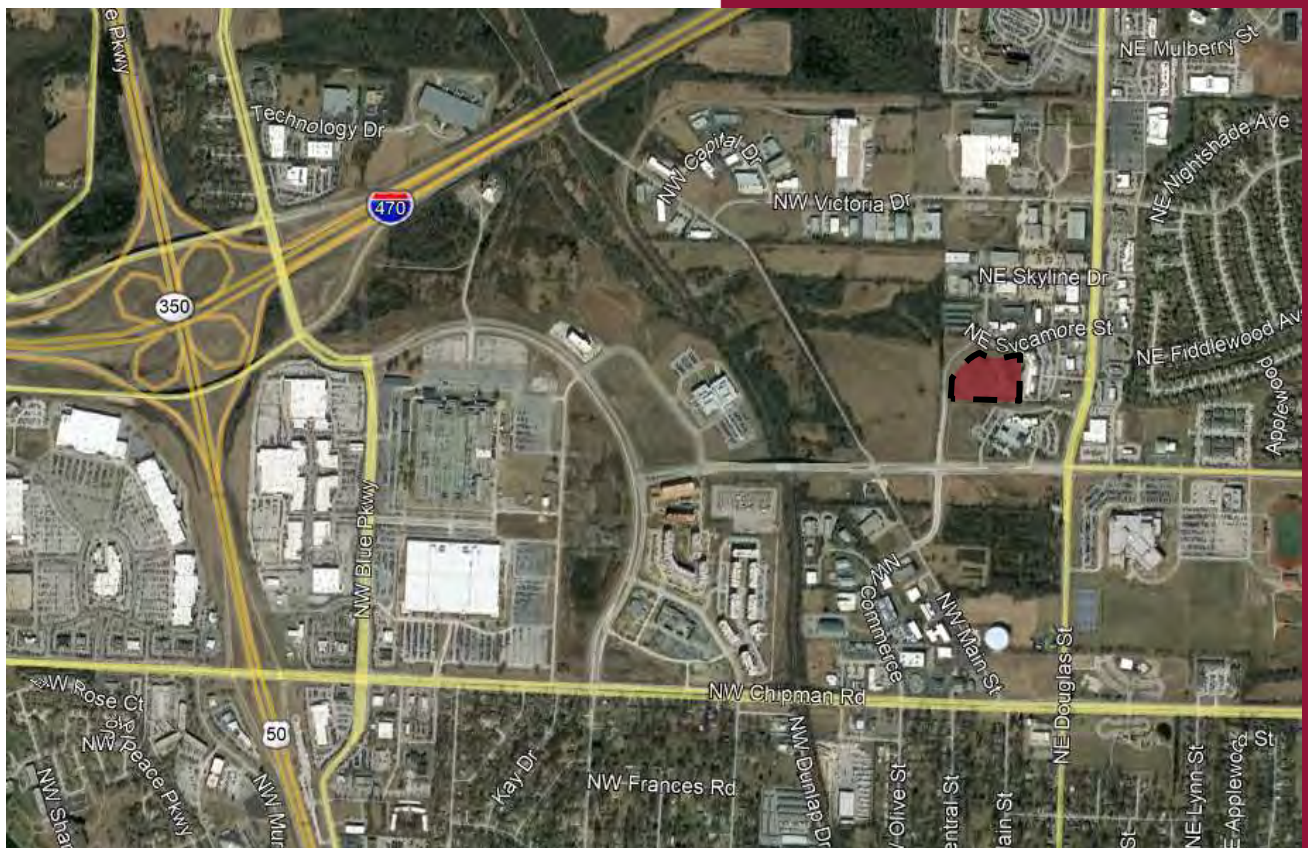


Douglas Station Traffic Impact Study

Sycamore Street and Sloan Street
Lee's Summit, Missouri



Prepared for:
Cave State Companies

Prepared by TranSystems
April 2021



TranSystems
2400 Pershing Road
Suite 400
Kansas City, MO 64108
Tel 816 329 8600
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April 30, 2021

Mr. Jacob Engle
Cave State Companies
569 Melville Ave., Suite 208
St. Louis, Missouri 63130

**RE: Douglas Station Traffic Impact Study
Sycamore Street and Sloan Street
Lee's Summit, Missouri**

Dear Mr. Engle:

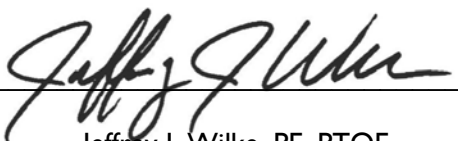
In response to your request and authorization, TranSystems has completed a traffic impact study for the proposed multifamily residential development generally located in the southeast corner of Sycamore Street and Sloan Street in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

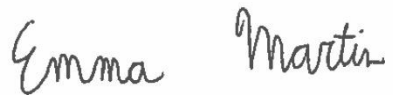
Included in this study is a discussion of the anticipated impact of the proposed development on the adjacent street network and identified improvements to mitigate deficiencies for the following scenarios:

- ▶ Existing Conditions
- ▶ Existing plus Development Conditions

We trust that the enclosed information proves beneficial to you and the City of Lee's Summit in this phase of the development process. We appreciate the opportunity to be of service to you and will be available to review this study at your convenience.

Sincerely,
TRANSYSTEMS

By: 
Jeffrey J. Wilke, PE, PTOE

By: 
Emma H Martin, EIT

JJW:EHM/ehm/PI01210128
Enclosure

Introduction

TranSystems has completed a traffic impact study for the proposed multifamily residential development generally located in the southeast corner of the Sycamore Street and Sloan Street intersection in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

The location of the development site relative to the major streets in the area is shown on **Figure A-1** in **Appendix A**. This study also contains a description of the proposed development and the surrounding transportation infrastructure along with trip generation estimates, trip distribution estimates, capacity analyses, and a summary of the findings.

Proposed Development Plan

The proposed development consists of seven, three-story apartment buildings. Each building will have 24 units, which totals 168 overall units at the development. Surface parking will be provided surrounding each of the buildings. The proposed development plan is included on **Figure A-2** in **Appendix A** for reference.

Access to the proposed development will be provided from two proposed intersections. Site Drive 1 will be along Sycamore Street, approximately 300 feet east of Sloan Street. This driveway will align with an existing driveway along the north side of Sycamore Street. The second driveway (Site Drive 2) will be along Sloan Street, approximately 575 feet south of Sycamore Street. Both intersections will allow full access.

Study Area

To assess the impacts of the proposed development, the intersections listed below were identified for study during the A.M. and P.M. peak periods.

- ▶ Tudor Road and Sloan Street
- ▶ Sycamore Street and Douglas Street
- ▶ Site Driveways

Surrounding Street Network and Land Uses

The development site is located on approximately 6 acres of undeveloped land. The north side of the site is bounded by Sycamore Street. There are several commercial buildings to the north along Sycamore Street, including medical offices, auto service businesses, and restaurants. Farther to the northwest along Sloan Street there are business park type land uses. The west side of the site is bounded by Sloan Street, and the land is generally undeveloped to the west of Sloan Street. The east side of the site is bounded by the rear parking lot of the Douglas Station retail shopping center. The Lee's Summit Police Department and Municipal Court are located to the south of the development site.

Tudor Road is a four-lane divided street with a raised median. According to the Lee's Summit Thoroughfare Master Plan, it is classified as a minor arterial. There is curb and gutter, along with sidewalks on both sides of the road. The posted speed limit is 35 mph. The street widens for left- and right-turn

lanes at the intersection with Sloan Street. Sloan Street is stop sign controlled at the intersection and Tudor Road is uncontrolled, allowing uninterrupted flow.

Douglas Street is a four-lane divided street with a raised median. It is classified as a major arterial. There is curb and gutter along with a sidewalk on both sides of the street. The posted speed limit is 45 mph. The street widens for left- and right-turn lanes at the signalized intersection with Sycamore Street.

Sycamore Street is a two-lane local street. The roadway is generally 32-feet wide and has curb and gutter. There is sidewalk along the entire north side of the road, and along the south side to the east of the proposed development site. The posted speed limit is 25 mph.

Adjacent to the development site, Sloan Street is classified as a local street. It has curbs and gutters, but no sidewalk adjacent to the development site. The posted speed limit is 25 mph. There is a horizontal curve in the roadway adjacent to the proposed development site. Just south of the site, Sloan widens to 36 feet and is classified as a commercial collector. There is sidewalk adjacent to this segment of the street. South of Tudor Road, Sloan Street becomes Commerce Drive.

Traffic Counts

The turning-movement traffic volume counts were collected at the study intersections on Tuesday, April 6, 2021. The turning movement counts were collected from 7:00 to 9:00 A.M. and from 4:00 to 6:00 P.M. The A.M. peak hour occurred between 7:00 and 8:00 A.M. at both intersections. The P.M. peak hour occurred between 4:30 and 5:30 P.M. at the intersection of Sycamore Street and Douglas Street and between 4:45 and 5:45 P.M. at the intersection of Tudor Road and Sloan Street. The existing lane configurations, traffic control devices, and peak hour volumes used for this study are illustrated in **Figure A-3**.

Analysis

The scope of analysis for the assessment of the proposed development's impact on the surrounding transportation system is based in large part on the recommended practices of the Institute of Transportation Engineers (ITE), as outlined in their Traffic Engineering Handbook. ITE is a nationally-recognized organization of transportation professionals with members from both private and public sectors. The analysis of the proposed development's impact included development of trip generation and trip distribution estimates as well as a traffic operations assessment for each study scenario. Each of the analysis methodologies and findings are described in the subsequent sections.

Trip Generation

Trip generation estimates were prepared using the Institute of Transportation Engineer's Trip Generation, 10th Edition. **Table 1** on the following page shows the expected trips to be generated by the proposed development. Additional information related to trip generation is included in **Appendix B**.

Table 1
Trip Generation

Land Use	Intensity	ITE Code	Average Weekday	A.M. Peak Hour			P.M. Peak Hour		
				Total	In	Out	Total	In	Out
Multifamily Housing (Mid-Rise)	168 units	221	914	57	15	42	73	45	28
Total Full Development Trips			914	57	15	42	73	45	28

Trip Distribution

The estimated trips generated by the proposed development were distributed onto the surrounding street network based on the trip distributions summarized in **Table 2**. These distributions are based on existing travel patterns, the surrounding street network, and engineering judgment. Detailed distributions through the study intersections is included in **Appendix B**.

Table 2
Trip Distribution

Direction To/From	Percentage
North on Douglas Street	25%
South on Douglas Street	20%
East on Tudor Road	25%
West on Tudor Road	30%
Total	100%

Sight Distances

Sight distances and methods for measurement are provided in A Policy on Geometric Design of Highways and Streets (7th Edition), also referred to as the AASHTO Green Book published by the American Association of State Highway and Transportation Officials (AASHTO). Intersection sight distance is provided at intersections to allow the drivers of stopped vehicles to depart from their approach and enter or cross the uncontrolled street. These distances are generous, allowing enough distance for the stopped driver to complete their turning or crossing maneuver without requiring through traffic on the uncontrolled street to reduce their speed.

Sight distances were measured in the field at each proposed site driveway intersection. The measurements and AASHTO recommended sight distances for each direction of travel are shown on the next page in **Table 3**.

Table 3
Intersection Sight Distances

Intersection	Direction Looking	Intersection Sight Distance, feet	
		Field Measured	Recommended
Sycamore Street & Site Drive 1	East	565	280
	West	300	240
Sloan Street & Site Drive 2	North	280	280
	South	475	240

The field measurements indicate that sight distances are adequate for the posted speed limit at each of the proposed site driveway intersections. Although these sight lines are adequate, one of the proposed buildings will limit a driver's line of sight when looking to the north from Site Drive 2 in the horizontal curve of Sloan Street. There should be no obstructions north of this driveway to ensure adequate sight lines are provided. No trees, bushes, signage, or retaining walls shall be located within the yellow shaded area to maintain adequate sight lines, as shown in **Figure 1**.

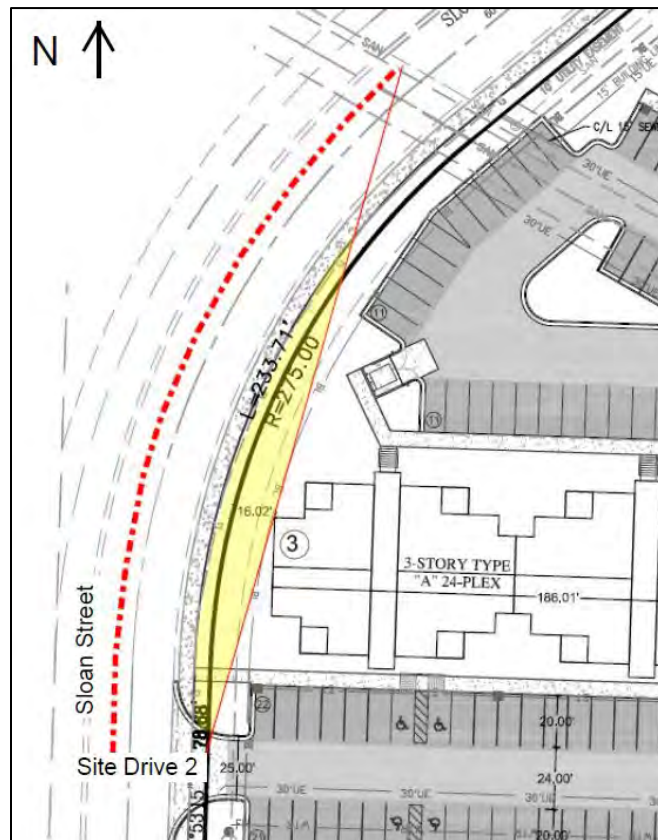


Figure 1: Driver's Line of Sight Looking North from Site Drive 2

Access Management

Lee's Summit Access Management Code (AMC) provides guidance on turn lane requirements, throat lengths, and spacing of intersections and driveways. The proposed site plan was reviewed for compliance with the AMC. No turn lanes are required at the site driveway intersections, as the driveways are located along local streets and low traffic volumes are projected. The two site driveway locations are adequately spaced from adjacent access points. Site Drive 1 has an adequate throat length, exceeding the 50 foot requirement based on the AMC. There is an adequate length before the first major turn at Site Drive 2, however there are several parking stalls within the throat that are less than 50 feet from Sloan Street.

Traffic Operation Assessment

An assessment of traffic operations was made for the scenarios listed below.

- ▶ Existing Conditions
- ▶ Existing plus Proposed Development Conditions

The study intersections were evaluated using the Synchro traffic analysis software package. Calculations were performed based on the methodologies outlined in the Highway Capacity Manual (HCM), 6th Edition, which is published by the Transportation Research Board. The operating conditions at an intersection are graded by the "level of service" experienced by drivers. Level of service (LOS) describes the quality of traffic operating conditions and is rated from "A" to "F". LOS A represents the least congested condition with free-flow movement of traffic and minimal delays. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in the average delay per stopped vehicle. Delay is measured in seconds per vehicle. **Table 4** shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Table 4 Intersection Level of Service Delay Thresholds		
Level of Service (LOS)	Signalized	Unsignalized
A	≤ 10 Seconds	≤ 10 Seconds
B	≤ 20 Seconds	≤ 15 Seconds
C	≤ 35 Seconds	≤ 25 Seconds
D	≤ 55 Seconds	≤ 35 Seconds
E	≤ 80 Seconds	≤ 50 Seconds
F	> 80 Seconds	> 50 Seconds

While LOS measurements apply to both signalized and unsignalized intersections, there are significant differences between how these intersections operate and how they are evaluated. LOS for signalized intersections reflects the operation of the intersection as a whole.

Unsignalized intersections, in contrast, are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are the left turns off of the major street and the side-

street approaches for two-way stop-controlled intersections. At unsignalized intersections lower LOS ratings (D, E and F) do not, in themselves, indicate the need for additional improvements. Many times there are convenient alternative routes to avoid the longer delays. Other times the volumes on the unsignalized approaches are relatively minor when compared to the major street traffic, and improvements such as a traffic signal installation may increase the average delay to all users of the intersection.

The decision to install a traffic signal, which is often considered when lower LOS ratings are projected, should be based on engineering studies and the warrants for traffic signal installation as outlined in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD). Signals are typically not recommended in locations where there are convenient alternative paths, or if the installation of a traffic signal would have negative impacts on the surrounding transportation system.

The LOS rating deemed acceptable varies by community, facility type and traffic control device. In Lee's Summit, LOS C has been identified as the minimum desirable goal for signalized intersections. However, at unsignalized intersections LOS D, E, or even F may be considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection, or the location has been deemed undesirable for signalization.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

Existing Conditions

The results of the Existing Conditions intersection analyses are summarized in **Table 5**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-3** through **A-5**. The Synchro output files are included in **Appendix C**. The 95th percentile queues at the study intersections are shown in **Figure A-6**.

Table 5 Intersection Operational Analysis Existing Conditions					
Intersection <i>Movement</i>	A.M. Peak Hour		P.M. Peak Hour		
	LOS ¹	Delay ²	LOS ¹	Delay ²	
Douglas Street and Sycamore Street <i>Traffic Signal</i>	A	8.5	B	10.3	
Sloan Street and Tudor Road <i>Northbound</i>	B	11.4	B	11.5	
<i>Southbound Left-Turn</i>	A	0.0	B	14.7	
<i>Southbound Through/Right-Turn</i>	A	9.7	B	10.4	
<i>Eastbound Left-Turn</i>	A	7.7	A	7.7	
<i>Westbound Left-Turn</i>	A	7.8	A	8.0	

1 – Level of Service

2 – Delay in seconds per vehicle

The results in **Table 5** indicate that both study intersections currently operate within acceptable levels of service during the peak hours. All 95th percentile queues are minimal and contained within their respective turn lanes.

Existing plus Proposed Development Conditions

The results of the Existing plus Proposed Development Conditions intersection analyses are summarized in **Table 6**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-7** through **A-9**. The Synchro output files are included in **Appendix C**. The projected 95th percentile queues at the study intersections are shown in **Figure A-10**.

Table 6 Intersection Operational Analysis Existing plus Proposed DevelopmentConditions					
Intersection	Movement	A.M. Peak Hour		P.M. Peak Hour	
		LOS ¹	Delay ²	LOS ¹	Delay ²
Douglas Street and Sycamore Street	Traffic Signal	A	9.0	B	10.7
Site Drive 1 and Sycamore Street	Northbound	A	9.0	A	9.0
	Westbound Left-Turn	A	7.4	A	7.5
Sloan Street and Site Drive 2	Westbound	A	8.8	A	8.9
	Southbound Left-Turn	A	7.3	A	7.3
Sloan Street and Tudor Road	Northbound	B	11.6	B	11.7
	Southbound Left-Turn	B	14.4	C	15.5
	Southbound Through/Right-Turn	A	9.5	B	10.1
	Eastbound Left-Turn	A	7.8	A	7.8
	Westbound Left-Turn	A	7.8	A	8.0

1 – Level of Service

2 – Delay in seconds per vehicle

The results in the table indicate that the study intersections are projected to continue operating at good levels of service. The analysis indicates that the effect on queue lengths will be nominal. The addition of development traffic is projected to have a minimal impact on the study intersections.

Summary

TranSystems has completed a traffic impact study for the proposed multifamily residential development generally located in the southeast corner of the Sycamore Street and Sloan Street intersection in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

The proposed development plan includes two new site driveways. Site Drive 1 will be aligned with an existing driveway along Sycamore Street, approximately 300 feet east of Sloan Street. Site Drive 2 will be

along Sloan Street, approximately 575 feet south of Sycamore Street. Sight distance is adequate at both site driveways. One of the proposed buildings will limit sight lines when looking to the north from Site Drive 2, therefore obstructions should be located in the area to the north of the driveway.

The proposed development is projected to generate 57 trips during the A.M. peak hour and 73 trips during the P.M. peak hour. This equates to approximately one additional vehicle per minute. No capacity improvements are identified to mitigate the addition of development traffic to the street network. All intersections are projected to continue operating at good levels of service with the addition of development traffic.

Appendix A - Figures

Figure A-1	Location Map
Figure A-2	Site Plan
Figure A-3	Existing Conditions Lane Configurations
Figure A-4	Existing Conditions A.M. Peak Hour Traffic Volume
Figure A-5	Existing Conditions P.M. Peak Hour Traffic Volume
Figure A-6	Existing Conditions 95th Percentile Queue Lengths
Figure A-7	Existing plus Proposed Development Conditions Lane Configurations
Figure A-8	Existing plus Proposed Development Conditions A.M. Peak Hour Traffic Volume
Figure A-9	Existing plus Proposed Development Conditions P.M. Peak Hour Traffic Volume
Figure A-10	Existing plus Proposed Development Conditions 95th Percentile Queue Lengths

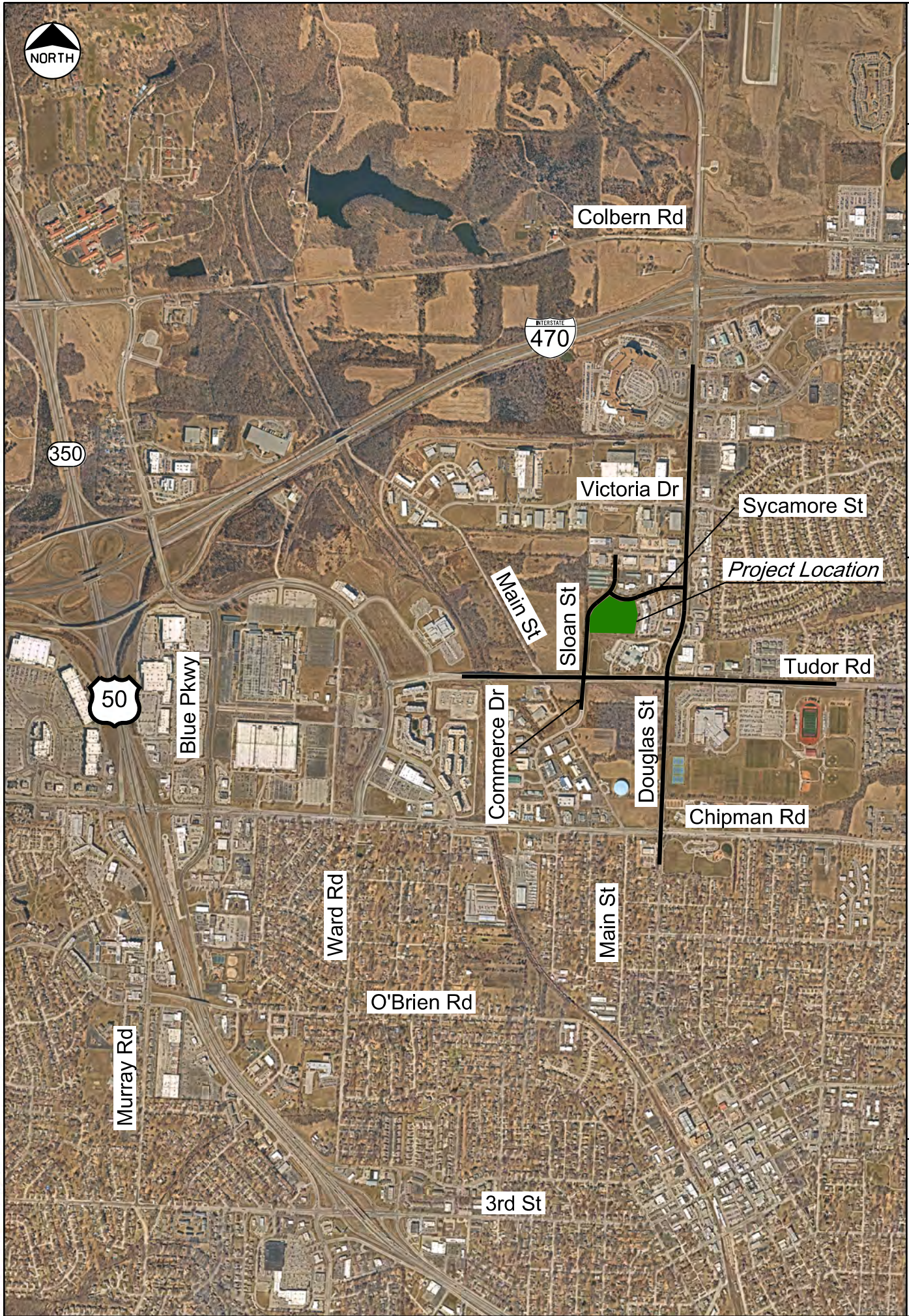


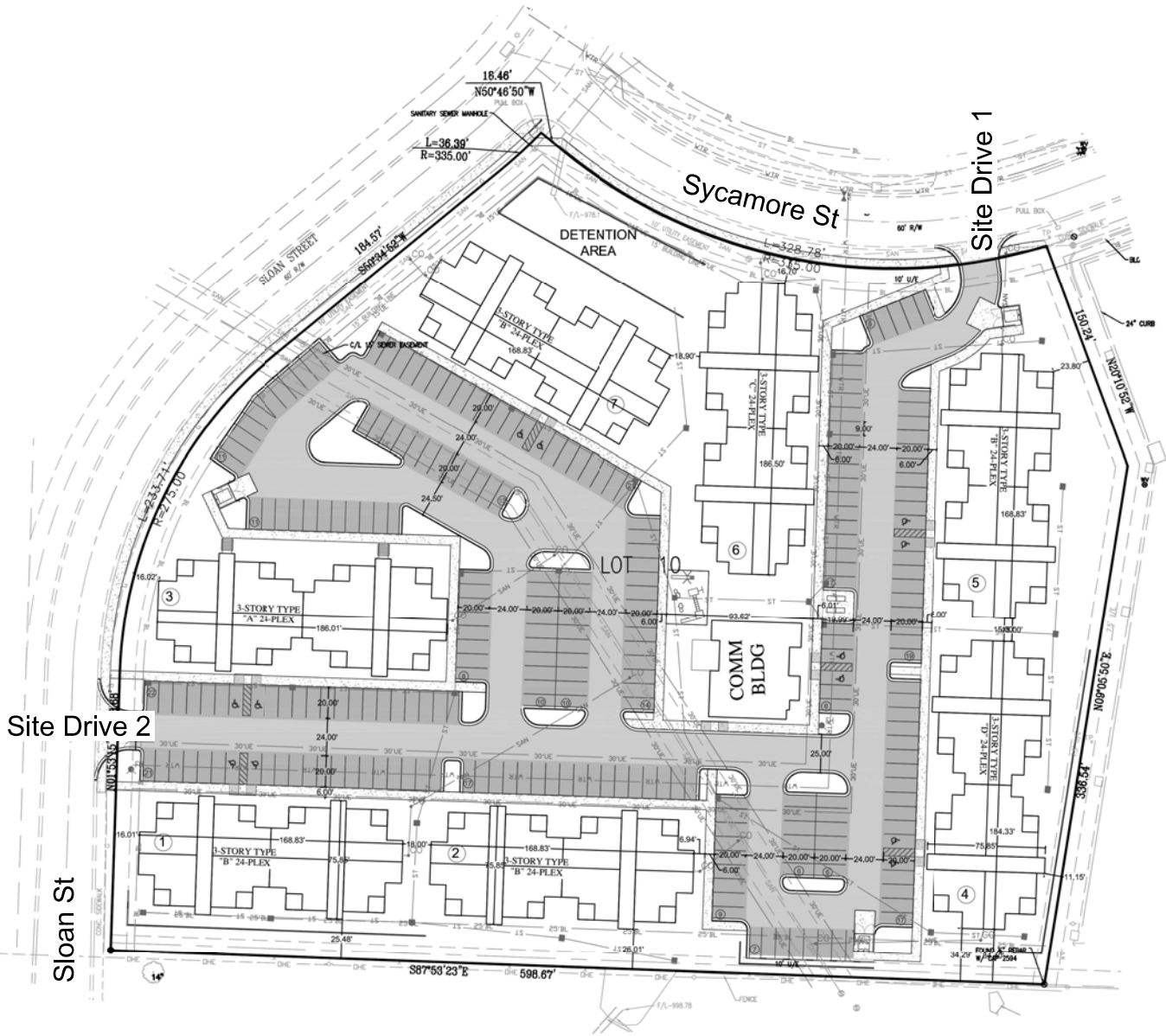
Figure A-1

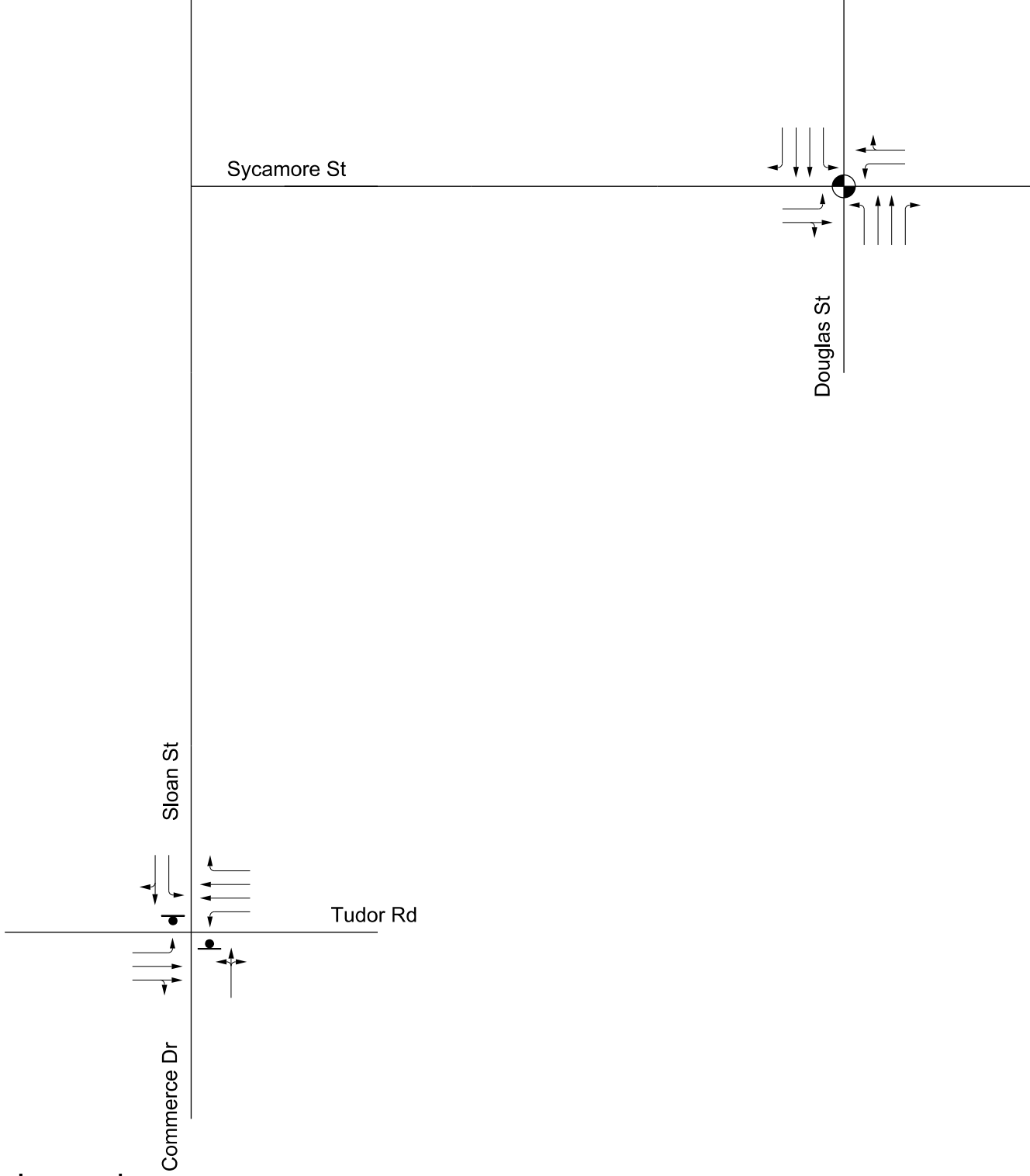
April 2021

No Scale

Douglas Station
Traffic Impact Study
Lee's Summit, Missouri

LOCATION MAP





Legend

-  - Traffic Signal
-  - Stop Sign
-  - Lane Configuration



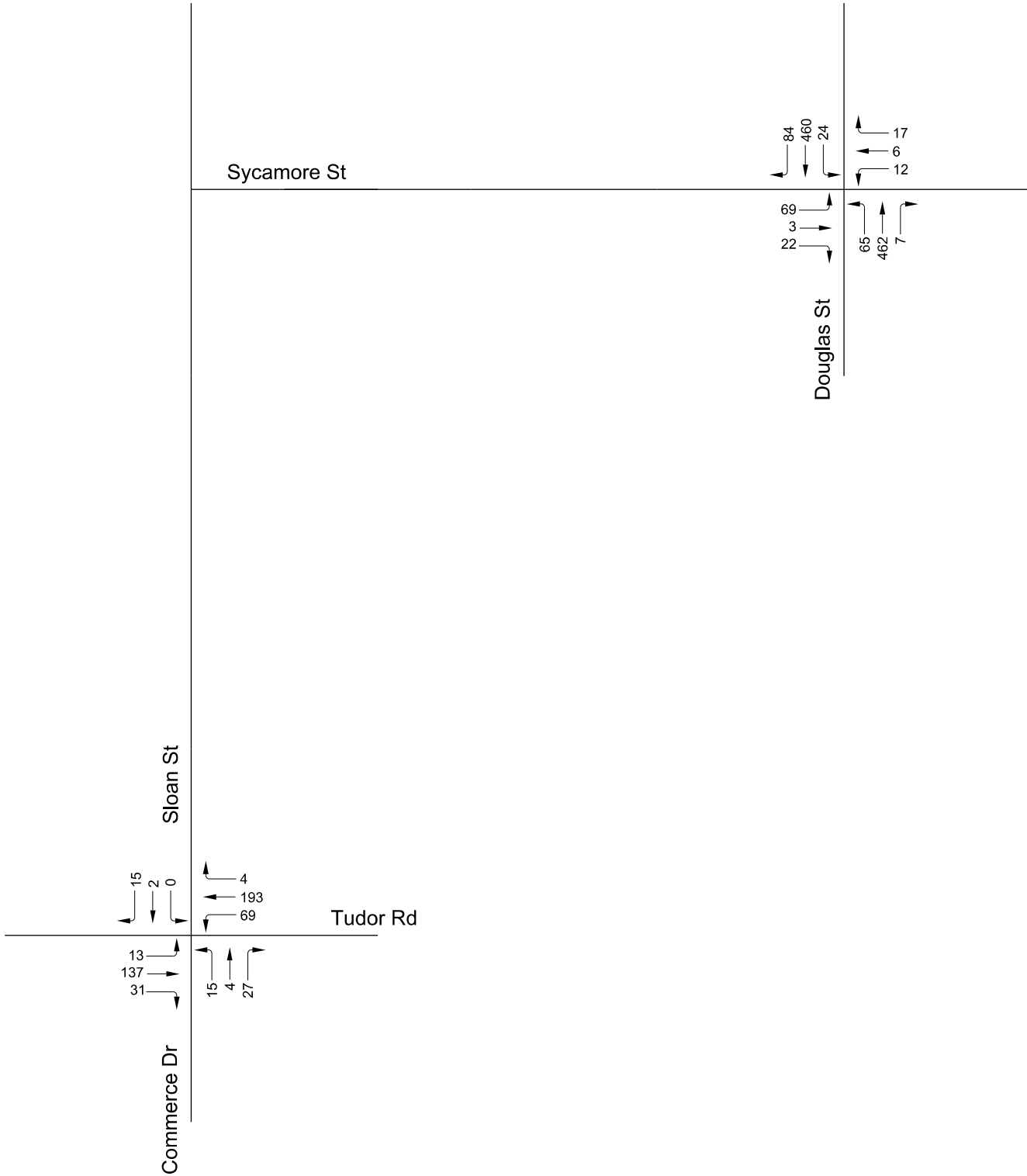
EXISTING CONDITIONS
LANE CONFIGURATIONS

Douglas Station
Traffic Impact Study
Lee's Summit, Missouri

April 2021

No Scale

Figure A-3



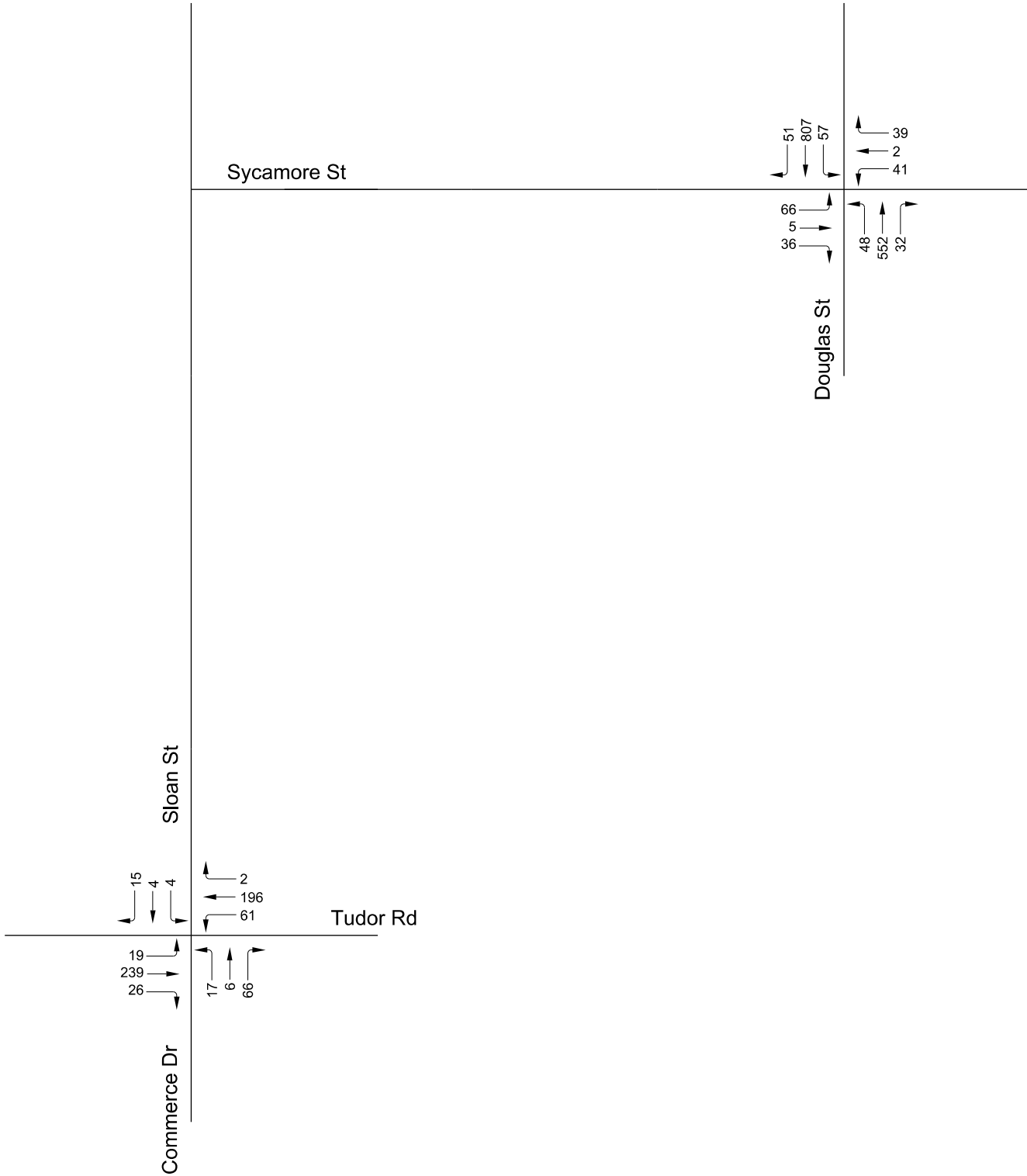
EXISTING CONDITIONS
A.M. PEAK HOUR TRAFFIC VOLUMES

Douglas Station
Traffic Impact Study
Lee's Summit, Missouri

April 2021

No Scale

Figure A-4



Legend

123 - Total Hourly Volume



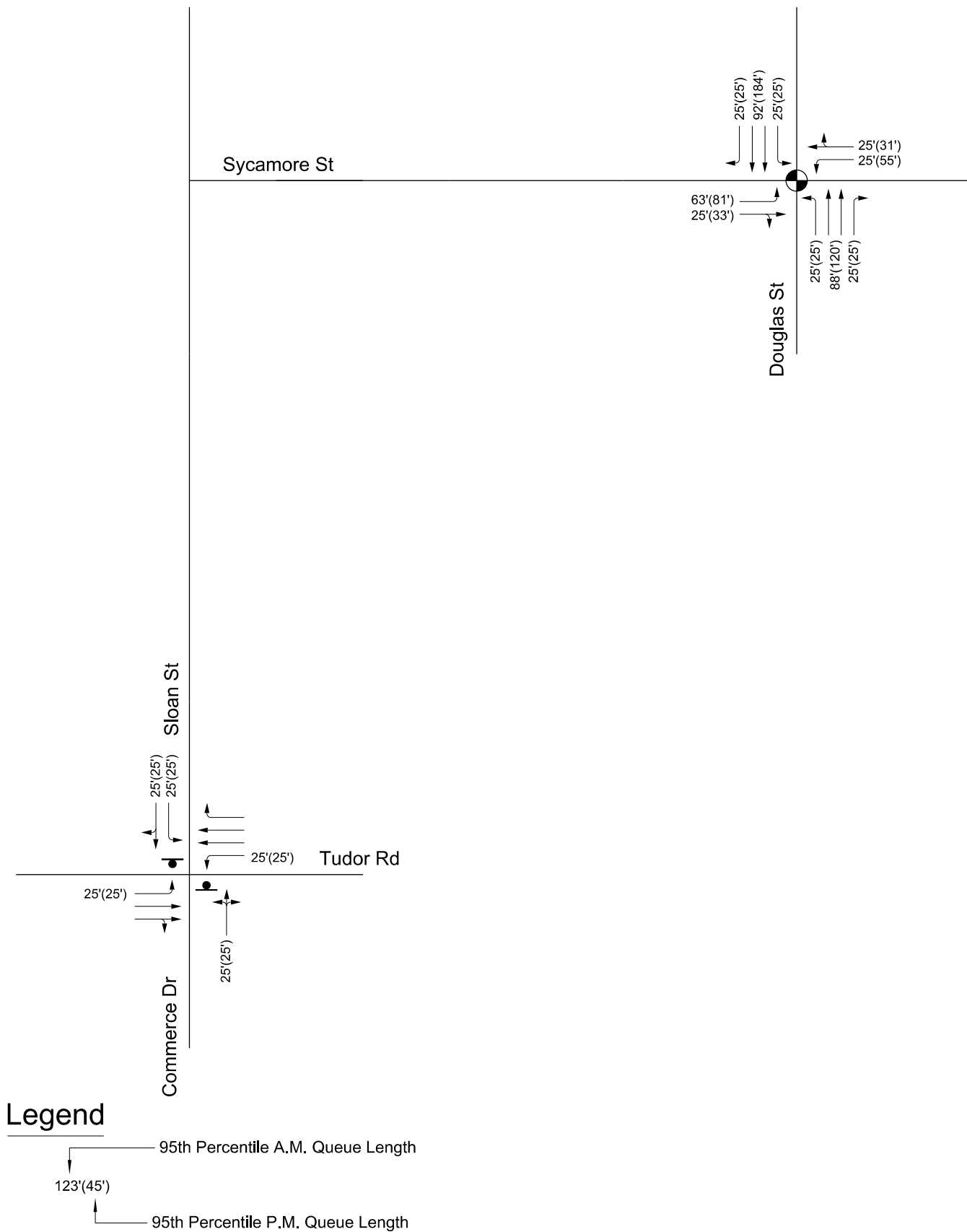
**EXISTING CONDITIONS
P.M. PEAK HOUR TRAFFIC VOLUMES**

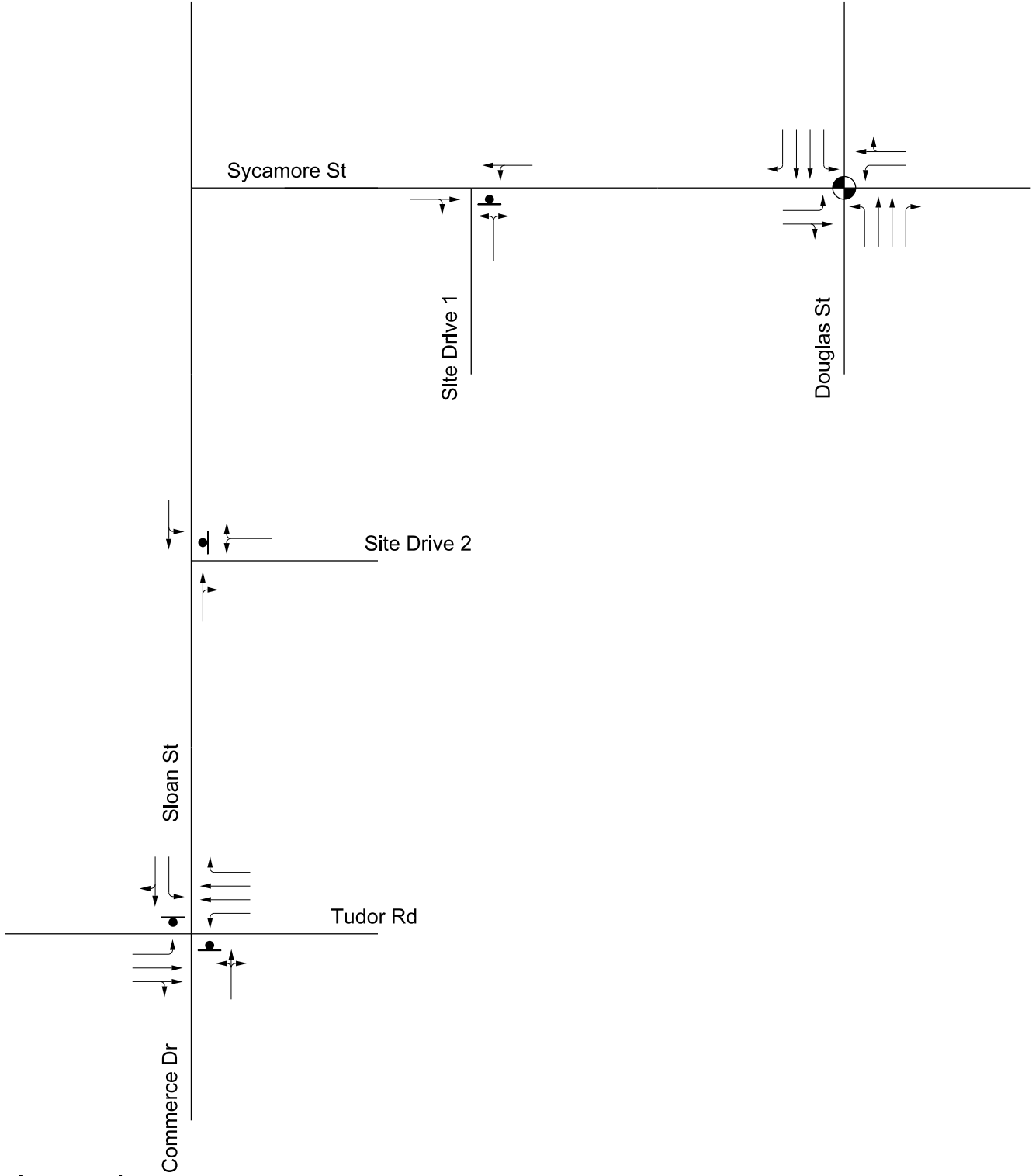
**Douglas Station
Traffic Impact Study**
Lee's Summit, Missouri

April 2021

No Scale

Figure A-5





Legend

-  - Traffic Signal
-  - Stop Sign
-  - Lane Configuration

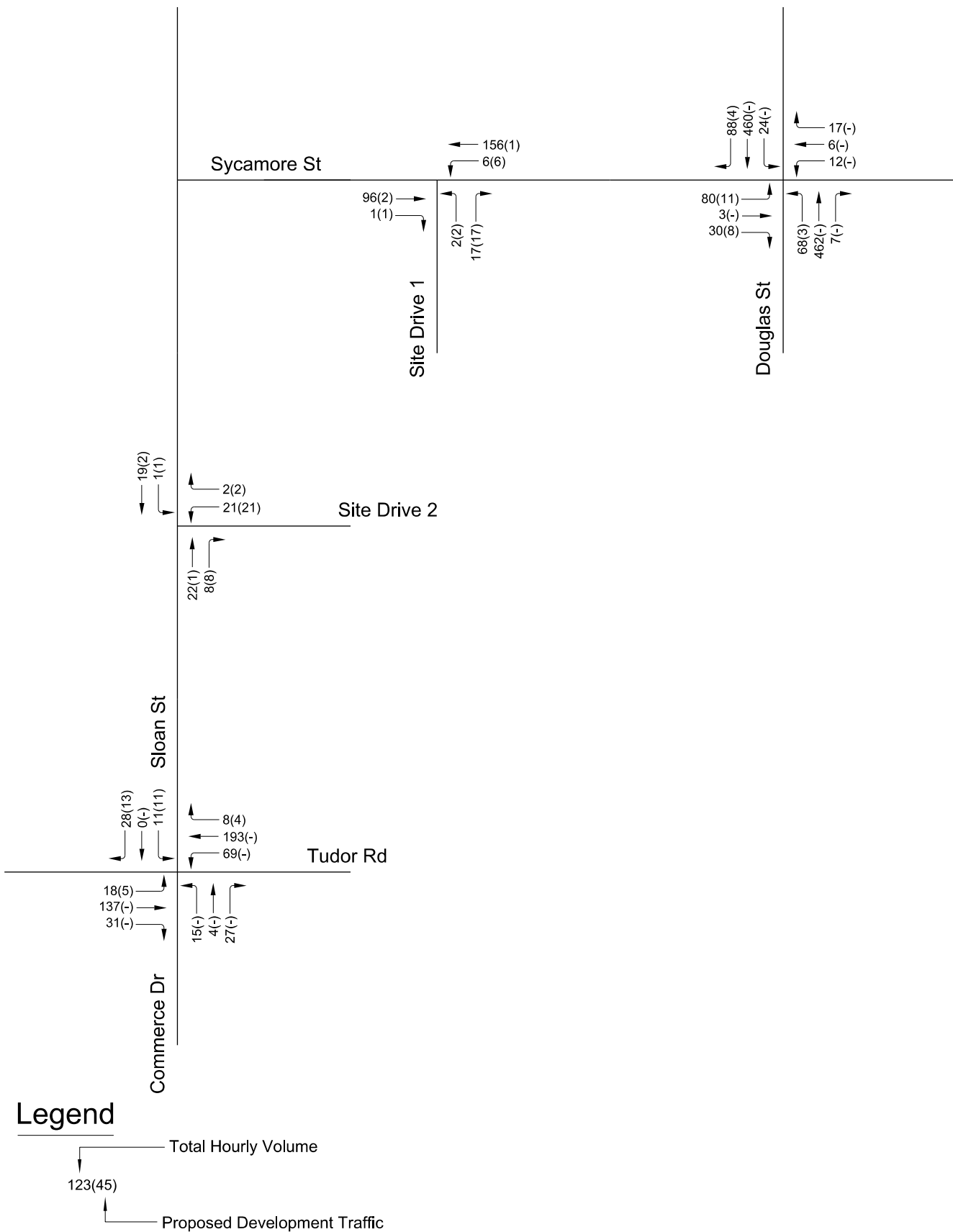


EXISTING PLUS PROPOSED DEVELOPMENT
LANE CONFIGURATIONS

Douglas Station
Traffic Impact Study
Lee's Summit, Missouri

April 2021
No Scale

Figure A-7



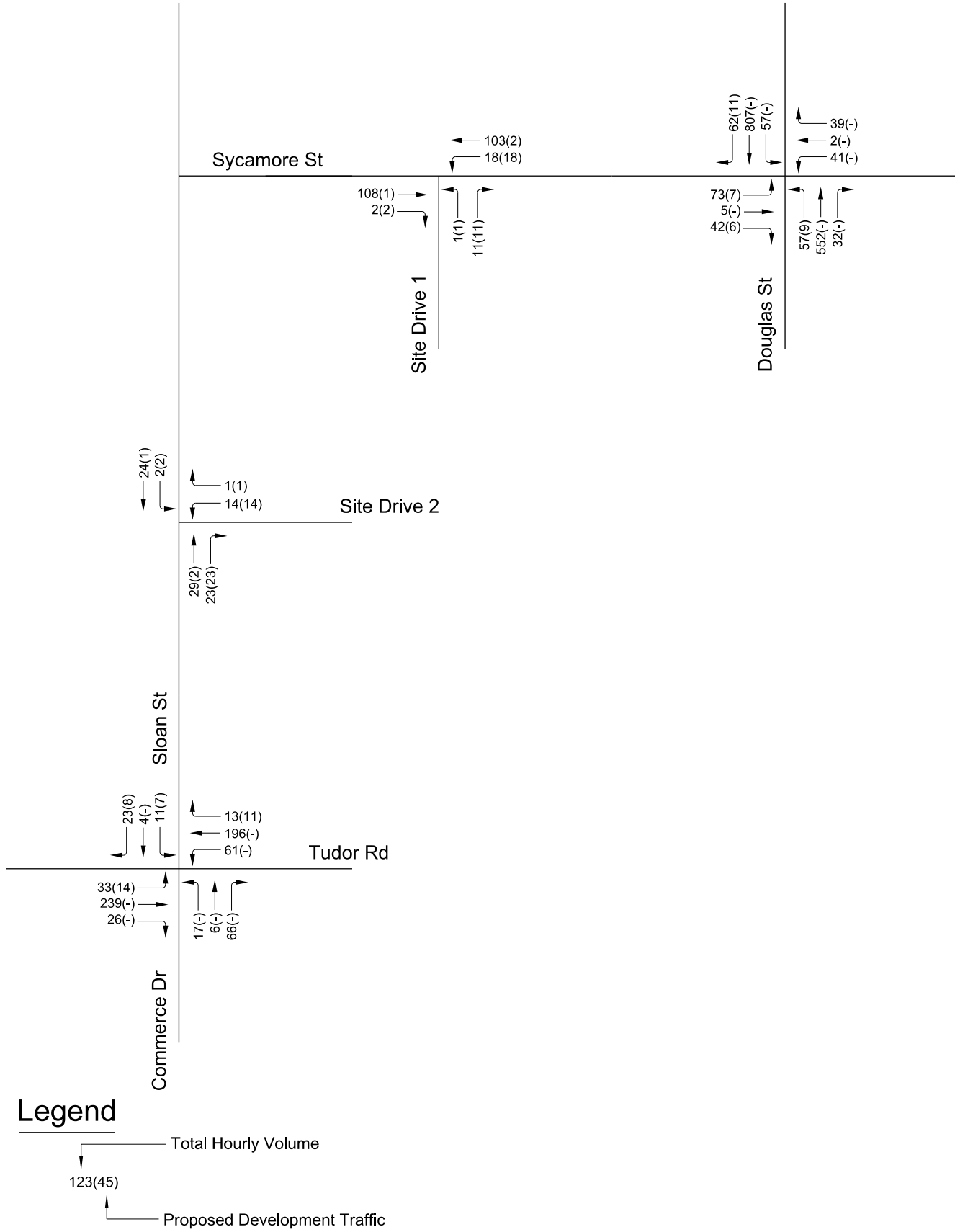
EXISTING PLUS PROPOSED DEVELOPMENT
A.M. PEAK HOUR TRAFFIC VOLUMES

Douglas Station
Traffic Impact Study
Lee's Summit, Missouri

April 2021

No Scale

Figure A-8



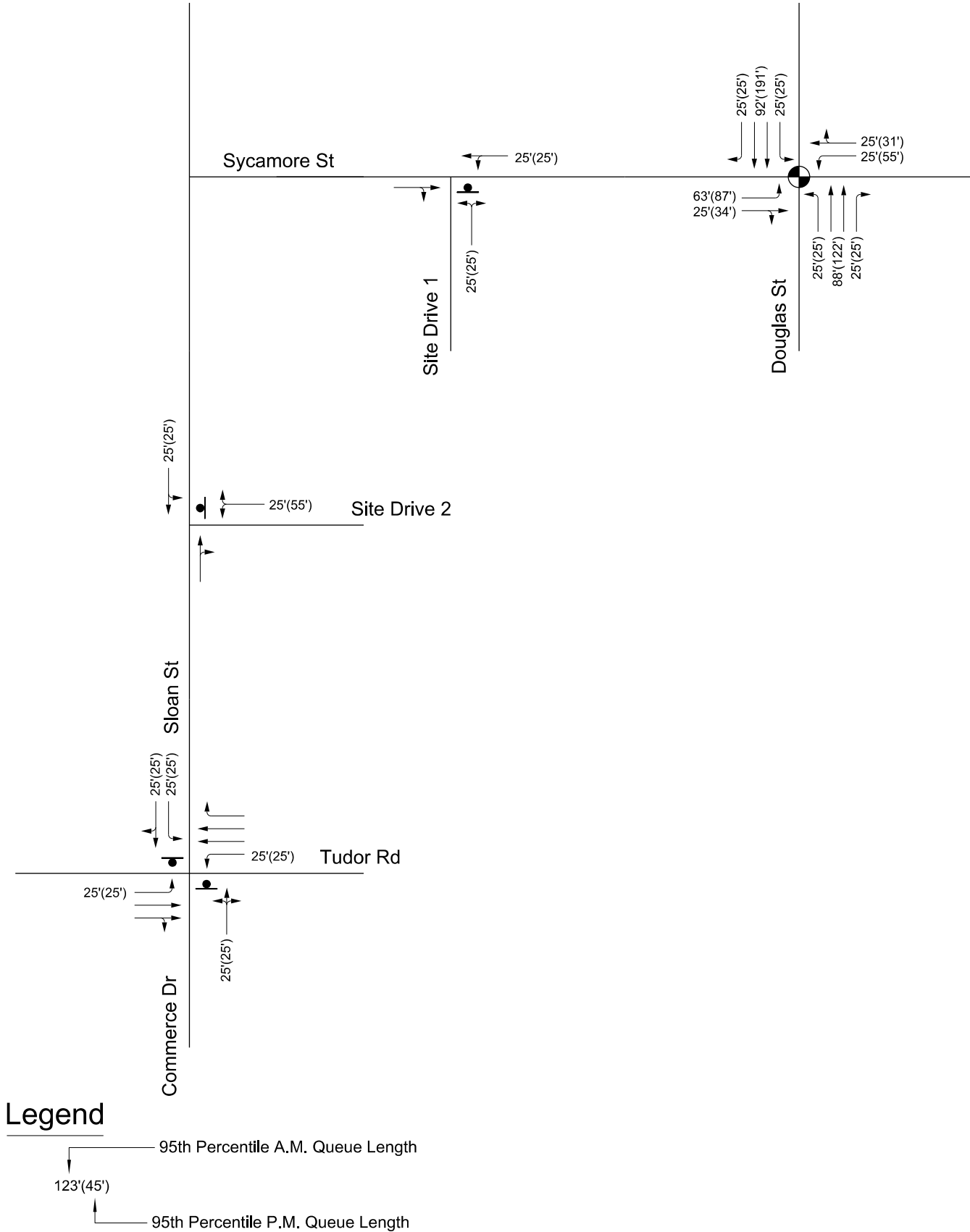
**EXISTING PLUS PROPOSED DEVELOPMENT
P.M. PEAK HOUR TRAFFIC VOLUMES**

**Douglas Station
Traffic Impact Study**
Lee's Summit, Missouri

April 2021

No Scale

Figure A-9



EXISTING PLUS PROPOSED DEVELOPMENT
A.M. AND P.M. 95TH PERCENTILE QUEUES

Douglas Station
Traffic Impact Study
Lee's Summit, Missouri

April 2021

No Scale

Figure A-10



Appendix B – Trip Generation and Distribution

See attached worksheets.

Douglas Station TIS

Lee's Summit, Missouri

Trip Generation

Land Uses	Intensity	ITE Code	Daily	A.M. Peak Hour			P.M. Peak Hour		
				Total	% In	% Out	Total	% In	% Out
Multifamily Housing (Mid-Rise)	168 units	221	914	57	26%	74%	42	61%	39%
Total Development Trips			914	57			73		
							45		28

Trip generation estimates based on 10th edition

Douglas Station TIS
Lee's Summit, Missouri

Existing Traffic Volumes
A.M. Peak Hour

Sycamore St & Sloan St										Sycamore St										Sycamore St and Douglas St																																		
15	193	←	+	—	—	—	—	←	4	15	193	←	+	—	—	—	—	←	193	←	4	15	193	←	+	—	—	—	—	←	193	←	4	15	193	←	+	—	—	—	—	←	193	←	4									
223	15	15	←	—	—	—	—	←	69	223	15	15	←	—	—	—	—	←	69	223	15	15	←	—	—	—	—	←	69	223	15	15	←	—	—	—	—	←	69	223	15	15	←	—	—	—	—	←	69					
404	13	13	↗	—	—	—	—	4/6/21	←	430	404	13	13	↗	—	—	—	—	4/6/21	←	430	404	13	13	↗	—	—	—	—	4/6/21	←	430	404	13	13	↗	—	—	—	—	4/6/21	←	430	404	13	13	↗	—	—	—	—	4/6/21	←	430
181	137	→	—	—	—	—	—	7:00	←	164	181	137	→	—	—	—	—	7:00	←	164	181	137	→	—	—	—	—	7:00	←	164	181	137	→	—	—	—	—	7:00	←	164	181	137	→	—	—	—	—	7:00	←	164				
31	31	←	—	—	—	—	—	137	→	27	31	31	←	—	—	—	—	137	→	27	31	31	←	—	—	—	—	137	→	27	31	31	←	—	—	—	—	137	→	27	31	31	←	—	—	—	—	137	→	27				
102	31	←	—	—	—	—	—	137	→	27	102	31	←	—	—	—	—	137	→	27	102	31	←	—	—	—	—	137	→	27	102	31	←	—	—	—	—	137	→	27	102	31	←	—	—	—	—	137	→	27				
148	69	↗	—	—	—	—	—	15	↗	46	148	69	↗	—	—	—	—	15	↗	46	148	69	↗	—	—	—	—	15	↗	46	148	69	↗	—	—	—	—	15	↗	46	148	69	↗	—	—	—	—	15	↗	46				
46	4	←	—	—	—	—	—	4	←	27	46	4	←	—	—	—	—	4	←	27	46	4	←	—	—	—	—	4	←	27	46	4	←	—	—	—	—	4	←	27	46	4	←	—	—	—	—	4	←	27				
17	17	←	—	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21				
38	38	←	—	—	—	—	—	38	←	21	38	38	←	—	—	—	—	38	←	21	38	38	←	—	—	—	—	38	←	21	38	38	←	—	—	—	—	38	←	21	38	38	←	—	—	—	—	38	←	21				
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17	17	←	—	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21				
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17	17	←	—	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21				
17	17	←	—	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21				
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17	17	←	—	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21				
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17	17	←	—	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21	17	17	←	—	—	—	—	17	←	21				
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Douglas Station TIS

Lee's Summit, Missouri

Existing Traffic Volumes

A.M. Peak Hour

Sycamore St & Sloan St

15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	101	103	105	107	109	111	113	115	117	119	121	123	125	127	129	131	133	135	137	139	141	143	145	147	149	151	153	155	157	159	161	163	165	167	169	171	173	175	177	179	181	183	185	187	189	191	193	195	197	199	201	203	205	207	209	211	213	215	217	219	221	223	225	227	229	231	233	235	237	239	241	243	245	247	249	251	253	255	257	259	261	263	265	267	269	271	273	275	277	279	281	283	285	287	289	291	293	295	297	299	301	303	305	307	309	311	313	315	317	319	321	323	325	327	329	331	333	335	337	339	341	343	345	347	349	351	353	355	357	359	361	363	365	367	369	371	373	375	377	379	381	383	385	387	389	391	393	395	397	399	401	403	405	407	409	411	413	415	417	419	421	423	425	427	429	431	433	435	437	439	441	443	445	447	449	451	453	455	457	459	461	463	465	467	469	471	473	475	477	479	481	483	485	487	489	491	493	495	497	499	501	503	505	507	509	511	513	515	517	519	521	523	525	527	529	531	533	535	537	539	541	543	545	547	549	551	553	555	557	559	561	563	565	567	569	571	573	575	577	579	581	583	585	587	589	591	593	595	597	599	601	603	605	607	609	611	613	615	617	619	621	623	625	627	629	631	633	635	637	639	641	643	645	647	649	651	653	655	657	659	661	663	665	667	669	671	673	675	677	679	681	683	685	687	689	691	693	695	697	699	701	703	705	707	709	711	713	715	717	719	721	723	725	727	729	731	733	735	737	739	741	743	745	747	749	751	753	755	757	759	761	763	765	767	769	771	773	775	777	779	781	783	785	787	789	791	793	795	797	799	801	803	805	807	809	811	813	815	817	819	821	823	825	827	829	831	833	835	837	839	841	843	845	847	849	851	853	855	857	859	861	863	865	867	869	871	873	875	877	879	881	883	885	887	889	891	893	895	897	899	901	903	905	907	909	911	913	915	917	919	921	923	925	927	929	931	933	935	937	939	941	943	945	947	949	951	953	955	957	959	961	963	965	967	969	971	973	975	977	979	981	983	985	987	989	991	993	995	997	999	1001	1003	1005	1007	1009	1011	1013	1015	1017	1019	1021	1023	1025	1027	1029	1031	1033	1035	1037	1039	1041	1043	1045	1047	1049	1051	1053	1055	1057	1059	1061	1063	1065	1067	1069	1071	1073	1075	1077	1079	1081	1083	1085	1087	1089	1091	1093	1095	1097	1099	1101	1103	1105	1107	1109	1111	1113	1115	1117	1119	1121	1123	1125	1127	1129	1131	1133	1135	1137	1139	1141	1143	1145	1147	1149	1151	1153	1155	1157	1159	1161	1163	1165	1167	1169	1171	1173	1175	1177	1179	1181	1183	1185	1187	1189	1191	1193	1195	1197	1199	1201	1203	1205	1207	1209	1211	1213	1215	1217	1219	1221	1223	1225	1227	1229	1231	1233	1235	1237	1239	1241	1243	1245	1247	1249	1251	1253	1255	1257	1259	1261	1263	1265	1267	1269	1271	1273	1275	1277	1279	1281	1283	1285	1287	1289	1291	1293	1295	1297	1299	1301	1303	1305	1307	1309	1311	1313	1315	1317	1319	1321	1323	1325	1327	1329	1331	1333	1335	1337	1339	1341	1343	1345	1347	1349	1351	1353	1355	1357	1359	1361	1363	1365	1367	1369	1371	1373	1375	1377	1379	1381	1383	1385	1387	1389	1391	1393	1395	1397	1399	1401	1403	1405	1407	1409	1411	1413	1415	1417	1419	1421	1423	1425	1427	1429	1431	1433	1435	1437	1439	1441	1443	1445	1447	1449	1451	1453	1455	1457	1459	1461	1463	1465	1467	1469	1471	1473	1475	1477	1479	1481	1483	1485	1487	1489	1491	1493	1495	1497	1499	1501	1503	1505	1507	1509	1511	1513	1515	1517	1519	1521	1523	1525	1527	1529	1531	1533	1535	1537	1539	1541	1543	1545	1547	1549	1551	1553	1555	1557	1559	1561	1563	1565	1567	1569	1571	1573	1575	1577	1579	1581	1583	1585	1587	1589	1591	1593	1595	1597	1599	1601	1603	1605	1607	1609	1611	1613	1615	1617	1619	1621	1623	1625	1627	1629	1631	1633	1635	1637	1639	1641	1643	1645	1647	1649	1651	1653	1655	1657	1659	1661	1663	1665	1667	1669	1671	1673	1675	1677	1679	1681	1683	1685	1687	1689	1691	1693	1695	1697	1699	1701	1703	1705	1707	1709	1711	1713	1715	1717	1719	1721	1723	1725	1727	1729	1731	1733	1735	1737	1739	1741	1743	1745	1747	1749	1751	1753	1755	1757	1759	1761	1763	1765	1767	1769	1771	1773	1775	1777	1779	1781	1783	1785	1787	1789	1791	1793	1795	1797	1799	1801	1803	1805	1807	1809	1811	1813	1815	1817	1819	1821	1823	1825	1827	1829	1831	1833	1835	1837	1839	1841	1843	1845	1847	1849	1851	1853	1855	1857	1859	1861	1863	1865	1867	1869	1871	1873	1875	1877	1879	1881	1883	1885	1887	1889	1891	1893	1895	1897	1899	1901	1903	1905	1907	1909	1911	1913	1915	1917	1919	1921	1923	1925	1927	1929	1931	1933	1935	1937	1939	1941	1943	1945	1947	1949	1951	1953	1955	1957	1959	1961	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005	2007	2009	2011	2013	2015	2017	2019	2021	2023	2025	2027	2029	2031	2033	2035	2037	2039	2041	2043	2045	2047	2049	2051	2053	2055	2057	2059	2061	2063	2065	2067	2069	2071	2073	2075	2077	2079	2081	2083	2085	2087	2089	2091	2093	2095	2097	2099	2101	2103	2105	2107	2109	2111	2113	2115	2117	2119	2121	2123	2125	2127	2129	2131	2133	2135	2137	2139	2141	2143	2145	2147	2149	2151	2153	2155	2157	2159	2161	2163	2165	2167	2169	2171	2173	2175	2177	2179	2181	2183	2185	2187	2189	2191	2193	2195	2197	2199	2201	2203	2205	2207	2209	2211	2213	2215	2217	2219	2221	2223	2225	2227	2229	2231	2233	2235	2237	2239	2241	2243	2245	2247	2249	2251	2253	2255	2257	2259	2261	2263	2265	2267	2269	2271	2273	2275	2277	2279	2281	2283	2285	2287	2289	2291	2293	2295	2297	2299	2301	2303	2305	2307	2309	2311	2313	2315	2317	2319	2321	2323	2325	2327	2329	2331	2333	2335	2337	2339	2341	2343	2345	2347	2349	2351	2353	2355	2357	2359	2361	2363	2365	2367	2369	2371	2373	2375	2377	2379	2381	2383	2385	2387	2389	2391	2393	2395	2397	2399	2401	2403	2405	2407	2409	2411	2413	2415	2417	2419	2421	2423	2425	2427	2429	2431	2433	2435	2437	2439	2441	2443	2445	2447	2449	2451	2453	2455	2457	2459	2461	2463	2465	2467	2469	2471	2473	2475	2477	2479	2481	2483	2485	2487	2489	2491	2493	2495	2497	2499	2501	2503	2505	2507	2509	2511	2513	2515	2517	2519	2521	2523	2525	2527	2529	2531	2533	2535	2537	2539	2541	2543	2545	2547	2549	2551	2553	2555	2557	2559	2561	2563	2565	2567	2569	2571	2573	2575	2577	2579	2581	2583	2585	2587	2589	2591	2593	2595	2597	2599	2601	2603	2605	2607	2609	2611	2613	2615	2617	2619	2621	2623	2625	2627	2629	2631	2633	2635	2637	2639	2641	2643	2645	2647	2649	2651	2653	2655	2657	2659	2661	2663	2665	2667	2669	2671	2673	2675	2677	2679	2681	2683	2685	2687	2689	2691	2693	2695	2697	2699	2701	2703	2705	2707	2709	2711	2713	2715	2717	2719	2721	2723	2725	2727	2729	2731	2733	2735	2737	2739	2741	2743	2745	2747	2749	2751	2753	2755	2757	2759	2761	2763	2765	2767	2769	2771	2773	2775	2777	2779	2781	2783	2785	2787	2789	2791	2793	2795	2797	2799	2801	2803	2805	2807	2809	2811	2813	2815	2817	2819	2821	2823	2825	2827	2829	2831	2833	2835	2837	2839	2841
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**Existing plus Proposed Development Traffic Volumes
A.M. Peak Hour**

P101210044

**Existing plus Proposed Development Traffic Volumes
A.M. Peak Hour**

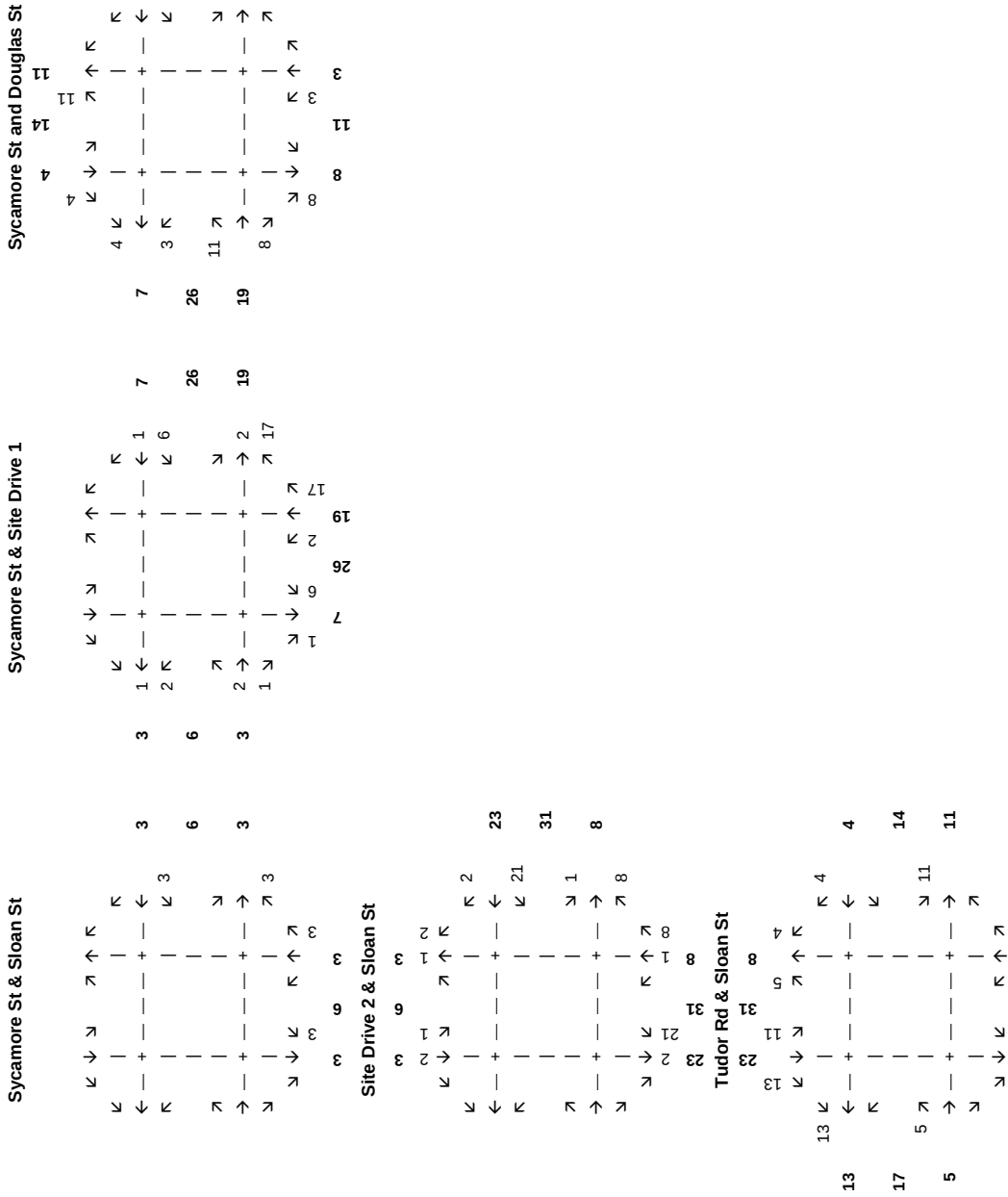
4/23/2021

Douglas Station TIS

Lee's Summit, Missouri

Proposed Development Trips

A.M. Peak Hour

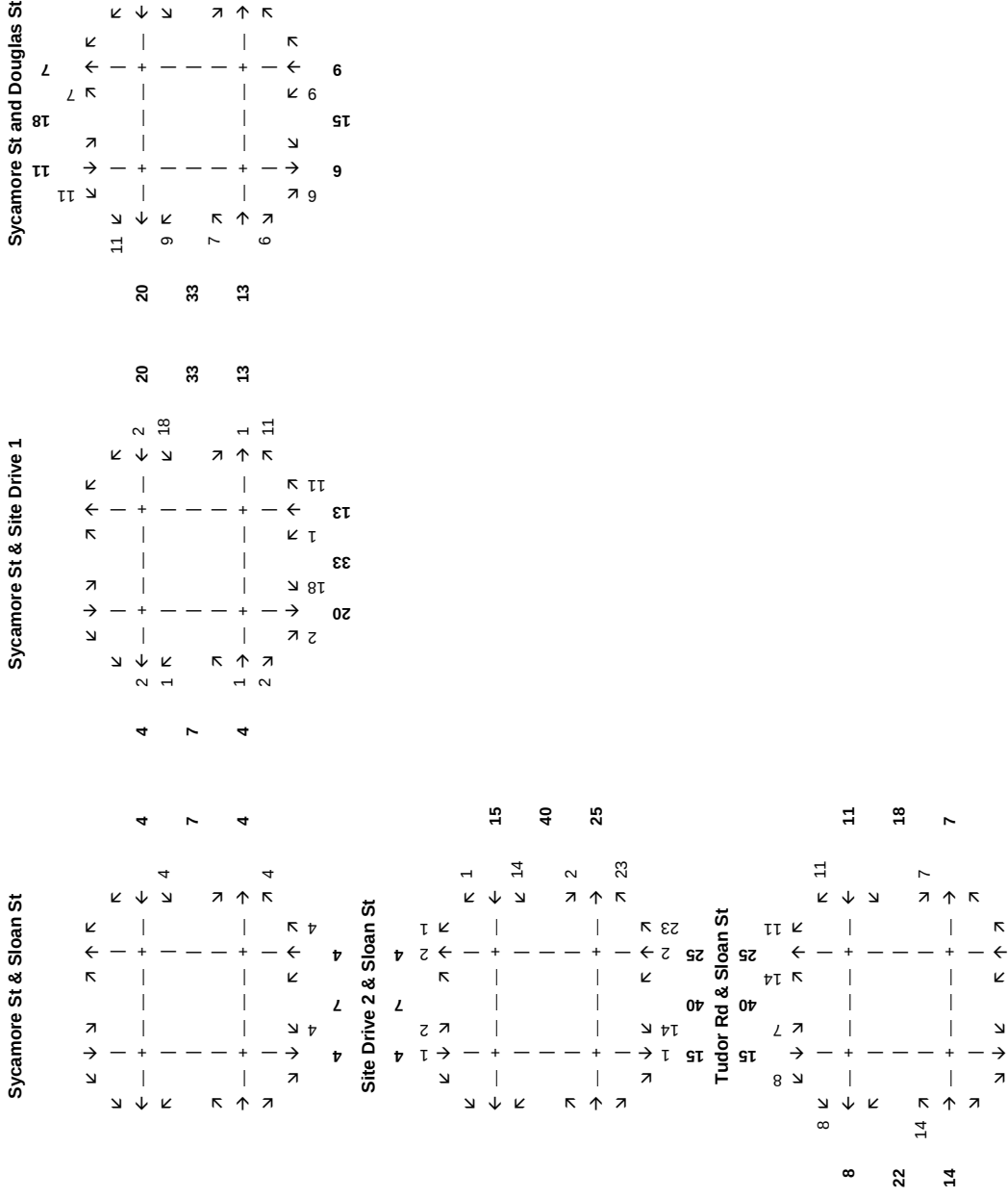


Douglas Station TIS

Lee's Summit, Missouri

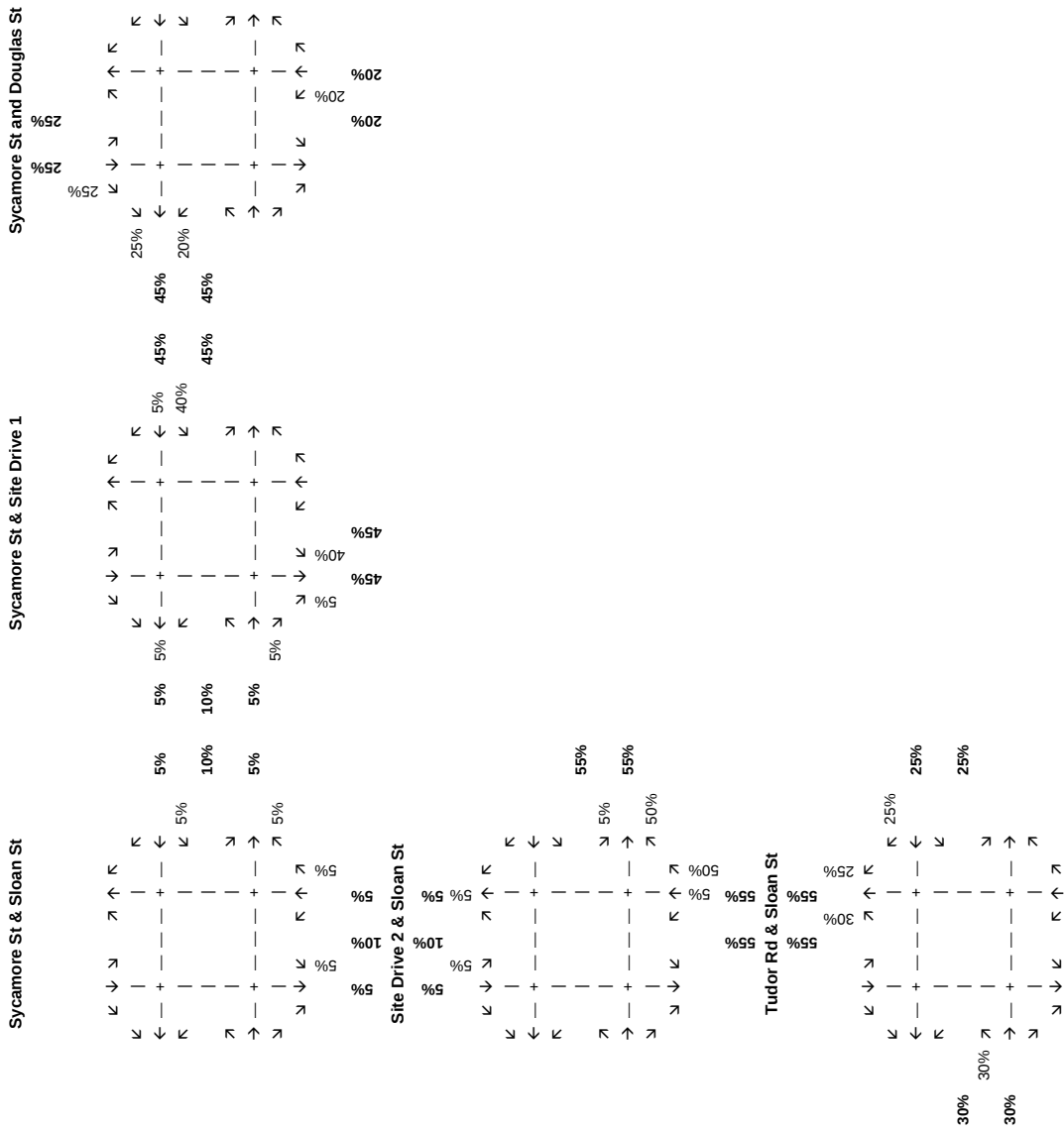
Proposed Development Trips

A.M. Peak Hour



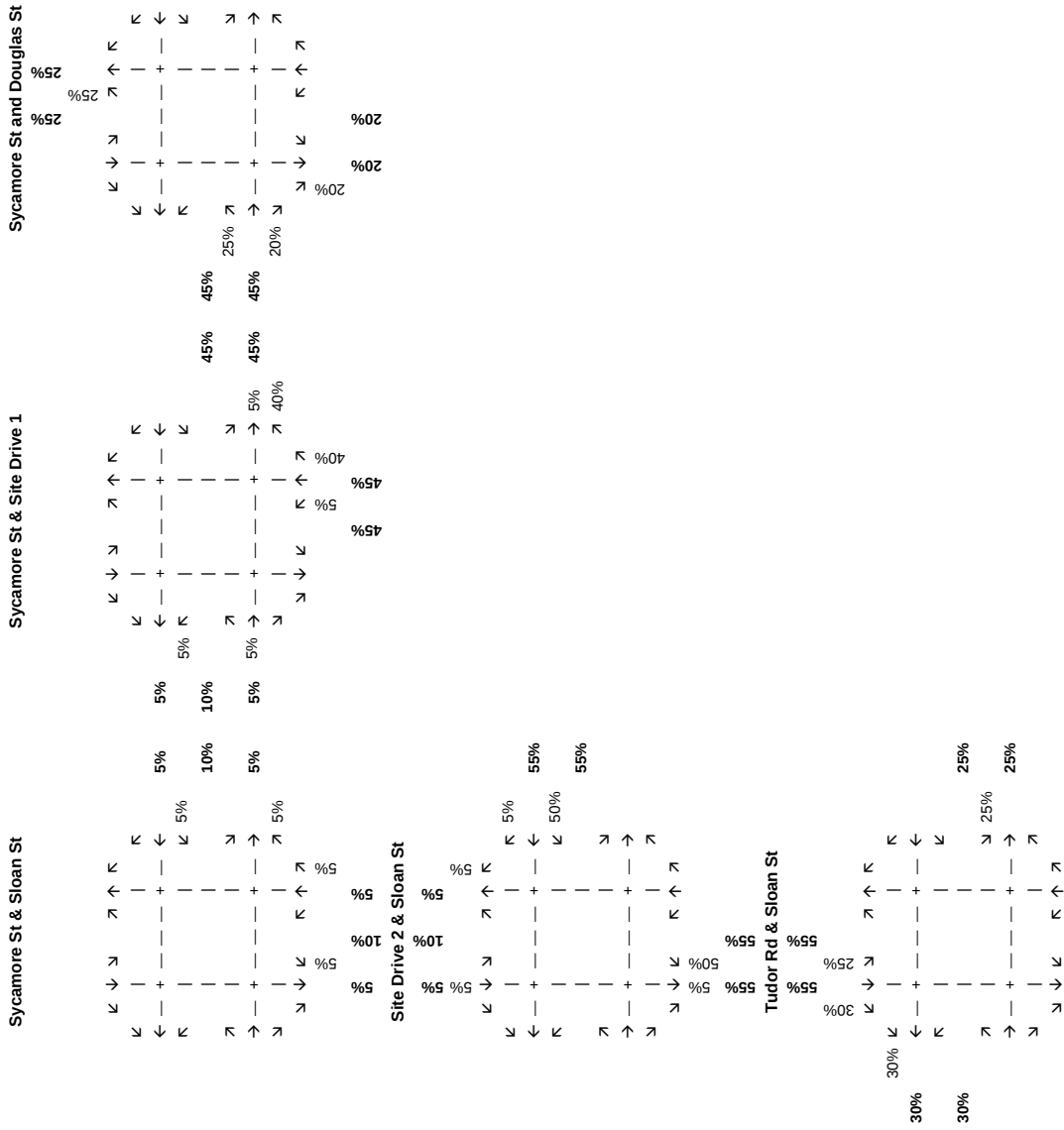
Douglas Station TIS Lee's Summit, Missouri

Trip Distribution Inbound



Douglas Station TIS Lee's Summit, Missouri

Trip Distribution Outbound





Appendix C – Capacity Analysis Reports

See attached worksheets.

Queues

1: Douglas St & Sycamore St

AM Peak Hour

Existing Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	26	13	24	68	486	7	25	484	88
v/c Ratio	0.39	0.11	0.07	0.10	0.10	0.20	0.01	0.04	0.21	0.08
Control Delay	32.3	13.2	25.2	15.0	4.0	7.0	0.0	4.0	8.4	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	13.2	25.2	15.0	4.0	7.0	0.0	4.0	8.4	1.3
Queue Length 50th (ft)	27	1	5	2	7	30	0	2	53	0
Queue Length 95th (ft)	63	20	19	21	19	88	0	9	92	12
Internal Link Dist (ft)		272		220		485			473	
Turn Bay Length (ft)	115		60		250		115	215		115
Base Capacity (vph)	259	321	258	324	726	2397	1112	732	2256	1054
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.08	0.05	0.07	0.09	0.20	0.01	0.03	0.21	0.08
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Douglas St & Sycamore St

AM Peak Hour
Existing Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	3	22	12	6	17	65	462	7	24	460	84
Future Volume (veh/h)	69	3	22	12	6	17	65	462	7	24	460	84
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	73	3	23	13	6	18	68	486	7	25	484	88
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	17	129	226	37	112	650	2095	934	656	1974	880
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.07	0.59	0.59	0.03	0.56	0.56
Sat Flow, veh/h	1387	186	1427	1385	412	1236	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	73	0	26	13	0	24	68	486	7	25	484	88
Grp Sat Flow(s),veh/h/ln	1387	0	1613	1385	0	1648	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.0	0.0	0.9	0.5	0.0	0.8	0.9	3.9	0.1	0.3	4.2	1.6
Cycle Q Clear(g_c), s	3.8	0.0	0.9	1.4	0.0	0.8	0.9	3.9	0.1	0.3	4.2	1.6
Prop In Lane	1.00		0.88	1.00		0.75	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	0	146	226	0	149	650	2095	934	656	1974	880
V/C Ratio(X)	0.32	0.00	0.18	0.06	0.00	0.16	0.10	0.23	0.01	0.04	0.25	0.10
Avail Cap(c_a), veh/h	383	0	326	380	0	333	769	2095	934	835	1974	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	25.0	25.6	0.0	24.9	4.5	5.8	5.0	5.1	6.8	6.2
Incr Delay (d2), s/veh	0.8	0.0	0.6	0.1	0.0	0.5	0.1	0.3	0.0	0.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.3	0.2	0.0	0.3	0.2	1.2	0.0	0.1	1.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	0.0	25.6	25.7	0.0	25.4	4.6	6.1	5.0	5.1	7.1	6.4
LnGrp LOS	C	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h	99			37			561			597		
Approach Delay, s/veh	27.0			25.6			5.9			6.9		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	39.0		11.4	7.0	41.0		11.4				
Change Period (Y+Rc), s	5.0	* 6		6.0	5.0	* 6		6.0				
Max Green Setting (Gmax), s	8.0	* 33		12.0	8.0	* 33		12.0				
Max Q Clear Time (g_c+I1), s	2.9	6.2		3.4	2.3	5.9		5.8				
Green Ext Time (p_c), s	0.0	3.7		0.0	0.0	3.5		0.1				

Intersection Summary

HCM 6th Ctrl Delay 8.5
HCM 6th LOS A

Notes

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

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

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	137	31	69	193	4	15	4	27	0	2	15
Future Vol, veh/h	13	137	31	69	193	4	15	4	27	0	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	115	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	163	37	82	230	5	18	5	32	0	2	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	235	0	0	200	0	0	492	611	100	508	624	115
Stage 1	-	-	-	-	-	-	212	212	-	394	394	-
Stage 2	-	-	-	-	-	-	280	399	-	114	230	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1329	-	-	1370	-	-	460	407	936	448	400	916
Stage 1	-	-	-	-	-	-	770	726	-	602	604	-
Stage 2	-	-	-	-	-	-	703	601	-	879	713	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1329	-	-	1370	-	-	425	379	936	405	372	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	425	379	-	405	372	-
Stage 1	-	-	-	-	-	-	762	718	-	595	568	-
Stage 2	-	-	-	-	-	-	645	565	-	834	705	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	2	11.4	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	616	1329	-	-	1370	-	-	-	782
HCM Lane V/C Ratio	0.089	0.012	-	-	0.06	-	-	-	0.026
HCM Control Delay (s)	11.4	7.7	-	-	7.8	-	-	0	9.7
HCM Lane LOS	B	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	-	0.1

Queues
1: Douglas St & Sycamore St

PM Peak Hour
Existing Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	45	45	45	53	607	35	63	887	56
v/c Ratio	0.46	0.20	0.28	0.20	0.10	0.25	0.03	0.10	0.35	0.05
Control Delay	45.3	15.2	39.5	13.9	3.8	7.9	0.1	3.6	7.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	15.2	39.5	13.9	3.8	7.9	0.1	3.6	7.9	0.9
Queue Length 50th (ft)	38	2	23	1	6	73	0	7	117	0
Queue Length 95th (ft)	81	33	55	31	17	120	0	19	184	8
Internal Link Dist (ft)		272		220		485			473	
Turn Bay Length (ft)	115		60		250		115	215		115
Base Capacity (vph)	320	412	320	410	578	2419	1109	708	2517	1151
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.11	0.14	0.11	0.09	0.25	0.03	0.09	0.35	0.05
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Douglas St & Sycamore St

PM Peak Hour
Existing Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	5	36	41	2	39	48	552	32	57	807	51
Future Volume (veh/h)	66	5	36	41	2	39	48	552	32	57	807	51
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	73	5	40	45	2	43	53	607	35	63	887	56
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	194	19	150	194	7	160	487	2260	1008	627	2276	1015
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.64	0.64	0.06	0.64	0.64
Sat Flow, veh/h	1361	179	1433	1361	71	1525	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	73	0	45	45	0	45	53	607	35	63	887	56
Grp Sat Flow(s),veh/h/ln	1361	0	1612	1361	0	1596	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.4	0.0	2.1	2.6	0.0	2.2	0.8	6.2	0.7	0.9	10.0	1.1
Cycle Q Clear(g_c), s	6.5	0.0	2.1	4.8	0.0	2.2	0.8	6.2	0.7	0.9	10.0	1.1
Prop In Lane	1.00		0.89	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	194	0	169	194	0	167	487	2260	1008	627	2276	1015
V/C Ratio(X)	0.38	0.00	0.27	0.23	0.00	0.27	0.11	0.27	0.03	0.10	0.39	0.06
Avail Cap(c_a), veh/h	378	0	387	378	0	383	610	2260	1008	742	2276	1015
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	34.4	36.6	0.0	34.4	4.8	6.7	5.6	4.4	7.2	5.6
Incr Delay (d2), s/veh	1.2	0.0	0.8	0.6	0.0	0.9	0.1	0.3	0.1	0.1	0.5	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	1.5	0.0	0.9	0.9	0.0	0.9	0.2	2.1	0.2	0.3	3.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	0.0	35.2	37.2	0.0	35.2	4.9	6.9	5.7	4.4	7.7	5.7
LnGrp LOS	D	A	D	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h	118			90			695			1006		
Approach Delay, s/veh	37.3			36.2			6.7			7.4		
Approach LOS	D			D			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	59.4		14.7	9.6	59.0		14.7				
Change Period (Y+Rc), s	5.0	* 6		6.0	5.0	* 6		6.0				
Max Green Setting (Gmax), s	10.0	* 53		20.0	10.0	* 53		20.0				
Max Q Clear Time (g_c+I1), s	2.8	12.0		6.8	2.9	8.2		8.5				
Green Ext Time (p_c), s	0.0	8.0		0.2	0.1	4.9		0.3				

Intersection Summary

HCM 6th Ctrl Delay 10.3
HCM 6th LOS B

Notes

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

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

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	239	26	61	196	2	17	6	66	4	4	15
Future Vol, veh/h	19	239	26	61	196	2	17	6	66	4	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	115	-	150	-	-	-	150	-	-
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	21	260	28	66	213	2	18	7	72	4	4	16
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	288	0	0	557	663	144	521	675	107
Stage 1	-	-	-	-	-	-	316	316	-	345	345	-
Stage 2	-	-	-	-	-	-	241	347	-	176	330	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1352	-	-	1271	-	-	413	380	877	438	374	926
Stage 1	-	-	-	-	-	-	670	654	-	644	635	-
Stage 2	-	-	-	-	-	-	741	633	-	809	644	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1352	-	-	1271	-	-	382	355	877	376	349	926
Mov Cap-2 Maneuver	-	-	-	-	-	-	382	355	-	376	349	-
Stage 1	-	-	-	-	-	-	659	644	-	634	602	-
Stage 2	-	-	-	-	-	-	685	600	-	724	634	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1.9			11.5			11.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	651	1352	-	-	1271	-	-	376	687			
HCM Lane V/C Ratio	0.149	0.015	-	-	0.052	-	-	0.012	0.03			
HCM Control Delay (s)	11.5	7.7	-	-	8	-	-	14.7	10.4			
HCM Lane LOS	B	A	-	-	A	-	-	B	B			
HCM 95th %tile Q(veh)	0.5	0	-	-	0.2	-	-	0	0.1			

Queues

1: Douglas St & Sycamore St

AM Peak Hour

Existing + Dev Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	84	35	13	24	72	486	32	25	484	93
v/c Ratio	0.43	0.14	0.07	0.10	0.10	0.20	0.03	0.04	0.22	0.09
Control Delay	33.3	12.1	25.2	15.0	4.1	7.2	0.0	4.0	8.6	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	12.1	25.2	15.0	4.1	7.2	0.0	4.0	8.6	1.5
Queue Length 50th (ft)	31	1	5	2	7	31	0	3	54	0
Queue Length 95th (ft)	71	24	19	21	20	88	0	9	92	14
Internal Link Dist (ft)		284		220		485			473	
Turn Bay Length (ft)	115		60		250		115	215		115
Base Capacity (vph)	259	327	256	324	722	2380	1105	727	2237	1046
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.11	0.05	0.07	0.10	0.20	0.03	0.03	0.22	0.09
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Douglas St & Sycamore St

AM Peak Hour
Existing + Dev Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	3	30	12	6	17	68	462	30	24	460	88
Future Volume (veh/h)	80	3	30	12	6	17	68	462	30	24	460	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	84	3	32	13	6	18	72	486	32	25	484	93
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	14	147	229	41	124	643	2074	925	637	1947	869
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.07	0.58	0.58	0.03	0.55	0.55
Sat Flow, veh/h	1387	138	1468	1373	412	1236	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	84	0	35	13	0	24	72	486	32	25	484	93
Grp Sat Flow(s),veh/h/ln	1387	0	1606	1373	0	1648	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.5	0.0	1.2	0.5	0.0	0.8	1.0	4.0	0.5	0.4	4.3	1.7
Cycle Q Clear(g_c), s	4.3	0.0	1.2	1.7	0.0	0.8	1.0	4.0	0.5	0.4	4.3	1.7
Prop In Lane	1.00		0.91	1.00		0.75	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	240	0	161	229	0	165	643	2074	925	637	1947	869
V/C Ratio(X)	0.35	0.00	0.22	0.06	0.00	0.15	0.11	0.23	0.03	0.04	0.25	0.11
Avail Cap(c_a), veh/h	378	0	320	366	0	328	755	2074	925	813	1947	869
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	24.9	25.7	0.0	24.8	4.8	6.0	5.3	5.4	7.1	6.5
Incr Delay (d2), s/veh	0.9	0.0	0.7	0.1	0.0	0.4	0.1	0.3	0.1	0.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.5	0.2	0.0	0.3	0.3	1.2	0.2	0.1	1.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	25.6	25.8	0.0	25.2	4.8	6.3	5.4	5.4	7.4	6.8
LnGrp LOS	C	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h	119		37			590			602			
Approach Delay, s/veh	27.0		25.4			6.1			7.2			
Approach LOS	C		C			A			A			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	39.0		12.0	7.1	41.2		12.0				
Change Period (Y+Rc), s	5.0	* 6		6.0	5.0	* 6		6.0				
Max Green Setting (Gmax), s	8.0	* 33		12.0	8.0	* 33		12.0				
Max Q Clear Time (g_c+I1), s	3.0	6.3		3.7	2.4	6.0		6.3				
Green Ext Time (p_c), s	0.1	3.7		0.0	0.0	3.6		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	9.0											
HCM 6th LOS	A											
Notes												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC
2: Site Drive 1 & Sycamore St

AM Peak Hour
Existing + Dev Conditions

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	96	1	6	156	2	17
Future Vol, veh/h	96	1	6	156	2	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
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	104	1	7	170	2	18
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	105	0	289	105
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1486	-	702	949
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	848	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1486	-	698	949
Mov Cap-2 Maneuver	-	-	-	-	698	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	844	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		9	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	914	-	-	1486	-	
HCM Lane V/C Ratio	0.023	-	-	0.004	-	
HCM Control Delay (s)	9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

HCM 6th TWSC
3: Sloan St & Site Drive 2

AM Peak Hour
Existing + Dev Conditions

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	2	22	8	1	19
Future Vol, veh/h	21	2	22	8	1	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	2	24	9	1	21

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	52	29	0	0	33
Stage 1	29	-	-	-	-
Stage 2	23	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	957	1046	-	-	1579
Stage 1	994	-	-	-	-
Stage 2	1000	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	956	1046	-	-	1579
Mov Cap-2 Maneuver	956	-	-	-	-
Stage 1	994	-	-	-	-
Stage 2	999	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	963	1579
HCM Lane V/C Ratio	-	-	0.026	0.001
HCM Control Delay (s)	-	-	8.8	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC
4: Sloan St & Tudor Rd

AM Peak Hour
Existing + Dev Conditions

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	137	31	69	193	8	15	4	27	11	2	28
Future Vol, veh/h	18	137	31	69	193	8	15	4	27	11	2	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	115	-	150	-	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	163	37	82	230	10	18	5	32	13	2	33
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	240	0	0	200	0	0	504	628	100	520	636	115
Stage 1	-	-	-	-	-	-	224	224	-	394	394	-
Stage 2	-	-	-	-	-	-	280	404	-	126	242	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1324	-	-	1370	-	-	451	398	936	439	394	916
Stage 1	-	-	-	-	-	-	758	717	-	602	604	-
Stage 2	-	-	-	-	-	-	703	598	-	865	704	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1324	-	-	1370	-	-	408	368	936	396	364	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	408	368	-	396	364	-
Stage 1	-	-	-	-	-	-	746	706	-	592	568	-
Stage 2	-	-	-	-	-	-	634	562	-	817	693	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			2			11.6			10.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	601	1324	-	-	1370	-	-	396	832			
HCM Lane V/C Ratio	0.091	0.016	-	-	0.06	-	-	0.033	0.043			
HCM Control Delay (s)	11.6	7.8	-	-	7.8	-	-	14.4	9.5			
HCM Lane LOS	B	A	-	-	A	-	-	B	A			
HCM 95th %tile Q(veh)	0.3	0	-	-	0.2	-	-	0.1	0.1			

Queues
1: Douglas St & Sycamore St

PM Peak Hour
Existing + Dev Conditions

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	51	45	45	63	607	35	63	887	68
v/c Ratio	0.49	0.22	0.28	0.19	0.13	0.25	0.03	0.10	0.37	0.06
Control Delay	46.0	14.5	39.0	13.7	4.0	8.1	0.1	3.8	9.0	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	14.5	39.0	13.7	4.0	8.1	0.1	3.8	9.0	1.5
Queue Length 50th (ft)	42	3	23	1	7	74	0	7	119	0
Queue Length 95th (ft)	87	34	55	31	20	122	0	20	191	12
Internal Link Dist (ft)		272		220		485			473	
Turn Bay Length (ft)	115		60		250		115	215		115
Base Capacity (vph)	319	414	317	408	562	2409	1105	713	2410	1105
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.12	0.14	0.11	0.11	0.25	0.03	0.09	0.37	0.06
Intersection Summary										

HCM 6th Signalized Intersection Summary

1: Douglas St & Sycamore St

PM Peak Hour

Existing + Dev Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	5	42	41	2	39	57	552	32	57	807	62
Future Volume (veh/h)	73	5	42	41	2	39	57	552	32	57	807	62
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	80	5	46	45	2	43	63	607	35	63	887	68
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	17	160	195	8	168	484	2247	1002	622	2247	1002
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.06	0.63	0.63	0.06	0.63	0.63
Sat Flow, veh/h	1361	158	1451	1354	71	1525	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	80	0	51	45	0	45	63	607	35	63	887	68
Grp Sat Flow(s),veh/h/ln	1361	0	1609	1354	0	1596	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.8	0.0	2.4	2.6	0.0	2.2	1.0	6.4	0.7	1.0	10.3	1.4
Cycle Q Clear(g_c), s	7.0	0.0	2.4	5.1	0.0	2.2	1.0	6.4	0.7	1.0	10.3	1.4
Prop In Lane	1.00		0.90	1.00		0.96	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	0	177	195	0	176	484	2247	1002	622	2247	1002
V/C Ratio(X)	0.40	0.00	0.29	0.23	0.00	0.26	0.13	0.27	0.03	0.10	0.39	0.07
Avail Cap(c_a), veh/h	375	0	384	369	0	381	598	2247	1002	737	2247	1002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	34.3	36.6	0.0	34.2	5.0	6.8	5.8	4.5	7.6	5.9
Incr Delay (d2), s/veh	1.3	0.0	0.9	0.6	0.0	0.8	0.1	0.3	0.1	0.1	0.5	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	1.6	0.0	1.0	0.9	0.0	0.9	0.3	2.2	0.2	0.3	3.5	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	0.0	35.2	37.2	0.0	34.9	5.1	7.1	5.9	4.6	8.1	6.1
LnGrp LOS	D	A	D	D	A	C	A	A	A	A	A	A
Approach Vol, veh/h	131			90			705			1018		
Approach Delay, s/veh	37.3			36.1			6.9			7.7		
Approach LOS	D			D			A			A		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	59.0		15.2	9.6	59.0		15.2				
Change Period (Y+Rc), s	5.0	* 6		6.0	5.0	* 6		6.0				
Max Green Setting (Gmax), s	10.0	* 53		20.0	10.0	* 53		20.0				
Max Q Clear Time (g_c+I1), s	3.0	12.3		7.1	3.0	8.4		9.0				
Green Ext Time (p_c), s	0.1	8.0		0.2	0.1	4.9		0.3				

Intersection Summary

HCM 6th Ctrl Delay 10.7

HCM 6th LOS B

Notes

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

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

HCM 6th TWSC
2: Site Drive 1 & Sycamore St

PM Peak Hour
Existing + Dev Conditions

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	108	2	18	103	1	11
Future Vol, veh/h	108	2	18	103	1	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
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	117	2	20	112	1	12
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	119	0	270	118
Stage 1	-	-	-	-	118	-
Stage 2	-	-	-	-	152	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1469	-	719	934
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	876	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1469	-	708	934
Mov Cap-2 Maneuver	-	-	-	-	708	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	863	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1.1		9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	910	-	-	1469	-	
HCM Lane V/C Ratio	0.014	-	-	0.013	-	
HCM Control Delay (s)	9	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 6th TWSC
3: Sloan St & Site Drive 2

PM Peak Hour
Existing + Dev Conditions

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	1	29	23	2	24
Future Vol, veh/h	14	1	29	23	2	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	1	32	25	2	26

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	75	45	0	0	57
Stage 1	45	-	-	-	-
Stage 2	30	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	928	1025	-	-	1547
Stage 1	977	-	-	-	-
Stage 2	993	-	-	-	-
Platoon blocked, %		-	-	-	-
Mov Cap-1 Maneuver	927	1025	-	-	1547
Mov Cap-2 Maneuver	927	-	-	-	-
Stage 1	977	-	-	-	-
Stage 2	992	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	933	1547
HCM Lane V/C Ratio	-	-	0.017	0.001
HCM Control Delay (s)	-	-	8.9	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 6th TWSC
4: Sloan St & Tudor Rd

PM Peak Hour
Existing + Dev Conditions

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	239	26	61	196	13	17	6	66	11	4	23
Future Vol, veh/h	33	239	26	61	196	13	17	6	66	11	4	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	-	115	-	150	-	-	-	150	-	-
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	260	28	66	213	14	18	7	72	12	4	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	227	0	0	288	0	0	587	705	144	551	705	107
Stage 1	-	-	-	-	-	-	346	346	-	345	345	-
Stage 2	-	-	-	-	-	-	241	359	-	206	360	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1339	-	-	1271	-	-	393	359	877	417	359	926
Stage 1	-	-	-	-	-	-	643	634	-	644	635	-
Stage 2	-	-	-	-	-	-	741	626	-	777	625	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1339	-	-	1271	-	-	356	331	877	355	331	926
Mov Cap-2 Maneuver	-	-	-	-	-	-	356	331	-	355	331	-
Stage 1	-	-	-	-	-	-	626	617	-	627	602	-
Stage 2	-	-	-	-	-	-	679	593	-	687	608	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	1.8	11.7	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	631	1339	-	-	1271	-	-	355	731
HCM Lane V/C Ratio	0.153	0.027	-	-	0.052	-	-	0.034	0.04
HCM Control Delay (s)	11.7	7.8	-	-	8	-	-	15.5	10.1
HCM Lane LOS	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.2	-	-	0.1	0.1