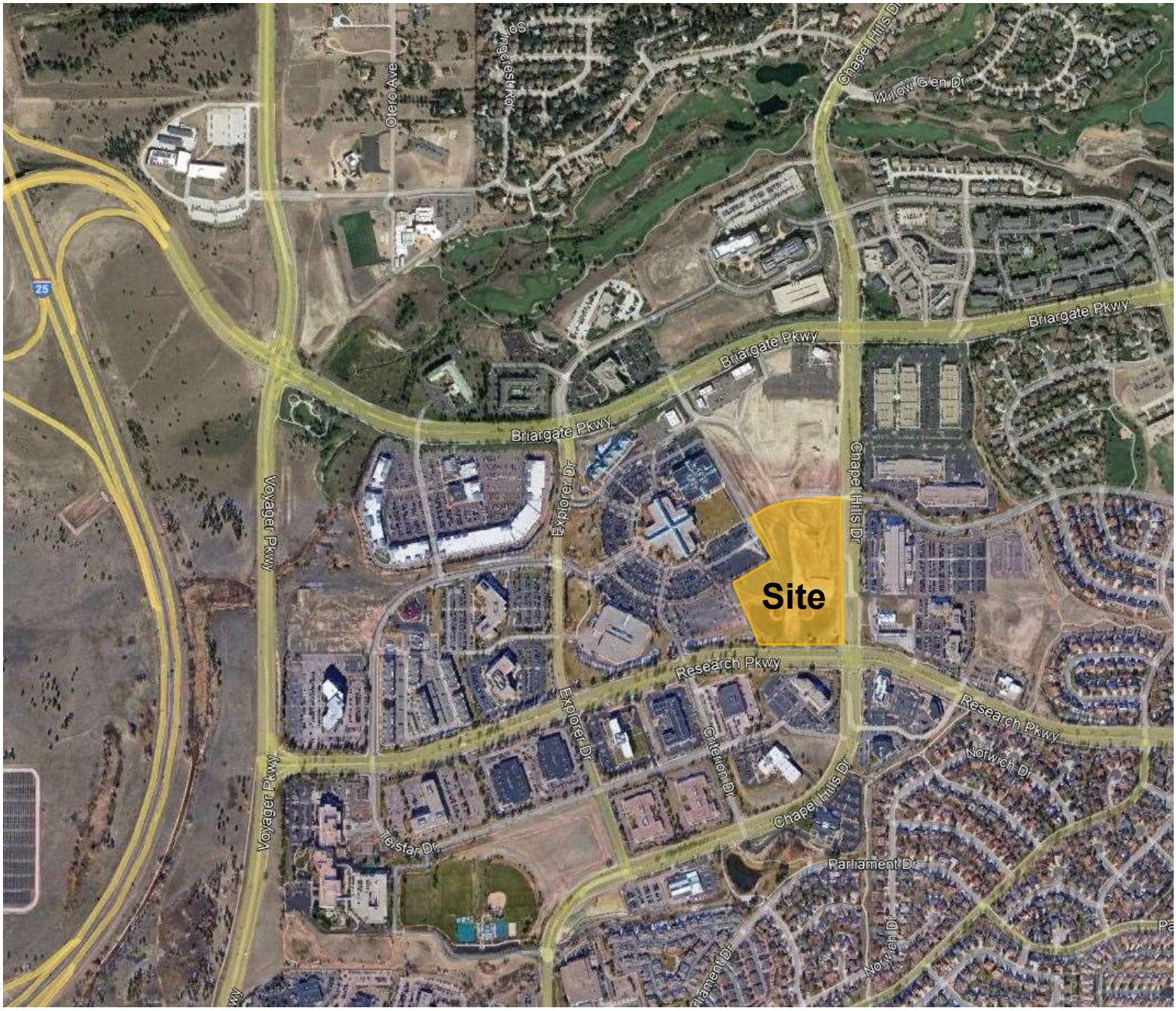
Vehicular access for the proposed Highlands at Briargate development will be provided by two access driveways. The north site access driveway will provide full movement access at the intersection of Spring Mountain View and Highlands Ridge Heights, approximately 500 feet west of the centerline of the Spring Mountain View/Dynamic Dr./Chapel Hills Dr. intersection. The south site access driveway will provide ¾ movement (right turn in/out and left turn out) access and intersect Chapel Hills Dr. opposite of the existing T-Mobile Access driveway, approximately 435 feet north of the centerline of the Chapel Hills Dr./Research Pkwy. intersection.

Based on the analyses contained herein the recommendations for geometric and operational, improvements/modifications for the study area roadways and intersections will sufficiently mitigate and/or off-set the impacts created by the traffic generated by the proposed Highlands at Briargate development. A summary of the recommended improvements/modifications for the study area roadways and intersections are provided in Table 11.

TABLE 11
SUMMARY OF RECOMMENDATIONS

Roadway	Recommendations	Responsibility	Timing
Research Pkwy.	No geometric or operational modifications are recommended as a result of the proposed Highlands at Briargate development.	N/A	N/A
Chapel Hills Dr.	No geometric or operational modifications are recommended as a result of the proposed Highlands at Briargate development.	N/A	N/A
Dynamic Dr.	No geometric or operational modifications are recommended as a result of the proposed Highlands at Briargate development.	N/A	N/A
Intersection	**Recommendations**	**Responsibility**	**Timing**
Research Pkwy./ Chapel Hills Dr.	No geometric or operational modifications are recommended as a result of the proposed Highlands at Briargate development. However, actual conditions should be monitored, and signal timing splits should be adjusted as needed. The southbound left turn movement should also be expanded to include a second lane utilizing the existing roadway space available.	City	As Needed
Spring Mountain View/Dynamic Dr./ Chapel Hills Dr.	It is recommended that a signal be installed at this intersection by the 2045 (long-term) analysis horizon or as needed. It is also recommended that the northbound left turn lane be extended to 375 feet by utilizing the existing space in the median and shortening the entrance taper for the lane.	Developer (Signal: Shared)	By 2045/ As Needed
Site Access/ T-Mobile Access/ Chapel Hills Dr.	A west leg of the intersection will be constructed concurrently with the proposed Highlands at Briargate development. The west leg will be stop-controlled and will have one shared left turn/through/right turn lane on the eastbound approach and one westbound departure lane. With the construction of this leg, northbound left turns are recommended to be restricted. It is also suggested that the westbound left turn movement be monitored and potentially restricted in the future if there seems to be an issue with safety or operations.	Developer City/Other	Concurrent with Project By 2045/ As Needed

N



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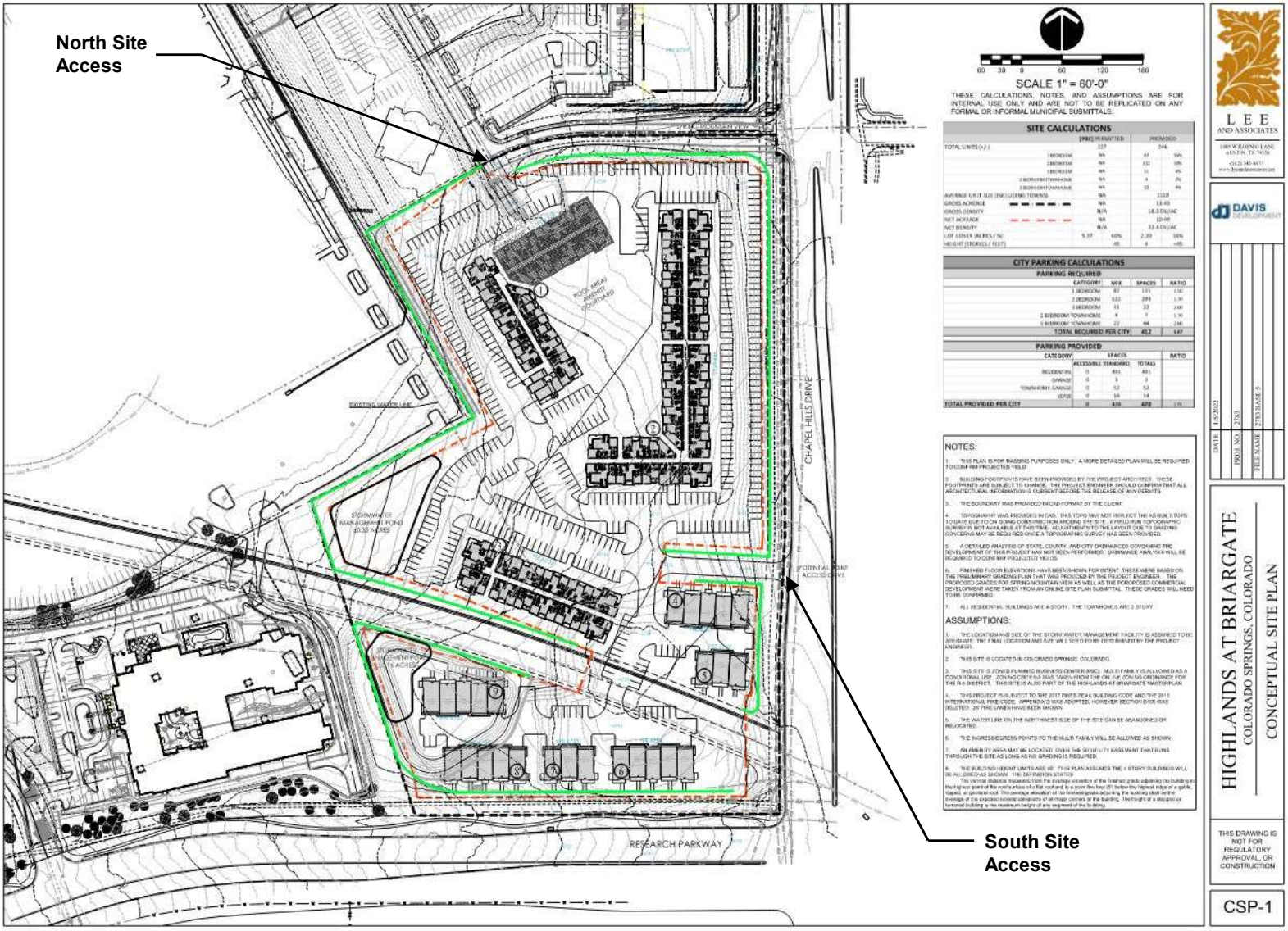
Site Location Map

Highlands at Briargate

Davis Development

HKS #210639

Figure 1



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Conceptual Site Plan

Highlands at Briargate

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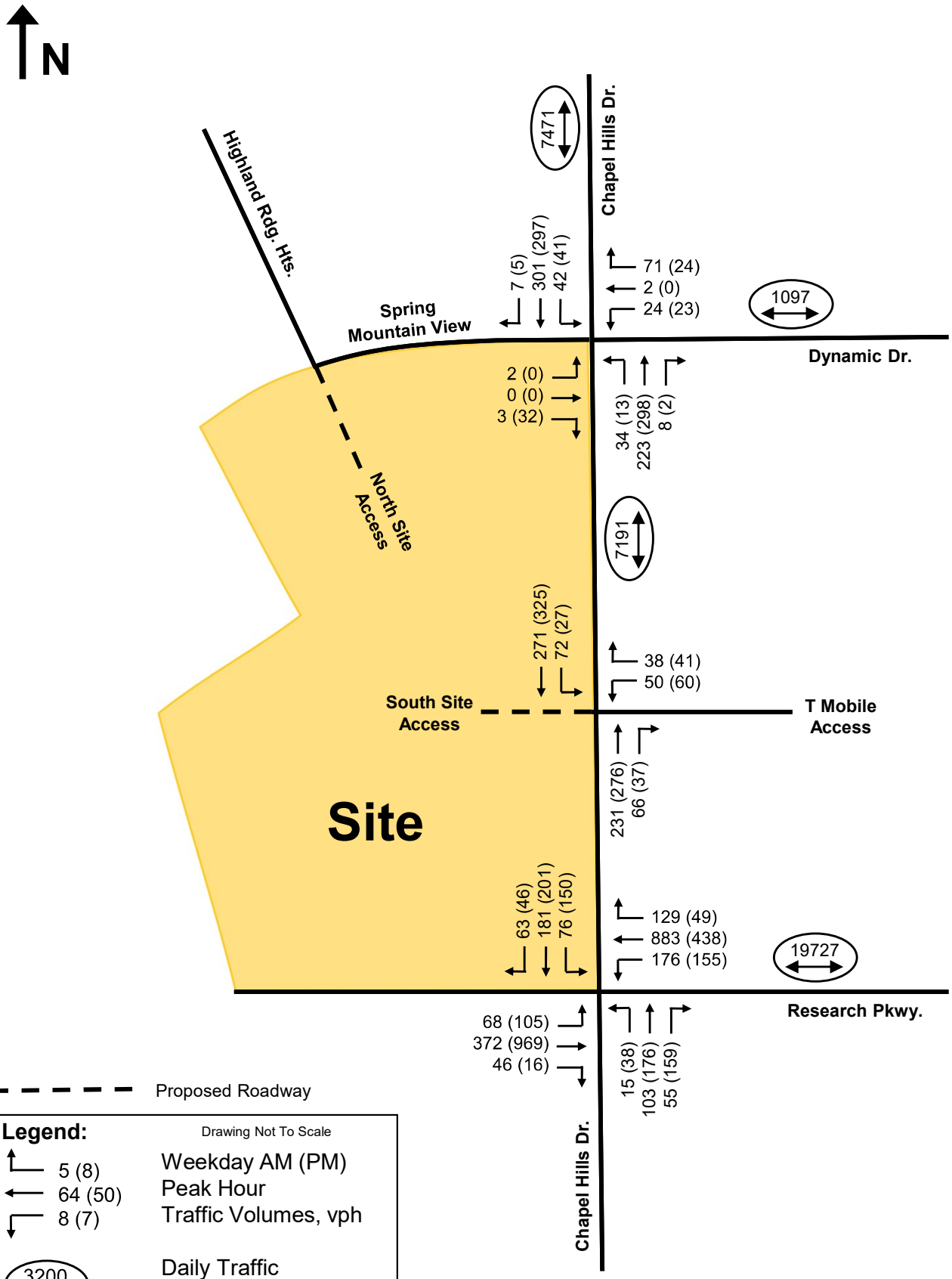
Figure 2



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2022 Existing Traffic Volumes

Highlands at Briargate

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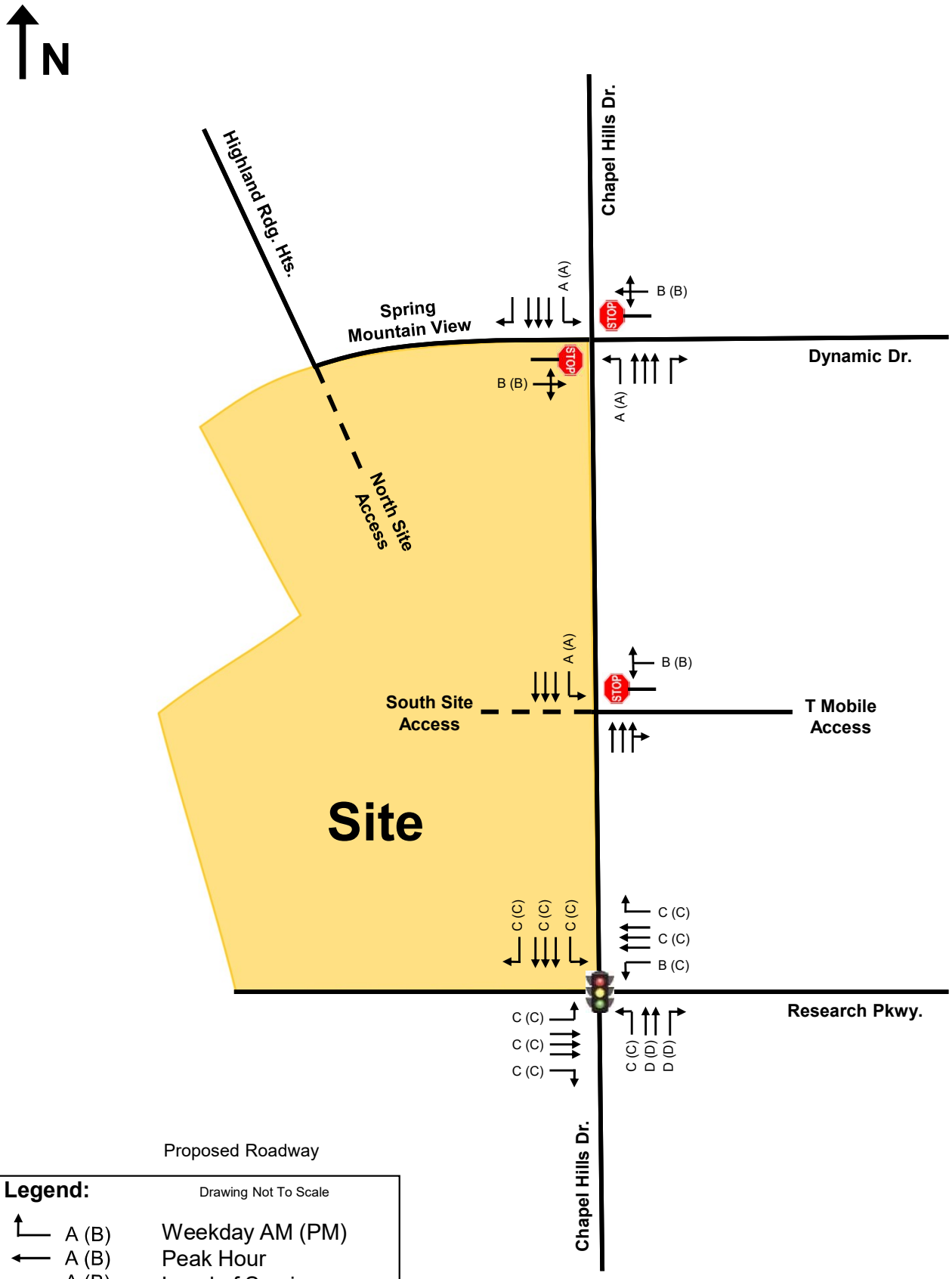
Figure 3



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2022 Existing Traffic Operational Conditions

Highlands at Briargate

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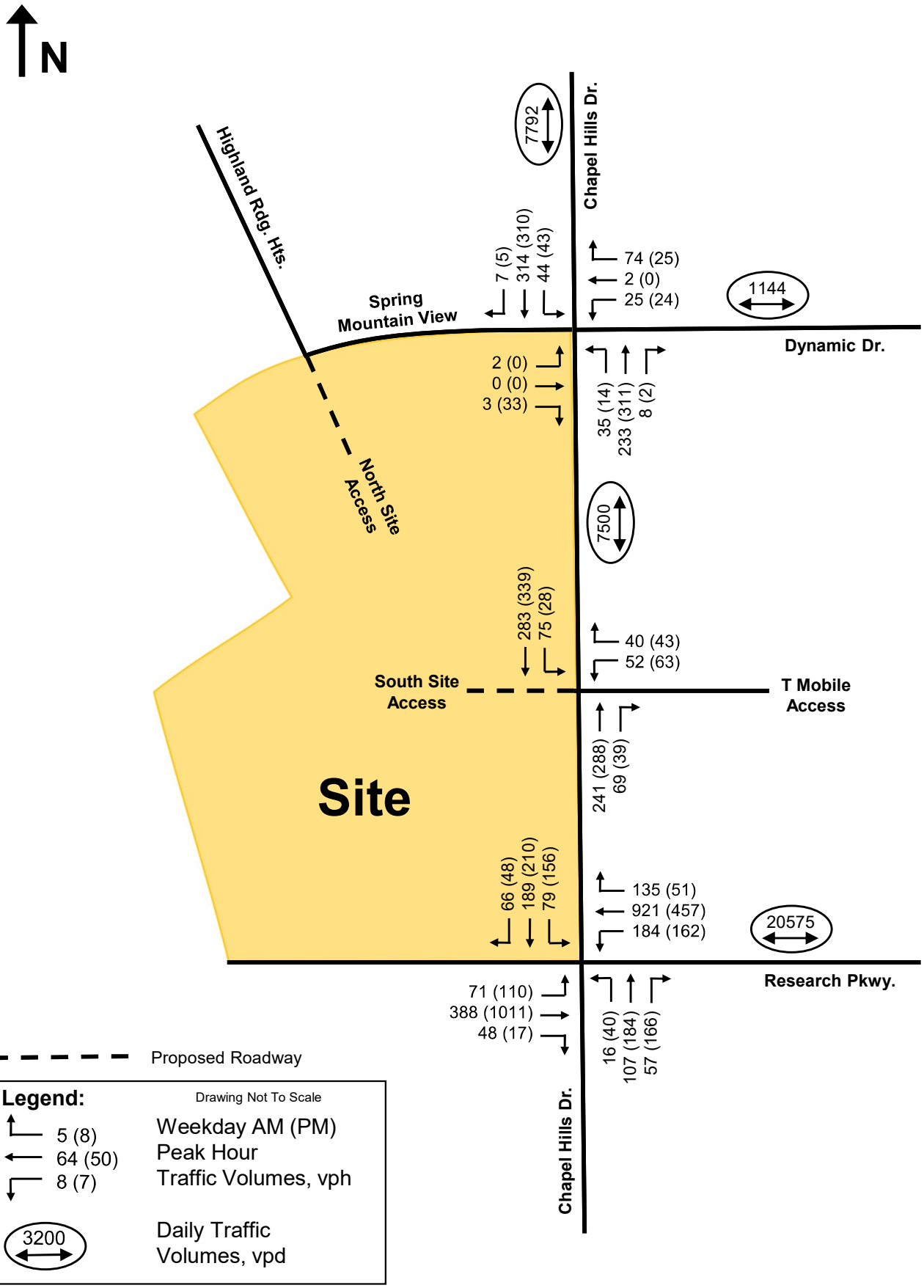
Figure 4



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2025 Regional Background Traffic Volumes

Highlands at Briargate

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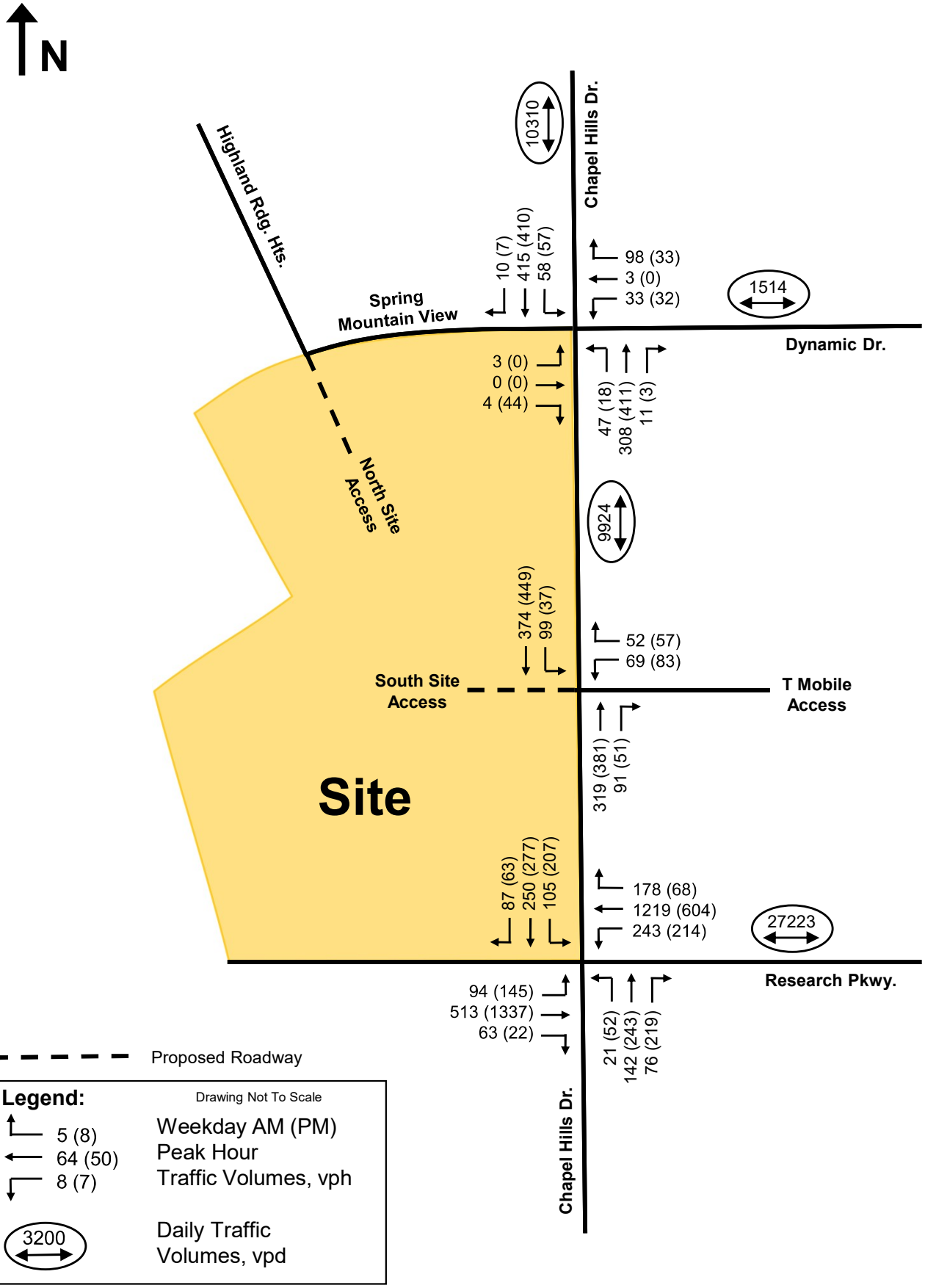
Figure 5



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2045 Regional Background Traffic Volumes

Highlands at Briargate

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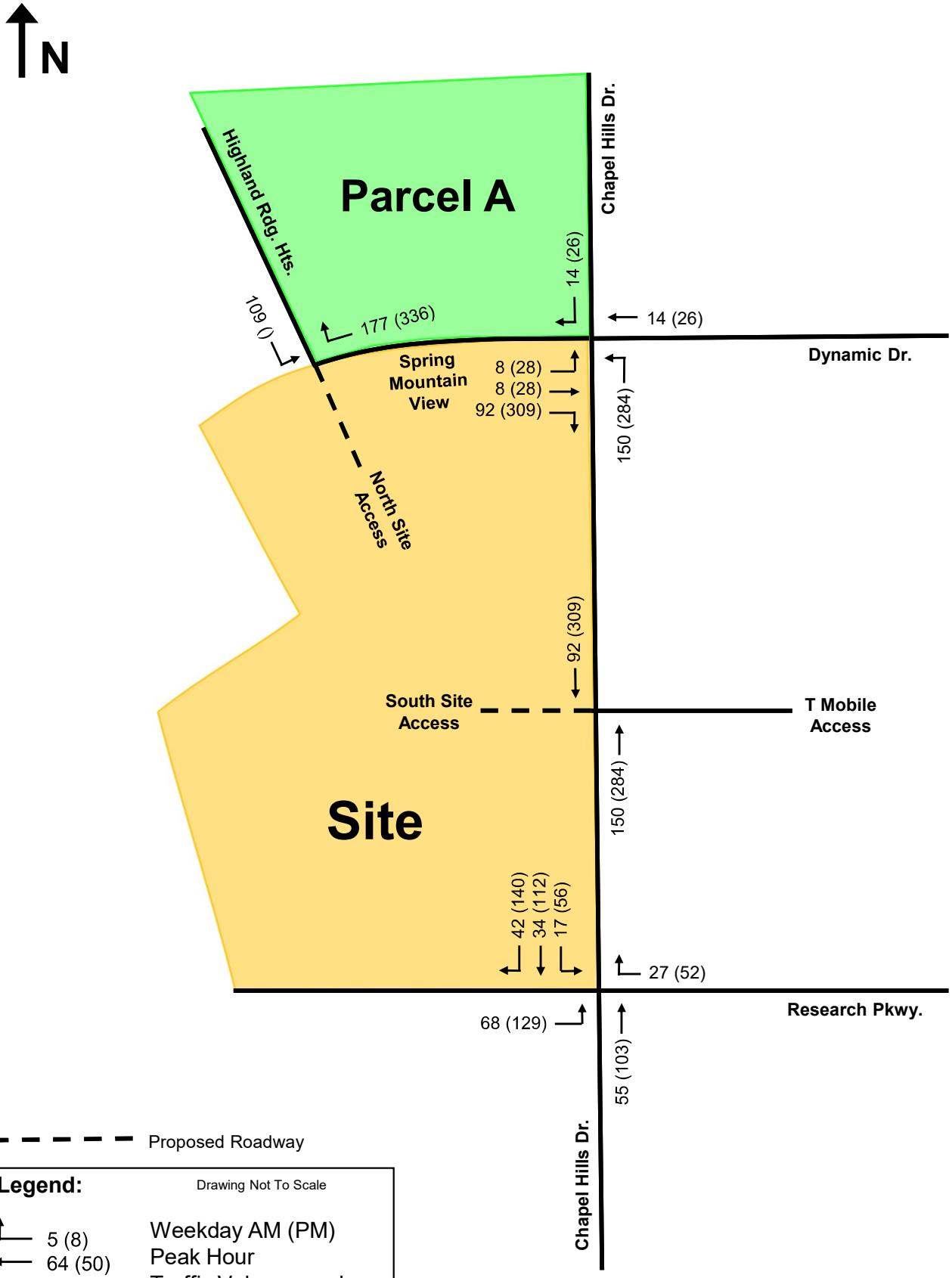
Figure 6



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2045 Local Background Traffic Volumes

Highlands at Briargate

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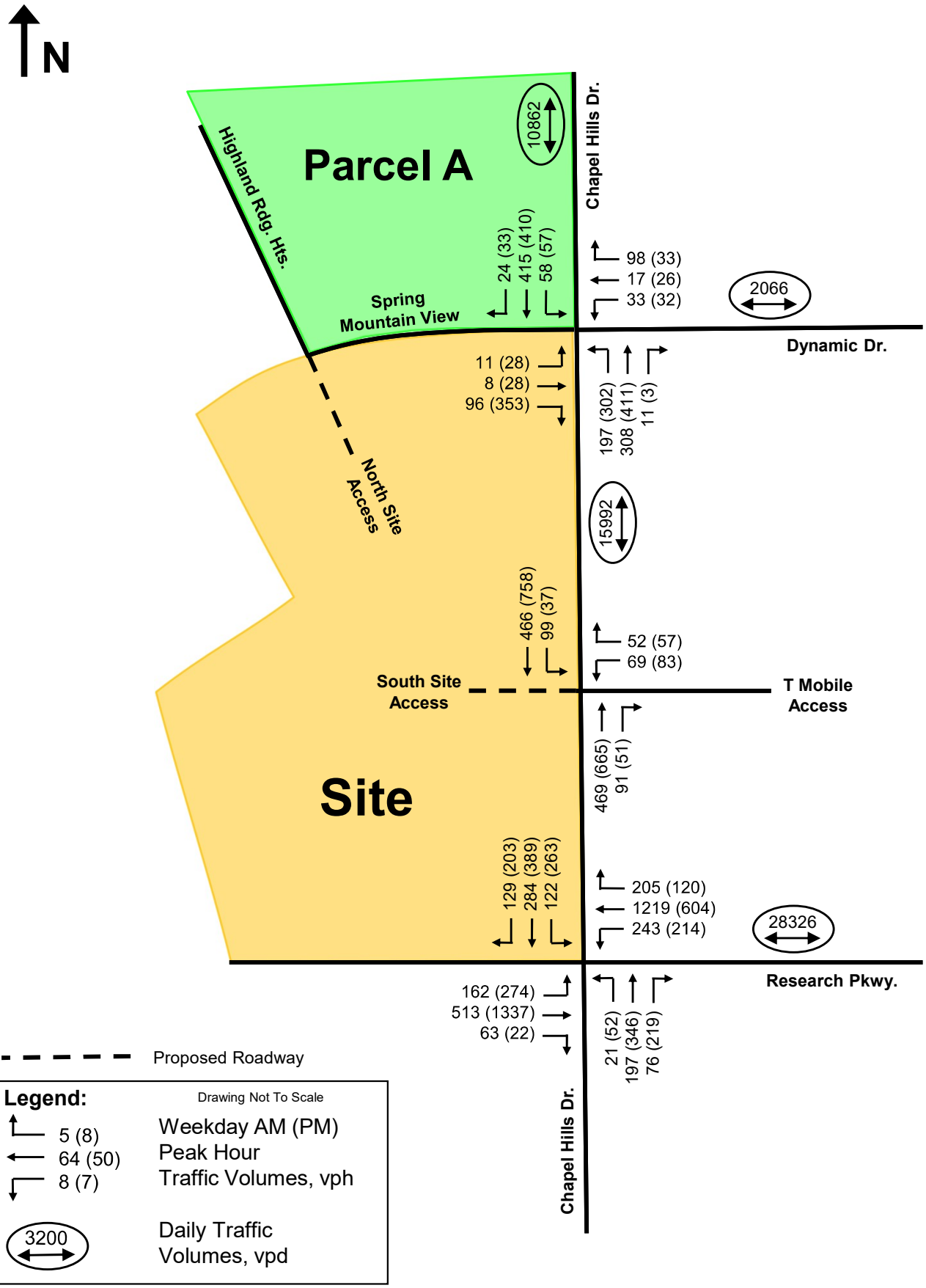
Figure 7



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2045 Total Background Traffic Volumes

Highlands at Briargate

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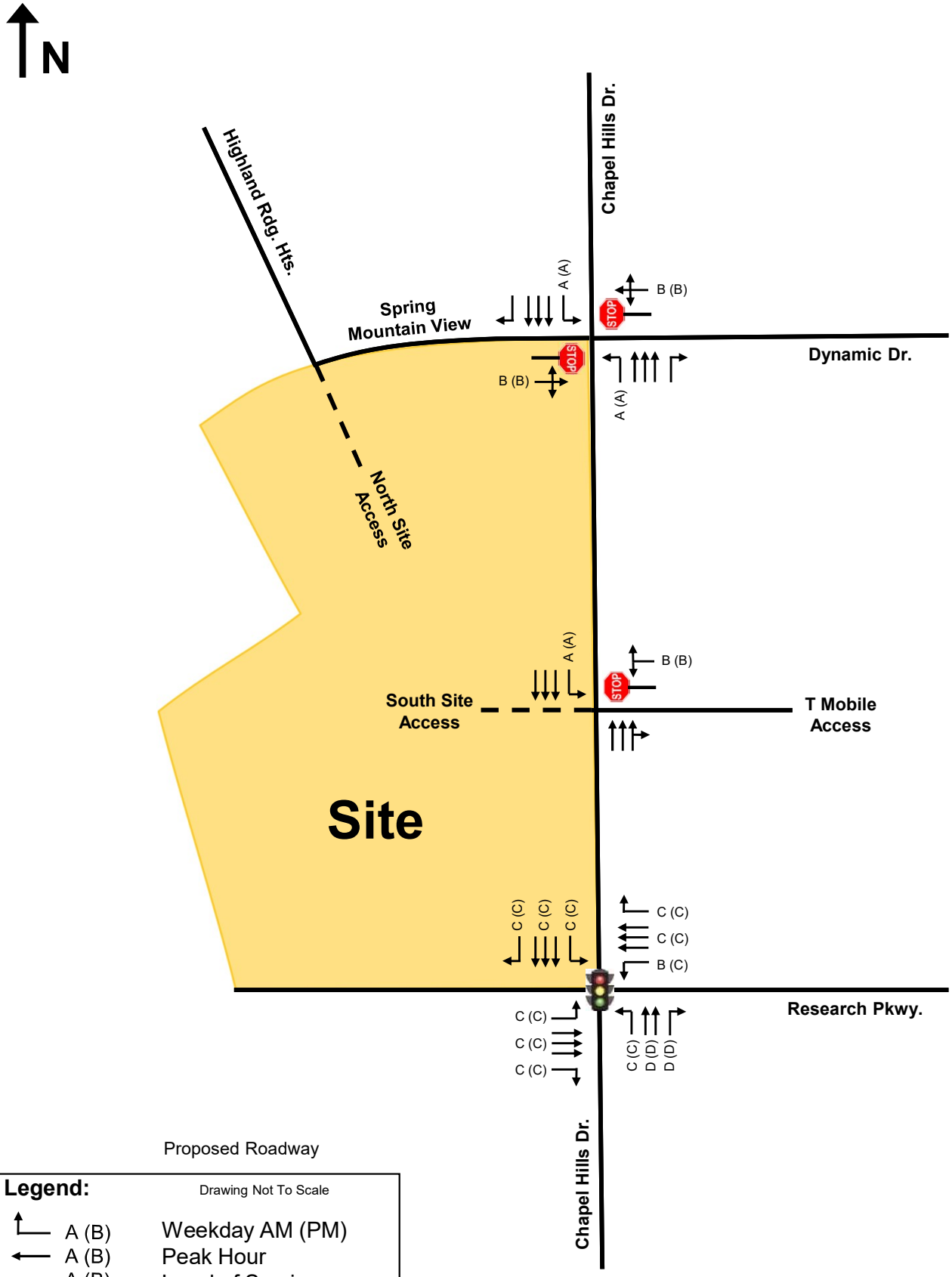
Figure 8



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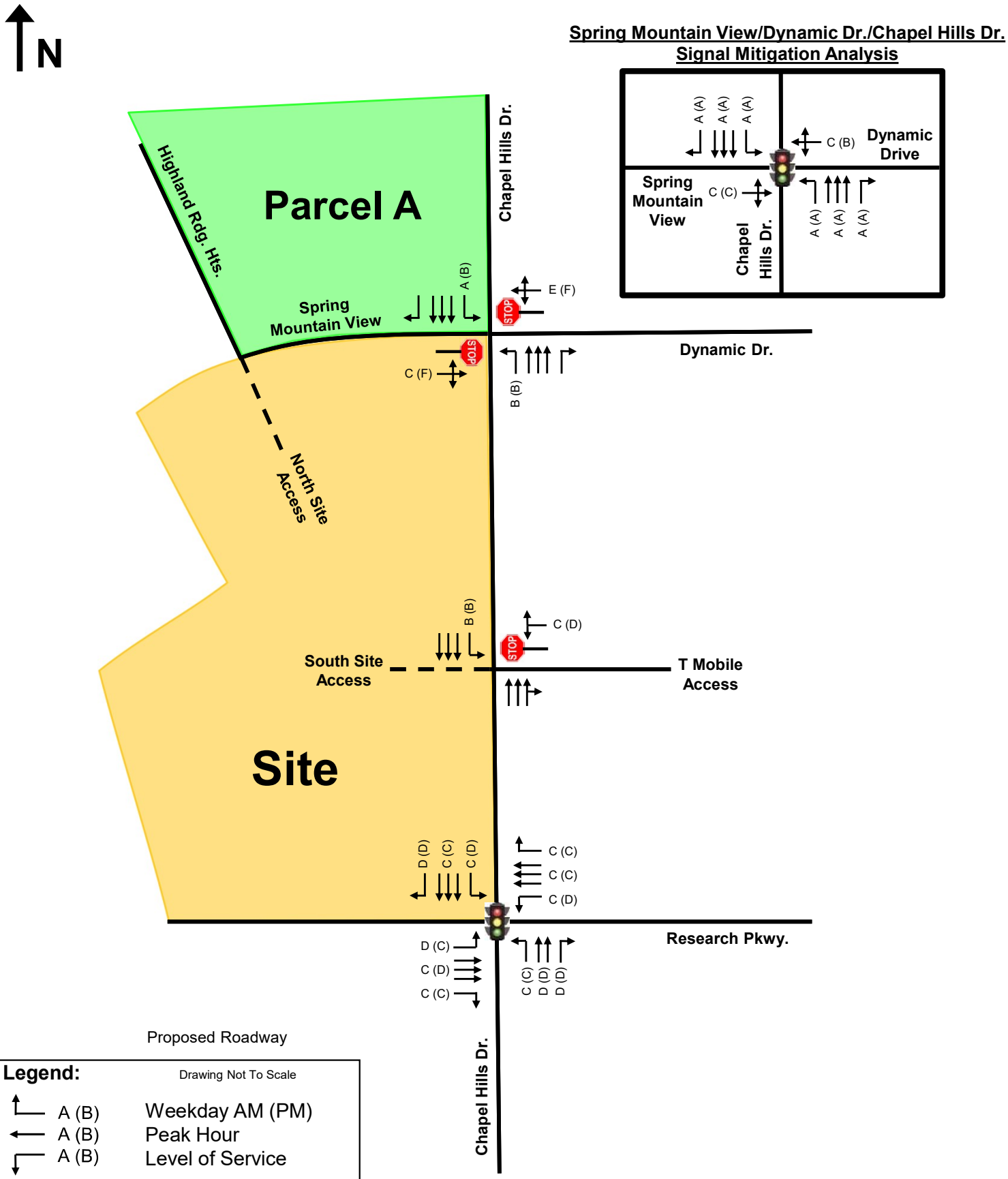
2025 Background Traffic Operational Conditions

Highlands at Briargate

Davis Development

HKS #210639

Figure 9



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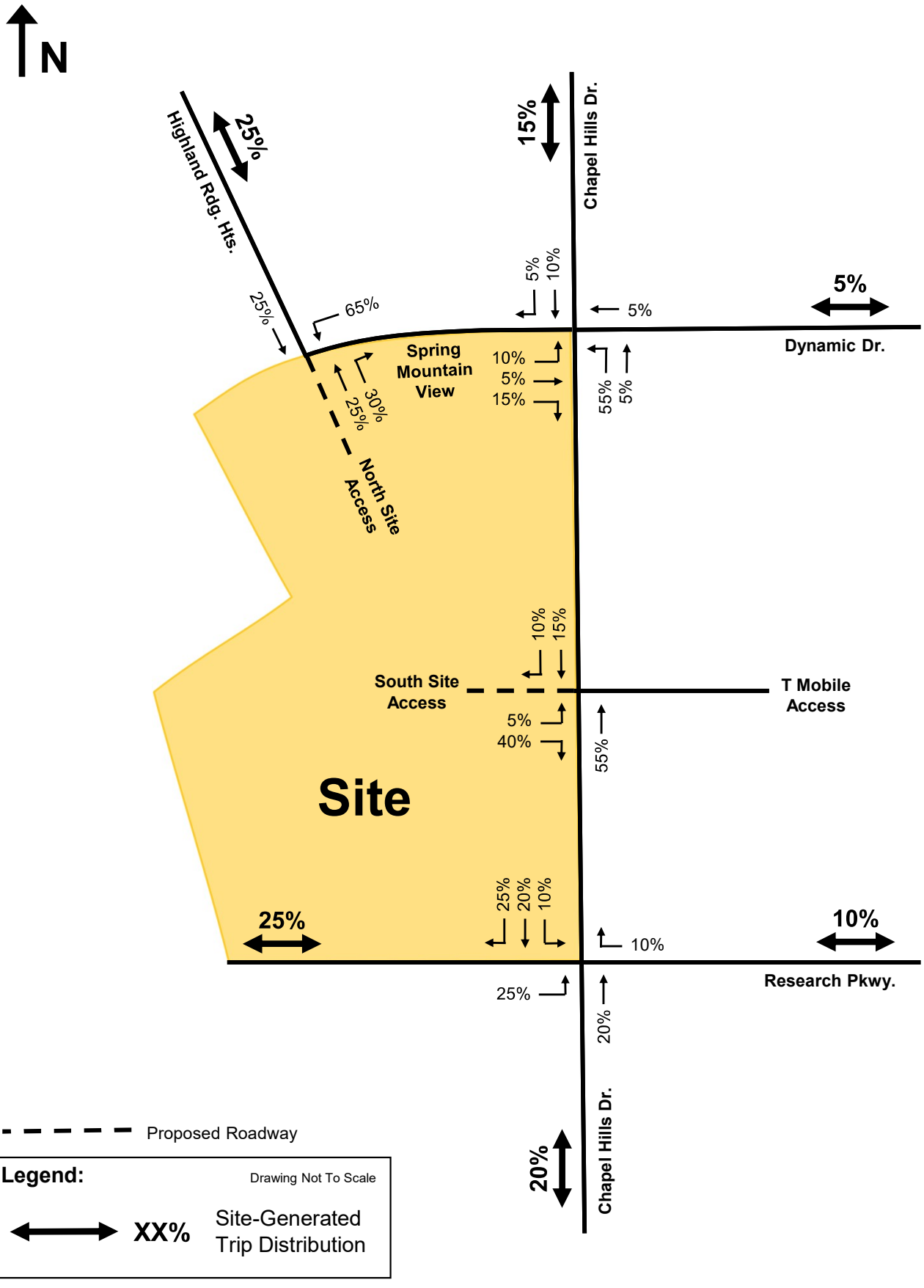
2045 Background Traffic Operational Conditions

Highlands at Briargate

Davis Development

HKS #210639

Figure 10

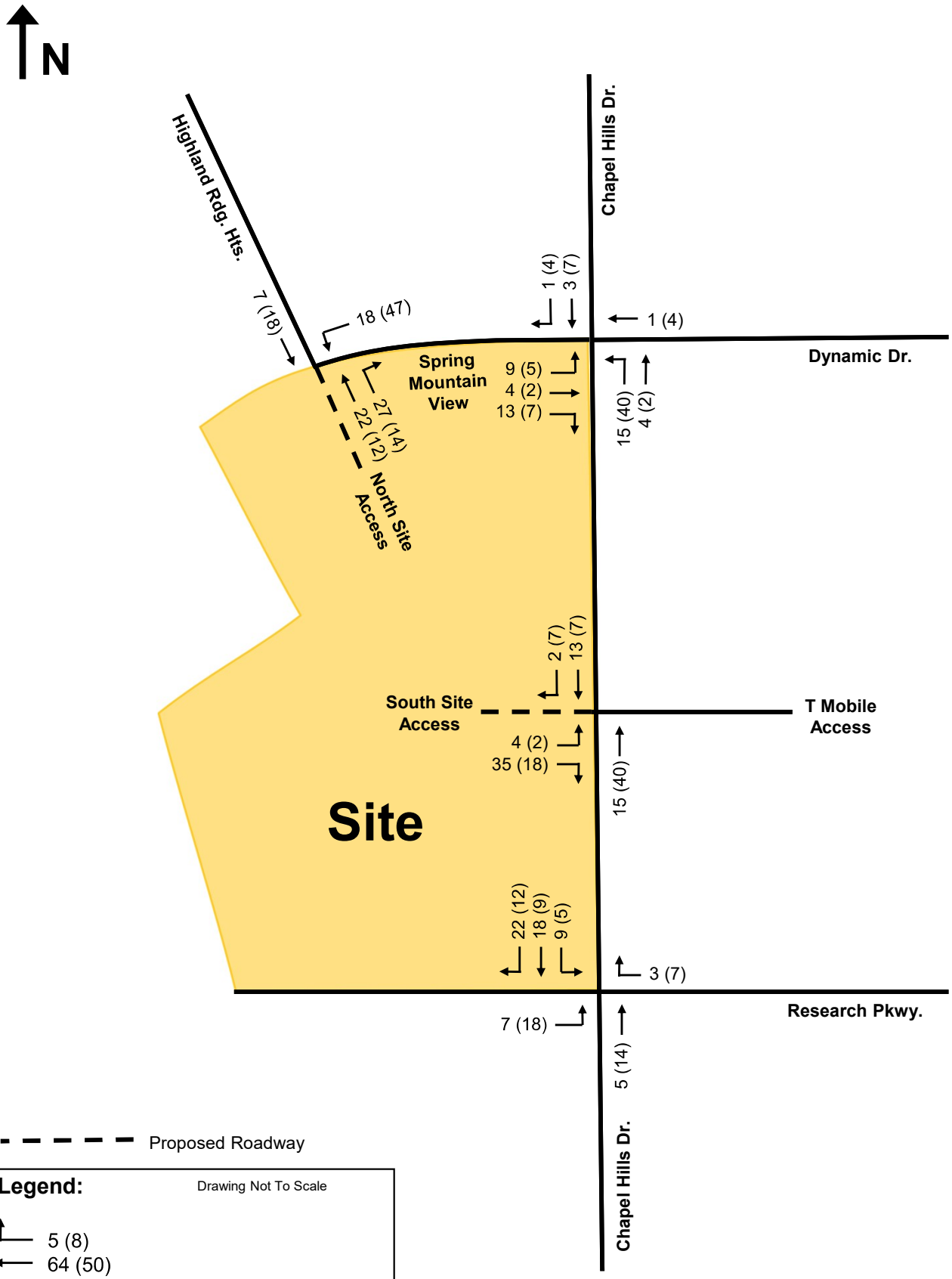


HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

Site Generated Trip Distribution

Highlands at Briargate
Davis Development
HKS #210639

Figure 11



HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

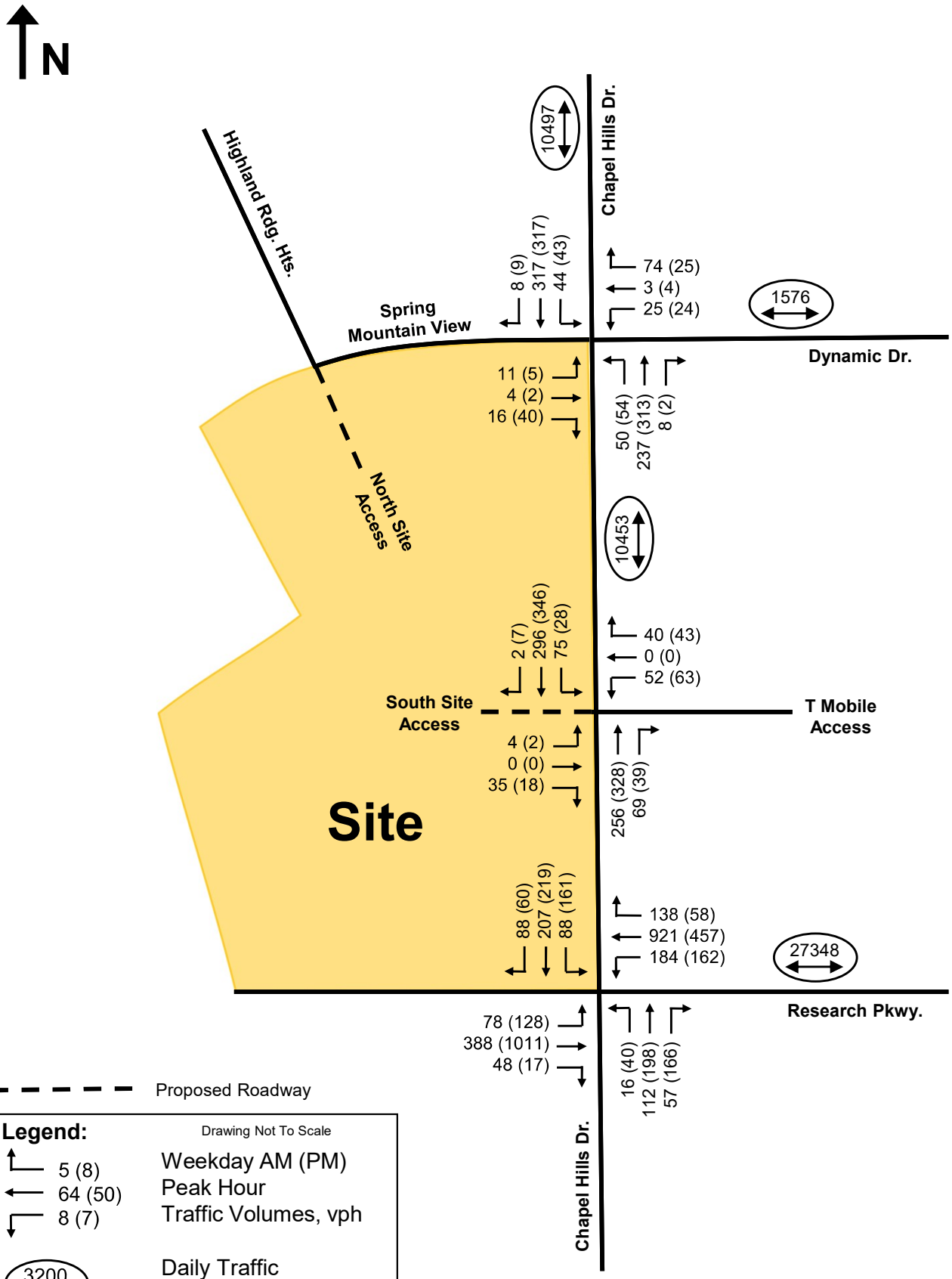
Site Generated Trip Assignment

Highlands at Briargate

Davis Development

HKS #210639

Figure 12



HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

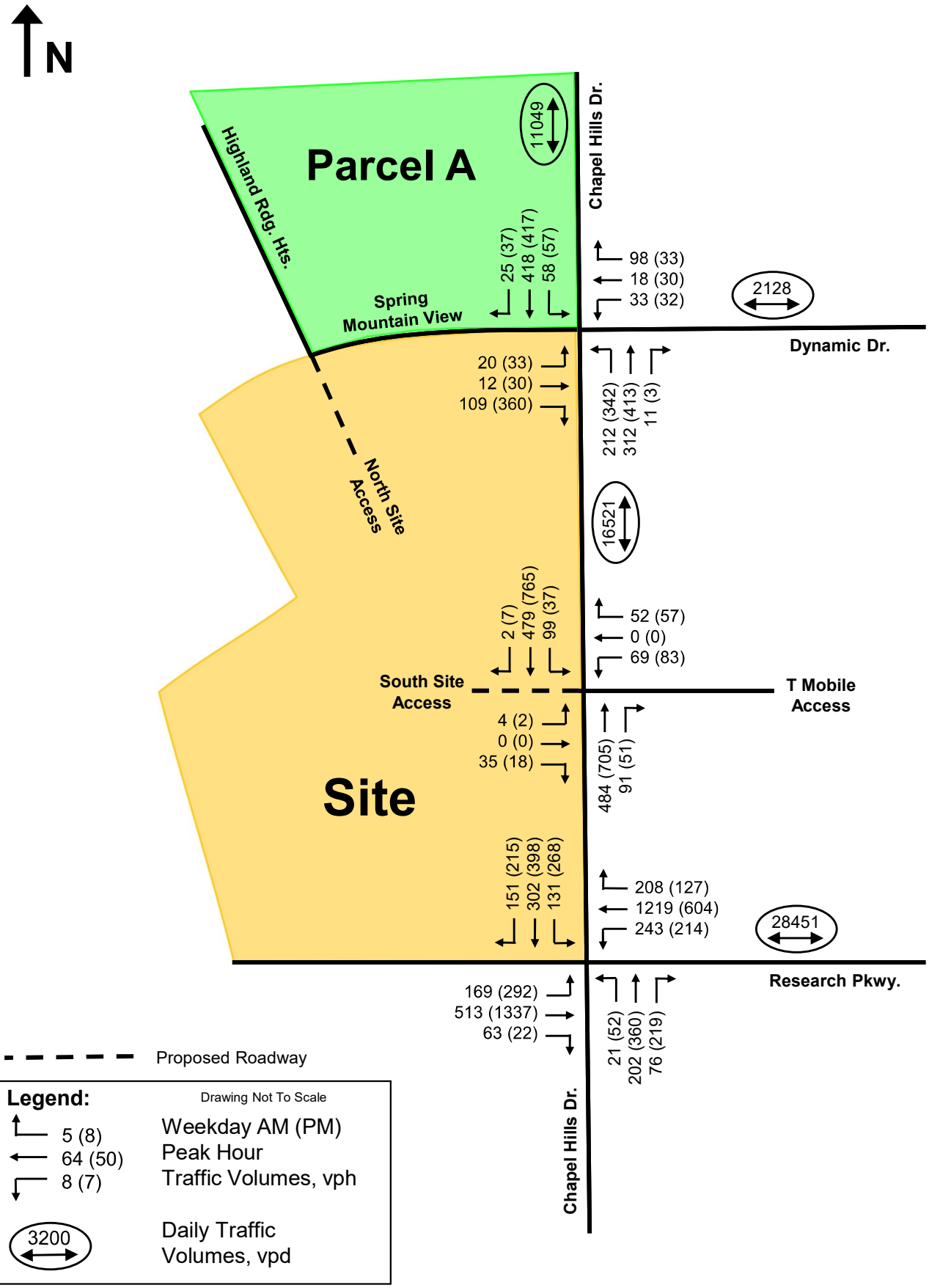
2025 Total Traffic Volumes (Background + Site Generated)

Highlands at Briargate

Davis Development

HKS #210639

Figure 13



HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

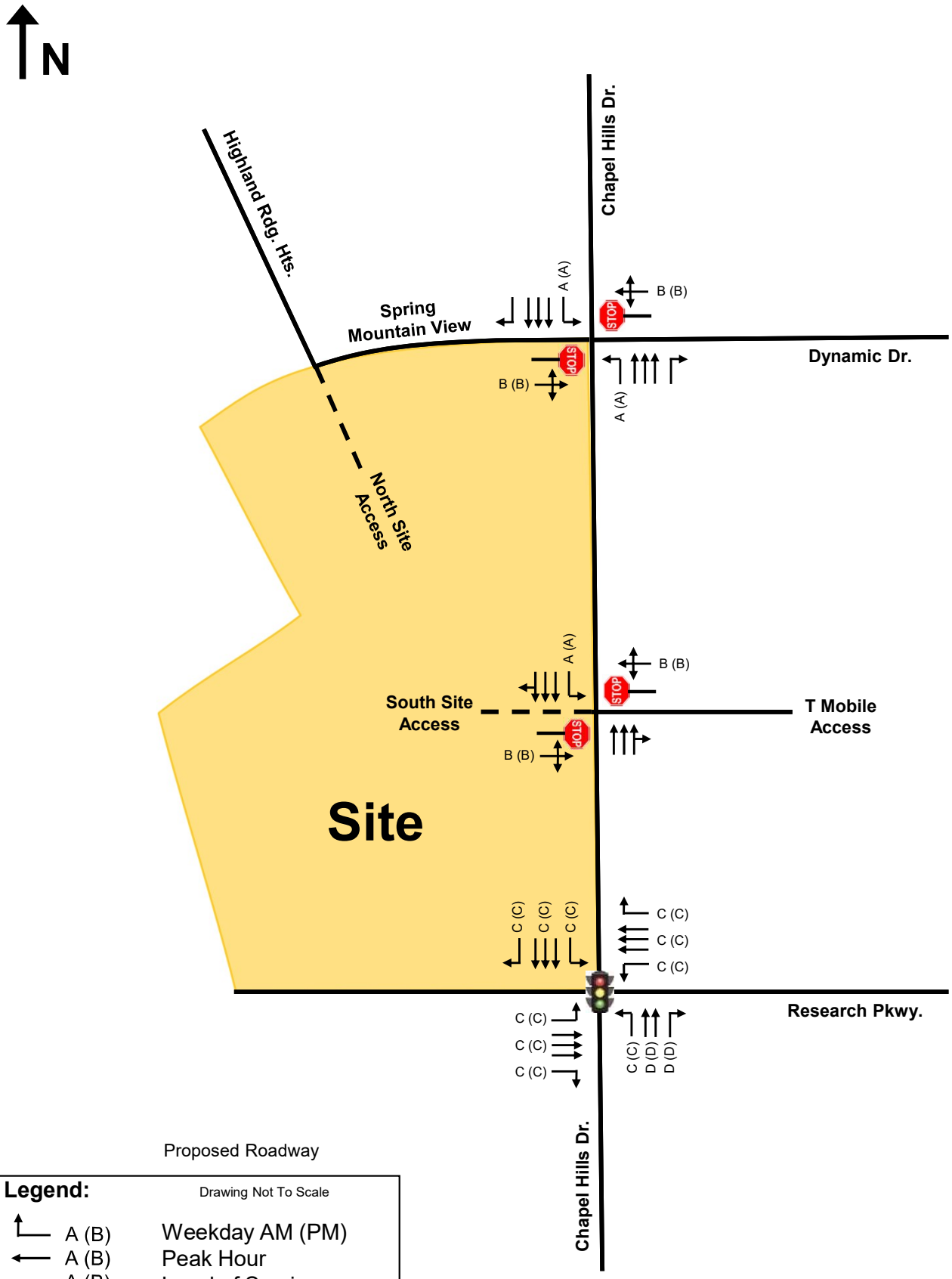
2045 Total Traffic Volumes (Background + Site Generated)

Highlands at Briargate

Davis Development

HKS #210639

Figure 14



HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

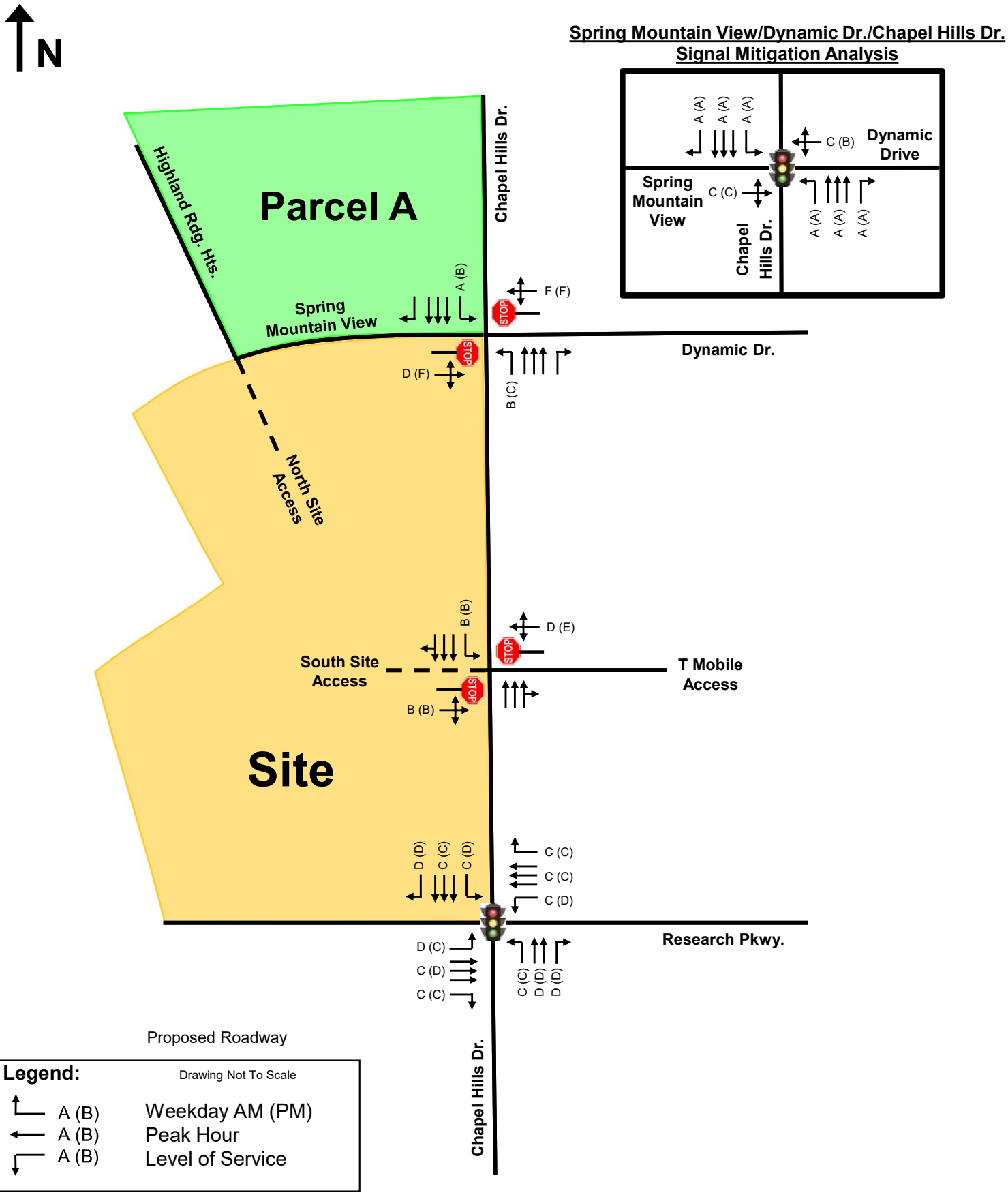
2025 Total Traffic Operational Conditions

Highlands at Briargate

Davis Development

HKS #210639

Figure 15



HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

2045 Total Traffic Operational Conditions

Highlands at Briargate

Davis Development

HKS #210639

Figure 16

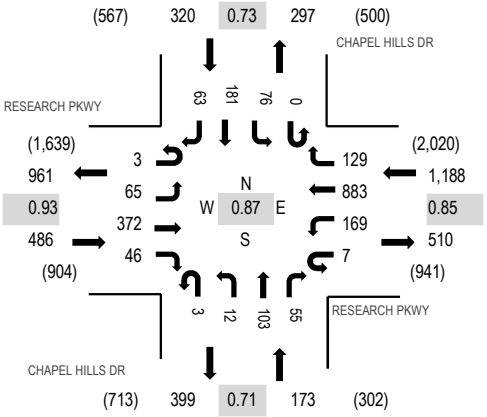
APPENDIX “A”

2022 EXISTING
TRAFFIC VOLUME COUNTS

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

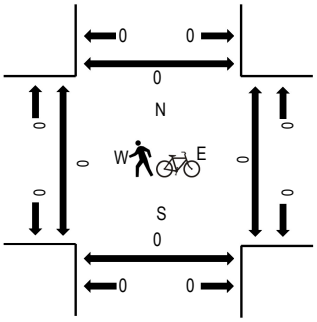
Location: 1 CHAPEL HILLS DR & RESEARCH PKWY AM
Date: Wednesday, March 2, 2022
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



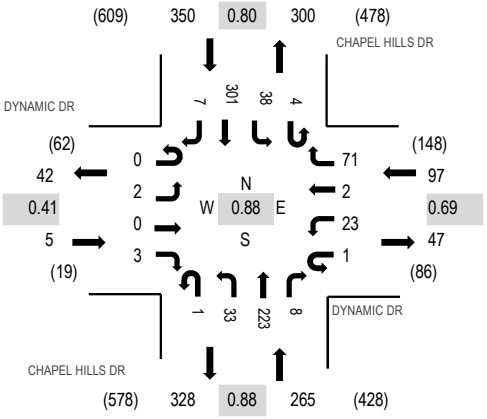
Traffic Counts

Interval Start Time	RESEARCH PKWY Eastbound				RESEARCH PKWY Westbound				CHAPEL HILLS DR Northbound				CHAPEL HILLS DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	7	68	2	1	17	128	11	0	3	9	3	0	9	19	5	282	1,875	0	1	0	0
7:15 AM	1	8	87	6	2	34	203	20	0	2	14	12	0	11	25	14	439	2,110	0	2	0	0
7:30 AM	1	14	104	12	0	30	221	28	1	3	28	13	0	19	32	25	531	2,167	0	0	0	0
7:45 AM	0	10	90	16	1	51	272	31	0	1	24	14	0	28	72	13	623	2,064	0	0	0	0
8:00 AM	0	15	96	13	2	45	217	43	1	1	15	10	0	14	34	11	517	1,918	0	0	0	0
8:15 AM	2	26	82	5	4	43	173	27	1	7	36	18	0	15	43	14	496		0	0	0	0
8:30 AM	1	25	72	7	1	40	137	20	2	3	19	17	0	22	46	16	428		0	0	0	1
8:45 AM	1	28	91	14	6	48	147	17	0	6	24	15	1	14	54	11	477		0	0	0	0
Count Total	6	133	690	75	17	308	1,498	197	5	26	169	102	1	132	325	109	3,793		0	3	0	1
Peak Hour	3	65	372	46	7	169	883	129	3	12	103	55	0	76	181	63	2,167		0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

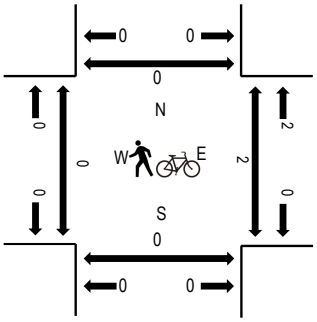
Location: 2 CHAPEL HILLS DR & DYNAMIC DR AM
Date: Wednesday, March 2, 2022
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



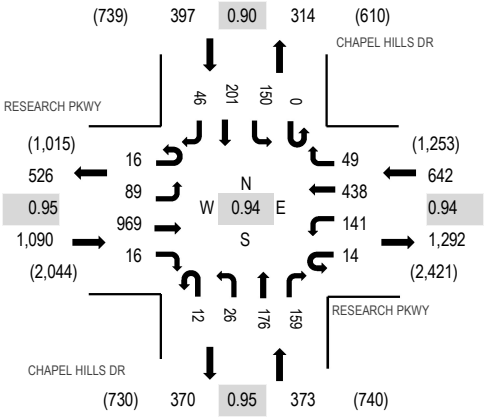
Traffic Counts

Interval Start Time	DYNAMIC DR Eastbound				DYNAMIC DR Westbound				CHAPEL HILLS DR Northbound				CHAPEL HILLS DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	4	0	5	0	1	26	1	1	2	32	0	72	575	0	4	0	0
7:15 AM	0	0	0	2	0	5	0	16	0	3	34	3	2	3	41	1	110	655	0	1	0	0
7:30 AM	0	1	0	0	0	8	0	32	0	7	56	3	1	14	68	0	190	717	0	1	0	0
7:45 AM	0	1	0	2	0	8	2	30	0	7	41	3	1	8	96	4	203	662	0	0	0	0
8:00 AM	0	0	0	0	1	3	0	6	1	13	61	0	1	9	56	1	152	629	0	0	0	0
8:15 AM	0	0	0	1	0	4	0	3	0	6	65	2	1	7	81	2	172		0	1	0	0
8:30 AM	0	0	0	4	0	2	1	5	0	4	35	3	1	9	70	1	135		0	0	0	0
8:45 AM	0	0	1	7	0	7	2	4	0	5	48	0	1	17	76	2	170		1	0	0	0
Count Total	0	2	1	16	1	41	5	101	1	46	366	15	9	69	520	11	1,204		1	7	0	0
Peak Hour	0	2	0	3	1	23	2	71	1	33	223	8	4	38	301	7	717		0	2	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

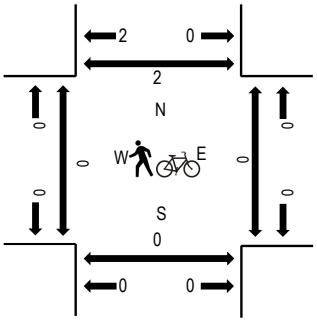
Location: 1 CHAPEL HILLS DR & RESEARCH PKWY PM
Date: Wednesday, March 2, 2022
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



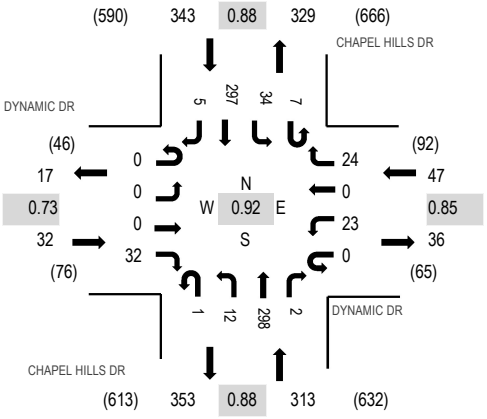
Traffic Counts

Interval Start Time	RESEARCH PKWY Eastbound				RESEARCH PKWY Westbound				CHAPEL HILLS DR Northbound				CHAPEL HILLS DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	2	26	220	8	2	44	106	9	0	6	36	58	0	32	58	9	616	2,446	0	0	0	1
4:15 PM	2	19	213	9	6	34	119	15	2	6	44	33	0	31	49	8	590	2,495	0	8	0	0
4:30 PM	5	17	234	6	7	26	99	11	2	13	37	43	0	29	47	13	589	2,485	0	0	0	0
4:45 PM	7	30	236	6	9	44	101	9	4	5	51	39	0	41	61	8	651	2,502	0	0	0	0
5:00 PM	4	16	268	4	1	41	120	13	7	6	46	41	0	39	50	9	665	2,330	0	0	0	2
5:15 PM	4	24	242	2	2	25	101	15	1	3	41	34	0	25	55	6	580		0	0	0	0
5:30 PM	1	19	223	4	2	31	116	12	0	12	38	45	0	45	35	23	606		0	0	0	0
5:45 PM	2	28	159	4	2	37	87	7	0	2	46	39	1	21	34	10	479		0	0	0	0
Count Total	27	179	1,795	43	31	282	849	91	16	53	339	332	1	263	389	86	4,776		0	8	0	3
Peak Hour	16	89	969	16	14	141	438	49	12	26	176	159	0	150	201	46	2,502		0	0	0	2

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

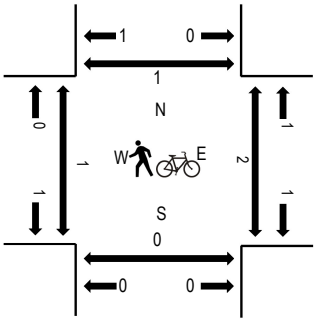
Location: 2 CHAPEL HILLS DR & DYNAMIC DR PM
Date: Wednesday, March 2, 2022
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



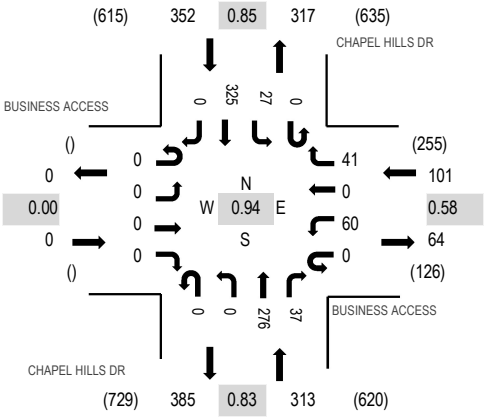
Traffic Counts

Interval Start Time	DYNAMIC DR Eastbound				DYNAMIC DR Westbound				CHAPEL HILLS DR Northbound				CHAPEL HILLS DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	11	0	8	0	4	0	5	74	0	4	9	82	2	199	735	0	1	0	0
4:15 PM	0	0	0	4	0	0	0	3	0	2	74	0	1	7	69	3	163	731	0	1	0	0
4:30 PM	0	0	0	10	0	6	0	9	0	1	65	0	1	8	76	0	176	721	0	0	0	0
4:45 PM	0	0	0	7	0	9	0	8	1	4	85	2	1	10	70	0	197	699	1	0	0	1
5:00 PM	0	1	2	12	0	6	0	8	0	3	76	0	1	6	74	6	195	655	0	0	0	0
5:15 PM	0	0	3	9	0	3	0	7	0	6	66	4	1	6	47	1	153		0	0	0	0
5:30 PM	0	0	2	8	0	5	0	12	0	1	74	0	0	4	44	4	154		0	0	0	0
5:45 PM	0	0	0	7	0	0	0	4	0	4	85	0	2	2	45	4	153		0	0	0	0
Count Total	0	1	7	68	0	37	0	55	1	26	599	6	11	52	507	20	1,390		1	2	0	1
Peak Hour	0	0	0	32	0	23	0	24	1	12	298	2	7	34	297	5	735		1	2	0	1

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

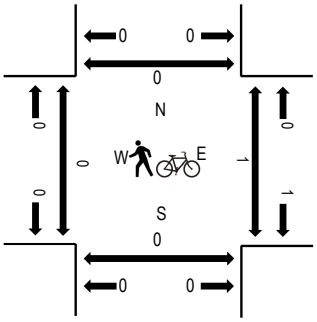
Location: 3 CHAPEL HILLS DR & BUSINESS ACCESS PM
Date: Wednesday, March 2, 2022
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	BUSINESS ACCESS Eastbound				BUSINESS ACCESS Westbound				CHAPEL HILLS DR Northbound				CHAPEL HILLS DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	14	0	12	0	0	64	10	0	12	91	0	203	766	0	1	0	0
4:15 PM	0	0	0	0	0	19	0	10	0	0	68	10	0	10	63	0	180	764	0	0	0	0
4:30 PM	0	0	0	0	0	9	0	10	0	0	59	6	0	4	91	0	179	751	0	0	0	0
4:45 PM	0	0	0	0	0	18	0	9	0	0	85	11	0	1	80	0	204	766	0	0	0	0
5:00 PM	0	0	0	0	0	19	0	11	0	0	67	9	0	8	87	0	201	724	0	1	0	0
5:15 PM	0	0	0	0	0	19	0	12	0	0	63	16	1	4	52	0	167		0	0	0	0
5:30 PM	0	0	0	0	0	48	0	19	0	0	55	13	0	2	57	0	194		0	0	0	0
5:45 PM	0	0	0	0	0	14	0	12	0	0	78	6	0	4	48	0	162		0	0	0	0
Count Total	0	0	0	0	0	160	0	95	0	0	539	81	1	45	569	0	1,490		0	2	0	0
Peak Hour	0	0	0	0	0	60	0	41	0	0	276	37	0	27	325	0	766		0	1	0	0

All Traffic Data Services

www.alltrafficdata.net

Date Start: 02-Mar-22
Site Code: 4
Station ID: 4
DYNAMIC DR E.O. CHAPEL HILLS DR

Start Time	02-Mar-22 Wed	EB	WB							Total
12:00 AM		1	1							2
01:00		0	0							0
02:00		1	1							2
03:00		1	0							1
04:00		1	3							4
05:00		5	17							22
06:00		18	23							41
07:00		37	**110**							**147**
08:00		**49**	38							87
09:00		31	33							64
10:00		17	31							48
11:00		31	33							64
12:00 PM		22	26							48
01:00		28	33							61
02:00		28	39							67
03:00		**39**	**82**							**121**
04:00		36	47							83
05:00		29	45							74
06:00		28	33							61
07:00		15	17							32
08:00		17	6							23
09:00		7	24							31
10:00		9	2							11
11:00		2	1							3
Total		452	645							1097
Percent		41.2%	58.8%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	49	110	-	-	-	-	-	-	147
PM Peak	-	15:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	39	82	-	-	-	-	-	-	121
Grand Total		452	645							1097
Percent		41.2%	58.8%							
ADT		ADT 1,097		AADT 1,097						

All Traffic Data Services

www.alltrafficdata.net

Date Start: 02-Mar-22
Site Code: 5
Station ID: 5
CHAPEL HILLS DR N.O. DYNAMIC DR

Start Time	02-Mar-22 Wed	NB	SB							Total
12:00 AM		6	4							10
01:00		1	3							4
02:00		3	3							6
03:00		1	4							5
04:00		14	9							23
05:00		25	27							52
06:00		93	91							184
07:00		247	274							521
08:00		231	**335**							**566**
09:00		189	262							451
10:00		205	232							437
11:00		**254**	263							517
12:00 PM		279	257							536
01:00		293	268							561
02:00		293	280							573
03:00		**410**	**390**							**800**
04:00		329	343							672
05:00		337	247							584
06:00		210	194							404
07:00		128	102							230
08:00		85	83							168
09:00		76	34							110
10:00		16	26							42
11:00		7	8							15
Total		3732	3739							7471
Percent		50.0%	50.0%							
AM Peak	-	11:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	254	335	-	-	-	-	-	-	566
PM Peak	-	15:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	410	390	-	-	-	-	-	-	800
Grand Total		3732	3739							7471
Percent		50.0%	50.0%							
ADT		ADT 7,471		AADT 7,471						

All Traffic Data Services

www.alltrafficdata.net

Date Start: 02-Mar-22
Site Code: 6
Station ID: 6
CHAPEL HILLS DR S.O. DYNAMIC DR

Start Time	02-Mar-22 Wed	NB	SB							Total
12:00 AM		5	3							8
01:00		1	3							4
02:00		2	2							4
03:00		1	3							4
04:00		10	8							18
05:00		20	33							53
06:00		81	78							159
07:00		185	266							451
08:00		243	**312**							**555**
09:00		180	246							426
10:00		205	236							441
11:00		**250**	242							492
12:00 PM		284	261							545
01:00		287	262							549
02:00		279	281							560
03:00		**376**	**392**							**768**
04:00		313	353							666
05:00		319	260							579
06:00		201	180							381
07:00		123	100							223
08:00		83	82							165
09:00		57	34							91
10:00		16	19							35
11:00		7	7							14
Total		3528	3663							7191
Percent		49.1%	50.9%							
AM Peak	-	11:00	08:00	-	-	-	-	-	-	08:00
Vol.	-	250	312	-	-	-	-	-	-	555
PM Peak	-	15:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	376	392	-	-	-	-	-	-	768
Grand Total		3528	3663							7191
Percent		49.1%	50.9%							
ADT		ADT 7,191		AADT 7,191						

All Traffic Data Services

www.alltrafficdata.net

Date Start: 02-Mar-22
Site Code: 7
Station ID: 7
RESEARCH PKWY E.O. CHAPEL HILLS DR

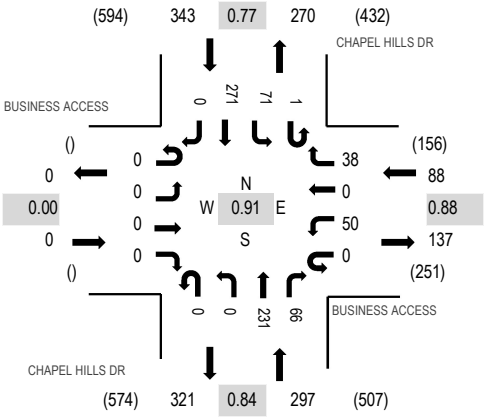
Start Time	02-Mar-22 Wed	EB	WB							Total
12:00 AM		24	15							39
01:00		18	15							33
02:00		11	3							14
03:00		10	19							29
04:00		11	42							53
05:00		26	159							185
06:00		159	465							624
07:00		462	**1050**							**1512**
08:00		479	970							1449
09:00		481	586							1067
10:00		525	567							1092
11:00		**613**	639							1252
12:00 PM		684	658							1342
01:00		693	598							1291
02:00		803	599							1402
03:00		1068	**809**							**1877**
04:00		**1233**	641							1874
05:00		1188	612							1800
06:00		607	415							1022
07:00		415	239							654
08:00		375	178							553
09:00		211	92							303
10:00		124	46							170
11:00		62	28							90
Total		10282	9445							19727
Percent		52.1%	47.9%							
AM Peak	-	11:00	07:00	-	-	-	-	-	-	07:00
Vol.	-	613	1050	-	-	-	-	-	-	1512
PM Peak	-	16:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	1233	809	-	-	-	-	-	-	1877
Grand Total		10282	9445							19727
Percent		52.1%	47.9%							

ADT ADT 19,727 AADT 19,727

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

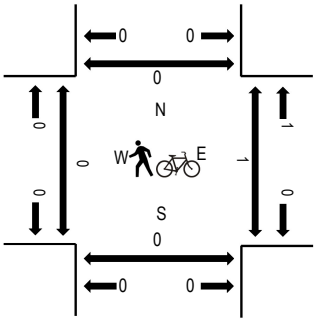
Location: 3 CHAPEL HILLS DR & BUSINESS ACCESS AM
Date: Wednesday, March 2, 2022
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	BUSINESS ACCESS Eastbound				BUSINESS ACCESS Westbound				CHAPEL HILLS DR Northbound				CHAPEL HILLS DR Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	6	0	6	0	0	22	6	0	10	27	0	77	559	0	4	0	0
7:15 AM	0	0	0	0	0	10	0	6	0	0	34	11	0	8	39	0	108	641	0	2	0	0
7:30 AM	0	0	0	0	0	16	0	9	0	0	56	14	0	16	63	0	174	728	0	1	0	0
7:45 AM	0	0	0	0	0	15	0	7	0	0	52	14	0	18	94	0	200	715	0	0	0	0
8:00 AM	0	0	0	0	0	13	0	12	0	0	57	15	1	14	47	0	159	698	0	0	0	0
8:15 AM	0	0	0	0	0	6	0	10	0	0	66	23	0	23	67	0	195		0	0	0	0
8:30 AM	0	0	0	0	0	15	0	3	0	0	39	26	0	13	65	0	161		0	0	0	0
8:45 AM	0	0	0	0	0	16	0	6	0	0	46	26	0	14	75	0	183		0	0	0	0
Count Total	0	0	0	0	0	97	0	59	0	0	372	135	1	116	477	0	1,257		0	7	0	0
Peak Hour	0	0	0	0	0	50	0	38	0	0	231	66	1	71	271	0	728		0	1	0	0

APPENDIX “B”

TRAFFIC SIGNAL TIMING PLANS

Intersection 429 at Research Pkwy and Chapel Hills Dr - Timing table, page 1

Page 1	Phases											
	1	2	3	4	5	6	7	8	9	10	11	12
Min Green	4	4	4	4	4	4	4	4	0	0	0	0
Passage Time I	2.0	5.0	2.0	3.0	2.0	5.0	2.0	3.0	0.0	0.0	0.0	0.0
Passage Time II	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Green I	8	34	8	20	8	34	8	20	0	0	0	0
Max Green II	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	3.0	4.5	3.0	4.5	3.0	4.5	3.0	4.5	0.0	0.0	0.0	0.0
Red Clearance	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Added Initial	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Min Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Green Time	0	0	0	0	0	0	0	0	0	0	0	0
Red Revert Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Time	0	7	0	7	0	7	0	7	0	0	0	0
Pedestrian Clearance	0	29	0	33	0	29	0	33	0	0	0	0
Handicap Walk	0	0	0	0	0	0	0	0	0	0	0	0
Handicap Ped Clearance	0	0	0	0	0	0	0	0	0	0	0	0
Research Pkwy	X	X			X	X						
Chapel Hills Dr			X	X			X	X				
Compass Direction	W	E	S	N	E	W	N	S				
Through, Turn or XPed	Left,prt	Thru	Left,prt	Thru	Left,prt	Thru	Left,prt	Thru				

Intersection 429 at Research Pkwy and Chapel Hills Dr - Sequence table, page 1

Page 1	Ring 1 Phases				Ring 2 Phases				Ring 3 Phases			
	1	2	3	4	5	6	7	8	9	10	11	12
State 1	Vehicle				Vehicle							
Barrier 1												
State 2		V & P				V & P						
Barrier 2	XXXXXXXXXXXXXXXXXXXXX				XXXXXXXXXXXXXXXXXXXXX							
State 3			Vehicle				Vehicle					
Barrier 3												
State 4				V & P				V & P				
Barrier 4	XXXXXXXXXXXXXXXXXXXXX				XXXXXXXXXXXXXXXXXXXXX							
State 5												
Barrier 5												
State 6												
Barrier 6												
State 7												
Barrier 7												
State 8												
Barrier 8												
State 9												
Barrier 9												
State 10												
Barrier 10												
State 11												
Barrier 11												
State 12												
Barrier 12												

Intersection 429 at Research Pkwy and Chapel Hills Dr - Phases control table, page 1

Page 1	Vehicle Phases 111 123456789012		Ped Phases 111 123456789012
Min Recalls		Ped Recalls	
Max Recalls	2 6	Handicap Ped Recalls	
Recall If Maxed		Soft Ped Recalls	
Dual Entry	4 8	Do Not Recall Ped	2 4 6 8
Do Not Skip		Allow Walk Reduction	
Simultaneous Gap Out		Hold In Walk	
Restricted Phases		Allow Ped Re-service	
Sequential Initial Timing		Rest In Walk	No
Max Timer Starts For Call			
Reduction Starts For Call			
Red To Avoid Left Turn Trap	2 6		
Rest In Red	No		

Intersection 429 at Research Pkwy and Chapel Hills Dr - Spec signaling cntrl tbl, pg 1

Page 1							
Signaling Control 1				Signaling Control 2			
Function	Flashing permissive left turn	Timer 1	2.0	Function	Flashing permissive left turn	Timer 1	2.0
Operand	0	Timer 2	0.0	Operand	0	Timer 2	0.0
Trigger	Always enabled	Timer 3	0.0	Trigger	Always enabled	Timer 3	0.0
	_____111	Output 1	25		_____111	Output 1	1
	123456789012	Output 2	34		123456789012	Output 2	35
Phases 1	5	Output 3	41	Phases 1	1	Output 3	40
Phases 2	2	Output 4	1	Phases 2	6	Output 4	1
Overlaps 1				Overlaps 1			
Overlaps 2				Overlaps 2			
Signaling Control 3				Signaling Control 4			
Function	Flashing permissive left turn	Timer 1	2.0	Function	Flashing permissive left turn	Timer 1	2.0
Operand	0	Timer 2	0.0	Operand	0	Timer 2	0.0
Trigger	Always enabled	Timer 3	0.0	Trigger	Always enabled	Timer 3	0.0
	_____111	Output 1	17		_____111	Output 1	9
	123456789012	Output 2	36		123456789012	Output 2	33
Phases 1	3	Output 3	44	Phases 1	7	Output 3	43
Phases 2	8	Output 4	1	Phases 2	4	Output 4	1
Overlaps 1				Overlaps 1			
Overlaps 2				Overlaps 2			

Intersection 429 at Research Pkwy and Chapel Hills Dr - Coordination table, plans 1-2

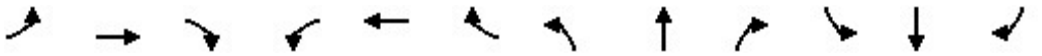
	_____111	Cycle Length	138			Alternate	Alternate	Alternate
Plan 1	123456789012	Offset 1	10	Phases	Splits	Mins	Passages	Maxes
Coordinated		Offset 2	0	1	14	0	0.0	13
Phases	2 6	Offset 3	0	2	63	0	0.0	72
Secondary		Offset 4	0	3	15	0	0.0	14
Coordinated		Relative Secondary Offset	0	4	46	0	0.0	51
Phases		Permissive Period	Auto	5	14	0	0.0	13
Extra Time		Max Cycle Addition	34	6	63	0	0.0	72
Phases		Max Cycle Subtraction	34	7	15	0	0.0	14
Additional		Coord Actuated Period	0	8	46	0	0.0	51
Max Recalls		Top Of Cycle Green Point	End	9	0	0	0.0	0
Units	Seconds	Big Bang Preempt Recvry	No	10	0	0	0.0	0
		Big Bang Ped Recovery	No	11	0	0	0.0	0
		Min Lagging Left Split	0%	12	0	0	0.0	0
	_____111	Cycle Length	0			Alternate	Alternate	Alternate
Plan 2	123456789012	Offset 1	0	Phases	Splits	Mins	Passages	Maxes
Coordinated		Offset 2	0	1	0	0	0.0	0
Phases		Offset 3	0	2	0	0	0.0	0
Secondary		Offset 4	0	3	0	0	0.0	0
Coordinated		Relative Secondary Offset	0	4	0	0	0.0	0
Phases		Permissive Period	Auto	5	0	0	0.0	0
Extra Time		Max Cycle Addition	0	6	0	0	0.0	0
Phases		Max Cycle Subtraction	0	7	0	0	0.0	0
Additional		Coord Actuated Period	0	8	0	0	0.0	0
Max Recalls		Top Of Cycle Green Point	End	9	0	0	0.0	0
Units	Seconds	Big Bang Preempt Recvry	No	10	0	0	0.0	0
		Big Bang Ped Recovery	No	11	0	0	0.0	0
		Min Lagging Left Split	0%	12	0	0	0.0	0

Intersection 429 at Research Pkwy and Chapel Hills Dr - Schedule table, events 1-25

Event	Ena-		Event Parameters		Start					Duration	Stop		Repetition		
Num	bled	Event Type	Param 1	Param 2	Mon	Day	Hour	Min	Sec	Minutes	Mon	Day	Repeat	Intervals	Priority
1	Yes	Run Plan	Plan 1	Ofst #1	1	1	06	00	00	735	12	31	Weekly	MTWTF	Low
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

APPENDIX “C”

INTERSECTION CAPACITY ANALYSIS WORKSHEETS



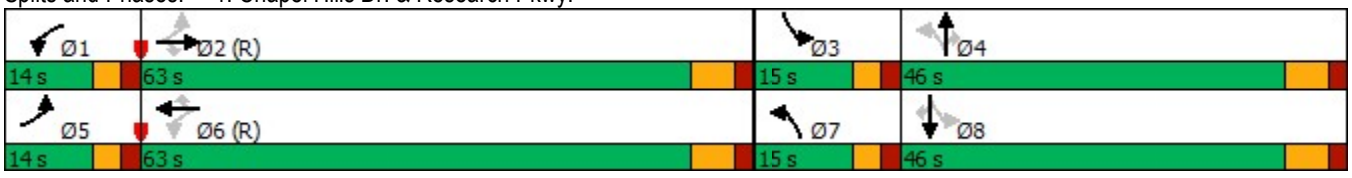
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.226			0.475			0.623			0.611		
Satd. Flow (perm)	421	5085	1583	885	5085	1583	1160	3539	1583	1138	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			140			107			107
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

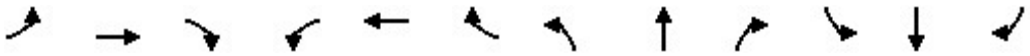
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	372	46	176	883	129	15	103	55	76	181	63
Future Volume (vph)	68	372	46	176	883	129	15	103	55	76	181	63
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.0	56.5	56.5	68.5	59.8	59.8	48.4	40.6	40.6	55.2	49.7	49.7
Actuated g/C Ratio	0.48	0.41	0.41	0.50	0.43	0.43	0.35	0.29	0.29	0.40	0.36	0.36
v/c Ratio	0.27	0.19	0.07	0.39	0.44	0.18	0.04	0.11	0.11	0.17	0.11	0.11
Control Delay	19.1	26.5	0.2	20.7	28.8	4.4	25.1	36.3	0.9	26.6	30.9	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	0.0
Total Delay	19.1	26.5	0.2	20.7	28.8	4.4	25.1	36.3	0.9	26.6	30.9	1.8
LOS	B	C	A	C	C	A	C	D	A	C	C	A
Approach Delay		22.9			24.9			24.0			24.2	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 48.7%	ICU Level of Service A
Analysis Period (min) 15	

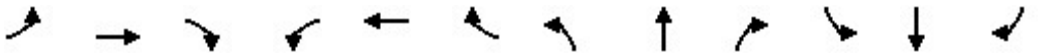
Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	74	404	50	191	960	140	16	112	60	83	197	68
v/c Ratio	0.27	0.19	0.07	0.39	0.44	0.18	0.04	0.11	0.11	0.17	0.11	0.11
Control Delay	19.1	26.5	0.2	20.7	28.8	4.4	25.1	36.3	0.9	26.6	30.9	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	0.0
Total Delay	19.1	26.5	0.2	20.7	28.8	4.4	25.1	36.3	0.9	26.6	30.9	1.8
Queue Length 50th (ft)	32	84	0	89	225	0	9	38	0	46	40	0
Queue Length 95th (ft)	59	110	0	136	269	41	24	64	4	83	68	10
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	292	2081	711	496	2201	764	482	1041	541	500	1830	638
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.19	0.07	0.39	0.44	0.18	0.03	0.11	0.11	0.17	0.11	0.11

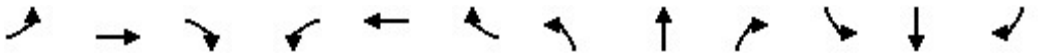
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	372	46	176	883	129	15	103	55	76	181	63
Future Volume (veh/h)	68	372	46	176	883	129	15	103	55	76	181	63
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	74	404	50	191	960	140	16	112	60	83	197	68
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	291	2230	692	532	2382	739	401	1017	454	452	1608	499
Arrive On Green	0.04	0.44	0.44	0.07	0.47	0.47	0.02	0.29	0.29	0.05	0.31	0.31
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	74	404	50	191	960	140	16	112	60	83	197	68
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	3.2	6.7	2.5	8.1	17.0	7.1	0.9	3.2	3.9	4.5	3.8	4.2
Cycle Q Clear(g_c), s	3.2	6.7	2.5	8.1	17.0	7.1	0.9	3.2	3.9	4.5	3.8	4.2
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	291	2230	692	532	2382	739	401	1017	454	452	1608	499
V/C Ratio(X)	0.25	0.18	0.07	0.36	0.40	0.19	0.04	0.11	0.13	0.18	0.12	0.14
Avail Cap(c_a), veh/h	344	2230	692	532	2382	739	500	1017	454	500	1608	499
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	20.8	23.8	22.6	18.8	24.2	21.5	33.8	36.3	36.5	31.8	33.7	33.8
Incr Delay (d2), s/veh	0.5	0.2	0.2	0.4	0.5	0.6	0.0	0.2	0.6	0.2	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.8	1.0	3.5	7.0	2.8	0.4	1.4	1.6	2.0	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	24.0	22.8	19.2	24.7	22.1	33.9	36.5	37.1	31.9	33.8	34.4
LnGrp LOS	C	C	C	B	C	C	C	D	D	C	C	C
Approach Vol, veh/h		528			1291			188			348	
Approach Delay, s/veh		23.5			23.6			36.5			33.5	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	66.8	11.2	46.0	9.9	70.9	7.3	49.9
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	10.1	8.7	6.5	5.9	5.2	19.0	2.9	6.2
Green Ext Time (p_c), s	0.0	3.2	0.0	0.9	0.0	9.0	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.919			0.901				0.850			0.850
Flt Protected		0.980			0.988		0.950			0.950		
Satd. Flow (prot)	0	1678	0	0	1658	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.980			0.988		0.950			0.950		
Satd. Flow (perm)	0	1678	0	0	1658	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	24	2	71	34	223	8	42	301	7
Future Vol, veh/h	2	0	3	24	2	71	34	223	8	42	301	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	2	0	3	26	2	77	37	242	9	46	327	8

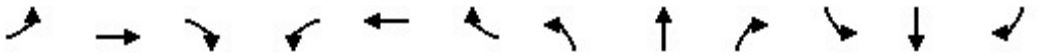
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	591	744	164	539	743	121	335	0	0	251	0	0
Stage 1	419	419	-	316	316	-	-	-	-	-	-	-
Stage 2	172	325	-	223	427	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	441	341	724	472	342	771	809	-	-	885	-	-
Stage 1	497	588	-	582	654	-	-	-	-	-	-	-
Stage 2	747	648	-	697	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	366	308	724	436	309	771	809	-	-	885	-	-
Mov Cap-2 Maneuver	366	308	-	436	309	-	-	-	-	-	-	-
Stage 1	474	557	-	555	624	-	-	-	-	-	-	-
Stage 2	639	618	-	658	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	11.8	1.2	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	809	-	-	520	631	885	-	-
HCM Lane V/C Ratio	0.046	-	-	0.01	0.167	0.052	-	-
HCM Control Delay (s)	9.7	-	-	12	11.8	9.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.6	0.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	210	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt	0.942		0.967			
Flt Protected	0.972				0.950	
Satd. Flow (prot)	1706	0	4917	0	1770	5085
Flt Permitted	0.972				0.950	
Satd. Flow (perm)	1706	0	4917	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	213		442			668
Travel Time (s)	4.8		10.0			15.2

Intersection Summary	
Area Type:	Other



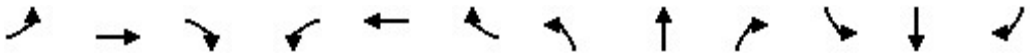
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.453			0.184			0.610			0.580		
Satd. Flow (perm)	844	5085	1583	343	5085	1583	1136	3539	1583	1080	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			107			173			107
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	969	16	155	438	49	38	176	159	150	201	46
Future Volume (vph)	105	969	16	155	438	49	38	176	159	150	201	46
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.6	56.6	56.6	67.4	56.9	56.9	48.6	39.6	39.6	53.7	44.2	44.2
Actuated g/C Ratio	0.48	0.41	0.41	0.49	0.41	0.41	0.35	0.29	0.29	0.39	0.32	0.32
v/c Ratio	0.25	0.51	0.02	0.65	0.23	0.07	0.09	0.19	0.30	0.35	0.13	0.09
Control Delay	18.4	31.4	0.1	30.7	26.7	0.2	25.8	37.7	6.5	29.6	34.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	31.4	0.1	30.7	26.7	0.2	25.8	37.7	6.5	29.6	34.7	0.3
LOS	B	C	A	C	C	A	C	D	A	C	C	A
Approach Delay		29.7			25.7			23.2			28.8	
Approach LOS		C			C			C			C	

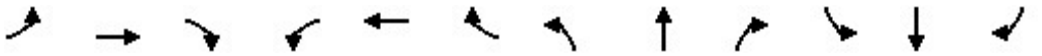
Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	114	1053	17	168	476	53	41	191	173	163	218	50
v/c Ratio	0.25	0.51	0.02	0.65	0.23	0.07	0.09	0.19	0.30	0.35	0.13	0.09
Control Delay	18.4	31.4	0.1	30.7	26.7	0.2	25.8	37.7	6.5	29.6	34.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	31.4	0.1	30.7	26.7	0.2	25.8	37.7	6.5	29.6	34.7	0.3
Queue Length 50th (ft)	51	255	0	77	101	0	22	68	0	95	52	0
Queue Length 95th (ft)	86	299	0	121	128	0	48	101	56	149	76	0
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	470	2083	712	260	2097	715	466	1016	577	470	1627	579
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.51	0.02	0.65	0.23	0.07	0.09	0.19	0.30	0.35	0.13	0.09

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	969	16	155	438	49	38	176	159	150	201	46
Future Volume (veh/h)	105	969	16	155	438	49	38	176	159	150	201	46
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	114	1053	17	168	476	53	41	191	173	163	218	50
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	462	2091	649	303	2163	671	421	1017	454	431	1685	523
Arrive On Green	0.05	0.41	0.41	0.07	0.42	0.42	0.03	0.29	0.29	0.07	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	114	1053	17	168	476	53	41	191	173	163	218	50
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	5.1	21.2	0.9	7.5	8.2	2.8	2.2	5.6	12.1	8.7	4.1	3.0
Cycle Q Clear(g_c), s	5.1	21.2	0.9	7.5	8.2	2.8	2.2	5.6	12.1	8.7	4.1	3.0
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	462	2091	649	303	2163	671	421	1017	454	431	1685	523
V/C Ratio(X)	0.25	0.50	0.03	0.55	0.22	0.08	0.10	0.19	0.38	0.38	0.13	0.10
Avail Cap(c_a), veh/h	487	2091	649	303	2163	671	499	1017	454	431	1685	523
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	21.6	30.3	24.3	23.4	25.3	23.7	33.1	37.1	39.5	30.1	32.4	32.0
Incr Delay (d2), s/veh	0.3	0.9	0.1	2.2	0.2	0.2	0.1	0.4	2.4	0.5	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	8.9	0.4	3.4	3.4	1.1	1.0	2.5	5.1	3.8	1.8	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	31.2	24.4	25.6	25.5	23.9	33.2	37.6	41.9	30.6	32.5	32.3
LnGrp LOS	C	C	C	C	C	C	C	D	D	C	C	C
Approach Vol, veh/h		1184			697			405			431	
Approach Delay, s/veh		30.2			25.4			39.0			31.8	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	65.0	15.0	46.0	14.0	63.0	9.0	52.0
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	7.1	10.2	10.7	14.1	9.5	23.2	4.2	6.1
Green Ext Time (p_c), s	0.0	3.9	0.0	1.8	0.0	9.2	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	30.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.865			0.931				0.850			0.850
Flt Protected					0.976		0.950			0.950		
Satd. Flow (prot)	0	1611	0	0	1693	0	1770	5085	1583	1770	5085	1583
Flt Permitted					0.976		0.950			0.950		
Satd. Flow (perm)	0	1611	0	0	1693	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	32	23	0	24	13	298	2	41	297	5
Future Vol, veh/h	0	0	32	23	0	24	13	298	2	41	297	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	0	35	25	0	26	14	324	2	45	323	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	571	767	162	571	770	162	328	0	0	326	0	0
Stage 1	413	413	-	352	352	-	-	-	-	-	-	-
Stage 2	158	354	-	219	418	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	452	331	726	452	330	726	815	-	-	817	-	-
Stage 1	501	592	-	551	630	-	-	-	-	-	-	-
Stage 2	761	629	-	701	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	412	307	726	407	307	726	815	-	-	817	-	-
Mov Cap-2 Maneuver	412	307	-	407	307	-	-	-	-	-	-	-
Stage 1	492	559	-	542	619	-	-	-	-	-	-	-
Stage 2	721	618	-	631	557	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	12.6	0.4	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	815	-	-	726	525	817	-	-
HCM Lane V/C Ratio	0.017	-	-	0.048	0.097	0.055	-	-
HCM Control Delay (s)	9.5	-	-	10.2	12.6	9.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	210	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt	0.945		0.982			
Flt Protected	0.971				0.950	
Satd. Flow (prot)	1709	0	4994	0	1770	5085
Flt Permitted	0.971				0.950	
Satd. Flow (perm)	1709	0	4994	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	213		442			668
Travel Time (s)	4.8		10.0			15.2

Intersection Summary	
Area Type:	Other

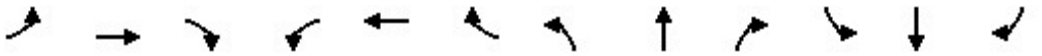
Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	41	276	37	27	325
Future Vol, veh/h	60	41	276	37	27	325
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	-	-	-	210	-
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	65	45	300	40	29	353

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	519	170	0	0	340	0
Stage 1	320	-	-	-	-	-
Stage 2	199	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	536	718	-	-	805	-
Stage 1	616	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	517	718	-	-	805	-
Mov Cap-2 Maneuver	517	-	-	-	-	-
Stage 1	616	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	583	805	-
HCM Lane V/C Ratio	-	-	0.188	0.036	-
HCM Control Delay (s)	-	-	12.6	9.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-



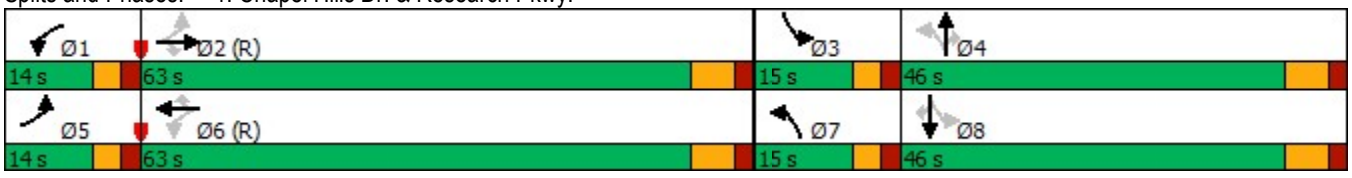
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.203			0.474			0.618			0.609		
Satd. Flow (perm)	378	5085	1583	883	5085	1583	1151	3539	1583	1134	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			147			107			107
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

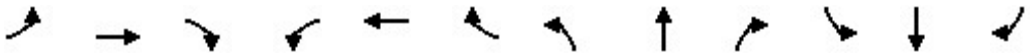
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	388	48	184	921	135	16	107	57	79	189	66
Future Volume (vph)	71	388	48	184	921	135	16	107	57	79	189	66
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.0	56.5	56.5	68.0	57.5	57.5	48.4	40.6	40.6	55.1	49.6	49.6
Actuated g/C Ratio	0.48	0.41	0.41	0.49	0.42	0.42	0.35	0.29	0.29	0.40	0.36	0.36
v/c Ratio	0.29	0.20	0.07	0.41	0.47	0.20	0.04	0.11	0.11	0.17	0.11	0.11
Control Delay	19.7	26.6	0.2	21.2	30.3	4.4	25.2	36.3	1.2	26.7	31.0	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	26.6	0.2	21.2	30.3	4.4	25.2	36.3	1.2	26.7	31.0	2.3
LOS	B	C	A	C	C	A	C	D	A	C	C	A
Approach Delay		23.1			26.1			24.2			24.3	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 25.0	Intersection LOS: C
Intersection Capacity Utilization 49.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.





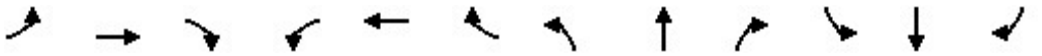
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	422	52	200	1001	147	17	116	62	86	205	72
v/c Ratio	0.29	0.20	0.07	0.41	0.47	0.20	0.04	0.11	0.11	0.17	0.11	0.11
Control Delay	19.7	26.6	0.2	21.2	30.3	4.4	25.2	36.3	1.2	26.7	31.0	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	26.6	0.2	21.2	30.3	4.4	25.2	36.3	1.2	26.7	31.0	2.3
Queue Length 50th (ft)	34	88	0	94	237	0	9	40	0	48	42	0
Queue Length 95th (ft)	61	115	0	143	282	43	26	65	5	85	71	14
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	274	2081	711	492	2117	744	479	1040	540	499	1829	637
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.20	0.07	0.41	0.47	0.20	0.04	0.11	0.11	0.17	0.11	0.11

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	388	48	184	921	135	16	107	57	79	189	66
Future Volume (veh/h)	71	388	48	184	921	135	16	107	57	79	189	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	422	52	200	1001	147	17	116	62	86	205	72
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	281	2223	690	522	2369	735	399	1017	454	451	1610	500
Arrive On Green	0.04	0.44	0.44	0.07	0.46	0.46	0.02	0.29	0.29	0.05	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	77	422	52	200	1001	147	17	116	62	86	205	72
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	3.3	7.0	2.6	8.6	18.0	7.6	0.9	3.3	4.0	4.6	4.0	4.5
Cycle Q Clear(g_c), s	3.3	7.0	2.6	8.6	18.0	7.6	0.9	3.3	4.0	4.6	4.0	4.5
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	281	2223	690	522	2369	735	399	1017	454	451	1610	500
V/C Ratio(X)	0.27	0.19	0.08	0.38	0.42	0.20	0.04	0.11	0.14	0.19	0.13	0.14
Avail Cap(c_a), veh/h	332	2223	690	522	2369	735	497	1017	454	497	1610	500
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	21.0	24.0	22.7	19.2	24.7	21.9	33.8	36.3	36.6	31.6	33.7	33.9
Incr Delay (d2), s/veh	0.5	0.2	0.2	0.5	0.6	0.6	0.0	0.2	0.6	0.2	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.9	1.0	3.7	7.5	3.0	0.4	1.5	1.7	2.0	1.7	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	24.2	23.0	19.6	25.2	22.5	33.8	36.6	37.2	31.8	33.9	34.5
LnGrp LOS	C	C	C	B	C	C	C	D	D	C	C	C
Approach Vol, veh/h		551			1348			195			363	
Approach Delay, s/veh		23.7			24.1			36.5			33.5	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	66.6	11.4	46.0	10.1	70.5	7.4	50.0
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	10.6	9.0	6.6	6.0	5.3	20.0	2.9	6.5
Green Ext Time (p_c), s	0.0	3.4	0.0	0.9	0.0	9.5	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.919			0.901				0.850			0.850
Flt Protected		0.980			0.988		0.950			0.950		
Satd. Flow (prot)	0	1678	0	0	1658	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.980			0.988		0.950			0.950		
Satd. Flow (perm)	0	1678	0	0	1658	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	25	2	74	35	233	8	44	314	7
Future Vol, veh/h	2	0	3	25	2	74	35	233	8	44	314	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	2	0	3	27	2	80	38	253	9	48	341	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	615	775	171	561	774	127	349	0	0	262	0	0
Stage 1	437	437	-	329	329	-	-	-	-	-	-	-
Stage 2	178	338	-	232	445	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	427	327	717	458	328	764	797	-	-	874	-	-
Stage 1	483	578	-	571	645	-	-	-	-	-	-	-
Stage 2	741	639	-	689	573	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	351	294	717	421	295	764	797	-	-	874	-	-
Mov Cap-2 Maneuver	351	294	-	421	295	-	-	-	-	-	-	-
Stage 1	460	546	-	544	614	-	-	-	-	-	-	-
Stage 2	629	608	-	648	541	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	12.1	1.2	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	797	-	-	506	620	874	-	-
HCM Lane V/C Ratio	0.048	-	-	0.011	0.177	0.055	-	-
HCM Control Delay (s)	9.7	-	-	12.2	12.1	9.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.6	0.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	210	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt	0.942		0.967			
Flt Protected	0.972				0.950	
Satd. Flow (prot)	1706	0	4917	0	1770	5085
Flt Permitted	0.972				0.950	
Satd. Flow (perm)	1706	0	4917	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	213		442			668
Travel Time (s)	4.8		10.0			15.2

Intersection Summary	
Area Type:	Other

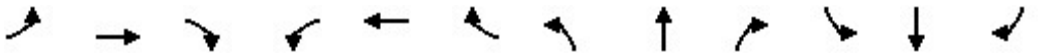
Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	40	241	69	75	283
Future Vol, veh/h	52	40	241	69	75	283
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	-	-	-	210	-
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	57	43	262	75	82	308

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	587	169	0	0	337	0
Stage 1	300	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	497	719	-	-	807	-
Stage 1	633	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	446	719	-	-	807	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	633	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	534	807	-
HCM Lane V/C Ratio	-	-	0.187	0.101	-
HCM Control Delay (s)	-	-	13.3	10	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.3	-



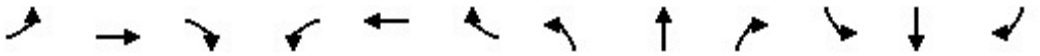
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.440			0.170			0.604			0.576		
Satd. Flow (perm)	820	5085	1583	317	5085	1583	1125	3539	1583	1073	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			107			180			107
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1011	17	162	457	51	40	184	166	156	210	48
Future Volume (vph)	110	1011	17	162	457	51	40	184	166	156	210	48
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.7	56.5	56.5	67.3	56.8	56.8	48.6	39.6	39.6	53.6	44.1	44.1
Actuated g/C Ratio	0.48	0.41	0.41	0.49	0.41	0.41	0.35	0.29	0.29	0.39	0.32	0.32
v/c Ratio	0.26	0.53	0.03	0.71	0.24	0.08	0.10	0.20	0.31	0.36	0.14	0.09
Control Delay	18.7	31.9	0.1	35.2	26.9	0.2	25.9	37.9	6.5	30.0	34.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	31.9	0.1	35.2	26.9	0.2	25.9	37.9	6.5	30.0	34.8	0.3
LOS	B	C	A	D	C	A	C	D	A	C	C	A
Approach Delay		30.1			26.9			23.3			29.0	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 28.1	Intersection LOS: C
Intersection Capacity Utilization 61.4%	ICU Level of Service B
Analysis Period (min) 15	

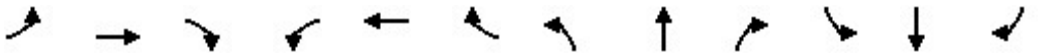
Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	120	1099	18	176	497	55	43	200	180	170	228	52
v/c Ratio	0.26	0.53	0.03	0.71	0.24	0.08	0.10	0.20	0.31	0.36	0.14	0.09
Control Delay	18.7	31.9	0.1	35.2	26.9	0.2	25.9	37.9	6.5	30.0	34.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	31.9	0.1	35.2	26.9	0.2	25.9	37.9	6.5	30.0	34.8	0.3
Queue Length 50th (ft)	54	269	0	81	105	0	23	71	0	99	54	0
Queue Length 95th (ft)	89	315	0	#135	134	0	49	105	57	155	79	0
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	460	2081	711	249	2094	715	463	1014	582	467	1624	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.53	0.03	0.71	0.24	0.08	0.09	0.20	0.31	0.36	0.14	0.09

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	1011	17	162	457	51	40	184	166	156	210	48
Future Volume (veh/h)	110	1011	17	162	457	51	40	184	166	156	210	48
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	120	1099	18	176	497	55	43	200	180	170	228	52
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	454	2091	649	293	2153	668	419	1017	454	426	1682	522
Arrive On Green	0.05	0.41	0.41	0.07	0.42	0.42	0.03	0.29	0.29	0.07	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	120	1099	18	176	497	55	43	200	180	170	228	52
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	5.4	22.4	0.9	7.9	8.6	2.9	2.3	5.9	12.6	9.1	4.3	3.1
Cycle Q Clear(g_c), s	5.4	22.4	0.9	7.9	8.6	2.9	2.3	5.9	12.6	9.1	4.3	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	454	2091	649	293	2153	668	419	1017	454	426	1682	522
V/C Ratio(X)	0.26	0.53	0.03	0.60	0.23	0.08	0.10	0.20	0.40	0.40	0.14	0.10
Avail Cap(c_a), veh/h	476	2091	649	293	2153	668	496	1017	454	426	1682	522
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	21.6	30.7	24.3	23.9	25.6	23.9	33.1	37.2	39.7	30.2	32.5	32.1
Incr Delay (d2), s/veh	0.3	1.0	0.1	3.4	0.3	0.2	0.1	0.4	2.6	0.6	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	9.4	0.4	3.6	3.6	1.1	1.0	2.7	5.3	4.0	1.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	31.6	24.4	27.3	25.8	24.2	33.2	37.7	42.2	30.8	32.6	32.5
LnGrp LOS	C	C	C	C	C	C	C	D	D	C	C	C
Approach Vol, veh/h		1237			728			423			450	
Approach Delay, s/veh		30.6			26.1			39.2			31.9	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	64.7	15.0	46.0	14.0	63.0	9.0	52.0
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	7.4	10.6	11.1	14.6	9.9	24.4	4.3	6.3
Green Ext Time (p_c), s	0.0	4.0	0.0	1.9	0.0	9.7	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.865			0.931				0.850			0.850
Flt Protected					0.976		0.950			0.950		
Satd. Flow (prot)	0	1611	0	0	1693	0	1770	5085	1583	1770	5085	1583
Flt Permitted					0.976		0.950			0.950		
Satd. Flow (perm)	0	1611	0	0	1693	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	33	24	0	25	14	311	2	43	310	5
Future Vol, veh/h	0	0	33	24	0	25	14	311	2	43	310	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	0	36	26	0	27	15	338	2	47	337	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	596	801	169	597	804	169	342	0	0	340	0	0
Stage 1	431	431	-	368	368	-	-	-	-	-	-	-
Stage 2	165	370	-	229	436	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	438	316	719	437	315	719	803	-	-	805	-	-
Stage 1	488	581	-	538	620	-	-	-	-	-	-	-
Stage 2	754	619	-	691	578	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	397	292	719	391	291	719	803	-	-	805	-	-
Mov Cap-2 Maneuver	397	292	-	391	291	-	-	-	-	-	-	-
Stage 1	479	547	-	528	608	-	-	-	-	-	-	-
Stage 2	712	607	-	618	544	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	12.9	0.4	1.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	803	-	-	719	510	805	-	-
HCM Lane V/C Ratio	0.019	-	-	0.05	0.104	0.058	-	-
HCM Control Delay (s)	9.6	-	-	10.3	12.9	9.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0.2	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	210	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt	0.945		0.982			
Flt Protected	0.971				0.950	
Satd. Flow (prot)	1709	0	4994	0	1770	5085
Flt Permitted	0.971				0.950	
Satd. Flow (perm)	1709	0	4994	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	213		442			668
Travel Time (s)	4.8		10.0			15.2

Intersection Summary	
Area Type:	Other

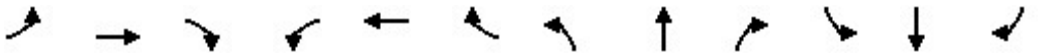
Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	43	288	39	28	339
Future Vol, veh/h	63	43	288	39	28	339
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	-	-	-	210	-
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	68	47	313	42	30	368

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	541	178	0	0	355	0
Stage 1	334	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	523	710	-	-	792	-
Stage 1	604	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	503	710	-	-	792	-
Mov Cap-2 Maneuver	503	-	-	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	714	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	570	792	-
HCM Lane V/C Ratio	-	-	0.202	0.038	-
HCM Control Delay (s)	-	-	12.9	9.7	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-



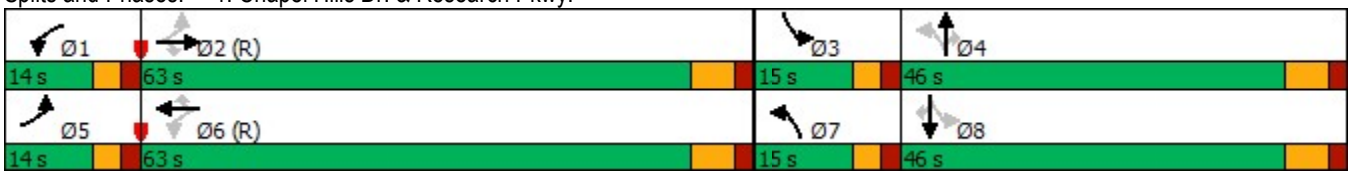
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.108			0.399			0.557			0.552		
Satd. Flow (perm)	201	5085	1583	743	5085	1583	1038	3539	1583	1028	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			171			107			140
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

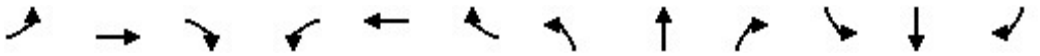
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	513	63	243	1219	205	21	197	76	122	284	129
Future Volume (vph)	162	513	63	243	1219	205	21	197	76	122	284	129
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	67.0	56.5	56.5	67.0	56.5	56.5	48.0	39.9	39.9	54.7	47.2	47.2
Actuated g/C Ratio	0.49	0.41	0.41	0.49	0.41	0.41	0.35	0.29	0.29	0.40	0.34	0.34
v/c Ratio	0.88	0.27	0.10	0.62	0.64	0.30	0.06	0.21	0.16	0.29	0.18	0.22
Control Delay	62.8	27.5	1.3	27.8	34.3	8.2	25.4	38.0	3.8	28.4	33.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	27.5	1.3	27.8	34.3	8.2	25.4	38.0	3.8	28.4	33.3	6.3
LOS	E	C	A	C	C	A	C	D	A	C	C	A
Approach Delay		33.0			30.1			28.2			25.7	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 29.9	Intersection LOS: C
Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.

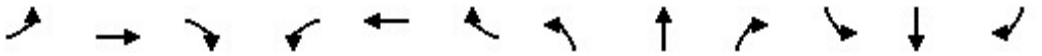




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	176	558	68	264	1325	223	23	214	83	133	309	140
v/c Ratio	0.88	0.27	0.10	0.62	0.64	0.30	0.06	0.21	0.16	0.29	0.18	0.22
Control Delay	62.8	27.5	1.3	27.8	34.3	8.2	25.4	38.0	3.8	28.4	33.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	27.5	1.3	27.8	34.3	8.2	25.4	38.0	3.8	28.4	33.3	6.3
Queue Length 50th (ft)	81	120	0	129	344	28	12	76	0	76	74	0
Queue Length 95th (ft)	#215	150	8	189	396	84	31	112	24	124	102	49
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	199	2081	711	427	2081	749	439	1021	533	460	1737	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.27	0.10	0.62	0.64	0.30	0.05	0.21	0.16	0.29	0.18	0.22

Intersection Summary

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



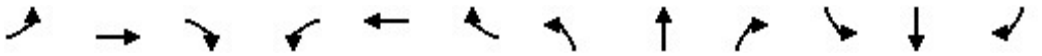
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	513	63	243	1219	205	21	197	76	122	284	129
Future Volume (veh/h)	162	513	63	243	1219	205	21	197	76	122	284	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	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	176	558	68	264	1325	223	23	214	83	133	309	140
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	239	2126	660	444	2126	660	359	1017	454	429	1687	524
Arrive On Green	0.07	0.42	0.42	0.07	0.42	0.42	0.02	0.29	0.29	0.07	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	176	558	68	264	1325	223	23	214	83	133	309	140
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	7.8	9.9	3.6	9.0	28.2	13.2	1.3	6.3	5.4	7.1	6.0	9.0
Cycle Q Clear(g_c), s	7.8	9.9	3.6	9.0	28.2	13.2	1.3	6.3	5.4	7.1	6.0	9.0
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	239	2126	660	444	2126	660	359	1017	454	429	1687	524
V/C Ratio(X)	0.74	0.26	0.10	0.59	0.62	0.34	0.06	0.21	0.18	0.31	0.18	0.27
Avail Cap(c_a), veh/h	239	2126	660	444	2126	660	451	1017	454	442	1687	524
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	26.7	26.4	24.6	24.9	31.7	27.3	33.5	37.4	37.1	30.2	32.9	33.9
Incr Delay (d2), s/veh	11.2	0.3	0.3	2.1	1.4	1.4	0.1	0.5	0.9	0.4	0.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	4.1	1.4	2.4	11.9	5.3	0.6	2.9	2.3	3.1	2.5	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	26.7	24.9	27.0	33.1	28.7	33.6	37.9	38.0	30.6	33.2	35.2
LnGrp LOS	D	C	C	C	C	C	C	D	D	C	C	D
Approach Vol, veh/h		802			1812			320			582	
Approach Delay, s/veh		29.0			31.7			37.6			33.1	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	64.0	14.0	46.0	14.0	64.0	7.9	52.1
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	11.0	11.9	9.1	8.3	9.8	30.2	3.3	11.0
Green Ext Time (p_c), s	0.0	4.6	0.0	1.7	0.0	12.3	0.0	2.6

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.888			0.910				0.850			0.850
Flt Protected		0.995			0.989		0.950			0.950		
Satd. Flow (prot)	0	1646	0	0	1676	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.995			0.989		0.950			0.950		
Satd. Flow (perm)	0	1646	0	0	1676	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other



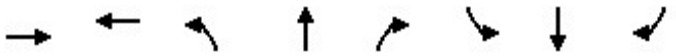
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.888			0.910				0.850			0.850
Flt Protected		0.995			0.989		0.950			0.950		
Satd. Flow (prot)	0	1646	0	0	1676	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.946			0.866		0.482			0.542		
Satd. Flow (perm)	0	1565	0	0	1468	0	898	5085	1583	1010	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		104			107				24			26
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	11	8	33	17	197	308	11	58	415	24
Future Volume (vph)	11	8	33	17	197	308	11	58	415	24
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.0	29.0	29.0	29.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	42.0%	42.0%	42.0%	42.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		8.5		8.5	51.5	51.5	51.5	51.5	51.5	51.5
Actuated g/C Ratio		0.12		0.12	0.75	0.75	0.75	0.75	0.75	0.75
v/c Ratio		0.44		0.59	0.32	0.09	0.01	0.08	0.12	0.02
Control Delay		13.3		19.8	7.7	4.6	2.6	3.4	2.9	1.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.3		19.8	7.7	4.6	2.6	3.4	2.9	1.5
LOS		B		B	A	A	A	A	A	A
Approach Delay		13.3		19.8		5.8			2.9	
Approach LOS		B		B		A			A	

Intersection Summary	
Cycle Length: 69	
Actuated Cycle Length: 69	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 45.6%	ICU Level of Service A
Analysis Period (min) 15	

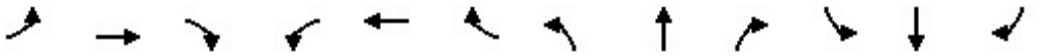
Splits and Phases: 2: Chapel Hills Dr. & Spring Mountain View/Dynamic Dr.



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	125	161	214	335	12	63	451	26
v/c Ratio	0.44	0.59	0.32	0.09	0.01	0.08	0.12	0.02
Control Delay	13.3	19.8	7.7	4.6	2.6	3.4	2.9	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	19.8	7.7	4.6	2.6	3.4	2.9	1.5
Queue Length 50th (ft)	8	22	60	28	0	5	13	0
Queue Length 95th (ft)	48	69	m92	m41	m2	19	30	6
Internal Link Dist (ft)	232	299		588			1046	
Turn Bay Length (ft)			240		200	235		250
Base Capacity (vph)	622	590	669	3792	1186	753	3792	1187
Starvation Cap Reductn	0	0	0	0	0	0	0	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	0.20	0.27	0.32	0.09	0.01	0.08	0.12	0.02

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	8	96	33	17	98	197	308	11	58	415	24
Future Volume (veh/h)	11	8	96	33	17	98	197	308	11	58	415	24
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	12	9	104	36	18	107	214	335	12	63	451	26
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	68	25	180	98	38	143	759	3775	1172	869	3775	1172
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	1.00	1.00	1.00	0.74	0.74	0.74
Sat Flow, veh/h	83	196	1378	264	291	1099	917	5106	1585	1034	5106	1585
Grp Volume(v), veh/h	125	0	0	161	0	0	214	335	12	63	451	26
Grp Sat Flow(s),veh/h/ln	1656	0	0	1654	0	0	917	1702	1585	1034	1702	1585
Q Serve(g_s), s	0.0	0.0	0.0	1.3	0.0	0.0	0.8	0.0	0.0	1.2	1.7	0.3
Cycle Q Clear(g_c), s	4.9	0.0	0.0	6.2	0.0	0.0	2.5	0.0	0.0	1.2	1.7	0.3
Prop In Lane	0.10		0.83	0.22		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	0	279	0	0	759	3775	1172	869	3775	1172
V/C Ratio(X)	0.46	0.00	0.00	0.58	0.00	0.00	0.28	0.09	0.01	0.07	0.12	0.02
Avail Cap(c_a), veh/h	625	0	0	623	0	0	759	3775	1172	869	3775	1172
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.3	0.0	0.0	28.8	0.0	0.0	0.0	0.0	0.0	2.5	2.6	2.4
Incr Delay (d2), s/veh	1.2	0.0	0.0	1.9	0.0	0.0	0.9	0.0	0.0	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.0	2.6	0.0	0.0	0.2	0.0	0.0	0.2	0.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	0.0	30.7	0.0	0.0	1.0	0.0	0.0	2.7	2.6	2.4
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		125			161			561			540	
Approach Delay, s/veh		29.5			30.7			0.4			2.6	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.5		13.5		55.5		13.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		35.5		24.5		35.5		24.5				
Max Q Clear Time (g_c+I1), s		4.5		6.9		3.7		8.2				
Green Ext Time (p_c), s		3.8		0.6		3.7		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			7.4									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	8	96	33	17	98	197	308	11	58	415	24
Future Vol, veh/h	11	8	96	33	17	98	197	308	11	58	415	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	12	9	104	36	18	107	214	335	12	63	451	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1148	1352	226	1074	1366	168	477	0	0	347	0	0
Stage 1	577	577	-	763	763	-	-	-	-	-	-	-
Stage 2	571	775	-	311	603	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	209	149	662	231	146	720	694	-	-	799	-	-
Stage 1	389	500	-	290	411	-	-	-	-	-	-	-
Stage 2	431	406	-	618	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	110	95	662	131	93	720	694	-	-	799	-	-
Mov Cap-2 Maneuver	110	95	-	131	93	-	-	-	-	-	-	-
Stage 1	269	461	-	201	284	-	-	-	-	-	-	-
Stage 2	237	281	-	470	449	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	39.3	4.8	1.2
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	694	-	-	349	259	799	-	-
HCM Lane V/C Ratio	0.309	-	-	0.358	0.621	0.079	-	-
HCM Control Delay (s)	12.5	-	-	21	39.3	9.9	-	-
HCM Lane LOS	B	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	1.3	-	-	1.6	3.8	0.3	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	210	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt	0.942		0.976			
Flt Protected	0.972				0.950	
Satd. Flow (prot)	1706	0	4963	0	1770	5085
Flt Permitted	0.972				0.950	
Satd. Flow (perm)	1706	0	4963	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	213		442			668
Travel Time (s)	4.8		10.0			15.2

Intersection Summary	
Area Type:	Other

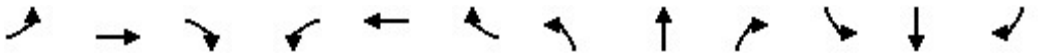
Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	69	52	469	91	99	466
Future Vol, veh/h	69	52	469	91	99	466
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	-	-	-	210	-
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	75	57	510	99	108	507

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	979	305	0	0	609	0
Stage 1	560	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	318	589	-	-	602	-
Stage 1	445	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	261	589	-	-	602	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	445	-	-	-	-	-
Stage 2	475	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.9	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	343	602	-
HCM Lane V/C Ratio	-	-	0.383	0.179	-
HCM Control Delay (s)	-	-	21.9	12.3	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	1.8	0.6	-



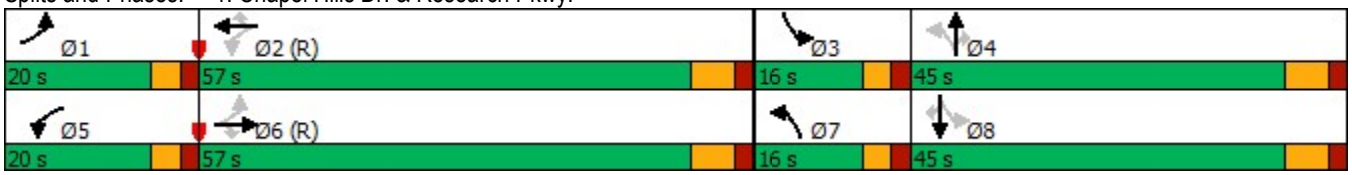
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.338			0.080			0.496			0.412		
Satd. Flow (perm)	630	5085	1583	149	5085	1583	924	3539	1583	767	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			130			238			221
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

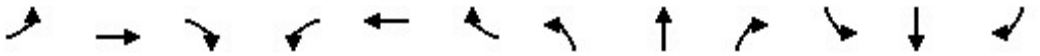
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	1337	22	214	604	120	52	346	219	263	389	203
Future Volume (vph)	274	1337	22	214	604	120	52	346	219	263	389	203
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	20.0	57.0	57.0	20.0	57.0	57.0	16.0	45.0	45.0	16.0	45.0	45.0
Total Split (%)	14.5%	41.3%	41.3%	14.5%	41.3%	41.3%	11.6%	32.6%	32.6%	11.6%	32.6%	32.6%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.6	50.5	50.5	67.4	50.9	50.9	48.2	38.5	38.5	53.7	43.4	43.4
Actuated g/C Ratio	0.48	0.37	0.37	0.49	0.37	0.37	0.35	0.28	0.28	0.39	0.31	0.31
v/c Ratio	0.70	0.78	0.04	0.94	0.35	0.20	0.15	0.38	0.39	0.76	0.26	0.34
Control Delay	29.8	42.5	0.1	79.9	32.3	5.4	26.5	41.5	6.4	46.0	36.8	6.1
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	29.8	42.5	0.1	79.9	32.3	5.4	26.5	41.5	6.4	46.0	36.8	6.1
LOS	C	D	A	E	C	A	C	D	A	D	D	A
Approach Delay		39.8			39.8			27.8			32.4	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 36.4	Intersection LOS: D
Intersection Capacity Utilization 81.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.

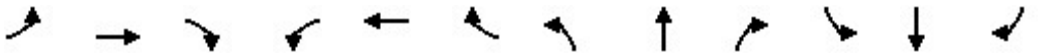




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	298	1453	24	233	657	130	57	376	238	286	423	221
v/c Ratio	0.70	0.78	0.04	0.94	0.35	0.20	0.15	0.38	0.39	0.76	0.26	0.34
Control Delay	29.8	42.5	0.1	79.9	32.3	5.4	26.5	41.5	6.4	46.0	36.8	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	42.5	0.1	79.9	32.3	5.4	26.5	41.5	6.4	46.0	36.8	6.1
Queue Length 50th (ft)	149	421	0	156	156	0	31	143	0	180	106	0
Queue Length 95th (ft)	215	482	0	#322	192	43	61	192	64	#282	142	62
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	429	1860	647	248	1873	665	408	987	613	378	1600	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.78	0.04	0.94	0.35	0.20	0.14	0.38	0.39	0.76	0.26	0.34

Intersection Summary

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



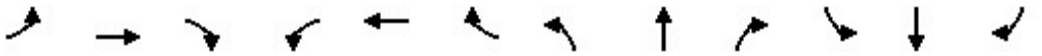
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	274	1337	22	214	604	120	52	346	219	263	389	203
Future Volume (veh/h)	274	1337	22	214	604	120	52	346	219	263	389	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	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	298	1453	24	233	657	130	57	376	238	286	423	221
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	433	1932	600	271	1869	580	319	991	442	351	1662	516
Arrive On Green	0.11	0.38	0.38	0.10	0.37	0.37	0.03	0.28	0.28	0.08	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	298	1453	24	233	657	130	57	376	238	286	423	221
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	14.6	34.1	1.3	11.2	12.9	7.8	3.1	11.8	17.6	11.0	8.4	15.1
Cycle Q Clear(g_c), s	14.6	34.1	1.3	11.2	12.9	7.8	3.1	11.8	17.6	11.0	8.4	15.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	433	1932	600	271	1869	580	319	991	442	351	1662	516
V/C Ratio(X)	0.69	0.75	0.04	0.86	0.35	0.22	0.18	0.38	0.54	0.82	0.25	0.43
Avail Cap(c_a), veh/h	433	1932	600	293	1869	580	402	991	442	351	1662	516
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	23.9	37.3	27.1	30.4	31.8	30.2	33.7	40.1	42.2	38.9	34.2	36.5
Incr Delay (d2), s/veh	4.5	2.8	0.1	21.0	0.5	0.9	0.3	1.1	4.6	13.8	0.4	2.6
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	6.7	14.7	0.5	6.3	5.5	3.2	1.4	5.4	7.5	5.3	3.6	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	40.0	27.2	51.4	32.4	31.1	34.0	41.2	46.8	52.7	34.6	39.1
LnGrp LOS	C	D	C	D	C	C	C	D	D	D	C	D
Approach Vol, veh/h		1775			1020			671			930	
Approach Delay, s/veh		37.9			36.5			42.6			41.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	57.0	16.0	45.0	18.3	58.7	9.6	51.4
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	15.0	50.5	11.0	38.5	15.0	50.5	11.0	38.5
Max Q Clear Time (g_c+I1), s	16.6	14.9	13.0	19.6	13.2	36.1	5.1	17.1
Green Ext Time (p_c), s	0.0	5.7	0.0	3.2	0.1	8.8	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	39.0
HCM 6th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.883			0.951				0.850			0.850
Flt Protected		0.997			0.983		0.950			0.950		
Satd. Flow (prot)	0	1640	0	0	1741	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.997			0.983		0.950			0.950		
Satd. Flow (perm)	0	1640	0	0	1741	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other



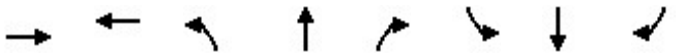
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.883			0.951				0.850			0.850
Flt Protected		0.997			0.983		0.950			0.950		
Satd. Flow (prot)	0	1640	0	0	1741	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.972			0.523		0.485			0.484		
Satd. Flow (perm)	0	1599	0	0	926	0	903	5085	1583	902	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		355			36				24			36
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	28	28	32	26	302	411	3	57	410	33
Future Volume (vph)	28	28	32	26	302	411	3	57	410	33
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.0	29.0	29.0	29.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	42.0%	42.0%	42.0%	42.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		12.0		12.0	48.0	48.0	48.0	48.0	48.0	48.0
Actuated g/C Ratio		0.17		0.17	0.70	0.70	0.70	0.70	0.70	0.70
v/c Ratio		0.78		0.52	0.52	0.13	0.00	0.10	0.13	0.03
Control Delay		15.7		25.5	17.0	6.1	1.0	5.9	4.6	2.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		15.7		25.5	17.0	6.1	1.0	5.9	4.6	2.6
LOS		B		C	B	A	A	A	A	A
Approach Delay		15.7		25.5		10.6			4.6	
Approach LOS		B		C		B			A	

Intersection Summary	
Cycle Length: 69	
Actuated Cycle Length: 69	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 61.4%	ICU Level of Service B
Analysis Period (min) 15	

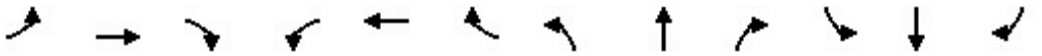
Splits and Phases: 2: Chapel Hills Dr. & Spring Mountain View/Dynamic Dr.



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	444	99	328	447	3	62	446	36
v/c Ratio	0.78	0.52	0.52	0.13	0.00	0.10	0.13	0.03
Control Delay	15.7	25.5	17.0	6.1	1.0	5.9	4.6	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	25.5	17.0	6.1	1.0	5.9	4.6	2.6
Queue Length 50th (ft)	35	25	115	34	0	6	16	0
Queue Length 95th (ft)	101	55	276	63	m0	29	45	11
Internal Link Dist (ft)	232	299		588			1046	
Turn Bay Length (ft)			240		200	235		250
Base Capacity (vph)	796	352	628	3538	1109	628	3538	1112
Starvation Cap Reductn	0	0	0	0	0	0	0	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	0.56	0.28	0.52	0.13	0.00	0.10	0.13	0.03

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	28	353	32	26	33	302	411	3	57	410	33
Future Volume (veh/h)	28	28	353	32	26	33	302	411	3	57	410	33
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	30	30	384	35	28	36	328	447	3	62	446	36
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	74	49	429	165	134	130	576	2855	886	630	2855	886
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	1.00	1.00	1.00	0.56	0.56	0.56
Sat Flow, veh/h	59	157	1382	303	431	419	913	5106	1585	940	5106	1585
Grp Volume(v), veh/h	444	0	0	99	0	0	328	447	3	62	446	36
Grp Sat Flow(s),veh/h/ln	1598	0	0	1153	0	0	913	1702	1585	940	1702	1585
Q Serve(g_s), s	8.6	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	2.1	2.9	0.7
Cycle Q Clear(g_c), s	18.3	0.0	0.0	2.8	0.0	0.0	8.1	0.0	0.0	2.1	2.9	0.7
Prop In Lane	0.07		0.86	0.35		0.36	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	552	0	0	429	0	0	576	2855	886	630	2855	886
V/C Ratio(X)	0.80	0.00	0.00	0.23	0.00	0.00	0.57	0.16	0.00	0.10	0.16	0.04
Avail Cap(c_a), veh/h	622	0	0	489	0	0	576	2855	886	630	2855	886
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	0.0	17.4	0.0	0.0	0.3	0.0	0.0	7.2	7.3	6.9
Incr Delay (d2), s/veh	6.9	0.0	0.0	0.3	0.0	0.0	4.0	0.1	0.0	0.3	0.1	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	7.4	0.0	0.0	1.1	0.0	0.0	0.6	0.0	0.0	0.4	0.9	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	0.0	17.7	0.0	0.0	4.3	0.1	0.0	7.5	7.5	6.9
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		444			99			778			544	
Approach Delay, s/veh		29.5			17.7			1.9			7.4	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.1		25.9		43.1		25.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		35.5		24.5		35.5		24.5				
Max Q Clear Time (g_c+I1), s		10.1		20.3		4.9		4.8				
Green Ext Time (p_c), s		5.4		1.2		3.8		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			10.9									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	174.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	28	353	32	26	33	302	411	3	57	410	33
Future Vol, veh/h	28	28	353	32	26	33	302	411	3	57	410	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	30	30	384	35	28	36	328	447	3	62	446	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1419	1676	223	1420	1709	224	482	0	0	450	0	0
Stage 1	570	570	-	1103	1103	-	-	-	-	-	-	-
Stage 2	849	1106	-	317	606	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	144	94	665	144	90	664	691	-	-	715	-	-
Stage 1	393	504	-	169	285	-	-	-	-	-	-	-
Stage 2	292	284	-	613	485	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	41	45	665	~ 18	43	664	691	-	-	715	-	-
Mov Cap-2 Maneuver	41	45	-	~ 18	43	-	-	-	-	-	-	-
Stage 1	206	460	-	89	150	-	-	-	-	-	-	-
Stage 2	118	149	-	221	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 498.6	$ 987.5	6.3	1.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	691	-	-	223	37	715	-	-
HCM Lane V/C Ratio	0.475	-	-	1.994	2.673	0.087	-	-
HCM Control Delay (s)	14.8	-	-	$ 498.6	$ 987.5	10.5	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	2.6	-	-	32.8	11.1	0.3	-	-

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

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	210	
Storage Lanes	1	0		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Ped Bike Factor						
Frt	0.945		0.989			
Flt Protected	0.971				0.950	
Satd. Flow (prot)	1709	0	5029	0	1770	5085
Flt Permitted	0.971				0.950	
Satd. Flow (perm)	1709	0	5029	0	1770	5085
Link Speed (mph)	30		30			30
Link Distance (ft)	213		442			668
Travel Time (s)	4.8		10.0			15.2

Intersection Summary	
Area Type:	Other

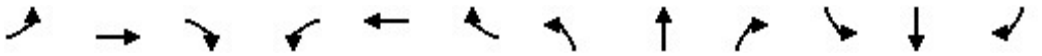
Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	57	665	51	37	758
Future Vol, veh/h	83	57	665	51	37	758
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	-	-	-	210	-
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	90	62	723	55	40	824

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1161	389	0	0	778	0
Stage 1	751	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	257	521	-	-	500	-
Stage 1	342	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	236	521	-	-	500	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	537	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.1	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	304	500	-
HCM Lane V/C Ratio	-	-	0.501	0.08	-
HCM Control Delay (s)	-	-	28.1	12.8	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	2.6	0.3	-



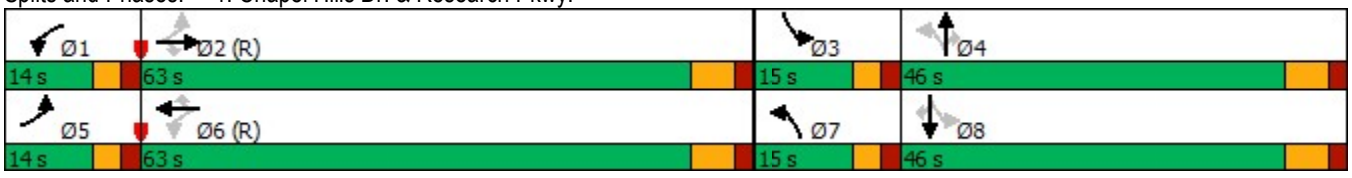
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.202			0.476			0.606			0.605		
Satd. Flow (perm)	376	5085	1583	887	5085	1583	1129	3539	1583	1127	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			150			107			107
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

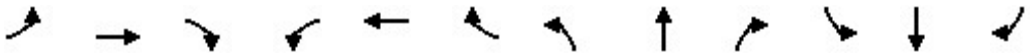
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	388	48	184	921	138	16	112	57	88	207	88
Future Volume (vph)	78	388	48	184	921	138	16	112	57	88	207	88
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.2	56.5	56.5	67.8	57.3	57.3	48.2	40.3	40.3	55.1	49.6	49.6
Actuated g/C Ratio	0.48	0.41	0.41	0.49	0.42	0.42	0.35	0.29	0.29	0.40	0.36	0.36
v/c Ratio	0.32	0.20	0.07	0.41	0.47	0.20	0.04	0.12	0.12	0.20	0.12	0.15
Control Delay	20.2	26.6	0.2	21.2	30.4	4.4	25.2	36.5	1.2	27.0	31.1	5.4
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	20.2	26.6	0.2	21.2	30.4	4.4	25.2	36.5	1.2	27.0	31.1	5.4
LOS	C	C	A	C	C	A	C	D	A	C	C	A
Approach Delay		23.1			26.2			24.7			24.2	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 50.3%	ICU Level of Service A
Analysis Period (min) 15	

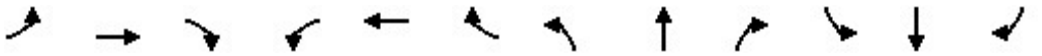
Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	422	52	200	1001	150	17	122	62	96	225	96
v/c Ratio	0.32	0.20	0.07	0.41	0.47	0.20	0.04	0.12	0.12	0.20	0.12	0.15
Control Delay	20.2	26.6	0.2	21.2	30.4	4.4	25.2	36.5	1.2	27.0	31.1	5.4
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	20.2	26.6	0.2	21.2	30.4	4.4	25.2	36.5	1.2	27.0	31.1	5.4
Queue Length 50th (ft)	37	88	0	94	238	0	9	42	0	54	46	0
Queue Length 95th (ft)	66	115	0	143	282	43	26	69	5	93	77	34
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	273	2081	711	493	2111	744	470	1034	538	496	1829	637
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.20	0.07	0.41	0.47	0.20	0.04	0.12	0.12	0.19	0.12	0.15

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	388	48	184	921	138	16	112	57	88	207	88
Future Volume (veh/h)	78	388	48	184	921	138	16	112	57	88	207	88
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	85	422	52	200	1001	150	17	122	62	96	225	96
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	281	2202	684	518	2332	724	386	1017	454	455	1632	506
Arrive On Green	0.04	0.43	0.43	0.07	0.46	0.46	0.02	0.29	0.29	0.05	0.32	0.32
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	85	422	52	200	1001	150	17	122	62	96	225	96
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	3.7	7.1	2.7	8.7	18.3	7.8	0.9	3.5	4.0	5.1	4.3	6.1
Cycle Q Clear(g_c), s	3.7	7.1	2.7	8.7	18.3	7.8	0.9	3.5	4.0	5.1	4.3	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	2202	684	518	2332	724	386	1017	454	455	1632	506
V/C Ratio(X)	0.30	0.19	0.08	0.39	0.43	0.21	0.04	0.12	0.14	0.21	0.14	0.19
Avail Cap(c_a), veh/h	327	2202	684	518	2332	724	484	1017	454	494	1632	506
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	21.2	24.3	23.1	19.7	25.3	22.5	33.8	36.4	36.6	31.1	33.4	34.0
Incr Delay (d2), s/veh	0.6	0.2	0.2	0.5	0.6	0.6	0.0	0.2	0.6	0.2	0.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.9	1.1	3.7	7.6	3.1	0.4	1.6	1.7	2.3	1.8	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	24.5	23.3	20.2	25.9	23.1	33.8	36.6	37.2	31.3	33.6	34.8
LnGrp LOS	C	C	C	C	C	C	C	D	D	C	C	C
Approach Vol, veh/h		559			1351			201			417	
Approach Delay, s/veh		24.0			24.8			36.6			33.4	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	66.0	12.0	46.0	10.5	69.5	7.4	50.6
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	10.7	9.1	7.1	6.0	5.7	20.3	2.9	8.1
Green Ext Time (p_c), s	0.0	3.4	0.0	1.0	0.0	9.5	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.930			0.902				0.850			0.850
Flt Protected		0.982			0.988		0.950			0.950		
Satd. Flow (prot)	0	1701	0	0	1660	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.982			0.988		0.950			0.950		
Satd. Flow (perm)	0	1701	0	0	1660	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

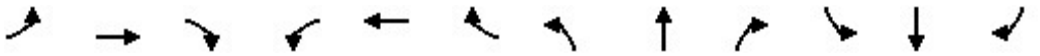
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	4	16	25	3	74	50	237	8	44	317	8
Future Vol, veh/h	11	4	16	25	3	74	50	237	8	44	317	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	12	4	17	27	3	80	54	258	9	48	345	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	654	816	173	602	816	129	354	0	0	267	0	0
Stage 1	441	441	-	366	366	-	-	-	-	-	-	-
Stage 2	213	375	-	236	450	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	406	310	715	434	310	762	793	-	-	870	-	-
Stage 1	480	575	-	539	621	-	-	-	-	-	-	-
Stage 2	707	615	-	685	570	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	327	273	715	380	273	762	793	-	-	870	-	-
Mov Cap-2 Maneuver	327	273	-	380	273	-	-	-	-	-	-	-
Stage 1	447	543	-	502	579	-	-	-	-	-	-	-
Stage 2	586	573	-	626	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	12.6	1.7	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	793	-	-	439	587	870	-	-
HCM Lane V/C Ratio	0.069	-	-	0.077	0.189	0.055	-	-
HCM Control Delay (s)	9.9	-	-	13.9	12.6	9.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.7	0.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	210		0
Storage Lanes	0		0	0		0	0		0	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	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.878			0.942			0.968			0.999	
Flt Protected		0.995			0.972					0.950		
Satd. Flow (prot)	0	1627	0	0	1706	0	0	4923	0	1770	5080	0
Flt Permitted		0.995			0.972					0.950		
Satd. Flow (perm)	0	1627	0	0	1706	0	0	4923	0	1770	5080	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			216			442			668	
Travel Time (s)		5.4			4.9			10.0			15.2	

Intersection Summary	
Area Type:	Other

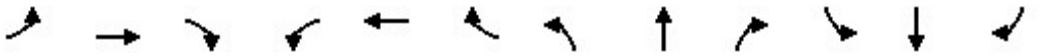
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	35	52	0	40	0	256	69	75	296	2
Future Vol, veh/h	4	0	35	52	0	40	0	256	69	75	296	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	210	-	-
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	4	0	38	57	0	43	0	278	75	82	322	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	598	840	162	609	804	177	-	0	0	353	0	0
Stage 1	487	487	-	316	316	-	-	-	-	-	-	-
Stage 2	111	353	-	293	488	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	-	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	-	-	-	3.12	-	-
Pot Cap-1 Maneuver	437	300	726	430	315	711	0	-	-	793	-	-
Stage 1	447	549	-	582	654	-	0	-	-	-	-	-
Stage 2	812	629	-	634	548	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	378	269	726	375	283	711	-	-	-	793	-	-
Mov Cap-2 Maneuver	378	269	-	375	283	-	-	-	-	-	-	-
Stage 1	447	492	-	582	654	-	-	-	-	-	-	-
Stage 2	762	629	-	539	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	14.7	0	2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	663	472	793	-	-
HCM Lane V/C Ratio	-	-	0.064	0.212	0.103	-	-
HCM Control Delay (s)	-	-	10.8	14.7	10.1	-	-
HCM Lane LOS	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.2	0.8	0.3	-	-



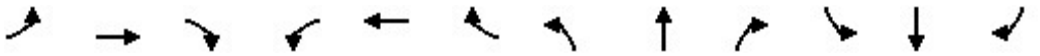
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.439			0.170			0.598			0.568		
Satd. Flow (perm)	818	5085	1583	317	5085	1583	1114	3539	1583	1058	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			107			180			107
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	1011	17	162	457	58	40	198	166	161	219	60
Future Volume (vph)	128	1011	17	162	457	58	40	198	166	161	219	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.8	56.5	56.5	67.2	56.7	56.7	48.6	39.6	39.6	53.6	44.1	44.1
Actuated g/C Ratio	0.48	0.41	0.41	0.49	0.41	0.41	0.35	0.29	0.29	0.39	0.32	0.32
v/c Ratio	0.30	0.53	0.03	0.71	0.24	0.09	0.10	0.21	0.31	0.38	0.15	0.11
Control Delay	19.2	31.9	0.1	35.3	26.9	0.9	25.9	38.1	6.5	30.3	34.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	31.9	0.1	35.3	26.9	0.9	25.9	38.1	6.5	30.3	34.9	1.6
LOS	B	C	A	D	C	A	C	D	A	C	C	A
Approach Delay		30.0			26.7			23.9			28.7	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 28.0	Intersection LOS: C
Intersection Capacity Utilization 62.1%	ICU Level of Service B
Analysis Period (min) 15	

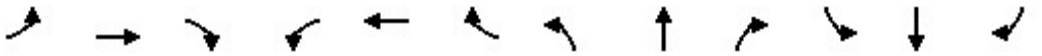
Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	139	1099	18	176	497	63	43	215	180	175	238	65
v/c Ratio	0.30	0.53	0.03	0.71	0.24	0.09	0.10	0.21	0.31	0.38	0.15	0.11
Control Delay	19.2	31.9	0.1	35.3	26.9	0.9	25.9	38.1	6.5	30.3	34.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	31.9	0.1	35.3	26.9	0.9	25.9	38.1	6.5	30.3	34.9	1.6
Queue Length 50th (ft)	63	269	0	81	105	0	23	77	0	103	57	0
Queue Length 95th (ft)	102	315	0	#135	134	5	49	112	57	159	83	8
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	459	2081	711	249	2090	714	459	1014	582	462	1624	578
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.53	0.03	0.71	0.24	0.09	0.09	0.21	0.31	0.38	0.15	0.11

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	1011	17	162	457	58	40	198	166	161	219	60
Future Volume (veh/h)	128	1011	17	162	457	58	40	198	166	161	219	60
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	139	1099	18	176	497	63	43	215	180	175	238	65
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	457	2091	649	293	2120	658	412	1017	454	419	1682	522
Arrive On Green	0.06	0.41	0.41	0.07	0.42	0.42	0.03	0.29	0.29	0.07	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	139	1099	18	176	497	63	43	215	180	175	238	65
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	6.2	22.4	0.9	7.9	8.7	3.3	2.3	6.3	12.6	9.4	4.5	4.0
Cycle Q Clear(g_c), s	6.2	22.4	0.9	7.9	8.7	3.3	2.3	6.3	12.6	9.4	4.5	4.0
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	457	2091	649	293	2120	658	412	1017	454	419	1682	522
V/C Ratio(X)	0.30	0.53	0.03	0.60	0.23	0.10	0.10	0.21	0.40	0.42	0.14	0.12
Avail Cap(c_a), veh/h	468	2091	649	293	2120	658	489	1017	454	419	1682	522
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	21.4	30.7	24.3	23.9	26.1	24.6	33.1	37.4	39.7	30.4	32.5	32.4
Incr Delay (d2), s/veh	0.4	1.0	0.1	3.4	0.3	0.3	0.1	0.5	2.6	0.7	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	9.4	0.4	3.6	3.6	1.3	1.0	2.9	5.3	4.2	1.9	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	31.6	24.4	27.3	26.4	24.9	33.2	37.9	42.2	31.0	32.7	32.8
LnGrp LOS	C	C	C	C	C	C	C	D	D	C	C	C
Approach Vol, veh/h		1256			736			438			478	
Approach Delay, s/veh		30.4			26.5			39.2			32.1	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	63.8	15.0	46.0	14.0	63.0	9.0	52.0
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	8.2	10.7	11.4	14.6	9.9	24.4	4.3	6.5
Green Ext Time (p_c), s	0.0	4.1	0.0	2.0	0.0	9.7	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.884			0.936				0.850			0.850
Flt Protected		0.995			0.978		0.950			0.950		
Satd. Flow (prot)	0	1638	0	0	1705	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.995			0.978		0.950			0.950		
Satd. Flow (perm)	0	1638	0	0	1705	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

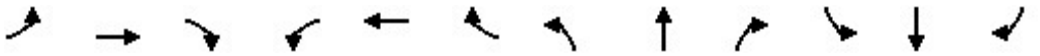
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	40	24	4	25	54	313	2	43	317	9
Future Vol, veh/h	5	2	40	24	4	25	54	313	2	43	317	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	5	2	43	26	4	27	59	340	2	47	345	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	695	899	173	691	907	170	355	0	0	342	0	0
Stage 1	439	439	-	458	458	-	-	-	-	-	-	-
Stage 2	256	460	-	233	449	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	384	277	715	386	274	718	792	-	-	803	-	-
Stage 1	482	576	-	468	565	-	-	-	-	-	-	-
Stage 2	666	564	-	688	571	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	328	241	715	325	239	718	792	-	-	803	-	-
Mov Cap-2 Maneuver	328	241	-	325	239	-	-	-	-	-	-	-
Stage 1	446	542	-	433	523	-	-	-	-	-	-	-
Stage 2	588	522	-	606	537	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	14.8	1.5	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	792	-	-	591	423	803	-	-
HCM Lane V/C Ratio	0.074	-	-	0.086	0.136	0.058	-	-
HCM Control Delay (s)	9.9	-	-	11.7	14.8	9.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	0.5	0.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	210		0
Storage Lanes	0		0	0		0	0		0	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	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.877			0.945			0.984			0.997	
Flt Protected		0.995			0.971					0.950		
Satd. Flow (prot)	0	1625	0	0	1709	0	0	5004	0	1770	5070	0
Flt Permitted		0.995			0.971					0.950		
Satd. Flow (perm)	0	1625	0	0	1709	0	0	5004	0	1770	5070	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			216			442			668	
Travel Time (s)		5.4			4.9			10.0			15.2	

Intersection Summary	
Area Type:	Other

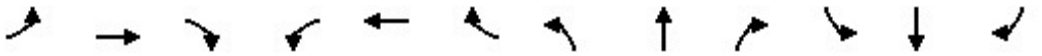
Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	18	63	0	43	0	328	39	28	346	7
Future Vol, veh/h	2	0	18	63	0	43	0	328	39	28	346	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	210	-	-
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	2	0	20	68	0	47	0	357	42	30	376	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	583	839	192	588	822	200	-	0	0	399	0	0
Stage 1	440	440	-	378	378	-	-	-	-	-	-	-
Stage 2	143	399	-	210	444	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	-	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	-	-	-	3.12	-	-
Pot Cap-1 Maneuver	445	300	695	442	307	687	0	-	-	755	-	-
Stage 1	481	576	-	529	614	-	0	-	-	-	-	-
Stage 2	777	601	-	710	574	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	402	288	695	416	295	687	-	-	-	755	-	-
Mov Cap-2 Maneuver	402	288	-	416	295	-	-	-	-	-	-	-
Stage 1	481	553	-	529	614	-	-	-	-	-	-	-
Stage 2	724	601	-	663	551	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	14.5	0	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	648	495	755	-	-
HCM Lane V/C Ratio	-	-	0.034	0.233	0.04	-	-
HCM Control Delay (s)	-	-	10.7	14.5	10	-	-
HCM Lane LOS	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.9	0.1	-	-



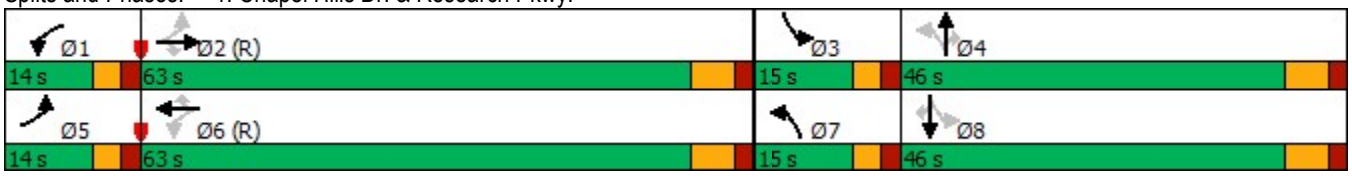
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.108			0.399			0.546			0.547		
Satd. Flow (perm)	201	5085	1583	743	5085	1583	1017	3539	1583	1019	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			173			107			164
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

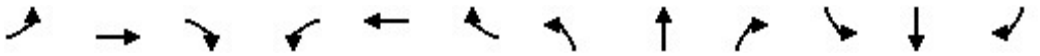
Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	513	63	243	1219	208	21	202	76	131	302	151
Future Volume (vph)	169	513	63	243	1219	208	21	202	76	131	302	151
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		8
Detector Phase	5	2	2	1	6	6	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.5	44.5	10.0	44.5	44.5
Total Split (s)	14.0	63.0	63.0	14.0	63.0	63.0	15.0	46.0	46.0	15.0	46.0	46.0
Total Split (%)	10.1%	45.7%	45.7%	10.1%	45.7%	45.7%	10.9%	33.3%	33.3%	10.9%	33.3%	33.3%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	67.0	56.5	56.5	67.0	56.5	56.5	47.9	39.8	39.8	54.7	47.2	47.2
Actuated g/C Ratio	0.49	0.41	0.41	0.49	0.41	0.41	0.35	0.29	0.29	0.40	0.34	0.34
v/c Ratio	0.92	0.27	0.10	0.62	0.64	0.30	0.06	0.22	0.16	0.31	0.19	0.25
Control Delay	70.8	27.5	1.3	27.8	34.3	8.2	25.4	38.1	3.8	28.7	33.4	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.8	27.5	1.3	27.8	34.3	8.2	25.4	38.1	3.8	28.7	33.4	6.0
LOS	E	C	A	C	C	A	C	D	A	C	C	A
Approach Delay		35.1			30.1			28.4			25.3	
Approach LOS		D			C			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.

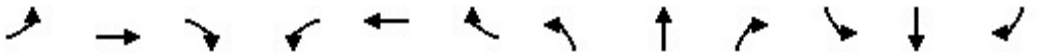




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	184	558	68	264	1325	226	23	220	83	142	328	164
v/c Ratio	0.92	0.27	0.10	0.62	0.64	0.30	0.06	0.22	0.16	0.31	0.19	0.25
Control Delay	70.8	27.5	1.3	27.8	34.3	8.2	25.4	38.1	3.8	28.7	33.4	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.8	27.5	1.3	27.8	34.3	8.2	25.4	38.1	3.8	28.7	33.4	6.0
Queue Length 50th (ft)	86	120	0	129	344	29	12	79	0	82	79	0
Queue Length 95th (ft)	#234	150	8	189	396	85	31	115	24	131	108	54
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	199	2081	711	427	2081	750	432	1020	532	457	1737	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.27	0.10	0.62	0.64	0.30	0.05	0.22	0.16	0.31	0.19	0.25

Intersection Summary

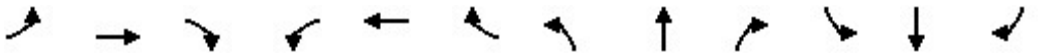
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	169	513	63	243	1219	208	21	202	76	131	302	151
Future Volume (veh/h)	169	513	63	243	1219	208	21	202	76	131	302	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	558	68	264	1325	226	23	220	83	142	328	164
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	2109	655	441	2109	655	349	1017	454	432	1705	529
Arrive On Green	0.07	0.41	0.41	0.07	0.41	0.41	0.02	0.29	0.29	0.07	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	184	558	68	264	1325	226	23	220	83	142	328	164
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	8.3	9.9	3.6	9.0	28.4	13.5	1.3	6.5	5.4	7.5	6.3	10.6
Cycle Q Clear(g_c), s	8.3	9.9	3.6	9.0	28.4	13.5	1.3	6.5	5.4	7.5	6.3	10.6
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	237	2109	655	441	2109	655	349	1017	454	432	1705	529
V/C Ratio(X)	0.78	0.26	0.10	0.60	0.63	0.35	0.07	0.22	0.18	0.33	0.19	0.31
Avail Cap(c_a), veh/h	237	2109	655	441	2109	655	440	1017	454	439	1705	529
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	27.4	26.7	24.8	25.2	32.1	27.7	33.5	37.5	37.1	30.1	32.7	34.1
Incr Delay (d2), s/veh	14.8	0.3	0.3	2.2	1.4	1.4	0.1	0.5	0.9	0.4	0.3	1.5
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	4.5	4.2	1.5	2.5	12.0	5.4	0.6	2.9	2.3	3.3	2.7	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.1	27.0	25.2	27.5	33.5	29.2	33.6	38.0	38.0	30.5	33.0	35.7
LnGrp LOS	D	C	C	C	C	C	C	D	D	C	C	D
Approach Vol, veh/h		810			1815			326			634	
Approach Delay, s/veh		30.3			32.1			37.7			33.1	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	63.5	14.5	46.0	14.0	63.5	7.9	52.6
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	9.0	56.5	10.0	39.5	9.0	56.5	10.0	39.5
Max Q Clear Time (g_c+I1), s	11.0	11.9	9.5	8.5	10.3	30.4	3.3	12.6
Green Ext Time (p_c), s	0.0	4.6	0.0	1.7	0.0	12.3	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	32.4
HCM 6th LOS	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.896			0.911				0.850			0.850
Flt Protected		0.993			0.989		0.950			0.950		
Satd. Flow (prot)	0	1657	0	0	1678	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.993			0.989		0.950			0.950		
Satd. Flow (perm)	0	1657	0	0	1678	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

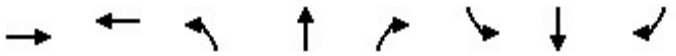
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.896			0.911				0.850			0.850
Flt Protected		0.993			0.989		0.950			0.950		
Satd. Flow (prot)	0	1657	0	0	1678	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.892			0.815		0.481			0.540		
Satd. Flow (perm)	0	1489	0	0	1383	0	896	5085	1583	1006	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		118			107				24			27
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	20	12	33	18	212	312	11	58	418	25
Future Volume (vph)	20	12	33	18	212	312	11	58	418	25
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.0	29.0	29.0	29.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	42.0%	42.0%	42.0%	42.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		8.6		8.6	51.4	51.4	51.4	51.4	51.4	51.4
Actuated g/C Ratio		0.12		0.12	0.74	0.74	0.74	0.74	0.74	0.74
v/c Ratio		0.53		0.61	0.35	0.09	0.01	0.08	0.12	0.02
Control Delay		15.8		21.3	8.1	4.7	2.6	3.4	2.9	1.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		15.8		21.3	8.1	4.7	2.6	3.4	2.9	1.6
LOS		B		C	A	A	A	A	A	A
Approach Delay		15.8		21.3		6.0			2.9	
Approach LOS		B		C		A			A	

Intersection Summary	
Cycle Length: 69	
Actuated Cycle Length: 69	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 7.6	Intersection LOS: A
Intersection Capacity Utilization 45.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: Chapel Hills Dr. & Spring Mountain View/Dynamic Dr.



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	153	163	230	339	12	63	454	27
v/c Ratio	0.53	0.61	0.35	0.09	0.01	0.08	0.12	0.02
Control Delay	15.8	21.3	8.1	4.7	2.6	3.4	2.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	21.3	8.1	4.7	2.6	3.4	2.9	1.6
Queue Length 50th (ft)	14	22	65	28	0	5	13	0
Queue Length 95th (ft)	58	71	m98	m41	m2	19	30	6
Internal Link Dist (ft)	232	299		588			1046	
Turn Bay Length (ft)			240		200	235		250
Base Capacity (vph)	604	560	666	3785	1184	748	3785	1185
Starvation Cap Reductn	0	0	0	0	0	0	0	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	0.25	0.29	0.35	0.09	0.01	0.08	0.12	0.02

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	12	109	33	18	98	212	312	11	58	418	25
Future Volume (veh/h)	20	12	109	33	18	98	212	312	11	58	418	25
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	22	13	118	36	20	107	230	339	12	63	454	27
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	79	30	167	98	40	143	758	3781	1174	867	3781	1174
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	1.00	1.00	1.00	0.74	0.74	0.74
Sat Flow, veh/h	151	233	1295	269	311	1108	914	5106	1585	1030	5106	1585
Grp Volume(v), veh/h	153	0	0	163	0	0	230	339	12	63	454	27
Grp Sat Flow(s),veh/h/ln	1679	0	0	1688	0	0	914	1702	1585	1030	1702	1585
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.9	0.0	0.0	1.2	1.7	0.3
Cycle Q Clear(g_c), s	5.8	0.0	0.0	6.1	0.0	0.0	2.6	0.0	0.0	1.2	1.7	0.3
Prop In Lane	0.14		0.77	0.22		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	0	282	0	0	758	3781	1174	867	3781	1174
V/C Ratio(X)	0.55	0.00	0.00	0.58	0.00	0.00	0.30	0.09	0.01	0.07	0.12	0.02
Avail Cap(c_a), veh/h	626	0	0	627	0	0	758	3781	1174	867	3781	1174
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.8	0.0	0.0	28.9	0.0	0.0	0.0	0.0	0.0	2.5	2.6	2.4
Incr Delay (d2), s/veh	1.7	0.0	0.0	1.9	0.0	0.0	1.0	0.0	0.0	0.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	2.6	0.0	0.0	0.2	0.0	0.0	0.2	0.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	0.0	0.0	30.8	0.0	0.0	1.1	0.0	0.0	2.6	2.6	2.4
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		153			163			581			544	
Approach Delay, s/veh		30.5			30.8			0.5			2.6	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.6		13.4		55.6		13.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		35.5		24.5		35.5		24.5				
Max Q Clear Time (g_c+I1), s		4.6		7.8		3.7		8.1				
Green Ext Time (p_c), s		4.0		0.8		3.8		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			7.9									
HCM 6th LOS			A									

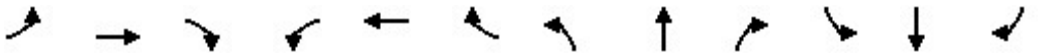
Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	12	109	33	18	98	212	312	11	58	418	25
Future Vol, veh/h	20	12	109	33	18	98	212	312	11	58	418	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	22	13	118	36	20	107	230	339	12	63	454	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1186	1391	227	1113	1406	170	481	0	0	351	0	0
Stage 1	580	580	-	799	799	-	-	-	-	-	-	-
Stage 2	606	811	-	314	607	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	199	141	661	219	138	718	691	-	-	795	-	-
Stage 1	387	498	-	274	396	-	-	-	-	-	-	-
Stage 2	411	391	-	616	485	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	99	87	661	112	85	718	691	-	-	795	-	-
Mov Cap-2 Maneuver	99	87	-	112	85	-	-	-	-	-	-	-
Stage 1	258	459	-	183	264	-	-	-	-	-	-	-
Stage 2	216	261	-	452	447	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.6	50	5.1	1.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	691	-	-	279	232	795	-	-
HCM Lane V/C Ratio	0.333	-	-	0.549	0.698	0.079	-	-
HCM Control Delay (s)	12.8	-	-	32.6	50	9.9	-	-
HCM Lane LOS	B	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	1.5	-	-	3.1	4.6	0.3	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	210		0
Storage Lanes	0		0	0		0	0		0	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	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.878			0.942			0.976			0.999	
Flt Protected		0.995			0.972					0.950		
Satd. Flow (prot)	0	1627	0	0	1706	0	0	4963	0	1770	5080	0
Flt Permitted		0.995			0.972					0.950		
Satd. Flow (perm)	0	1627	0	0	1706	0	0	4963	0	1770	5080	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			216			442			668	
Travel Time (s)		5.4			4.9			10.0			15.2	

Intersection Summary	
Area Type:	Other

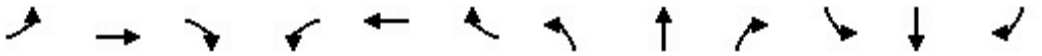
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	35	69	0	52	0	484	91	99	479	2
Future Vol, veh/h	4	0	35	69	0	52	0	484	91	99	479	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	210	-	-
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	4	0	38	75	0	57	0	526	99	108	521	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	948	1363	262	1000	1315	313	-	0	0	625	0	0
Stage 1	738	738	-	576	576	-	-	-	-	-	-	-
Stage 2	210	625	-	424	739	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	-	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	-	-	-	3.12	-	-
Pot Cap-1 Maneuver	274	147	628	256	157	583	0	-	-	591	-	-
Stage 1	302	422	-	389	500	-	0	-	-	-	-	-
Stage 2	710	475	-	529	422	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	213	120	628	207	128	583	-	-	-	591	-	-
Mov Cap-2 Maneuver	213	120	-	207	128	-	-	-	-	-	-	-
Stage 1	302	345	-	389	500	-	-	-	-	-	-	-
Stage 2	641	475	-	406	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	27.9	0	2.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	523	286	591	-	-
HCM Lane V/C Ratio	-	-	0.081	0.46	0.182	-	-
HCM Control Delay (s)	-	-	12.5	27.9	12.4	-	-
HCM Lane LOS	-	-	B	D	B	-	-
HCM 95th %tile Q(veh)	-	-	0.3	2.3	0.7	-	-



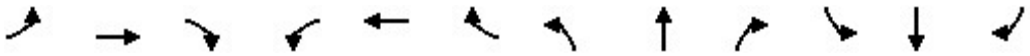
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		160	320		185	150		330	195		185
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	3539	1583	1770	5085	1583
Flt Permitted	0.336			0.080			0.491			0.386		
Satd. Flow (perm)	626	5085	1583	149	5085	1583	915	3539	1583	719	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			138			238			234
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		726			1044			578			442	
Travel Time (s)		16.5			23.7			13.1			10.0	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	292	1337	22	214	604	127	52	360	219	268	398	215
Future Volume (vph)	292	1337	22	214	604	127	52	360	219	268	398	215
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2		2	4		4	8		8
Detector Phase	1	6	6	5	2	2	7	4	4	3	8	8
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)	10.0	41.5	41.5	10.0	41.5	41.5	10.0	44.0	44.0	10.0	44.0	44.0
Total Split (s)	20.0	57.0	57.0	20.0	57.0	57.0	17.0	44.0	44.0	17.0	44.0	44.0
Total Split (%)	14.5%	41.3%	41.3%	14.5%	41.3%	41.3%	12.3%	31.9%	31.9%	12.3%	31.9%	31.9%
Yellow Time (s)	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5	3.0	4.5	4.5
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)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5	5.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	Max	None	Max	Max
Act Effct Green (s)	66.8	50.5	50.5	67.2	50.7	50.7	47.2	37.5	37.5	54.5	43.4	43.4
Actuated g/C Ratio	0.48	0.37	0.37	0.49	0.37	0.37	0.34	0.27	0.27	0.39	0.31	0.31
v/c Ratio	0.75	0.78	0.04	0.94	0.35	0.21	0.16	0.41	0.39	0.78	0.27	0.36
Control Delay	32.6	42.5	0.1	80.1	32.4	5.2	26.6	42.7	6.6	47.1	36.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	42.5	0.1	80.1	32.4	5.2	26.6	42.7	6.6	47.1	36.9	6.0
LOS	C	D	A	F	C	A	C	D	A	D	D	A
Approach Delay		40.2			39.6			28.8			32.5	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 138	
Actuated Cycle Length: 138	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 36.6	Intersection LOS: D
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

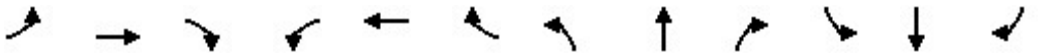
Splits and Phases: 1: Chapel Hills Dr. & Research Pkwy.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	317	1453	24	233	657	138	57	391	238	291	433	234
v/c Ratio	0.75	0.78	0.04	0.94	0.35	0.21	0.16	0.41	0.39	0.78	0.27	0.36
Control Delay	32.6	42.5	0.1	80.1	32.4	5.2	26.6	42.7	6.6	47.1	36.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	42.5	0.1	80.1	32.4	5.2	26.6	42.7	6.6	47.1	36.9	6.0
Queue Length 50th (ft)	161	421	0	156	156	0	31	151	0	184	109	0
Queue Length 95th (ft)	230	482	0	#322	192	45	61	201	65	#296	145	64
Internal Link Dist (ft)		646			964			498			362	
Turn Bay Length (ft)	400		160	320		185	150		330	195		185
Base Capacity (vph)	428	1860	647	248	1867	668	412	961	603	375	1600	658
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.78	0.04	0.94	0.35	0.21	0.14	0.41	0.39	0.78	0.27	0.36

Intersection Summary

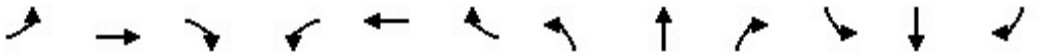
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	292	1337	22	214	604	127	52	360	219	268	398	215
Future Volume (veh/h)	292	1337	22	214	604	127	52	360	219	268	398	215
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	317	1453	24	233	657	138	57	391	238	291	433	234
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	432	1932	600	271	1869	580	314	966	431	352	1660	515
Arrive On Green	0.11	0.38	0.38	0.10	0.37	0.37	0.03	0.27	0.27	0.09	0.33	0.33
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	5106	1585
Grp Volume(v), veh/h	317	1453	24	233	657	138	57	391	238	291	433	234
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1702	1585
Q Serve(g_s), s	15.0	34.1	1.3	11.2	12.9	8.3	3.2	12.4	17.8	12.0	8.6	16.1
Cycle Q Clear(g_c), s	15.0	34.1	1.3	11.2	12.9	8.3	3.2	12.4	17.8	12.0	8.6	16.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	432	1932	600	271	1869	580	314	966	431	352	1660	515
V/C Ratio(X)	0.73	0.75	0.04	0.86	0.35	0.24	0.18	0.40	0.55	0.83	0.26	0.45
Avail Cap(c_a), veh/h	432	1932	600	293	1869	580	409	966	431	352	1660	515
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	24.9	37.3	27.1	30.4	31.8	30.4	34.4	41.1	43.1	38.6	34.3	36.9
Incr Delay (d2), s/veh	6.4	2.8	0.1	21.0	0.5	1.0	0.3	1.3	5.0	14.9	0.4	2.9
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	7.4	14.7	0.5	6.3	5.5	3.4	1.4	5.7	7.6	5.2	3.7	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.3	40.0	27.2	51.4	32.4	31.4	34.7	42.4	48.1	53.5	34.7	39.7
LnGrp LOS	C	D	C	D	C	C	C	D	D	D	C	D
Approach Vol, veh/h		1794			1028			686			958	
Approach Delay, s/veh		38.3			36.5			43.7			41.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	57.0	17.0	44.0	18.3	58.7	9.6	51.4
Change Period (Y+Rc), s	5.0	6.5	5.0	6.5	5.0	6.5	5.0	6.5
Max Green Setting (Gmax), s	15.0	50.5	12.0	37.5	15.0	50.5	12.0	37.5
Max Q Clear Time (g_c+I1), s	17.0	14.9	14.0	19.8	13.2	36.1	5.2	18.1
Green Ext Time (p_c), s	0.0	5.7	0.0	3.2	0.1	8.8	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	39.5
HCM 6th LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.885			0.953				0.850			0.850
Flt Protected		0.996			0.983		0.950			0.950		
Satd. Flow (prot)	0	1642	0	0	1745	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.996			0.983		0.950			0.950		
Satd. Flow (perm)	0	1642	0	0	1745	0	1770	5085	1583	1770	5085	1583
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

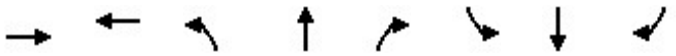
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	240		200	235		250
Storage Lanes	0		0	0		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												
Frt		0.885			0.953				0.850			0.850
Flt Protected		0.996			0.983		0.950			0.950		
Satd. Flow (prot)	0	1642	0	0	1745	0	1770	5085	1583	1770	5085	1583
Flt Permitted		0.968			0.544		0.481			0.483		
Satd. Flow (perm)	0	1596	0	0	966	0	896	5085	1583	900	5085	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		349			36				24			40
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		312			379			668			1126	
Travel Time (s)		7.1			8.6			15.2			25.6	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	33	30	32	30	342	413	3	57	417	37
Future Volume (vph)	33	30	32	30	342	413	3	57	417	37
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	29.0	29.0	29.0	29.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	42.0%	42.0%	42.0%	42.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		12.8		12.8	47.2	47.2	47.2	47.2	47.2	47.2
Actuated g/C Ratio		0.19		0.19	0.68	0.68	0.68	0.68	0.68	0.68
v/c Ratio		0.79		0.50	0.61	0.13	0.00	0.10	0.13	0.04
Control Delay		17.0		23.6	22.4	7.1	1.0	6.4	5.0	2.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		17.0		23.6	22.4	7.1	1.0	6.4	5.0	2.7
LOS		B		C	C	A	A	A	A	A
Approach Delay		17.0		23.6		14.0			5.0	
Approach LOS		B		C		B			A	

Intersection Summary	
Cycle Length: 69	
Actuated Cycle Length: 69	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 12.6	Intersection LOS: B
Intersection Capacity Utilization 64.9%	ICU Level of Service C
Analysis Period (min) 15	

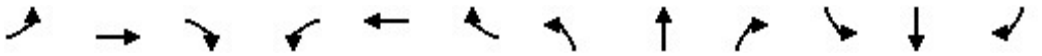
Splits and Phases: 2: Chapel Hills Dr. & Spring Mountain View/Dynamic Dr.



Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	460	104	372	449	3	62	453	40
v/c Ratio	0.79	0.50	0.61	0.13	0.00	0.10	0.13	0.04
Control Delay	17.0	23.6	22.4	7.1	1.0	6.4	5.0	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	23.6	22.4	7.1	1.0	6.4	5.0	2.7
Queue Length 50th (ft)	43	26	144	41	0	7	18	0
Queue Length 95th (ft)	112	56	#354	70	m0	30	48	12
Internal Link Dist (ft)	232	299		588			1046	
Turn Bay Length (ft)			240		200	235		250
Base Capacity (vph)	791	366	613	3478	1090	615	3478	1095
Starvation Cap Reductn	0	0	0	0	0	0	0	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	0.58	0.28	0.61	0.13	0.00	0.10	0.13	0.04

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	30	360	32	30	33	342	413	3	57	417	37
Future Volume (veh/h)	33	30	360	32	30	33	342	413	3	57	417	37
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	33	391	35	33	36	372	449	3	62	453	40
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	79	53	433	162	152	129	563	2812	873	621	2812	873
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	1.00	1.00	1.00	0.55	0.55	0.55
Sat Flow, veh/h	72	167	1357	289	477	405	904	5106	1585	939	5106	1585
Grp Volume(v), veh/h	460	0	0	104	0	0	372	449	3	62	453	40
Grp Sat Flow(s),veh/h/ln	1597	0	0	1171	0	0	904	1702	1585	939	1702	1585
Q Serve(g_s), s	9.8	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0	2.2	3.0	0.8
Cycle Q Clear(g_c), s	19.0	0.0	0.0	3.0	0.0	0.0	11.9	0.0	0.0	2.2	3.0	0.8
Prop In Lane	0.08		0.85	0.34		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	565	0	0	443	0	0	563	2812	873	621	2812	873
V/C Ratio(X)	0.81	0.00	0.00	0.23	0.00	0.00	0.66	0.16	0.00	0.10	0.16	0.05
Avail Cap(c_a), veh/h	623	0	0	492	0	0	563	2812	873	621	2812	873
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	0.0	0.0	17.0	0.0	0.0	0.5	0.0	0.0	7.5	7.6	7.1
Incr Delay (d2), s/veh	7.5	0.0	0.0	0.3	0.0	0.0	6.0	0.1	0.0	0.3	0.1	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	7.7	0.0	0.0	1.2	0.0	0.0	0.9	0.0	0.0	0.4	1.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	0.0	0.0	17.3	0.0	0.0	6.5	0.1	0.0	7.8	7.8	7.2
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		460			104			824			555	
Approach Delay, s/veh		29.9			17.3			3.0			7.7	
Approach LOS		C			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.5		26.5		42.5		26.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		35.5		24.5		35.5		24.5				
Max Q Clear Time (g_c+I1), s		13.9		21.0		5.0		5.0				
Green Ext Time (p_c), s		5.5		1.0		3.8		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			11.5									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	239.7

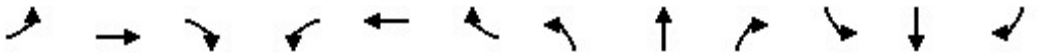
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	30	360	32	30	33	342	413	3	57	417	37
Future Vol, veh/h	33	30	360	32	30	33	342	413	3	57	417	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	240	-	200	235	-	250
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	36	33	391	35	33	36	372	449	3	62	453	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1517	1773	227	1515	1810	225	493	0	0	452	0	0
Stage 1	577	577	-	1193	1193	-	-	-	-	-	-	-
Stage 2	940	1196	-	322	617	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	126	82	661	126	78	663	682	-	-	713	-	-
Stage 1	389	500	-	146	258	-	-	-	-	-	-	-
Stage 2	256	258	-	609	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	34	661	~ 4	~ 32	663	682	-	-	713	-	-
Mov Cap-2 Maneuver	-	34	-	~ 4	~ 32	-	-	-	-	-	-	-
Stage 1	177	457	-	66	117	-	-	-	-	-	-	-
Stage 2	79	117	-	211	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 4442.9	7.4	1.2
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	682	-	-	-	11	713	-	-
HCM Lane V/C Ratio	0.545	-	-	-	9.387	0.087	-	-
HCM Control Delay (s)	16.4	-	-	-	$ 4442.9	10.5	-	-
HCM Lane LOS	C	-	-	-	F	B	-	-
HCM 95th %tile Q(veh)	3.3	-	-	-	14.2	0.3	-	-

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	210		0
Storage Lanes	0		0	0		0	0		0	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	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor												
Frt		0.877			0.945			0.990			0.999	
Flt Protected		0.995			0.971					0.950		
Satd. Flow (prot)	0	1625	0	0	1709	0	0	5034	0	1770	5080	0
Flt Permitted		0.995			0.971					0.950		
Satd. Flow (perm)	0	1625	0	0	1709	0	0	5034	0	1770	5080	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		238			216			442			668	
Travel Time (s)		5.4			4.9			10.0			15.2	

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	18	83	0	57	0	705	51	37	765	7
Future Vol, veh/h	2	0	18	83	0	57	0	705	51	37	765	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	210	-	-
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	2	0	20	90	0	62	0	766	55	40	832	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1222	1737	420	1207	1714	411	-	0	0	821	0	0
Stage 1	916	916	-	794	794	-	-	-	-	-	-	-
Stage 2	306	821	-	413	920	-	-	-	-	-	-	-
Critical Hdwy	6.44	6.54	7.14	6.44	6.54	7.14	-	-	-	5.34	-	-
Critical Hdwy Stg 1	7.34	5.54	-	7.34	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.74	5.54	-	6.74	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.82	4.02	3.92	3.82	4.02	3.92	-	-	-	3.12	-	-
Pot Cap-1 Maneuver	189	86	497	193	89	504	0	-	-	477	-	-
Stage 1	228	349	-	276	398	-	0	-	-	-	-	-
Stage 2	622	387	-	537	348	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	155	79	497	174	82	504	-	-	-	477	-	-
Mov Cap-2 Maneuver	155	79	-	174	82	-	-	-	-	-	-	-
Stage 1	228	320	-	276	398	-	-	-	-	-	-	-
Stage 2	546	387	-	473	319	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	43.9	0	0.6
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	407	237	477	-	-
HCM Lane V/C Ratio	-	-	0.053	0.642	0.084	-	-
HCM Control Delay (s)	-	-	14.3	43.9	13.2	-	-
HCM Lane LOS	-	-	B	E	B	-	-
HCM 95th %tile Q(veh)	-	-	0.2	3.9	0.3	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	38	231	66	72	271
Future Vol, veh/h	50	38	231	66	72	271
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	-	-	-	210	-
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	54	41	251	72	78	295

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	561	162	0	0	323	0
Stage 1	287	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	5.74	7.14	-	-	5.34	-
Critical Hdwy Stg 1	6.64	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-	3.12	-
Pot Cap-1 Maneuver	511	726	-	-	819	-
Stage 1	644	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	462	726	-	-	819	-
Mov Cap-2 Maneuver	462	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	548	819	-
HCM Lane V/C Ratio	-	-	0.175	0.096	-
HCM Control Delay (s)	-	-	13	9.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.3	-

APPENDIX “D”

“LOCAL” BACKGROUND TRAFFIC VOLUME DEVELOPMENT WORKSHEETS

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Highlands at Briargate
Davis Development
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Future Land Uses Adjacent to Study Area Roadways

Figure D-1

HARRIS KOCHER SMITH
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Parcel A Conceptual Site Plan

Highlands at Briargate

Davis Development

HKS #210639

Figure D-2

N

Trip Generation for Local Background Traffic (2045 Build Out)										
Land Use	Intensity		ITE Code	Daily (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
					Total	In	Out	Total	In	Out
Shopping Plaza	125	1000 SF	821	11033	441	273	168	1078	517	561
			Total	**11,033**	**441**	**273**	**168**	**1,078**	**517**	**561**

Notes:

1. Trip Generation Projections are based on ITE Trip Generation, 11th Edition

HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

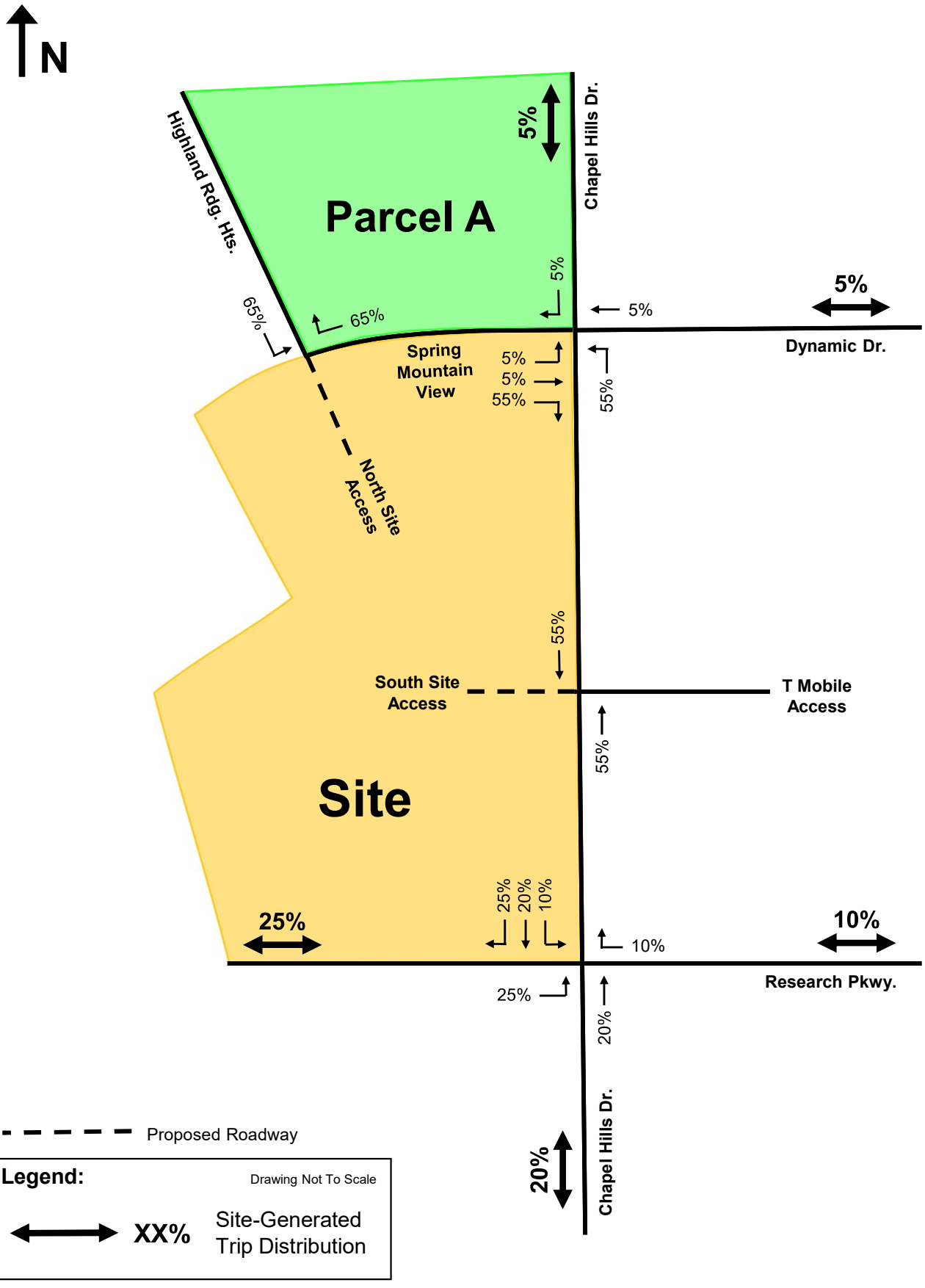
Highlands at Briargate

Davis Development

HKS #210639

Off-Site Parcels Trip Generation Spreadsheet

Figure D-3



HARRIS KOCHER SMITH
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Parcel A Generated Trip Distribution

(For the development of 2045 Local Background Volumes)

Highlands at Briargate

Davis Development

HKS #210639

Figure D-4

APPENDIX “E”

TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
County: El Paso
City: Colorado Springs

Major Street: Chapel Hills Dr.
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Spring Mountain View/Dynamic Dr.
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 0%
From East (WB) 100%
From South (NB) 100%
From West (EB) 100%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level? No

Analysis based on EXISTING volume data.

Date	Day of the Week	Time (HH:MM)			
		From	AM / PM	To	AM / PM
3/2/2022	Wednesday	6:00	AM	10:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**No**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: Brett Zmenkowski
Agency: Harris Kocher Smith
Date: 3/10/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	1

Satisfied? No

Condition C: Combination of A & B at 80%

Satisfied? No

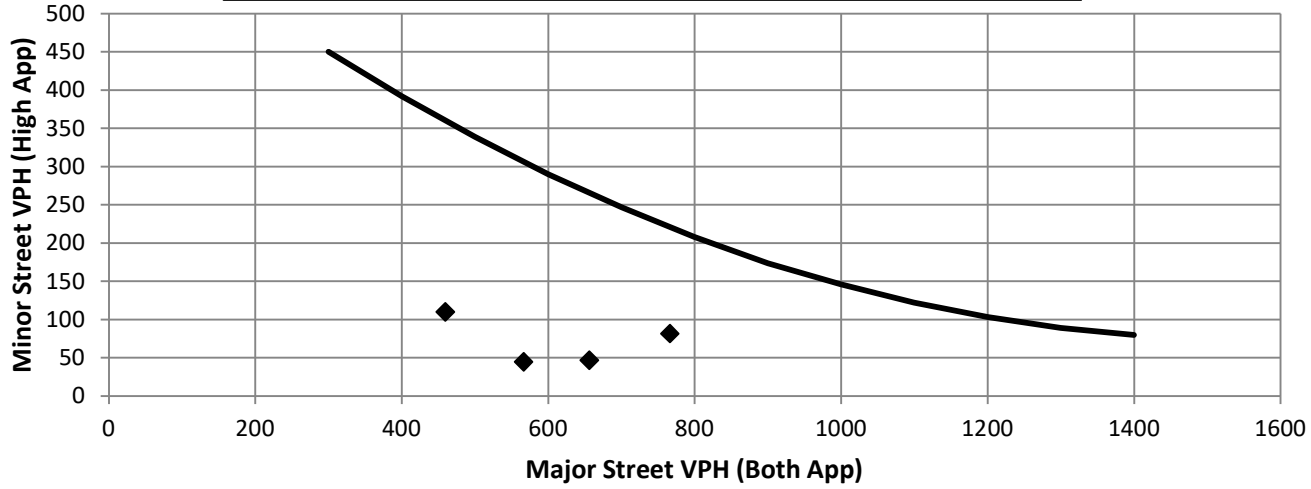
6:00 AM		Enter Start Time (Military Time) (HH:MM)			
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	172	23	195
2	7:00	8:00	459	110	569
3	8:00	9:00	578	38	616
4	9:00	10:00	442	33	475
5	10:00	11:00	437	31	468
6	11:00	12:00	513	33	546
7	12:00	13:00	541	26	567
8	13:00	14:00	555	33	588
9	14:00	15:00	559	39	598
10	15:00	16:00	766	82	848
11	16:00	17:00	656	47	703
12	17:00	18:00	566	45	611
13	18:00	19:00	395	33	428
14	19:00	20:00	225	17	242
15	20:00	21:00	166	6	172
16	21:00	22:00	91	24	115

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	15:00	16:00	7:00	17:00
Major Road Vol.	766	656	459	566
Minor Road Vol.	82	47	110	45

Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
County: El Paso
City: Colorado Springs

Major Street: Chapel Hills Dr.
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Spring Mountain View/Dynamic Dr.
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 0%
From East (WB) 100%
From South (NB) 100%
From West (EB) 100%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level? No

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2025 Background	Yes	6:00	AM	10:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**No**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: Brett Zmenkowski
Agency: Harris Kocher Smith
Date: 3/10/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	1

Satisfied? No

Condition C: Combination of A & B at 80%

Satisfied? No

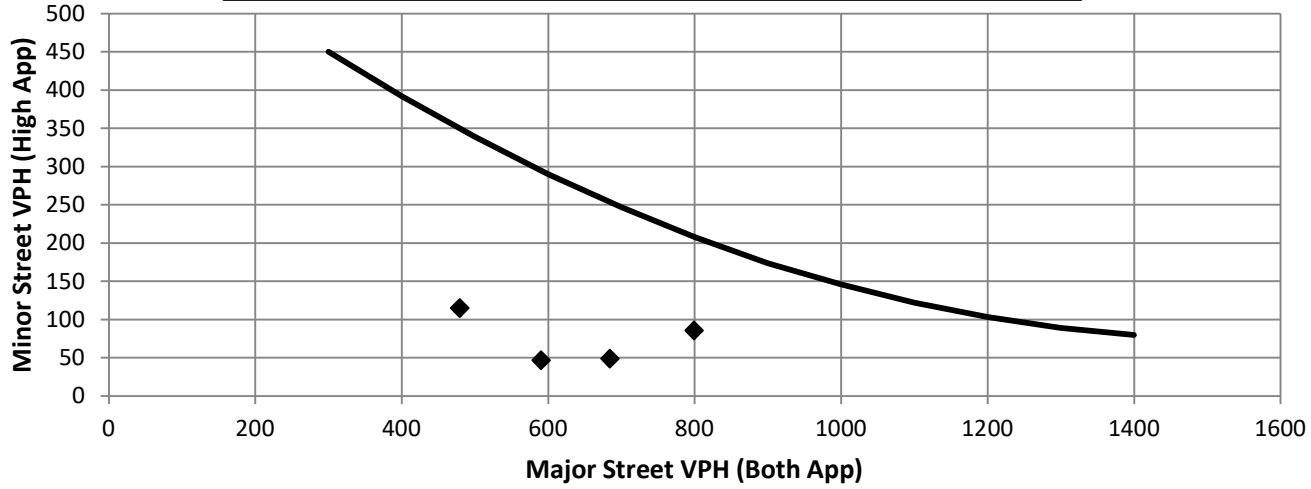
6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	179	24	203
2	7:00	8:00	479	115	594
3	8:00	9:00	603	40	643
4	9:00	10:00	461	34	495
5	10:00	11:00	456	32	488
6	11:00	12:00	535	34	569
7	12:00	13:00	564	27	591
8	13:00	14:00	579	34	613
9	14:00	15:00	583	41	624
10	15:00	16:00	799	86	885
11	16:00	17:00	684	49	733
12	17:00	18:00	590	47	637
13	18:00	19:00	412	34	446
14	19:00	20:00	235	18	253
15	20:00	21:00	173	6	179
16	21:00	22:00	95	25	120

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	15:00	16:00	7:00	17:00
Major Road Vol.	799	684	479	590
Minor Road Vol.	86	49	115	47

Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Warrant 3: Peak Hour Volume 100%

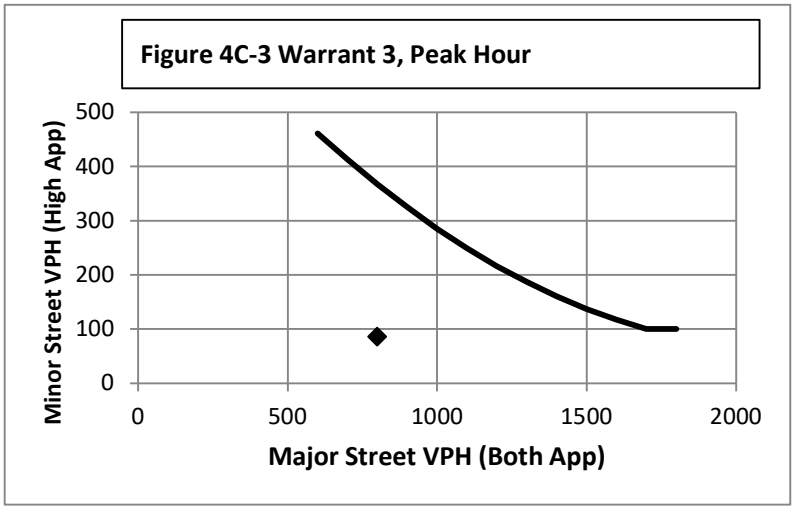
Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	Yes
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
15:00	799	86



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

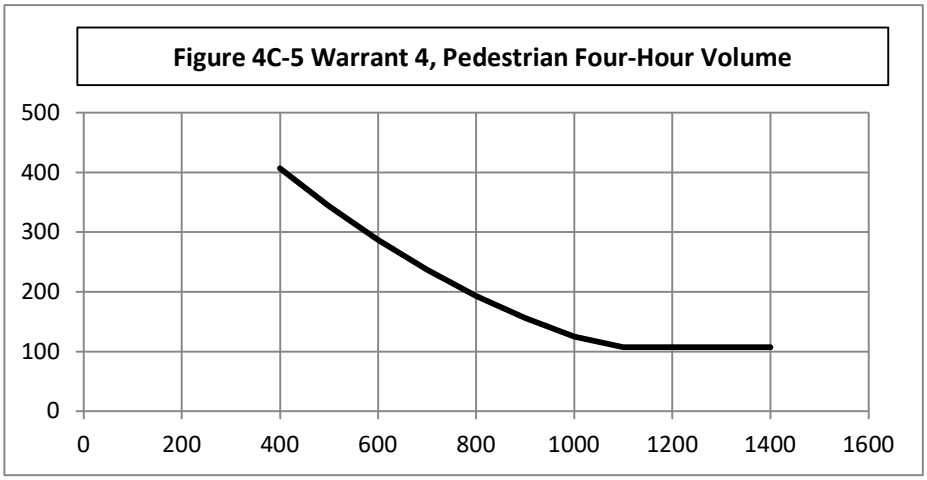
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

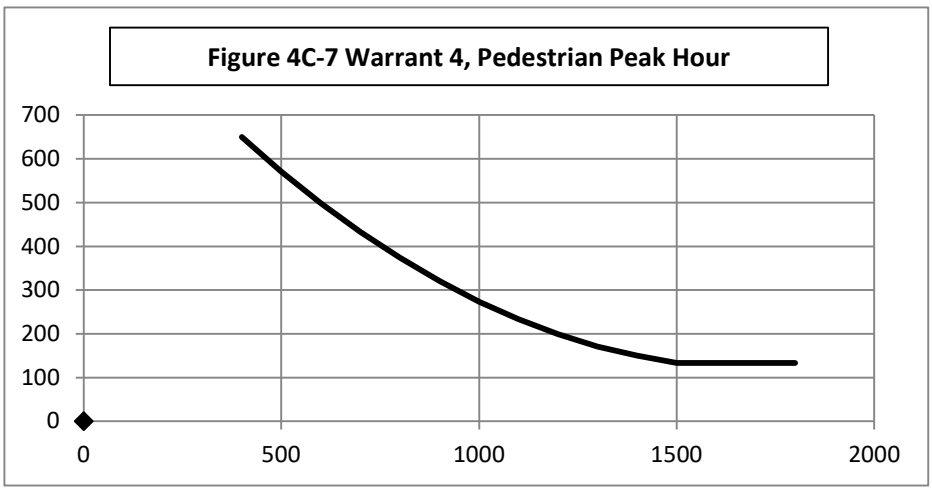
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
County: El Paso
City: Colorado Springs

Major Street: Chapel Hills Dr.
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Spring Mountain View/Dynamic Dr.
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 0%
From East (WB) 100%
From South (NB) 100%
From West (EB) 100%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level? No

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2045 Background	No	6:00	AM	10:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**Yes**
Condition A: Minimum Vehicular Volume	Yes
Condition B: Interruption of Continuous Traffic	Yes
Condition C: Combination: 80% of A and B	Yes
Warrant 2: Four-Hour Volume	**Yes**
Warrant 3: Peak Hour Volume	**Yes**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: Brett Zmenkowski
Agency: Harris Kocher Smith
Date: 3/10/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	12	12

Satisfied? Yes

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	8	11

Satisfied? Yes

Condition C: Combination of A & B at 80%

Satisfied? Yes

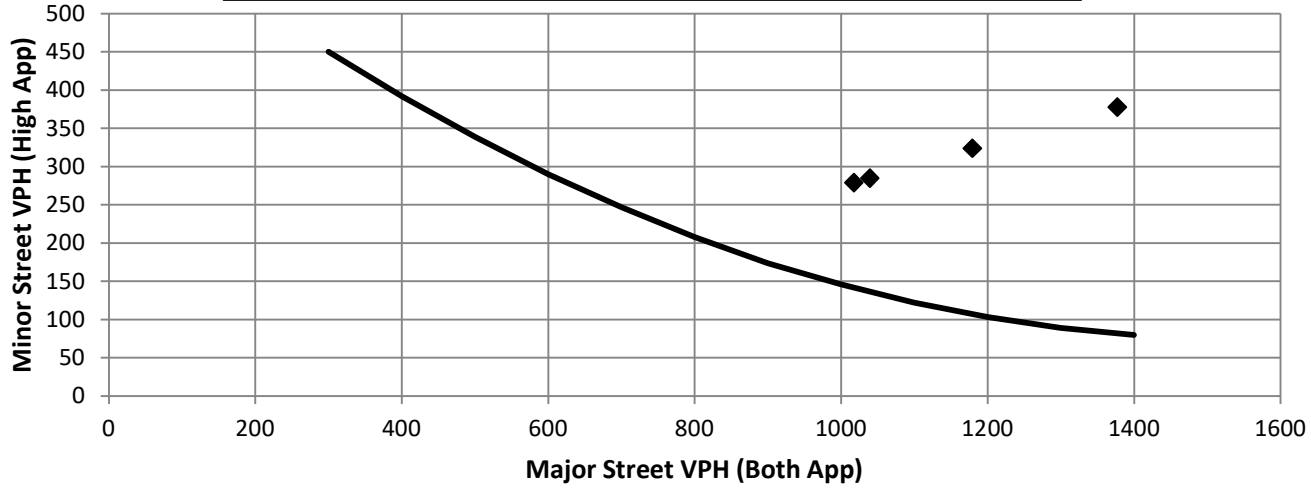
6:00 AM		Enter Start Time (Military Time) (HH:MM)			
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	309	85	394
2	7:00	8:00	825	226	1051
3	8:00	9:00	1039	285	1324
4	9:00	10:00	794	218	1012
5	10:00	11:00	786	216	1002
6	11:00	12:00	922	253	1175
7	12:00	13:00	972	267	1239
8	13:00	14:00	998	274	1272
9	14:00	15:00	1005	276	1281
10	15:00	16:00	1377	378	1755
11	16:00	17:00	1179	324	1503
12	17:00	18:00	1017	279	1296
13	18:00	19:00	710	195	905
14	19:00	20:00	404	111	515
15	20:00	21:00	298	82	380
16	21:00	22:00	164	45	209

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? Yes
Manually Set To:

Hour Start	15:00	16:00	8:00	17:00
Major Road Vol.	1377	1179	1039	1017
Minor Road Vol.	378	324	285	279

Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Warrant 3: Peak Hour Volume 100%

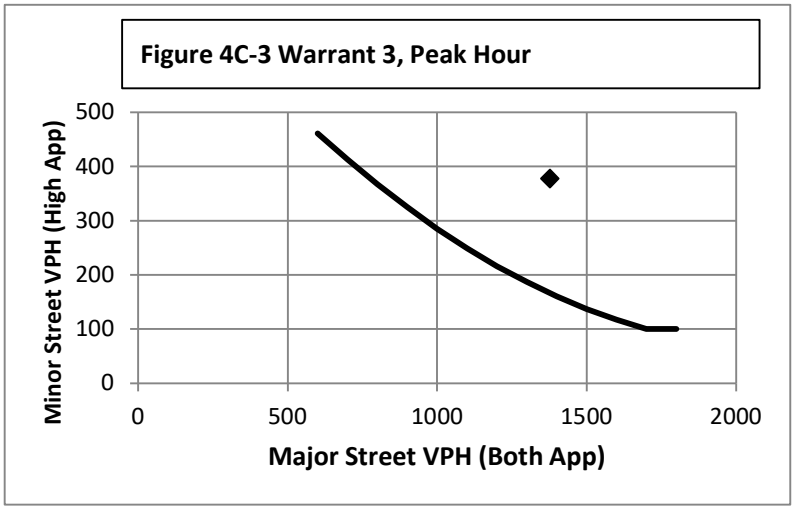
Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	Yes
Volume on Minor Approach	100	Yes
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
15:00	1377	378



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

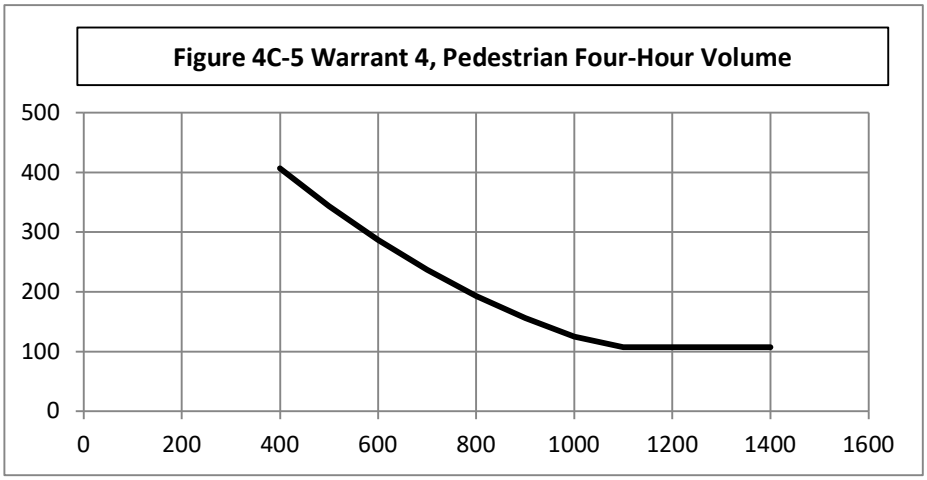
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

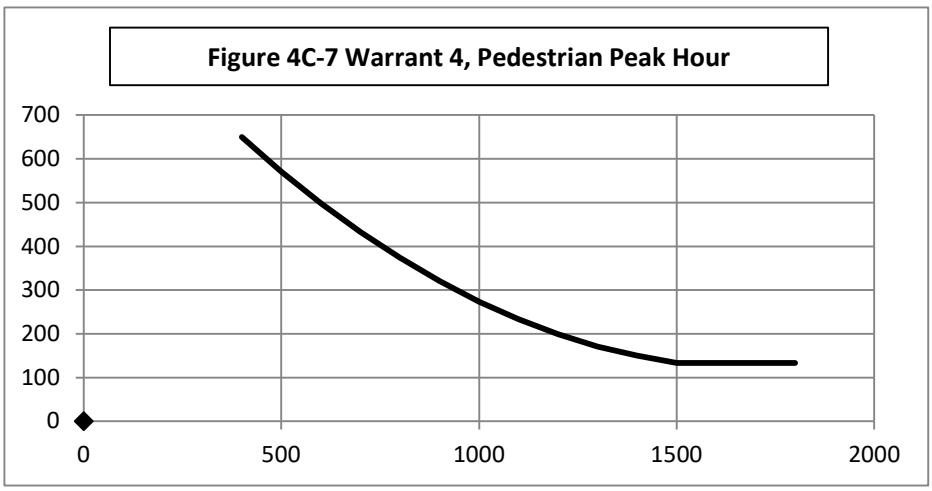
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
County: El Paso
City: Colorado Springs

Major Street: Chapel Hills Dr.
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Spring Mountain View/Dynamic Dr.
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 0%
From East (WB) 100%
From South (NB) 100%
From West (EB) 100%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level? No

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2025 Total	Yes	6:00	AM	10:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**No**
Condition A: Minimum Vehicular Volume	No
Condition B: Interruption of Continuous Traffic	No
Condition C: Combination: 80% of A and B	No
Warrant 2: Four-Hour Volume	**No**
Warrant 3: Peak Hour Volume	**No**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:

Name: Brett Zmenkowski
Agency: Harris Kocher Smith
Date: 3/10/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	0	0

Satisfied? No

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	0	1

Satisfied? No

Condition C: Combination of A & B at 80%

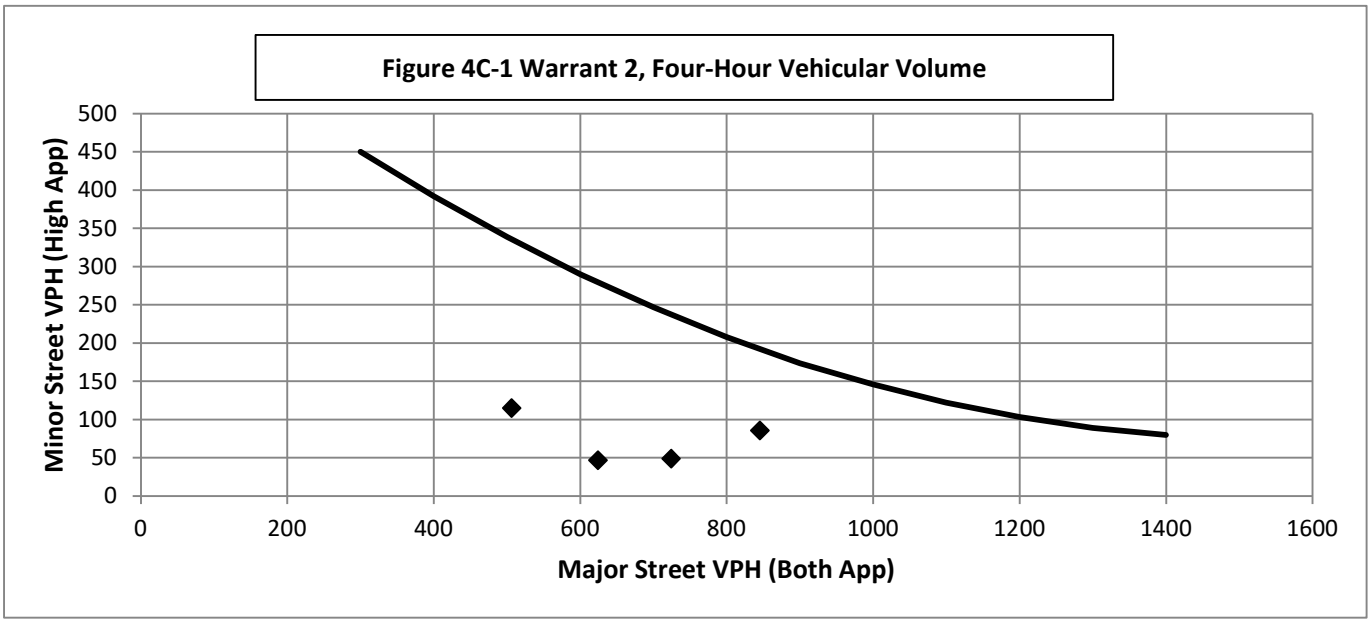
Satisfied? No

6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	190	24	214
2	7:00	8:00	506	115	621
3	8:00	9:00	638	40	678
4	9:00	10:00	488	34	522
5	10:00	11:00	482	32	514
6	11:00	12:00	566	34	600
7	12:00	13:00	597	27	624
8	13:00	14:00	612	34	646
9	14:00	15:00	617	41	658
10	15:00	16:00	845	86	931
11	16:00	17:00	724	49	773
12	17:00	18:00	624	47	671
13	18:00	19:00	436	34	470
14	19:00	20:00	248	18	266
15	20:00	21:00	183	6	189
16	21:00	22:00	100	25	125

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? No
Manually Set To:

Hour Start	15:00	16:00	7:00	17:00
Major Road Vol.	845	724	506	624
Minor Road Vol.	86	49	115	47



Warrant 3: Peak Hour Volume 100%

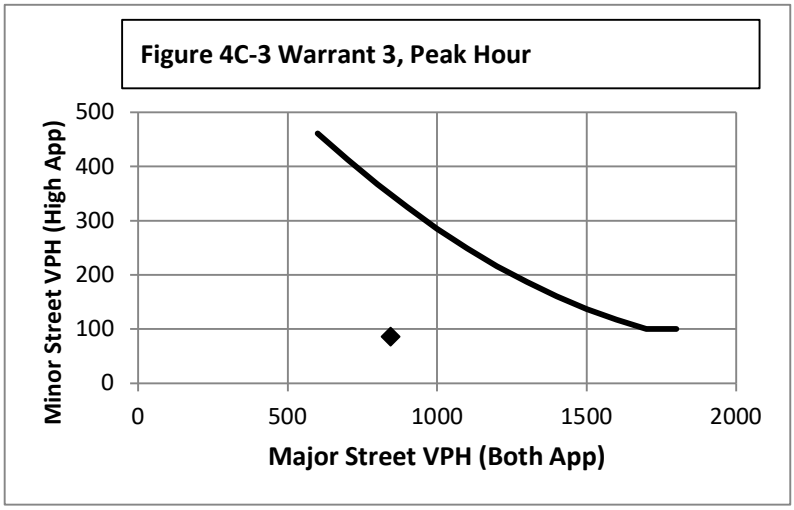
Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	Yes
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
15:00	845	86



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

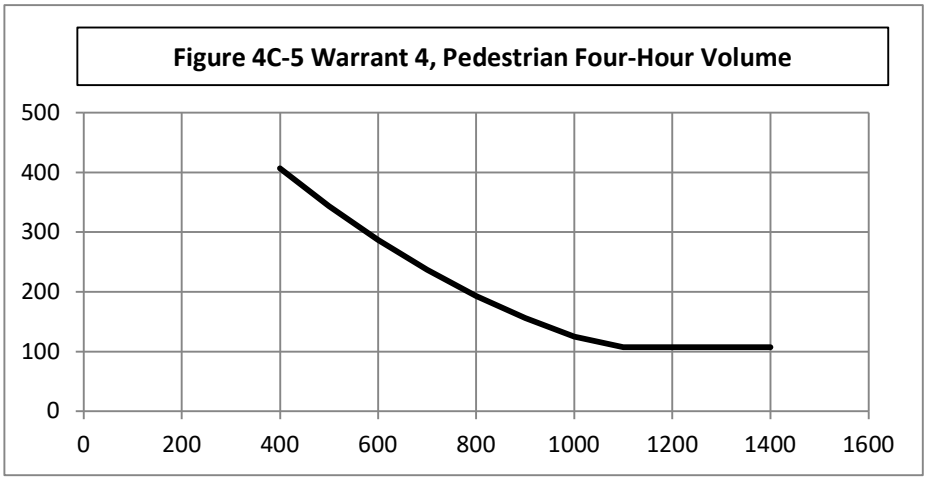
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

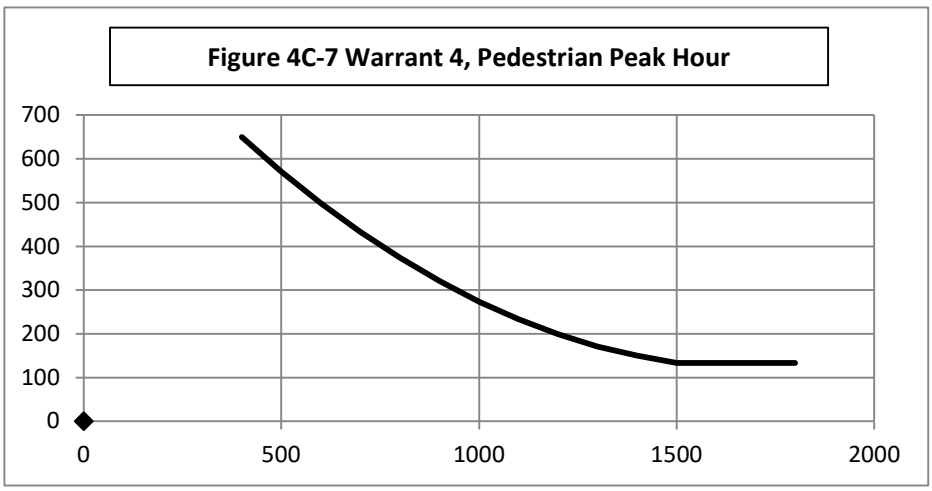
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Wisconsin Department of Transportation Traffic Signal Warrant Summary Worksheet

100%

The Worksheet(s) attached are provided as an attachment to the Engineering Investigation Study for:

Intersection: Spring Mountain View/Dynamic Dr./Chapel Hills Dr.
County: El Paso
City: Colorado Springs

Major Street: Chapel Hills Dr.
Critical Approach Speed: 35 mph
Lanes: 2 or more lanes

Minor Street: Spring Mountain View/Dynamic Dr.
Critical Approach Speed: 25 mph
Lanes: 1 lane

% Right Turns Included
From North (SB) 0%
From East (WB) 100%
From South (NB) 100%
From West (EB) 100%

In built-up area of isolated community of < 10,000 population? No
Total number of approaches at intersection? 4 or more
If it is a "T" intersection, inflate minor threshold to 150%? No
Manually set volume level? No

Analysis based on PROJECTED volume data.

Forecast Year	Within 5 Years of Construction?	Time (HH:MM)			
		From	AM / PM	To	AM / PM
2045 Total	No	6:00	AM	10:00	PM

Warrant Evaluation Summary	Warrant Met:
Warrant 1: Eight - Hour Vehicular Volume	**Yes**
Condition A: Minimum Vehicular Volume	Yes
Condition B: Interruption of Continuous Traffic	Yes
Condition C: Combination: 80% of A and B	Yes
Warrant 2: Four-Hour Volume	**Yes**
Warrant 3: Peak Hour Volume	**Yes**
Warrant 4: Pedestrian Volume	**N/A**
Criterion A: Four-Hour	
Criterion B: Peak-Hour	
Warrant 5: School Crossing	**N/A**
Warrant 6: Coordinated Signal System	**N/A**
Warrant 7: Crash Experience	**N/A**
Warrant 8: Roadway Network	**N/A**
Warrant 9: Intersection Near a Grade Crossing	**N/A**

Warrant Analysis Conducted By:
Name: Brett Zmenkowski
Agency: Harris Kocher Smith
Date: 3/10/2022

Warrant 1: Eight - Hour Vehicular Volume 100%

Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

Condition A : Min. Veh. Volume		
Volume Level	100%	80%
Major Rd. Req	600	480
Minor Rd. Req	150	120
Number of Hours	12	12

Satisfied? Yes

Condition B: Interruption of Continuous Traffic		
Volume Level	100%	80%
Major Rd. Req	900	720
Minor Rd. Req	75	60
Number of Hours	8	12

Satisfied? Yes

Condition C: Combination of A & B at 80%

Satisfied? Yes

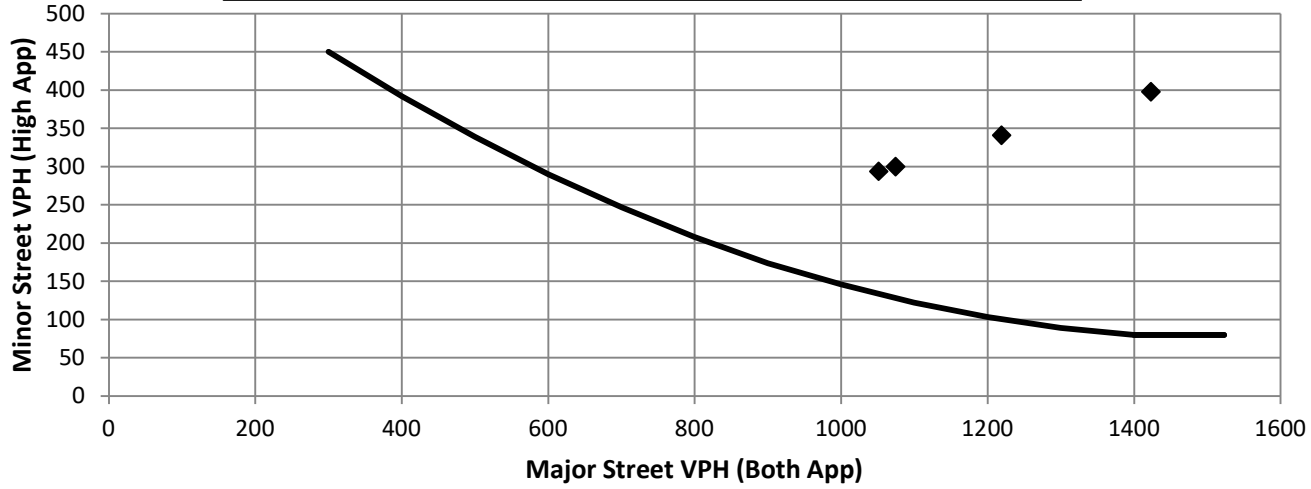
6:00 AM	Enter Start Time (Military Time) (HH:MM)				
Time Period	**From**	**To**	**Major Road: Both App. (VPH)**	**Minor Road: High App. (VPH)**	**Total**
1	6:00	7:00	319	89	408
2	7:00	8:00	853	238	1091
3	8:00	9:00	1074	300	1374
4	9:00	10:00	821	229	1050
5	10:00	11:00	812	227	1039
6	11:00	12:00	953	266	1219
7	12:00	13:00	1005	281	1286
8	13:00	14:00	1031	288	1319
9	14:00	15:00	1038	290	1328
10	15:00	16:00	1423	398	1821
11	16:00	17:00	1219	341	1560
12	17:00	18:00	1051	294	1345
13	18:00	19:00	734	205	939
14	19:00	20:00	418	117	535
15	20:00	21:00	308	86	394
16	21:00	22:00	169	47	216

Warrant 2: Four-Hour Volume 100%

Warrant Evaluated? Yes
Warrant Satisfied? Yes
Manually Set To:

Hour Start	15:00	16:00	8:00	17:00
Major Road Vol.	1423	1219	1074	1051
Minor Road Vol.	398	341	300	294

Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Warrant 3: Peak Hour Volume 100%

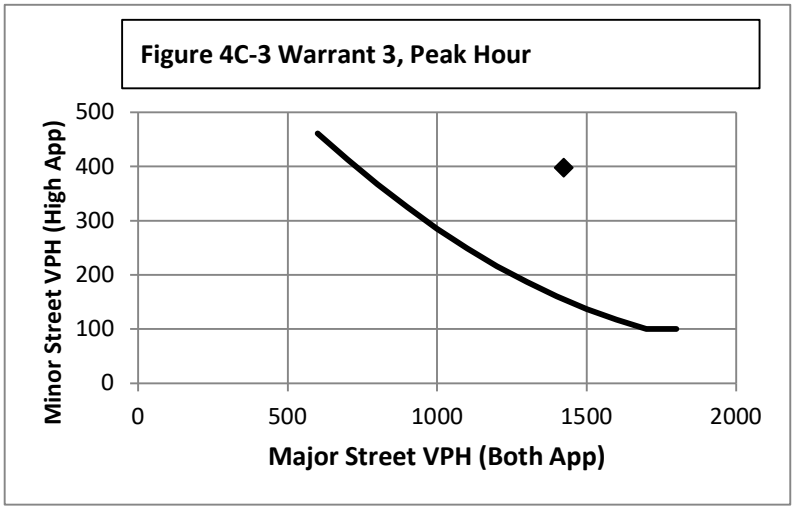
Warrant Evaluated? Yes **Warrant Satisfied? Yes** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	Yes
Volume on Minor Approach	100	Yes
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
15:00	1423	398



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

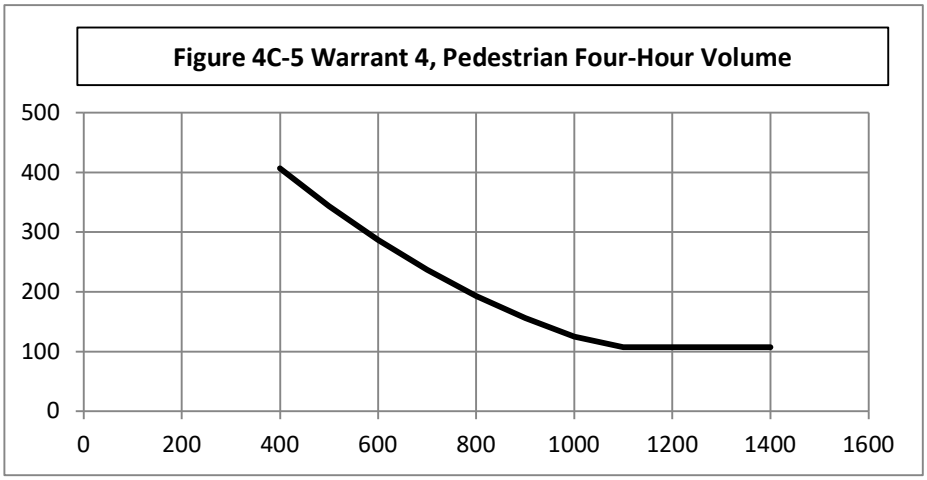
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

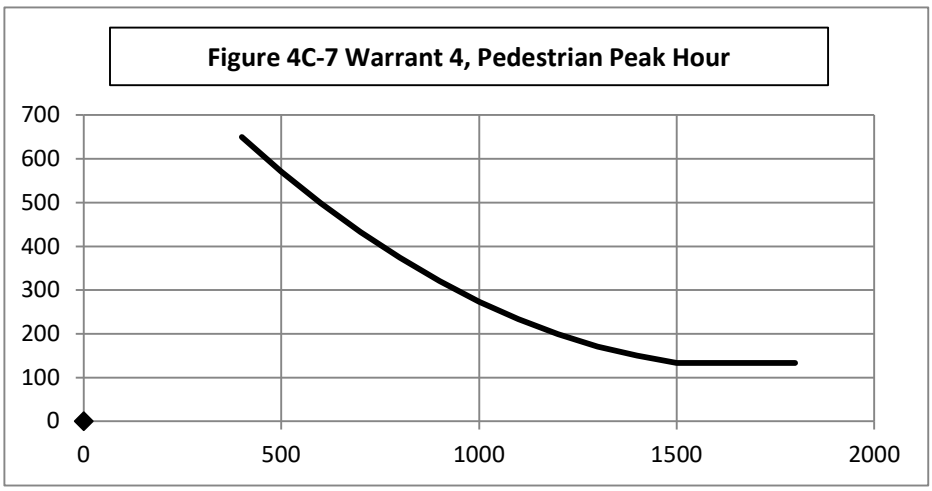
Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?



Warrant 3: Peak Hour Volume 100%

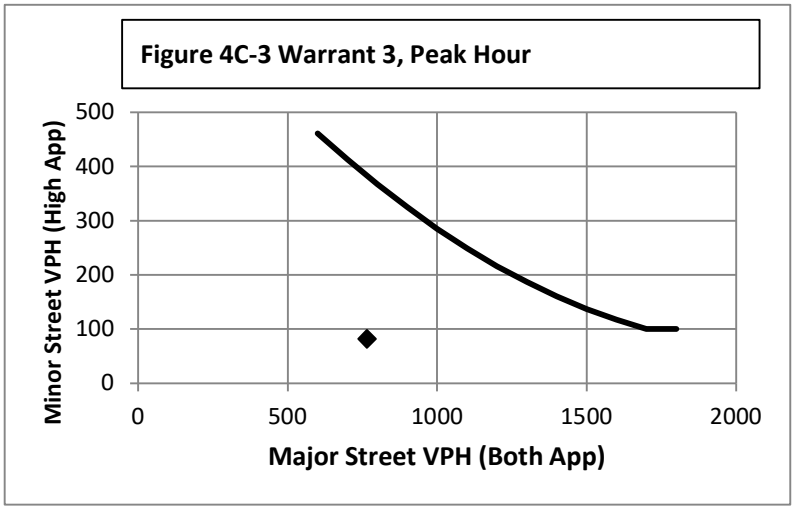
Warrant Evaluated? Yes **Warrant Satisfied? No** **Manually Set To:**

Condition justifying use of warrant:

Criteria		Met?
Delay on Minor Approach	4	Yes
Volume on Minor Approach	100	No
Total Entering Volume (veh/h)	800	

Manually Set Peak Hour? No

Peak Hour	Major Road Vol. (Both App.)	Minor Road Vol. (High App.)
15:00	766	82



Warrant 4: Pedestrian Volume 100%

Warrant Evaluated? **Warrant Satisfied? N/A** **Manually Set To:**

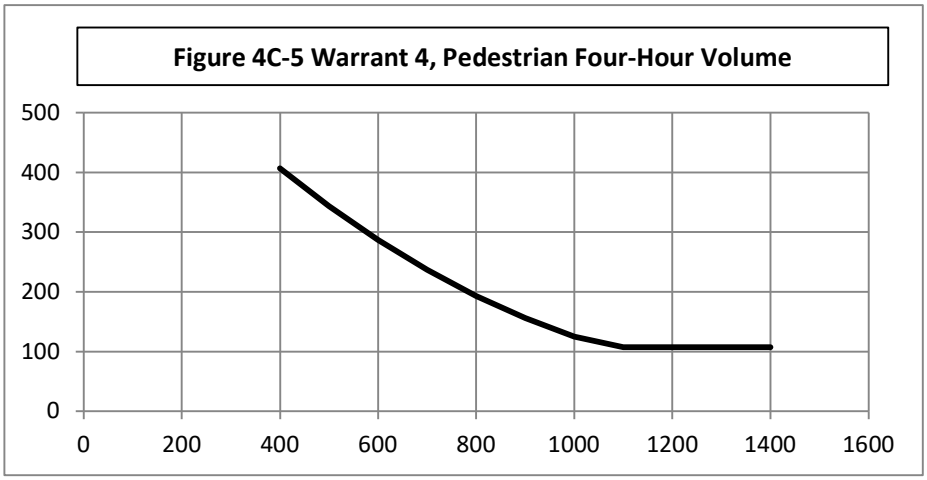
Criterion A: Four Hour

Hour (Start)	Pedestrian Volume	Major Road Vol.
		0
		0
		0
		0

Manually Set Major Rd Vol?

Avg. walk speed less than 3.5 ft/s?

Criterion A Satisfied?



Criterion B: Peak Hour

Peak Hour	Pedestrian Vol.	Major Road Vol.
0:00	0	0

Criterion B Satisfied?