Appendix H
Traffic

SLOVER DISTRIBUTION CENTER
DRAFT
ENVIRONMENTAL IMPACT REPORT

BLOOMINGTON BUSINESS CENTER
Traffic Impact Analysis Report

Prepared for

County of San Bernardino

385 N. Arrowhead Avenue
San Bernardino, CA 92415

Prepared by

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EXECUTIVE SUMMARY

This study analyzes the potential traffic impact of the proposed Bloomington Business Center (the "Project"), located on a vacant 17.34-acre site south of Slover Avenue between Laurel Avenue and Locust Avenue in the unincorporated community of Bloomington within San Bernardino County. The proposed project will consist of a 344,000 square-foot warehouse development. The project will take access via three driveways; one on Slover Avenue, one on Laurel Avenue, and one on Locust Avenue.

The project is expected to generate approximately 1,604 trips per day, which includes approximately 137 (107 inbound and 30 outbound) AM peak hour trips and approximately 143 (36 inbound and 107 outbound) PM peak hour trips.

The Existing Plus Project conditions has been analyzed to comply with California Environmental Quality Act (CEQA) documentation. This condition is provided for informational purposes only. The results of the analysis show that all the study intersections are currently operating at acceptable levels of service (LOS D or better). The addition of project-related trips to existing traffic volumes result in no significant impacts at any study intersection. Therefore, mitigation is not required under the Existing Plus Project conditions.

The Opening Year 2018 With Ambient Traffic Without Project conditions analysis includes the addition of ambient growth (1%) to the existing traffic volumes. Under this condition, the results of the analysis show that all the study intersections operate at acceptable levels of service (LOS D or better). The addition of project-related trips to the Opening Year 2018 With Ambient Traffic Without Project traffic volumes result in one significant impact at the intersection of Slover Avenue at Sierra Avenue. Therefore, mitigation is required under the Opening Year 2018 With Ambient Traffic With Project condition at this location.

The Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project conditions analysis includes the addition of traffic generated by nine (9) approved or pending projects located in the San Bernardino County, City of Rialto and the City of Fontana. The cumulative projects that would contribute traffic within the larger study area are forecast to generate approximately 20,069 trips per day, which includes approximately 1,515 AM peak hour trips and approximately 1,652 PM peak hour trips.

Under Opening Year 2018 With Ambient Traffic With Cumulative Projects Without and With Project conditions, the analysis results show the following intersections are forecast to operate at unacceptable levels of service i.e. LOS "E" or "F" which also means the following intersections are significantly impacted by the proposed project and mitigation measures are required:

- Slover Avenue / Sierra Avenue
- I-10 Eastbound Ramps / Cedar Avenue
- I-10 Westbound Ramps / Cedar Avenue

The Interstate 10 / Cedar Avenue interchange improvements are planned and funded with completion of the interchange project scheduled in Year 2020 according to the Supplemental Traffic

Operations Report-Cedar Avenue Interchange on Interstate 10 (Parsons, May 2016). For the time period between the projects opening Year in 2018 and completion in 2020 of the Cedar Avenue interchange improvements, there would be a temporary significant unavoidable impact at the two ramp intersections. Once the interchange improvements are completed, the project's impact on level of service would be eliminated.

Under Horizon Year 2038 without Project conditions, the analysis results show that all study intersections are expected to operate at acceptable levels of service except for Slover Ave. / Sierra Ave. and Slover Ave. / Linden Avenue which are forecast to operate at a deficient LOS "E". The addition of project-related trips to Horizon Year 2038 without Project traffic volumes result in two significant impacts at the following intersections:

- Slover Avenue / Sierra Avenue
- Slover Avenue / Linden Avenue

According to SANBAG, the I-10 / Cedar Ave. interchange improvements are fully funded and expected to be built by Year 2020. With completion of these improvements, no significant impacts are expected to occur under Horizon Year 2038 conditions since the intersections at the I-10 / Cedar Avenue interchange are forecast to operate at acceptable levels of service with the improvements.

Table ES-1 summarize the results of the peak hour intersection analysis under the Existing Conditions without and with the proposed project. **Table ES-2** summarize the results of the peak hour intersection analysis under the Opening Year 2018 With Ambient Traffic Conditions without and with the proposed project. The results of the peak hour intersection analysis under the Opening Year 2018 With Ambient Traffic With Cumulative Projects without and with the project are summarized in **Table ES-3**. **Table ES-4** summarize the results of the peak hour intersection analysis under the Horizon Year 2038 conditions with and without the proposed project.

Table ES-5 summarizes the recommended mitigation measures and fair share contributions toward the intersection improvements. The County of San Bernardino plans on widening Cedar Avenue from four to six lanes from Valley Boulevard to Orange Street along with the improvements to the I-10 interchange. The intersection analysis in this report assumes these improvements are completed along Cedar Avenue in the Horizon Year 2038 Without and With Project conditions.

Table ES-6 through **Table ES-9** summarize the results of the Interstate 10 mainline freeway analysis under the Existing, Opening Year 2018 With Ambient Growth, Opening Year 2018 With Ambient Growth With Cumulative Projects and Horizon Year 2038 conditions without and with the proposed project. The analysis results show the addition of project traffic on study freeway segments do not result in significant impacts. Therefore, mitigation is not required.

Exhibit ES-1 illustrate the recommended improvements at the significantly impacted intersections.

Table ES-1
Summary of Peak Hour Intersection Operations
Existing Conditions – Without and With Proposed Project

Study Intersection	Existing Conditions		Existing Plus Project Conditions		Significant Impact?	
	AM Delay[1] - LOS	PM Delay[1] - LOS	AM Delay[1] - LOS	PM Delay[1] - LOS	AM	PM
1 - Slover Avenue / Sierra Avenue	42.1 - D	54.3 - D	43.2 - D	54.5 - D	No	No
2 - Slover Avenue / Production Avenue	27.8 - C	26.6 - C	29.1 - C	28.4 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	22.2 - C	15.2 - B	23.4 - C	15.7 - B	No	No
4 - Slover Avenue / Tamarind Avenue	14.8 - B	15.1 - B	15.3 - B	15.4 - B	No	No
5 - Slover Avenue / Alder Avenue	16.1 - C	15.3 - C	16.5 - C	15.9 - C	No	No
6 - Slover Avenue / Laurel Avenue	27.7 - C	15.4 - B	27.9 - C	15.7 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.2 - B	8.8 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		11.3 - B	13.0 - B	No	No
9 - Slover Avenue / Locust Avenue	18.4 - B	17.0 - B	18.8 - B	17.6 - B	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		11.6 - B	13.3 - B	No	No
11 - Slover Avenue / Linden Avenue	23.0 - C	25.8 - D	26.1 - D	31.8 - D	No	No
12 - Slover Avenue / Cedar Avenue	29.1 - C	30.9 - C	31.3 - C	35.2 - D	No	No
13 - Cedar Avenue / Orange Street	16.2 - B	20.2 - C	16.5 - B	20.2 - C	No	No
14 - Sierra Avenue / I-10 Ramps	27.5 - C	34.3 - C	27.9 - C	35.2 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	51.5 - D	44.5 - D	52.0 - D	46.8 - D	No	No
16 - Cedar Avenue / I-10 WB Ramps	43.3 - D	27.7 - C	43.8 - D	28.1 - C	No	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Seconds of delay per vehicle.

LOS = level of service.

Table ES-2
Summary of Peak Hour Intersection Operations
Opening Year 2018 With Ambient Traffic Conditions – Without and With Proposed Project

Study Intersection	Opening Year 2018 With Ambient Traffic Without Project Conditions		Opening Year 2018 With Ambient Traffic With Project Conditions		Significant Impact?	
	AM	PM	AM	PM		
	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	AM	PM
1 - Slover Avenue / Sierra Avenue	42.5 - D	54.4 - D	43.8 - D	**55.2 - E**	No	**Yes**
2 - Slover Avenue / Production Avenue	28.2 - C	27.3 - C	29.3 - C	29.7 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	22.6 - C	15.4 - B	23.9 - C	16.6 - B	No	No
4 - Slover Avenue / Tamarind Avenue	15.1 - B	15.5 - B	15.6 - B	18.1 - B	No	No
5 - Slover Avenue / Alder Avenue	16.4 - C	15.4 - C	16.5 - C	15.9 - C	No	No
6 - Slover Avenue / Laurel Avenue	28.0 - C	16.4 - B	28.1 - C	17.0 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.3 - B	8.8 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		11.1 - B	13.7 - B	No	No
9 - Slover Avenue / Locust Avenue	18.6 - B	17.3 - B	21.3 - C	18.4 - B	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		11.6 - B	13.4 - B	No	No
11 - Slover Avenue / Linden Avenue	23.7 - C	26.8 - D	26.9 - D	32.1 - D	No	No
12 - Slover Avenue / Cedar Avenue	29.5 - C	31.2 - C	32.3 - C	35.8 - D	No	No
13 - Cedar Avenue / Orange Street	16.3 - B	20.4 - C	16.3 - B	20.4 - C	No	No
14 - Sierra Avenue / I-10 Ramps	27.6 - C	34.9 - C	27.6 - C	35.4 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	52.6 - D	44.8 - D	53.2 - D	46.9 - D	No	No
16 - Cedar Avenue / I-10 WB Ramps	44.0 - D	28.1 - C	44.9 - D	28.6 - C	No	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Seconds of delay per vehicle.

LOS = level of service.

Table ES-3
Summary of Peak Hour Intersection Operations
Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions
Without and With Proposed Project

Study Intersection	Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project		Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project		Significant Impact?	
	AM	PM	AM	PM		
	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	AM	PM
1 - Slover Avenue / Sierra Avenue	44.4 - D	**58.1 - E**	48.4 - D	**59.3 - E**	No	**Yes**
2 - Slover Avenue / Production Avenue	32.4 - C	30.0 - C	34.0 - C	31.0 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	22.3 - C	15.7 - B	22.3 - C	16.9 - B	No	No
4 - Slover Avenue / Tamarind Avenue	16.6 - B	32.3 - C	19.1 - B	34.4 - C	No	No
5 - Slover Avenue / Alder Avenue	17.0 - C	16.3 - C	17.4 - C	16.8 - C	No	No
6 - Slover Avenue / Laurel Avenue	29.0 - C	15.7 - B	29.6 - C	15.9 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.3 - B	8.8 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		11.4 - B	14.3 - B	No	No
9 - Slover Avenue / Locust Avenue	18.8 - B	18.7 - B	21.5 - C	21.3 - C	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		11.6 - B	13.4 - B	No	No
11 - Slover Avenue / Linden Avenue	28.6 - D	32.4 - D	33.1 - D	33.6 - D	No	No
12 - Slover Avenue / Cedar Avenue	50.0 - D	43.6 - D	51.6 - D	51.9 - D	No	No
13 - Cedar Avenue / Orange Street	24.6 - C	23.0 - C	26.0 - C	24.0 - C	No	No
14 - Sierra Avenue / I-10 Ramps	28.2 - C	35.9 - D	28.3 - C	36.6 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	**67.1 - E**	54.7 - D	**69.2 - E**	**55.6 - E**	**Yes**	**Yes**
16 - Cedar Avenue / I-10 WB Ramps	**57.7 - E**	36.6 - D	**58.4 - E**	37.6 - D	**Yes**	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Seconds of delay per vehicle.

LOS = level of service.

Table ES-4
Summary of Peak Hour Intersection Operations
Horizon Year 2038 Conditions – Without and With Proposed Project

Study Intersection	Horizon Year 2038 Without Project Conditions AM	Horizon Year 2038 Without Project Conditions PM	Horizon Year 2038 With Project Conditions AM	Horizon Year 2038 With Project Conditions PM	Significant Impact? AM	Significant Impact? PM
	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	AM	PM
1 - Slover Avenue / Sierra Avenue	**61.0 - E**	**78.0 - E**	**63.8 - E**	**79.6 - E**	**Yes**	**Yes**
2 - Slover Avenue / Production Avenue	34.1 - C	31.2 - C	34.4 - C	32.4 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	23.4 - C	18.1 - B	24.4 - C	18.5 - B	No	No
4 - Slover Avenue / Tamarind Avenue	19.5 - B	38.0 - D	21.3 - C	43.3 - D	No	No
5 - Slover Avenue / Alder Avenue	20.6 - C	20.2 - C	21.4 - C	20.6 - C	No	No
6 - Slover Avenue / Laurel Avenue	29.7 - C	16.0 - B	30.0 - C	16.8 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.8 - B	8.9 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		12.2 - B	17.3 - C	No	No
9 - Slover Avenue / Locust Avenue	19.5 - B	21.1 - C	22.6 - C	22.7 - C	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		12.5 - B	15.1 - C	No	No
11 - Slover Avenue / Linden Avenue	**46.1 - E**	**41.2 - E**	**48.4 - E**	**43.5 - E**	**Yes**	**Yes**
12 - Slover Avenue / Cedar Avenue	51.8 - D	45.7 - D	52.1 - D	52.7 - D	No	No
13 - Cedar Avenue / Orange Street	46.2 - D	52.6 - D	46.5 - D	54.2 - D	No	No
14 - Sierra Avenue / I-10 Ramps	35.2 - D	45.1 - D	35.4 - D	45.9 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	34.0 - C	29.2 - C	34.5 - C	29.4 - C	No	No
16 - Cedar Avenue / I-10 WB Ramps	25.2 - C	22.4 - C	26.1 - C	22.8 - C	No	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Average seconds of delay per vehicle.

LOS = level of service.

I-10 / Cedar Avenue interchange improvements are assumed to be constructed prior to the Horizon Year 2038 conditions.

Table ES-5
Summary of Peak Hour Intersection Operations With Mitigation

Int. #	Intersection	Peak Hour	Without Project Delay (1) – LOS	With Project Delay (1) – LOS	Recommended Mitigation	With Project With Mitigation Delay (1) – LOS	Project Responsibility (%)
Opening Year 2018 With Ambient Traffic With Project Conditions							
1	Slover Avenue / Sierra Avenue	PM	54.3 - D	**55.2 - E**	Restripe the northbound dedicated right-turn lane to provide a shared through/right-turn lane.	53.9 – D	100%
Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project Conditions							
1	Slover Avenue / Sierra Avenue	PM	**58.1 - E**	**59.3 - E**	Restripe the northbound dedicated right-turn lane to provide a shared through/right-turn lane.	**57.4 – E**	(2)
Horizon Year 2038 With Project Conditions							
1	Slover Avenue / Sierra Avenue	AM	**61.0 – E**	**63.8 – E**	Restripe the northbound dedicated right-turn lane to provide a shared through/right-turn lane.	**58.7 – E**	(2)
		PM	**78.0 – E**	**79.6 – E**		**76.6 – E**	
11	Slover Avenue / Linden Avenue	AM	**46.1 – E**	**48.4 - E**	Contribute a fair share towards the installation of a new traffic signal.	43.3 – D	6.6%
		PM	**41.2 – E**	**43.5 – E**		37.2 – D	5.0%

Note: Deficient intersection operation indicated in **bold**. If the intersection delay after mitigation operates better than without project conditions, then the impact is considered mitigated according to San Bernardino County's TIA Guidelines.
(1) Seconds of delay per vehicle.
(2) Mitigation determined in Opening Year 2018 With Ambient Traffic With Project condition.

Table ES-6
Summary of Freeway Mainline Operations
Existing Conditions – Without and With Proposed Project

Freeway Segment	No. Lanes		Direction	Capacity	Existing Conditions				Existing Plus Project Conditions				Δ V/C	Sig. Impact?
	Through	Auxilliary			ADT	PHV	V/C	LOS	ADT	PHV	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	208,000	9,551	0.955	**E**	208,900	9,593	0.959	**E**	0.004	No
	4	1	WB	10,000	208,000	9,551	0.955	**E**	208,300	9,563	0.956	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	196,000	9,005	0.901	D	196,300	9,017	0.902	D	0.001	No
	4	1	WB	10,000	196,000	9,005	0.901	D	196,900	9,047	0.905	D	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".

(1) Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.

Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.

Δ= Difference

V/C = Volume to Capacity Ratio

LOS = Level of Service

For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.

Table ES-7
Summary of Freeway Mainline Operations
Opening Year 2018 With Ambient Traffic Conditions – Without and With Proposed Project

Freeway Segment	No. Lanes		Direction	Capacity	Opening Year 2018 With Ambient Traffic Without Project Conditions				Opening Year 2018 With Ambient Traffic With Project Conditions				Δ V/C	Sig. Impact?
	Through	Auxilliary			ADT	PHV (1)	V/C	LOS	ADT	PHV (1)	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	214,240	9,838	0.984	**E**	215,200	9,880	0.988	**E**	0.004	No
	4	1	WB	10,000	214,240	9,838	0.984	**E**	214,500	9,850	0.985	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	201,880	9,275	0.928	**E**	202,100	9,287	0.929	**E**	0.001	No
	4	1	WB	10,000	201,880	9,275	0.928	**E**	202,800	9,317	0.932	**E**	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".

(1) Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.

Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.

Δ= Difference

V/C = Volume to Capacity Ratio

LOS = Level of Service

For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.

Table ES-8
Summary of Freeway Mainline Operations
Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions
Without and With Proposed Project

Freeway Segment	No. Lanes		Direction	Capacity	Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project Conditions				Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project Conditions				Δ V/C	Sig. Impact?
	Through	Auxilliary			ADT	PHV [1]	V/C	LOS	ADT	PHV [1]	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	216,300	9,931	0.993	**E**	217,200	9,973	0.997	**E**	0.004	No
	4	1	WB	10,000	215,600	9,900	0.990	**E**	215,900	9,912	0.991	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	203,400	9,347	0.935	**E**	203,700	9,359	0.936	**E**	0.001	No
	4	1	WB	10,000	203,900	9,366	0.937	**E**	204,800	9,408	0.941	**E**	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".

[1] Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.

Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.

Δ= Difference

V/C = Volume to Capacity Ratio

LOS = Level of Service

For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.

Table ES-9
Summary of Freeway Mainline Operations
Horizon Year 2038 Conditions – Without and With Proposed Project

Freeway Segment	No. Lanes			Direction	Capacity	Horizon Year 2038 Without Project Conditions				Horizon Year 2038 With Project Conditions				Δ V/C	Sig. Impact?
	Through	HOV	Auxilliary			ADT	PHV [1]	V/C	LOS	ADT	PHV [1]	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	1	EB	11,600	256,200	11,765	1.014	**F**	257,100	11,807	1.018	**F**	0.004	No
	4	1	1	WB	11,600	243,000	11,158	0.962	**E**	243,300	11,170	0.963	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	1	EB	11,600	246,000	11,303	0.974	**E**	246,300	11,315	0.975	**E**	0.001	No
	4	1	1	WB	11,600	223,500	10,269	0.885	D	224,400	10,311	0.889	D	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".

[1] Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.

Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.

Δ= Difference

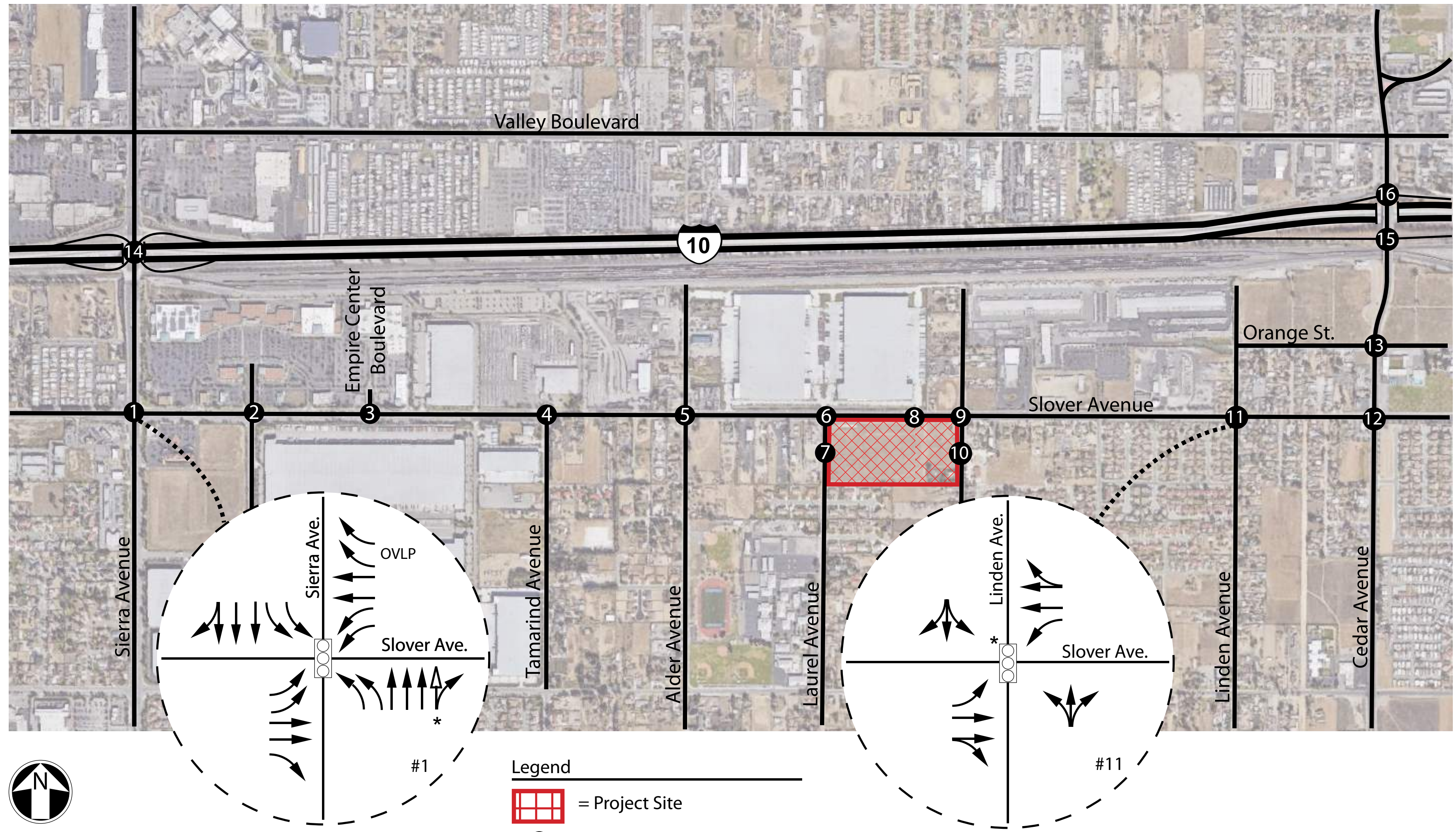
V/C = Volume to Capacity Ratio

LOS = Level of Service

HOV = High Occupancy Vehicle

For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.

For conservatism, the Year 2038 condition assumes I-10 widening to include only 1 additional HOV lane in each direction (I-10 Corridor Project Report Alt. 2).



Michael Baker INTERNATIONAL

Recommended Mitigation Measures

Exhibit ES-1

INTRODUCTION

This study analyzes the potential traffic impact of the proposed Bloomington Business Center (the "Project"), located on a vacant 17.34-acre site south of Slover Avenue between Laurel Avenue and Locust Avenue in the unincorporated community of Bloomington within San Bernardino County. The proposed project will consist of a 344,000 square-foot warehouse development providing access via three driveways; one on Slover Avenue, one on Laurel Avenue, and one on Locust Avenue. **Exhibit 1** shows the regional project vicinity. The project site plan is illustrated in **Exhibit 2**.

As required by San Bernardino County, this traffic impact study has been prepared in accordance with the *County of San Bernardino Traffic Impact Study Guidelines* (Revised April 9, 2014) and the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County* (**Appendix A**). The threshold to determine the need for traffic studies is a project generating 100 or more peak hour trips. The project is expected to generate approximately 1,604 trips per day, which includes approximately 137 (107 inbound and 30 outbound) AM peak hour trips and approximately 143 (36 inbound and 107 outbound) PM peak hour trips. A traffic study has been prepared since the AM and PM peak hour project trips exceed 100.

Project Study Area

The project study area was defined based on input from San Bernardino County staff. A scoping agreement has been reviewed and approved by County staff to establish the trip generation, study area and trip distribution, refer to **Appendix B**. Since the study area extends into the City of Fontana, the draft scoping agreement was provided to the City for review and they had no comments. Although the scoping agreement only includes 13 study intersections, the traffic study includes the Sierra Avenue / I-10 Ramps and Cedar Avenue / I-10 interchange in an effort to be comprehensive and conservative. The study area as shown in **Exhibit 3** includes the following sixteen (16) intersections:

1) Slover Avenue / Sierra Avenue
2) Slover Avenue / Production Avenue
3) Slover Avenue/Empire Center Blvd
4) Slover Avenue / Tamarin Avenue
5) Slover Avenue / Alder Avenue
6) Slover Avenue / Laurel Avenue
7) Laurel Avenue / Project Driveway 1
8) Slover Avenue / Project Driveway 2
9) Slover Avenue / Locust Avenue
10) Locust Avenue / Project Driveway 3
11) Slover Avenue / Linden Avenue
12) Slover Avenue / Cedar Avenue
13) Cedar Avenue / Orange Street
14) Sierra Avenue / I-10 Ramps
15) Cedar Avenue / I-10 EB Ramps
16) Cedar Avenue / I-10 WB Ramps

The following scenarios have been analyzed in this report:

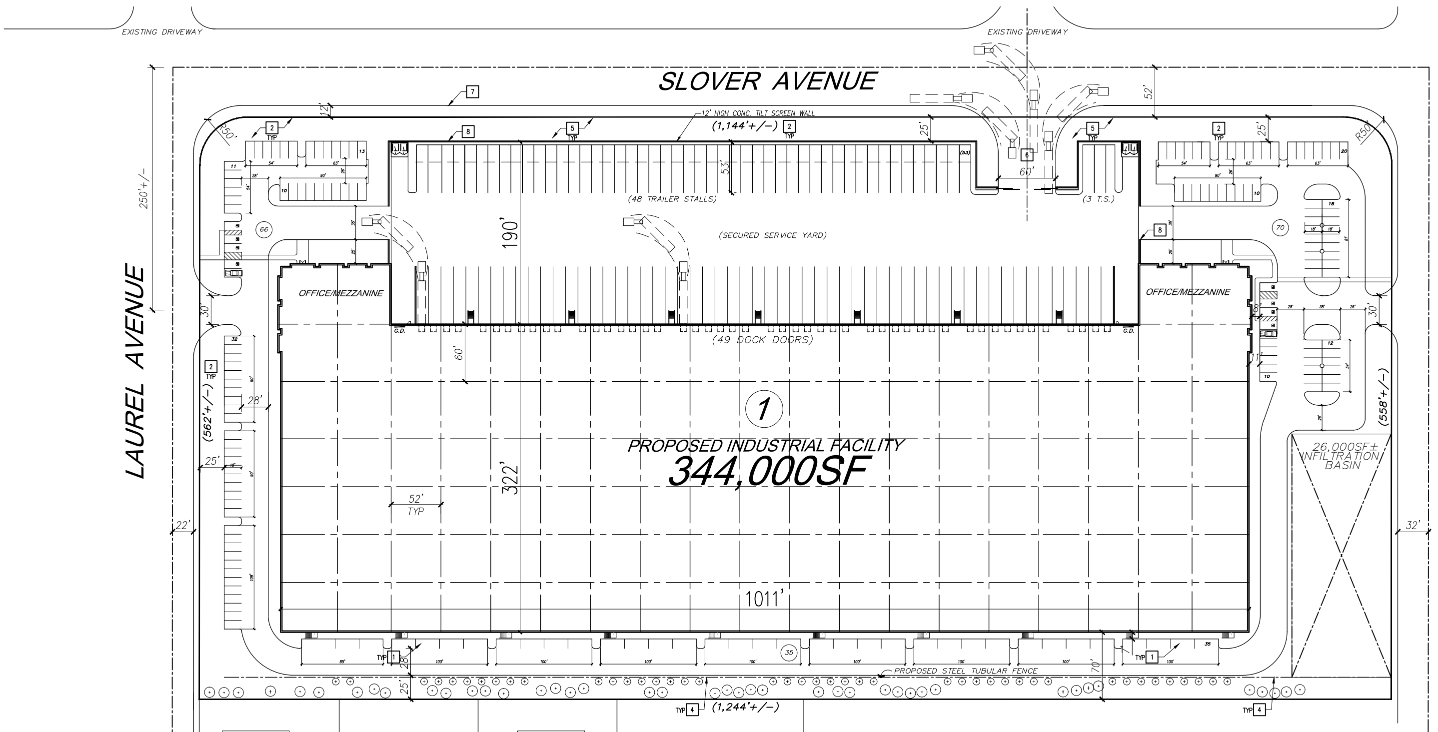
- Existing Conditions
- Existing Plus Project
- Opening Year 2018 With Ambient Traffic Without Project
- Opening Year 2018 With Ambient Traffic With Project
- Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project
- Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project
- Horizon Year 2038 Without Project
- Horizon Year 2038 With Project

Michael Baker INTERNATIONAL

Regional Project Location

Exhibit 1

156590 January 2017



KEYNOTES:

1. PARALLEL PARKING
2. LANDSCAPE AREA
3. EXISTING RESIDENTIAL AREA
4. STEEL TUBULAR FENCE
5. 25' LANDSCAPE BUFFER
6. TRUCK ENTRY DRIVE
7. EXISTING CURB & GUTTER
8. PROPOSED 12' HIGH SCREEN WALL

"OFFICIAL USE ONLY"

N

0 50' 100'

5/29/2014

PROJECT SUMMARY

LAND AREA:
17.34AC+/− (755,300SF)

BUILDING AREA:
FIRST FLR: 340,000SF
MEZZANINE: 4,000SF
344,000SF

(45.5% F.A.R.)
45% COVERAGE

LANDSCAPE AREA
15.6% SITE LANDSCAPE
19% (W/INFILTRATION BASIN)

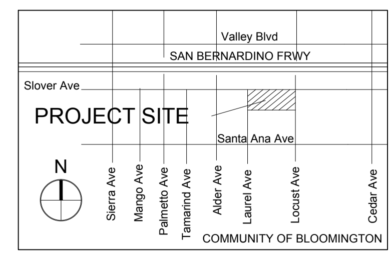
AUTO PARKING:

OFFICE: 344,000X.05=	17,200/250=	69 STALLS
WAREHOUSE:	40,000/1,000=	40 STALLS
WAREHOUSE:	286,800/4,000=	72 STALLS

PARKING REQUIRED: 181 STALLS (.53/1000)
PARKING PROVIDED: 224 STALLS (.65/1000)
ADA PARKING STALLS:
7 STALLS REQ. (8 STALLS PROV.)

GENERAL NOTES:

* POTENTIAL OFFICE/MEZZANINE AREA (EXACT FUTURE LOCATION T.B.D.)
"NO PROTECTED PLANTS ON THIS SITE"
- EXISTING SITE 'VACANT'
- NO ON-SITE EASEMENTS EXIST.
- PROPOSED DISTRIBUTION FACILITY IS CONCRETE TILT-UP CONSTRUCTION.
- DISTRIBUTION FACILITY IS INDICATED AS A SHELL BLDG. W/NO CURRENT TENANT.
- NO SIGNAGE PROPOSED AT THIS TIME.



VICINITY MAP
NO SCALE

LEGAL DESCRIPTION:

PARCEL 1: THE WEST ½ OF THE EAST ½ OF FARM LOT NO. 461, ACCORDING TO MAP SHOWING SUBDIVISION OF LANDS BELONGING TO THE SEMI-TROPIC LAND AND WATER COMPANY, AS RECORDED IN BOOK 11 PAGE 12 OF MAPS, RECORDS OF SAID COUNTY.

PARCEL 2: THE EAST ½ OF THE WEST ½ OF FARM LOT NO. 461, ACCORDING TO MAP SHOWING SUBDIVISION OF LANDS BELONGING TO THE SEMI-TROPIC LAND AND WATER COMPANY, AS RECORDED IN BOOK 11 PAGE 12 OF MAPS, RECORDS OF SAID COUNTY.

PARCEL 3: THE WEST ½ OF THE WEST ½ OF FARM LOT NO. 461, ACCORDING TO MAP SHOWING SUBDIVISIONS OF LANDS BELONGING TO THE SEMI-TROPIC LAND AND WATER COMPANY, AS RECORDED IN BOOK 11 PAGE 12 OF MAPS, RECORDS OF SAID COUNTY.

PARCEL 4: THE EAST ½ OF THE EAST ½ OF FARM LOT NO. 461, 3.34 ACRES MORE OR LESS, ACCORDING TO MAP SHOWING SUBDIVISION OF LANDS BELONGING TO THE SEMI-TROPIC LAND AND WATER COMPANY, AS RECORDED IN BOOK 11 PAGE 12 OF MAPS, RECORDS OF SAID COUNTY. EXCEPTING THEREFROM THE SOUTH 150 FEET THEREOF.

TOGETHER WITH: THE SOUTH 150 FEET OF THE EAST 1/2 OF THE EAST 1/2 OF FARM LOT 461, ACCORDING TO MAP SHOWING SUBDIVISION OF LANDS BELONGING TO SEMI-TROPIC LAND AND WATER COMPANY, AS PER PLAT RECORDED IN BOOK 11 OF MAPS, PAGE 12, RECORDS OF SAID COUNTY

UTILITY COMPANIES:

WATER SERVICE
West Valley Water District
855 W. Base Line Rd.
Rialto, CA. 92376
(909)875-1804

ELECTRICAL SERVICE
S.C.E.C.
287 Tennessee St.
Redlands, CA. 92373
(909)307-6767

NATURAL GAS SERVICE
S.C.G.C.
P.O. BOX 3003, SC 8031
Redlands, CA. 92373-0306
(909)335-7547

TELEPHONE SERVICE
VERIZON
27512 W. LUGONIA, STE. B2
REDLANDS, CA. 92374
(909) 798-5450

PROJECT TEAM:

APPLICANT:
JM REALTY GROUP
3535 Inland Empire Blvd.
Ontario, CA. 91764
909-373-2914
Contact: Joe McKay

CIVIL:
HUITT-ZOLLARS
3990 Concours, Suite 330
Ontario, CALIFORNIA 91764
909-941-7799 (x11420)
909-941-7789 FAX
Contact: DAVID WHITE, PE

REPRESENTATIVE:
INLAND EMPIRE DEVELOPMENT SERVICES
931 Monarch Court
Beaumont, CA. 92223
951-845-1003
Contact: Gil Saenz

ARCHITECT:
MacDAVID AUBORT AND ASSOC.
9281 Irvine Boulevard
IRVINE, CALIFORNIA 92618
949-305-2200 x224
949-305-2233 FAX
Contact: DAN MacDAVID

ASSESSOR'S PARCEL #'S.:
0256-041-01
0256-041-02
0256-041-03
0256-041-47
0256-041-48

ZONING:
EXISTING – BL/SINGLE RES-1-AA
PROPOSED – COMMUNITY INDUSTRIAL (BL/IC)

C.U.P. & G.P.A. REQUIRED
FOR WRHSE. BLDG.

MacDavid Aubort
and Associates Incorporated
Architecture • Planning • Interiors
9281 Irvine Boulevard Irvine, California 92618
P: 949.305.2200 F: 949.305.2233

SITE PLAN #4B w/ Infiltration Basin

Bloomington Business Center

County of San Bernardino, California

JM Realty Group

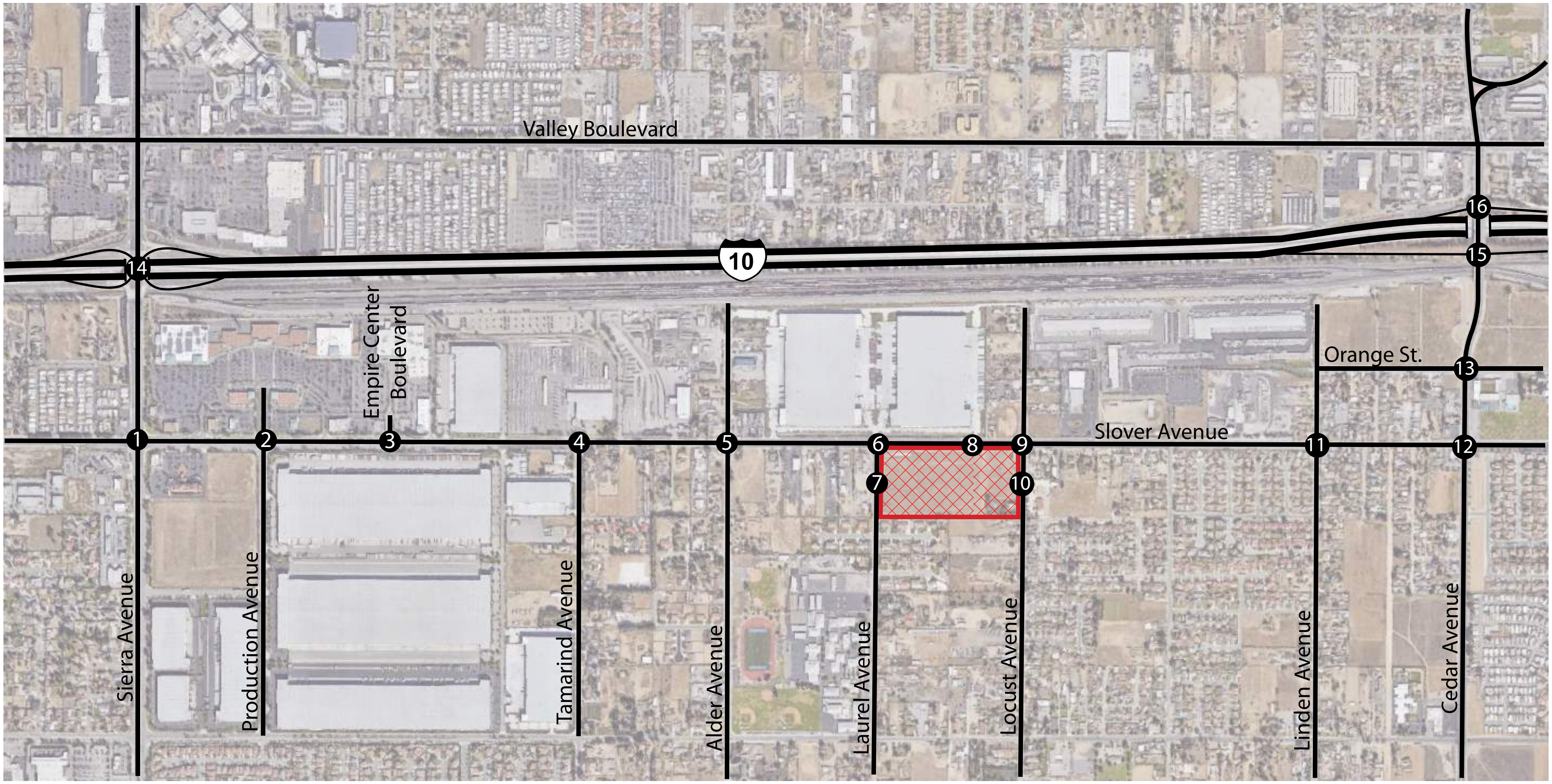
Ontario, California

Michael Baker
INTERNATIONAL

Project Site Plan

Exhibit 2

156590 Mar. 2017



Legend

= Project Site

= Study Intersection

Michael Baker INTERNATIONAL

156590 January 2017

Study Area

Exhibit 3

At study intersections, existing peak hour traffic volumes were collected for passenger cars, 2-axle trucks, 3-axle trucks, and 4+ axle trucks. Using the conversion factor detailed in the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County*, existing peak hour traffic volumes were converted to Passenger Car Equivalents (PCE) based on the following factors:

Vehicle Type	Passenger Car Equivalent (PCE)
Passenger Car	1.0
2 Axle Truck	1.5
3 Axle Truck	2.0
4+ Axle Truck	3.0

It should be noted the analysis in this report is based on PCE's for all study scenarios.

<u>Ambient Growth</u>

Ambient growth refers to a growth rate applied to existing traffic volumes to account for other general traffic growth in and around the study area. In this analysis, the ambient growth rate is based on a 1% annual growth for one (1) year to represent the 2018 traffic conditions. The total ambient growth is 1% (growth of 1% per year from 2017 to 2018). This ambient growth rate is included in the Opening Year 2018 With Ambient Traffic, Opening Year 2018 With Ambient Traffic With Cumulative Projects, and Horizon Year 2038 traffic (daily and peak hour) volumes to account for general traffic growth not reflected by cumulative projects.

<u>Cumulative Projects</u>

The term "cumulative" in this study refers to cumulative development which includes pending and/or approved projects that are assumed to be fully completed and occupied after the date of existing counts but prior to the project's expected opening day (2018) that would contribute traffic within the project study area. Forecast project traffic associated with the City of Fontana, City of Rialto and San Bernardino County were identified and evaluated. Each jurisdiction provided a list of projects that could potentially generate traffic within the study area by the project's opening year (2018). Michael Baker reviewed 32 cumulative projects to determine if they added a measurable amount of traffic to the study area. This cumulative traffic has been analyzed in the Opening Year 2018 With Ambient Traffic With Cumulative Projects conditions with and without the proposed project.

ANALYSIS METHODOLOGY

In accordance with the *County of San Bernardino Traffic Impact Study Guidelines (Revised April 9, 2014),* this study analyzes the following study scenarios:

- **Existing Conditions** – Analysis of existing traffic count volumes, intersection geometry and existing roadway network.
- **Existing With Project Conditions** – Analysis of existing traffic volumes overlaid with traffic generated by the proposed project. The existing intersection geometry and roadway network were used in this analysis.
- **Opening Year 2018 With Ambient Traffic Conditions Without Project** – Analysis of existing traffic volumes overlaid with ambient traffic growth (1%) for a period of one year representing the projects expected opening year (approximately 2018).
- **Opening Year 2018 With Ambient Traffic Conditions With Project** – Analysis of existing traffic volumes with ambient traffic growth (1%) overlaid with traffic associated with the proposed project.
- **Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions Without Project** – Analysis of existing traffic volumes with ambient growth (1%) overlaid with cumulative project traffic anticipated to be constructed by the projects opening year (2018).
- **Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions With Project** – Analysis of existing traffic volumes with ambient growth (1%) overlaid with cumulative project traffic and traffic generated by the proposed project.
- **Horizon Year 2038 Conditions Without Project** – Analysis of Horizon Year 2038 conditions is based on build-out of the San Bernardino County General Plan land uses and Circulation Element roadway network with a few road network adjustments. For example, the I-10 / Cedar Avenue interchange improvements are planned, funded and scheduled to be constructed by Year 2020. Therefore, these improvements are included in the Horizon Year 2038 conditions. However, other network improvements such as the I-10/Alder Avenue interchange construction and the I-10/Locust Avenue overpass are not assumed in this analysis since these projects are not funded and may not be complete by the year 2038. Therefore, Horizon Year 2038 forecast daily traffic volumes used in this analysis were derived by applying an ambient growth (1% per year on Sierra Avenue and Slover Avenue and 1.5% per year on Cedar Avenue) to the Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project traffic volumes.
- **Horizon Year 2038 Conditions With Project** – Analysis of Horizon Year 2038 conditions was conducted using the forecast 2038 traffic volumes overlaid with traffic generated by the proposed project.

Intersection Analysis

Analysis of all intersections in the project study area is based on *County of San Bernardino Traffic Impact Study Guidelines (Revised April 9, 2014)* and the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County* (**Appendix A**).

As required, the 2010 Highway Capacity Manual (HCM) operation methodology for *Signalized and Un-signalized Intersections* was used to determine the operating Levels of Service (LOS) of the study intersections. The Synchro (Version 8.0) software package was used to evaluate the study intersections using the HCM methodology. The HCM methodology describes the operation of an intersection using a range of levels of service (LOS) from LOS A (free-flow conditions) to LOS F (severely congested conditions) as shown in **Table 1**. The corresponding delay per vehicle thresholds for signalized and un-signalized intersections are provided in **Table 2**.

Table 1
Level of Service Descriptions

LOS	Description
A	This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
B	This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.
C	This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
D	This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
E	This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
F	This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: HCM 2010; Chapter 18, page 18-6

Table 2
Level of Service & Delay Ranges

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Un-signalized Intersections
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: 2010 Highway Capacity Manual.

Roadway Segments

Roadway segment level of service standards are generally used as long-range planning guidelines to determine the functional classification of roadways and are not always accurate indicators of roadway performance. Typically, the performance and level of service of a roadway segment is heavily influenced by the ability of intersections to accommodate peak hour volumes. Therefore, peak hour signalized and un-signalized intersections within the study area are the focus of the project traffic analysis summarized in this report since intersections control the movement of vehicles along road segments. The roadway segment volumes provided in this report are for information only, not for determining the significance of a potential impact.

Freeway Segments

According to the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County*, if a project contributes 100 or more two-way peak hour trips to a freeway segment, then a freeway analysis is required. This project contributes approximately 43 directional trips in the PM peak hour to Interstate 10. However, in an effort to be comprehensive and conservative, a freeway analysis is provided in this report even though the volume of project traffic added to the freeway does not meet the significance threshold.

PERFORMANCE CRITERIA

County of San Bernardino

The definition of an intersection deficiency has been obtained from the County of San Bernardino General Plan guidelines. The guidelines state that peak hour intersection operations of LOS D or better are generally acceptable during the peak hours in the Valley Region. Therefore, any intersection operating at LOS E or LOS F will be considered deficient.

City of Fontana

The City of Fontana has set the goal for acceptable level of service as LOS C or better, wherever feasible (see Goal #1, Policy #12 of the City of Fontana General Plan Circulation Element). However, in some instances, maintaining the LOS C threshold within a built environment may require extensive roadway widening that could affect existing uses, property rights and substantial costs associated with implementing these improvements. In the event that the improvements required to maintain LOS C is determined to be infeasible, the City of Fontana recognizes that LOS D may be considered the worst acceptable level of service in urbanized areas of the City.

Caltrans

The definition of intersection deficiency has been obtained from the Caltrans Guide for the Preparation of Traffic Impact Studies. As stated in Caltrans Guidelines, Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

THRESHOLDS OF SIGNIFICANCE

County of San Bernardino

To determine whether the addition of project-generated trips results in a significant impact at a study intersection, and thus requires mitigation, San Bernardino County TIA Guidelines utilizes the thresholds of significance defined below.

Signalized Intersections:

Any study intersection that is operating at a LOS ‘A’, ‘B’, ‘C’ or ‘D’ for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS ‘E’ or ‘F’ shall mitigate the impact to bring the intersection back to at least LOS ‘D’. Any study intersection that is operating at LOS ‘E’ or ‘F’ for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.

Un-signalized Intersections:

An impact is considered significant if the study determines that either criteria a) or both criteria b) and c) occur.

a.) The addition of project related traffic causes the intersection LOS to change from a LOS ‘D’ or better to a LOS ‘E’ or worse

OR

b.) The project contributes additional traffic to an intersection that is already projected to operate at a LOS ‘E’ or ‘F’ with background traffic

AND

c.) At least one or both of the following conditions are met:

1.) The project adds ten (10) or more trips to any approach

2.) The intersection meets the peak hour traffic signal warrant after the addition of project traffic

City of Fontana

A significant impact occurs at a study intersection if the addition of project trips causes the peak hour LOS to fall from acceptable LOS C or better to an unacceptable LOS E or F.

Caltrans

Caltrans does not have specific significance thresholds for determining project-related impacts at study intersections, therefore, the County’s thresholds have been applied to the I-10 / Cedar Avenue and I-10/Sierra Avenue interchanges.

Caltrans does not provide any significance criteria. For purposes of this analysis, we used the following criteria. If a freeway segment operates at LOS ‘E’ or ‘F’ and the change in volume to capacity (v/c) ratio as a result of project-related traffic exceeds 0.01, then the freeway segment is considered significant and mitigation measures are required. This significance criteria is consistent with other agencies in Southern California, such as San Diego County.

<u>Appendix A</u> includes the *County of San Bernardino Traffic Impact Study Guidelines; Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County* and the *County of San Diego Guidelines for Determining Significance*.

EXISTING CONDITIONS

Existing Land Use

Currently the 17.34-acre project site is vacant and un-developed except for a single family residential unit in the southeast corner of the site.

Existing Roadway Circulation System

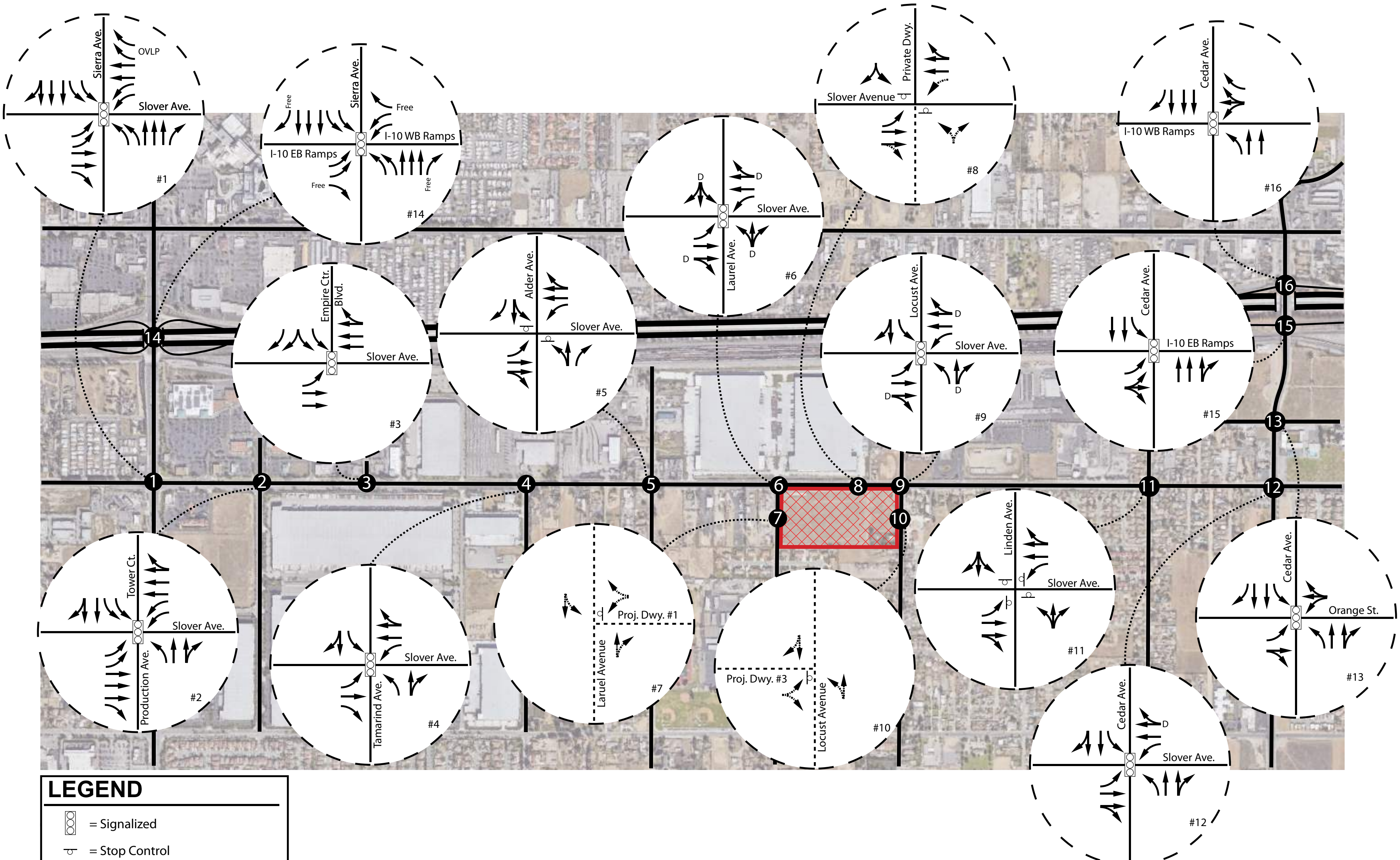
A detailed field review was conducted to determine the existing intersection geometry, traffic control devices, signal phasing and other factors, which may affect intersection capacity. The existing intersection geometry for study intersections is illustrated in **Exhibit 4**. The following is a detailed description of roadways in the study area.

Slover Avenue is a three-lane to six-lane roadway orientated in an east -west direction. Between Sierra Avenue and Production Avenue, Slover Avenue is six lanes with a raised median and left turn lanes. Between Production Avenue and Empire Center Boulevard, Slover Avenue narrows to 5 lanes (2 lanes eastbound, 3 lanes westbound) and then narrows further to 3 lanes (1 eastbound, 2 westbound) between Empire Center Boulevard and Tamarind Avenue. Between Alder Avenue and Cedar Avenue, Slover Avenue is four lanes with two-way-left-turn-lanes. Slover Avenue is classified as a Major Highway according to the Bloomington Community Circulation Element. Class II bike lanes are not provided on either side of the roadway and the posted speed limit is 45mph west of Locust Avenue and 50 mph east of Locust Avenue.

Sierra Avenue is a six-lane roadway with a raised median oriented in a north-south direction. Sierra Avenue is classified as a Major Highway north of the I-10 freeway and a Major Divided Highway between the I-10 freeway and Jurupa Avenue according to the Bloomington Community Circulation Element. South of Jurupa Avenue, Sierra Avenue is classified as a Major Arterial Highway. The posted speed limit is 40 mph north of the I-10 freeway and 50 mph south of the I-10 freeway. Class II bike lanes are not provided on either side of the roadway.

Locust Avenue is a two-lane roadway oriented in a north-south direction. Within the study area, Locust Avenue extends from the I-10 freeway, where it is a cul-de-sac, south to the intersection of 7th Street and Armstrong Road. Armstrong Road, an extension of Locust Avenue, turns into Valley Way and connects to SR-60.

Cedar Avenue is a four-lane undivided roadway and is generally oriented in a north-south direction. From Interstate 10, Cedar Avenue extends north through the City of Rialto, and south towards Crestmore Heights. The Bloomington Community Circulation Element classifies Cedar Avenue as a Major Highway from the northern to southern boundaries of Bloomington. The posted speed limit along Cedar Avenue between Valley Boulevard and Slover Avenue is 40 mph.



LEGEND

= Signalized

= Stop Control

= Future Proposed Driveway

D = Defacto Right-Turn-Lane

OVLP = Right-Turn Overlap

Michael Baker INTERNATIONAL

Existing Intersection Lane Configurations

Exhibit 4

156590 Feb. 2017

Existing Conditions Traffic Volumes

To determine the existing operations of the study intersections, traffic counts were collected on Thursday, January 26, 2017 during the AM (7:00 to 9:00 AM) and PM (4:00 to 6:00 PM) peak periods at the following fourteen (14) intersections:

1) Slover Avenue / Sierra Avenue
2) Slover Avenue / Production Avenue
3) Slover Avenue/Empire Center Blvd
4) Slover Avenue / Tamarin Avenue
5) Slover Avenue / Alder Avenue
6) Slover Avenue / Laurel Avenue
7) Slover Avenue / Project Driveway 2
8) Slover Avenue / Locust Avenue
9) Slover Avenue / Linden Avenue
10) Slover Avenue / Cedar Avenue
11) Cedar Avenue / Orange Street
12) Sierra Avenue / I-10 Ramps
13) Cedar Avenue / I-10 EB Ramps
14) Cedar Avenue / I-10 WB Ramps

Study intersections #1 – 4 are located in the City of Fontana and study intersections #5-14 are located in San Bernardino County. The traffic counts collected at the study intersections include vehicle classifications such as passenger cars, 2-axle trucks, 3-axle trucks, and 4+axle trucks. For purposes of this analysis, all truck traffic was converted into Passenger Car Equivalents (PCE) since trucks occupy the space of more than one passenger car. In addition, the time it takes for these larger vehicles to accelerate and slow-down is much longer than passenger cars and varies depending on type of vehicle and number of axles. For these reasons, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4-axle trucks. These PCE factors are consistent with the *Guidelines for CMP Traffic Impact Analysis Reports* in San Bernardino County. PCE conversion worksheets can be found in **Appendix C**.

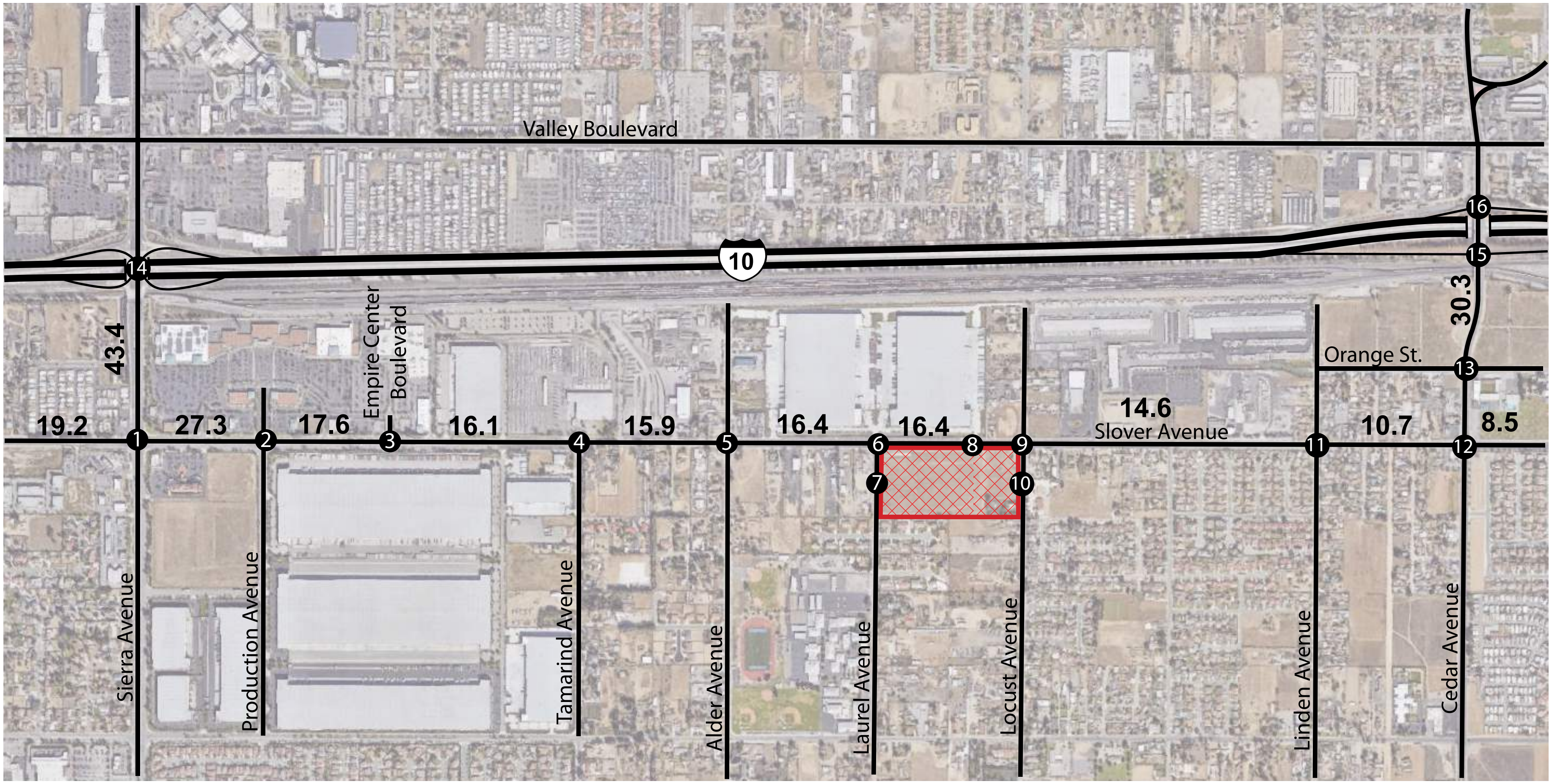
As previously mentioned, roadway segment volumes provided in this report are for information only, not for determining the significance of a potential impact. The existing daily traffic volumes were calculated based on PM peak hour intersection count data according to the following:

$$\text{Daily Traffic} = \frac{(\text{Entering Volumes} + \text{Exiting Volumes})_{avg}}{9\%}$$

Where volumes for adjacent intersections were used to average the encompassed street segment. A value of 9% was used as an approximation for the ratio of peak hour traffic to daily traffic volumes based on ITE rates for residential as well as warehouse land uses.

Exhibit 5 shows existing roadway segment daily volumes. **Exhibit 6** shows the existing AM and PM peak hour intersection volumes. Detailed traffic count data is contained in **Appendix C**.

Exhibit 7 illustrates Bloomington Community Plan Circulation Element showing the classification and configuration of arterial highways planned to serve the ultimate development defined by the land use element of the General Plan. **Exhibit 8** shows the San Bernardino General Plan roadway cross-sections.



Legend

= Project Site

= Study Intersection

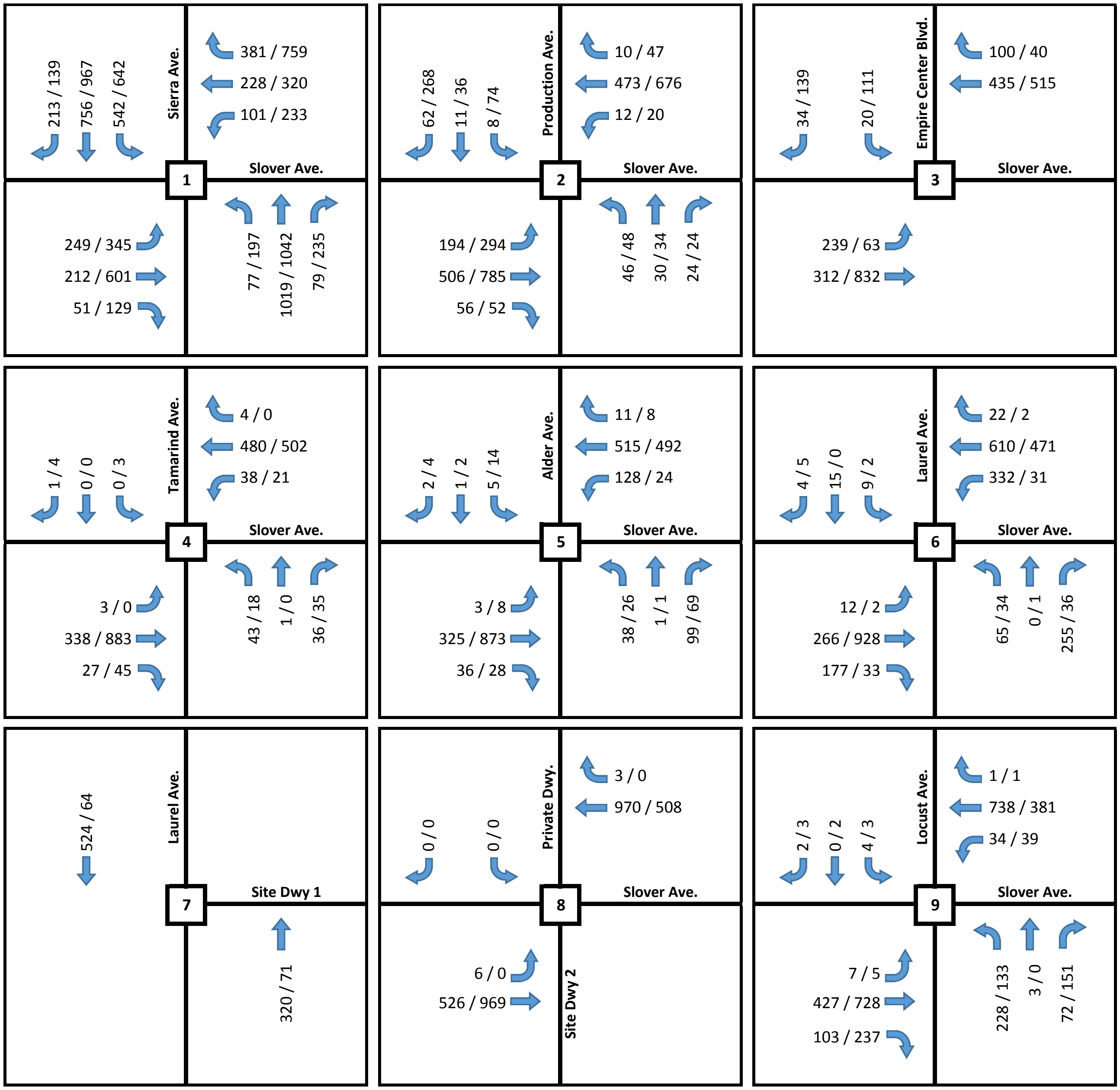
##.# = 1,000 Daily Trips (Total of Both Directions)

Michael Baker INTERNATIONAL

Existing Daily Traffic

156590 Feb. 2017

Exhibit 5



Notes:

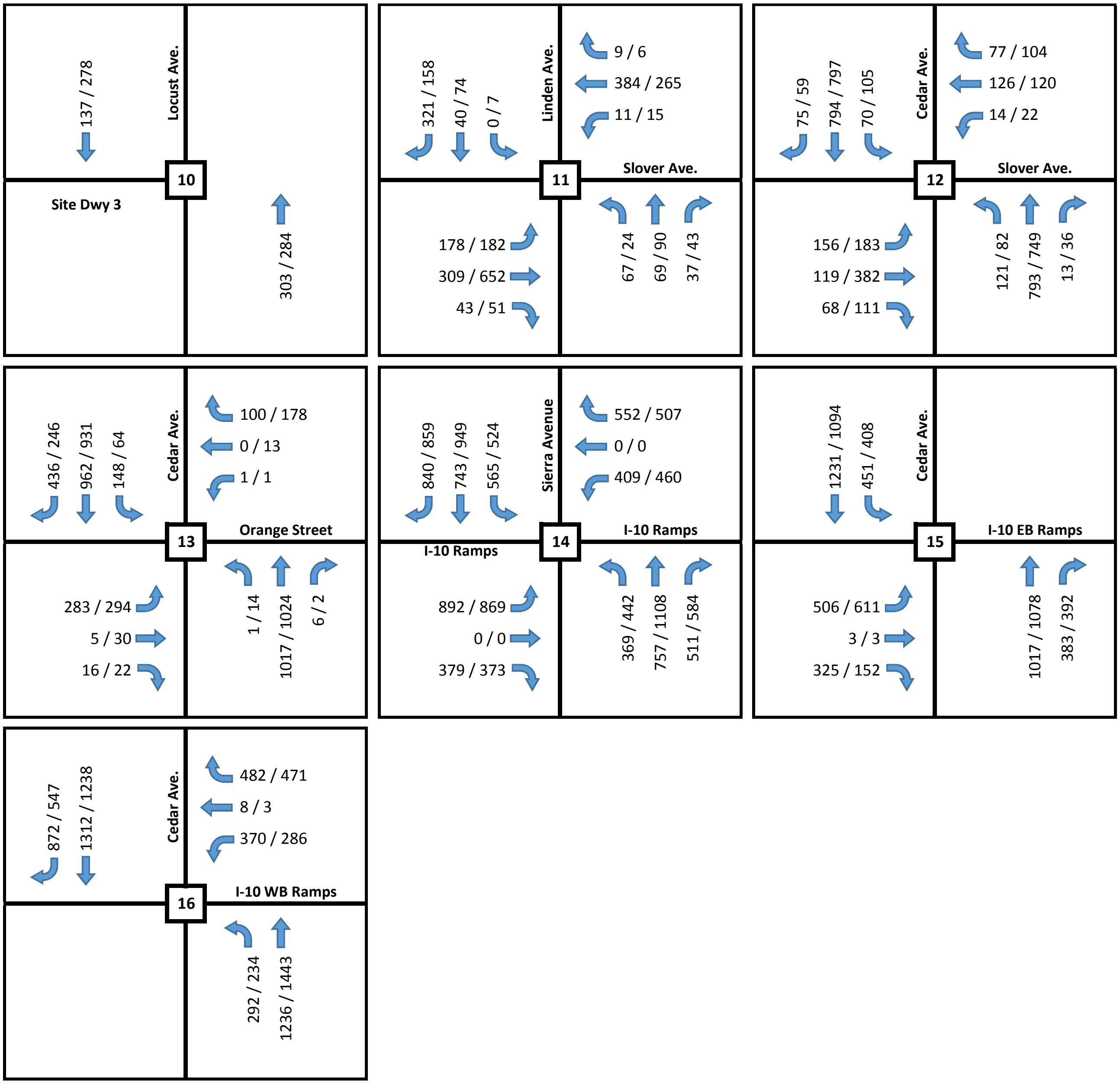
XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

Michael Baker INTERNATIONAL

Existing AM/PM Peak Hour Volumes

Exhibit 6 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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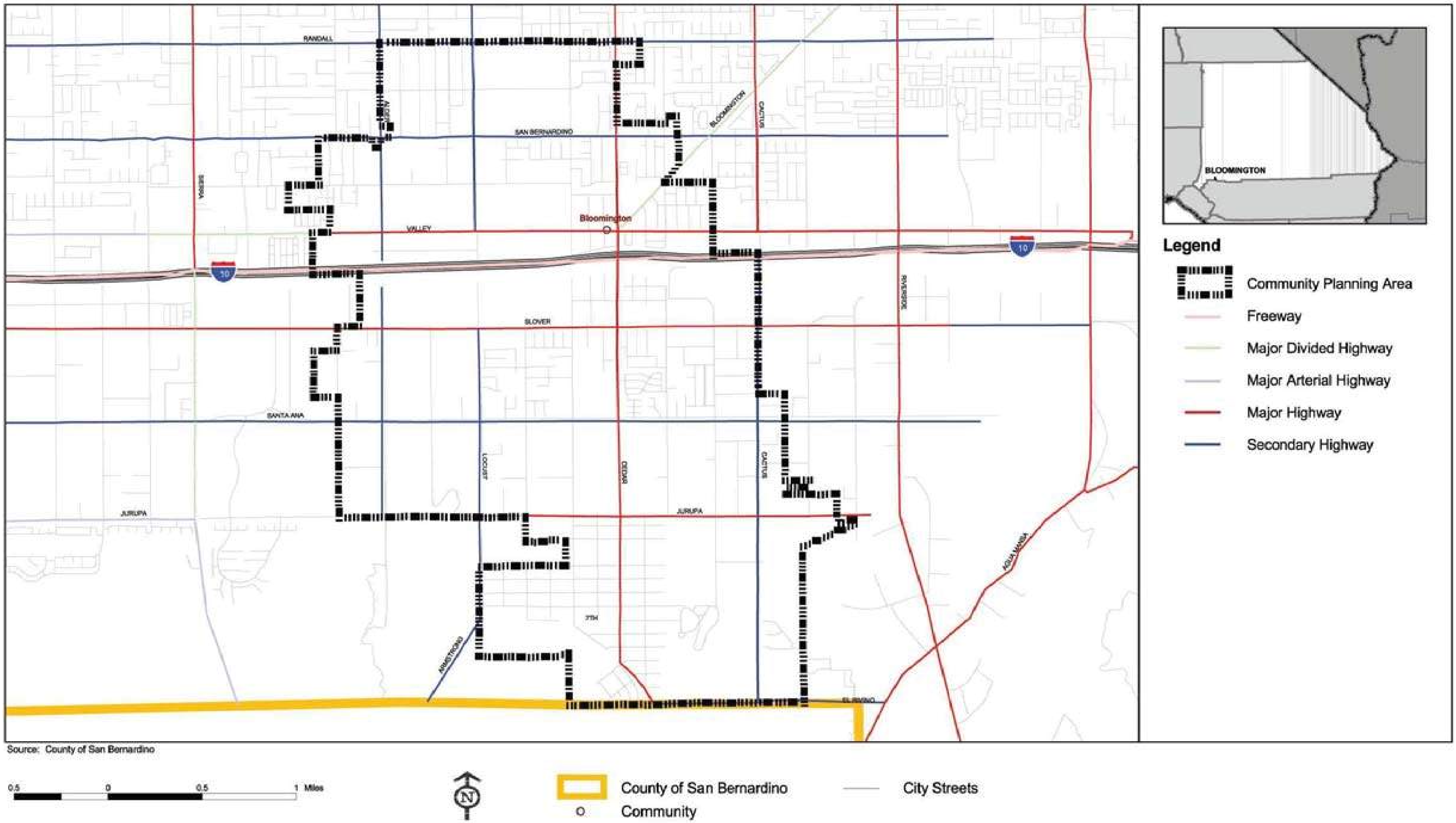
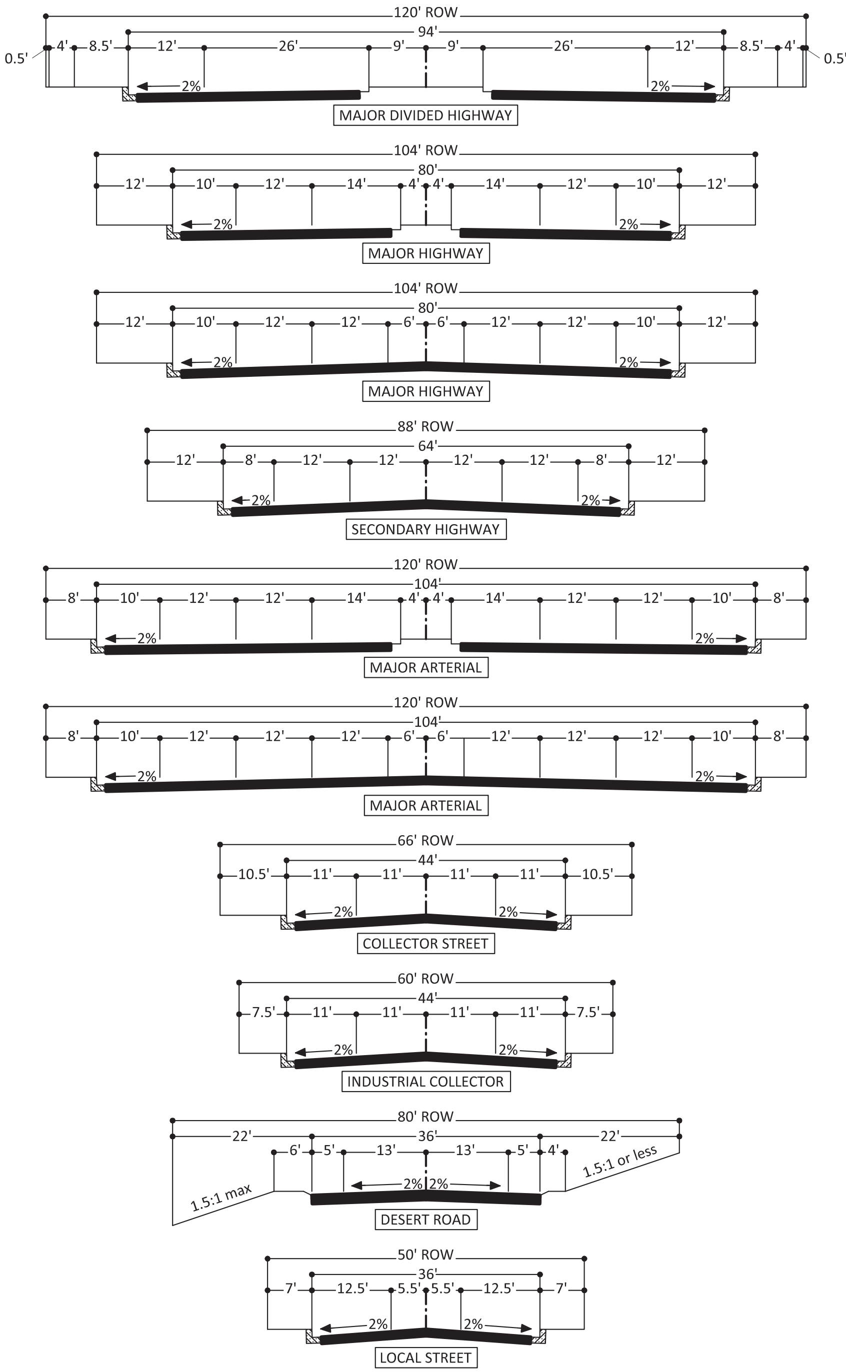
Existing AM/PM Peak Hour Volumes

Exhibit 6 (2 of 2)



Bloomington Community Plan Circulation Element

Exhibit 7



Source: County of San Bernardino

San Bernardino County General Plan Roadway Cross-Sections

Exhibit 8

Existing Levels of Service

Table 3 summarizes the existing AM and PM peak hour intersection LOS of the study intersections based on the existing peak hour intersection volumes and existing intersection geometry. Detailed HCM calculation sheets are contained in **Appendix D**.

Table 3
Existing Peak Hour Intersection Conditions

Study Intersection	Traffic Control	Existing Conditions	
		AM Delay[1] - LOS	PM Delay[1] - LOS
1 - Slover Avenue / Sierra Avenue	Signal	42.1 - D	54.3 - D
2 - Slover Avenue / Production Avenue	Signal	27.8 - C	26.6 - C
3 - Slover Avenue / Empire Center Blvd.	Signal	22.2 - C	15.2 - B
4 - Slover Avenue / Tamarind Avenue	Signal	14.8 - B	15.1 - B
5 - Slover Avenue / Alder Avenue	TWSC	16.1 - C	15.3 - C
6 - Slover Avenue / Laurel Avenue	Signal	27.7 - C	15.4 - B
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		
9 - Slover Avenue / Locust Avenue	Signal	18.4 - B	17.0 - B
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		
11 - Slover Avenue / Linden Avenue	AWSC	23.0 - C	25.8 - D
12 - Slover Avenue / Cedar Avenue	Signal	29.1 - C	30.9 - C
13 - Cedar Avenue / Orange Street	Signal	16.2 - B	20.2 - C
14 - Sierra Avenue / I-10 Ramps	Signal	27.5 - C	34.3 - C
15 - Cedar Avenue / I-10 EB Ramps	Signal	51.5 - D	44.5 - D
16 - Cedar Avenue / I-10 WB Ramps	Signal	43.3 - D	27.7 - C

Note: Deficient intersection operation indicated in **bold**.

[1] Average seconds of delay per vehicle. TWSC = Two-Way Stop Control

LOS = level of service. AWSC = All-Way Stop Control

As shown in **Table 3**, all study intersections currently operate at acceptable levels of service (LOS D or better).

Existing Bicycle and Pedestrian Access

There are currently no Class II bike lanes in either direction of travel on Slover Avenue, Laurel Avenue, or Locust Avenue in the vicinity of the project site. Sidewalks exist intermittently along Slover Avenue within the study area with gaps along the south side of Slover Avenue between Tamarind Avenue and Cedar Avenue. The project will be providing sidewalks along the project frontage on Slover Avenue, Laurel Avenue, and Locust Avenue.

Existing Transit Access

There are two transit facilities located near the project site in the form of bus stops serviced by OmniTrans Route 29. The first is located on the west side of Laurel Avenue approximately 150 feet south of Slover. The second is located on the north side of Slover Avenue approximately 700 feet west of Locust Avenue. Route 29 originates and terminates at the South Fontana Transfer Center next to Kaiser Hospital off of Sierra Avenue north of Valley Boulevard.

Freeway Segment Analysis

A mainline freeway capacity analysis was conducted on the Interstate 10 freeway from Citrus Avenue to Sierra Avenue and from Cedar Avenue to Riverside Avenue. These two freeway segments were selected for analysis since the highest concentration of project-related traffic are assumed to distribute onto these segments. As shown in **Table 4**, freeway mainline segments from Citrus Ave. to Sierra Ave. currently operate at a deficient level of service 'E'.

Table 4
Existing Conditions Freeway Mainline Level of Service Analysis

I-10 Freeway Segment	No. Lanes		Direction	LOS "E" Capacity	ADT[1]	Peak Hour %[1]	Directional Split [1]	Truck Factor[1]	PHV	V/C	LOS
	Through	Auxilliary									
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	208,000	7.34%	69.69%	89.77%	9,551	0.955	**E**
	4	1	WB	10,000	208,000	7.34%	69.69%	89.77%	9,551	0.955	**E**
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	196,000	7.34%	69.69%	89.82%	9,005	0.901	D
	4	1	WB	10,000	196,000	7.34%	69.69%	89.82%	9,005	0.901	D

Note: Deficient roadway segment operations shown in **bold**
ADT = Average Daily Traffic
PHV = Peak Hour Volume
[1] Data taken from Caltrans Count Data (2015)
V/C = Volume to Capacity Ratio
LOS = Level of Service
Maximum level of service "E" capacity for Through lanes is assumed to be 2,200 vphpl.
Maximum level of service "E" capacity for Auxilliary lanes is assumed to be 1,200 vphpl.

PROPOSED PROJECT

This study analyzes the forecast traffic impact of the proposed Bloomington Business Center (the "Project"), located on a vacant 17.34-acre site south of Slover Avenue between Laurel Avenue and Locust Avenue in the unincorporated community of Bloomington, San Bernardino County. The proposed project will consist of a 344,000 square-foot warehouse development with project access via three driveways; one on Slover Avenue, one on Laurel Avenue, and one on Locust Avenue.

Project Trip Generation

To determine the trips forecast to be generated by the proposed project, *ITE Trip Generation Manual, 9th Edition* rates were utilized in accordance with the San Bernardino County Guidelines. **Table 5** shows the trip generation rates used for the proposed project as well as the breakdown by vehicle type. The vehicle type breakdown is based on the *Truck Trip Generation Study prepared* by the City of Fontana to estimate how many trucks versus passenger cars would be generated by land use such as a warehouse. Trip generation rates can be found in **Appendix E**.

To provide a conservative analysis, the proposed project has been analyzed as a warehouse development although a high-cube warehouse is anticipated on the proposed site. According to the *ITE Trip Generation Manual*, the total daily rate for a warehouse (ITE Land Use Code 150) is 3.56 trips per one thousand square feet whereas a high-cube warehouse has a daily rate of 1.68 trips per one thousand square feet (*ITE* Land Use Code 152). Therefore the project-related traffic volumes and analysis results are conservative.

As discussed previously, passenger car equivalent (PCE) factors were applied to the trip generation. As summarized in **Table 6**, the proposed project is expected to generate approximately 1,604 trips per day, which includes approximately 137 AM (107 inbound and 30 outbound) peak hour trips and approximately 143 PM (36 inbound and 107 outbound) peak hour trips. There are no trip reductions applied to the trip generation since the site is currently vacant and undeveloped except for a single family residential unit on the southeast corner of the site. To be conservative, no trip generation credit was taken for the existing single family residential unit onsite.

Project Trip Distribution and Assignment

The project trip distribution was developed based on the existing roadway network and surrounding land uses, existing traffic patterns and access to Interstate 10. **Exhibit 9** illustrates the project's trip distribution for passenger cars and **Exhibit 10** illustrates the project's trip distribution for trucks. Trip distribution for truck traffic is slightly different than the distribution for passenger vehicles primarily due to anticipated access routes. All trucks will access the project site via Slover Avenue (Project Driveway 2) whereas passenger vehicles will access the site via Laurel Avenue (Project Driveway 1) and Locust Avenue (Project Driveway 3).

Utilizing the projects trip distribution shown in **Exhibits 9 and 10**, the forecast project-generated trips were assigned to the roadway network. **Exhibits 11 & 12** show the daily project trip assignment for passenger vehicles and trucks, respectively. AM/PM peak hour project trip assignment for both passenger vehicles and trucks is provided in **Exhibit 13**.

Table 5
Trip Generation Rates

Land Use: Warehouse ITE Land Use Code		Daily			AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Trip Generation Rate[1]		1.780	1.780	3.560	0.237	0.063	0.300	0.080	0.240	0.320
Entering / Exiting Split[1]		50%	50%	100%	79%	21%	100%	25%	75%	100%
Category										
Passenger Car[2]	79.57%	*1.416*	*1.416*	*2.833*	*0.189*	*0.050*	*0.239*	*0.064*	*0.191*	*0.255*
2-Axle Trucks[2]	3.46%	*0.062*	*0.062*	0.123	*0.008*	*0.002*	0.010	*0.003*	*0.008*	0.011
3-Axle Trucks[2]	4.64%	*0.083*	*0.083*	0.165	*0.011*	*0.003*	0.014	*0.004*	*0.011*	0.015
4+-Axle Trucks[2]	12.33%	*0.219*	*0.219*	0.439	*0.029*	*0.008*	0.037	*0.010*	*0.030*	0.039
Total Trucks	*20.43%*	*0.364*	*0.364*	*0.727*	*0.048*	*0.013*	*0.061*	*0.017*	*0.049*	*0.065*
Total Vehicles	100%	1.780	1.780	3.560	0.237	0.063	0.300	0.081	0.240	0.320

Notes:

All rates provided per Thousand Square Feet (KSF).

[1] Source: Institute of Transportation Engineers *Trip Generation Manual* , 9th Edition. Per KSF.

[2] Source: Percentages by vehicle type taken from Truck Trip Generation Study, City of Fontana, August 2003.

Table 6
Proposed Project Trip Generation

Land Use: Warehouse
ITE Land Use Code = 150
Land Use Intensity = 344 KSF

Category	Daily			AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Passenger Car	*487*	*487*	*974*	*65*	*17*	*82*	*22*	*66*	*88*
2-Axle Trucks	*21*	*21*	*42*	*3*	*1*	*4*	*1*	*3*	*4*
3-Axle Trucks	*29*	*29*	*57*	*4*	*1*	*5*	*1*	*4*	*5*
4+-Axle Trucks	*75*	*75*	*151*	*10*	*3*	*13*	*3*	*10*	*14*
Total Trucks	*125*	*125*	*250*	*17*	*5*	*22*	*5*	*17*	*22*
Total Vehicles	612	612	1,224	82	22	104	27	83	110

Trip Generation - Passenger Car Equivalent (PCE)

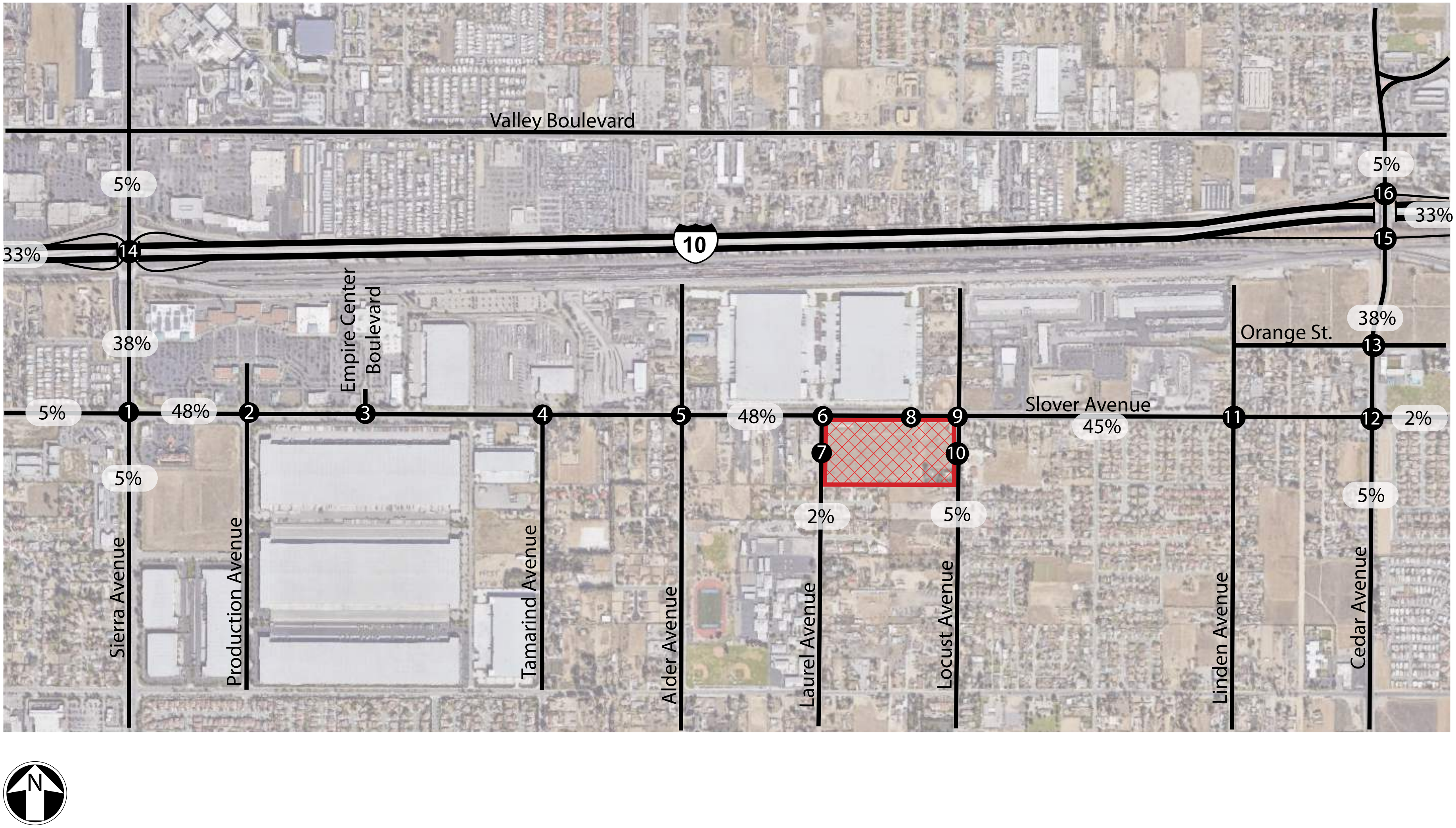
Land Use: Warehouse
ITE Land Use Code = 150
Land Use Intensity = 344 KSF

Category	PCE Factor[1]	Daily			AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Passenger Car	1.0	*487*	*487*	*974*	*65*	*17*	*82*	*22*	*66*	*88*
2-Axle Trucks	1.5	*32*	*32*	*64*	*4*	*2*	*6*	*2*	*4*	*6*
3-Axle Trucks	2.0	*58*	*58*	*116*	*8*	*2*	*10*	*2*	*8*	*10*
4+-Axle Trucks	3.0	*225*	*225*	*450*	*30*	*9*	*39*	*9*	*30*	*39*
Total Trucks	--	*315*	*315*	*630*	*42*	*13*	*55*	*13*	*42*	*55*
Total Vehicles	--	802	802	1,604	107	30	137	35	108	143

Notes:

All rates provided per Thousand Square Feet (KSF).

[1] PCE Factor Source: San Bernardino County CMP, 2005 Update



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Project Distribution - Passenger Cars

156590 January 2017

Exhibit 9

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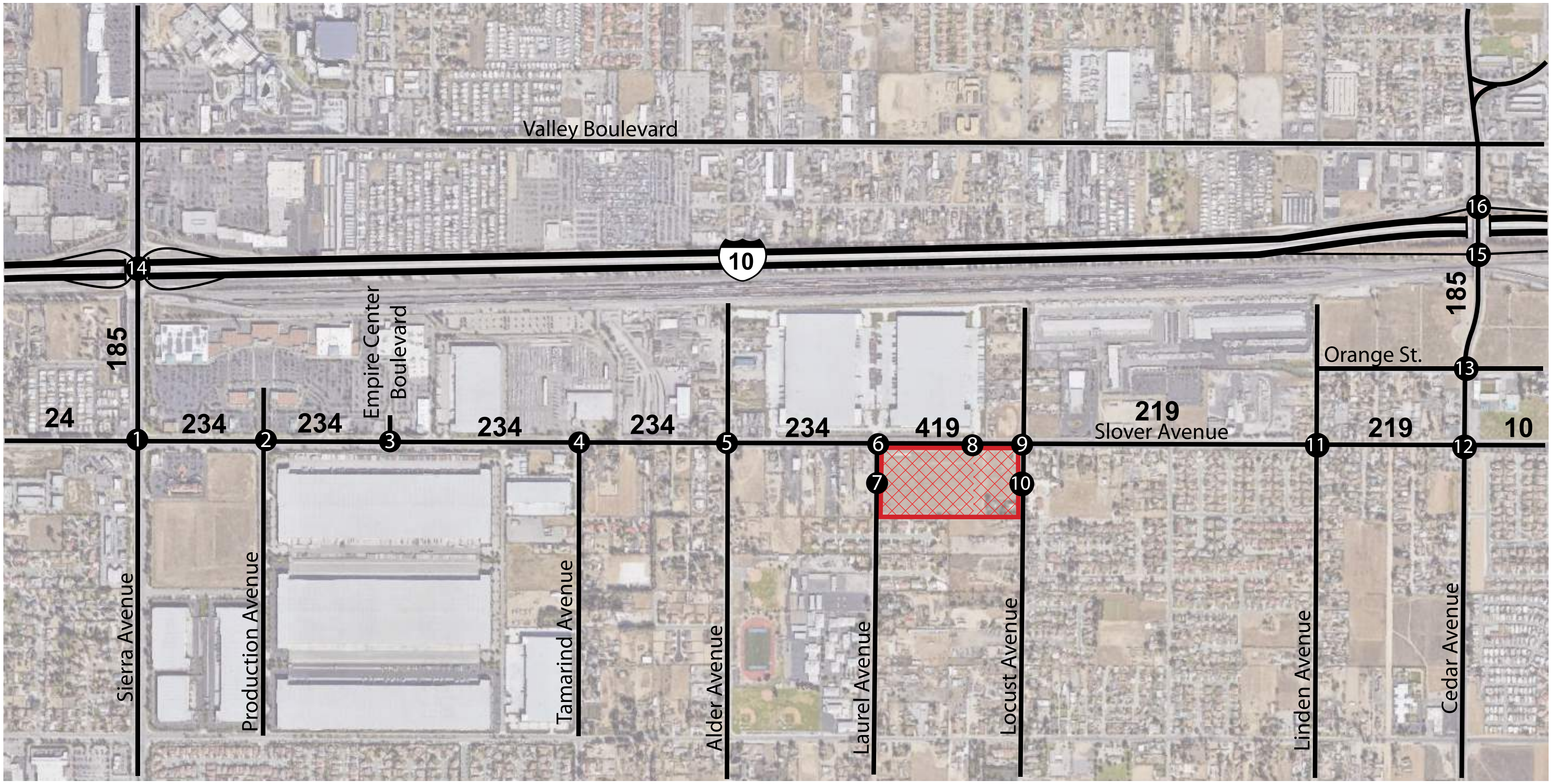
Project Distribution - Trucks

156590 January 2017

Exhibit 10



Legend

= Project Site

= Study Intersection

= Daily Project Trips (Cars)

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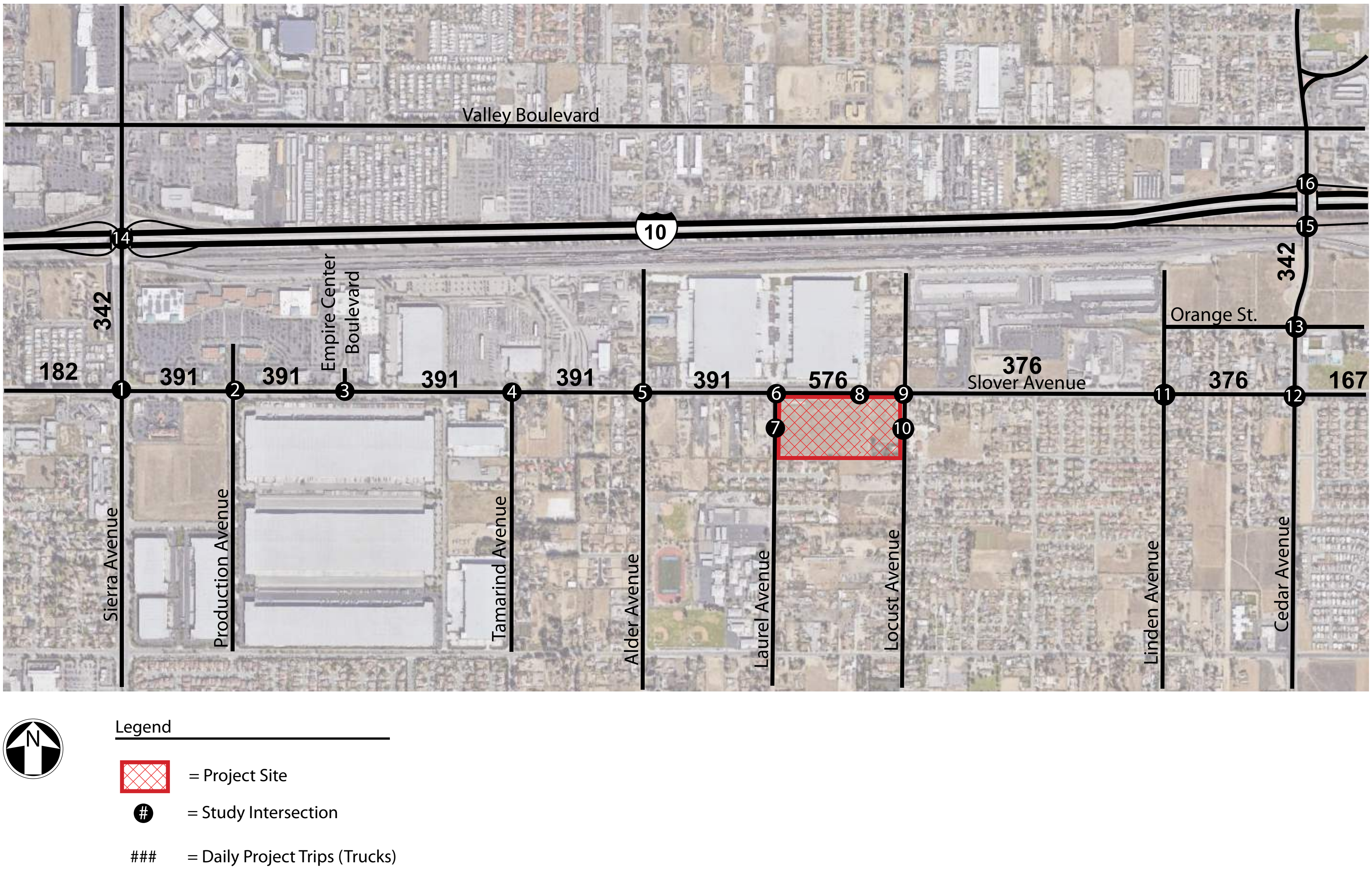
Daily Project Trip Assigment - Cars

156590 January 2017

Exhibit 11



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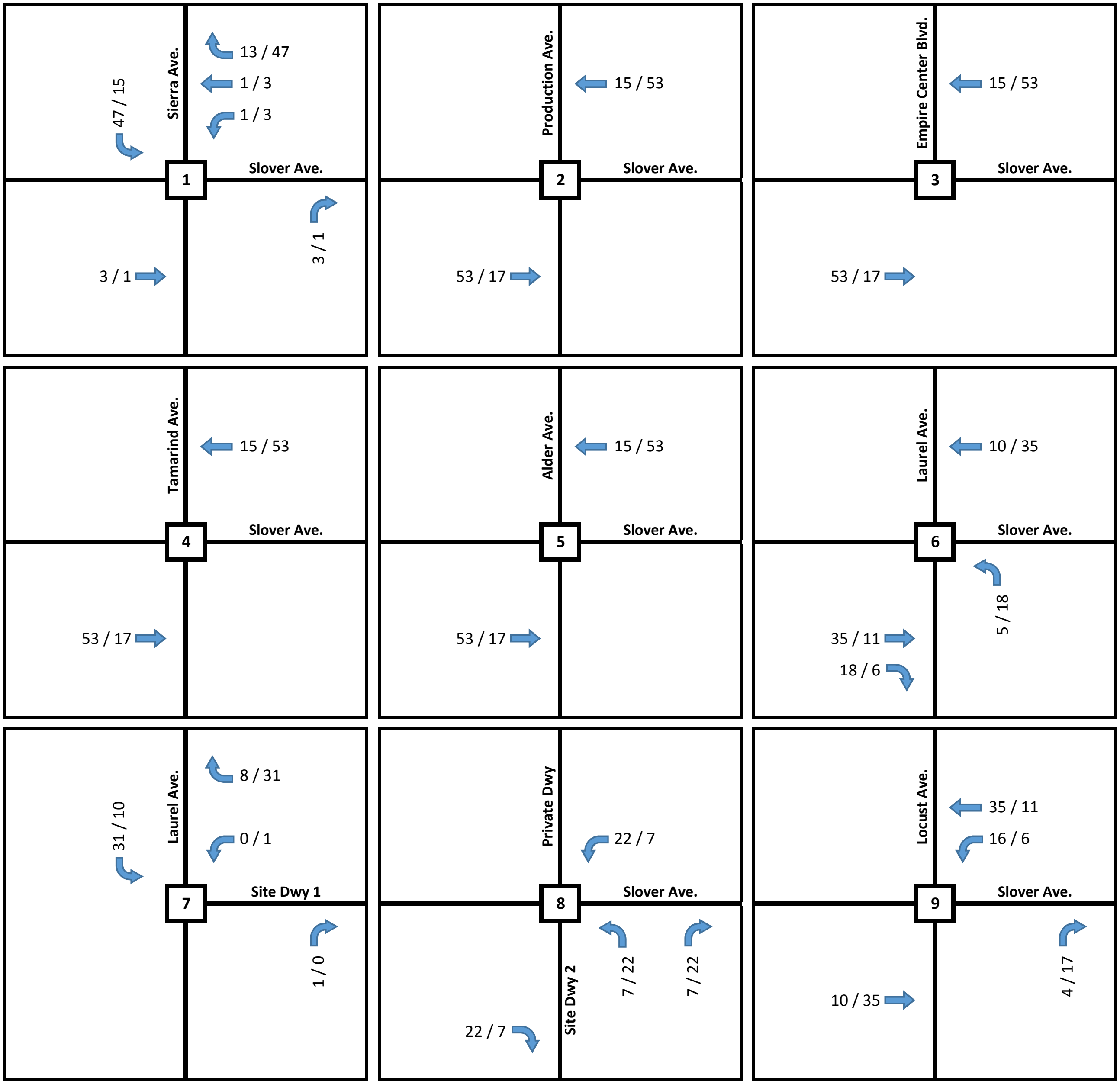
Daily Project Trip Assignment - Trucks

156590 January 2017

Exhibit 12



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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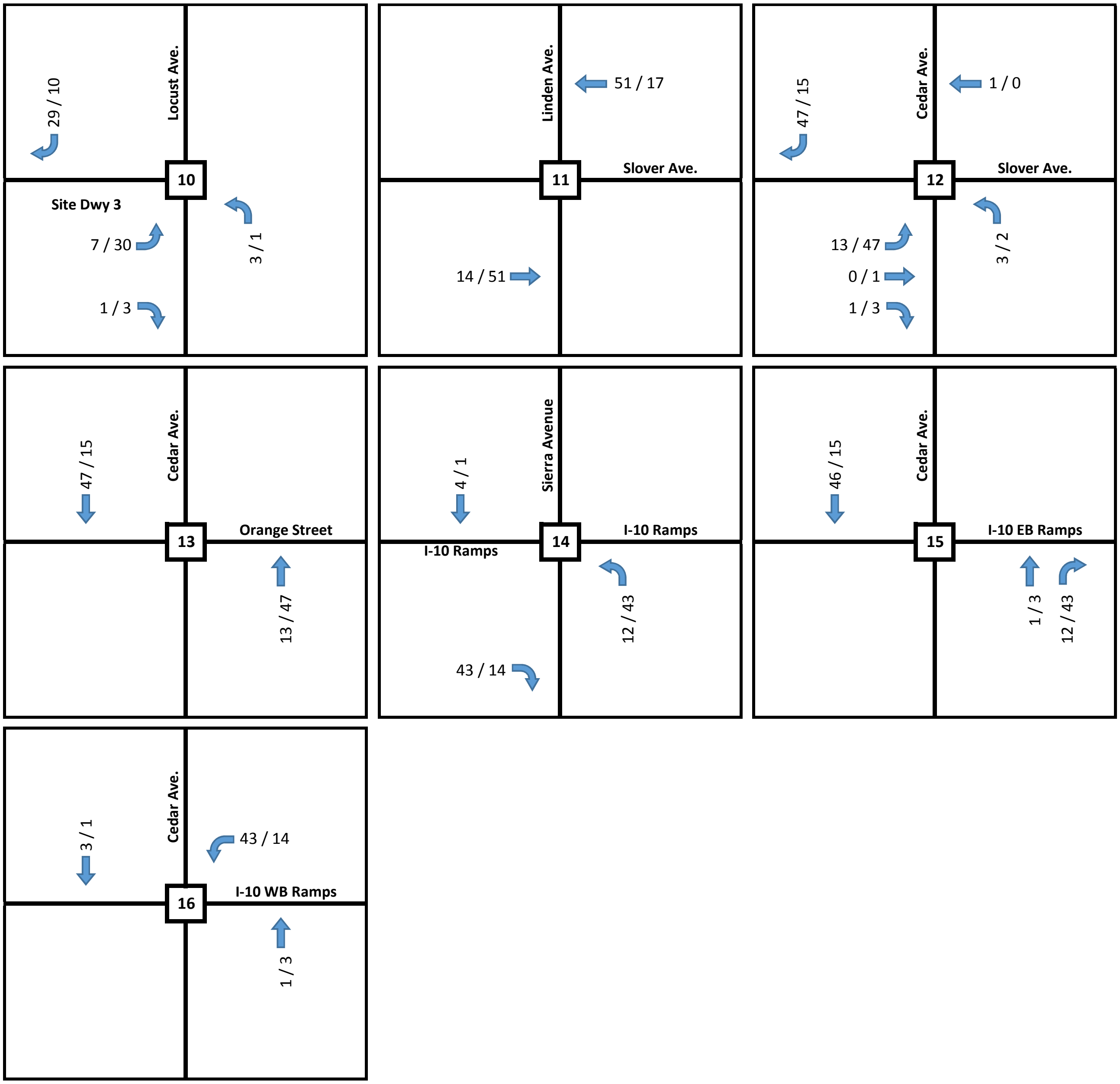
Project Only AM/PM Peak Hour Volumes

Exhibit 13 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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Project Only AM/PM Peak Hour Volumes

Exhibit 13 (2 of 2)

Site Access

The project is proposed to have access on Laurel Avenue via Driveway 1, Slover Avenue via Driveways 2, and Locust Avenue via 3 as illustrated in **Exhibit 3** of this report.

On Laurel Avenue, Driveway 1 will serve as a one-way stop controlled intersection primarily utilized by passenger cars since this driveway provides a direct access to a surface parking lot serving autos on the west side of the site. Driveway 1 is located approximately 250 feet south of Slover Avenue.

On Slover Avenue, Driveway 2 will serve as an all-way access and will be utilized exclusively by trucks entering and exiting the site. This driveway would be located adjacent to the existing driveway on the north side of Slover Avenue approximately 375 feet west of Locust Avenue which serves an existing warehouse.

Driveway 3 on Locust Avenue will also primarily serve passenger cars on the east side of the site. This driveway is located approximately 250 feet south of Slover Avenue.

Sight distance at each project access point should not be a problem but should be reviewed with respect to standard County of San Bernardino sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

EXISTING PLUS PROJECT CONDITIONS

To determine the Existing Plus Project operating conditions at the study intersections, the project-generated trips were added to the existing conditions volumes without ambient traffic growth. As previously mentioned, this condition has been analyzed to comply with California Environmental Quality Act (CEQA) documentation and provided for informational purposes only. **Exhibit 14** shows Existing Plus Project roadway segment daily volumes and **Exhibit 15** shows Existing Plus Project AM and PM peak hour intersection volumes.

Table 7 summarizes the Existing Plus Project AM and PM peak hour intersection LOS for the study intersections. As shown, all study intersections are projected to operate at acceptable LOS (D or better) under the Existing Plus Project conditions. Detailed HCM calculation sheets are contained in **Appendix F**.

Table 7
Existing Plus Project Peak Hour Intersection Conditions

Study Intersection	Traffic Control	Existing Plus Project Conditions	
		AM Delay[1] - LOS	PM Delay[1] - LOS
1 - Slover Avenue / Sierra Avenue	Signal	43.2 - D	54.5 - D
2 - Slover Avenue / Production Avenue	Signal	29.1 - C	28.4 - C
3 - Slover Avenue / Empire Center Blvd.	Signal	23.4 - C	15.7 - B
4 - Slover Avenue / Tamarind Avenue	Signal	15.3 - B	15.4 - B
5 - Slover Avenue / Alder Avenue	TWSC	16.5 - C	15.9 - C
6 - Slover Avenue / Laurel Avenue	Signal	27.9 - C	15.7 - B
7 - Laurel Avenue / Project Driveway 1	OWSC	10.2 - B	8.8 - A
8 - Slover Avenue / Project Driveway 2	OWSC	11.3 - B	13.0 - B
9 - Slover Avenue / Locust Avenue	Signal	18.8 - B	17.6 - B
10 - Locust Avenue / Project Driveway 3	OWSC	11.6 - B	13.3 - B
11 - Slover Avenue / Linden Avenue	AWSC	26.1 - D	31.8 - D
12 - Slover Avenue / Cedar Avenue	Signal	31.3 - C	35.2 - D
13 - Cedar Avenue / Orange Street	Signal	16.5 - B	20.2 - C
14 - Sierra Avenue / I-10 Ramps	Signal	27.9 - C	35.2 - D
15 - Cedar Avenue / I-10 EB Ramps	Signal	52.0 - D	46.8 - D
16 - Cedar Avenue / I-10 WB Ramps	Signal	43.8 - D	28.1 - C

Note: Deficient intersection operation indicated in **bold**.
[1] Average seconds of delay per vehicle.
LOS = level of service.

TWSC = Two-Way Stop Control
AWSC = All-Way Stop Control
OWSC = One-Way Stop Control

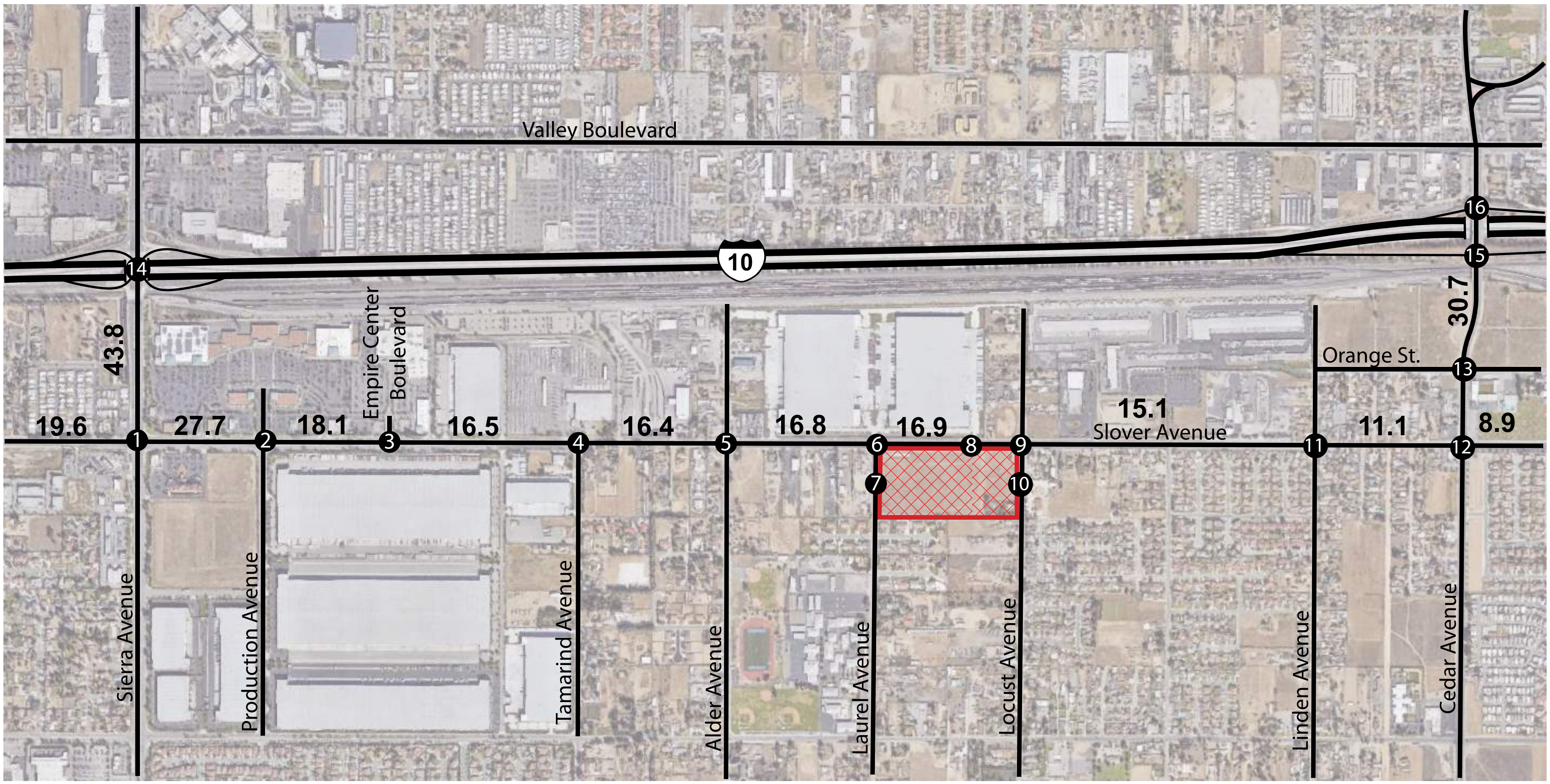
Freeway Segment Analysis

Under Existing Plus Project conditions, a mainline freeway capacity analysis was conducted on the Interstate 10 freeway from Citrus Avenue to Sierra Avenue and from Cedar Avenue to Riverside Avenue. As shown in **Table 8**, freeway mainline segments from Citrus Ave. to Sierra Ave. currently operate at a deficient level of service 'E'.

Table 8
Existing Plus Project Freeway Mainline Level of Service Analysis

Freeway Segment	No. Lanes		Direction	Capacity	ADT	Peak Hour %(1)	Directional Split (1)	Truck Factor(1)	PHV	V/C	LOS
	Through	Auxilliary									
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	208,900	7.34%	69.69%	89.77%	9,593	0.959	**E**
	4	1	WB	10,000	208,300	7.34%	69.69%	89.77%	9,563	0.956	**E**
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	196,300	7.34%	69.69%	89.82%	9,017	0.902	D
	4	1	WB	10,000	196,900	7.34%	69.69%	89.82%	9,047	0.905	D

Note: Deficient roadway segment operations shown in **bold**
ADT = Average Daily Traffic
PHV = Peak Hour Volume
(1) Data taken from Caltrans Count Data
V/C = Volume to Capacity Ratio
LOS = Level of Service
Maximum level of service "E" capacity for Through lanes is assumed to be 2,200 vphpl.
Maximum level of service "E" capacity for Auxilliary lanes is assumed to be 1,200 vphpl.



Legend

= Project Site

= Study Intersection

##.# = 1,000 Daily Trips (Total of Both Directions)

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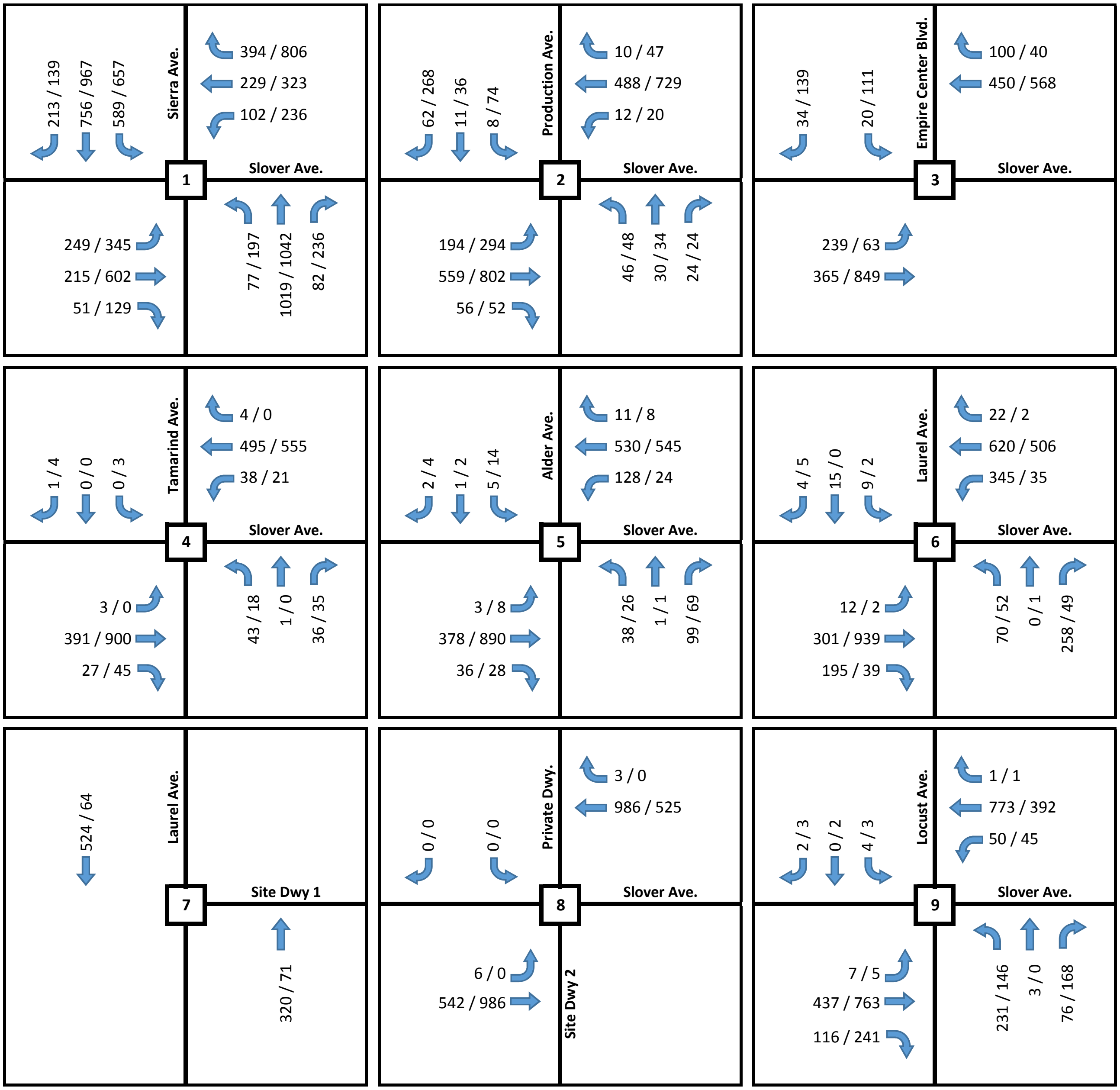
Existing Plus Project Daily Traffic

156590 Mar. 2017

Exhibit 14



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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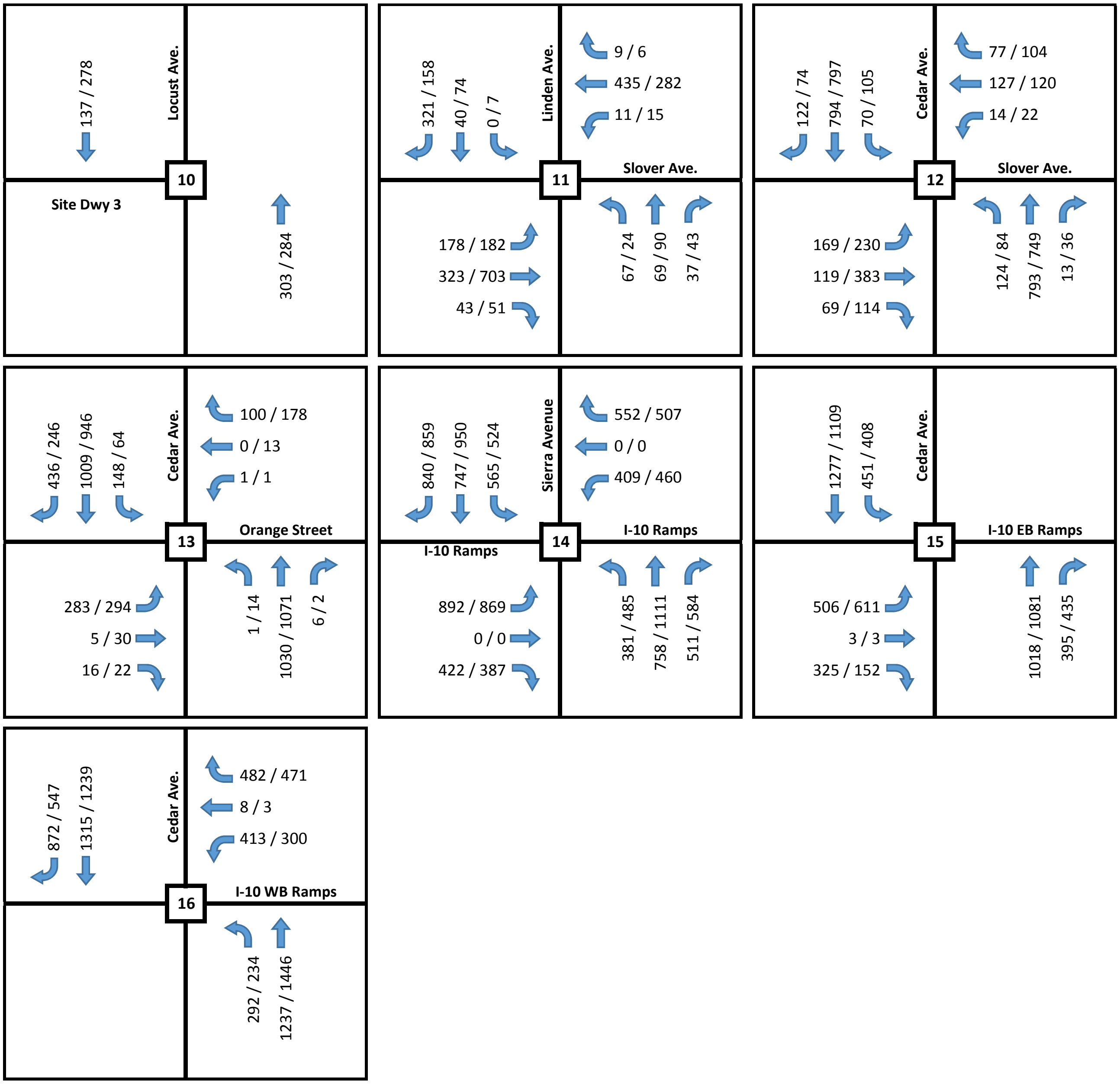
Existing Plus Project AM/PM Peak Hour Volumes

Exhibit 15 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

Existing Plus Project AM/PM Peak Hour Volumes

Exhibit 15 (2 of 2)

OPENING YEAR 2018 WITH AMBIENT TRAFFIC CONDITIONS – WITHOUT AND WITH PROJECT

To determine the Opening Year 2018 With Ambient Traffic conditions in the project study area, traffic volumes have been calculated based on a one percent (1%) annual growth rate of existing traffic volumes for a period of one year based on the project's expected opening year (2018).

Opening Year 2018 With Ambient Traffic Without Project traffic volumes were derived at the intersections and roadway segments within the project study area. An ambient growth factor of 1% per year was also applied to the existing traffic volumes to account for area wide growth through the opening year.

Opening Year 2018 With Ambient Traffic With Project traffic volumes were calculated by adding project volumes to Opening Year 2018 With Ambient Traffic Without Project traffic volumes.

Opening Year 2018 With Ambient Traffic Conditions – Without & With Project Level of Service Analysis

Table 9 summarizes the Opening Year 2018 With Ambient Traffic conditions peak hour intersection analysis without and with the proposed project using HCM methodology. As shown, the analysis results show all study intersections are forecast to operate at acceptable levels of service (D or better) under the Opening Year 2018 With Ambient Traffic conditions Without the proposed project. With the addition of project traffic to the Opening Year 2018 With Ambient Traffic conditions, the analysis results show the intersection of Slover Avenue / Sierra Avenue operates at an unacceptable LOS E in the PM peak hour. Since this intersection operates at LOS D without the project and LOS E with the project, this location is considered significantly impacted by the project. Therefore, mitigation measures are required.

At the intersection of Slover Avenue / Sierra Avenue, the recommended mitigation is to restripe the northbound dedicated right-turn lane to a shared through/right-turn lane. This mitigation measure reduces the impact to a level below significance since the intersection delay is less than the delay without the proposed project.

Detailed HCM calculation sheets are contained in **Appendix G**.

Exhibit 16 and **Exhibit 17** show the Opening Year 2018 With Ambient Traffic roadway segment daily volumes and AM/PM peak hour intersection volumes respectively, for the without project conditions.

Exhibit 18 and **Exhibit 19** show the Opening Year 2018 With Ambient Traffic With Project roadway segment daily volumes and AM/PM peak hour intersection volumes respectively.

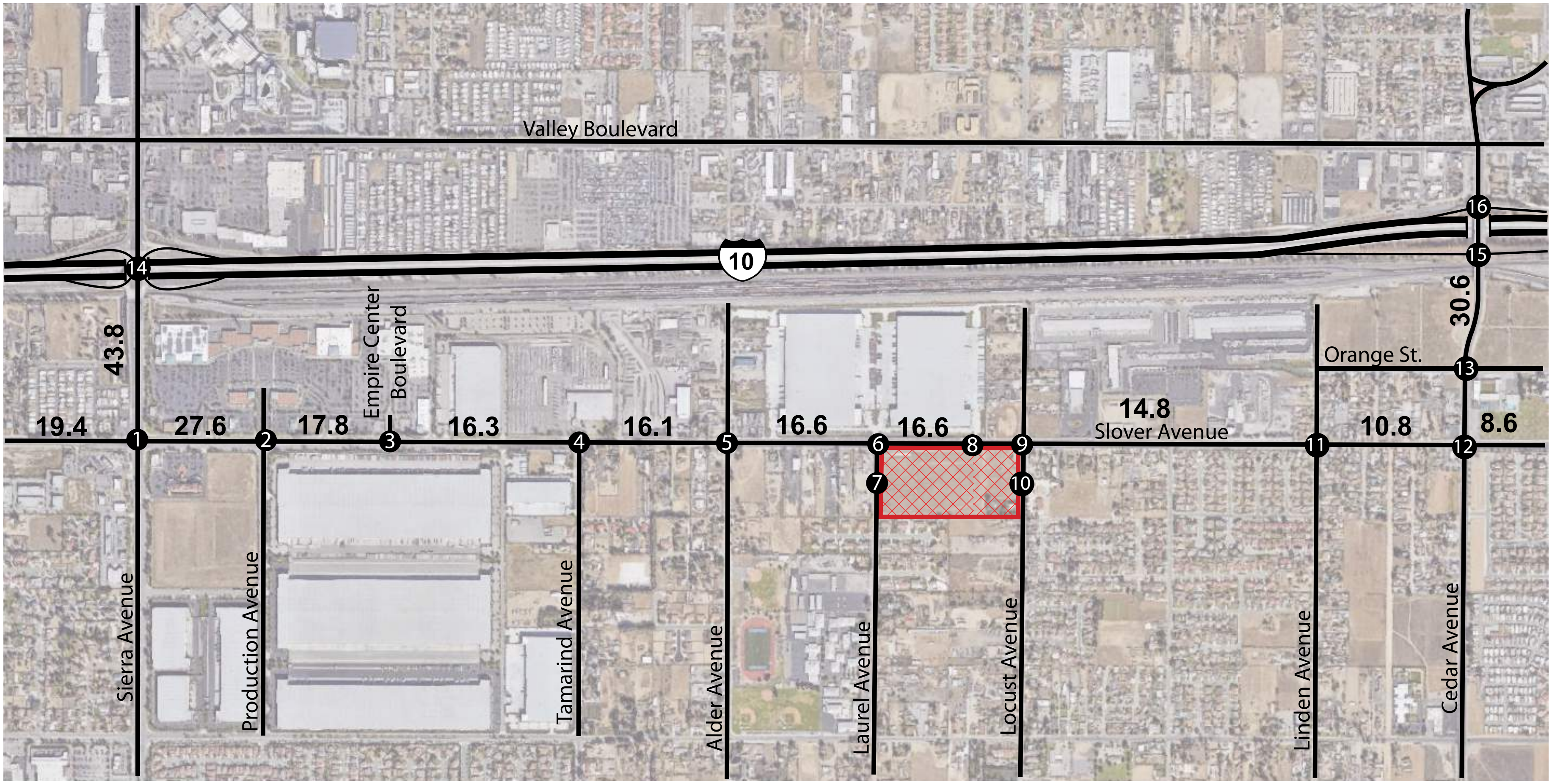
Table 9
Opening Year 2018 With Ambient Traffic Peak Hour Intersection Conditions Without and With Project

Study Intersection	Opening Year 2018 With Ambient Traffic Without Project Conditions		Opening Year 2018 With Ambient Traffic With Project Conditions		Significant Impact?	
	AM	PM	AM	PM		
	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	AM	PM
1 - Slover Avenue / Sierra Avenue	42.5 - D	54.4 - D	43.8 - D	**55.2 - E**	No	**Yes**
2 - Slover Avenue / Production Avenue	28.2 - C	27.3 - C	29.3 - C	29.7 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	22.6 - C	15.4 - B	23.9 - C	16.6 - B	No	No
4 - Slover Avenue / Tamarind Avenue	15.1 - B	15.5 - B	15.6 - B	18.1 - B	No	No
5 - Slover Avenue / Alder Avenue	16.4 - C	15.4 - C	16.5 - C	15.9 - C	No	No
6 - Slover Avenue / Laurel Avenue	28.0 - C	16.4 - B	28.1 - C	17.0 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.3 - B	8.8 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		11.1 - B	13.7 - B	No	No
9 - Slover Avenue / Locust Avenue	18.6 - B	17.3 - B	21.3 - C	18.4 - B	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		11.6 - B	13.4 - B	No	No
11 - Slover Avenue / Linden Avenue	23.7 - C	26.8 - D	26.9 - D	32.1 - D	No	No
12 - Slover Avenue / Cedar Avenue	29.5 - C	31.2 - C	32.3 - C	35.8 - D	No	No
13 - Cedar Avenue / Orange Street	16.3 - B	20.4 - C	16.3 - B	20.4 - C	No	No
14 - Sierra Avenue / I-10 Ramps	27.6 - C	34.9 - C	27.6 - C	35.4 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	52.6 - D	44.8 - D	53.2 - D	46.9 - D	No	No
16 - Cedar Avenue / I-10 WB Ramps	44.0 - D	28.1 - C	44.9 - D	28.6 - C	No	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Seconds of delay per vehicle.

LOS = level of service.



Legend

= Project Site

= Study Intersection

##.# = 1,000 Daily Trips (Total of Both Directions)

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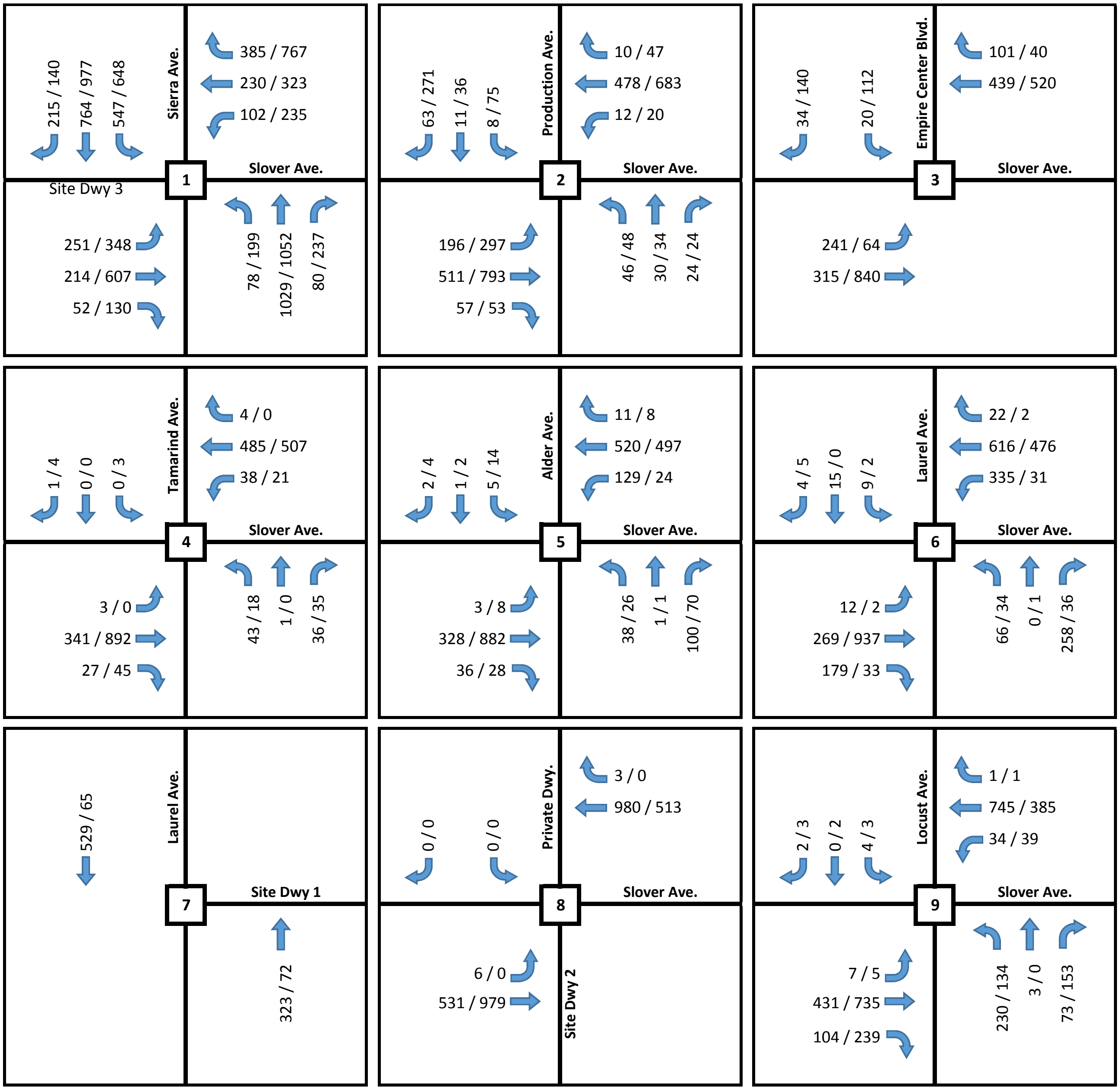
Opening Year 2018 With Ambient Traffic Daily Traffic

156590 Mar. 2017

Exhibit 16



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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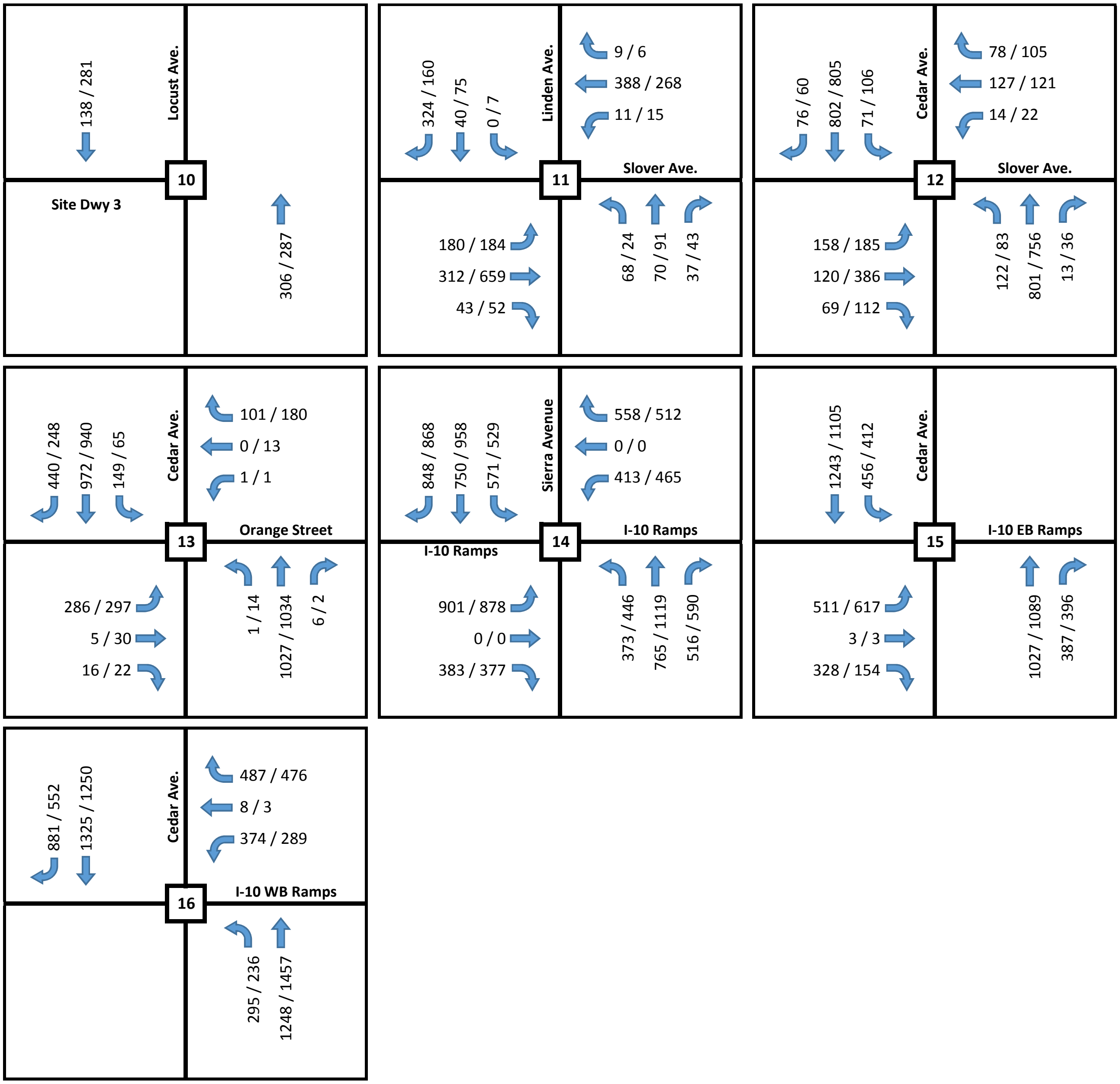
Opening Year 2018 With Ambient Traffic
AM/PM Peak Hour Volumes

Exhibit 17 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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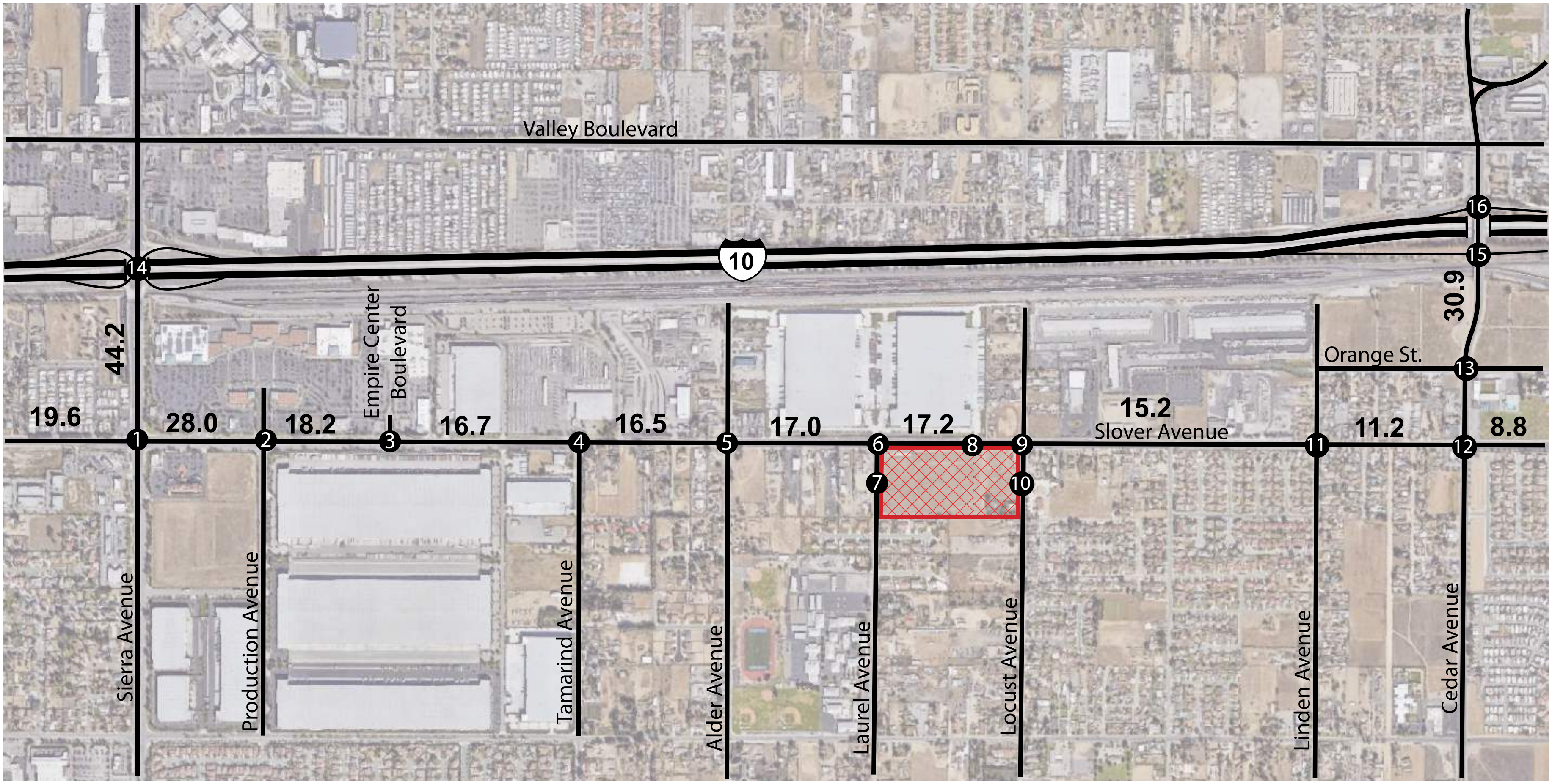
Opening Year 2018 With Ambient Traffic
AM/PM Peak Hour Volumes

Exhibit 17 (2 of 2)



Legend

= Project Site

= Study Intersection

##.# = 1,000 Daily Trips

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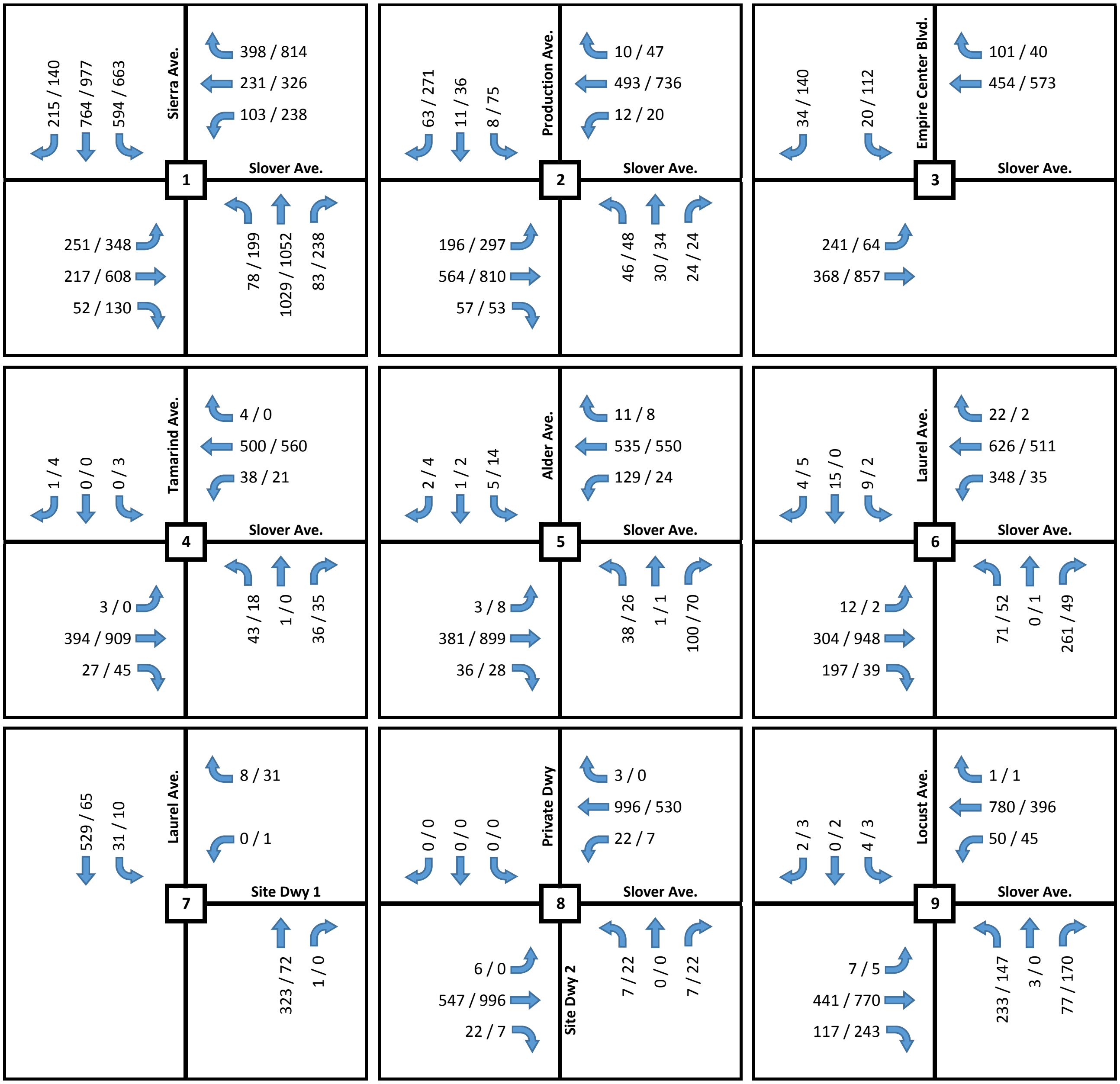
Opening Year 2018 With Ambient Traffic With Project Daily Traffic

156590 Mar. 2017

Exhibit 18



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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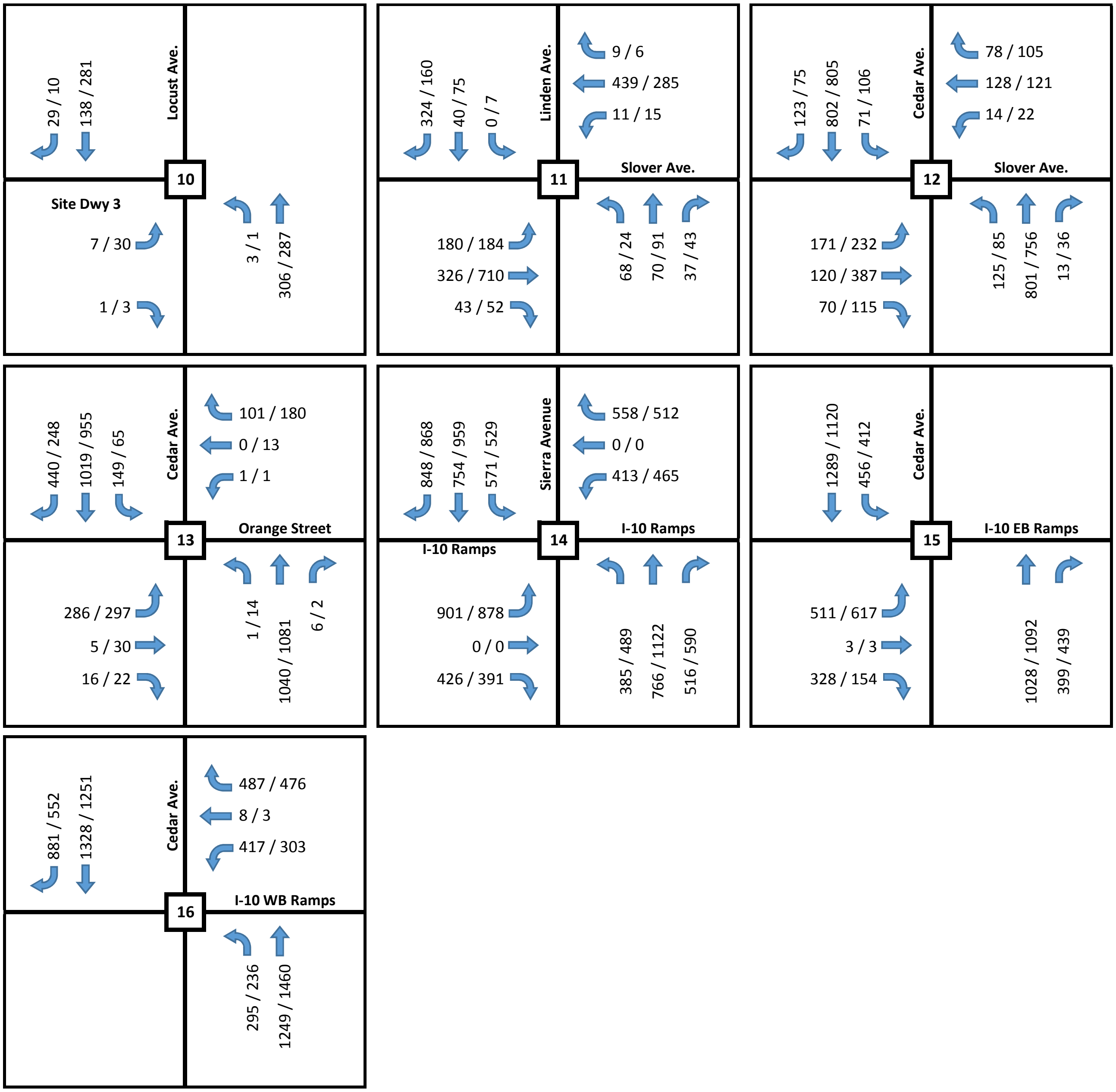
Opening Year 2018 With Ambient Traffic With Project AM/PM Peak Hour Volumes

Exhibit 19 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

Michael Baker INTERNATIONAL

Opening Year 2018 With Ambient Traffic With Project AM/PM Peak Hour Volumes

Exhibit 19 (2 of 2)

Opening Year 2018 With Ambient Traffic Conditions – Without & With Project Freeway Mainline Segment Analysis

Under Opening Year 2018 With Ambient Traffic Without Project conditions, a freeway mainline capacity analysis was conducted on the Interstate 10 freeway from Citrus Avenue to Sierra Avenue and from Cedar Avenue to Riverside Avenue. Project only traffic volumes were added to the Opening Year 2018 With Ambient Traffic Without Project traffic volumes to derive the Opening Year 2018 With Ambient Traffic With Project traffic volumes. **Table 10** includes a comparison of Opening Year 2018 With Ambient Traffic Without and With Project conditions. As shown, both freeway mainline segments operate at a deficient level of service 'E' with and without the project. The analysis results show the change in volume to capacity ratio between the without and with project conditions does not exceed 0.01, therefore, these freeway segments are not significantly impacted by the project.

Table 10
Opening Year 2018 With Ambient Traffic - Without & With Project
Freeway Mainline Comparison

Freeway Segment	No. Lanes		Direction	Capacity	Opening Year 2018 With Ambient Traffic Without Project Conditions				Opening Year 2018 With Ambient Traffic With Project Conditions				Δ V/C	Sig. Impact?
	Through	Auxilliary			ADT	PHV [1]	V/C	LOS	ADT	PHV [1]	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	214,240	9,838	0.984	**E**	215,200	9,880	0.988	**E**	0.004	No
	4	1	WB	10,000	214,240	9,838	0.984	**E**	214,500	9,850	0.985	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	201,880	9,275	0.928	**E**	202,100	9,287	0.929	**E**	0.001	No
	4	1	WB	10,000	201,880	9,275	0.928	**E**	202,800	9,317	0.932	**E**	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".
[1] Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.
Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.
Δ= Difference
V/C = Volume to Capacity Ratio
LOS = Level of Service
For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.

OPENING YEAR 2018 WITH AMBIENT TRAFFIC WITH CUMULATIVE PROJECTS – WITHOUT AND WITH PROJECT

To determine the Opening Year 2018 With Ambient Traffic With Cumulative Projects conditions in the project study area, forecast project traffic associated with San Bernardino County, City of Rialto and the City of Fontana approved or pending projects were added to existing traffic volumes with ambient traffic growth (1%). County staff identified the list of projects that would generate traffic into the study area by the projects opening year (approximately 2018). Cumulative project traffic data through the study area is based on information from traffic impact studies prepared for the cumulative projects where available. The list of cumulative projects and the trips generated by each project are presented in **Table 11**.

As presented in **Table 11**, nine (9) cumulative projects are forecast to generate approximately 20,069 trips per day, which includes approximately 1,515 AM peak hour trips and approximately 1,652 PM peak hour trips using ITE trip generation rates. A total of 32 cumulative projects were considered within the City of Rialto, City of Fontana and San Bernardino County. A full list of cumulative projects considered in this analysis is provided in **Appendix H**.

The locations of the cumulative projects are provided in **Exhibit 20**. **Exhibit 21** illustrates the daily trips generated by the cumulative projects. The AM and PM peak hour trips generated by the cumulative projects are shown in **Exhibit 22**.

To determine the Opening Year 2018 With Ambient Traffic With Cumulative Projects operating conditions, the cumulative project trips were added to the existing traffic volumes at the intersections and roadway segments within the project study area. An ambient growth factor of 1% per year was also applied to the existing traffic volumes to account for area wide growth through the project's opening year (approximately 2018).

Table 11
Cumulative Projects Trip Generation Table

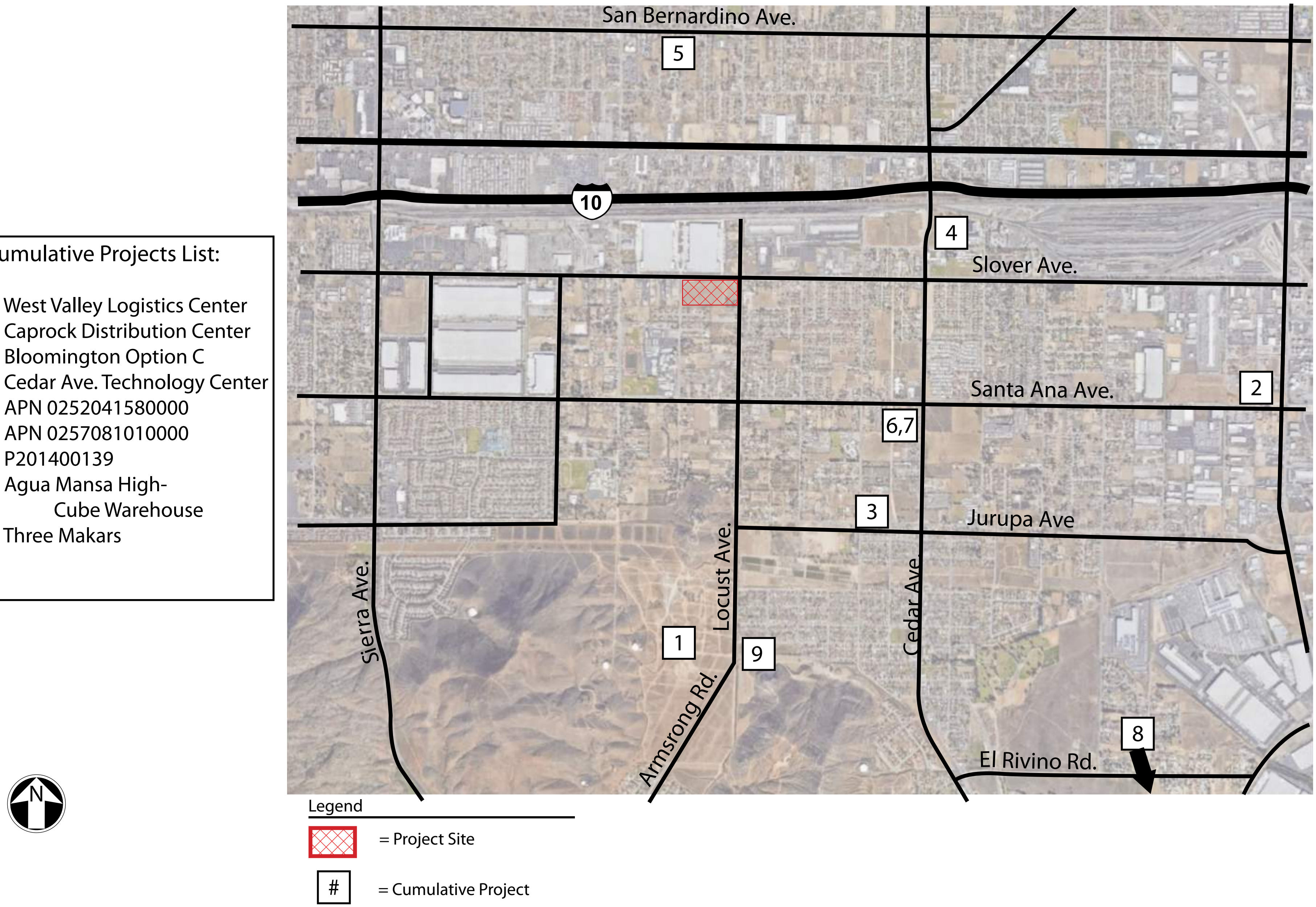
	Project	Jurisdiction	Land Use	Size	Vehicle Type	ADT	AM Peak Hour			PM Peak Hour		
							Total	Inbound	Outbound	Total	Inbound	Outbound
1	West Valley Logistics Center SP	Fontana	Warehouse/High-Cube Warehouse	3,474 KSF	Car+Truck	8,365	575	380	195	621	223	398
2	Caprock Distribution Center	Rialto	Warehouse	525.11 KSF	Car	1,128	95	77	18	101	25	76
					Truck	2,023	170	135	35	183	48	135
3	Bloomington Option C	SBC	High-Cube Warehouse	676.98 KSF	Car	905	59	43	16	65	22	43
					Truck	585	43	30	13	43	13	30
4	Cedar Avenue Technology Center	SBC	High-Cube Warehouse	344 KSF	Car	523	44	29	15	47	9	38
					Truck	340	30	21	9	30	6	24
5	APN 0252041580000	SBC	Church	1,100 Seats	Car	671	67	60	7	67	60	7
6	APN 0257081010000	SBC	Commercial Retail	8.32 KSF	Car	369	57	27	30	23	10	13
7	P201400139	SBC	Gas Station With Convenience Store/Car Wash	6 VFP	Car	1,954	122	61	61	162	81	81
8	Agua Mansa High-Cube Warehouse	SBC	High-Cube Warehouse & Cross-Dock Facility	471.86 KSF	Car	803	64	48	16	68	17	51
					Truck	518	40	30	10	44	11	33
9	Three Makars	SBC	Single Family Residential	198 DU	Car	1,885	149	38	111	198	125	73
	Total Cumulative Project Trips					20,069	1,515	979	536	1,652	650	1,002

Note: all volumes are in passenger car equivalents (PCE's)

SBC = San Bernardino County; KSF = Thousand Square Feet; VFP = Vehical Fuel Pump; DU=Dwelling Unit

Cumulative Projects List:

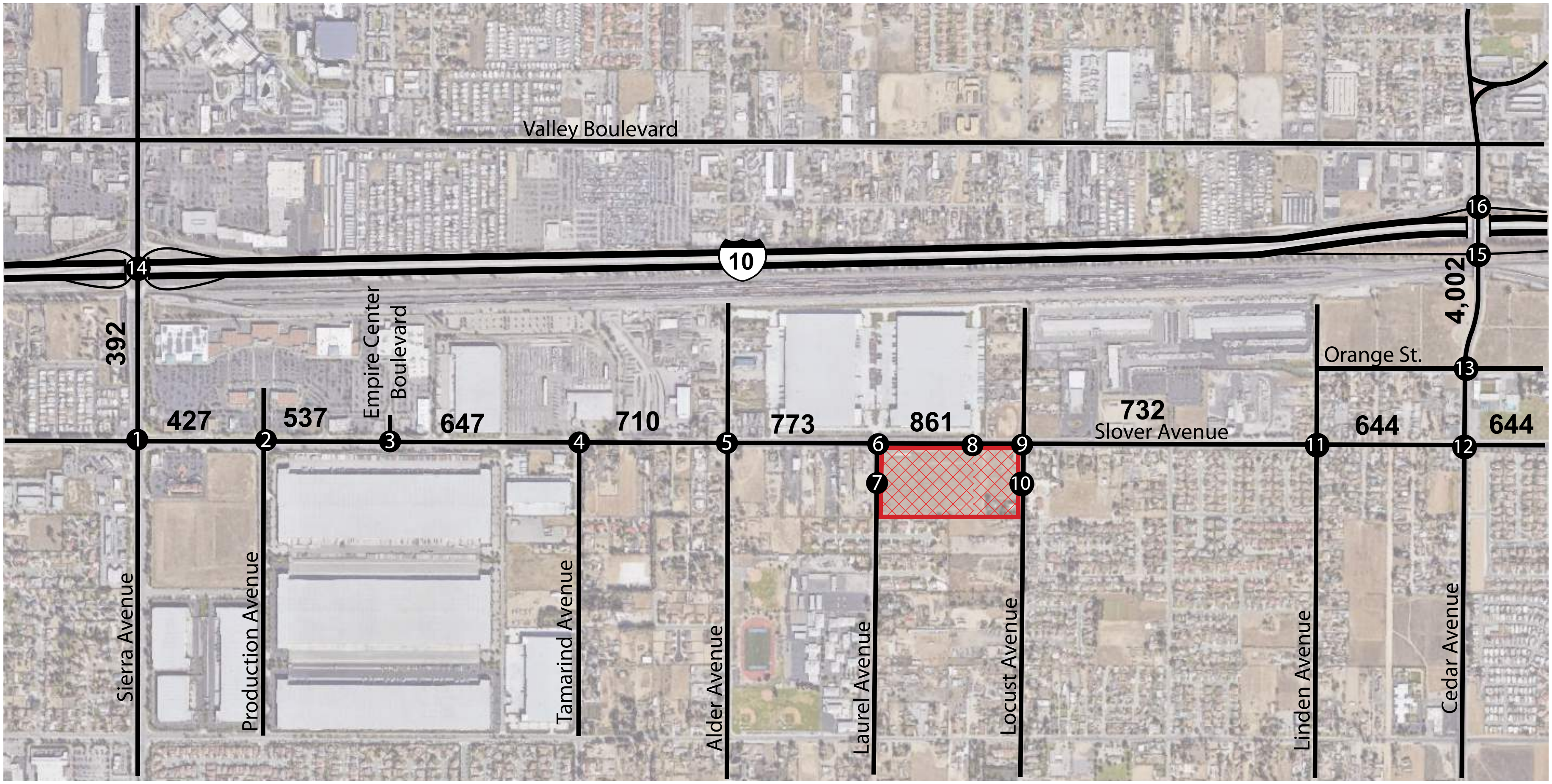
1. West Valley Logistics Center
2. Caprock Distribution Center
3. Bloomington Option C
4. Cedar Ave. Technology Center
5. APN 0252041580000
6. APN 0257081010000
7. P201400139
8. Agua Mansa High-Cube Warehouse
9. Three Makars



Cumulative Projects Location Map

156590 January 2017

Exhibit 20



Legend

= Project Site

= Study Intersection

= Daily Trips (PCE)

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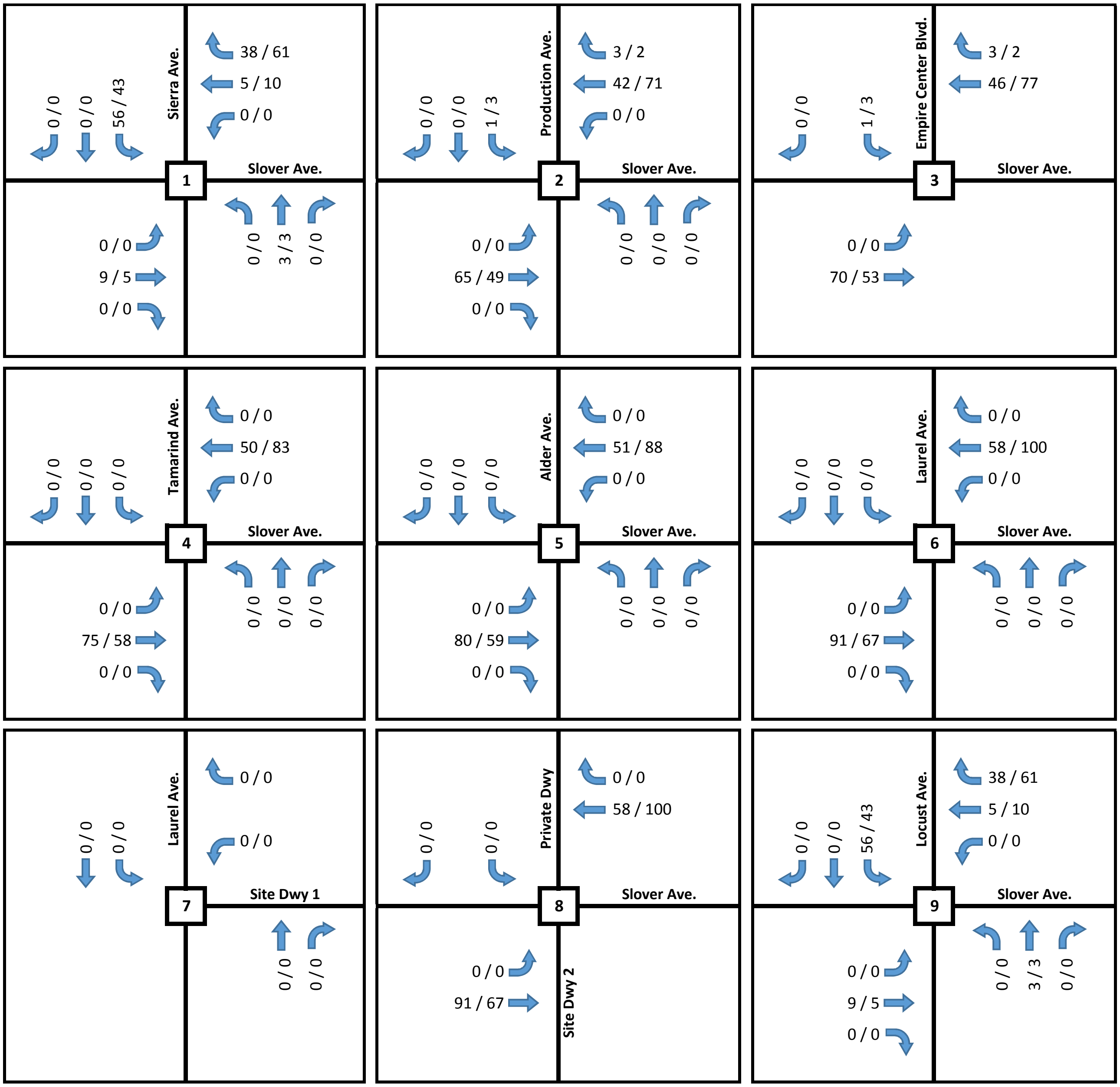
Cumulative Projects Daily Traffic

156590 Mar. 2017

Exhibit 21



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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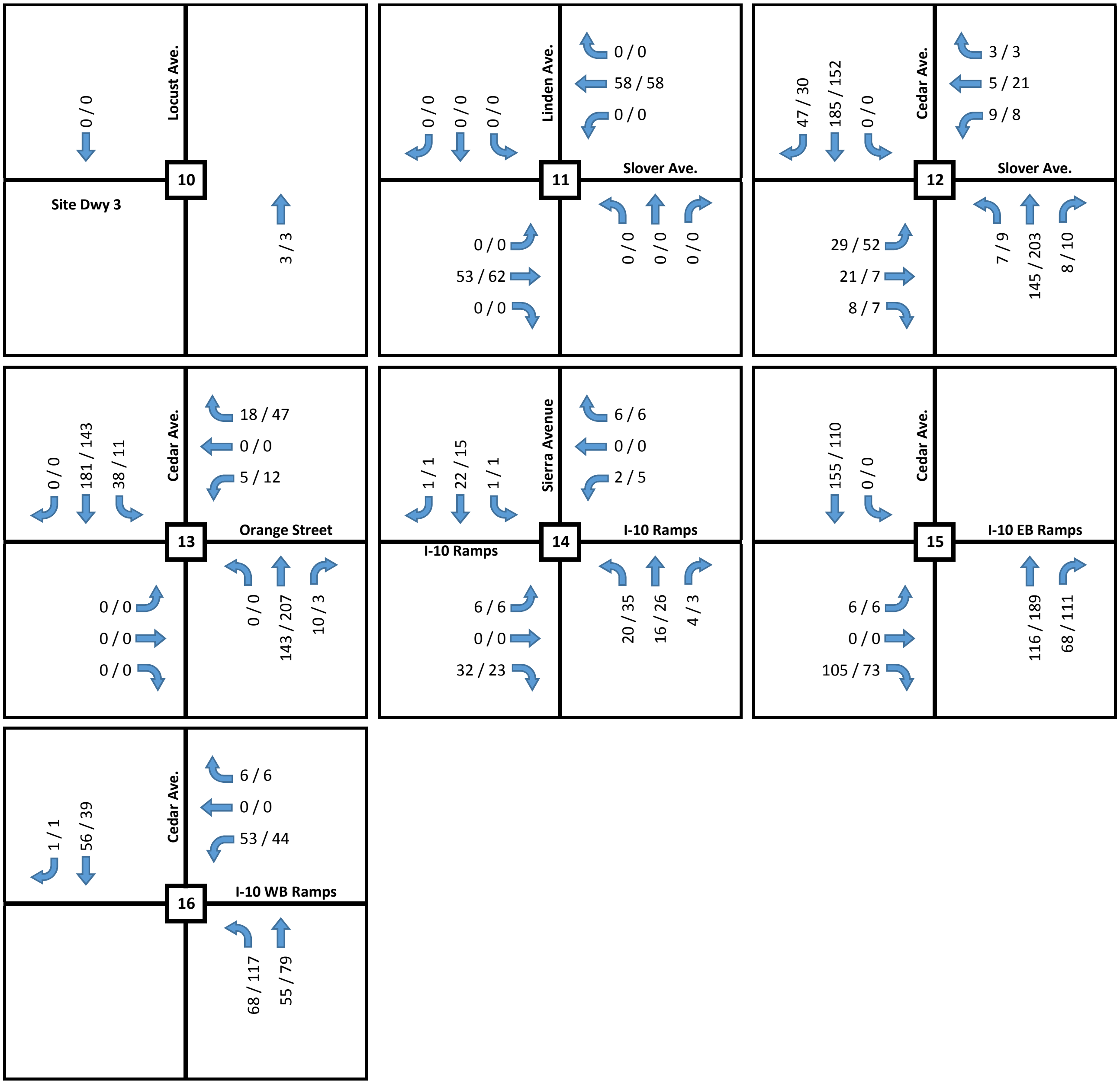
Cumulative Projects Only AM/PM Peak Hour Volumes

Exhibit 22(1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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Cumulative Projects Only AM/PM Peak Hour Volumes

Exhibit 22(2 of 2)

Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions Level of Service Analysis

Table 12 summarizes the Opening Year 2018 conditions peak hour intersection analysis without and with the proposed project using HCM methodology. Detailed HCM calculation sheets are contained in **Appendix I**. **Exhibit 23** and **Exhibit 24** show the Opening Year 2018 roadway segment daily volumes and AM/PM peak hour intersection volumes respectively, for the without project conditions. **Exhibit 25** and **Exhibit 26** show the Opening Year 2018 with project roadway segment daily volumes and AM/PM peak hour intersection volumes respectively.

Table 12
Opening Year 2018 With Ambient Traffic With Cumulative Projects
Peak Hour Intersection Conditions – Without & With Project

Study Intersection	Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project		Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project		Significant Impact?	
	AM	PM	AM	PM		
	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	Delay[1] - LOS	AM	PM
1 - Slover Avenue / Sierra Avenue	44.4 - D	**58.1 - E**	48.4 - D	**59.3 - E**	No	**Yes**
2 - Slover Avenue / Production Avenue	32.4 - C	30.0 - C	34.0 - C	31.0 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	22.3 - C	15.7 - B	22.3 - C	16.9 - B	No	No
4 - Slover Avenue / Tamarind Avenue	16.6 - B	32.3 - C	19.1 - B	34.4 - C	No	No
5 - Slover Avenue / Alder Avenue	17.0 - C	16.3 - C	17.4 - C	16.8 - C	No	No
6 - Slover Avenue / Laurel Avenue	29.0 - C	15.7 - B	29.6 - C	15.9 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.3 - B	8.8 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		11.4 - B	14.3 - B	No	No
9 - Slover Avenue / Locust Avenue	18.8 - B	18.7 - B	21.5 - C	21.3 - C	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		11.6 - B	13.4 - B	No	No
11 - Slover Avenue / Linden Avenue	28.6 - D	32.4 - D	33.1 - D	33.6 - D	No	No
12 - Slover Avenue / Cedar Avenue	50.0 - D	43.6 - D	51.6 - D	51.9 - D	No	No
13 - Cedar Avenue / Orange Street	24.6 - C	23.0 - C	26.0 - C	24.0 - C	No	No
14 - Sierra Avenue / I-10 Ramps	28.2 - C	35.9 - D	28.3 - C	36.6 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	**67.1 - E**	54.7 - D	**69.2 - E**	**55.6 - E**	**Yes**	**Yes**
16 - Cedar Avenue / I-10 WB Ramps	**57.7 - E**	36.6 - D	**58.4 - E**	37.6 - D	**Yes**	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Seconds of delay per vehicle.

LOS = level of service.

As shown in **Table 12**, the analysis results show the following intersections are forecast to operate at unacceptable levels of service i.e. LOS "E" or "F" which also means the following intersections are significantly impacted by the proposed project and mitigation measures are required:

- Slover Avenue / Sierra Avenue
- I-10 Eastbound Ramps / Cedar Avenue
- I-10 Westbound Ramps / Cedar Avenue

The Interstate 10 / Cedar Avenue interchange improvements are planned and funded with completion of the interchange project scheduled in Year 2020 according to the Supplemental Traffic Operations Report-Cedar Avenue Interchange on Interstate 10 (Parsons, May 2016). For the time period between the projects' Opening Year in 2018 and completion in 2020 of the Cedar Avenue interchange improvements, there would be a temporary significant unavoidable impact at the two ramp intersections. Once the interchange improvements are completed, the project's impact on level of service would be eliminated.

At the intersection of Slover Avenue / Sierra Avenue, the recommended mitigation is to restripe the northbound dedicated right-turn lane to a shared through/right-turn lane. This mitigation measure reduces the impact to a level below significance since the intersection delay is less than the delay without the proposed project.

Opening Year 2018 With Ambient Traffic With Cumulative Projects – Without & With Project Freeway Mainline Segment Analysis

Under Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project conditions, a mainline freeway capacity analysis was conducted on the Interstate 10 freeway from Citrus Avenue to Sierra Avenue and from Cedar Avenue to Riverside Avenue. Cumulative project traffic volumes in the area are added to existing freeway traffic volumes with ambient traffic growth to derive the Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project traffic volumes. Project only traffic volumes were added to the Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project traffic volumes to derive the Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project traffic volumes. **Table 13** includes a comparison of Opening Year 2018 With Ambient Traffic With Cumulative Projects Without and With Project conditions. As shown, both freeway mainline segments operate at a deficient level of service 'E' with and without the project. However, the change in volume to capacity ratio does not exceed 0.01, therefore, these freeway segments are not significantly impacted by the project.

Table 13
Opening Year 2018 With Ambient Traffic With Cumulative Projects Without & With Project Freeway Mainline Comparison

Freeway Segment	No. Lanes		Direction	Capacity	Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project Conditions				Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project Conditions				Δ V/C	Sig. Impact?
	Through	Auxilliary			ADT	PHV (1)	V/C	LOS	ADT	PHV (1)	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	EB	10,000	216,300	9,931	0.993	**E**	217,200	9,973	0.997	**E**	0.004	No
	4	1	WB	10,000	215,600	9,900	0.990	**E**	215,900	9,912	0.991	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	EB	10,000	203,400	9,347	0.935	**E**	203,700	9,359	0.936	**E**	0.001	No
	4	1	WB	10,000	203,900	9,366	0.937	**E**	204,800	9,408	0.941	**E**	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".

(1) Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.

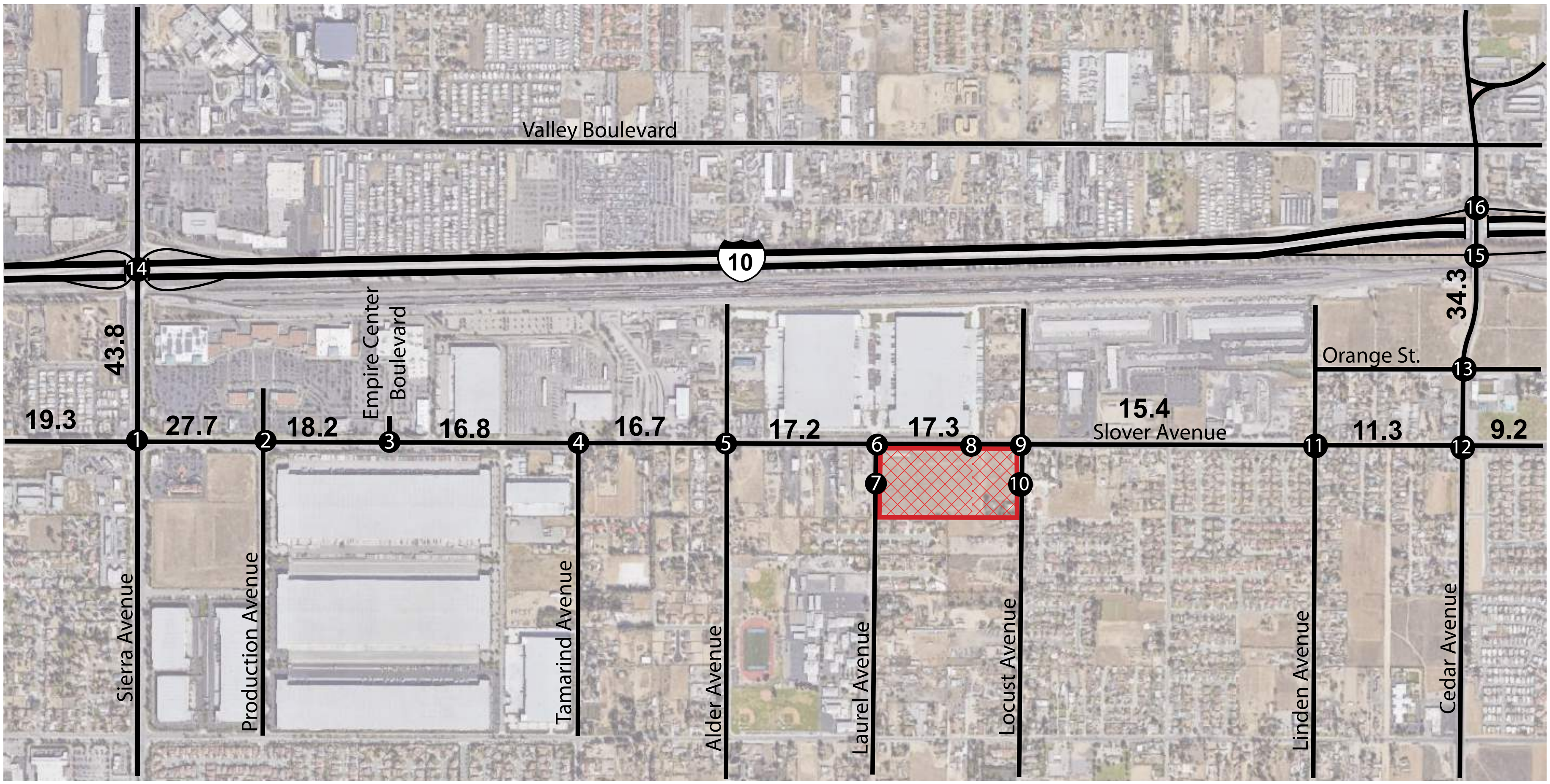
Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.

Δ= Difference

V/C = Volume to Capacity Ratio

LOS = Level of Service

For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.



Legend

= Project Site

= Study Intersection

##.# = 1,000 Daily Trips

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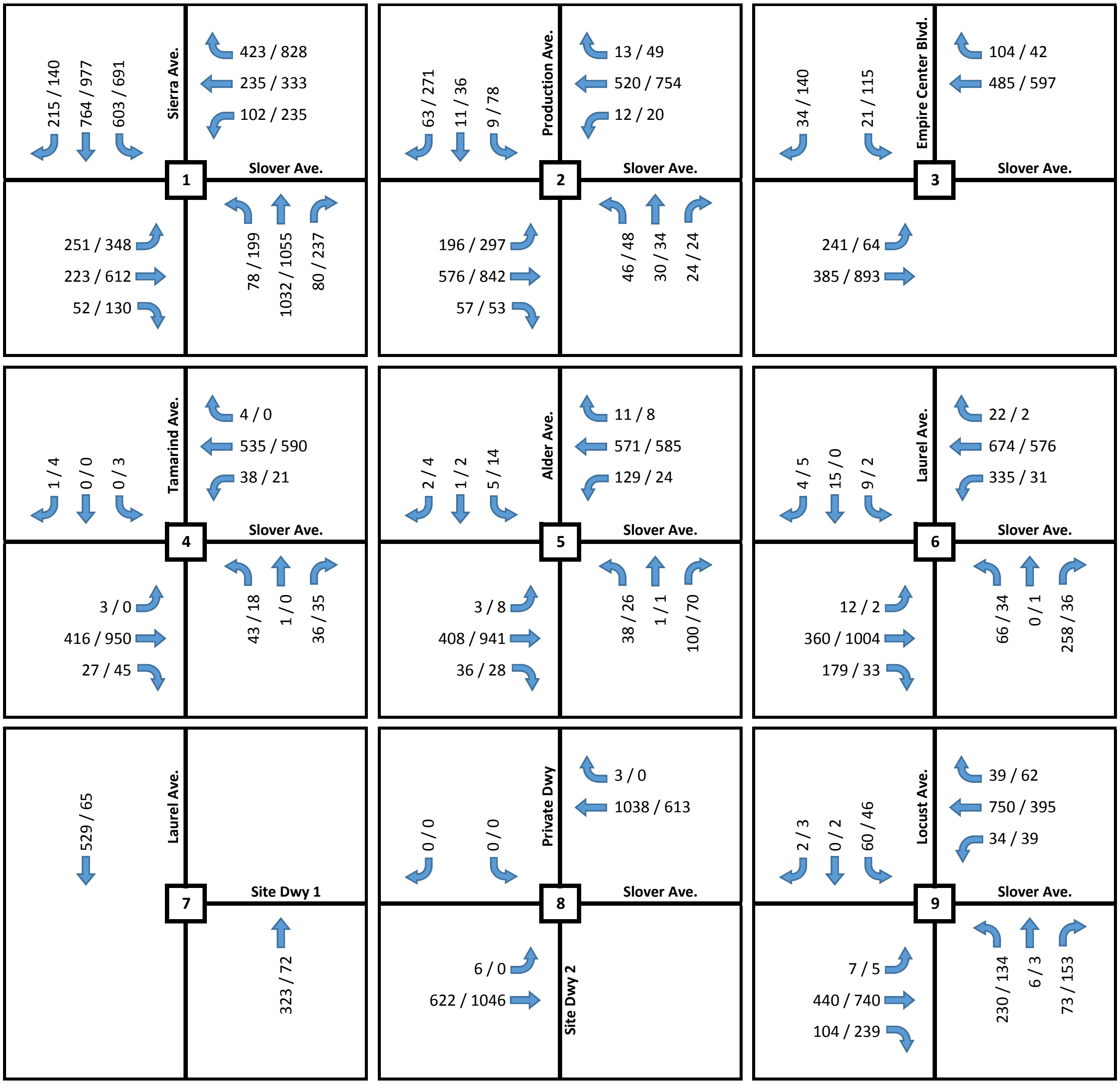
Opening Year 2018 With Ambient Traffic With Cumulative Projects Without Project Daily Traffic

156590 Mar. 2017

Exhibit 23



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as
Passenger Car Equivalents (PCE)

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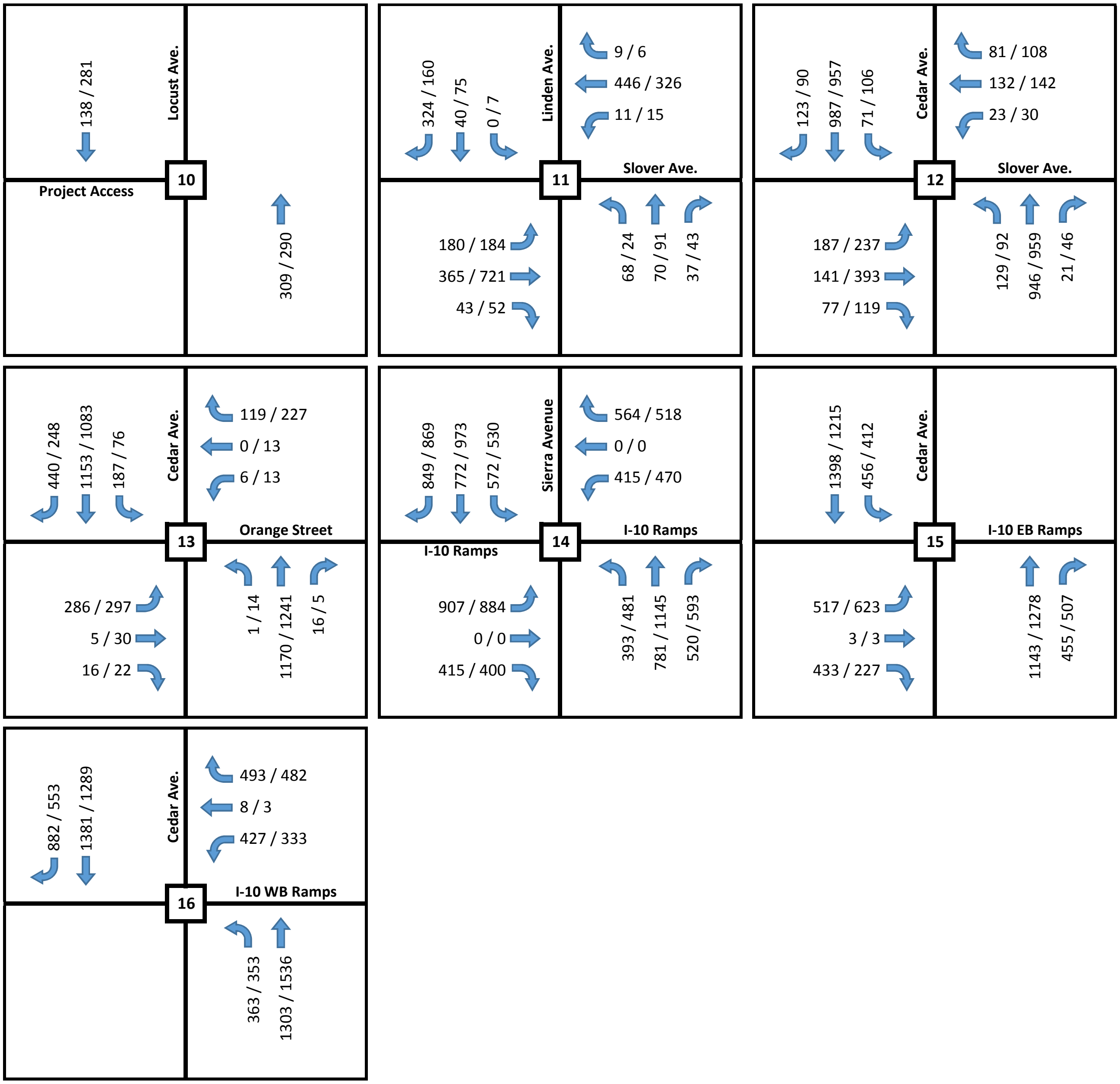
Opening Year 2018 With Ambient Traffic With Cumulative Projects
AM/PM Peak Hour Volumes

Exhibit 24 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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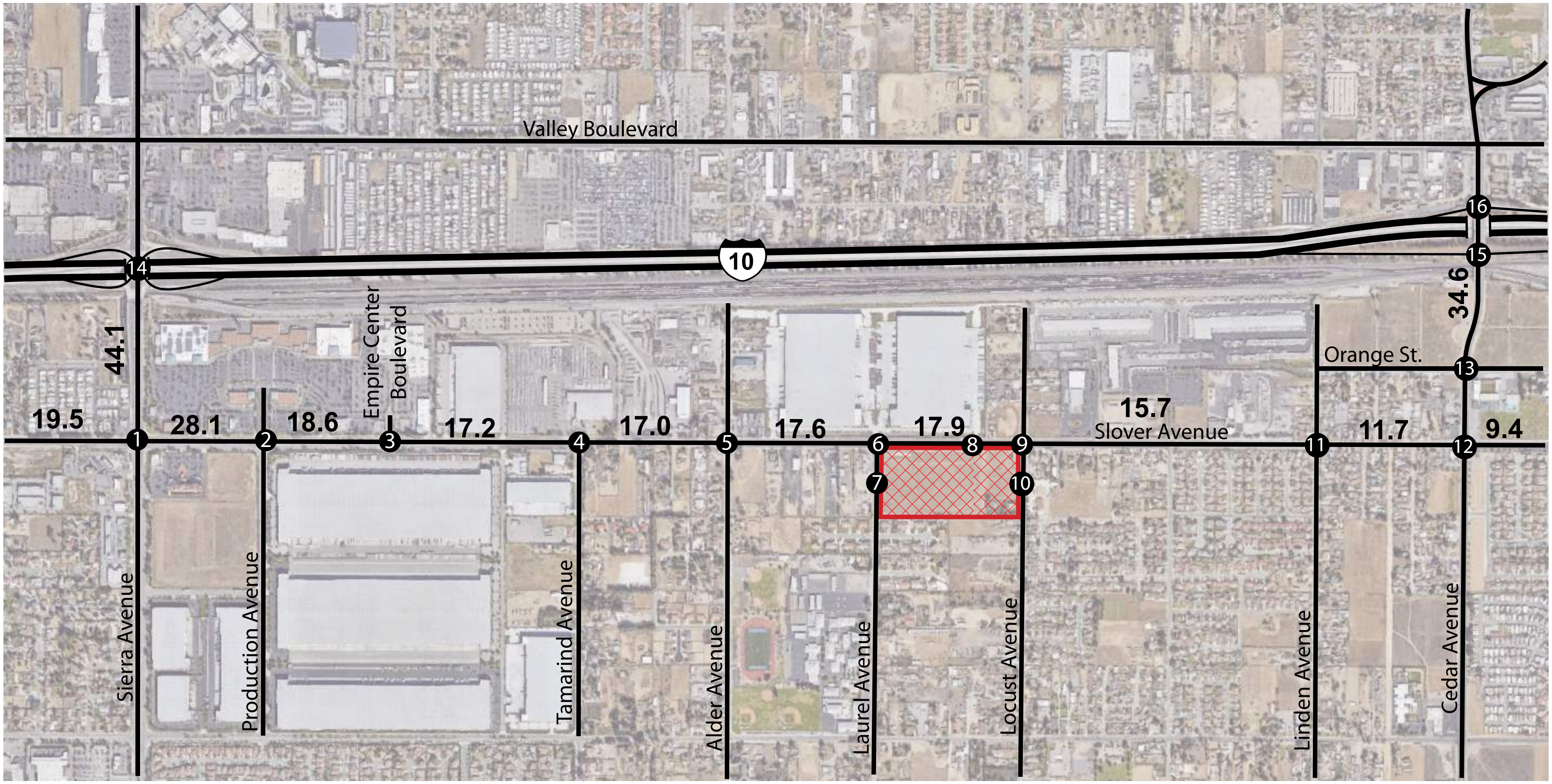
Opening Year 2018 With Ambient Traffic With Cumulative Projects AM/PM Peak Hour Volumes

Exhibit 24 (2 of 2)



Legend

= Project Site

= Study Intersection

##.# = 1,000 Daily Trips

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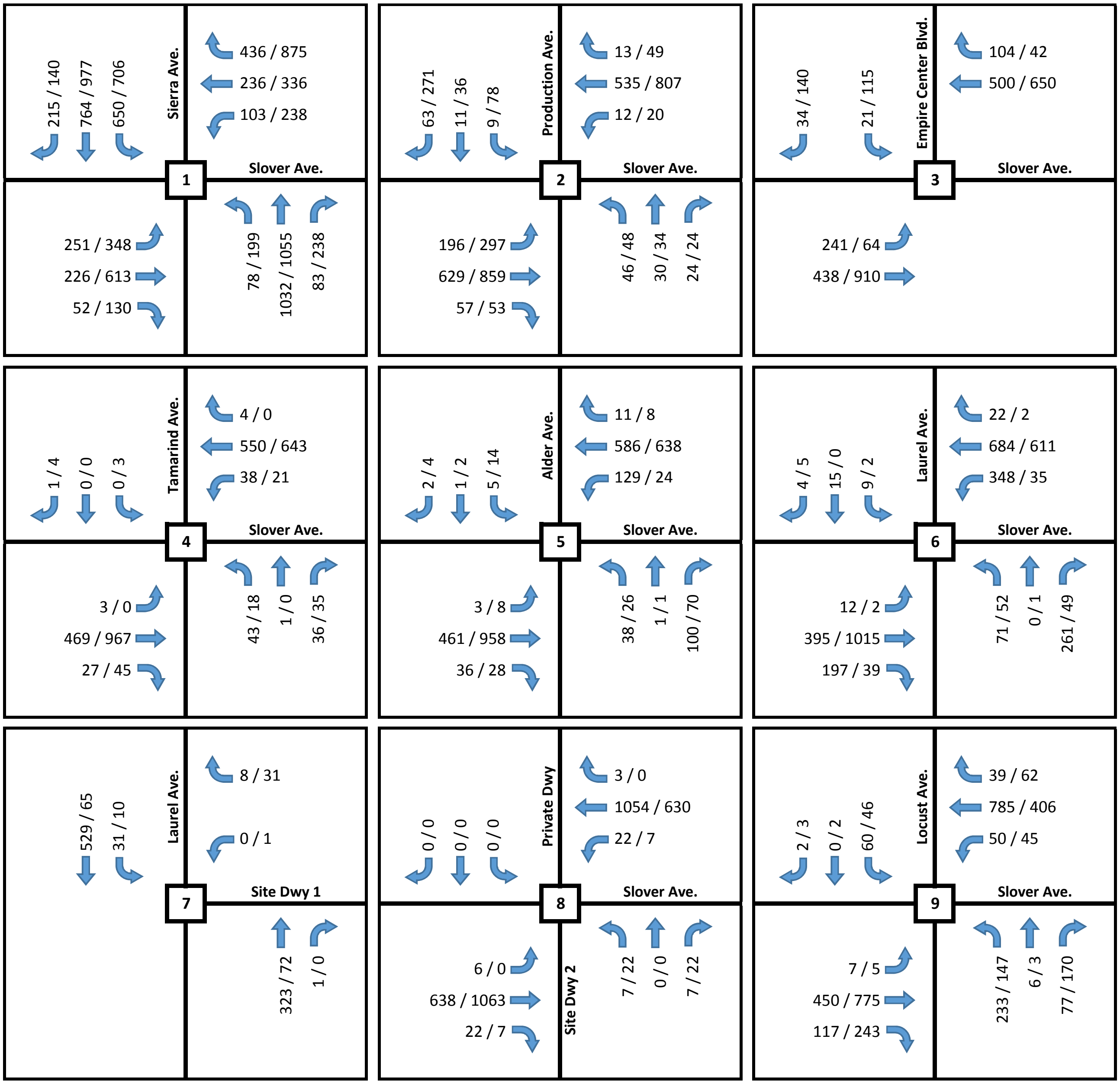
Opening Year 2018 With Ambient Growth With Cumulative Projects With Project Daily Traffic

156590 Mar. 2017

Exhibit 25



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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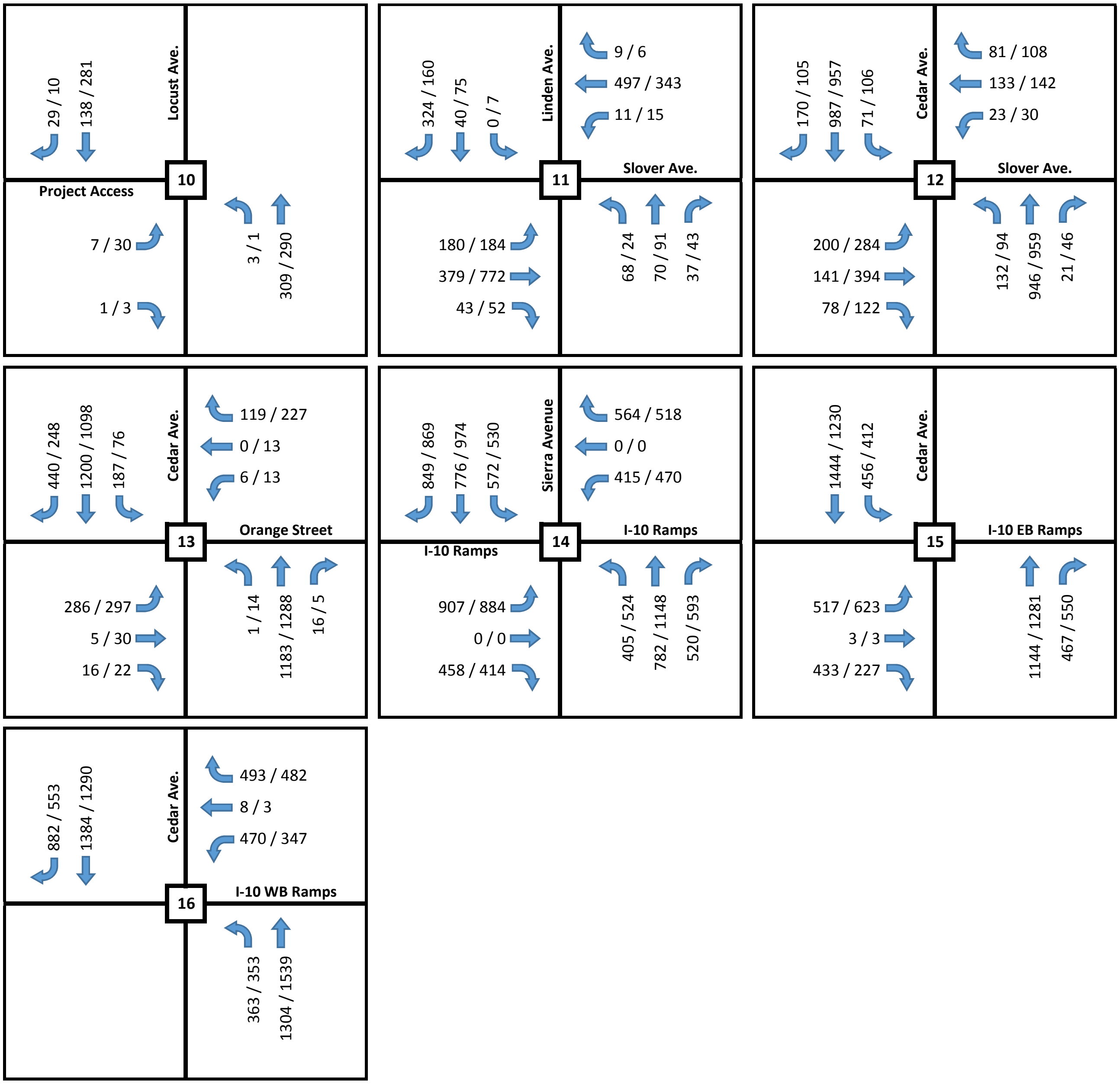
Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project AM/PM Peak Hour Volumes

Exhibit 26 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project AM/PM Peak Hour Volumes

Exhibit 26 (2 of 2)

HORIZON YEAR 2038 CONDITIONS – WITHOUT AND WITH PROJECT

Analysis of Horizon Year 2038 conditions is based on build-out of the San Bernardino County General Plan Circulation Element roadway network with a few road network adjustments. For example, the I-10 / Cedar Avenue interchange improvements are planned, funded and scheduled to be constructed in Year 2020. Therefore these improvements are included in the Horizon Year 2038 conditions. However, other improvements such as the I-10 / Alder interchange construction and the I-10/Locust Avenue overpass are not assumed in this analysis since these projects are not funded and may not be complete by year 2038.

Future traffic volumes in this analysis were based on the Year 2035 San Bernardino Transportation Analysis Model (SBTAM). In order to develop the 2038 traffic volumes used in this analysis, we extrapolated the traffic growth using the average annual growth rate reflected in the SBTAM model between 2008 and 2035. The forecast was checked to ensure a conservative minimum ambient growth of 1% per year on Sierra Avenue and Slover Avenue and 1.5% per year on Cedar Avenue above Opening Year 2018 With Ambient Traffic With Cumulative Projects traffic volumes. Horizon Year 2038 conditions post-processing volume worksheets are contained in **Appendix J**.

The Interstate 10 / Cedar Avenue interchange improvements are planned and funded with project completion scheduled in Year 2020 according to the Supplemental Traffic Operations Report-Cedar Avenue Interchange on Interstate 10 (Parsons, May 2016). . Therefore, the latest planned improvements at the interchange have been assumed in the Horizon Year 2038 conditions which include the following:

Cedar Avenue / Interstate 10 Westbound Ramps

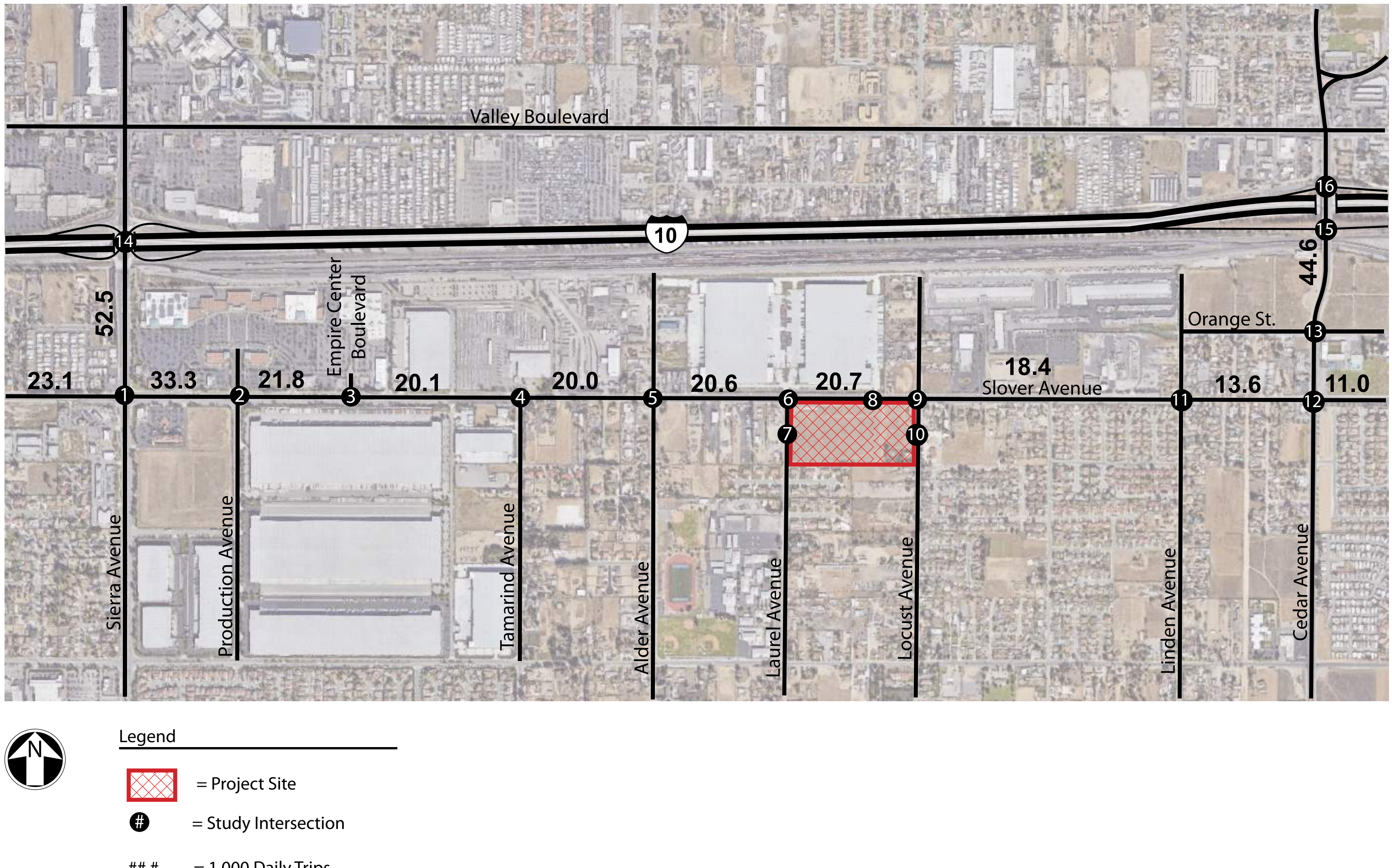
Northbound: add one (1) left-turn lane and one (1) through lane
Southbound: add one (1) dedicated right-turn lane
Westbound: add one (1) dedicated left-turn lane and one (1) right-turn lane**;** restripe the shared left-through-right turn lane to a shared through-left turn lane

Cedar Avenue / Interstate 10 Eastbound Ramps

Southbound: add one (1) through lane
Eastbound: add one (1) right-turn lane**;** restripe the shared left-through-right turn lane to a shared through-left turn lane

Exhibit 27 and **Exhibit 28** shows the Horizon Year 2038 roadway segment daily volumes and, AM/PM peak hour intersection volumes respectively, for the without project conditions.

Exhibit 29 and **Exhibit 30** shows the Horizon Year 2038 with project roadway segment daily volumes and, AM/PM peak hour intersection volumes respectively.



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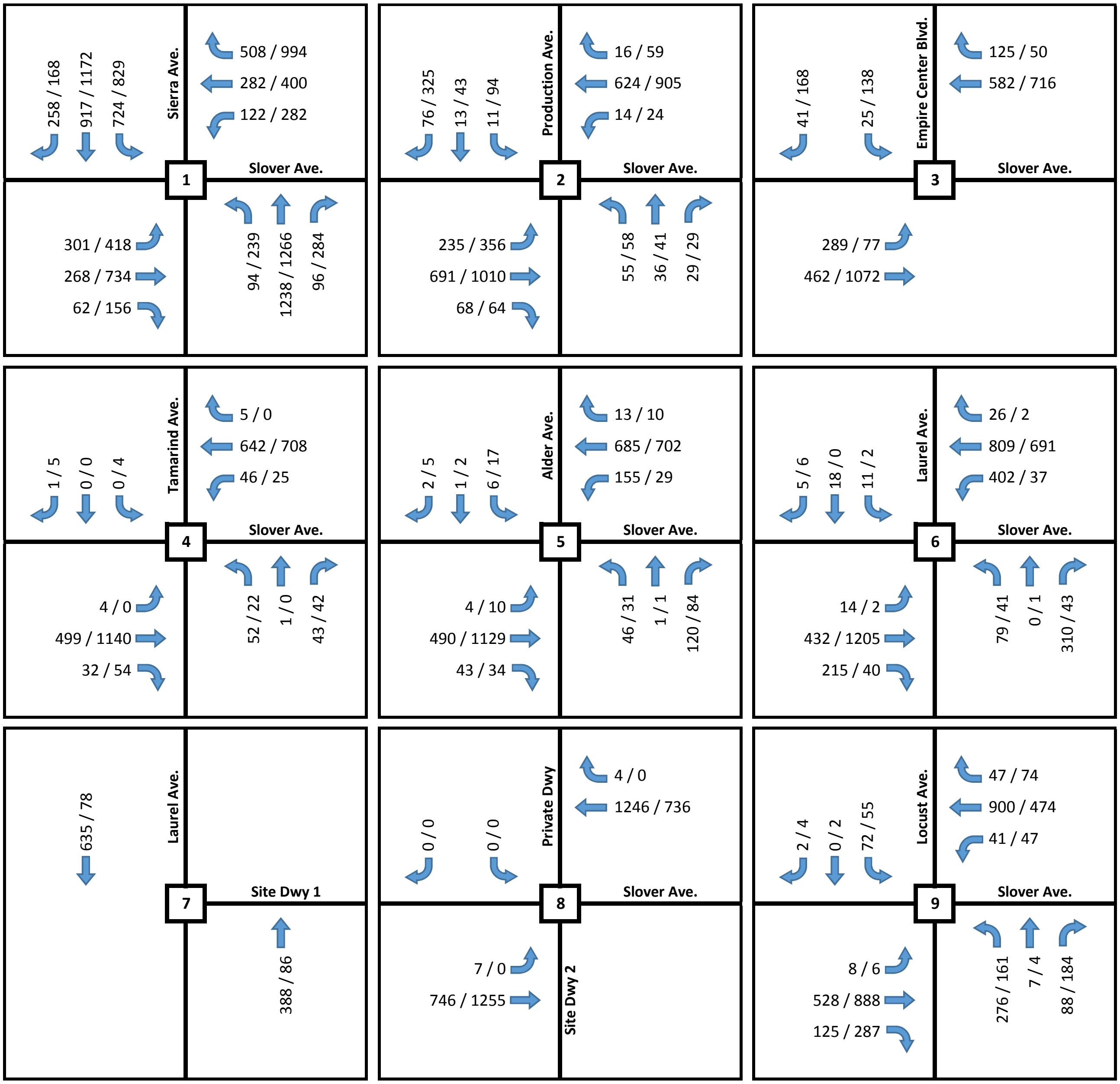
Horizon Year 2038 Without Project Daily Traffic

156590 Mar. 2017

Exhibit 27



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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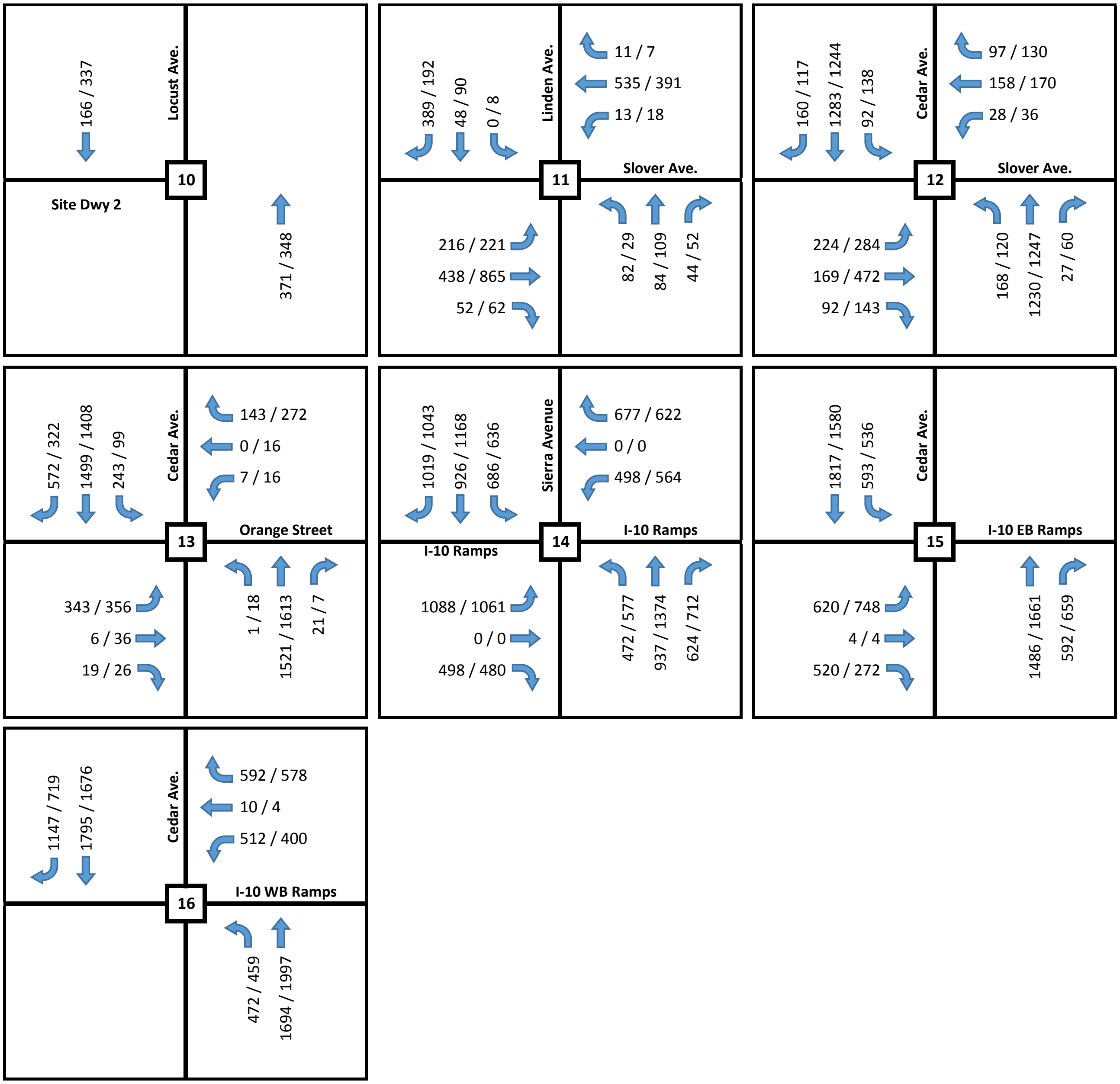
Horizon Year 2038 Without Project AM/PM Peak Hour Volumes

Exhibit 28 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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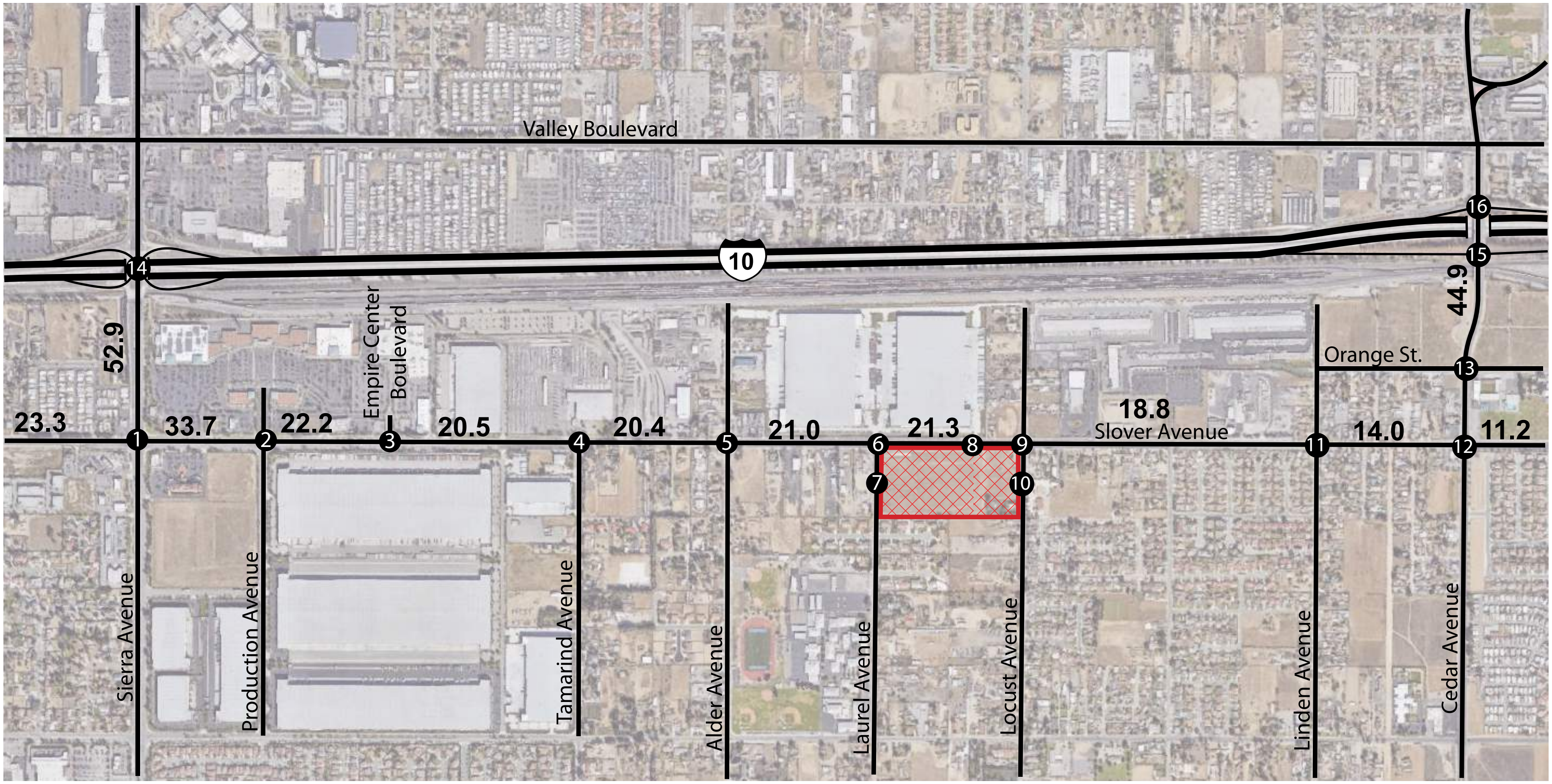
Horizon Year 2038 Without Project AM/PM Peak Hour Volumes

Exhibit 28 (2 of 2)



Legend

= Project Site

= Study Intersection

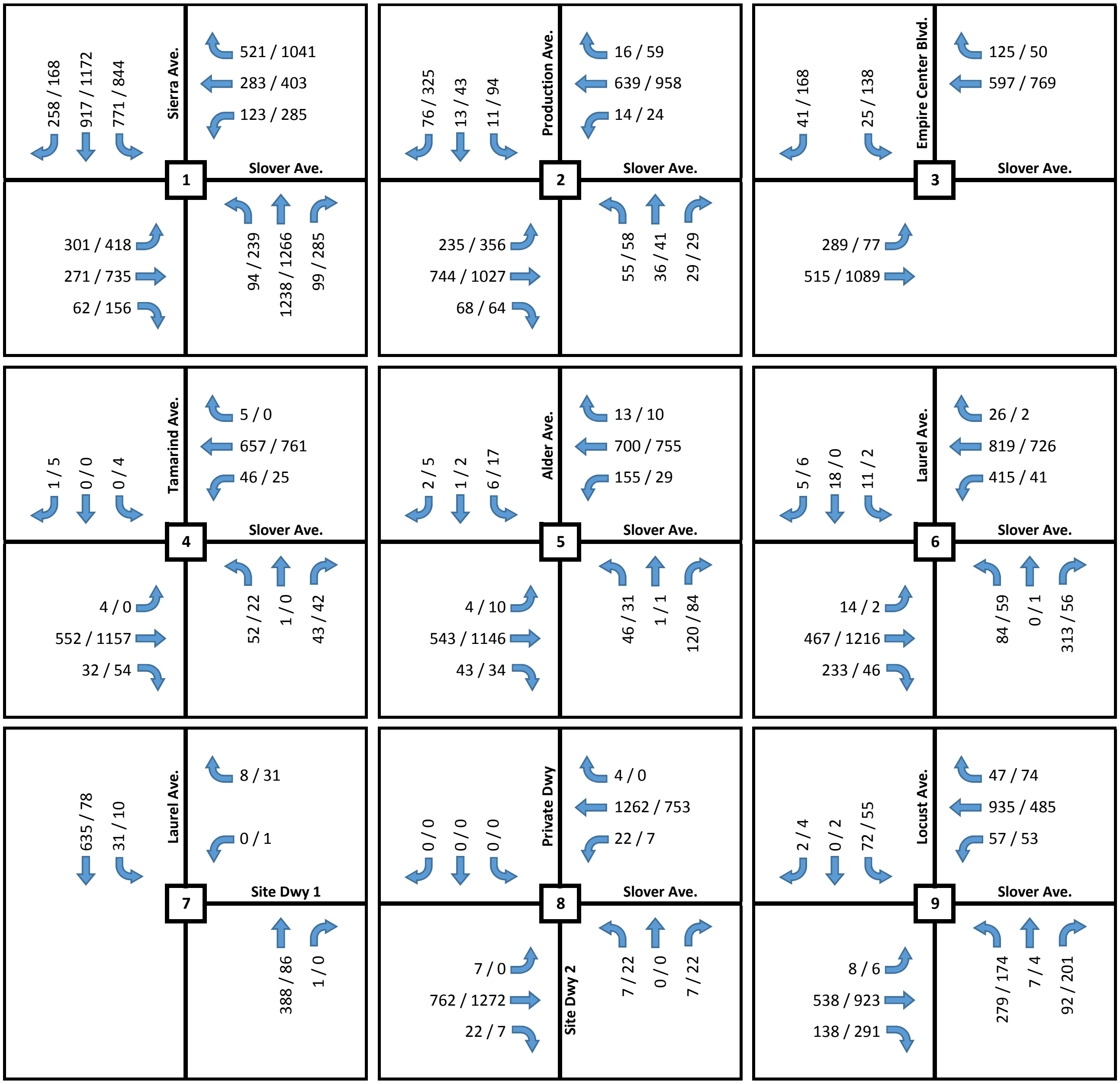
##.# = 1,000 Daily Trips

Michael Baker INTERNATIONAL

Horizon Year 2038 With Project Daily Traffic

156590 Mar. 2017

Exhibit 29



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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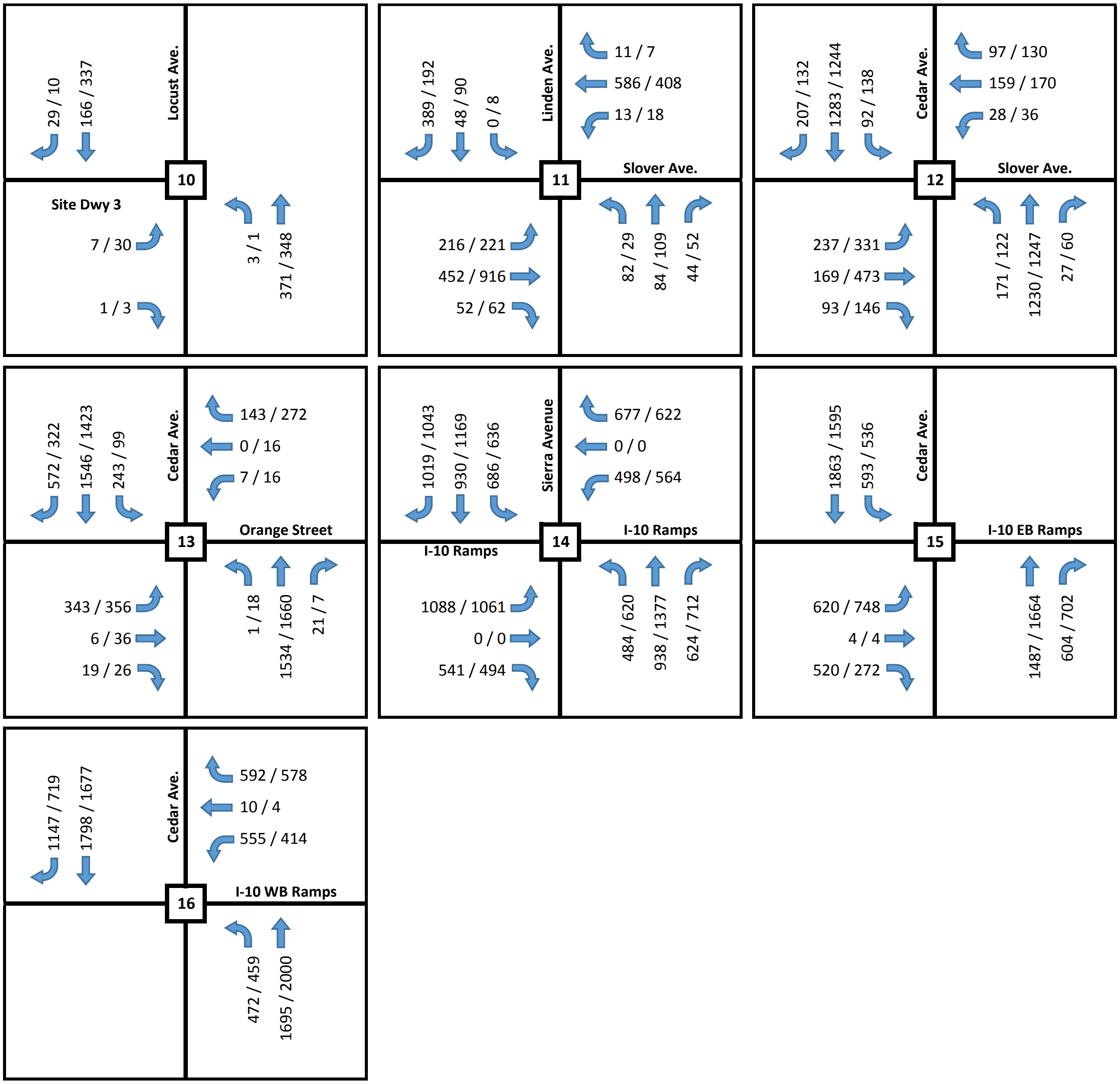
Horizon Year 2038 With Project AM/PM Peak Hour Volumes

Exhibit 30 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

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Horizon Year 2038 With Project AM/PM Peak Hour Volumes

Exhibit 30 (2 of 2)

Horizon Year 2038 Conditions Level of Service Analysis

The results of the Horizon Year 2038 intersection level of service analysis at study intersections are summarized in **Table 14**. Detailed HCM calculation worksheets are contained in **Appendix K**.

Table 14
Horizon Year 2038 Peak Hour Intersection Conditions - Without and With Project

Study Intersection	Horizon Year 2038 Without Project Conditions AM Delay[1] - LOS	Horizon Year 2038 Without Project Conditions PM Delay[1] - LOS	Horizon Year 2038 With Project Conditions AM Delay[1] - LOS	Horizon Year 2038 With Project Conditions PM Delay[1] - LOS	Significant Impact? AM	Significant Impact? PM
1 - Slover Avenue / Sierra Avenue	**61.0 - E**	**78.0 - E**	**63.8 - E**	**79.6 - E**	**Yes**	**Yes**
2 - Slover Avenue / Production Avenue	34.1 - C	31.2 - C	34.4 - C	32.4 - C	No	No
3 - Slover Avenue / Empire Center Blvd.	23.4 - C	18.1 - B	24.4 - C	18.5 - B	No	No
4 - Slover Avenue / Tamarind Avenue	19.5 - B	38.0 - D	21.3 - C	43.3 - D	No	No
5 - Slover Avenue / Alder Avenue	20.6 - C	20.2 - C	21.4 - C	20.6 - C	No	No
6 - Slover Avenue / Laurel Avenue	29.7 - C	16.0 - B	30.0 - C	16.8 - B	No	No
7 - Laurel Avenue / Project Driveway 1	Does Not Exist Without Project		10.8 - B	8.9 - A	No	No
8 - Slover Avenue / Project Driveway 2	Does Not Exist Without Project		12.2 - B	17.3 - C	No	No
9 - Slover Avenue / Locust Avenue	19.5 - B	21.1 - C	22.6 - C	22.7 - C	No	No
10 - Locust Avenue / Project Driveway 3	Does Not Exist Without Project		12.5 - B	15.1 - C	No	No
11 - Slover Avenue / Linden Avenue	**46.1 - E**	**41.2 - E**	**48.4 - E**	**43.5 - E**	**Yes**	**Yes**
12 - Slover Avenue / Cedar Avenue	51.8 - D	45.7 - D	52.1 - D	52.7 - D	No	No
13 - Cedar Avenue / Orange Street	46.2 - D	52.6 - D	46.5 - D	54.2 - D	No	No
14 - Sierra Avenue / I-10 Ramps	35.2 - D	45.1 - D	35.4 - D	45.9 - D	No	No
15 - Cedar Avenue / I-10 EB Ramps	34.0 - C	29.2 - C	34.5 - C	29.4 - C	No	No
16 - Cedar Avenue / I-10 WB Ramps	25.2 - C	22.4 - C	26.1 - C	22.8 - C	No	No

Note: Deficient intersection operation indicated in **bold**. If the condition with the project shows a deficient LOS, then this is considered a significant impact.

[1] Average seconds of delay per vehicle.

LOS = level of service.

I-10 / Cedar Avenue interchange improvements are assumed to be constructed prior to the Horizon Year 2038 conditions.

As shown in **Table 14**, the following study intersections are forecast to operate at deficient levels of service (LOS E) under Horizon Year 2038 conditions both without and with the proposed project:

- Slover Avenue / Sierra Avenue
- Slover Avenue / Linden Avenue

Since both intersections are forecast to operate at a deficient level of service (LOS E) in the AM and PM peak hour, both locations are considered significantly impacted by the proposed project and mitigation measures are required.

Signal Warrant Analysis

Signal warrants were evaluated at the intersection of Slover Avenue / Linden Avenue under the Horizon Year 2038 With Project conditions. Using the *California Manual on Traffic Control Devices (MUTCD) 2014*, the Peak Hour signal warrant (Warrant 3) is satisfied at this location in both the AM and PM peak hour. With the installation of a traffic signal at Slover Avenue / Linden Avenue, the analysis results shows this intersection is forecast to operate acceptably (LOS D) under the Horizon Year 2038 conditions with the proposed project. Therefore, a signal is recommended at this location. Peak hour signal warrants can be found in **Appendix L**.

Freeway Segment Analysis

Under Horizon Year 2038 Without Project conditions, a mainline freeway capacity analysis was conducted on the Interstate 10 freeway from Citrus Avenue to Sierra Avenue and from Cedar Avenue to Riverside Avenue. Year 2038 without Project traffic volumes were factored from the Year 2045 daily traffic volumes taken from Alternative 2 in the I-10 Corridor Project Report dated March 2016 prepared by Parsons.

As shown in **Table 15** under Horizon Year 2038 Without and With Project conditions, both freeway mainline segments operate at a deficient LOS 'E' and 'F' except for the segment of Cedar Avenue to Riverside Avenue in the westbound direction. This segment is forecast to operate at LOS 'D' due to the future I-10 widening. Project only traffic volumes were added to the Horizon Year 2038 Without Project traffic volumes to derive the Horizon Year 2038 With Project traffic volumes. As shown, both freeway mainline segments operate at a deficient level of service 'E' with and without the project. However, the change in volume to capacity ratio does not exceed 0.01, therefore, these freeway segments are not significantly impacted by the project.

Table 15
Horizon Year 2038 Without & With Project Freeway Mainline Comparison

Freeway Segment	No. Lanes			Direction	Capacity	Horizon Year 2038 Without Project Conditions				Horizon Year 2038 With Project Conditions				Δ V/C	Sig. Impact?
	Through	HOV	Auxilliary			ADT	PHV [(1)]	V/C	LOS	ADT	PHV [(1)]	V/C	LOS		
Citrus Ave. to Sierra Ave.	4	1	1	EB	11,600	256,200	11,765	1.014	**F**	257,100	11,807	1.018	**F**	0.004	No
	4	1	1	WB	11,600	243,000	11,158	0.962	**E**	243,300	11,170	0.963	**E**	0.001	No
Cedar Ave. to Riverside Ave.	4	1	1	EB	11,600	246,000	11,303	0.974	**E**	246,300	11,315	0.975	**E**	0.001	No
	4	1	1	WB	11,600	223,500	10,269	0.885	D	224,400	10,311	0.889	D	0.004	No

Note: Deficient roadway segment operations shown in **bold,** i.e. LOS "E" or "F".
[(1)] Peak hour volume (PHV) calculation = ADT x Peak Hour Percent (7.34%) x Directional Split (69.69%) x Truck Factor (89.82%) which is taken from Caltrans website.
Maximum level of service "E" capacity is assumed to be 2,200 vphpl for Through lanes and 1,200 vphpl for Auxiliary lanes.
Δ= Difference
V/C = Volume to Capacity Ratio
LOS = Level of Service
HOV = High Occupancy Vehicle
For this analysis, a freeway segment is considered significantly impacted by project-related traffic if the change in v/c ratio for segments operating at LOS "E" or "F" exceed 0.01.
For conservatism, the Year 2038 condition assumes I-10 widening to include only 1 additional HOV lane in each direction (I-10 Corridor Project Report Alt. 2).

SIGNIFICANT IMPACTS AND MITIGATION

County of San Bernardino

To determine whether the addition of project-generated trips results in a significant impact at a study intersection, and thus requires mitigation, San Bernardino County TIA Guidelines utilizes the thresholds of significance defined below.

Signalized Intersections:

Any study intersection that is operating at a LOS 'A', 'B', 'C' or 'D' for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS 'E' or 'F' shall mitigate the impact to bring the intersection back to at least LOS 'D'. Any study intersection that is operating at LOS 'E' or 'F' for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.

Un-signalized Intersections:

An impact is considered significant if the study determines that either criteria a) or both criteria b) and c) occur.

d.) The addition of project related traffic causes the intersection LOS to change from a LOS 'D' or better to a LOS 'E' or worse

OR

e.) The project contributes additional traffic to an intersection that is already projected to operate at a LOS 'E' or 'F' with background traffic

AND

f.) At least one or both of the following conditions are met:

1.) The project adds ten (10) or more trips to any approach

2.) The intersection meets the peak hour traffic signal warrant after the addition of project traffic

City of Fontana

A significant impact occurs at a study intersection if the addition of project trips causes the peak hour LOS to fall from acceptable LOS C or better to an unacceptable LOS E or F.

Caltrans

Caltrans does not have specific significance thresholds for determining project-related impacts at study intersections, therefore, the County's thresholds have been applied to the I-10 / Cedar Avenue and I-10/Sierra Avenue interchanges.

Caltrans does not provide any significance criteria for operational analysis of freeway mainline segments. Therefore, this analysis utilized the *County of San Diego Guidelines for Determining Significance*, August 2011 for determining significance on study freeway segments. According to the County of San Diego's significance criteria, any freeway segment operating at LOS 'E' or 'F' and the change in volume to capacity (v/c) ratio as a result of project-related traffic exceeds 0.01, then the freeway segment is considered significant and mitigation measures are required.

The proposed project's traffic impacts defined and recommended mitigation measures are described in detail below:

Existing Plus Project Conditions: Significant Impacts and Recommended Mitigation

The results of the Existing Plus Project conditions analysis show the addition of project-related trips to existing traffic volumes do not result in any significant impacts at study intersections. Therefore, mitigation is not required. In addition, there are no freeway mainline segment significant impacts as a result of the proposed project.

Opening Year 2018 With Ambient Traffic Conditions: Significant Impacts and Recommended Mitigation

The results of the Opening Year 2018 With Ambient Traffic With Project conditions analysis show that the addition of project-related trips to existing with ambient growth traffic volumes result in one (1) significant impact at the intersection of Slover Avenue / Sierra Avenue. The recommended mitigation at this location is to restripe the northbound dedicated right-turn lane to a shared through/right-turn lane. The results of the freeway mainline segment analysis show no significant impacts as a result of the proposed project.

Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions: Significant Impacts and Recommended Mitigation

Under Opening Year 2018 With Ambient Traffic With Cumulative Projects Conditions, the addition of project-related traffic results in significant impacts at the following study intersections and therefore mitigation measures are required:

- Slover Avenue / Sierra Avenue
- I-10 Eastbound Ramps / Cedar Avenue
- I-10 Westbound Ramps / Cedar Avenue

The Interstate 10 / Cedar Avenue interchange improvements are planned and funded with completion of the interchange project scheduled in Year 2020 according to the Supplemental Traffic Operations Report-Cedar Avenue Interchange on Interstate 10 (Parsons, May 2016). For the time period between the projects' Opening Year in 2018 and completion in 2020 of the Cedar Avenue interchange improvements, there would be a temporary significant unavoidable impact at the two ramp intersections. Once the interchange improvements are completed, the project's impact on level of service would be eliminated.

At Slover Avenue / Sierra Avenue, the recommended mitigation is to restripe the northbound dedicated right-turn lane to a shared through/right-turn lane.

Under this scenario, the results of the freeway mainline segment analysis show no project-related significant impacts, therefore, mitigation is not required.

Horizon Year 2038 Significant Impacts and Recommended Mitigation

For study intersections, the addition of projected-related trips to Horizon Year 2038 traffic volumes do result in significant impacts at the following study intersections and therefore mitigation measures are required:

- Slover Avenue / Sierra Avenue
- Slover Avenue / Linden Avenue

Table 16 summarizes the recommended mitigation measures for the identified intersections that are significantly impacted by the proposed project. According to SANBAG, the I-10 / Cedar Ave. interchange improvements are funded and expected to be built by Year 2020. With completion of these improvements, no significant impacts are expected to occur under Horizon Year 2038 conditions at the I-10 / Cedar Avenue interchange since the intersection is forecast to operate at acceptable levels of service with the proposed improvements previously discussed.

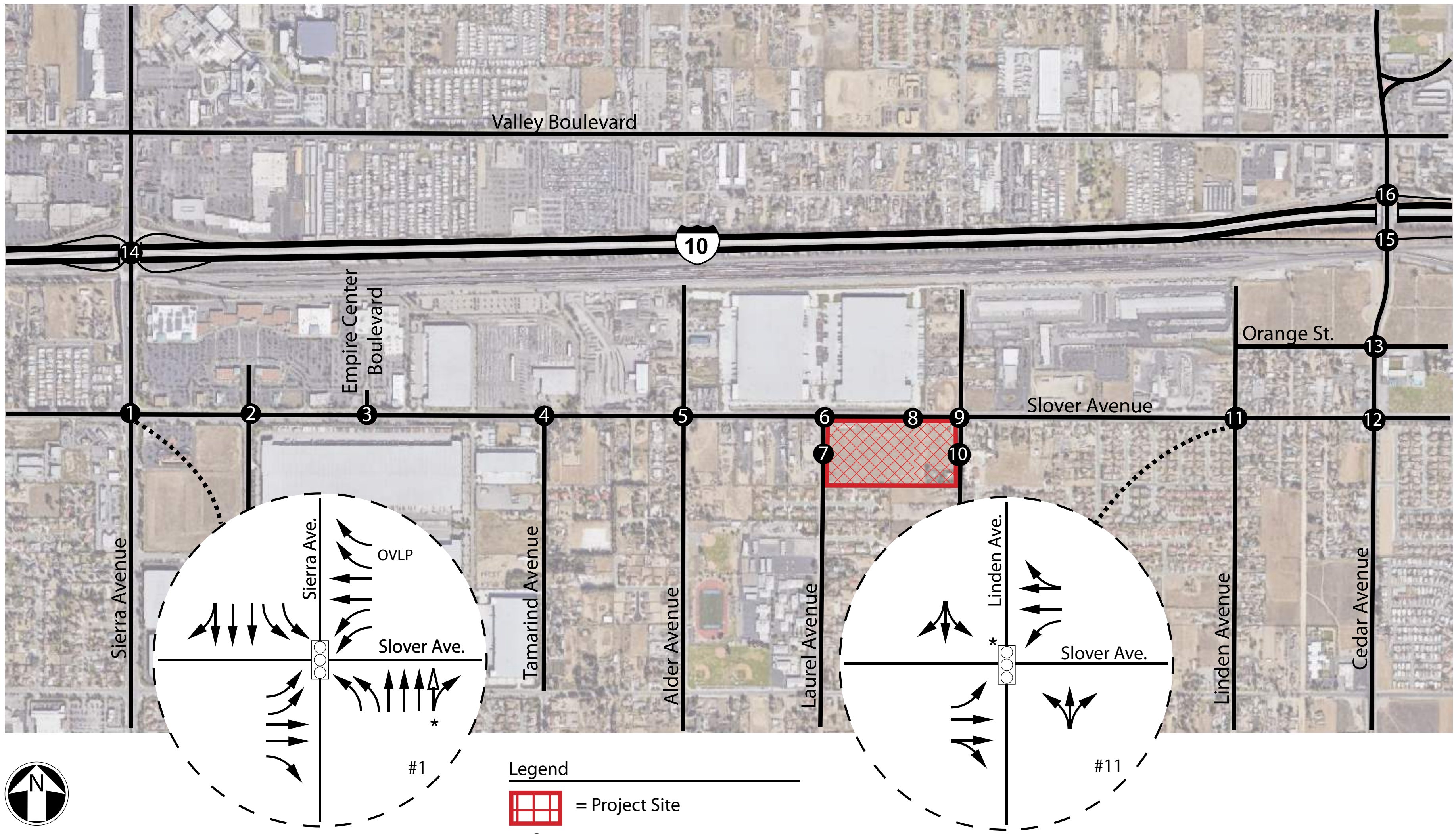
Under this scenario, the results of the freeway mainline segment analysis show no project-related significant impacts, therefore, mitigation is not required.

The recommended mitigation measures at impacted intersections as described above are illustrated graphically in **Exhibit 31**. The fair share contribution calculation worksheets and HCM worksheets with the recommended mitigation measures are provided in **Appendix M**.

Table 16
Summary of Peak Hour Intersection Operations With Mitigation

Int. #	Intersection	Peak Hour	Without Project Delay (1) – LOS	With Project Delay (1) – LOS	Recommended Mitigation	With Project With Mitigation Delay (1) – LOS	Project Responsibility (%)
Opening Year 2018 With Ambient Traffic With Project Conditions							
1	Slover Avenue / Sierra Avenue	PM	54.3 - D	**55.2 - E**	Restripe the northbound dedicated right-turn lane to provide a shared through/right-turn lane.	53.9 – D	100%
Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project Conditions							
1	Slover Avenue / Sierra Avenue	PM	**58.1 - E**	**59.3 - E**	Restripe the northbound dedicated right-turn lane to provide a shared through/right-turn lane.	**57.4 – E**	(2)
Horizon Year 2038 With Project Conditions							
1	Slover Avenue / Sierra Avenue	AM	**61.0 – E**	**63.8 – E**	Restripe the northbound dedicated right-turn lane to provide a shared through/right-turn lane.	**58.7 – E**	(2)
		PM	**78.0 – E**	**79.6 – E**		**76.6 – E**	
11	Slover Avenue / Linden Avenue	AM	**46.1 – E**	**48.4 - E**	Contribute a fair share towards the installation of a new traffic signal.	43.3 – D	6.6%
		PM	**41.2 – E**	**43.5 – E**		37.2 – D	5.0%

Note: Deficient intersection operation shown in **bold.** If the intersection delay after mitigation operates better than without project conditions, then the impact is considered mitigated according to San Bernardino County's TIA Guidelines.
(1) Seconds of delay per vehicle.
(2) Mitigation determined in Opening Year 2018 With Ambient Traffic With Project condition.



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156590 Mar. 2017

Recommended Mitigation Measures

Exhibit 31

CONCLUSIONS

This study analyzes the forecast traffic impact of the proposed Bloomington Business Center (the "Project"), located on a vacant 17.34-acre site south of Slover Avenue between Laurel Avenue and Locust Avenue in the unincorporated community of Bloomington within San Bernardino County. The proposed project will consist of a 344,000 square-foot warehouse development. The project will take access via three driveways; one on Slover Avenue, one on Laurel Avenue, and one on Locust Avenue.

The project is expected to generate approximately 1,604 trips per day, which includes approximately 137 AM (107 inbound and 30 outbound) peak hour trips and approximately 143 PM (36 inbound and 107 outbound) peak hour trips.

The results of the Existing Plus Project conditions analysis show no significant project-related impacts at study intersections or freeway mainline segments, therefore, no mitigation is required.

Under the Opening Year 2018 With Ambient Traffic With Project conditions, the results of the analysis show that all the study intersections are currently operating at acceptable level of service (LOS D or better) except at the intersection of Slover Avenue / Sierra Avenue. The addition of project-related trips to existing with ambient traffic volumes result in one (1) direct significant impact at this intersection. The recommended mitigation at this location is to restripe the northbound dedicated right-turn lane to a shared through/right-turn lane.

The proposed project will result in significant impacts at three (3) intersections under Opening Year 2018 With Ambient Traffic With Cumulative Projects With Project conditions and mitigation measures are required. These intersections include Slover Avenue / Sierra Avenue, I-10 EB Ramps / Cedar Avenue, and I-10 WB Ramps / Cedar Avenue.

The Interstate 10 / Cedar Avenue interchange improvements are planned and funded with completion of the interchange project scheduled in Year 2020 according to the Supplemental Traffic Operations Report-Cedar Avenue Interchange on Interstate 10 (Parsons, May 2016). For the time period between the projects Opening Year in 2018 and completion in 2020 of the Cedar Avenue interchange improvements, there would be a temporary significant unavoidable impact at the two ramp intersections. Once the interchange improvements are completed, the project's impact on level of service would be eliminated.

As previously mentioned, the recommended mitigation at Slover Avenue / Sierra Avenue is to restripe the northbound dedicated right-turn lane to a shared through/right-turn lane.

Under the Horizon Year 2038 conditions, the proposed project will result in significant impacts at the Slover Avenue / Sierra Avenue intersection and Slover Avenue / Linden Avenue intersection. The recommended mitigation measure at Slover Avenue / Sierra Avenue is restriping the northbound right-turn lane to a shared through/right-turn lane. At Slover Avenue / Linden Avenue, the recommended mitigation is to contribute a fair share towards installation of a traffic signal.

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX A

- **County of San Bernardino Traffic Impact Study Guidelines**
- **Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County**
- **County of San Diego Guidelines for Determining Significance**

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COUNTY OF SAN BERNARDINO
TRAFFIC IMPACT STUDY GUIDELINES

Revised April 9, 2014

The current guidelines are found in Chapter 10 of the Road Planning and Design Standards. This document can be accessed online from the Land Development page under the Department of Land Use Services website.

The direct link is: http://www.sbcounty.gov/Uploads/lus/PW/ROADPLANNINGDESIGNSTANDARDS.pdf

Since the Road Planning and Design Standards have not been modified in many years, additional guidance has been developed with the guidelines contained herein. Staff hopes to incorporate these changes when the Road Planning and Design Standards are next updated.

Developers and Engineers are cautioned that in the event of a conflict between Chapter 10, as currently adopted, and the proposed guidelines on the following pages, the adopted version of Chapter 10 shall take precedence.

Engineers and developers are encouraged to contact the Traffic Division of the Public Works Department if there are any concerns about interpreting differences between Chapter 10 and the draft guidelines contained herein.

County of San Bernardino Draft Interim

TRAFFIC IMPACT STUDY GUIDELINES

10.1 INTRODUCTION

The purpose of Traffic Impact Study (TIS) Guidelines is to provide a general guide in assessing the potential traffic impacts of any proposed development projects, General Plan Amendments and changes in zoning in the County of San Bernardino. This TIS guide presents the required format (See Exhibit ‘A’) and methodology that is generally required to be utilized in the study preparation.

These are general guidelines for the preparation of a TIS Report. The Department of Public Works reserves the right to modify the TIS requirements based on the unique characteristics of a particular project.

The TIS must be prepared by a registered Traffic Engineer (State of California) or a registered Civil Engineer with experience in traffic.

The TIS must contain a Title page that includes, at a minimum, the Tract or Parcel number of the project, the developer’s name and address and the Traffic Engineer’s name, Traffic Engineer’s signature, address, phone number and stamp.

To avoid unnecessary delays or revisions and to stream line the TIS preparation and review process, the applicant shall submit and have approved, by the Department of Public Works Traffic Division, a “Scope for Traffic Study” prior to the preparation and submittal of a draft TIS. An electronic version of this document in Word format is available from the Traffic Division.

10.2 NEED FOR TRAFFIC STUDY

The County of San Bernardino, Department of Public Works may require a Traffic Impact Study (TIS) be prepared for development projects, Specific and Area Plans, or requests, by the developers, for General Plan Amendments. The TIS may be required for any development, regardless of size, if there are concerns over safety or operational issues such as congestion, delay, LOS, etc. Prior to the developer filing an application with Land Use Services Department, the Traffic Division will determine both whether a TIS is required and what type of TIS should be prepared.

The requirement to prepare a TIS will be based upon, but not limited to, one or more of the following criteria:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.
- If a project is located within 300 feet of the intersection of two streets designated as Collector or higher in the County’s General Plan or the Department’s Master Plan or impacted intersection as determined by the Traffic Division.
- If this project creates safety or operational concerns.

If a project generates less than 100 trips without consideration of pass-by trips during any peak hour, a study maybe required if there are special concerns.

The Traffic Division also reserves the right to require an applicant to prepare additional traffic analysis based on the project location, configuration, unique aspects of the project, proximity to major roadways, interchanges or intersections, evaluating corner site distance at the driveways or other requirements as determined by the Traffic Division.

10.3 TYPES OF TRAFFIC IMPACT STUDY

The type of study used will depend on the location of the project, the amount of project trips generated and whether the project falls within a fee plan area. As noted previously, Traffic Division will determine the type of study to be submitted by the developer. There are two types of TIS that may be requested by the Department of Public Works:

1. **Traffic Impact Study:** This type is required when thresholds are met and conducted based on these guidelines. Since these guidelines are in compliance with SANBAG guidelines, a TIS required by the County may be used to meet requirements for a TIS under the SANBAG Congestion Management Program.

2. **Letter Report:** A letter to address the significant impacts of the project in the immediate area. This type of report is primarily intended for specific concerns or small projects and thus limited to special situations.

10.4 COORDINATION WITH THE DEPARTMENT OF PUBLIC WORKS

Prior to filing an application with Land Use Services, the developer should obtain a Traffic Study Determination Form from Land Use Services or the Traffic Division and submit the completed form to Department of Public Works at Land Use Office or Traffic Division. Traffic Division will then make a determination regarding the need for and type of TIS.

If a TIS is needed, the developer should retain the services of a qualified registered Traffic or a registered Civil Engineer with experience in traffic engineering and initiate the process of finalizing a scoping agreement that will govern the conduct of the TIS. Studies submitted for review without an approved scoping agreement may be subject to significant revisions and will increase the cost for review that will be charged to the developer by the Department.

The TIS will need to be completed and submitted at the time an application is filed with Land Use Services. The applicant shall obtain the approval of the submitted TIS prior to the approval of the proposed project.

10.5 SCOPE OF TRAFFIC IMPACT STUDY

10.5.1 STUDY AREA BOUNDARIES

The area to be studied shall include all intersections which the proposed project will add 50 or more trips during any peak hour. All key intersections within this study area must be analyzed to identify impacts to capacity and Level of Service (LOS). The study intersections shall be listed in the “Scope for Traffic Study” for review and approval by the Traffic Division.

At a minimum, the following subject/locations shall be studied:

a) Site access driveways
b) On-site circulation
c) Roadway(s) adjacent to the project
d) Intersections in the immediate vicinity of the project
e) Pedestrian and bicycle circulation
f) Consistency with County Plans and Policies
g) Transit (bus and light commuter rail) accessibility to project site
h) Any intersection on which the project will add 50 or more peak hour project trips

If special concerns exist for projects with less than 50 peak hour trips, the applicant should study items a) to d). For projects with more than 50 trips but less than 100, the applicant should study items a) to f).

10.5.2 STUDY SCENARIOS

The following study scenarios shall be included for intersection capacity analysis:

a) Existing Conditions
b) Project Opening Year with Ambient Traffic
c) Project Opening Year with Ambient Traffic and Proposed Project
d) Project Opening Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project
e) Project Opening Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project with Mitigation (if required)

Traffic studies that are part of an EIR process shall also include the following:

a) Build-out Year with Ambient Traffic
b) Build-out Year with Ambient Traffic and Proposed Project
c) Build-out Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project
d) Build-out Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project plus Mitigation (if required)

Background Traffic will be developed per Section 4.4 “Trip Forecasts” of this document.
Projects with phased openings will study items b), c), d), and e) for each phase.

10.6 TRAFFIC DATA

10.6.1 TRAFFIC COUNTS

Data for existing traffic conditions shall be collected for the project using the following guidelines:

- Peak period turning movement counts at all study intersections and driveways including bicycle and pedestrian counts at intersections with high non-automotive use. For intersections with high percentages of heavy vehicles, turning movement counts will count heavy vehicles separately.
- Average Daily Traffic (ADT) for all roadways within study area and vehicle classification counts in areas with a high percentage of heavy vehicle use.
- Traffic counts shall not be used if more than one (1) year old without prior Traffic Division approval.
- Traffic data shall not be collected on weeks that include a holiday and non-school session time periods unless approved by the Traffic Division.
- Traffic data shall not be collected between Thanksgiving and the first week of the new year without prior Traffic Division approval.
- Traffic counts shall be conducted on Tuesdays, Wednesdays, or Thursdays.

Unless directed otherwise by the Traffic Division, counts will be collected during the following time frames:

- Morning (7:00a.m. to 9:00 a.m.)
- Afternoon/evening (4:00 p.m. to 6:00 p.m.)
- Midday and “School-Release” peak hours – As directed by the Traffic Division
- Other peak hours, off-peak, weekend or special event, may also be required

Count data shall be included in the study appendices.

10.6.2 TRIP GENERATION

The latest edition of the Institute of Transportation Engineers’ (ITE) Trip Generation shall be used for trip generation forecasts unless otherwise directed by the Traffic Division. The proposed trip generation shall be listed in the “Scope for Traffic Study” for review and approval by the Traffic Division.

For projects that anticipate the generation of significant truck traffic, all truck trips shall be converted into passenger car equivalents (PCE) for the capacity analysis.

10.6.3 TRIP DISTRIBUTION

A graphical representation of the proposed project trip distribution should be based on the relative location of population, commercial, recreational and employment centers; existing peak hour link and turning movement volumes; ADT volumes; proximity to regional transportation corridors and/or knowledge of local and regional traffic circulation. A preliminary trip distribution pattern shall be submitted in the “Scope for Traffic Study” for review and approval by the Traffic Division

For studies that are in support of an EIR, the Traffic Division may require additional information such as select zone analysis from the SCAG Travel Demand Model, the County of San Bernardino’s traffic assignment model or other available data sources. The trip distribution may be further refined, after consultation with the Traffic Division, based on consideration of following factors:

- Type of proposed development
- Location and intensity of development
- Conditions on the roadway network in the vicinity
- Similar land use in the vicinity
- Truck route system
- As directed by Traffic Division

10.6.4 TRIP FORECASTS

For Opening Year and Future Year conditions, an annual growth factor will be provided to the applicant by the Traffic Division. For larger projects, the SANBAG Regional and sub regional models should be used. The need for an analysis based on regional models will be identified during the scoping process.

For all projects, the applicant shall include cumulative projects to the study. A list of proposed and approved developments can be obtained from the County’s Land Use Services Planning Division. At a minimum, future projects located within a distance of twice the study area should be included. Projects outside that radius should be included if the traffic generated by that project can reasonably be expected to impact a study intersection and/or road segment.

10.7 TRAFFIC ANALYSIS METHODOLOGY

10.7.1 INTERSECTION ANALYSIS

Intersection analyses shall be performed using the latest version of the Transportation Research Board, Highway Capacity Manual (HCM) methodology.

The following assumptions are to be used in the analysis:

- Optimized signal timing for non-coordinated intersections.
- For coordinated intersections, the existing coordination timing plan should be obtained from the responsible agency.
- Two (2) second lost time/phase
- 1800 vphgpl for exclusive thru and right turn lanes
- 1700 vphgpl for exclusive left turn lanes
- 1600 vphgpl for exclusive dual left turn lanes

Saturation flow rates may also be used based on actual field measurements of particular intersections with approval from the Traffic Division.

Signal timing recommendations may also be required by the Traffic Division.

10.7.2 TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis shall be performed for all unsignalized study intersections for the project opening year and build-out year conditions. Traffic signal warrant analysis shall be performed using the latest edition of the California MUTCD. The warrant analysis shall be included in the study appendices.

In determining the location of a new traffic signal on an arterial street or approaching an arterial street, traffic progression and simulation analysis may be required using Synchro/SimTraffic software or equivalent at the direction of the Traffic Division.

10.7.3 SITE ACCESS ANALYSIS

The following analyses shall be performed to improve the project access circulation and to limit driveways and local street access on arterial streets:

a) **Intersection Sight Distance -** All on-site intersections, project access driveways or streets to public roadways shall provide adequate sight distance. Adequate intersection sight distance shall be determined using the Caltrans Highway Design Manual.
b) **Driveway Length and gated Entrance –** Primary project driveways shall have a throat of sufficient length to allow vehicles to enter the project area without causing subsequent vehicles to back out onto the County street system. A turn around shall be provided at all gated entrances.
c) **Limit Driveway Impacts -** Driveways and local streets access on arterial streets shall be limited to minimize the impacts on arterial streets. Driveways should be located so as to maintain a reasonable distance from an adjacent intersection and/or driveway. Whenever possible, driveways shall be consolidated with adjacent properties.
d) **Corner Clearance –** A driveway should be a sufficient distance from a signalized intersection so that right-turn egress movements do not interfere with the right-turn queue at the intersection. In addition, every effort should be made to provide right-turn egress movements with sufficient distance to enter the left-turn pocket at the adjacent intersection.
e) **Right turn lanes at driveways -** If the project right turn peak hour volume is 50 or more vehicles, a right-turn deceleration lane shall be reviewed for appropriateness on all driveways accessing major arterial and secondary streets. The length of right turn lane should be sufficient to allow a vehicle traveling at the posted speed to decelerate before entering the driveway as outlined in the Caltrans Highway Design Manual.
f) Adequacy of pedestrian facilities
g) Bicycle accessibility
h) Accessibility from adjacent transit stops

10.7.4 SAFETY AND OPERATION IMPROVEMENT ANALYSIS

The TIS shall analyze opening year roadway conditions to determine if safety and/or operational improvements are necessary due to an increase in traffic from the project or cumulative projects. The following improvements shall be analyzed:

a) Addition of through lane(s), right turn lane(s) and left turn lane(s)
b) Left and/or right turn lane pocket length (queue length)
c) Bus turnouts – Coordinate potential bus top locations on arterial streets adjacent to the proposed project site with local transit agencies. Review appropriateness of bus turnouts for each of the identified bus stop locations.
d) Parking restrictions on adjacent streets
e) Free Right turn lane - Free right turn lane shall be considered when right turn volumes exceed 300 vehicles per hour.
f) Traffic Signal Coordination - For new or modified traffic signals, the Traffic Division may require traffic simulation and coordination timing plans using the latest Synchro software. The traffic

simulation and coordination timing plan shall include signalized intersections as identified by the Traffic Division. A copy of the Synchro files shall be available to the Traffic Division for review.

g) Bicycle Circulation - Identify and implement bike lane facilities adjacent to the project site in accordance with the County's Bicycle Master Plan.

10.8 DETERMINATION OF IMPACTS

The following criteria shall be used to determine if the addition of project traffic should be considered to have a significant impact and feasible measures must be identified to mitigate the impacts.

10.8.1 SIGNALIZED INTERSECTIONS

Any study intersection that is operating at a LOS 'A', 'B', 'C' or 'D' for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS 'E' or 'F' shall mitigate the impact to bring the intersection back to at least LOS 'D'.

Any study intersection that is operating at a LOS 'E' or 'F' for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.

For scenarios which include the addition of Cumulative Project Traffic (i.e. shared impacts), study intersections shall be mitigated to LOS 'D' or better in the Valley and Mountain regions and LOS 'C' or better in the Desert regions of the County.

10.8.2 UNSIGNALIZED INTERSECTIONS

An impact is considered significant if the study determines that either section a) **or** both sections b) and c) occur.

a) The addition of project related traffic causes the intersection to move from a LOS 'D' or better to a LOS 'E' or worse

OR

b) The project contributes additional traffic to an intersection that is already projected to operate at an LOS 'E' or 'F' with background traffic (per Section 10.5.2 b))

AND

c) One or both of the following conditions are met:
   1) The project adds ten (10) or more trips to any approach
   2) The intersection meets the peak hour traffic signal warrant after the addition of project traffic (per Section 10.5.2 c)).

Once a significant impact has been identified, mitigation shall be provided as follows:

1. For scenarios involving project traffic but not Cumulative Project Traffic, the LOS shall be mitigated to either LOS 'D' or better for case a) above or to pre-project LOS and delay for case b) above.
2. For scenarios that include Cumulative Project Traffic study intersections shall be mitigated to LOS 'D' or better in the Valley and Mountain regions and LOS 'C' or better in the Desert regions of the County.

10.8.3 INCONSISTENCY WITH ADOPTED PLANS SUPPORTING NON-AUTOMOTIVE USE

A significant impact occurs if the project is inconsistent with adopted plans supporting non-automotive use.

10.9 MITIGATIONS FOR TRAFFIC IMPACTS

The TIS will evaluate and recommend mitigations to address all findings of significant impact. As part of the final acceptance of a traffic study, the Traffic Division will review and approve any required improvements or fair share contributions necessary to mitigate the traffic related impacts from the development. These mitigations will be included as part of the conditions of approval and will be in addition to any improvements required by any other Divisions of Public Works and/or Departments. Any traffic mitigations based on a traffic study will be in addition to any other fees related to Regional Development Mitigation Plans and Local Area Transportation Facilities Plans or any fees required by other Divisions of Public Works and/or Departments.

Fair share contributions required as mitigations in a traffic impact study and subsequently listed in the conditions of approval shall be required before a building permit will be issued. Improvements required as mitigation in a traffic impact study and subsequently listed in the conditions of approval shall be completed prior to occupancy.

For more information on transportation fees related to traffic impacts, please see Chapter 11 of the Road Planning and Design Standards.

10.9.1 COUNTY MITIGATION FEE PLANS

The study shall state if the proposed project falls within any of the adopted fee plans in the County's unincorporated areas. Further information can be found on the following website: http://www.sbcounty.gov/dpw/transportation/transportation_planning.asp

10.9.2 FAIR SHARE CONTRIBUTIONS

For mitigations that are needed where the applicant is not solely responsible, a fair share computation shall be computed and reported for each such mitigation. The fair share amount should be calculated using the following formula:

$$Fair\ share = \frac{project\ trips}{project\ trips + future\ development\ trips} \times 100\%$$

EXHIBIT A

TRAFFIC IMPACT STUDY (TIS FORMAT)

1. Executive Summary
2. Introduction
    a. Purpose of the TIS and study objective
    b. Project location and vicinity map (Exhibit)
    c. Project size, description, etc
    d. Existing and Proposed land use and zoning
    e. Site plan and proposed project (Exhibit)
    f. Proposed project opening year and phase opening
    g. Committed (funded) roadway improvements
3. Existing Condition
    a. Existing roadway network
    b. Existing traffic control and intersection geometrics (Exhibit)
    c. Existing traffic volumes – AM and PM peak hour and ADT (Exhibit)
    d. Existing Level of Service (LOS) at intersections (Table)
    e. Existing bicycle facilities (Exhibit)
    f. Existing transit facilities (Exhibit)
    g. Existing pedestrian facilities
4. Future Condition (Both Opening Year and Build-Out Year Conditions, if required)
    a. Project Traffic (Opening Year(s))
        i. Trip generation (Table)
        ii. Trip distribution and assignment (Exhibit)
        iii. Project peak hour turning movement and ADT (Exhibit)
    b. Cumulative project traffic
        i. Identify location of previously approved and proposed development projects (if required)
    c. Ambient Traffic
        i. Peak hour turning movement and ADT (Exhibit)
        ii. Ambient traffic growth rate
    d. Ambient Traffic plus Cumulative Project Traffic
        i. Trip generation, distribution and assignment of cumulative projects if required. (Exhibit)
        ii. Total Ambient and Cumulative peak hour turning movement and ADT. (Exhibit)
    e. Total Traffic
        i. Project plus Ambient and Cumulative Traffic peak hour turning movement and ADT for opening year(s). (Exhibit)
5. Traffic Analysis
    a. Analysis Methodology.
    b. Level of Service of each study intersection for Ambient and Cumulative Traffic; Ambient and Cumulative plus Project; and Ambient and Cumulative Traffic plus Project with Mitigation. (Table)
6. Traffic Impacts
    a. Determination of significant impacts for intersections
    b. Site Access Analysis
    c. Safety and Operation Improvement Analysis
7. Mitigations and Recommendations

a. Proposed mitigation measures at significantly impacted intersections
b. Traffic Signal Warrant Analysis
c. Recommended Improvements categorized by whether they are included in fee plan or not. (Identify if these improvements are included in an adopted fee program)

8. Appendix
    a. Traffic Counts
    b. Analysis worksheets
    c. Signal warrants
    d. Copies of the traffic models

APPENDIX B
(FORMERLY APPENDIX C)

GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

These guidelines describe the key elements required for preparing Traffic Impact Analysis Reports (TIA Reports) for the Congestion Management Program (CMP) in San Bernardino County. The purpose of these guidelines is to achieve a common approach to preparation of TIA Reports by all jurisdictions, thereby reducing inconsistencies and disagreements on how such studies should be performed.

TIA Reports shall be prepared by local jurisdictions when local criteria and thresholds indicate they are necessary. However, TIA Reports must be prepared to satisfy CMP requirements, except as noted below, when a proposed change in land use, development project, or at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation or other CMA-approved data source. Pass-by trips shall not be considered in the threshold determination. However, industrial, warehousing and truck projects shall convert trucks to PCE’s before applying the threshold.

Jurisdictions that have implemented qualifying development mitigation programs that achieve development contribution requirements established by the SANBAG Development Mitigation Nexus Study are not required to prepare TIA reports for CMA review. However, until these jurisdictions have agreements with Caltrans regarding State highway facilities within the jurisdiction, any project meeting the CMP threshold of 250 two-way peak hour trips that expects to add at least 50 peak hour trips to a State highway facility is required to prepare a TIA report for Caltrans’ review. If a project is forecast to generate 100 to 250 peak hour trips and expects to add at least 50 peak hour trips to a State highway facility, the jurisdiction should consult with Caltrans to determine the need for a TIA report. Refer to Figure B-1 at the end of this appendix for a flow chart that defines when TIA reports need to be prepared.

Projects shall not be split to avoid the CMP requirements. If an additional phase of a project, when added to the preceding phases, causes the sum of the phases to exceed the threshold, the entire project must be analyzed as a unit. The analysis must be conducted when the phases are anticipated and should not wait for later phases, even if earlier phases alone would not exceed the threshold.

Locally determined criteria may be developed which are more stringent than those identified above. Individual development projects, parcels, or proposals in the same geographic vicinity that can reasonably be combined into a single project for analysis purposes which meets the threshold requirements for a TIA Report shall be analyzed as a single project.

TIA REVIEW

All TIA Reports shall be copied to the CMA. If a TIA Report is prepared by the local jurisdiction as stated above and if the TIA Report determines that the project would add 50 or more 2-way peak-hour trips to a CMP arterial within another jurisdiction or 100 2-way peak-hour trips to a freeway, that jurisdiction (and Caltrans, if a state highway) shall be provided a copy of the TIA Report by the permitting jurisdiction. However, these criteria are not intended to determine when a local jurisdiction prepares a TIA Report.

It is the responsibility of the local jurisdiction to provide review copies of the TIA Report to the CMA and to potentially impacted jurisdictions so that review will occur in concert with the permitting jurisdiction's project review schedule and prior to any approval or permitting activity. (Note: the transmittal letter shall indicate the agencies receiving the TIA report.) The period allotted for review shall be stipulated by the permitting jurisdiction but shall not be less than 15 working days from the date the CMA receives the report. To establish the date of receipt, it is encouraged the report be transmitted by certified mail. Should serious technical flaws be identified in the TIA Report such that the permitting jurisdiction chooses to recirculate the TIA Report, the recirculated document shall be reviewed no later than 10 working days from the date of receipt.

Note: Caltrans' review period is 30 days, consistent with CEQA. Lack of comment by Caltrans does not imply acceptance. If an encroachment permit will be required for the project, it is recommended that the jurisdiction work with Caltrans to resolve any outstanding comments before proceeding to project approval.

The reports focus on the potential impacts of land use decisions on the CMP system. These reports are used in conjunction with modeling for the CMP system to forecast transportation deficiencies in San Bernardino County. While there are unique aspects to many projects, the approach outlined here can be applied to the vast majority of projects. The preparer of the report is responsible for presenting all the relevant information that would be helpful in making transportation-related decisions. The guidelines presented here should be regarded as typical minimum requirements. They are not a substitute for exercising good planning and engineering judgment. Local agencies may wish to include additional requirements for traffic analysis beyond those for the CMP. Only the CMP requirements are addressed here; any requirements added by a jurisdiction apply only in that jurisdiction, unless otherwise agreed.

Other information relating to the preparation of a TIA Report may be found in Chapter 4 of the Congestion Management Program for San Bernardino County. Preparers of TIA Reports should consult the CMP for additional detail.

<u>Implications of CMP Review</u>

The authority to make land use decisions rests with local jurisdictions. A Land Use/Transportation Analysis Program consistent with the CMP guidelines has the potential to influence local land use decisions by requiring full evaluation and disclosure of impacts to the regional transportation system, regardless of jurisdictional boundaries. Local jurisdictions are required to maintain the adopted standards on the CMP system, so it is essential that local jurisdictions consider the necessary actions and costs required to mitigate impacts that result from local land use decisions.

The success of the program relies on consistency with applicable regional plans and the cooperative efforts of local jurisdictions, Caltrans and the CMA. If an integration of land use decisions and the provision of transportation facilities is not accomplished as required by the program, a jurisdiction which fails to mitigate deficiencies on the CMP system caused by its land use decisions will face withholding of its Proposition 111 gas tax increment funds.

<u>TIA Report Content</u>

The TIA Report may be contained within other similar documents (e.g. an EIR prepared under CEQA), or it may be an independent document. The intent is to address all CMP concerns without duplication of other work. In some jurisdictions, the TIA Report may be prepared by the developer or developer's consultant. In other jurisdictions, the TIA Report may be prepared by the jurisdiction or jurisdiction's consultant. In either case, it is in the interest of all parties that the participants fully understand and come to agreement on the assumptions and methodology prior to conducting the actual analysis. This is particularly important when considering using assumptions that vary from the norm. The local jurisdiction may request a meeting with the developer and/or preparer of the TIA Report to discuss the methodology prior to the initiation of work on the analysis. A meeting with the CMA and/or Caltrans, where applicable, is also encouraged to address issues associated with large or extraordinary projects.

The following outline and commentary represents the recommended structure for the TIA Report.

I. Introduction

Set the stage for the analysis, providing background information necessary for the unfamiliar reader to understand the magnitude of the project, location of the project and special characteristics.

A. Project, general plan, or specific plan description

The description must include project size by land use type, location of project, approximate location of proposed access points to the local and regional roadway system and movements from adjacent streets allowed into and out of the project. This should be shown in a site diagram. Special characteristics of the site, such as unusual daily or seasonal peaking characteristics or heavy involvement of truck traffic, should be mentioned. If the description is included in another part of a more comprehensive document, that is acceptable.

B. Analysis methodology

Provide a general description (overview) of the process used to analyze the project. Analysis years should be specified and the approach to the modeling/traffic forecasting process should be explained. The sources of information should be identified. The study area and method for LOS analysis for the various roadway types should be identified. At a minimum, the study area must include all freeway links with 100 or more peak-hour project trips (two-way) and other CMP roadways with 50 or more peak-hour project trips (two-way). The study area does not end with a city or county boundary. The study area is defined by the magnitude of project trips alone. In most cases, the analysis need not extend more than five miles beyond the project site, even if there are more than 50 project trips on an arterial and 100 project trips on a freeway. However, analysis of projects in isolated areas with few access routes should be continued until the 100 or 50-trip threshold is met. Within the defined study area, all "key intersections," as listed in the most current CMP, must be analyzed. Key intersections represent intersections of CMP roadways plus those additional intersections recognized by local jurisdictions and/or SANBAG to be important to mobility on CMP roadways. At a minimum, key intersections will include signalized intersections operating at LOS D or below. The distribution of traffic must be shown for all roadways on which project trips occur (except those for internal circulation), whether or not they are on the CMP network.

The analysis of traffic operations and LOS is to be provided for the following conditions and is to include an assessment of traffic mitigation requirements for project opening day and future conditions.

1. Existing conditions – the conditions at the time of TIA preparation without the inclusion of the project generated trips. Existing deficiencies should be identified, but mitigation analysis is not required. The existing conditions analysis must include the full project impact area as defined above.
2. Project opening day conditions - the conditions on the opening day of the project for two scenarios: 1) excluding the project traffic and 2) including the project traffic. Assume full trip generation impact of the site. Full mitigation analysis is to be performed for project opening day conditions. If it is deemed more appropriate because of the nature of the project, another intermediate scenario may be included to focus on the access requirements and/or immediate area surrounding the project, subject to a request by the local jurisdiction. The methodology used for distribution of project traffic at project opening day conditions is at the discretion of the local jurisdiction.
3. Future conditions - the conditions for two model forecast year scenarios: 1) excluding the project traffic and 2) including the project traffic. Full mitigation analysis is to be performed for future conditions. In addition, a staging analysis of mitigations may be required for large projects constructed over a long time period. The need for a staging analysis will be determined by the local jurisdiction.

The analysis of the project opening day and future condition shall be based on, at a minimum, the PM peak-hour of the adjacent street traffic. An analysis of the AM peak-hour of the adjacent street traffic is also required for developments containing residential land uses and may be required for other types of development at local discretion. Analysis may be required for peak-hours other than the AM and PM peak for some land uses. This determination will be made by the local jurisdiction. The peak traffic generation hour of the development, if different from peak AM and PM hours, must also be identified and the total vehicle trips during the peak-hour of the generator must be estimated. This will facilitate a decision regarding the need to evaluate time periods other than the peak-hours of the adjacent streets.

Note: For State highway facilities, analysis of future conditions for is only required for the following: 1) jurisdictions that have not adopted qualifying development mitigation programs that achieve development contribution requirements established by the SANBAG Development Mitigation Nexus Study and 2) State highway facilities that are not included in the SANBAG Development Mitigation Nexus Study or are not subject to an agreement with Caltrans.

II. Existing conditions

A. Existing roadway system

Provide a map and brief written description of the roadway network. The number and type of lanes on freeways, principal arterials and other impacted roadways should be identified. Signalized intersections and plans for signalization should be identified. The existing number of lanes at key CMP intersections should be clearly identified on a graphic or in conjunction with the LOS analysis output. Maps of the CMP network are available in the Congestion Management Program documentation, available from the CMA. Also describe the relevant portions of the future network as specified with officially approved funding sources.

B. Existing volumes

Existing average weekday daily traffic (AWDT) should be identified for the CMP links in the study area. Historic volume growth trends in the study area should be shown. Consult the local jurisdiction, Caltrans and San Bernardino County for additional information.

C. Existing LOS

A LOS analysis must be conducted on all existing segments and intersections on the CMP network potentially impacted by the project or plan (as defined by the thresholds in Section I. B). Urban segments (i.e., segments on roadways that are generally signalized with spacing less than 2 miles) do not require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections. Freeway mainline must be analyzed and ramp/weaving analysis may be required at local discretion, if a ramp or weaving problem is anticipated. Several software packages are available for conducting LOS analysis for signalized intersections, freeways and other types of roadways. The software package and version used must be identified. Normally, the existing LOS analysis for intersections will be run using optimized signal timing, since the future analysis will normally need to be run using optimized timing. Signal timing optimization should consider pedestrian safety and signal coordination requirements. Minimum times should be no less than 10 seconds.

Saturation flow rates are considered as average field measured saturation flow rates and in no case shall the adjusted saturation flow rates of the 2000 Highway Capacity Software be allowed to go lower than the specified saturation flow rates listed on page C-13, when field data are not available. However, there shall be no restriction on minimum saturation flow rates if actual saturation flow rates are available.

Default lost time is two seconds per phase and a clearance signal time of three seconds. Without local data to show otherwise, a peak-hour factor of 0.95 may be assumed for existing and full generation scenarios. Variations from these values must be documented and justified. LOS analyses should be field-verified so that the results are reasonably consistent with observation and errors in the analysis are more likely to be caught. A brief commentary on existing problem areas must be included in this section, bringing existing problems to the attention of the readers.

Only project opening day and future scenarios with project require that traffic operational problems be mitigated to provide LOS E or better operation. If the lead agency or an affected adjacent jurisdiction requires mitigation to a higher LOS, this takes precedence over the CMP requirements. The LOS threshold for State highway facilities will be the same as the jurisdiction where the facility is located but no greater than a 45 second average delay per vehicle in the peak hour (middle of LOS “D”). Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

D. Related general plan issues

The relationship to the general plan may be identified. This section should provide general background information from the Traffic Circulation Element of the General Plan, including plans for the ultimate number of lanes, new roadways planned for the future and other information that provides a context for how the proposed project interrelates with the future planned transportation system.

III. Future conditions

A. Traffic forecasts

One of the primary products of the TIA is the comparison of future traffic conditions with and without the project. The primary forecasts will be for the CMP forecast year (consult the CMA for the most currently applicable forecast years). If a project is phased over a development period past the CMP forecast year, a buildout forecast with forecast background traffic must also be provided. There are two components of the forecast that need to be considered: background traffic and project traffic. Acceptable methodologies for these forecasts are described below.

1. Project Traffic Forecasts - Two basic alternatives are available for forecasting project traffic:

Manual method - Generate project trips using rates from the ITE Trip Generation report. Distribute and assign the trips based on the location of the project relative to the remainder of the urban area and on the type of land use. Rather than relying on pure judgment to develop the distribution of project traffic, the future year CMP model select zone needs to be obtained from SCAG to determine the distribution pattern. The percentage distribution should be reasonably related to the location of and the number of trips generated by zones surrounding the project. Computer-assisted trip distribution and assignment methods may be used as long as they reasonably represent the travel characteristics of the area in which the project is located. It should be noted that the model does not forecast project trucks. Therefore distribution needs to be made in a reasonable manner.

Use of local model - Create a zone or zones that represent the project (if not already contained in the local model). The CMP model may be used if new zones are created to represent the project (it is unlikely that the CMP model will already have zones small enough to represent the project). The zone or zones should include the exact representation of driveway locations with centroid connectors. It is important that the driveway representations be exact to produce acceptable turning movement volumes. Some adjustments to the turning movement volumes may be needed, depending on the adequacy of this representation.

The above methodologies may produce different results, both in the generation of trips and the distribution of trips. However, both methods will have application, depending on the jurisdiction and on the type and size of project. It should be noted that a model select zone run shall be used for distribution and ITE trip generation rates for project trips.

2. Background Traffic Forecasts - Background traffic refers to all traffic other than the traffic associated with the project itself. The background traffic shall include intersection turning movement and segment truck volumes by classification (converted to PCE's) as shown on page C-12 on arterial streets, interchange ramps and mainline freeway lanes. Future scenarios shall use the truck model (converted to PCEs) or 150 percent of the existing truck volume for arterials and freeway ramps and 160 percent for mainline freeway lanes in a special generator area such as found in the City of Fontana (between I-15 and Citrus Avenue and between San Bernardino Avenue and Jurupa Avenue).

Several alternatives for forecasting background traffic are:

For project opening day analysis - Use accepted growth rates provided by the jurisdictions in which the analysis is to take place. Each jurisdiction's growth rates should be used for intersections and segments within that jurisdiction. A table of growth rates may be available from the jurisdictions.

For horizon year - The traffic passenger vehicle and truck classification (in PCEs) models will provide the needed forecasts and if requested, passenger vehicle background plus project forecasts. Local models may also be used to generate intersection and segment forecasts, if a traffic refinement process is properly applied to maximize the quality and reasonableness of the forecasts. Alternatively, the CMP model may be used to generate growth factors by subarea, which may be applied to existing intersection and segment volumes. The separate forecasting of background traffic by each TIA Report preparer is redundant, will only create conflict among reports and should be avoided by the city/county providing an acceptable background forecast for use by all TIA Report preparers. Ideally, cities and/or the County should establish the background forecasts annually for use by project applicants. Until the city/county is in a position to produce these forecasts on a routine basis, they may wish to use the results of the background forecasts from prior acceptable TIA Reports as the basis for background forecasts for other TIA Reports. The availability of such forecasts should be established before initiating the preparation of a TIA Report. If the CMP model is being used as the basis for the forecast, assume that the project is not included in the CMP model forecast (unless it can be definitively proven otherwise). If a local model is being used, the background traffic will be derived by subtracting the project traffic from the forecast where the project is already represented in the model. Where the project is not represented in the model, the background traffic can be directly derived from the model (with appropriate refinement to maintain quality and reasonableness of the forecasts).

A Note on Methodology for General Plans and Specific Plans:

In the case of analysis of general plan revisions/updates or specific plans, the same approach is applied as above. However, the "project" to be analyzed shall consist of the proposed land use. For threshold determination use the difference between the previously approved general plan and the proposed revision to the general plan. Unless otherwise agreed by the local jurisdiction, the analysis must assume the maximum intensity of land uses allowed (i.e., worst case) on the parcels to which the revision applies. All new specific plans must be analyzed based on worst case assumptions. Although general plans may not identify specific access locations, the analysis must assume access locations that are reasonable, based on the location and size of the plan.

B. Traffic added by project, general plan revision/update, or specific plan

The methods for generating and distributing project trips must be consistent with the appropriate methodology listed above. The total number of trips generated by the project must be specified by land use. The source of the trip generation rates must be documented. Project trips (inbound and outbound) must be identified on a graphic map for both the peak hour or hours being studied.

Any assumed reductions in trip generation rates, such as internal trips and transit/TDM reductions must be documented. Pass-by trips may be allowed only for retail uses and fast-food restaurants. The pass-by and internal trip percentages and methodology must be consistent with the estimates and methodology contained in the latest ITE Trip Generation handbook. The internal trip percentage must be justified by having a mixed-use development of sufficient size. In special cases, larger reductions may be allowed; but these must be documented and justified. Reductions for transit or TDM must be accompanied by an explanation of how the strategies will actually be implemented and may require a monitoring program.

Industrial and warehouse truck uses must also show the estimated number and distribution of truck trips (in PCE’s) for the same hours. The methodology utilized to obtain trip generation rates and truck percentages applied in traffic impact analyses for industrial and warehouse (including ‘high-cube’) land uses must be clearly defined. Trip rates shall be obtained from the latest edition of ITE’s *Trip Generation* manual or from current and relevant studies and shall be approved by the local jurisdiction.

C. Transit and TDM considerations

Transit and travel demand management strategies are a consideration in many development projects. Requirements within each jurisdiction are contained in the local TDM ordinance, to be adopted by each local jurisdiction as part of the CMP requirements. Examples of items to include are location of transit stops in relationship to the proposed project, designation of ridesharing coordinator, posting of information on transit routes and ridesharing information, provision of transit passes, etc.

D. Traffic model forecasts

Provide a map showing link volumes by direction. All CMP arterial links with 50 or more peak-hour project trips (two-way) and freeway links with 100 or more peak-hour project trips (two-way) must be shown. The factor to derive a peak-hour from the three-hour AM peak period is 0.38. The factor to derive a peak-hour from the four-hour PM peak is 0.28. All model forecasts shall be post processed. **Appendix E** contains guidelines for model post processing.

E. Future LOS

Compute levels of service for CMP segments and intersections based on the procedures in the 2000 Highway Capacity Manual and subsequent updates. Refer to the procedures adopted in Chapter 2 of the CMP and the assumptions specified in section II.C of this appendix. Copies of the volumes, intersection geometry, capacity analysis worksheets and all relevant assumptions must be included as appendices to the TIA Report. It should be noted that the v/c ratio and implied LOS that can be output by travel demand models are different from the LOS analysis prescribed in this section. The capacities used in the model are not typically the same capacities as used in the capacity analysis.

Intersections and segments on State highway facilities should be analyzed as a coordinated system. Left turn, through and right turn lane queuing analysis is highly desirable to validate an intersection's LOS. This more detailed analysis is meant to ensure the various movements do not overflow and impede adjacent movements and is left to the discretion of the local agency.

F. Description of projected LOS problems

Identify resulting levels of service for intersections and segments, as appropriate, on a map for applicable peak-hours. Describe in the text the nature of expected LOS problems. Describe any other impacts that the project may also have on the CMP roadway network, particularly access requirements.

G. Project contribution to total new volumes (forecast minus existing) on analyzed links

Compute the ratio of traffic generated by the proposed development to the total new traffic (including project traffic) generated between the existing condition and forecast year for each analyzed link or intersection. The purpose of this calculation is to identify the proportion of volume increase that can be attributed to the proposed project. This will be a necessary component of any deficiency plans prepared under the CMP at a later date. The calculations are to be conducted for all applicable peak-hours. The results may be shown on a map or in a table by percentages to the nearest tenth of a percent.

IV. Project mitigation.

The mitigation of project impacts is designed to identify potential LOS problems and to address them before they actually occur. This will also provide a framework for negotiations between the local jurisdiction and the project developer. The CMA will not be involved in these negotiations unless requested by a local jurisdiction. Impacts beyond the boundaries of the jurisdiction must be identified in the same fashion as impacts within the jurisdictional boundary. Impacted local agencies outside the boundary will be provided an opportunity for review of the TIA Report. Negotiations with these outside jurisdictions and with Caltrans are a possible outcome, depending on the magnitude and nature of the impacts. For the CMP, the mitigations must bring the roadway into conformance with the LOS standards established for the CMP. However, local agencies may require conformance to higher standards and these must be considered in consultation with the local jurisdiction. Measures to address local needs that are independent from the CMP network should be included in the TIA Report for continuity purposes. Consult the local jurisdiction to determine requirements which may be beyond the requirements of the CMP. The information required in this part of the TIA Report is described below.

A. Other transportation improvements already programmed and fully funded

Only transportation improvements that are fully funded should be assumed in forecast.

B. Roadway improvements needed to maintain CMP LOS standard

These should include an evaluation of intersection turn lanes, signalization, signal coordination and link lane additions, at a minimum. If a freeway is involved, lane requirements and ramp treatments to solve LOS deficiencies must be examined. Prior studies on the same sections may be furnished to the preparer of the TIA and such studies may be referenced if they do, in fact, provide the necessary mitigation for the proposed project. However, the calculation of percentage of contribution of the project to the growth in traffic must still be provided for the appropriate peak-hours, as described earlier. If the physical or environmental constraints make mitigation unlikely, then the contribution may be used to improve LOS elsewhere on the system or another location that would relieve the impact. The point of referencing a previously conducted study is to avoid unnecessary duplication of effort on the same sections of roadway. Copies of previously conducted relevant studies in the area may be obtained from the local jurisdictions or the CMA, including any plans resulting from the annual modeling runs for the CMP.

C. Other improvements needed to maintain the LOS standard

In some cases, additional transit and TDM strategies beyond what was in the original assumptions may be necessary to provide an adequate mitigation. These must be described and the method for implementation must be discussed.

D. LOS with improvements

The LOS with improvements must be computed and shown on a map or table along with the traffic LOS without improvements. Delay values, freeway volume/capacity ratios, or other measures of LOS must be included in the results (could be in an appendix) along with the letter designation.

E. Cost estimates

The costs of mitigating deficiencies must be estimated for deficiencies that occur either within or outside the boundaries of the jurisdiction. The costs must be identified separately for each jurisdiction and for Caltrans roadways. Prior studies and cost estimates by SANBAG, Caltrans and other jurisdictions may be referenced. Used together with the analysis conducted in Section III.G, this will provide an approximation of project contribution to the needed improvements. This estimate is prepared for discussion purposes with the local jurisdiction and with neighboring jurisdictions and Caltrans. It does not imply any legal responsibility or formula for contributions to mitigations. If a mitigation measure is identified as necessary to bring a deficiency into conformance with the LOS standard, but physical or environmental constraints make the improvement impractical, an equivalent contribution should be considered to improve the LOS elsewhere on the system or another location providing direct relief.

F. Relationship to other elements

While the measures required to address air quality problems are not required for the TIA Report, they may be required as part of a CEQA review. The TIA Report may be integrated with environmental documents prepared for CEQA requirements. This is at the discretion of the local jurisdiction.

V. Conclusions and recommendations

A. Summary of proposed mitigations and costs

Provide a summary of the impacts, proposed mitigations and the costs of the mitigations. A cost estimate for the proposed mitigations must be included. Generalized unit costs will be available from either Caltrans or the local jurisdiction. The source of the unit cost estimates used must be specified in the TIA Report.

B. Other recommendations

List any other recommendations that should be brought to the attention of the local jurisdiction, the CMA, or Caltrans. This may include anticipated problems beyond the forecast year or on portions of the network not analyzed.

Summary List of Typical Figures and Tables to Be Included in a TIA Report:

- Project location and 5 mile limit study area (map)
- Project size by land use (table)
- Trips generated by land use for AM and PM weekday peak-hours of adjacent street traffic and for daily traffic inbound and outbound (table) and other applicable peak-hours
- List of other planned transportation improvements affecting the project
- Existing intersection and link volumes and levels of service (map)
- Distribution and assignment of project trips (map)
- Forecast traffic without project and with project for applicable peak-hours (map or table)
- LOS without project and with project (map or table)
- Improvements required to mitigate project opening day and forecast year scenario impacts (map and/or table)
- Ratio of project traffic to new traffic (new traffic means the difference between existing and forecast) on analyzed links or intersections (map or table)
- Improvement costs by jurisdiction and for Caltrans roadways

SUMMARY OF ANALYSIS ASSUMPTIONS FOR THE CMP TRAFFIC IMPACT ANALYSIS GUIDELINES

LOS Analysis Procedures and Assumptions

Intersections

- Current HCM operational analysis.
- Optimized signal timing/phasing for future signal analysis, unless assumed to be in a coordinated system, in which case estimated actual cycle length is used. The maximum cycle length for a single signalized intersection or system should be 130 seconds.
- 10 second minimum phase time, including change interval.
- Average arrivals, unless a coordinated signal system dictates otherwise.
- Ideal lane width (12 feet).
- "Required" solution if analysis by Webster.
- Exclusive right turn lane is assumed to exist if pavement is wide enough to permit a separate right turn, even if it is not striped. (Minimum 20' from curb line to lane stripe).
- 2 second lost time/phase.
- A full saturation flow rate can be assumed for an extra lane provided on the upstream of the intersection only if this lane also extends at least 600 feet downstream of the intersection (or to the next downstream intersection).
- PHF = 0.95 for future analysis.
- The lane utilization factor may also be set at 1.00 when the v/c ratio for the lane group approaches 1.0, as lanes tend to be more equally utilized in such situations.
- For light duty trucks (such as service vehicles, buses, RV’s and dual rear wheels) use a PCE of 1.5. For medium duty trucks with 3 axles use a PCE of 2.0. For heavy duty trucks with 4 axles, use a PCE of 3.0.
- Industrial, warehousing and other Projects with high truck percentages should convert to PCE’s before applying thresholds.
- When field saturation flow rates and any special intersection characteristics are not available, the following field adjusted

saturation flow rates are recommended for analysis.

Existing and Opening Day Scenarios

- Exclusive thru: 1,800 vehicles per hour green per lane (vphgpl)
- Exclusive left: 1,700 vphgpl
- Exclusive right: 1,800 vphgpl
- Exclusive double left: 1,600 vphgpl
- Exclusive triple left: 1,500 vphgpl or less

Future Scenarios

- Exclusive thru: 1,900 vphgpl
- Exclusive left: 1,800 vphgpl
- Exclusive right: 1,900 vphgpl
- Exclusive double right: 1,800 vphgpl
- Exclusive double left: 1,700 vphgpl
- Exclusive triple left: 1,600 vphgpl or less

  Note: Existing field saturation flow rates should be used if they are available and any special traffic or geometric characteristics should also be taken into account if known to affect traffic flow.

Freeways

- Capacity of 2,200 vehicles/hour/lane (1,600/hr/lane/HOV)
- Use Caltrans truck percentages (includes trucks, buses and RV's)
- Peak-hour factor of 0.98 for congested areas and 0.95 for less congested areas
- Directional distribution of 55% and 45%, if using non-directional volumes from Caltrans volume book
- Design speed of 70 mph

Stop Controlled Intersections

- Current HCM for 2-way and 4-way stops

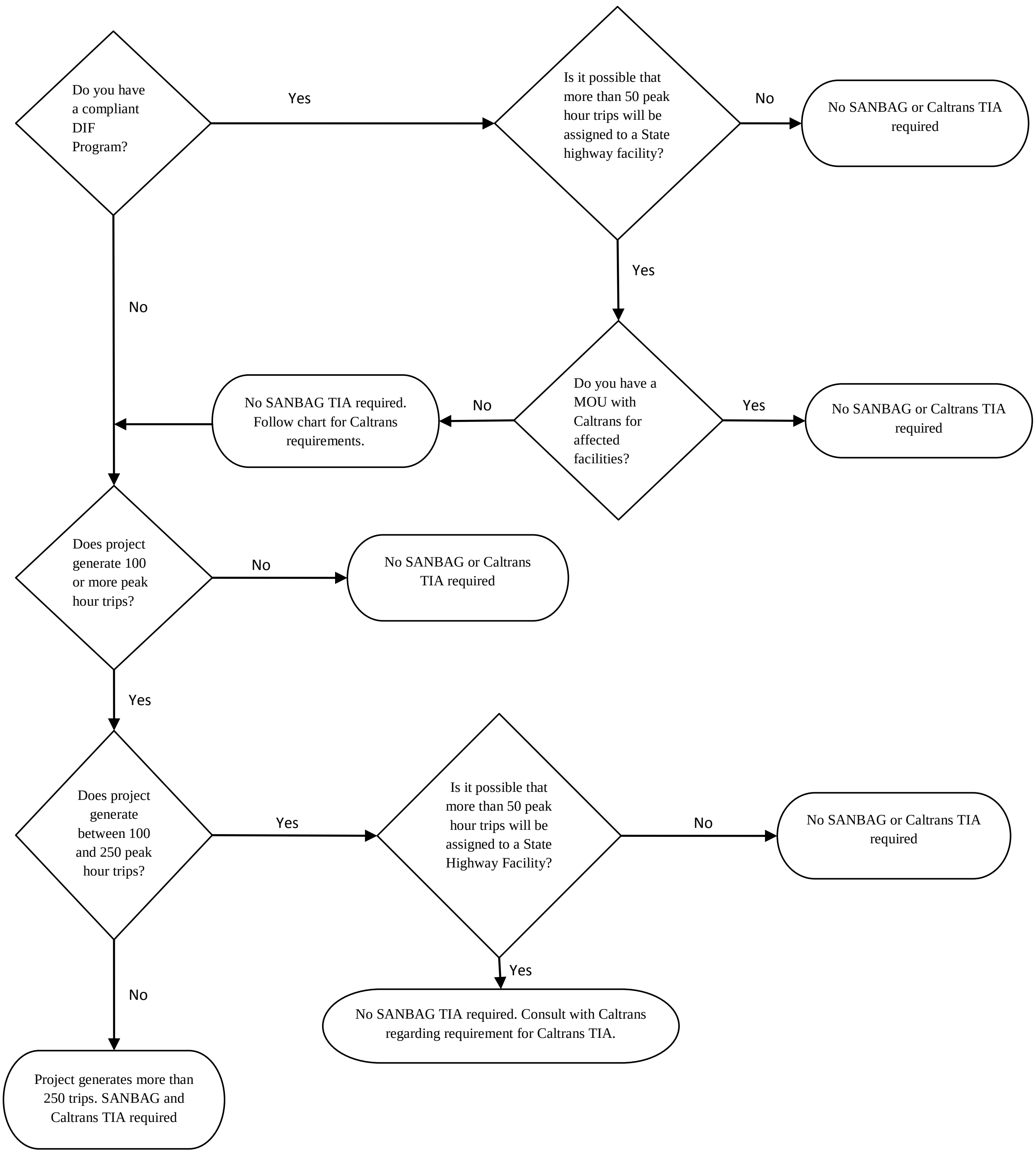
Project-Related Assumptions

- Use the latest ITE Trip Generation handbook for mixed use internal trip percentages. Higher percentages must be fully justified.
- Pass by trips - Retail uses and fast food restaurants only
  - Use ITE procedures to estimate percentage
  - For analysis at entry points into site, driveway volume is not reduced (i.e., trip generation rate is still the same). Rather, trips are redistributed based on the assumed prevalent directions of pass-by trips (see recommended ITE procedure).
- Reductions for transit or TDM are a maximum of 10% unless higher can be justified.

Other

- If a new traffic generating development project (other than a single family residential unit) within a federally designated urbanized area abuts a state highway or abuts a highway that intersects a State highway within 500 feet of that intersection, the local jurisdiction in which the development occurs must notify Caltrans and the CMA.
- The TIA procedures will be reviewed biannually. Forward comments to the CMA.
- Industrial warehouse and truck projects may distribute only truck trips by hand. (Employee trip distribution shall be modeled.)
- Intersections will be considered deficient (LOS "F") if the critical v/c ratio equals or exceeds 1.0, even if the LOS defined by the delay value is above the defined LOS standard.
- All the computer-generated traffic forecasts need to be refined for use in TIA reports to provide the best estimate of future volumes possible. Traffic forecasts should be post processed by using "B" turns software available through SCAG or another approved methodology. However, the post processing of turning movements is restricted to local models only.

Figure B - 1: Peak Hour Trip Generation Thresholds for Preparation of SANBAG and Caltrans TIA Reports



COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE
AND
REPORT FORMAT AND CONTENT REQUIREMENTS

TRANSPORTATION AND TRAFFIC

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

Second Revision
June 30, 2009

Second Modification
August 24, 2011

APPROVAL

I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and were considered by the Director of Planning and Land Use, in coordination with the Director of Public Works on the 24th day of August, 2011.

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I hereby certify that these **Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic** are a part of the County of San Diego, Land Use and Environment Group's Guidelines for Determining Significance and Technical Report Format and Content Requirements and have hereby been approved by the Deputy Chief Administrative Officer (DCAO) of the Land Use and Environment Group on the 24th day of August, 2011. The Director of Planning and Land Use is authorized to approve revisions to these Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic, except any revisions to Section 4.0 of the Guidelines for Determining Significance for Transportation and Traffic must be approved by the Deputy CAO.

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Deputy CAO

COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE

TRANSPORTATION AND TRAFFIC

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

Second Revision
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EXPLANATION

These Guidelines for Determining Significance for Transportation and Traffic and information presented herein shall be used by County staff in their review of discretionary projects and environmental documents pursuant to the California Environmental Quality Act (CEQA). These Guidelines present a range of quantitative, qualitative, and performance levels for particular environmental effects. Normally, (in the absence of substantial evidence to the contrary), non-compliance with a particular standard stated in these Guidelines will usually mean the project will result in a significant effect, whereas compliance will normally mean the effect will be determined to be “less than significant.” Section 15064(b) of the State CEQA Guidelines states:

> “The determination whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on factual and scientific data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting.”

These Guidelines assist in providing a consistent, objective and predictable evaluation of significant effects. These Guidelines are not binding on any decision-maker and should not be substituted for the use of independent judgment to determine significance or the evaluation of evidence in the record. The County reserves the right to request further, project specific, information in its evaluation of a project’s environmental effects and to modify these Guidelines in the event a scientific discovery or factual data alters the common application of a Guideline. In addition, evaluations to verify the applicability of the significance guidelines for individual project conditions may be necessary. Additional evaluations may include analysis of vehicle headways, speeds, average gaps, queues, delay, or other factors.

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List of Acronyms

ADT	Average Daily Trips
CALTRANS	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Plan
DPLU	Department of Planning and Land Use
HCM	Highway Capacity Manual
ITE	Institute of Traffic Engineers
LOS	Level of Service
min	Minute
mph	Miles per Hour
MTDB	Metropolitan Transit Development Board
NCTD	North San Diego County Transit District
PFE	Public Facilities Element
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SANTEC	San Diego Traffic Engineers' Council
sec	Second
TIS	Traffic Impact Study
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

INTRODUCTION

This document provides guidance for evaluating adverse environmental effects that a proposed project may have on transportation and traffic. Specifically, this document addresses the following questions listed in the California Environmental Quality Act (CEQA) Guidelines, Appendix G, XV, Transportation/Traffic[1]:

Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of the effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit?

b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

g) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Traffic and transportation related impacts are major concerns for the San Diego Region. As population in the San Diego Region grows, traffic, as measured by average daily trips (ADT), also grows. Land development within the San Diego region contributes to growth in population and growth in traffic. The rate of land development, population and traffic growth has often outpaced the provision of needed transportation infrastructure to adequately accommodate the increased growth. As a result, traffic congestion is a common occurrence on many freeways, highways and arterials in the San Diego region.

[1] The State CEQA Guidelines, Appendix G, XV Transportation/Traffic list two other transportation/traffic related questions (c and e), which are not addressed in this document. Question c states, “Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in locations that results in substantial safety risks?” Question c is concerned with airport traffic safety and is addressed under the County’s Guidelines for Determining Significance for Airport Hazards. Questions e states, “Would the project result in inadequate emergency access? Question e is addressed under the County’s Guidelines for Determining Significance for Fire Protection Planning, which addresses the needs of emergency service providers (fire and sheriff, etc.), including emergency access requirements.

1.0 GENERAL PRINCIPLES AND EXISTING CONDITIONS

The population of the San Diego Region is projected to increase from approximately 2.9 million people today to about 3.9 million in the year 2030. As a result, the number of forecasted Vehicle Miles Traveled (VMT) in the San Diego Region is projected to increase 50 percent from current levels. Road improvements will be needed to accommodate the anticipated growth in traffic; otherwise, traffic congestion will increase significantly.

1.1 <u>Level of Service</u>

As a means of measuring and evaluating traffic congestion, the concept of "level of service" was created. Level of service (LOS) is a quality of service measure that describes operational conditions on a transportation facility, such as a roadway or intersection. Levels of service are established based upon the driver's perspective. This service measure is a general overall measurement of several conditions such as speed and travel time, freedom to maneuver, traffic interruption, and comfort and convenience. Safety is an important concern but, typically, is not included in the measures that establish service levels.

Six LOS categories are defined for each type of transportation facility. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Methods for identifying levels of service vary based upon the type of transportation facility. Criteria for identifying levels of service on County of San Diego arterials are provided in the County of San Diego Public Road Standards. Methods of identifying levels of service for freeways, highways and intersections are provided in the Highway Capacity Manual (HCM). A detailed discussion of level of service is provided in Attachment A. Also, definitions of some key traffic terms are included in Attachment B.

Levels of service are used primarily to assess how substantial increases in vehicular traffic may affect traffic congestion on specific transportation facilities, such as freeways, arterials, and intersections. Procedures have also been established to adjust the evaluation to account for trucks, buses, grade and pedestrian volumes. Substantial traffic volume increase may also result in other traffic related impacts. Where applicable, evaluations should be made to assess the potential for traffic related impacts for the following items:

- Regional transportation facilities; including freeways, state highways and ramps
- Local circulation and road network
- Adequacy of existing roadway or intersection design features
- Access (both primary and secondary, as required)
- Alternative transportation modes; including pedestrians, bicyclists and transit

1.2 Traffic Impact Studies

In order to evaluate potential traffic impacts that may result from a specific land development or road improvement project, traffic impact studies are often prepared. Traffic impact studies include estimates of the amount of traffic generated by the project, distributions of project traffic or redistributions of traffic caused by the project, assessments of potential traffic impacts, and when applicable, the identification of mitigation measures to alleviate project-related traffic impacts.

The agency responsible for final approval of a project's traffic study is the agency that has discretionary approval of the project. For most projects located in the unincorporated area of San Diego, the agency approving the traffic study would be the County of San Diego. However, coordination with other affected agencies is often necessary in the preparation of traffic impact studies. The San Diego Association of Governments (SANDAG) is the agency responsible for the oversight of regional transportation planning. The California Department of Transportation (Caltrans) is the State agency responsible for planning, constructing and maintaining the State highway network. In addition to the County of San Diego, eighteen other municipalities within the San Diego Region are responsible for planning, constructing and maintaining local transportation networks within their respective areas of jurisdiction.

For more information on Traffic Impact Studies refer to the Transportation and Traffic Report Format and Content Requirements.

1.3 Regional Transportation Plan

On March 28, 2003, the SANDAG Board adopted the 2030 Regional Transportation Plan (RTP) and in February 2005, Amendment Number 1 to the RTP was approved. Mobility 2030 establishes goals and policies for addressing the needs of the regional transportation network in the San Diego region. In addition to identifying highway and road improvements, Mobility 2030 emphasizes Managed/High Occupancy Vehicle (HOV) lanes to accommodate transit services, as well as carpools and vanpools. It also emphasizes the coordination of transportation infrastructure and services with land use planning and focuses on a variety of performance measures, such as average travel times, instead of the traditional level of service measurements.

Under the "reasonably expected revenue" scenario, Mobility 2030 estimates $42 billion to be available to implement proposed improvements in the plan. Under this scenario, 19% would be provided through the Transnet extension, 28% would be provided by local revenue sources, 33% would be provided by state sources and 20% would come from federal sources. Identified improvements would not focus solely on road improvements, but are expected to increase mobility by making improvements to transit, highways, local street networks, land use systems and demand management systems.

2.0 EXISTING REGULATIONS AND STANDARDS

The following list details the most significant regulations and standards that address traffic and transportation issues in California and the County of San Diego.

2.1 State Regulations and Standards

California Environmental Quality Act (CEQA)[2]
[http://ceres.ca.gov/topic/env_law/ceqa/guidelines/]
Under the California Environmental Quality Act (CEQA) lead agencies are required to consider traffic impacts when assessing the environmental impacts of proposed projects. CEQA requires discretionary projects to evaluate the effect projects may have on traffic circulation and other transportation related impacts.

2.2 Local Regulations and Standards

Public Facilities Element (Part XII) of the San Diego County General Plan
[http://ceres.ca.gov/planning/counties/San_Diego/plans.html]
The County of San Diego General Plan Public Facilities Element establishes policies and implementation measures regarding the assessment and mitigation of traffic impacts of new development. One of the goals of the Public Facilities Element (PFE) is to provide "A safe, convenient, and economical integrated transportation system including a wide range of transportation modes (PFE, page XII-4-18)." The PFE also identifies an objective in the Transportation Section to provide a "Level of Service C or better on County Circulation Element roads. (PFE, page XII-4-18)." The PFE, however, establishes LOS D as an off-site mitigation limit for discretionary projects. When an existing Level of Service is already D, "a LOS of D may be allowed (PFE, page XII-4-18)." According to the PFE, projects that significantly increase congestion on roads operating at LOS E or LOS F must provide mitigation. According to the PFE, this mitigation can consist of a fair share contribution to an established program or project to mitigate the project's impacts. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Sections 15091 and 15093 of the State CEQA Guidelines to approve the project as proposed.

San Diego County Transportation Impact Fee (TIF) Program/Ordinance
[http://www.sdcounty.ca.gov/dpw/land/tif.html]
The County of San Diego Board of Supervisors adopted a Transportation Impact Fee Ordinance (April 2005/Updated January 2008) for the unincorporated area of San Diego County. The ordinance enables the County to implement Transportation Impact Fee (TIF) programs. The TIF program requires payment of fees that constitute a proposed project's fair share contribution towards the construction costs of the planned transportation facilities that are affected by the proposed development. The TIF fees are collected as a condition of approval of a subdivision or prior to issuance of a development permit, including and most typically a building permit.

[2] Public Resources Code 21000-21178; California Code of Regulations, Guidelines for Implementation of CEQA, Appendix G, Title 14, Chapter 3, §15000-15387.

The TIF Program provides a mechanism for mitigating the impacts created by future growth within the unincorporated area. The TIF is offered to developers to facilitate compliance with the CEQA mandate that development projects mitigate their indirect, cumulative traffic impacts. The County TIF Program assesses the fee on all new development that results in new/added traffic. The primary purpose of the TIF is twofold: (1) to fund the construction of identified roadway facilities needed to reduce, or mitigate, projected cumulative traffic impacts resulting from future development within the County; and (2) to allocate the costs of these roadway facilities proportionally among future developing properties based upon their individual cumulative traffic impacts.

Cumulative impacts are those impacts caused collectively by all development within the community. Cumulative impacts can result from individually minor, but collectively significant projects taking place over a period of time (CEQA Guidelines §15355). The CEQA Guidelines recognize that mitigation for cumulative impacts may involve the adoption of ordinances or regulations (CEQA Guidelines §15130) such as the County-adopted Transportation Impact Fee Program.

TIF funds are collected into 23 local Community Planning Area accounts, three regional accounts, and three regional freeway ramp accounts. TIF funds are only used to pay for improvements to roadway facilities identified for inclusion in the TIF Program, which include both County roads and Caltrans highway facilities TIF funds collected for a specific local or regional area must be spent in the same area. For example, the TIF collected in the North Region TIF account may only be used for improvements to TIF facilities in the North Region. By ensuring TIF funds are spent for the specific roadway improvements identified in the TIF Program, the CEQA mitigation requirement is satisfied and the Mitigation Fee Act nexus is met.

As part of the TIF Program process, the transportation infrastructure needs are characterized as one of the following: existing deficiencies; direct impacts of future development; or indirect (cumulative) impacts of future development. Existing roadway deficiencies are the responsibility of existing developed land uses and government agencies, and cannot be financed with impact fees. The TIF Program is not intended to mitigate direct impacts which will continue to be the responsibility of individual development projects. Therefore, the TIF Program is only designed to address the cumulative impacts associated with new growth.

Recognizing that an individual development project is not wholly responsible for cumulative traffic impacts, each development project is required to mitigate in proportion to the project's estimated traffic generation. The County TIF Program enables projects to achieve CEQA compliance by paying a fair share toward the cost of improving roads in the future as the levels of service become unacceptable due to the increased traffic volume caused by the cumulative impacts, of various developments. The County's TIF Program goes into detail in identifying anticipated development, the roads affected, roadway costs, and the existing and projected levels of service on those roads. As sufficient funds become available, the County will implement the improvements that it has programed.

While contribution to the TIF Program will typically mitigate a project's cumulative impacts within the unincorporated area, certain projects would result in increases in density or intensity beyond the growth projections analyzed in the TIF report. These projects, such as General Plan Amendments, Specific Plan Amendments, Rezones and some Major Use Permits, may be required to implement mitigation for cumulative impacts beyond payment of the TIF. In addition, the TIF Program does not mitigate for cumulative impacts that occur in neighboring jurisdictions.

Cumulative Traffic Impacts at Joint County/City Facilities

- The TIF does cover cumulative traffic impacts for road segments and/or intersections that are located along county/city boundaries.
- The TIF does not cover cumulative traffic impacts that occur entirely within a neighboring city.

San Diego County Public Road Standards
[http://www.sdcounty.ca.gov/dpw/land/rtelocs.html]
These standards provide minimum design and construction requirements for public roads. Levels of service are established for Circulation Element roads. Levels of service are not applied with the non-Circulation Element residential roads. Target design capacities, however, have been identified for these roads.

San Diego County Private Road Standards
[http://www.sdcounty.ca.gov/dpw/land/rtelocs.html]
These standards provide minimum design and construction requirements for private roads. Levels of service are not established for private roads. Minimum design and construction requirements, however, are established based upon the projected average daily traffic (ADT) volume on the road.

SANDAG Standards - Congestion Management Program[3]
[http://www.sandag.org/uploads/projectid/projectid_13_8907.pdf]
State Proposition 111, passed by voters in 1990, established a requirement that urbanized areas prepare and regularly update a Congestion Management Program (CMP), which is a part of SANDAG's Regional Transportation Plan (RTP). The purpose of the CMP is to monitor the performance of the region's transportation system, develop programs to address near-term and long-term congestion, and better integrate transportation and land use planning. SANDAG, as the designated Congestion Management Agency for San Diego region, must develop, adopt and update the CMP in response to six specific legislative requirements further described in the report. SANDAG, local jurisdictions, and transportation operators (i.e., Caltrans, Metropolitan Transit Development Board (MTDB), North San Diego County Transit District (NCTD), etc.) are responsible for implementing and monitoring the CMP.

[3] Congestion Management Program Update, November 2008, San Diego Regional Planning Agency

One component of the CMP is a Land Use Analysis Program. Under this program, the CMP requires a review of large projects that generate 2,400 or more average daily trips or 200 or more peak hour trips. This review must assess impacts to state highways and regionally significant arterials. An excerpted list of these roadways from the CMP is included below.

List of CMP System Roadways

CMP Freeways
Interstate 5: Orange County Line to U.S./Mexico Border
Interstate 8: Nimitz Boulevard to Imperial County Line
Interstate 15: Riverside County Line to I-5
Interstate 805: I-5 (North) to I-5 (South)
State Route 52: I-5 to SR 25
State Route 54: I-5 to Briarwood Road
State Route 56: I-5 to I-15
State Route 67: Mapleview Street to I-8
State Route 78: I-5 to North Broadway
State Route 94: I-5 to Avocado Boulevard
State Route 125: SR 54 to SR 52
State Route 125: SR 905 to San Miguel Road[1]
State Route 163: I-15 to I-5
State Route 905: Oro Vista Road to Otay Mesa Road

CMP Highways
State Route 54: SR 94 to Grove Road
State Route 67: SR 78 to Mapleview Valley
State Route 75: I-5 (North) to I-5 (South)
State Route 76: Coast Highway to SR 79
State Route 78: North Broadway to Imperial County Line
State Route 79: Riverside County Line to I-8
State Route 94: Avocado Boulevard to Old Highway 80
State Route 282: Alameda Boulevard to Orange Avenue

CMP Arterials
(1) Manchester Avenue/El Camino Real: I-5 to SR 76/Mission Avenue
(2) Palomar Airport Road/San Marcos Boulevard: I-5 to SR
(3) Olivenhain Road/Rancho Santa Fe Road: El Camino Real to SR 78
(4) Centre City Parkway: 1-15 (North) to I-15 (South)
(5) Scripps Poway Parkway: I-15 to SR 67
(6) La Jolla Village Drive/Miramar Road: I-5 to I-15
(7) Balboa Avenue: I-5 to I-15
(8) Sea World Drive/Friars Road/Mission Gorge Road/Woodside Avenue: I-5 to SR 67
(9) Fletcher Parkway/Broadway/E. Main Street: I-8 (West) to I-8 (East)
(10) Nimitz Blvd./North Harbor Dr./Grape & Hawthorne Streets/Pacific Highway/Harbor Drive: I-8 to I-5
(11) Otay Mesa Road-Interim SR 905: SR 905 (West) to SR 905 (East)[6]

2.3 Regional and Local Traffic Impact Analysis Guidelines

San Diego Traffic Engineers' Council (SANTEC) and the Institute of Traffic Engineers (ITE)

The San Diego Traffic Engineers' Council (SANTEC) and the local chapter of the Institute of Traffic Engineers (ITE) have endorsed for use the "Guidelines of Traffic Impact Studies (TIS) in the San Diego Region." These guidelines were prepared by a traffic subcommittee formed by SANDAG. The purpose of the subcommittee was to develop a model set of guidelines for the analysis of traffic impacts for adoption and use by the various jurisdictions in the San Diego region. The goal was to foster more consistency in the assessment of traffic impacts in the San Diego region. These guidelines establish a LOS target of LOS D. Impacts would be identified for those projects that significantly increase the volume and or delay at intersections and road segments operating below LOS D (i.e. at LOS E of LOS F) either prior to or as a result of the proposed project. These guidelines have been incorporated into an appendix of the Regional Congestion Management Program (CMP) that is formally adopted by SANDAG for use by local jurisdictions. These guidelines are often used as a guideline by many local traffic-engineering consultants in the preparation of traffic impact studies in the San Diego Region. These guidelines, however, do not provide specific direction regarding the assessment of cumulative traffic impacts, unsignalized intersections or consistency with recent changes in the CEQA guidelines that removed consideration of de minimis findings/effects.

California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) has prepared a "Guide for the Preparation of Traffic Impact Studies." Objectives for the preparation of this guide include providing consistency and uniformity in the identification of traffic impacts generated by local land use proposals. In terms of level of service, Caltrans endeavors to maintain a goal of LOS C on State highway facilities. However, Caltrans acknowledges that this may not always be feasible. In these circumstances, Caltrans often accepts lower LOS on facilities that are currently operating below the LOS C objective.

City of San Diego

The City of San Diego has prepared a "Traffic Impact Study Manual." The purpose is to provide guidelines to consultants on how to prepare traffic impact studies in the City of San Diego and to ensure consistency on the preparation of these studies. Impacts are identified if the proposed project will increase the traffic volume on a road segment above an identified allowable increase. The better the initial level of service on the road segment, the higher the allowable volume increase.

3.0 TYPICAL ADVERSE EFFECTS

3.1 <u>Traffic Congestion</u>

Traffic related impacts are most often associated with motorized congestion on local roads and the regional circulation network. As the San Diego region grows, the number of vehicle trips that are generated by residents also grows. Historically, motor-vehicle trips have been increasing at a faster rate than that of the population growth. It is forecasted that more than 16 million vehicle trips would be made in this region each weekday by the year 2030. The personal automobile is expected to remain the primary method of travel in the region thus leading to increased motor-vehicle delay. However planned freeway and local road expansion, increased trolley and bus service, better rail service, and greater provisions for non-motorized travel would alleviate some of the traffic congestion. SANDAG's 2030 RTP details the regional improvements that are projected to occur within a twenty-year time frame, but even with these improvements providing a balanced and efficient transportation system will remain a challenge.

Increased personal automobile use affects operations on roadway segments and at intersections and ramps, which in turn results in decreases in traffic flow on roadways and longer queues at intersections and ramps. These delays add time to drivers' daily commutes and can cause noticeable increases in traffic congestion.

The County has established a level of service (LOS) of D a baseline goal for acceptable level of service on a roadway or at an intersection. This baseline, however, may not be achievable or desirable for many corridors and/or intersections. Substantial impacts to biological resources, community character, historical buildings, existing residences or businesses, and/or other resources may make physical improvements to provide LOS D or better impractical or infeasible.

It is important to note that policies aimed at avoiding traffic congestion may conflict with other important community goals or values. Standards that solely measure motor vehicle level of service do not account for the experience of other road users. This may discourage infill development or land use goals identified in a community plan to promote decreased reliance on automobile trips. Mitigation measures to improve an intersection or widen a road may conflict with the walkability of a town center or preservation of sensitive environmental resources. Finally, enhancing roadway capacity may have the adverse effect encouraging more people to drive thereby conflicting with goals that encourage multi-modal transportation and/or seek to reduce vehicle miles traveled.

3.2 Connectivity

The County's road network is made up of a variety of roadway classifications, which allow people to travel throughout the County. However, at times there are physical limitations, such as steep topography, which partially constrain connectivity on existing roadways and preclude the construction on new roadway connections. In order to address connectivity issues alternative road networks to access potential connections may be required.

3.3 Hazards Due to an Existing Transportation Design Feature

Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to an existing transportation design feature and result in potential hazards. These hazards can occur due to a design features or physical configuration of existing or proposed access roads and can adversely affect the safe transport of vehicles along a roadway. The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, may also result in vehicle conflicts with other vehicles or stationary objects.

3.4 Hazards to Pedestrians or Bicyclists

Increased motor vehicle traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to pedestrians or bicyclists and result in potential hazards. These hazards can occur for a variety of reasons including:

- A design feature or physical configurations on a road segment or at an intersection that may adversely affect the visibility of pedestrians or bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists;

- High amount of pedestrian activity at the project access points.

- Precluding or substantially hindering the provision of a planned bike lane or pedestrian facility on a roadway adjacent to the project site.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers may result in vehicle/pedestrian, vehicle/bicycle conflicts.

- The project may result in a substantial increase in pedestrian or bicycle activity without the presence of adequate facilities.

4.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

The following significance guidelines should guide the evaluation of whether a significant impact to transportation and traffic will occur as a result of project implementation. A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary. Conversely, if a project does not propose any of the following, it will generally not be considered to have a significant effect on transportation and traffic, absent specific evidence of such an effect.

This section provides guidance for evaluating adverse environmental effects a project may have in relation to traffic and transportation. The guidelines for determining significance are organized into eight categories: road segments, intersections, two-lane highways, ramps, congestion management plan, hazards due to an existing transportation design feature, hazards to pedestrians or bicyclists, and public transportation.

<u>Land Development Projects</u>

Land Development projects are projects that may result in an increase in the density or intensity or use on a parcel or parcels of land. These projects include, but are not limited to subdivisions, use permits, rezones and general plan amendments. Land development projects, typically, require discretionary approval. Due to the increased intensity of uses, land development projects generate additional traffic onto the County's road network and can contribute towards traffic congestion. A traffic impact study is often required to fully assess potential traffic impacts that may result from implementation of the proposed project.

<u>Road Improvement Projects</u>

Road improvement projects are projects that can affect transportation system operations; including level of service and other performance measures. Projects may consist of increasing road capacity or improving the traffic operations on the County's road network. This section refers to stand alone road improvement projects that are not improvements associated with a proposed development. These projects are typically publicly initiated. Road improvement projects do not generate additional trips but, in some cases, may cause a redistribution of trips on the County's road network. Road improvement projects are typically one or more of the following; road widening, construction of new road, intersection improvements and operational improvements/road maintenance. Additional guidance on how to evaluate Publicly Initiated Road Improvement Projects is included as Attachment B of the Report Format and Content Requirements.

4.1 Road Segments

Pursuant to the County's General Plan Public Facilities Element (PFE Pg. XII-4-18), new development must provide improvements or other measures to mitigate traffic impacts to avoid:

(a) Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;

(b) Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and

(c) "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project cannot be approved unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines for determining the amount of additional traffic that would "significantly impact congestion" on such roads.

The County has created the following guidelines to evaluate likely motor vehicle traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in Table 1. The levels in Table 1 are based upon average operating conditions on County roadways. It should be noted that these levels only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

On-site Circulation Element Roads

PFE, Transportation, Policy 1.1 states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- ***The additional or redistributed ADT generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours except within the Otay Ranch and Harmony Grove Village plans as specified in the PFE, Implementation Measure 1.1.2.***

Off-site Circulation Element Roads

PFE, Transportation, Policy 1.1 also addresses offsite Circulation Element roads. It states, "new development shall provide off-site improvements designed to contribute to the overall achievement of a Level of Service D on Circulation Element Roads". Implementation Measure 1.1.3 addresses projects that would significantly impact congestion on roads at LOS E or F. It states that new development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to attain a LOS to D or better or appropriate mitigation is provided. The following significance guidelines define a method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will "significantly impact congestion" on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in Table 1, or***

- ***The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.***

Table 1
Measures of Significant Project Impacts to Congestion on Circulation Element Road Segments: Allowable Increases on Congested Road Segments

Level of service	Two-lane road	Four-lane road	Six-lane road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

Notes:
1. **By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.**
2. **The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.**

LOS E

The first significance criterion listed in Table 1 addresses roadways presently operating at LOS E. Based on these criteria, an impact from new development on an LOS E road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 200 ADT. Using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 2.4 minutes.

Therefore, the addition of 200 ADT, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Significance criteria were also established for 4-lane and 6-lane roads operating at LOS E and are based upon the above 24 hour ADT significance criterion established for two-lane roads. The two-lane road criterion was doubled to determine impacts to four-lane roads and tripled to determine impacts to six-lane roads. This was considered to be conservative since the 24 hour per lane road capacity for a 4-lane road is more than double that of a two-lane road and the per lane capacity of a six-lane road is more than triple that of the two-lane road. For LOS E roads, the additional significance criteria are 400 ADT for a 4-lane road and 600 ADT for a 6-lane road.

Similar to the criteria for two-lane roads, 400 ADT for a 4-lane road and 600 ADT for a 6-lane road criteria would generate less than 25 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 2.4 minutes. The addition of 200 ADT per lane (400 ADT for a 4 lane road or 600 ADT for a 6 lane road), in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Road capacities based upon level of service for County roads can be found in the County's Public Road Standards, available online at http://www.sdcounty.ca.gov/dpw/land/rtelocs.html.

LOS F

The second significance criteria listed in Table 1 addresses roadways presently operating at LOS F. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Roads can have a greater effect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F roads more stringent significance criteria was established when compared to that for LOS E. Based on this guidance, an impact from new development on an LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 100. Again, using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 12.5 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 4.8 minutes.

The addition of 100 ADT, in most cases, would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. The same approach used to determine significance criteria for 4-lane and 6-lane roads operating at LOS E was used to determine appropriate significance criteria for four-lane and six-lane roads operating at LOS F. Based on this approach, the significance criteria for a four-lane road (200 ADT) and for a six-lane road (300 ADT) would generate less than 12.5 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 4.8 minutes. The addition of 100 per lane ADT (200 ADT for a 4-lane road and 300 ADT for a 6-lane road) would, in most cases, not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway.

In summary, under extremely congested LOS F conditions, small changes and disruptions to the traffic flow can significantly affect traffic operations and additional project traffic can increase the likelihood or frequency of these events. Therefore, the LOS F ADT significance criteria was set at 100 ADT (50% of the LOS E criterion) to provide a higher level of assurance that the traffic allowed under the criterion would not significantly impact traffic operation on the road segment.

Non-Circulation Element Residential Streets

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots and not to carry through traffic, however, for projects that will substantially increase traffic volumes on residential streets, a comparison of the traffic volumes on the residential streets with the recommended design capacity must be provided. Recommended design capacities for residential non-Circulation Element streets are provided in the San Diego County Public and Private Road Standards. Traffic volume that exceeds the design capacity on residential streets may impact residences and should be analyzed on a case-by-case basis.

4.2 <u>Intersections</u>

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections. Table 2 summarizes significant project impacts for signalized and unsignalized intersections.

Table 2
Measures of Significant Project Impacts to Congestion on Intersections: Allowable Increases on Congested Intersections

Level of Service	Signalized	Unsignalized
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement
LOS F	Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement

Notes:

1. A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues, which typically operate at LOS F. Also if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
3. The County may also determine impacts have occurred on roads even when a project's direct or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
4. For determining significance at signalized intersections with LOS F conditions, the analysis must evaluate both the delay <u>and</u> the number of trips on a critical movement, exceedance of either criteria result in a significant impact.

4.2.1 Signalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in Table 2.***

- ***Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.***

LOS E

The significance criterion for signalized intersections identified in Table 2 allows an increase in the overall delay at an intersection operating at LOS E of two seconds. This is consistent with the capacity limit contained in the SANDAG's CMP and guidelines established by the City of San Diego. A delay of two seconds is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low. Therefore, an increased wait time of two seconds, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS E is 2 seconds.

LOS F

The primary significance criterion for signalized intersections operating at LOS F conditions was based upon increased delay at the intersection. Under LOS F congested conditions, small changes and disruptions to the traffic flow to signalized intersections can have a greater effect on overall intersection operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic at signalized intersections operating at LOS F, a more stringent guideline was established when compared to signalized intersection operating at LOS E. A significance guideline of an increased delay of 1 second was established for signalized intersections operating at LOS F. An increase in the overall delay at an intersection of one second, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS F is 1 second.

Signalized intersections operating at LOS F also have the potential for substantial queuing at specific turning movements that may detrimentally effect overall intersection and/or road segment operations. Thus, an increase of peak hour trips to a critical move was also established as a secondary significance criterion for signalized intersections. A critical movement would be a movement or a lane at an intersection that is experiencing queuing or substantial delay and is affecting the overall operation of the intersection. The increase in peak hour trips to a critical move is a measurement of how many cars can be added to an existing queue. The addition of more than five trips (peak hour) per critical movement will normally be considered a significant impact. This significance criterion was selected because the five or less additional trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver (5 peak hour trips equals one trip every 12 minutes or 720 seconds).

For LOS F intersections, the 5 peak hour trips to a critical movement would not be noticeable to the average driver since the one additional trip during the 12 minute interval on average would clear the traffic signal cycles well within the 12 minute period. It should also be noted that if the 5 additional peak hour trips arrived at the same time these trips would also clear the traffic cycle and existing queue lengths would be re-established.

4.2.2 Unsignalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact to an unsignalized intersection as listed in Table 2 and described as text below:

- ***The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or***

- ***The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or***

- ***The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or***

- ***The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or***

- ***Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.***

The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. As noted in Table 2 on page 15, significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

LOS E

The significance guidelines for unsignalized intersections identify a minimum number of trips added to a critical movement at an unsignalized intersection. Since the operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves, the significance guidelines for unsignalized intersections were based upon the number of trips added to a critical movement. This guideline directly relates to the number of vehicles that can be added to an existing queue that forms at the intersection. A significance criteria of (21) twenty-one or more trips (peak hour) per critical movement was used for LOS E conditions. Although delays drivers experience under LOS E condition may be noticeable, they are not yet considered unacceptable. Twenty trips spread out over the peak hour would not likely cause the intersection delay or existing queue lengths to become unacceptable. The twenty trips (peak hour) would not be noticeable to the average driver.

The operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves. Therefore, the significance guidelines for unsignalized intersections are based upon the number of peak hour trips added to a critical movement at that intersection. This guideline examines the number of vehicles that may be added to an existing queue that forms at the intersection by the additional traffic generated by a project. In LOS E situations, the delays that drivers experience are noticeable, but are not considered excessive. A peak hour increase of twenty trips to the critical movement of an unsignalized intersection would be, on average, one additional car every 3.0 minutes or 180 seconds. Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E condition, this would not be noticeable to the average driver and would not be considered a significant impact.

LOS F

For LOS F conditions, a significance level of 6 or more trips (peak hour) per critical movement was used. Five trips or less spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver. For example, 5 trips spread out over an hour would be one car every 12 minutes. This typically exceeds the average wait time in the queue and would not be noticeable to the average driver.

4.3 Two-Lane Highways

This section provides level of service impact guidelines for State highways and County arterials operating as two-lane highways.

Several designated County Circulation Element Roads are State highways that are managed and maintained by Caltrans. These highways include State Route 67, State Route 76, State Route 78, State Route 79 and State Route 94 and within the unincorporated area of the County most of these routes operate as two-lane highways. Caltrans has prepared a "Guide for the Preparation of Traffic Impact Studies" that should also be referenced when evaluating traffic impacts to the above Circulation Element Roads that are under the jurisdiction of Caltrans. Also, Caltrans District 11 local office should be consulted early to adequately scope the traffic study and ensure potential local district issues in the traffic impact study are addressed. While the "Guide for the Preparation of Traffic Impact Studies" provides guidance for scoping a traffic study to assess impacts on Caltrans facilities, it does not provide specific guidelines for determining when a significant traffic impact occurs; hence, the development of the following significance guidelines for two-lane highways.

In addition to the State Routes identified above, several County Circulation Element Roads, although designated as arterials, operate as two-lane highways. These include roadways that have passing opportunities for 40% or more along the length of the roadway and/or have few/limited access points and intersections along the length of the roadway. Examples would include sections of Old Highway 80, Old Highway 395 and Del Dios Highway. The Highway Capacity Manual (HCM) includes analysis criteria for assessment of LOS for two-lane highways. Section 2.2 of the County of San Diego's "Transportation and Traffic Report Format and Content Requirements" states that "The Director of Public Works may, based upon a review of the operational characteristics of the roadway, designate that a HCM analysis be used to determine the LOS for a two-lane County arterial in lieu of the LOS table provided in the County of San Diego Public Road Standards." Level of service tables for two-lane highways have also been established by the County of Riverside and the County of Sacramento.

4.3.1 Signalized Intersection Spacing Over One Mile

This section provides LOS impact significance levels for State highways and County arterials operating as two-lane highways with signalized intersection spacing over one mile. County arterials were addressed in section 4.1 and Table 1, however, those that operate as two-lane highways would have higher project contribution amounts and different LOS E and LOS F levels and are treated in this section.

Table 3
Measures of Significant Project Impacts to Congestion: Allowable Increases on Two-lane Highways with Signalized Intersection Spacing Over One Mile

Level of Service	LOS Criteria	Impact Significance Level
LOS E	> 16,200 ADT	>325 ADT
LOS F	> 22,900 ADT	>225 ADT
Note: **Where detailed data are available, the Director of Public Works may also accept a detailed level of service analysis based upon the two-lane highway analysis procedures provided in the Chapter 20 Highway Capacity Manual.**		

Two-lane highways with intersection spacing over one mile have minimal side friction and conform to the HCM assumptions for two-lane highways. Level of service criteria for LOS E and LOS F are provided in Table 3 based upon criteria established with the Counties of Riverside and Sacramento and concurred upon by Caltrans-District 11. These criteria are appropriate for use for most projects with the potential to affect two-lane highways, as road conditions for two-lane highways in these Counties are similar to those in the County of San Diego. The ADT based guidelines should be the first applied method of analysis, however, County staff may allow the use of HCM Chapter 20 methodology (average travel speed and/or percent time spent following) to provide a more detailed evaluation and to determine the overall level of service in certain cases, with the approval of the Director of Public Works. Where impacts to State Highways are involved, consultation with Caltrans is recommended.

LOS E

Impact significance levels are provided in Table 3 for two-lane highways with signalized intersection spacing over one mile. The first impact significance level addresses impacts from new development (both direct and cumulative impacts) on an LOS E road. In this scenario a significant impact would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 325. For most discretionary projects, the 325 ADT level would generate less than 35 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 1.7 minutes. The addition of 325 ADT would, in most cases, not be noticeable to the average driver on a two-lane highway which has higher speeds and reduced side friction compared to a typical arterial. The additional 325 ADT, therefore, would not constitute a significant impact on a two-lane highway operating at LOS E; however, the addition of more than 325 ADT would generally result in a significant impact.

LOS F

The second impact significance guideline concerns roadways presently operating at LOS F (for a 2-lane highway LOS F would not occur until ADT exceeds 22,900 trips per day. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Roads can have a greater affect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F roads, a more stringent guideline was established when compared to that for LOS E. The guideline for determining significance from new development (both direct and cumulative impacts) on a LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 225. For most discretionary projects, the 225 ADT level would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 2.4 minutes. The addition of 225 ADT would, in most cases, not be noticeable to the average driver on a two-lane highway which has higher speeds and reduced side friction compared to a typical arterial. The addition 225 ADT or less would therefore not constitute a significant impact on a two-lane highway operating at LOS F. However, the addition of more than 225 ADT would be considered a significant impact.

4.3.2 Signalized Intersection Spacing Under One Mile

This section provides level of service impact guidelines for State highway segments and County arterials operating as two-lane highways with signalized intersection spacing under one mile. Typical examples of this type of roadway are those segments of two lane highways that traverse town centers. Similar to the experience of drivers in urban areas with closely spaced intersections, the functionality of two-lane highway conditions with signalized intersections spacing under one mile becomes constrained not due to the segment capacity but the intersection operations. Therefore the assessment of operations of intersections on two-lane highways shall be guided by a Level of Service standard. Level of Service for purposes of this significance guideline is based upon the overall intersection operations – similar to Urban Street analysis in Chapter 15 Highway Capacity Manual. For determining impact significance at the signalized intersection, Table 4 “Measures of Significant Project Impacts to Congestion on Intersections Allowable Increases on Congested Intersections” may be used as summarized below:

Table 4
Measures of Significant Project Impacts to Congestion: Allowable Increases on Two-lane Highways with Signalized Intersection Spacing Under One Mile

Level of Service	Signalized
LOS E	Delay of 2 seconds or less
LOS F	Delay of 1 second, or 5 peak hour trips or less on a critical movement

Notes:
1. A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues which typically operate at LOS F.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
3. The County may also determine impacts have occurred on roads even when a project’s traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

The second impact significance guideline (Table 4) concerns two-lane highways with signalized intersection spacing less than 1 mile. Two-lane highways with intersection spacing less than 1 mile operate similar to urban streets as identified in the HCM. Per the HCM, level Urban Streets have lower speeds with levels of service most characterized by the operation of the intersections along the highway/street. For two-lane highways with intersection spacing less than 1 mile, the level of service will be determined to be that of the intersections along the highway. Impacts to the highway will be determined by evaluating the intersection impact criteria identified in Table 4.

Impacts related to operational features on two-lane highways will be evaluated on a case-by-case basis based upon traffic flow patterns, geometrics, available sight distance, accident histories, and other factors. Coordination with County staff and Caltrans is recommended regarding any additional operational analysis that may be necessary.

4.4 Ramps

Additional or redistributed ADT generated by the proposed project may significantly increase congestion at a freeway ramp. Caltrans' "Guide for the Preparation of Traffic Impact Studies" states that an operational analysis based upon Caltrans' Highway Design Manual should be used in the evaluation of ramps and that Caltrans' Ramp Metering Guidelines should be used in the preparation of the operational analysis. However, specific criteria for the determination of an impact at a ramp are not provided in the above documents.

The CMP includes guidelines for the determination of traffic impacts at a ramp. These guidelines are summarized in Table 5. Table 5 may be used as a guide in determining significant increases in congestion on ramps and for identifying conflicts with the congestion management program. Other factors that may be considered include ramp metering, location (rural vs. urban), ramp design, and the proximity of adjacent intersections. Coordination with Caltrans and the local jurisdiction should be conducted to determine appropriate impact criteria for the specific ramps being assessed.

4.5 Congestion Management Program

Projects that generate over 2,400 ADT or 200 peak hour trips, must comply with the traffic study requirements of SANDAG's Congestion Management Program. Trip distributions for these projects must also use the current regional computer traffic model. Projects that must prepare a CMP analysis should also follow the CMP traffic impact analysis guidelines. These guidelines are summarized in Table 5.

Table 5
Measure of Significant Project Traffic Impacts for Circulation Element Roads, Signalized Intersections, and Ramps

Level of Service With Project	Allowable Change Due to Project Impact						
	Freeways		Roadway Segments*		Intersections**	Ramps**	Ramps with >15 min. delay
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)	Delay (min.)
E & F	0.01	1	0.02	1	2	-	2

* For County arterials, which are not identified in SANDAG's Regional Transportation Plan and Congestion Management Program as regionally significant arterials, significance may be measured based upon an increase in average daily trips. The allowable change in ADT due to project impacts in this instance would be identified in Table 1.

** Signalized Intersections

*** See the Report Format and Content Requirements for guidance on ramp metering analysis.

KEY
V/C = Volume to Capacity ratio
Speed = Speed measured in miles per hour
Delay = Average stopped delay per vehicle measured in seconds, or minutes
LOS = Level of Service
ADT = Average Daily Trips

4.6 Hazards Due to an Existing Transportation Design Feature

Many roadways and intersections in the County were designed and constructed prior to the adoption of current road design standards. The design of the roadways and intersections that were able to handle lower traffic volumes, may pose an increased risk if traffic volumes substantially increase along the road segment or at the intersection as a result of the proposed project. Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to an existing transportation design feature. Therefore, it is necessary to evaluate potential hazards to an existing transportation design feature.

The determination of significant hazards to an existing transportation design feature shall be on a case-by-case basis, considering the following factors:

- Design features/physical configurations of access roads may adversely affect the safe movement of all users along the roadway.
- The percentage or magnitude of increased traffic on the road due to the proposed project may affect the safety of the roadway.
- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, may result in conflicts with other users or stationary objects.

- Conformance of existing and proposed roads to the requirements of the private or public road standards, as applicable.

4.7 Hazards to Pedestrians or Bicyclists

Many roadways and intersections in the County do not currently have pedestrian or bicycle facilities. The roadways and intersections designed prior to adoption of current road standards may have conditions that may pose an increased risk if traffic volumes, pedestrian volumes, or bicycle volumes substantially increase along the road segment or at the intersection, as a result of the proposed project. Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to pedestrians or bicyclists. Therefore, it is necessary to evaluate potential hazards to pedestrians or bicyclists.

The determination of significant hazards to pedestrians or bicyclists shall be on a case-by-case basis, considering the following factors:

- Design features/physical configurations on a road segment or at an intersection that may adversely affect the visibility of pedestrians or bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists.

- The amount of pedestrian activity at the project access points that may adversely affect pedestrian safety.

- The preclusion or substantial hindrance of the provision of a planned bike lane or pedestrian facility on a roadway adjacent to the project site.

- The percentage or magnitude of increased traffic on the road due to the proposed project that may adversely affect pedestrian and bicycle safety.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers that may result in vehicle/pedestrian, vehicle/bicycle conflicts.

- Conformance of existing and proposed roads to the requirements of the private or public road standards, as applicable.

- The potential for a substantial increase in pedestrian or bicycle activity without the presence of adequate facilities.

4.8 Alternative Transportation

Alternative transportation (cycling, walking, and transit use) is addressed in the County's General Plan Public Facilities Element (PFE). The County's stated objective for alternative transportation is addressed by the PFE, Objective 4. Objective 4 asks for a "Reduction in the demand on the road system through increased public use of alternate forms of transportation and other means." Pursuant to Objective 4, Policies 4.1 – 4.4 establish a means for the County to meet the objective. As such, if a proposed project is not in conformance with the applicable alternative transportation policies in the PFE, a significant conflict with the County's alternative transportation policies may occur.

5.0 STANDARD MITIGATION AND PROJECT DESIGN CONSIDERATIONS

If a proposed project's traffic results in a significant traffic impact (per the criteria specified above), mitigation for the traffic impact must be proposed. If mitigation is infeasible or impractical, the technical, economic, and physical reasons for the infeasibility must be detailed to support a statement of overriding considerations under CEQA. Potential mitigation measures can include traffic signal improvements, physical road improvements, street re-striping and parking prohibitions, fair share contributions toward identified, funded and scheduled projects, and transportation demand management programs.

A variety of possible generalized mitigation measures are provided below. It should be recognized that a variety of improvements may be required to mitigate direct impacts depending on the extent of the project's impact. For example, a project may identify a direct impact to a road segment; however the entire segment may not need to be improved. Depending on the situation, frontage improvements or turn pockets may adequately mitigate the impact. However, analysis must be provided to demonstrate that with implementation of the proposed mitigation measure, conditions would either not change or not become worse with the implementation of the project. For example, travel time or queue lengths may need to be quantified to justify the adequacy of a proposed mitigation measure as being proportional to the project's significant impact. It should be noted that fair share contributions are not adequate to fully mitigate a direct impact because the construction of actual improvements must be in place prior to the project impact occurring. Consult with County staff, as necessary, for further information. Conceptual striping plans to ensure feasibility of the proposed mitigation measures may be required.

5.1 Traffic Signal Improvements

- New Signal (provided that it meets traffic signal warrants)
- Signal modifications including timing, coordination, phasing improvements, etc.

5.2 Physical Road Improvements

- Turn Restrictions
- New Roadway
- Curve Realignment
- Roadway widening to add lanes or shoulders
- Provision of pathway or sidewalk
- Extension of truncated street
- Shoulder provisions for bicycle-lanes
- Redesign of freeway on- and off-ramps
- Median construction/modification to restrict access
- Flaring of intersections to add turn lanes
- Provision of passing lanes or turnouts
- Acceleration and deceleration lanes

- Removal of obstructions (vegetation, rock outcroppings, utilities, etc.)
- Roundabouts

5.3 Street Re-striping and Parking Restrictions

- Re-striping to add lanes with or without parking removal or restrictions
- Protected left-turn pockets, or free right turn lanes
- Parking restrictions, daily or during peak hours
- Bicycle lanes and or sharrows

5.4 Fair Share Contributions

- Payment of the County's Traffic Impact Fee for mitigation of cumulative impacts within the unincorporated County (Refer to Section 2.2 of these Guidelines for discussion of how the TIF mitigates cumulative impacts)
- Contribution of funds to approved projects identified in the County's Capital Improvement Program Plan
- Agreement between an applicant and a City or non-County agency to contribute a fair share payment towards the construction of a specific traffic improvement found adequate by the County for impacts outside of the jurisdiction of the unincorporated County (Refer to Section 5.0 of the Report Format and Content Requirements for additional discussion of impacts outside of the County's jurisdiction).

5.5 Transportation Demand Management*

- Flexible or staggered work hours
- Properly pricing parking
- Transit incentives and improvements including subsidized transit passes, bus turnouts, or bus shelters/benches
- Carpool, vanpool programs and participation in a computerized matching system
- Incentives to promote bicycle and walk trip modal split

* Implementation of these measures will require monitoring on an on-going basis.

5.6 Traffic Safety/Hazards to Pedestrians or Bicyclists

If traffic safety or pedestrian/bicycle safety impacts are present, then conditions are placed on a project prior to approval to address those concerns. Often, compliance with County of San Diego Public or Private Road Standards will provide sufficient mitigation for an identified impact. However, site specific mitigation measures, such as the improvement of sight distance along the frontage of a project, will be imposed as a condition of approval. Conceptual striping plans to ensure feasibility of the proposed mitigation measures may be required.

Projects that would generate a high demand for pedestrian traffic such as schools, shopping centers, and large office parks may be required to provide pedestrian and bicycle routes to the facilities to accommodate the pedestrian demand.

Bicycle lanes and routes designated on the County's General Plan/Circulation Element must be specified and existing facilities identified. Provisions to provide/accommodate the ultimate right-of-way needed to construct designated bike lanes must be incorporated into the proposed project. Construction of bicycle lanes may be based upon the demand and connections to existing facilities in the area.

5.7 Alternative Transportation

Alternative transportation is addressed in the County's General Plan Public Facilities Element (PFE), Policies 4.1 – 4.4. The PFE identifies several viable ways of promoting alternative transportation and to reduce demand on the road system. However, many of these solutions are programmatic in nature and cannot typically be implemented by an individual project. Program level solutions include establishing incentive programs for employers to encourage their employees to use alternative transportation and coordinating the planning and development of transit centers with other jurisdictions and public transportation agencies. Project level solutions include identifying the need for transit improvements for large scale projects and conditioning new development on the dedication and construction of bikeways as indicated in the Circulation Element's Bicycle Network.

5.8 Project Phasing

If a proposed project will be developed in phases and the county agrees that phased implementation of mitigation measures is a feasible option, the traffic analysis will need to identify impacts and associated mitigation according to each phase of development. The implementation of mitigation measures would be timed with each project phase to address the impacts that each phase of development would create. The traffic analysis will need to evaluate each phase separately in order to justify the mitigation that will be implemented at each phase. For example, if a project proposes to construct in phases (stages) or with interim uses before full build out, then the traffic study shall detail the projects traffic impacts and needed mitigation for each phase (stage) as it comes online and identify appropriate mitigation at each stage. This level of analysis will allow County staff to draft road and frontage improvement conditions in conjunction with actual project improvements via phasing or stages.

6.0 REFERENCES

California Department of Transportation, Guidelines for the Preparation of Traffic Impact Studies, May 18, 2000.

California Public Resources Code, California Environmental Quality Act (PRC §21000-21178).

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[Attachment A]

LEVELS OF SERVICE SUMMARY

Background

Level of Service

Level of service (LOS) is a quality of service measure that describes motor vehicle operational conditions on a transportation facility, such as a roadway or intersection. This service measure is a general overall measurement of several conditions such as speed and travel time, freedom to maneuver, traffic interruption, comfort and convenience.

Six LOS categories are defined for each type of facility. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of those conditions. Safety is not included in the measures that establish service levels.

Each transportation facility type has one or more of service measure that serves as the primary determinant of level of service for that facility type. This LOS-determining parameter is called the service measure or sometimes the Measure of Effectiveness (MOE). The MOE will vary from facility type to facility type. For instance, for intersections the MOE will be delay; for a road segment it may be the 24-hour volume, the volume to capacity ratio, speed or travel time along the facility.

Capacity

The capacity of a facility is the maximum number of persons or vehicles that can be expected to traverse a point or uniform section of road within a specified time frame under prevailing roadway, traffic and control conditions. Theoretically, this is the point in which the flow rate (vehicles/hour) on the facility is the highest. At lower traffic volumes, the peak hour operations will be low density with higher speeds. At higher traffic volumes, the peak hour operations will be of higher density, but at lower speeds. The flow rate can be measured in 15 minute, hourly or 24-hour intervals. Some general relationships/estimates have been established/assumed for converting from 24-hour average daily traffic measurements to peak hour measurements and vice-versa.

The highest volume attainable under LOS E defines the capacity of the arterial or collector. Operating conditions at capacity are unstable and difficult to predict. If this capacity is exceeded, operating conditions on the roadway change dramatically. Average travel speeds are extremely low, stop-and-go traffic occurs and excessive queuing may be present.

The capacity is related to level of service. The LOS E/LOS F criteria are identified as the capacity of the facility (roadway or intersection). Volumes to capacity ratios are calculated based upon these capacity (LOS E/LOS F) criteria.

Roadways

Roadways are classified based upon the roadway's function, control conditions and type roadside development, including its specific use, density and intensity. Road classifications for roadways located within the unincorporated area are described in the County of San Diego's General Plan Circulation Element and in the County of San Diego Public Road Standards. The road classifications provided therein may be grouped into four categories, arterials, collectors, residential roads and industrial/commercial roads. A description of each category and the method of determining LOS for each are discussed below:

Freeways

A freeway is defined as a divided highway with full control of access and two or more lanes for the exclusive use of traffic in each direction. Freeways provide uninterrupted flow. There are no signalized or stop-controlled intersections and direct access to and from adjacent property is not permitted. Access to the freeway is limited to ramp locations. Raised barriers, at-grade medians or continuous raised medians separate opposing directions of travel.

Operating conditions on a freeway primarily result from interactions among vehicles and drivers. Although speed is a major concern of drivers as related to service quality, freedom to maneuver within the traffic stream and proximity to other vehicles are equally noticeable concerns. These qualities are related to the density of the traffic stream. Unlike speed, density increases up to capacity.

The LOS criteria for freeways are defined to represent reasonable ranges in the three critical flow variables, speed, density and flow rate. They are as follows:

LOS A describes free flow operations. Free flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver in the traffic stream. The effects of incidents or point breakdowns are easily absorbed at this level.

LOS B represents reasonably free flow and free flow speeds are maintained. The ability to maneuver in the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents and point breakdowns are still easily absorbed.

LOS C provides for flow with speeds at or near the free flow speed. Freedom to maneuver is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage.

LOS D is the level at which speeds begin to decline slightly with increasing flows and density begins to increase somewhat more quickly. Freedom to maneuver is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.

LOS E describes operations at capacity, the highest density value. Operations at this level are volatile, because there are virtually no usable gaps in the traffic stream. Vehicles are closely spaced, leaving little room to maneuver. Speeds still exceed 49 mph. At capacity the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown with excessive queuing. Maneuverability in the traffic stream is extremely limits and the level of physical and psychological comfort afforded the driver is poor.

LOS F describes breakdowns in vehicular flow. Such conditions generally exist within queues forming behind breakdown points. These may occur for a number of reasons, such as traffic incidents, merges, and lane drops. The breakdowns occur when the ratio of existing demand to actual capacity (or of forecasted demand to estimated capacity) exceed 1.00.

The level of service for freeway segments is estimated by calculating the demand to capacity or volume to capacity ratio. It is based upon the peak 15 min traffic flow as expressed in vehicles per hour. Adjustments to account for the types of vehicle in the traffic flow are provided in the HCM. Adjustments to the capacity to account for geometrics, grade and environmental factors, such as adverse weather conditions, are also provided.

Two-Lane Highways

A two-lane highway is a two-lane undivided roadway with one lane for each direction of travel. Traffic signals are spaced over two miles apart along the highway. Passing a slower vehicle requires the use of the opposing lane as sight distance and gaps are available. As volumes and geometric restrictions increase the ability to pass decreases and platoons form. Motorists in platoons are subject to delay because they are unable to pass.

Many two-lane highways are located within the County of San Diego unincorporated area. These are primarily State highways such as SR 67, SR 76, SR 78 and SR 94. For State highways Caltrans design standards, which utilize a peak hour HCM analysis, is used. This methodology estimates traffic operations based upon terrain, geometric design and traffic conditions. Base conditions for terrain and geometric designs have been identified which are applicable for most route segments. Procedures to account for segments, which differ from the base conditions, are also provided. The methodology is typically applied to highway segments at least 2 miles long.

In the Highway Capacity Manual (HCM Ch.20) two-lane highways are categorized into two classes for analysis:

Class I – These are two-lane highways on which motorists expect to travel at relatively high speeds. These include major intercity routes connecting major traffic generators, daily commuters, or primarily links in the state or national highway network. They serve long distance trips or serve as connecting links between facilities that serve long trips.

Class II - These are two-lane highways on which motorists do not necessarily expect to travel at high speeds. They function as access routes to Class I facilities, serve as scenic/recreational routes or pass through rugged terrain. They often serve short trips, the beginning or ending portion of a longer trip or trips for which sightseeing/recreation plays a significant role.

The primary measures of level of service for Class I two-lane highways are percent time spent following (PTSF) and average travel speed (ATS). For Class II two-lane highways level of service is based only upon time spent following. Levels of service criteria of two-lane highways are defined based upon the peak period (15 min flow periods) and are intended for application to segments of significant length. They are defined as follows:

LOS A describes the highest quality of service, when motorists are able to travel at their desired speed. Without strict enforcement average speeds of 55 mph would be expected on Class I two-lane highways and platoons of three or more vehicles are rare. On Class II two-lane highways speeds may fall below 55 mph but motorists will not be delayed in platoons more than 40 % of their travel time.

LOS B characterizes traffic flow with speeds of 50 mph (slightly higher on level terrain), on Class I two-lane highways, and drivers are delayed in platoons up to 50 percent of the time. On Class II two-lane highways speeds may fall below 50 mph but motorists will not be delayed in platoons more than 55 % of their travel time.

LOS C describes further increases in traffic flow, resulting in noticeable increases in platoon formation, platoon size and frequency of passing impediments. The average speed still exceeds 45 mph on level terrain Class I two-lane highways. Although traffic flow is stable it is susceptible to congestion due to turning vehicles and slow-moving traffic. Percent time following may reach 65 %. On Class II two-lane highways speeds may fall below 45 mph but motorists will not be delayed in platoons more than 70 % of their travel time.

LOS D describes unstable flow. The two opposing traffic streams begin to operate separately and passing becomes extremely difficult. Turning vehicles and roadside distractions may cause disruptions to the traffic stream. The average speed of 40 mph can still be maintained on Class I two-lane highways, under base conditions, but mean platoon sizes of 5 to 10 vehicles are common. On Class II two-lane highways speeds may fall below 40 mph but motorists will not be delayed in platoons more than 85 % of their travel time.

LOS E traffic flow conditions have a percent time following greater than 80% for Class I two-lane highways and greater than 85% on Class II two-lane highways. Speeds may drop below 40 mph on Class I highways and may be as low as 25 mph on sustained grades. Passing is virtually impossible. Platooning becomes intense as slower vehicles or other interruptions are encountered.

LOS F represents heavily congested flow and speeds are highly variable.

The highest volume attainable under LOS E defines the capacity of the two-lane highway. Generally, this is 3,200 peak hour trips in both directions. Operating conditions at capacity are unstable and difficult to predict.

Arterials and Collectors

Arterials are roadways that primarily serve longer through trips. Providing access to abutting commercial and residential land uses is also an important function of arterials. Traffic signals are, typically, located at many intersections with public roads and major access points to adjacent land uses. Collectors are roadways provide both land access and traffic circulation. Their access function is more important than that of arterials and unlike arterials their operations is not always dominated by traffic signals.

On arterials, which are predominately uninterrupted on segments between major intersections, the Highway Capacity Manual 2000 evaluation method for Urban Streets may be used. Average travel speed on the road way is used as the determinant of operating LOS. The average travel speed is related to the traffic volume on the road. Exhibit 10-7 in the HCM 2000 provides a service volume Table that contains approximate hourly volumes and corresponding level of service estimates for different roadway types. Typically, the capacity of arterials, which have few interruptions between major intersections, is limited by the capacity of the intersections along the roadway.

The Highway Capacity Manual 2000 includes a method for evaluating level of service for urban streets. Urban streets are identified in the HCM 2000 as arterials with traffic signals spaced two miles or less apart. The HCM methodology primarily assesses the travel speed and level of service of the urban street based upon the operations and delay that occurs at the intersection along the urban street. A roadway's access function, however, is not assessed/included in this methodology. The level of access provided by a roadway should also be considered in evaluating its performance.

Most County arterials and collectors have frequent interruptions between major intersections. Capacity and level of service for arterials and collectors in the County of San Diego are usually determined based 24-hour average daily traffic according to Table 2 in the County of San Diego Standards for Public Roads. The 24-hour average daily traffic volumes are identified for each LOS category. They were based upon historical operations of County roads, comparisons with standards from other jurisdictions, and comparison with Highway Capacity Manual tables/guidelines. They account for both mobility and access along the roadway. They are derived based upon average conditions and should be revised to account for special circumstances, such as reduced lane width, extreme grades and the provision of access improvements including turn lanes and acceleration/deceleration lanes. It should also be noted that, although not proportional to peak hour traffic volumes, the 24 hour ADT is often related to the peak hour volume. When the 24-hour volume is significantly increased, the peak hour volume is also typically significantly increased.

The following statements characterize LOS along arterials and collectors:

LOS A describes primarily free flow operations. Vehicles are completely unimpeded in their ability to maneuver into and within the traffic stream. Average travel speeds are approximately 90 % of the free flow speed. The free flow speed is the theoretical speed of traffic when no vehicles are present.

LOS B describes reasonably unimpeded traffic operations. The ability to maneuver into and within the traffic stream is only slightly restricted. Average travel speeds are approximately 70 % of the free flow speed.

LOS C describes stable operations. The ability to maneuver and change lanes in mid-block locations may be more restricted than at LOS B. Average travel speeds are approximately 50 % of the free flow speed.

LOS D borders on a range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. The ability to maneuver into and within the traffic stream is limited with slight and infrequent delay. Average travel speeds are approximately 40 % of the free flow speed.

LOS E is characterized by significant delays. The ability to maneuver into and within the traffic stream is extremely limited. Average travel speeds are approximately 33 % or less than the free flow speed.

LOS F is characterized by high delays. Average travel speeds are extremely low with stop-and-go traffic or excessive queuing.

The highest volume attainable under LOS E defines the capacity of the arterial or collector. Operating conditions at capacity are unstable and difficult to predict. If this capacity is exceeded, operating conditions on the roadway change dramatically. Average travel speeds are extremely low, stop-and-go traffic occurs and excessive queuing may be present. Generally, the highest LOS E capacity for County arterials and collectors is identified in Table 1 of the County of San Diego Public Road Standards.

Residential Roads

Residential roads are provided to collect traffic from adjacent residential areas and lots. Their primary purpose is to provide a limited residential area access to and from the regional road network. Such roads are not envisioned to provide through traffic generated in one community and destined for another. They are designed to accommodate local traffic.

Levels of service are not applied to residential roads. Due to the abutting and surrounding residential land uses, reduced traffic volumes are desired in order to minimize real and or perceived impacts to the adjacent uses. Residential roads are targeted to serve between 1,500 and 4,500 average daily trips (ADT). The County also has some special residential roads, which include frontage, alley and hillside residential. Due to the unique nature of these roads traffic may be less than 1500 ADT. Traffic volumes in excess of these targets may be accepted if other means of access to an area is precluded or found to be impractical due to such factors as environmental impacts, engineering, and no other legal access for an area.

Industrial/Commercial Roads

Industrial/Commercial roads provide access to abutting lots zoned for industrial and commercial uses. Their primary purpose is to provide a limited industrial/commercial area access to and from the regional road network. Such roads are not envisioned to provide through traffic generating in one community and destined for another. They are designed to accommodate a high percentage of trucks.

Levels of service are not applied to industrial/commercial roads. Due to the abutting and surrounding industrial/commercial land uses, reduced traffic volumes are desired in order to minimize real and or perceived impacts to the adjacent uses. Two-lane industrial/commercial roads are targeted to serve 4,500 ADT. Four lane industrial/commercial roads are recommended for traffic volumes greater than 4,500 ADT. Traffic volumes in excess of 4,500 ADT may be accepted on two lane industrial/commercial roads if adequate abutting lot access improvements are provided or other means of access to an area is precluded or found to be impractical due to such factors as environmental impacts, engineering, and no legal access.

Intersections

Levels of service for intersection are estimated based upon the procedures provided in the HCM 2000. The HCM includes procedures for the analysis of signalized and unsignalized intersections. Capacity and traffic analysis focus on the peak hour of traffic volume, because it represents the most critical period for operations and has the highest capacity requirements. Since the flow rate can fluctuate substantially within the peak hour, assessments based upon the peak 15-minute flow rate are used. A discussion of these procedures is provided below.

Signalized Intersections

The analysis of signalized intersection is based upon a wide variety of prevailing traffic, roadway and signalization conditions. Traffic conditions include volumes on each approach, distribution of vehicles by movement (left, through, right), the vehicle type distribution, pedestrian cross flows and other factors. Roadway conditions include basic geometrics of the intersection, such as the number and width of through lanes, the number and width of turn lanes, grades and adjacent parking lanes. Signalization conditions include signal phasing, timing, type of control and other factors.

The maximum capacity at signalized intersections is defined for each lane group. The lane group capacity is the maximum hourly rate of vehicles that can reasonably pass through the intersection. The flow rate is generally measured for a 15 min period and is stated in vehicles per hour (veh/hr). Capacity is evaluated in terms of the ratio of demand flow rate to maximum capacity (v/c ratio).

In the HCM methodology the capacity, LOS, and other performance measures are estimated for lane groups and intersection approaches. The overall LOS is also estimated for the intersection as a whole. The methodology, however, does not take into account the potential impact of downstream congestion of the intersection. Nor does the methodology detect and adjust for the impacts of left turn pocket overflows on through traffic and intersection operation.

Levels of service for signalized intersections are defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Although the control delay is estimated based upon a number of variables, for a given set of signal conditions the v/c ratio is a lead parameter of control delay. LOS for signalized intersections are estimated based upon a calculation of the v/c ratio, which is used with other factors to estimate the control delay.

Levels of service for signalized intersections are defined to represent reasonable ranges in control delay as follows:

LOS A describes operations with low control delay, up to 10 sec/vehicle. Many vehicles do not stop at all.

LOS B describes operations with control delay greater than 10 and up to 20 sec/vehicle. More vehicles stop than at LOS A, causing higher levels of control delay.

LOS C describes operations with control delay greater than 20 and up to 30 sec/vehicle. Individual cycle failures may begin at this level. Cycle failures occur when a given green phase does not serve all queued vehicles and overflows occur. The number of vehicles stopping is noticeable, though many still pass through the intersection without stopping.

LOS D describes operations with control delay greater than 35 and up to 55 sec/vehicle. At LOS D the influence of congestion becomes more noticeable. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 sec/vehicle. Individual cycle failures are frequent.

LOS F describes operations with control delay greater than 80 sec/vehicle. This level is considered unacceptable to most drivers. It often occurs when the arrival flow rates exceed the capacity of lane groups. Many individual cycles fail.

Unsignalized Intersections

Two-Way Stop-Controlled Intersections (TWSC)
Levels of service procedures are provided in the HCM for two-way stop-controlled (TWSC) intersections. Level of service for TWSC intersections is determined by estimating the control delay for each minor movement. The delay is estimated by determining the amount of available acceptable gaps for a driver to maneuver from and to the minor street. LOS is not defined for the intersection as a whole.

The LOS criteria for TWSC intersections are somewhat different from that of signalized intersections primarily because of different driver perceptions. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than unsignalized intersections. LOS F occurs when there are not enough gaps of sufficient size to allow the minor street demand to safely cross through traffic on the major street. This is typically evident by extremely long control delays experienced by minor-street traffic. Drivers on the minor street may also start accepting smaller than usual gaps. In such cases safety may be a problem and some disruption of the major street traffic may occur.

All-Way Stop-Controlled Intersections (AWSC)
Levels of service procedures are provided in the HCM for all-way stop-controlled (AWSC) intersections. Level of service for AWSC intersections is determined by estimating the control delay per vehicle for each lane and each approach. The LOS for each approach and for the intersection as a whole is then estimated by computing weighted averages of the delay.

The LOS criteria for TWSC intersections are similar to those of signalized intersections. The criteria for LOS for AWSC intersections, however, have different values than for signalized intersections. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than unsignalized intersections. A higher level of control delay is acceptable at a signalized intersection for the same LOS.

Roundabouts

The HCM includes procedures to estimate the capacity of single-lane roundabouts. It, however, does not include procedures for estimating the LOS of a roundabout. The capacity analysis is based upon gap acceptance techniques. The procedures are not applicable to multilane roundabouts. More details regarding the use and experience of roundabouts in the United States are needed before an analysis procedure for multilane roundabouts will be provided in the HCM.

LEVEL OF SERVICE (LOS) DEFINITIONS (generally used by Caltrans)

The concept of Level of Service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A Level of Service[s] definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety. Levels of Service definitions can generally be categorized as follows:

LOS	D/C*	Congestion/Delay	Traffic Description
(Used for freeways, expressways and conventional highways[A])			
"A"	<0.41	None	Free flow.
"B"	0.42-0.62	None	Free to stable flow, light to moderate volumes.
"C"	0.63-0.79	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
(Used for conventional highways)			
"F"	>1.00	Considerable	Forced or breakdown. Delay measured in average flow, travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.
(Used for freeways and expressways)			
"F0"	1.01-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go.
"F1"	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues.
"F2"	1.36-1.45	Very severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods.
"F3"	>1.46	Extremely severe 3+ hours of delay	Gridlock.

[s] Level of Service can generally be calculated using "Table 3.1. LOS Criteria for Basic Freeway Sections" from the latest Highway Capacity Manual. However, contact Caltrans for more specific information on determining existing "free-flow" freeway speeds.

* Demand/Capacity ratio used for forecasts (V/C ratio used for operational analysis, where V = volume)

[A] Arterial LOS is based upon average "free-flow" travel speeds, and should refer to definitions in Table 11.1 in the HCM.

[Attachment B]

DEFINITIONS OF KEY TERMS

Traffic Terms

AM or PM Peak Hours: Those hours of the day in which the bulk of commute trips occur and in which traffic impacts are likely to be the greatest.

Average Daily Traffic (ADT): The number of vehicles that use a roadway segment within a 24-hour period.

Capacity of a transportation facility: The maximum number of persons or vehicles that can be expected to traverse a point or uniform section of road within a specified time frame under prevailing roadway, traffic and control conditions. Theoretically, this is the point in which the flow rate (vehicles/hour) on the facility is the highest. The highest volume attainable under LOS E has been designated as the capacity of the arterial or collector.

Critical Movement: Intersection movements (right-turn, left-turn, through-movement), that experience excessive queues, which typically operate at LOS F.

Level of Service (LOS): Corresponds to “excellent” through “failure” conditions in terms of traffic congestion, both for road segments and for intersections. It is used to provide an indication of the amount of delay a driver would experience along a road segment or the amount of wait time a driver would experience at an intersection. *LOS* is rated on a scale of A through F, with A representing excellent, free flow conditions, and F representing failures of road segments or intersections.

Volume to Capacity (V/C) Ratio: The ratio of the actual traffic volume of a road segment or intersection to the design capacity of the road segment or intersection. It is used to provide an estimate of the level of service of the road segment or intersection.

Parking Terms

The following list highlights several key parking terms that are defined in the Zoning Ordinance:

Parking Area: Open area other than a street or alley that contains motor vehicle parking spaces.

Parking Space: An unobstructed space or area other than a street or alley, not less than the minimum size specified for the type of use provided with adequate ingress and egress, and which is permanently reserved and maintained for the parking of motor vehicles.

Covered Parking: Covered or enclosed parking spaces located anywhere on a building site where a structure may be located.

Loading Space: An area, other than a street or alley on the same lot with a building or a group of buildings not less than 10-feet wide, 35-feet long, and 14-feet high which affords adequate ingress and egress for trucks from a public street or alley, and which is permanently reserved and maintained for the temporary parking of commercial vehicles while loading or unloading merchandise or materials. Loading and unloading shall not obstruct access to any parking space.

Off-Street Parking: A facility/area for vehicle parking located outside of a public street right-of-way.

Open Parking: Open parking spaces are spaces located outside the ultimate right-of-way of any street.

[Attachment C]

SUMMARY OF MODIFICATIONS AND REVISIONS

Guidelines for Determining Significance and Report Format and Content Requirements for Traffic and Transportation were originally approved on September 26, 2006. The following is a summary of revisions made since original document approval.

Second Modification, August 24, 2011

- Added clarifying language for cumulative impacts and use of TIF program as mitigation at shared jurisdictional facilities (segments and intersections).

First Modification, February 19, 2010

- Revised the reference to the CEQA Guidelines, Appendix G questions to reflect the updated questions that were changed as a result of SB 97 greenhouse gas emission related legislation
- Deleted discussions related to adequate parking capacity to reflect the deletion of this topic from the CEQA Guidelines, Appendix G
- Added discussion to Section 2.2 of the Guidelines regarding TIF as mitigation for cumulative impacts
- Updated Congestion Management Program information to reflect the latest 2008 update
- Added discussion to the mitigation section of the Report Format and Content Requirements to address mitigation of impacts outside of the County's jurisdiction
- Added Appendix C to the Report Format and Content Requirements to clarify the required scope of cumulative analysis and cumulative impact mitigation

Second Revision, June 30, 2009

- Removed reference to the public road standards in Attachment A of the Guideline.

- Updated language about the RTP to reflect the most recent update

- Added discussion to 3.0 Typical Adverse Effects to clarify that LOS thresholds are typically established as a baseline for determining significant impacts but that other factors may need to be considered including whether achieving the LOS standard is practical or infeasible.

- Updated the reference to the PFE Implementation measure 1.1.2 in the Guideline addressing the exceptions for Otay Ranch and Harmony Grove Village.

- Clarified significance criteria for on and off-site circulation element roads differentiating criteria for LOS E vs. LOS F roads (pgs 13 - 15)
- Better defined critical movement (Table 2, Table 4 and definitions) and added guidance in the report formats specifying when it is adequate to evaluate an

entire intersection movement versus evaluate each critical movement at the intersection (Section 3.5 Report Formats)

- Moved Table 2 to beginning of section 4.2 to clarify that the table is used to assess both signalized and unsignalized intersections.
- Added an additional guideline for signalized intersections to address cases where a significant impact would occur to the intersection due to traffic operations, geometrics, sight distance, etc.
- Corrected criteria in Section 4.2.2 Unsignalized Intersections to remove inconsistency between the guideline and the text (changed guideline language to reference impacts result from 21 or more and 6 or more peak hour trips versus 20 or more and 5 or more)
- Clarified the note in Table 3 in the text that follows to indicate when a deviation in the methodology for analysis of 2 lane highways would be considered.
- Provided an example of a State highway or county arterial that operates as a 2 lane highway with signalized intersection spacing under one mile as being typical of a roadway that traverses a town center.
- Revised language referencing cumulative impacts in Tables 2 and 4.
- Added language to the significance guideline on parking capacity to reference that a special parking study may identify inadequate parking capacity versus only referencing Zoning Ordinance since we often cannot rely solely on Zoning Ordinance standards for parking
- Added language to Section 5.0 Standard Mitigation to clarify that when a significant impact is identified the required mitigation may include a variety of measures and need not necessarily include improvement of an entire road segment to get the operations back to an acceptable LOS. Clarifies that mitigation must result in conditions either better or the same as what they were prior to the project impacts.
- Added section 5.9 Project Phasing to Section 5.0 Mitigation to clarify that mitigation measures can be tied to the phased project impacts if a project proposes to implement in phases. Also added reference to Project Phasing in the Report Formats to clarify that the analysis must be presented according to phases to allow identification of adequate mitigation according to phase.
- Added language about existing conditions and the need for updated traffic counts to Section 2.0 of the Report Formats.
- Clarified Table 1 of the Report Formats. Added a column to address when an issue specific TIS is required and added a row to address when a TIS may be needed for projects that generate from 200 to 500 ADT or 20 to 50 Peak Hour Trips.
- Clarified that peak hour trips are to include the 2-way peak hour total.
- Defined the scope of a full TIS (direct and cumulative analysis) as requiring analysis of all roads and intersections that receive 25 or more peak hour trips. The 25 peak hour trip guideline is now consistent for both direct and cumulative analysis.
- Clarified that the CMP analysis requires analysis of roads and intersections that receive 50 or more peak hour trips and that the county analysis requirements (roads and intersections that receive 25 or more peak hour trips) would typically cover all CMP road and intersection analysis.

- Added section 2.1.4 Projects Proposing to Amend the County's General Plan to the Report Formats to reference the Public Facilities Element Requirement that a build out analysis be prepared for certain projects and to state that depending on the result of the build out analysis, amendments to the circulation element may need to be included as part of the project to make the project description consistent with the General Plan. Also clarified that impact conclusions and mitigation measures need not be identified in the conclusions of planning analyses as these are not CEQA requirements.
- Added language to Section 3.5 Intersections of Report Formats to indicate which intersections should be studied and to recognize that additional side/minor street intersections may need to be evaluated in traffic operation issues are identified.
- Added Attachment B to the Report Format and Content Requirements to provide guidance on evaluating Road Improvem0ent projects
- Revised the general format of Traffic Impact Studies in Section 3.1 Outline. Made a clear separation in the organization to distinguish between required CEQA analysis and mitigation measures and analysis required for planning purposes such as CMP and General Plan Consistency/Build Out analysis
- Clarified in section 3.2 Project Trip Generation that for projects proposing a GPA and/or Rezone, the analysis should be based on the highest density or intensity use that would be allowed with the GPA or Rezone
- Various changes and reorganization to the content of the Report Formats to add additional detail as to what is expected in each section of the study

First Revision, December 5, 2007

- Added criteria for two-lane Highways (Section 4.3)
- Various editorial revisions

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX B

Traffic Impact Analysis Scoping Agreement

Michael Baker

INTERNATIONAL

SCOPE FOR TRAFFIC STUDY

Project Name:	Bloomington Business Center

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	Not Available (Slover Ave between Laurel Ave & Linden Ave)		
Project Description:	Proposed Warehouse		
City:	Unincorporated Community of Bloomington, San Bernardino County		
Project Buildout Year:	2018	Ambient Growth Rate per Year:	1.0% (per the Cedar Ave project under study)
Closest Intersection (Slover Avenue / Locust Avenue) to the Project			
Xtn N/S Street Name:	Locust Avenue		
Xtn E/W Street Name:	Slover Avenue		
Thomas Guide Pg+Grid:	605-C7	County Supervisorial District:	5

	Engineer	Developer
Company:	Michael Baker International	JM Realty Corp
Name:	Carla Dietrich	Joseph McKay
Address:	3536 Concours Street, Suite 100	3535 Inland Empire Boulevard
City, State, Zip Code:	Ontario, CA 91764	Ontario, CA 91764
Phone #:	(909) 974-4908	(909) 941-2520
Fax #:	(909) 974-4004	n/a
Email:	cdietrich@mbakerintl.com	JMCKAY@jmrealtygroup.com

By: Carla Dietrich

Print Name: Carla Dietrich

Transportation Engineer 12/12/2016

Reviewed By: [signature]

Print Name: JEREMY JOHNSON 12-15-16

Traffic Division Representative Date

COUNTY APPROVAL OF SCOPE DOES NOT REPRESENT OTHER AGENCIES. APPLICANT/ENGINEER ENCOURAGED TO SEEK ADDITIONAL INPUT FROM THE CITY OF FONTANA TO AVOID POTENTIAL FUTURE DELAYS AND ADDITIONAL COSTS.

SCOPE FOR TRAFFIC STUDY

Project Name:	Bloomington Business Center

1. Traffic Distribution: Based on a global distribution, 10% of project traffic is assumed to travel north, 17% to the south, 38% to the west, and 35% to the east. **Exhibit 1** shows the passenger car project distribution and **Exhibit 2** shows the truck project distribution.

2. Trip Credit: No trip generation credits have been proposed for this project since the site is vacant.

Transportation Demand Management (TDM)	No	Not Anticipated
Existing Active Land Use	No	Vacant Land, One Single Family Residence
Previous Land Use	No	Undeveloped
Internal Trip Reduction	No	Not Applicable
Pass-by Trip Reduction	No	Not Applicable

3. Related Projects: Cumulative background projects list and information to be provided by San Bernardino County Planning, City of Fontana, and City of Rialto. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to the Traffic Division for review and approval before being incorporated into the study.

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered. However, the traffic study will not include a freeway analysis on Interstate 10 since the project is adding 47 PM peak hour trips which is less than the 100 (two-way) peak hour trips required for analysis per the SANBAG CMP Guidelines.

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at: http://www.sanbag.ca.gov/planning/subr_congestion.html

SCOPE FOR TRAFFIC STUDY

Project Name: Bloomington Business Center

5. Trip Generation

Trip Generation Rate(s) Source: ITE Trip Generation	**I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:**	**Edition:**	9th

Land Use Code	**Land Use**	**Rate Based on**	**Qty**	***AVTE vs**	**ADT**	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour	
						In	Out	In	Out	In	Out
150	Warehouse	I	344,000 SF	1,000 SF of GFA on a weekday	1,603	108	30	35	109	--	--

* - Average Vehicle Trip Ends.
For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store

SCOPE FOR TRAFFIC STUDY

Project Name:	Bloomington Business Center

6. Study Intersections: At minimum, the study shall include the following intersections as shown in **Exhibit 3**. Project only AM/PM peak hour traffic volumes are shown in **Exhibit 4** to illustrate which intersections exceed the 50 trip study threshold. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	% County	Thomas Guide Page+Grid	N-S / E-W Street Name	City	Signalized	CMP
1	0%	605-B7	Slover Avenue @ Sierra Avenue	Fontana	Yes	No
2	0%	605-B7	Slover Avenue @ Production Avenue	Fontana	Yes	No
3	0%	605-B7	Slover Avenue @ Empire Center Boulevard	Fontana	Yes	No
4	0%	605-B7	Slover Avenue @ Tamarind Avenue	Fontana/San Bernardino County	Yes	No
5	100%	605-B7	Slover Avenue @ Alder Avenue	San Bernardino County	No	No
6	100%	605-C7	Slover Avenue @ Laurel Avenue	San Bernardino County	Yes	No
7	100%	605-C7	Slover Avenue @ Proposed Site Driveway 1	San Bernardino County	Yes	No
8	100%	605-C7	Slover Avenue @ Proposed Site Driveway 2	San Bernardino County	Yes	No
9	100%	605-D7	Slover Avenue @ Locust Avenue	San Bernardino County	No	No
10	100%	605-C7	Laurel Avenue @ Proposed Site Driveway 3	San Bernardino County	No	No
11	100%	605-C7	Slover Avenue @ Linden Avenue	San Bernardino County	No	No
12	100%	605-C7	Cedar Avenue @ Slover Avenue	San Bernardino County	Yes	No
13	100%	605-C7	Cedar Avenue @ Orange Street	San Bernardino County	Yes	No

Cities to be consulted: The City of Fontana since the project is within a mile of the City limits.

COUNTY OF SAN BERNARDINO –
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING DIVISION
(909) 387-8186

REVIEW SUBMITTAL NUMBER. : 1ST Submittal		**PROJECT : Scoping agreement dated 11/17/2016 for the Bloomington Business Center**
REVIEWER: Jeremy Johnson	**SUPERVISOR: Ed Petre, P.E.**	**LOCATION: South side of Slover Ave from Laurel Ave to Linden Ave (APNs: 0256-041-01, 02, 03 and 47);**
REVIEW TYPE: ☒ LAND DEV. ☐ PERMITS ☐ OTHER		**CONSULTANT: Carla Dietrich; Michael Baker Associates**
DATE: 11/17/16	**RETURN DATE: 12/5/16**	**CONTACT INFO: (909) 974-4908**

No.	Page	Comment	Initial Disp.	Response	Final Disp.	LS or NDC
1	General	Exhibits show Tamarind in the wrong location. Revise as needed.	C	As requested, the exhibits have been revised showing Tamarind in the correct location. See Exhibits 1, 2 & 3.		
2	4	Slover and Tamarind has split jurisdiction. Update table accordingly.	C	On page 4 of 6 of the Scope for Traffic Study, the table has been updated to show split jurisdiction.		
3	4	Locust and Linden are parallel. Should Xtn. 11 be "Slover" and Linden, consistent with Exhibits?	C	Intersection #11 in the table has been revised to state the correct intersection name.		
4	4	Cedar Ave at Orange carries 38% of project traffic (+/- 47 PCE). Include in study and update exhibits accordingly.	C	The intersection of Cedar Ave. @ Orange Street has been added to the study intersection table and Exhibits 1 – 4.		
5	5	The County's Slover Ave widening project is scheduled to end the middle of December, 2016. Therefore to obtain accurate traffic counts, surveys should be taken in January 2017 after the holidays.	C	We concur, traffic counts will be collected in January 2017 after the holidays.		

DESIGNERS INITIAL DISPOSITION CODES: **C** = Will Comply **D** = Discuss **N** = No Change **A** = Agency Action
REVIEWERS FINAL DISPOSITION CODES: **D** = Done or Approved **NC**= Not Complied **NCR** = No Change Required
LS =Revise in Later Submittal **NDC** = Revise Immediately

Project Name:	Bloomington Business Center

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County's Road Planning and Design Standards.

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $3400 is required at the time that a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

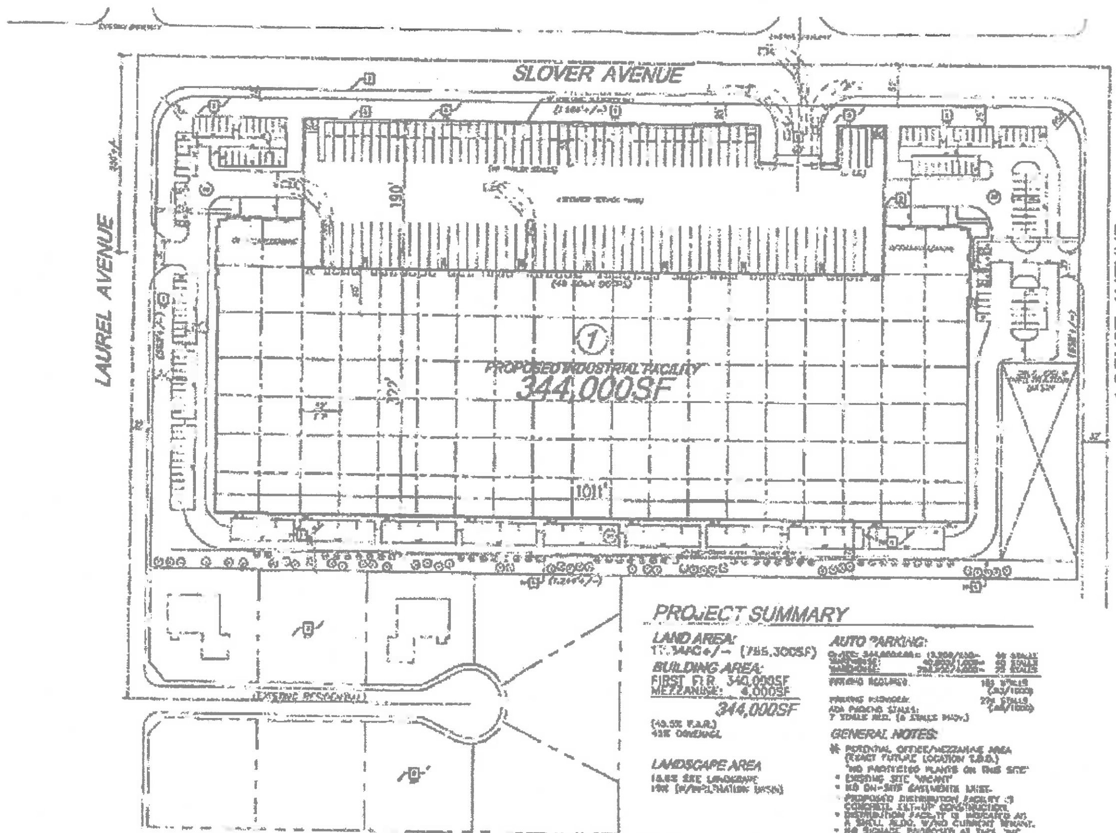
Project Name:	Bloomington Business Center

9. Contact Information:

Please submit a signed copy of this scope for approval by the Traffic Division. Draft scopes may be sent electronically. Final scope with signature should be submitted in person or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: epetre@dpw.sbcounty.gov (Ed Petre)



KEYNOTES:

"OFFICIAL USE ONLY"

N

0 50' 100'

5/29/2014

PROJECT SUMMARY

LAND AREA:
17.34AC+/− (755,300SF)

BUILDING AREA:
FIRST FLR. 340,000SF
MEZZANINE: 4,000SF
344,000SF

AUTO PARKING:

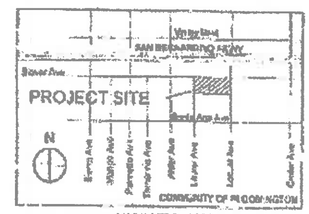
GENERAL NOTES:

LANDSCAPE AREA

UTILITY COMPANIES:

PROJECT TEAM

LEGAL DESCRIPTION:



VICINITY MAP

ASSESSORS PARCEL #'S.:

ZONING:

C.U.P. & G.P.A. REQUIRED

SITE PLAN #4B w/ Infiltration Basin

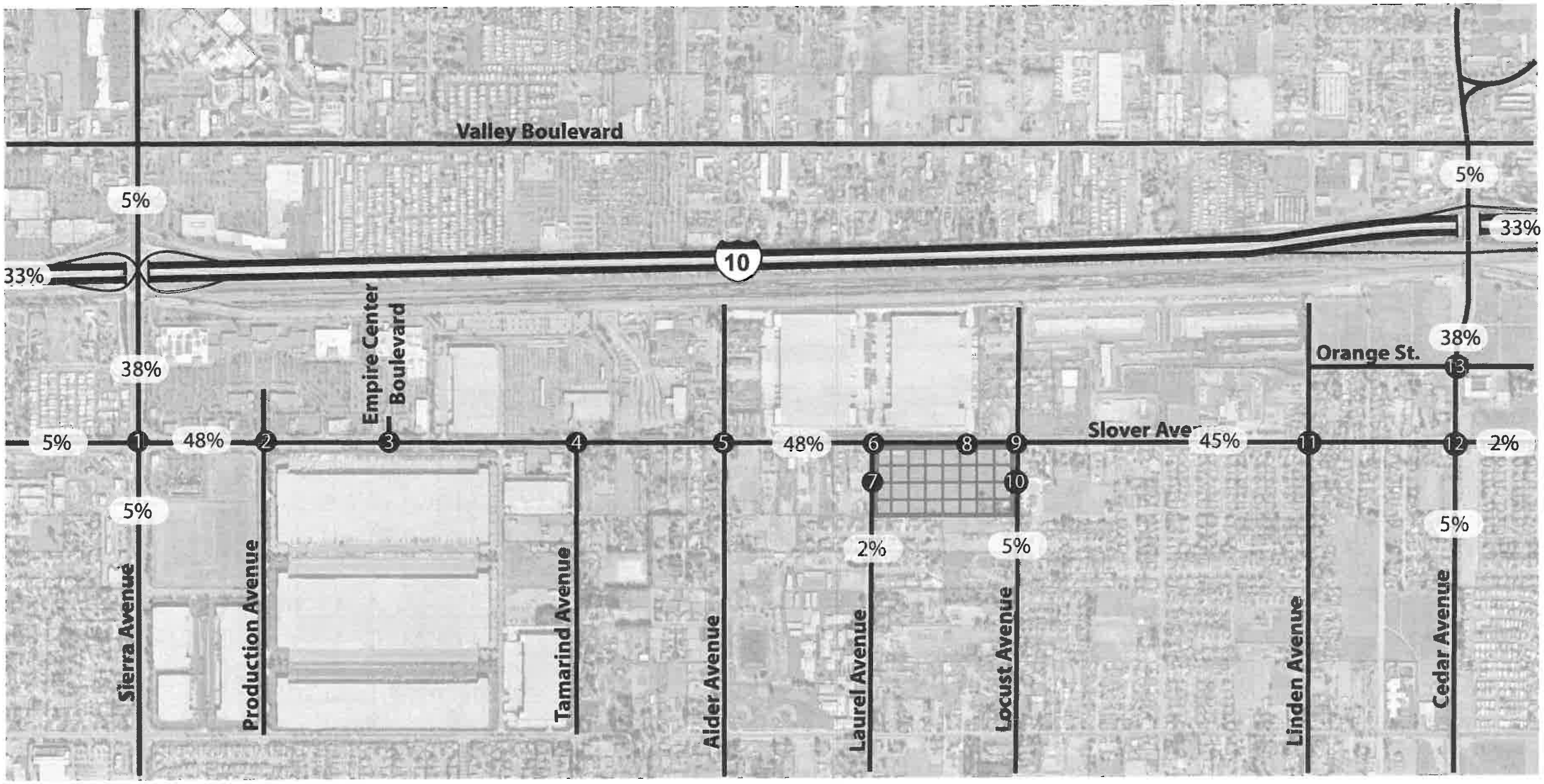
Bloomington Business Center

County of San Bernardino, California

MacDavid Aubort

JM Realty Group

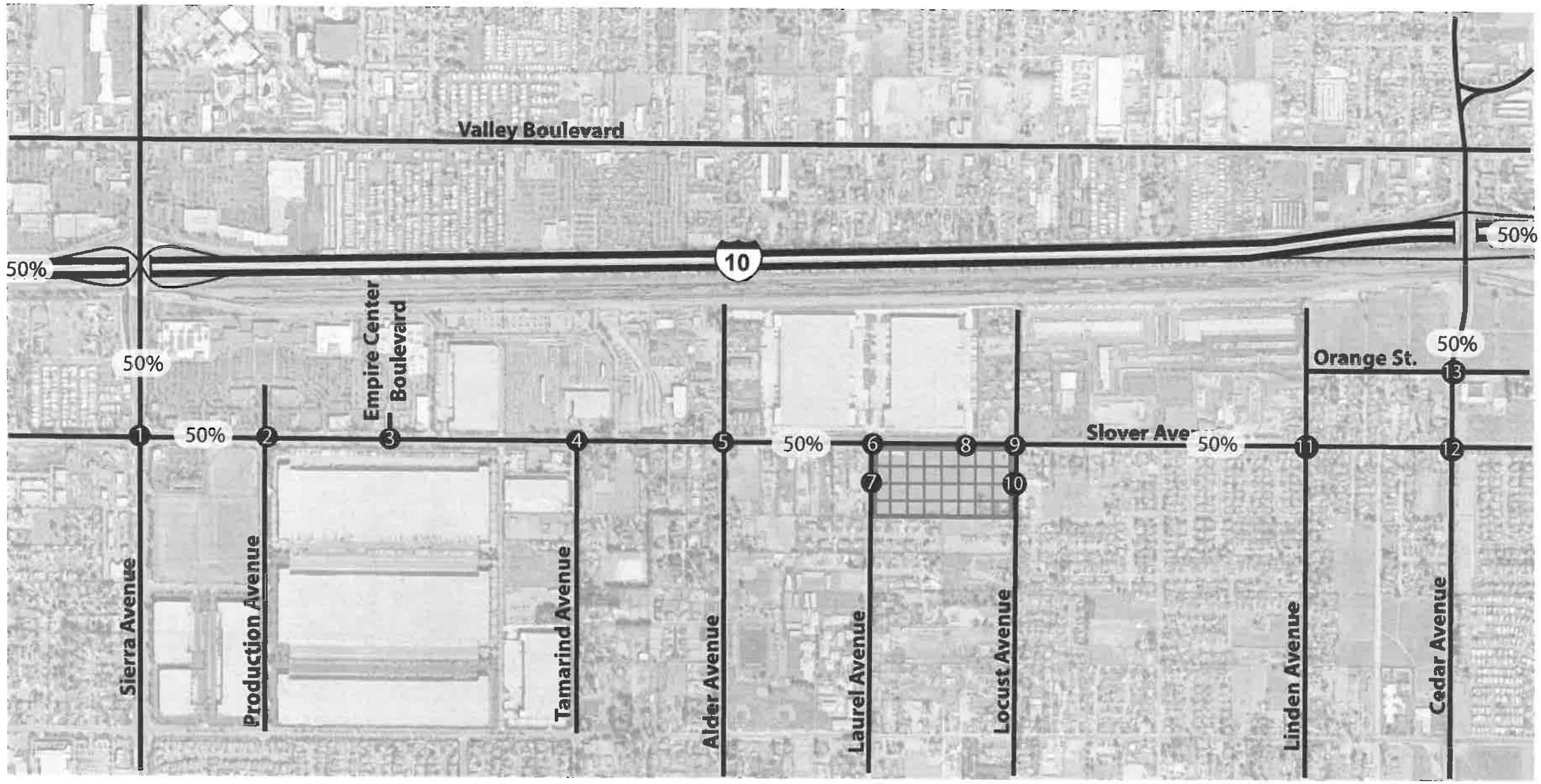
Ontario, California



Michael Baker
INTERNATIONAL

Distribution - Passenger Cars

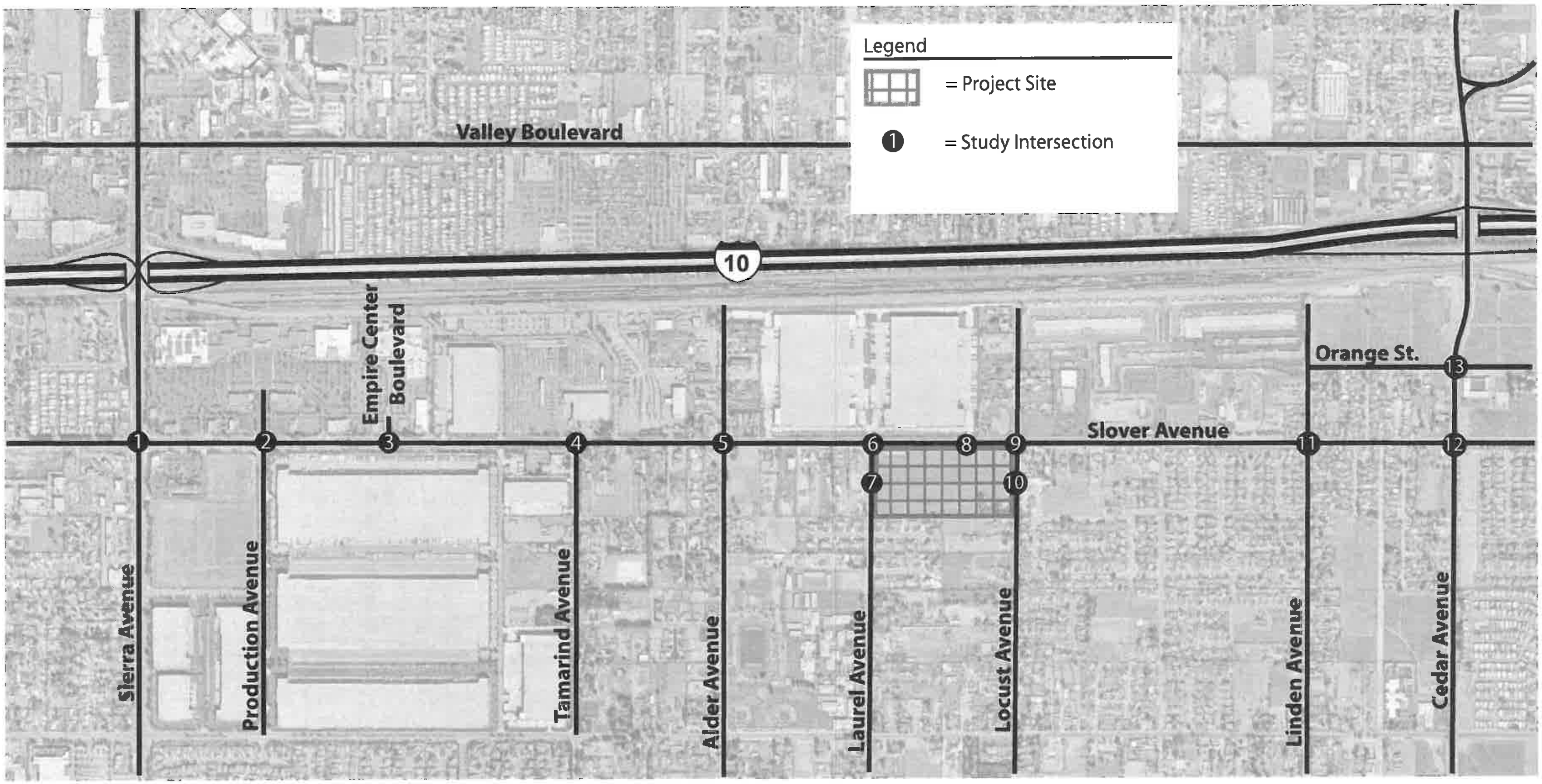
Exhibit 1



Michael Baker INTERNATIONAL

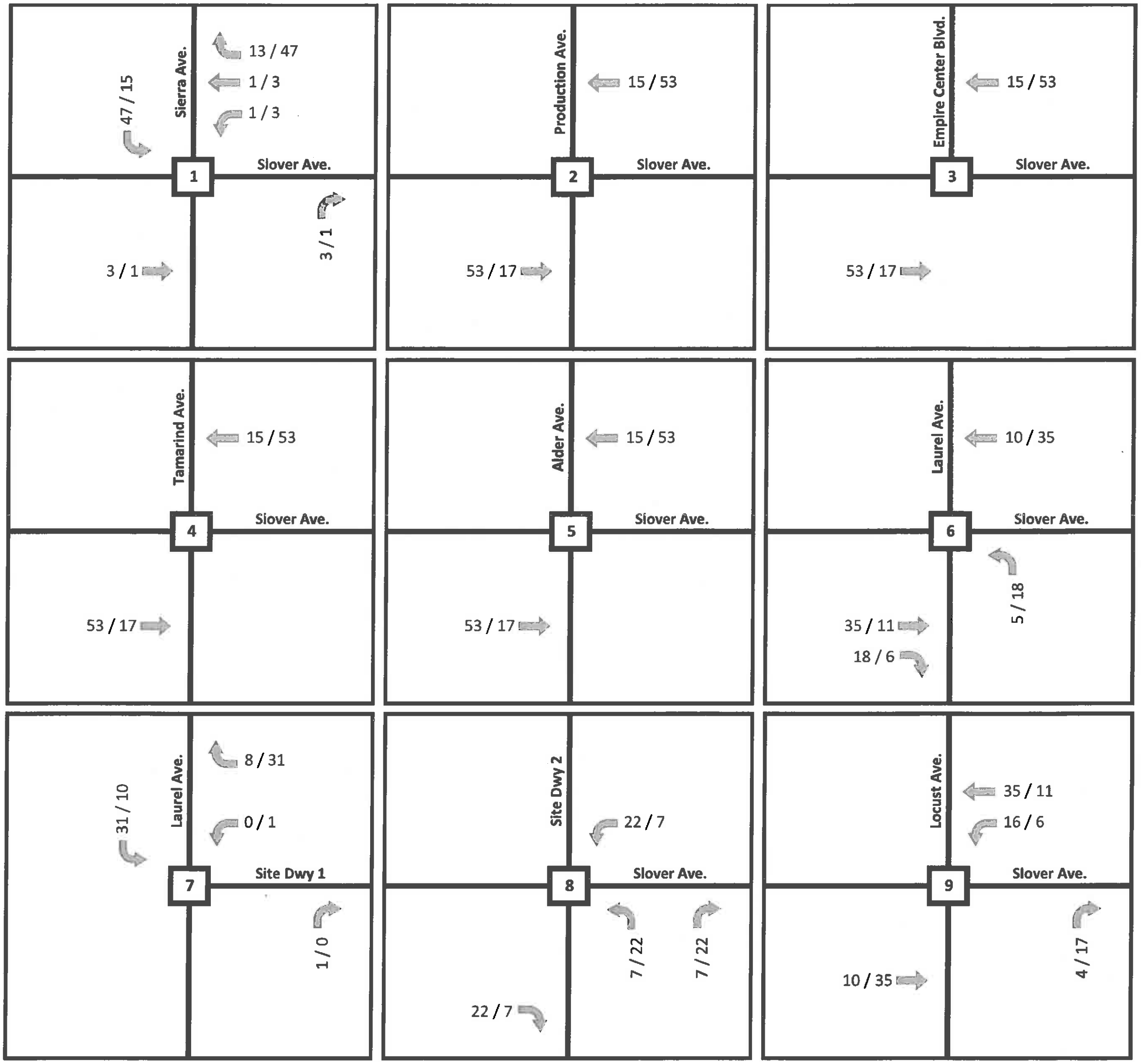
Distribution - Trucks

Exhibit 2



Michael Baker
INTERNATIONAL

Study Area
Exhibit 3



Notes:

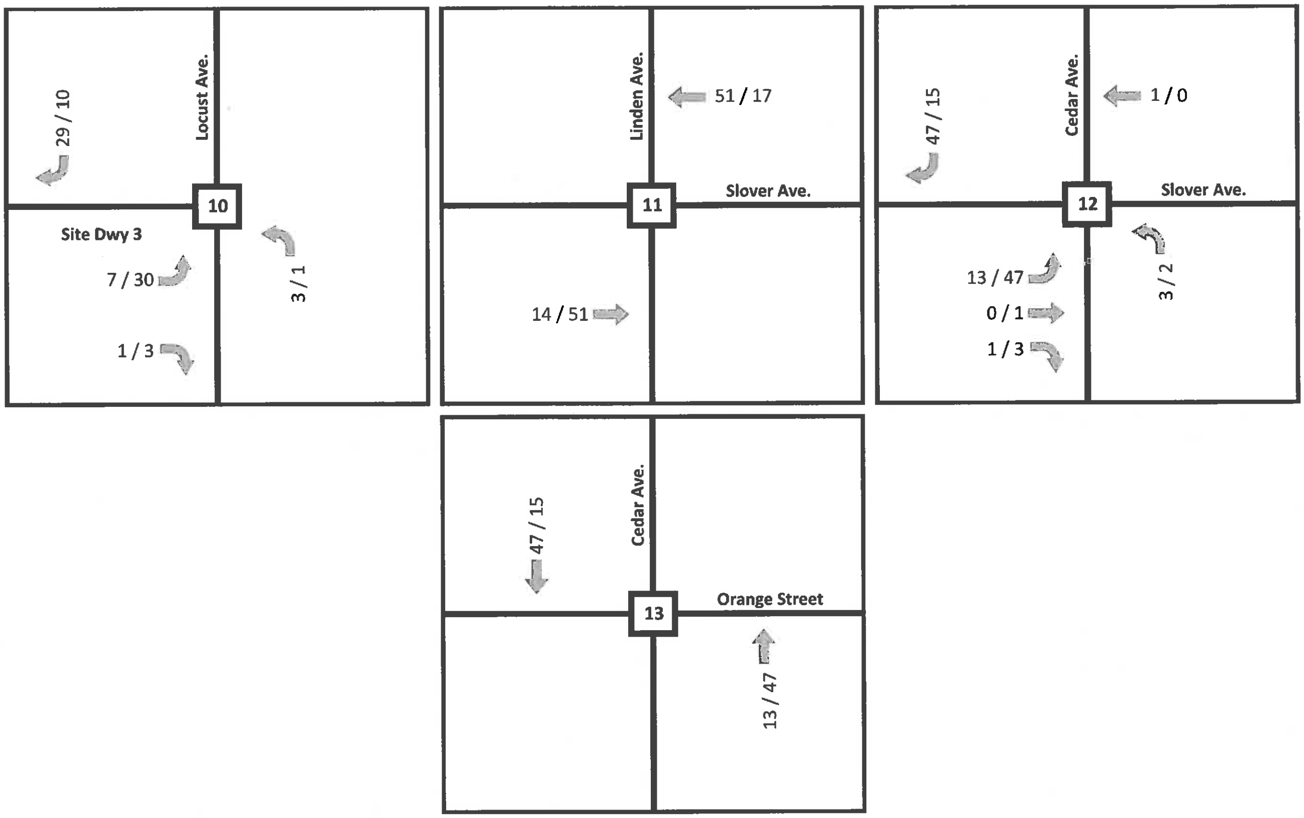
XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

Michael Baker INTERNATIONAL

Project Only AM/PM Peak Hour Volumes

Exhibit 4 (1 of 2)



Notes:

XX / XX = AM / PM Peak Hour Volumes

All Turn Movement Volumes are shown as Passenger Car Equivalents (PCE)

Michael Baker INTERNATIONAL

Project Only AM/PM Peak Hour Volumes

Exhibit 4 (2 of 2)

Table 1
Bloomington Business Center
Trip Generation Rates

Category		Daily In	Daily Out	Daily Total	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Land Use: Warehouse ITE Land Use Code = 150										
Trip Generation Rate[1]		1.780	1.780	3.560	0.237	0.063	0.300	0.080	0.240	0.320
Entering / Exiting Split[1]		50%	50%	100%	79%	21%	100%	25%	75%	100%
Passenger Car[2]	79.57%	*1.416*	*1.416*	*2.833*	*0.189*	*0.050*	*0.239*	*0.064*	*0.191*	*0.255*
2-Axle Trucks[2]	3.46%	*0.062*	*0.062*	0.123	*0.008*	*0.002*	0.010	*0.003*	*0.008*	0.011
3-Axle Trucks[2]	4.64%	*0.083*	*0.083*	0.165	*0.011*	*0.003*	0.014	*0.004*	*0.011*	0.015
4+-Axle Trucks[2]	12.33%	*0.219*	*0.219*	0.439	*0.029*	*0.008*	0.037	*0.010*	*0.030*	0.039
Total Trucks	*20.43%*	*0.364*	*0.364*	*0.727*	*0.048*	*0.013*	*0.061*	*0.017*	*0.049*	*0.065*
Total Vehicles	**100%**	**1.780**	**1.780**	**3.560**	**0.237**	**0.063**	**0.300**	**0.081**	**0.240**	**0.320**

Notes:

All rates provided per Thousand Square Feet (KSF).

[1] Source: Institute of Transportation Engineers *Trip Generation Manual*, 9th Edition. Per KSF.

[2] Source: Truck Trip Generation Study, City of Fontana, August 2003

Table 2
Bloomington Business Center
Trip Generation - Vehicles

Land Use: Warehouse ITE Land Use Code = 150									
Land Use Intensity =	344	KSF							
Category	**Daily**			**AM Peak Hour**			**PM Peak Hour**		
	In	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Passenger Car	*487*	*487*	*974*	*65*	*17*	*82*	*22*	*66*	*88*
2-Axle Trucks	*21*	*21*	*42*	*3*	*1*	*4*	*1*	*3*	*4*
3-Axle Trucks	*29*	*29*	*57*	*4*	*1*	*5*	*1*	*4*	*5*
4+-Axle Trucks	*75*	*75*	*151*	*10*	*3*	*13*	*3*	*10*	*14*
Total Trucks	*125*	*125*	*250*	*17*	*5*	*21*	*5*	*17*	*22*
Total Vehicles	**612**	**612**	**1,225**	**82**	**22**	**103**	**27**	**83**	**110**

Notes:

All rates provided per Thousand Square Feet (KSF).

Table 3
Bloomington Business Center
Trip Generation - Passenger Car Equivalent (PCE)

Land Use: Warehouse										
ITE Land Use Code = 150										
Land Use Intensity =		344	KSF							
Category	**PCE Factor[1]**	**Daily**			**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Passenger Car	1.0	*487*	*487*	*974*	*65*	*17*	*82*	*22*	*66*	*88*
2-Axle Trucks	1.5	*32*	*32*	*63*	*5*	*2*	*6*	*2*	*5*	*6*
3-Axle Trucks	2.0	*58*	*58*	*116*	*8*	*2*	*10*	*2*	*8*	*10*
4+-Axle Trucks	3.0	*225*	*225*	*450*	*30*	*9*	*39*	*9*	*30*	*39*
Total Trucks	--	*315*	*315*	*629*	*43*	*13*	*55*	*13*	*43*	*55*
Total Vehicles	--	**802**	**802**	**1,603**	**108**	**30**	**137**	**35**	**109**	**143**

Notes:

All rates provided per Thousand Square Feet (KSF).

[1] PCE Factor Source: San Bernardino County CMP, 2005 Update

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX C

Traffic Count Data & PCE Calculations

Michael Baker
INTERNATIONAL

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Sierra Ave and Slover Ave , Fontana

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-001
City:	Fontana

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Sierra Ave

Slover Ave

Peak Hour Summary

Southbound Approach

	Right	Through	Left	Departing
Lanes	0	3	2	
AM	210	732	519	1608
NOON	0	0	0	0
PM	135	962	626	2121

Eastbound Approach

	Lanes	AM	NOON	PM
Departing		492	0	630
Left	2	245	0	342
Through	2	193	0	565
Right	1	49	0	126

Westbound Approach

	AM	NOON	PM	Lanes
Right	361	0	753	2
Through	206	0	302	2
Left	94	0	231	2
Departing	790	0	1418	

CONTROL

Signalized

Northbound Approach

	Departing	Left	Through	Right
AM	875	76	1002	78
NOON	0	0	0	0
PM	1319	193	1026	227
Lanes		2	3	1

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg			
AM	1461	1608	
NOON	0	0	
PM	1723	2121	

West Leg	AM	NOON	PM
	492	0	630
	487	0	1033

East Leg	AM	NOON	PM
	661	0	1286
	790	0	1418

South Leg		
AM	875	1156
NOON	0	0
PM	1319	1446

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	3069	0	3844
West Leg	979	0	1663
East Leg	1451	0	2704
South Leg	2031	0	2765

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001

Day: Thursday

Cars

City: Fontana

Date: 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	23	221	18	115	151	94	56	29	7	18	48	60	840
7:15 AM	20	246	13	95	152	81	89	33	16	18	55	100	918
7:30 AM	13	286	13	108	180	40	74	57	10	23	41	69	914
7:45 AM	18	253	22	174	194	48	43	48	10	17	49	71	947
8:00 AM	24	203	29	127	184	38	34	42	11	30	48	108	878
8:15 AM	22	232	37	150	162	26	43	50	9	16	32	74	853
8:30 AM	10	222	31	118	168	15	39	27	18	24	30	65	767
8:45 AM	17	199	32	104	198	22	46	48	16	18	19	74	793
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	147	1862	195	991	1389	364	424	334	97	164	322	621	6910
APPROACH %'s :	6.67%	84.48%	8.85%	36.12%	50.62%	13.27%	49.59%	39.06%	11.35%	14.81%	29.09%	56.10%	

UTURNS				
	NB	SB	EB	WB
7:00 AM	1		4	1
7:15 AM	1		3	0
7:30 AM	0		3	2
7:45 AM	1		3	0
8:00 AM	2		1	1
8:15 AM	3		5	2
8:30 AM	0		5	1
8:45 AM	2		6	0
	NB	SB	EB	WB
TOTAL VOLUMES :	10	0	30	7

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	75	988	77	504	710	207	240	180	47	88	193	348	3657
PEAK HR FACTOR :		0.913			0.854			0.828			0.845		0.965

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001 | **Day:** Thursday

Cars

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	42	254	51	131	204	32	90	114	25	52	84	196	1275
4:15 PM	47	260	37	178	273	39	69	136	29	44	64	156	1332
4:30 PM	46	264	50	141	226	20	80	124	30	63	61	191	1296
4:45 PM	48	249	50	154	222	33	93	135	40	52	70	165	1311
5:00 PM	53	222	59	149	250	33	72	134	25	60	85	230	1372
5:15 PM	41	273	59	161	258	45	94	129	28	54	64	159	1365
5:30 PM	44	242	45	163	243	44	72	111	25	50	63	169	1271
5:45 PM	44	263	49	146	218	37	72	121	23	47	76	147	1243
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	365	2027	400	1223	1894	283	642	1004	225	422	567	1413	10465
APPROACH %'s :	13.07%	72.60%	14.33%	35.97%	55.71%	8.32%	34.31%	53.66%	12.03%	17.57%	23.61%	58.83%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	188	1008	218	605	956	131	339	522	123	229	280	745	5344
PEAK HR FACTOR :		0.948			0.912			0.918			0.836		0.974

UTURNS			
NB	SB	EB	WB
3		9	2
0		3	1
2		9	1
5		10	6
3		7	3
1		4	2
2		2	5
2		6	3
NB	SB	EB	WB
18	0	50	23

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001

Day: Thursday

2 Axle Trucks

City: Fontana

Date: 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	0	3	0	0	4	0	0	0	0	0	0	1	8
7:15 AM	0	0	1	0	4	0	0	2	0	1	0	0	8
7:30 AM	1	2	0	3	3	1	1	0	0	0	0	2	13
7:45 AM	0	3	0	0	3	1	2	0	0	0	1	1	11
8:00 AM	0	1	0	2	3	0	1	0	1	1	0	0	9
8:15 AM	1	2	2	2	3	1	0	1	0	0	0	3	15
8:30 AM	0	1	0	1	5	0	2	0	0	0	1	1	11
8:45 AM	0	4	1	2	3	0	0	1	0	0	0	2	13
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	16	4	10	28	3	6	4	1	2	2	10	88
APPROACH %'s :	9.09%	72.73%	18.18%	24.39%	68.29%	7.32%	54.55%	36.36%	9.09%	14.29%	14.29%	71.43%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	1	6	1	5	13	2	4	2	1	2	1	3	41
PEAK HR FACTOR :	0.667			0.714			0.875			0.750			0.965

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	0	4.5	0	0	6	0	0	0	0	0	0	1.5	12
7:15 AM	0	0	1.5	0	6	0	0	3	0	1.5	0	0	12
7:30 AM	1.5	3	0	4.5	4.5	1.5	1.5	0	0	0	0	3	20
7:45 AM	0	4.5	0	0	4.5	1.5	3	0	0	0	1.5	1.5	17
8:00 AM	0	1.5	0	3	4.5	0	1.5	0	1.5	1.5	0	0	14
8:15 AM	1.5	3	3	3	4.5	1.5	0	1.5	0	0	0	4.5	23
8:30 AM	0	1.5	0	1.5	7.5	0	3	0	0	0	1.5	1.5	17
8:45 AM	0	6	1.5	3	4.5	0	0	1.5	0	0	0	3	20
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	24	6	15	42	4.5	9	6	1.5	3	3	15	132
APPROACH %'s :	9.09%	72.73%	18.18%	24.39%	68.29%	7.32%	54.55%	36.36%	9.09%	14.29%	14.29%	71.43%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	2	9	2	8	20	3	6	3	2	3	2	5	62
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	2	3	0	3	1	0	1	2	0	1	3	2	18
4:15 PM	0	3	1	2	1	1	0	1	0	1	0	2	12
4:30 PM	1	4	1	2	1	0	0	3	0	1	3	1	17
4:45 PM	0	1	0	5	0	1	0	4	0	0	2	3	16
5:00 PM	1	0	1	2	1	0	0	2	0	0	2	0	9
5:15 PM	0	0	0	1	1	0	0	5	0	0	2	0	9
5:30 PM	0	1	1	2	0	0	0	3	0	1	0	2	10
5:45 PM	0	0	0	0	1	0	0	4	0	0	1	2	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	12	4	17	6	2	1	24	0	4	13	12	99
APPROACH %'s :	20.00%	60.00%	20.00%	68.00%	24.00%	8.00%	4.00%	96.00%	0.00%	13.79%	44.83%	41.38%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	2	5	2	10	3	1	0	14	0	1	9	4	51
PEAK HR FACTOR :	0.375			0.583			0.700			0.700			0.974

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	3	4.5	0	4.5	1.5	0	1.5	3	0	1.5	4.5	3	27
4:15 PM	0	4.5	1.5	3	1.5	1.5	0	1.5	0	1.5	0	3	18
4:30 PM	1.5	6	1.5	3	1.5	0	0	4.5	0	1.5	4.5	1.5	26
4:45 PM	0	1.5	0	7.5	0	1.5	0	6	0	0	3	4.5	24
5:00 PM	1.5	0	1.5	3	1.5	0	0	3	0	0	3	0	14
5:15 PM	0	0	0	1.5	1.5	0	0	7.5	0	0	3	0	14
5:30 PM	0	1.5	1.5	3	0	0	0	4.5	0	1.5	0	3	15
5:45 PM	0	0	0	0	1.5	0	0	6	0	0	1.5	3	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	18	6	25.5	9	3	1.5	36	0	6	19.5	18	148.5
APPROACH %'s :	20.00%	60.00%	20.00%	68.00%	24.00%	8.00%	4.00%	96.00%	0.00%	13.79%	44.83%	41.38%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	8	3	15	5	2	0	21	0	2	14	6	77
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	0	1	0	0	0	0	0	1	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	2
7:30 AM	0	0	0	0	0	0	0	1	1	0	0	2	4
7:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	2
8:00 AM	0	2	0	0	0	0	0	2	0	0	3	0	7
8:15 AM	1	0	0	1	0	0	0	1	0	0	0	0	3
8:30 AM	0	0	0	0	1	0	2	0	0	0	0	0	3
8:45 AM	1	0	1	0	0	0	1	0	0	0	1	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	3	1	1	2	0	3	6	1	2	4	2	27
APPROACH %'s :	33.33%	50.00%	16.67%	33.33%	66.67%	0.00%	30.00%	60.00%	10.00%	25.00%	50.00%	25.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	2	0	0	1	0	0	4	1	2	3	2	15
PEAK HR FACTOR :	0.250			0.250			0.625			0.583			0.965

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	0	2	0	0	0	0	0	2	0	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	4
7:30 AM	0	0	0	0	0	0	0	2	2	0	0	4	8
7:45 AM	0	0	0	0	2	0	0	2	0	0	0	0	4
8:00 AM	0	4	0	0	0	0	0	4	0	0	6	0	14
8:15 AM	2	0	0	2	0	0	0	2	0	0	0	0	6
8:30 AM	0	0	0	0	2	0	4	0	0	0	0	0	6
8:45 AM	2	0	2	0	0	0	2	0	0	0	2	0	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	6	2	2	4	0	6	12	2	4	8	4	54
APPROACH %'s :	33.33%	50.00%	16.67%	33.33%	66.67%	0.00%	30.00%	60.00%	10.00%	25.00%	50.00%	25.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	4	0	0	2	0	0	8	2	4	6	4	30
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001

3 Axle Trucks

Day: Thursday

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	1	1	0	2	0	0	0	1	0	0	3	0	8
4:15 PM	0	0	0	0	0	0	2	2	0	0	2	2	8
4:30 PM	0	2	1	0	0	0	0	0	0	0	1	0	4
4:45 PM	0	0	0	1	0	0	0	3	0	0	1	1	6
5:00 PM	0	0	0	2	0	1	0	5	1	0	0	2	11
5:15 PM	3	1	0	2	1	0	0	1	0	0	4	0	12
5:30 PM	0	1	0	1	0	0	2	1	1	0	0	2	8
5:45 PM	0	0	0	0	0	0	1	3	0	0	1	0	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	5	1	8	1	1	5	16	2	0	12	7	62
APPROACH %'s :	40.00%	50.00%	10.00%	80.00%	10.00%	10.00%	21.74%	69.57%	8.70%	0.00%	63.16%	36.84%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	3	3	1	5	1	1	0	9	1	0	6	3	33
PEAK HR FACTOR :	0.438			0.583			0.417			0.563			0.974

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	2	2	0	4	0	0	0	2	0	0	6	0	16
4:15 PM	0	0	0	0	0	0	4	4	0	0	4	4	16
4:30 PM	0	4	2	0	0	0	0	0	0	0	2	0	8
4:45 PM	0	0	0	2	0	0	0	6	0	0	2	2	12
5:00 PM	0	0	0	4	0	2	0	10	2	0	0	4	22
5:15 PM	6	2	0	4	2	0	0	2	0	0	8	0	24
5:30 PM	0	2	0	2	0	0	4	2	2	0	0	4	16
5:45 PM	0	0	0	0	0	0	2	6	0	0	2	0	10
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	8	10	2	16	2	2	10	32	4	0	24	14	124
APPROACH %'s :	40.00%	50.00%	10.00%	80.00%	10.00%	10.00%	21.74%	69.57%	8.70%	0.00%	63.16%	36.84%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	6	6	2	10	2	2	0	18	2	0	12	6	66
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	1	0	0	2	1	0	1	1	0	0	1	0	7
7:15 AM	0	3	0	2	2	0	0	0	0	1	1	2	11
7:30 AM	0	2	0	2	2	0	0	1	0	0	0	3	10
7:45 AM	0	1	0	1	3	0	0	5	0	0	4	0	14
8:00 AM	0	0	0	5	1	1	1	1	0	1	4	3	17
8:15 AM	0	0	0	1	0	0	0	2	0	1	2	3	9
8:30 AM	0	1	0	1	3	2	1	0	0	0	2	2	12
8:45 AM	0	2	0	4	0	0	0	2	0	1	2	4	15
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	9	0	18	12	3	3	12	0	4	16	17	95
APPROACH %'s :	10.00%	90.00%	0.00%	54.55%	36.36%	9.09%	20.00%	80.00%	0.00%	10.81%	43.24%	45.95%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	6	0	10	8	1	1	7	0	2	9	8	52
PEAK HR FACTOR :		0.500			0.679			0.400			0.594		0.965

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
7:00 AM	3	0	0	6	3	0	3	3	0	0	3	0	21
7:15 AM	0	9	0	6	6	0	0	0	0	3	3	6	33
7:30 AM	0	6	0	6	6	0	0	3	0	0	0	9	30
7:45 AM	0	3	0	3	9	0	0	15	0	0	12	0	42
8:00 AM	0	0	0	15	3	3	3	3	0	3	12	9	51
8:15 AM	0	0	0	3	0	0	0	6	0	3	6	9	27
8:30 AM	0	3	0	3	9	6	3	0	0	0	6	6	36
8:45 AM	0	6	0	12	0	0	0	6	0	3	6	12	45
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	27	0	54	36	9	9	36	0	12	48	51	285
APPROACH %'s :	10.00%	90.00%	0.00%	54.55%	36.36%	9.09%	20.00%	80.00%	0.00%	10.81%	43.24%	45.95%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	18	0	30	24	3	3	21	0	6	27	24	156
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-001 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	0	4	0	5	0	0	0	5	0	1	3	1	19
4:15 PM	0	0	0	4	2	0	1	5	0	1	3	1	17
4:30 PM	0	3	2	3	0	2	2	3	0	1	1	0	17
4:45 PM	0	3	3	2	1	0	1	8	1	0	1	1	21
5:00 PM	0	2	0	0	1	0	0	7	1	0	2	0	13
5:15 PM	0	2	1	1	0	0	0	2	0	0	3	0	9
5:30 PM	0	1	0	1	1	0	1	1	0	0	0	0	5
5:45 PM	0	1	0	5	1	0	1	5	0	0	4	0	17
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	16	6	21	6	2	6	36	2	3	17	3	118
APPROACH %'s :	0.00%	72.73%	27.27%	72.41%	20.69%	6.90%	13.64%	81.82%	4.55%	13.04%	73.91%	13.04%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	10	6	6	2	2	3	20	2	1	7	1	60
PEAK HR FACTOR :		0.667			0.500			0.625			0.750		0.974

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	0	2	2	1	2	2	2	
4:00 PM	0	12	0	15	0	0	0	15	0	3	9	3	57
4:15 PM	0	0	0	12	6	0	3	15	0	3	9	3	51
4:30 PM	0	9	6	9	0	6	6	9	0	3	3	0	51
4:45 PM	0	9	9	6	3	0	3	24	3	0	3	3	63
5:00 PM	0	6	0	0	3	0	0	21	3	0	6	0	39
5:15 PM	0	6	3	3	0	0	0	6	0	0	9	0	27
5:30 PM	0	3	0	3	3	0	3	3	0	0	0	0	15
5:45 PM	0	3	0	15	3	0	3	15	0	0	12	0	51
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	48	18	63	18	6	18	108	6	9	51	9	354
APPROACH %'s :	0.00%	72.73%	27.27%	72.41%	20.69%	6.90%	13.64%	81.82%	4.55%	13.04%	73.91%	13.04%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	30	18	18	6	6	9	60	6	3	21	3	180
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Truck Summary (PCE)

NS/EW Streets:		Sierra Ave			Sierra Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		2	3	1	2	3	0	2	2	1	2	2	2	
AM														
PEAK HR VOL	2 Axle (PCE)	2	9	2	8	20	3	6	3	2	3	2	5	62
	3 Axle (PCE)	0	4	0	0	2	0	0	8	2	4	6	4	30
	4 Axle (PCE)	0	18	0	30	24	3	3	21	0	6	27	24	156
	Total Truck (PCE)	2	31	2	38	46	6	9	32	4	13	35	33	248
PM														
PEAK HR VOL	2 Axle (PCE)	3	8	3	15	5	2	0	21	0	2	14	6	77
	3 Axle (PCE)	6	6	2	10	2	2	0	18	2	0	12	6	66
	4 Axle (PCE)	0	30	18	18	6	6	9	60	6	3	21	3	180
	Total Truck (PCE)	9	44	23	43	13	10	9	99	8	5	47	15	323

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	77	1019	79	542	756	213	249	212	51	101	228	381	3905
PM													
Total Volume (Car+Truck)	197	1052	241	648	969	141	348	621	131	234	327	760	5667

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Production Ave and Slover Ave , Fontana

Date: 1/26/2017

Day: Thursday

Project #: 17-6017-002

City: Fontana

N

Production Ave

Slover Ave

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

Southbound Approach

Lanes	0	2	2	
AM	62	10	7	227 AM
NOON	0	0	0	0 NOON
PM	267	36	72	372 PM

Eastbound Approach

	AM	NOON	PM
	529	0	958
2	189	0	291
3	470	0	712
1	48	0	42
Lanes	AM	NOON	PM

CONTROL

Signalized

Westbound Approach

AM	NOON	PM	Lanes
10	0	47	0
429	0	651	3
11	0	20	2
498	0	802	
AM	NOON	PM	

Northbound Approach

AM	69	38	28	21	AM
NOON	0	0	0	0	NOON
PM	98	40	34	18	PM
		1	2	0	Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	79	227	
NOON	0	0	
PM	375	372	

West Leg

AM	NOON	PM
529	0	958
707	0	1045

East Leg

AM	NOON	PM
450	0	718
498	0	802

South Leg

AM	69	87
NOON	0	0
PM	98	92

Total Volume Per Leg

North Leg

AM	306
NOON	0
PM	747

West Leg

AM	NOON	PM
1236	0	2003

East Leg

AM	NOON	PM
948	0	1520

South Leg

AM	156
NOON	0
PM	190

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 | **Day:** Thursday

City: Fontana | **Date:** 1/26/2017

Cars

AM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	10	1	4	0	4	11	19	124	7	0	95	4	279
7:15 AM	11	7	3	2	1	15	19	100	5	8	129	1	301
7:30 AM	9	8	1	1	1	15	31	102	8	2	95	3	276
7:45 AM	9	1	5	2	4	9	60	120	17	3	107	1	338
8:00 AM	11	9	5	2	2	24	48	109	8	4	108	1	331
8:15 AM	3	8	6	1	2	14	45	117	9	1	89	5	300
8:30 AM	4	9	0	5	3	15	40	88	4	1	71	8	248
8:45 AM	8	3	1	3	2	19	44	89	5	0	63	12	249
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	65	46	25	16	19	122	306	849	63	19	757	35	2322
APPROACH %'s :	47.79%	33.82%	18.38%	10.19%	12.10%	77.71%	25.12%	69.70%	5.17%	2.34%	93.34%	4.32%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	32	26	17	6	9	62	184	448	42	10	399	10	1245
PEAK HR FACTOR :	0.750			0.688			0.855			0.927			0.921

CONTROL : Signalized

	UTURNS			
	NB	SB	EB	WB
7:00 AM			0	0
7:15 AM			2	0
7:30 AM			3	0
7:45 AM			0	1
8:00 AM			3	0
8:15 AM			0	0
8:30 AM			2	1
8:45 AM			2	0
	NB	SB	EB	WB
TOTAL	0	0	12	2

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002

Day: Thursday

Cars

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	8	5	3	20	7	61	69	157	9	1	165	20	525
4:15 PM	5	17	3	10	12	60	61	171	9	3	120	11	482
4:30 PM	17	7	5	15	12	66	68	151	4	6	157	10	518
4:45 PM	9	10	5	21	2	67	63	156	6	2	139	11	491
5:00 PM	2	9	1	14	15	74	80	152	14	7	203	10	581
5:15 PM	6	8	3	20	7	59	76	195	11	5	127	16	533
5:30 PM	5	6	2	11	8	69	67	158	7	7	153	11	504
5:45 PM	3	9	1	11	10	66	72	141	7	3	112	13	448
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	55	71	23	122	73	522	556	1281	67	34	1176	102	4082
APPROACH %'s :	36.91%	47.65%	15.44%	17.02%	10.18%	72.80%	29.20%	67.28%	3.52%	2.59%	89.63%	7.77%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	34	34	14	70	36	266	287	654	35	20	626	47	2123
PEAK HR FACTOR :		0.707			0.903			0.865			0.788		0.914

CONTROL : Signalized

	UTURNS			
	NB	SB	EB	WB
4:00 PM			1	1
4:15 PM			0	1
4:30 PM			1	2
4:45 PM			2	0
5:00 PM			4	1
5:15 PM			3	0
5:30 PM			3	1
5:45 PM			5	0
	NB	SB	EB	WB
TOTAL VOLUMES	0	0	19	6

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	1	2	0	0	2	0	5
7:30 AM	1	0	1	0	0	0	0	1	1	0	2	0	6
7:45 AM	0	0	1	0	0	0	0	0	0	0	2	0	3
8:00 AM	0	0	0	0	0	0	1	1	1	1	2	0	6
8:15 AM	1	0	0	0	0	0	1	1	1	0	0	0	4
8:30 AM	0	0	0	1	0	0	0	2	1	0	1	0	5
8:45 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	2	1	0	0	3	9	4	1	11	0	33
APPROACH %'s :	50.00%	0.00%	50.00%	100.00%	0.00%	0.00%	18.75%	56.25%	25.00%	8.33%	91.67%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	2	0	2	0	0	0	2	3	3	1	6	0	19
PEAK HR FACTOR :	0.500			0.000			0.667			0.583			0.921

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	1.5	0	2
7:15 AM	0	0	0	0	0	0	1.5	3	0	0	3	0	8
7:30 AM	1.5	0	1.5	0	0	0	0	1.5	1.5	0	3	0	9
7:45 AM	0	0	1.5	0	0	0	0	0	0	0	3	0	5
8:00 AM	0	0	0	0	0	0	1.5	1.5	1.5	1.5	3	0	9
8:15 AM	1.5	0	0	0	0	0	1.5	1.5	1.5	0	0	0	6
8:30 AM	0	0	0	1.5	0	0	0	3	1.5	0	1.5	0	8
8:45 AM	0	0	0	0	0	0	0	3	0	0	1.5	0	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	3	1.5	0	0	4.5	13.5	6	1.5	16.5	0	49.5
APPROACH %'s :	50.00%	0.00%	50.00%	100.00%	0.00%	0.00%	18.75%	56.25%	25.00%	8.33%	91.67%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	3	0	3	0	0	0	3	5	5	2	9	0	29
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	0	0	0	0	0	0	1	3	0	1	5	0	10
4:15 PM	0	0	0	0	0	0	0	3	0	1	3	0	7
4:30 PM	0	0	1	0	0	0	1	3	1	0	5	0	11
4:45 PM	1	0	0	0	0	0	1	6	1	0	4	0	13
5:00 PM	1	0	0	0	0	0	1	9	0	0	2	0	13
5:15 PM	0	0	0	0	0	0	0	4	1	0	2	0	7
5:30 PM	0	0	0	0	0	0	1	4	0	0	2	0	7
5:45 PM	0	0	0	0	0	0	0	5	0	0	2	0	7
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	1	0	0	0	5	37	3	2	25	0	75
APPROACH %'s :	66.67%	0.00%	33.33%	#DIV/0!	#DIV/0!	#DIV/0!	11.11%	82.22%	6.67%	7.41%	92.59%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	2	0	1	0	0	0	3	22	3	0	13	0	44
PEAK HR FACTOR :	0.750			0.000			0.700			0.650			0.914

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	0	0	0	0	0	0	1.5	4.5	0	1.5	7.5	0	15
4:15 PM	0	0	0	0	0	0	0	4.5	0	1.5	4.5	0	11
4:30 PM	0	0	1.5	0	0	0	1.5	4.5	1.5	0	7.5	0	17
4:45 PM	1.5	0	0	0	0	0	1.5	9	1.5	0	6	0	20
5:00 PM	1.5	0	0	0	0	0	1.5	13.5	0	0	3	0	20
5:15 PM	0	0	0	0	0	0	0	6	1.5	0	3	0	11
5:30 PM	0	0	0	0	0	0	1.5	6	0	0	3	0	11
5:45 PM	0	0	0	0	0	0	0	7.5	0	0	3	0	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	1.5	0	0	0	7.5	55.5	4.5	3	37.5	0	112.5
APPROACH %'s :	66.67%	0.00%	33.33%	#DIV/0!	#DIV/0!	#DIV/0!	11.11%	82.22%	6.67%	7.41%	92.59%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	0	2	0	0	0	5	33	5	0	20	0	66
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 **Day:** Thursday

3 Axle Trucks

City: Fontana **Date:** 1/26/2017

AM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
7:30 AM	1	0	0	0	0	0	0	1	0	0	2	0	4
7:45 AM	0	1	1	0	0	0	1	1	0	0	2	0	6
8:00 AM	0	1	1	0	0	0	1	2	0	0	2	0	7
8:15 AM	0	0	0	1	1	0	0	0	0	0	1	0	3
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	2	2	1	1	0	2	6	1	0	10	0	26
APPROACH %'s :	20.00%	40.00%	40.00%	50.00%	50.00%	0.00%	22.22%	66.67%	11.11%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	1	2	2	1	1	0	2	4	0	0	7	0	20
PEAK HR FACTOR :	0.625			0.250			0.500			0.875			0.921

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	4
7:30 AM	2	0	0	0	0	0	0	2	0	0	4	0	8
7:45 AM	0	2	2	0	0	0	2	2	0	0	4	0	12
8:00 AM	0	2	2	0	0	0	2	4	0	0	4	0	14
8:15 AM	0	0	0	2	2	0	0	0	0	0	2	0	6
8:30 AM	0	0	0	0	0	0	0	0	2	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	4	4	2	2	0	4	12	2	0	20	0	52
APPROACH %'s :	20.00%	40.00%	40.00%	50.00%	50.00%	0.00%	22.22%	66.67%	11.11%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	2	4	4	2	2	0	4	8	0	0	14	0	40
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	0	0	0	0	0	0	1	3	0	0	4	1	9
4:15 PM	0	0	1	0	0	0	1	1	0	0	3	0	6
4:30 PM	0	0	1	1	0	0	0	1	0	0	0	0	3
4:45 PM	1	0	0	1	0	0	0	3	0	0	0	0	5
5:00 PM	0	0	0	0	0	0	1	3	0	0	4	0	8
5:15 PM	0	0	0	0	0	1	0	3	0	0	2	0	6
5:30 PM	0	0	0	0	0	0	0	3	0	0	2	0	5
5:45 PM	0	0	0	0	0	0	0	2	0	0	1	1	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	2	2	0	1	3	19	0	0	16	2	46
APPROACH %'s :	33.33%	0.00%	66.67%	66.67%	0.00%	33.33%	13.64%	86.36%	0.00%	0.00%	88.89%	11.11%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	0	1	2	0	1	1	10	0	0	6	0	22
PEAK HR FACTOR :	0.500			0.750			0.688			0.375			0.914

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	0	0	0	0	0	0	2	6	0	0	8	2	18
4:15 PM	0	0	2	0	0	0	2	2	0	0	6	0	12
4:30 PM	0	0	2	2	0	0	0	2	0	0	0	0	6
4:45 PM	2	0	0	2	0	0	0	6	0	0	0	0	10
5:00 PM	0	0	0	0	0	0	2	6	0	0	8	0	16
5:15 PM	0	0	0	0	0	2	0	6	0	0	4	0	12
5:30 PM	0	0	0	0	0	0	0	6	0	0	4	0	10
5:45 PM	0	0	0	0	0	0	0	4	0	0	2	2	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	4	4	0	2	6	38	0	0	32	4	92
APPROACH %'s :	33.33%	0.00%	66.67%	66.67%	0.00%	33.33%	13.64%	86.36%	0.00%	0.00%	88.89%	11.11%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	2	0	2	4	0	2	2	20	0	0	12	0	44
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	0	0	0	0	0	0	0	3	0	0	1	0	4
7:15 AM	0	0	0	0	0	0	0	2	1	0	3	0	6
7:30 AM	2	0	0	0	0	0	0	2	1	0	1	0	6
7:45 AM	0	0	0	0	0	0	0	5	1	0	4	0	10
8:00 AM	0	0	0	0	0	0	1	4	1	0	7	0	13
8:15 AM	1	0	0	0	0	0	0	4	0	0	5	0	10
8:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	4
8:45 AM	1	0	0	0	0	0	0	4	0	0	6	0	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	0	0	0	0	0	1	24	4	0	31	0	64
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	3.45%	82.76%	13.79%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	3	0	0	0	0	0	1	15	3	0	17	0	39
PEAK HR FACTOR :	0.375			0.000			0.792			0.607			0.921

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
7:00 AM	0	0	0	0	0	0	0	9	0	0	3	0	12
7:15 AM	0	0	0	0	0	0	0	6	3	0	9	0	18
7:30 AM	6	0	0	0	0	0	0	6	3	0	3	0	18
7:45 AM	0	0	0	0	0	0	0	15	3	0	12	0	30
8:00 AM	0	0	0	0	0	0	3	12	3	0	21	0	39
8:15 AM	3	0	0	0	0	0	0	12	0	0	15	0	30
8:30 AM	0	0	0	0	0	0	0	0	0	0	12	0	12
8:45 AM	3	0	0	0	0	0	0	12	0	0	18	0	33
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	0	0	0	0	0	3	72	12	0	93	0	192
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	3.45%	82.76%	13.79%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	9	0	0	0	0	0	3	45	9	0	51	0	117
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-002 **Day:** Thursday

4 Axle+ Trucks

City: Fontana **Date:** 1/26/2017

PM

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	1	0	1	0	0	0	0	8	1	0	3	0	14
4:15 PM	2	0	0	0	0	0	0	9	1	0	3	0	15
4:30 PM	0	0	0	0	0	0	0	6	2	0	2	0	10
4:45 PM	1	0	0	0	0	0	0	9	2	0	1	0	13
5:00 PM	0	0	0	0	0	0	0	7	0	0	1	0	8
5:15 PM	2	0	2	0	0	0	0	4	0	0	2	0	10
5:30 PM	0	0	1	0	0	0	0	2	1	0	1	0	5
5:45 PM	0	0	0	0	0	0	0	9	1	1	3	0	14
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	0	4	0	0	0	0	54	8	1	16	0	89
APPROACH %'s :	60.00%	0.00%	40.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.10%	12.90%	5.88%	94.12%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	3	0	2	0	0	0	0	26	4	0	6	0	41
PEAK HR FACTOR :	0.313			0.000			0.682			0.750			0.914

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Production Ave			Production Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	2	2	0	2	3	1	2	3	0	
4:00 PM	3	0	3	0	0	0	0	24	3	0	9	0	42
4:15 PM	6	0	0	0	0	0	0	27	3	0	9	0	45
4:30 PM	0	0	0	0	0	0	0	18	6	0	6	0	30
4:45 PM	3	0	0	0	0	0	0	27	6	0	3	0	39
5:00 PM	0	0	0	0	0	0	0	21	0	0	3	0	24
5:15 PM	6	0	6	0	0	0	0	12	0	0	6	0	30
5:30 PM	0	0	3	0	0	0	0	6	3	0	3	0	15
5:45 PM	0	0	0	0	0	0	0	27	3	3	9	0	42
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	18	0	12	0	0	0	0	162	24	3	48	0	267
APPROACH %'s :	60.00%	0.00%	40.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.10%	12.90%	5.88%	94.12%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	9	0	6	0	0	0	0	78	12	0	18	0	123
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:

		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
		Production Ave			Production Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:		2	3	1	2	3	0	2	2	1	2	2	2	
AM														
PEAK HR VOL	2 Axle (PCE)	3	0	3	0	0	0	3	5	5	2	9	0	29
	3 Axle (PCE)	2	4	4	2	2	0	4	8	0	0	14	0	40
	4 Axle (PCE)	9	0	0	0	0	0	3	45	9	0	51	0	117
	Total Truck (PCE)	14	4	7	2	2	0	10	58	14	2	74	0	186
PM														
PEAK HR VOL	2 Axle (PCE)	3	0	2	0	0	0	5	33	5	0	20	0	66
	3 Axle (PCE)	2	0	2	4	0	2	2	20	0	0	12	0	44
	4 Axle (PCE)	9	0	6	0	0	0	0	78	12	0	18	0	123
	Total Truck (PCE)	14	0	10	4	0	2	7	131	17	0	50	0	233

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	46	30	24	8	11	62	194	506	56	12	473	10	1431
PM													
Total Volume (Car+Truck)	48	34	24	74	36	268	294	785	52	20	676	47	2356

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Empire Center Blvd and Slover Ave , Fontana

Date: 1/26/2017

Day: Thursday

Project #: 17-6017-003

City: Fontana

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

Control: Signalized

Southbound Approach (Empire Center Blvd)

	Right (Lanes 1.5)	Through (Lanes 0)	Left (Lanes 1.5)	Northbound departure
AM	34	0	20	339
NOON	0	0	0	0
PM	139	0	111	102

Eastbound Approach (Slover Ave)

	Lanes	AM	NOON	PM
Westbound departure		427	0	629
Left	1	239	0	63
Through	2	272	0	751
Right	0	0	0	0

Westbound Approach

	AM	NOON	PM	Lanes
Right	100	0	39	0
Through	393	0	490	3
Left	0	0	0	0
Eastbound departure	292	0	862	

Northbound Approach

	Southbound departure	Left (Lanes 0)	Through (Lanes 0)	Right (Lanes 0)
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	0	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	54	339
North Leg	NOON	0	0
North Leg	PM	250	102
East Leg	AM	493	292
East Leg	NOON	0	0
East Leg	PM	529	862
West Leg	AM	511	427
West Leg	NOON	0	0
West Leg	PM	814	629
South Leg	AM	0	0
South Leg	NOON	0	0
South Leg	PM	0	0

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	393	0	352
East Leg	785	0	1391
West Leg	938	0	1443
South Leg	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003 | **Day:** Thursday

City: Fontana | **Date:** 1/26/2017

Cars

AM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	5	0	1	10	117	0	0	103	5	241
7:15 AM	0	0	0	2	0	0	25	81	0	0	132	13	253
7:30 AM	0	0	0	4	0	6	35	71	0	0	94	19	229
7:45 AM	0	0	0	7	0	5	64	70	0	0	100	27	273
8:00 AM	0	0	0	5	0	17	64	51	0	0	83	29	249
8:15 AM	0	0	0	4	0	6	76	55	0	0	88	25	254
8:30 AM	0	0	0	3	0	10	37	56	0	0	67	22	195
8:45 AM	0	0	0	10	0	7	45	50	0	0	64	17	193
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	40	0	52	356	551	0	0	731	157	1887
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	43.48%	0.00%	56.52%	39.25%	60.75%	0.00%	0.00%	82.32%	17.68%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	20	0	34	239	247	0	0	365	100	1005
PEAK HR FACTOR :		0.000			0.614			0.907			0.915		0.920

UTURNS			
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003 | **Day:** Thursday

City: Fontana | **Date:** 1/26/2017

Cars

PM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	17	0	30	14	160	0	0	135	8	364
4:15 PM	0	0	0	19	0	21	17	188	0	0	109	12	366
4:30 PM	0	0	0	25	0	44	9	160	0	0	101	7	346
4:45 PM	0	0	0	20	0	22	20	179	0	0	128	5	374
5:00 PM	0	0	0	38	0	52	19	151	0	0	127	12	399
5:15 PM	0	0	0	28	0	21	15	198	0	0	110	14	386
5:30 PM	0	0	0	24	0	31	27	145	0	0	108	4	339
5:45 PM	0	0	0	22	0	11	13	138	0	0	113	10	307
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	193	0	232	134	1319	0	0	931	72	2881
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	45.41%	0.00%	54.59%	9.22%	90.78%	0.00%	0.00%	92.82%	7.18%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	111	0	139	63	688	0	0	466	38	1505
PEAK HR FACTOR :	0.000			0.694			0.881			0.906			0.943

UTURNS			
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
7:45 AM	0	0	0	0	0	0	0	1	0	0	2	0	3
8:00 AM	0	0	0	0	0	0	0	1	0	0	2	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1	2	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	7	0	0	9	0	17
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	12.50%	87.50%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	3	0	0	5	0	8
PEAK HR FACTOR :		0.000			0.000			0.750			0.625		0.920

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	1.5	0	2
7:15 AM	0	0	0	0	0	0	0	3	0	0	3	0	6
7:30 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
7:45 AM	0	0	0	0	0	0	0	1.5	0	0	3	0	5
8:00 AM	0	0	0	0	0	0	0	1.5	0	0	3	0	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	1.5	3	0	0	0	0	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	1.5	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1.5	10.5	0	0	13.5	0	25.5
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	12.50%	87.50%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	5	0	0	8	0	12
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003

Day: Thursday

2 Axle Trucks

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	0	0	1	0	4	0	0	5	0	10
4:15 PM	0	0	0	0	0	0	0	2	0	0	4	0	6
4:30 PM	0	0	0	0	0	0	0	4	0	0	4	0	8
4:45 PM	0	0	0	0	0	0	0	4	0	0	3	0	7
5:00 PM	0	0	0	0	0	0	0	8	0	0	2	0	10
5:15 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
5:30 PM	0	0	0	0	0	0	0	4	0	0	1	0	5
5:45 PM	0	0	0	0	0	0	1	4	0	0	2	0	7
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	1	36	0	0	23	0	61
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	0.00%	100.00%	2.70%	97.30%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	22	0	0	11	0	33
PEAK HR FACTOR :	0.000			0.000			0.688			0.688			0.943

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	0	0	1.5	0	6	0	0	7.5	0	15
4:15 PM	0	0	0	0	0	0	0	3	0	0	6	0	9
4:30 PM	0	0	0	0	0	0	0	6	0	0	6	0	12
4:45 PM	0	0	0	0	0	0	0	6	0	0	4.5	0	11
5:00 PM	0	0	0	0	0	0	0	12	0	0	3	0	15
5:15 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
5:30 PM	0	0	0	0	0	0	0	6	0	0	1.5	0	8
5:45 PM	0	0	0	0	0	0	1.5	6	0	0	3	0	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1.5	1.5	54	0	0	34.5	0	91.5
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	0.00%	100.00%	2.70%	97.30%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	33	0	0	17	0	50
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003 **Day:** Thursday

3 Axle Trucks

City: Fontana **Date:** 1/26/2017

AM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	0	0	0	0	0	0	0	3	0	0	2	0	5
8:00 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
8:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	3
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	10	0	0	10	0	20
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	6	0	0	7	0	13
PEAK HR FACTOR :		0.000			0.000			0.500			0.875		0.920

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	0	0	0	0	4	0	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
7:45 AM	0	0	0	0	0	0	0	6	0	0	4	0	10
8:00 AM	0	0	0	0	0	0	0	4	0	0	4	0	8
8:15 AM	0	0	0	0	0	0	0	2	0	0	4	0	6
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	20	0	0	20	0	40
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	12	0	0	14	0	26
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	0	0	0	0	3	0	0	5	0	8
4:15 PM	0	0	0	0	0	0	0	2	0	0	3	0	5
4:30 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
4:45 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	5	0	0	4	1	10
5:15 PM	0	0	0	0	0	0	0	1	0	0	2	0	3
5:30 PM	0	0	0	0	0	0	0	3	0	0	3	0	6
5:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	22	0	0	18	1	41
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	94.74%	5.26%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	12	0	0	7	1	20
PEAK HR FACTOR :		0.000			0.000			0.600			0.400		0.943

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	0	0	0	0	6	0	0	10	0	16
4:15 PM	0	0	0	0	0	0	0	4	0	0	6	0	10
4:30 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
4:45 PM	0	0	0	0	0	0	0	6	0	0	0	0	6
5:00 PM	0	0	0	0	0	0	0	10	0	0	8	2	20
5:15 PM	0	0	0	0	0	0	0	2	0	0	4	0	6
5:30 PM	0	0	0	0	0	0	0	6	0	0	6	0	12
5:45 PM	0	0	0	0	0	0	0	4	0	0	0	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	44	0	0	36	2	82
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	94.74%	5.26%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	24	0	0	14	2	40
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003 **Day:** Thursday

4 Axle+ Trucks

City: Fontana **Date:** 1/26/2017

AM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	0	0	0	0	3	0	0	1	0	4
7:15 AM	0	0	0	0	0	0	0	1	0	0	3	0	4
7:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:45 AM	0	0	0	0	0	0	0	5	0	0	5	0	10
8:00 AM	0	0	0	0	0	0	0	5	0	0	8	0	13
8:15 AM	0	0	0	0	0	0	0	4	0	0	2	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	4
8:45 AM	0	0	0	0	0	0	0	4	0	0	6	0	10
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	24	0	0	30	0	54
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	16	0	0	16	0	32
PEAK HR FACTOR :	0.000			0.000			0.800			0.500			0.920

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
7:00 AM	0	0	0	0	0	0	0	9	0	0	3	0	12
7:15 AM	0	0	0	0	0	0	0	3	0	0	9	0	12
7:30 AM	0	0	0	0	0	0	0	6	0	0	3	0	9
7:45 AM	0	0	0	0	0	0	0	15	0	0	15	0	30
8:00 AM	0	0	0	0	0	0	0	15	0	0	24	0	39
8:15 AM	0	0	0	0	0	0	0	12	0	0	6	0	18
8:30 AM	0	0	0	0	0	0	0	0	0	0	12	0	12
8:45 AM	0	0	0	0	0	0	0	12	0	0	18	0	30
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	72	0	0	90	0	162
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	48	0	0	48	0	96
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-003

Day: Thursday

4 Axle+ Trucks

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	0	0	0	0	8	0	0	2	0	10
4:15 PM	0	0	0	0	0	0	0	10	0	0	3	0	13
4:30 PM	0	0	0	0	0	0	0	6	0	0	3	0	9
4:45 PM	0	0	0	0	0	0	0	9	0	0	1	0	10
5:00 PM	0	0	0	0	0	0	0	8	0	0	1	0	9
5:15 PM	0	0	0	0	0	0	0	6	0	0	1	0	7
5:30 PM	0	0	0	0	0	0	0	4	0	0	1	0	5
5:45 PM	0	0	0	0	0	0	0	6	0	0	4	0	10
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	57	0	0	16	0	73
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	29	0	0	6	0	35
PEAK HR FACTOR :	0.000			0.000			0.806			0.500			0.943

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	1.5	1	2	0	0	3	0	
4:00 PM	0	0	0	0	0	0	0	24	0	0	6	0	30
4:15 PM	0	0	0	0	0	0	0	30	0	0	9	0	39
4:30 PM	0	0	0	0	0	0	0	18	0	0	9	0	27
4:45 PM	0	0	0	0	0	0	0	27	0	0	3	0	30
5:00 PM	0	0	0	0	0	0	0	24	0	0	3	0	27
5:15 PM	0	0	0	0	0	0	0	18	0	0	3	0	21
5:30 PM	0	0	0	0	0	0	0	12	0	0	3	0	15
5:45 PM	0	0	0	0	0	0	0	18	0	0	12	0	30
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	171	0	0	48	0	219
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	87	0	0	18	0	105
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Empire Center Blvd			Empire Center Blvd			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		0	0	0	1.5	0	1.5	1	2	0	0	3	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	0	0	0	0	0	0	0	5	0	0	8	0	12
	3 Axle (PCE)	0	0	0	0	0	0	0	12	0	0	14	0	26
	4 Axle (PCE)	0	0	0	0	0	0	0	48	0	0	48	0	96
	Total Truck (PCE)	0	0	0	0	0	0	0	65	0	0	70	0	134
PM														
PEAK HR VOL	**2 Axle (PCE)**	0	0	0	0	0	0	0	33	0	0	17	0	50
	3 Axle (PCE)	0	0	0	0	0	0	0	24	0	0	14	2	40
	4 Axle (PCE)	0	0	0	0	0	0	0	87	0	0	18	0	105
	Total Truck (PCE)	0	0	0	0	0	0	0	144	0	0	49	2	195

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	0	0	0	20	0	34	239	312	0	0	435	100	1139
PM													
Total Volume (Car+Truck)	0	0	0	111	0	139	63	832	0	0	515	40	1700

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Tamarind Ave and Slover Ave , Fontana

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-004
City:	Fontana

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Tamarind Ave

Slover Ave

Peak Hour Summary

Southbound Approach

Lanes	0	1	1	
AM	1	0	0	8
NOON	0	0	0	0
PM	4	0	3	0

Eastbound Approach

	AM	NOON	PM
	498	0	495

Lanes	AM	NOON	PM
1	3	0	0
2	313	0	804
0	23	0	41

Westbound Approach

AM	NOON	PM	Lanes
4	0	0	0
461	0	474	2
38	0	19	1

AM	NOON	PM
348	0	842

CONTROL
Signalized

Northbound Approach

AM	61	36	1	35
NOON	0	0	0	0
PM	60	17	0	35
Lanes		1	1	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

1	8	AM
0	0	NOON
7	0	PM

West Leg

AM	NOON	PM
498	0	495
339	0	845

East Leg

AM	NOON	PM
503	0	493
348	0	842

South Leg

AM	61	72
NOON	0	0
PM	60	52

Total Volume Per Leg

North Leg

9	AM
0	NOON
7	PM

West Leg

AM	NOON	PM
837	0	1340

East Leg

AM	NOON	PM
851	0	1335

South Leg

AM	133
NOON	0
PM	112

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 | **Day:** Thursday

Cars

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	7	0	13	0	0	0	0	107	8	3	97	2	237
7:15 AM	8	1	15	0	0	1	0	77	9	10	124	0	245
7:30 AM	7	0	1	0	0	0	3	63	1	9	102	1	187
7:45 AM	9	0	5	0	0	0	0	49	3	16	123	1	206
8:00 AM	9	0	12	0	0	0	1	39	6	23	112	0	202
8:15 AM	8	0	28	0	0	1	1	41	4	26	104	0	213
8:30 AM	4	0	8	0	0	0	0	46	4	8	85	0	155
8:45 AM	3	0	8	0	0	0	0	47	4	1	76	0	139

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	55	1	90	0	0	2	5	469	39	96	823	4	1584
APPROACH %'s :	37.67%	0.68%	61.64%	0.00%	0.00%	100.00%	0.97%	91.42%	7.60%	10.40%	89.17%	0.43%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	31	1	34	0	0	1	3	296	21	38	446	4	875
PEAK HR FACTOR :	0.688			0.250			0.696			0.871			0.893

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 | **Day:** Thursday

City: Fontana | **Date:** 1/26/2017

Cars

PM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	10	0	6	1	0	3	0	176	7	4	114	0	321
4:15 PM	0	0	10	1	0	1	1	188	11	3	110	0	325
4:30 PM	5	0	7	1	0	2	0	170	6	2	106	0	299
4:45 PM	5	0	10	1	0	1	0	189	7	7	116	0	336
5:00 PM	3	0	13	1	0	1	0	181	8	3	113	0	323
5:15 PM	3	0	5	0	0	0	0	204	16	5	116	0	349
5:30 PM	4	0	8	0	0	0	0	166	9	5	99	0	291
5:45 PM	4	0	11	0	0	0	0	150	6	6	107	0	284
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	34	0	70	5	0	8	1	1424	70	35	881	0	2528
APPROACH %'s :	32.69%	0.00%	67.31%	38.46%	0.00%	61.54%	0.07%	95.25%	4.68%	3.82%	96.18%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	16	0	35	3	0	4	0	744	37	17	451	0	1307
PEAK HR FACTOR :		0.797			0.583			0.888			0.951		0.936

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	1	0	0	0	0	1	0	0	1	0	3
7:15 AM	0	0	0	0	0	0	0	2	0	0	3	0	5
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	1	0	0	0	0	0	0	1	0	0	1	0	3
8:00 AM	0	0	0	0	0	0	0	1	0	0	2	0	3
8:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	2	1	1	0	0	4
8:45 AM	0	0	0	0	0	0	0	0	1	0	2	0	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	1	0	0	0	0	8	2	2	10	0	24
APPROACH %'s :	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	80.00%	20.00%	16.67%	83.33%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	1	0	1	0	0	0	0	4	0	0	6	0	12
PEAK HR FACTOR :	0.500			0.000			0.500			0.500			0.893

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	1.5	0	0	0	0	1.5	0	0	1.5	0	5
7:15 AM	0	0	0	0	0	0	0	3	0	0	4.5	0	8
7:30 AM	0	0	0	0	0	0	0	0	0	0	1.5	0	2
7:45 AM	1.5	0	0	0	0	0	0	1.5	0	0	1.5	0	5
8:00 AM	0	0	0	0	0	0	0	1.5	0	0	3	0	5
8:15 AM	0	0	0	0	0	0	0	1.5	0	1.5	0	0	3
8:30 AM	0	0	0	0	0	0	0	3	1.5	1.5	0	0	6
8:45 AM	0	0	0	0	0	0	0	0	1.5	0	3	0	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1.5	0	1.5	0	0	0	0	12	3	3	15	0	36
APPROACH %'s :	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	80.00%	20.00%	16.67%	83.33%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	2	0	2	0	0	0	0	6	0	0	9	0	18
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	4	1	1	6	0	12
4:15 PM	0	0	0	0	0	0	0	4	1	2	3	0	10
4:30 PM	0	0	0	0	0	0	0	3	1	0	3	0	7
4:45 PM	0	0	0	0	0	0	0	7	0	0	2	0	9
5:00 PM	0	0	0	0	0	0	0	5	2	0	1	0	8
5:15 PM	1	0	0	0	0	0	0	3	0	0	1	0	5
5:30 PM	0	0	0	0	0	0	0	5	0	0	2	0	7
5:45 PM	0	0	1	0	0	0	0	5	0	0	2	0	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	1	0	0	0	0	36	5	3	20	0	66
APPROACH %'s :	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.80%	12.20%	13.04%	86.96%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	18	3	0	7	0	29
PEAK HR FACTOR :	0.250			0.000			0.750			0.583			0.936

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	6	1.5	1.5	9	0	18
4:15 PM	0	0	0	0	0	0	0	6	1.5	3	4.5	0	15
4:30 PM	0	0	0	0	0	0	0	4.5	1.5	0	4.5	0	11
4:45 PM	0	0	0	0	0	0	0	10.5	0	0	3	0	14
5:00 PM	0	0	0	0	0	0	0	7.5	3	0	1.5	0	12
5:15 PM	1.5	0	0	0	0	0	0	4.5	0	0	1.5	0	8
5:30 PM	0	0	0	0	0	0	0	7.5	0	0	3	0	11
5:45 PM	0	0	1.5	0	0	0	0	7.5	0	0	3	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1.5	0	1.5	0	0	0	0	54	7.5	4.5	30	0	99
APPROACH %'s :	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.80%	12.20%	13.04%	86.96%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	2	0	0	0	0	0	0	27	5	0	11	0	44
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	2	0	0	0	0	0	0	1	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
8:15 AM	0	0	0	0	0	0	0	1	1	0	1	0	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	0	0	0	0	0	7	1	0	6	0	16
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.50%	12.50%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	2	0	0	0	0	0	0	3	0	0	2	0	7
PEAK HR FACTOR :	0.250			0.000			0.375			0.500			0.893

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	4	0	0	2	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
7:30 AM	4	0	0	0	0	0	0	2	0	0	0	0	6
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	4	0	0	4	0	8
8:15 AM	0	0	0	0	0	0	0	2	2	0	2	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	0	0	0	0	0	0	14	2	0	12	0	32
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.50%	12.50%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	4	0	0	0	0	0	0	6	0	0	4	0	14
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004

Day: Thursday

3 Axle Trucks

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	2	0	0	5	0	7
4:15 PM	0	0	0	0	0	0	0	4	0	0	3	0	7
4:30 PM	0	0	0	0	0	0	0	4	0	0	1	0	5
4:45 PM	0	0	0	0	0	0	0	5	0	1	1	0	7
5:00 PM	0	0	0	0	0	0	0	3	0	0	4	0	7
5:15 PM	0	0	0	0	0	0	0	2	0	1	2	0	5
5:30 PM	0	0	1	0	0	0	0	3	0	0	1	0	5
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	24	0	2	17	0	44
APPROACH %'s :	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	10.53%	89.47%	0.00%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	14	0	2	8	0	24
PEAK HR FACTOR :	0.000			0.000			0.700			0.625			0.936

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	4	0	0	10	0	14
4:15 PM	0	0	0	0	0	0	0	8	0	0	6	0	14
4:30 PM	0	0	0	0	0	0	0	8	0	0	2	0	10
4:45 PM	0	0	0	0	0	0	0	10	0	2	2	0	14
5:00 PM	0	0	0	0	0	0	0	6	0	0	8	0	14
5:15 PM	0	0	0	0	0	0	0	4	0	2	4	0	10
5:30 PM	0	0	2	0	0	0	0	6	0	0	2	0	10
5:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	2

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	2	0	0	0	0	48	0	4	34	0	88
APPROACH %'s :	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	10.53%	89.47%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	28	0	4	16	0	48
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 **Day:** Thursday

4 Axle+ Trucks

City: Fontana **Date:** 1/26/2017

AM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	3	1	0	1	0	5
7:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:45 AM	2	0	0	0	0	0	0	3	1	0	3	0	9
8:00 AM	0	0	0	0	0	0	0	4	0	0	5	0	9
8:15 AM	1	0	0	0	0	0	0	1	0	0	3	0	5
8:30 AM	1	0	0	0	0	0	0	0	0	0	3	0	4
8:45 AM	0	0	0	0	0	0	0	5	0	0	6	0	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	0	0	0	0	0	0	20	2	0	24	0	50
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	90.91%	9.09%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	2	0	0	0	0	0	0	10	2	0	7	0	21
PEAK HR FACTOR :	0.250			0.000			0.750			0.583			0.893

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	9	3	0	3	0	15
7:15 AM	0	0	0	0	0	0	0	6	0	0	6	0	12
7:30 AM	0	0	0	0	0	0	0	6	0	0	3	0	9
7:45 AM	6	0	0	0	0	0	0	9	3	0	9	0	27
8:00 AM	0	0	0	0	0	0	0	12	0	0	15	0	27
8:15 AM	3	0	0	0	0	0	0	3	0	0	9	0	15
8:30 AM	3	0	0	0	0	0	0	0	0	0	9	0	12
8:45 AM	0	0	0	0	0	0	0	15	0	0	18	0	33
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	0	0	0	0	0	0	60	6	0	72	0	150
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	90.91%	9.09%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	6	0	0	0	0	0	0	30	6	0	21	0	63
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-004 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	1	0	0	0	0	0	0	9	0	0	3	0	13
4:15 PM	0	0	0	0	0	0	0	10	0	0	2	0	12
4:30 PM	0	0	0	0	0	0	0	6	0	0	4	0	10
4:45 PM	0	0	0	0	0	0	0	9	0	0	1	0	10
5:00 PM	0	0	0	0	0	0	0	8	0	0	2	0	10
5:15 PM	0	0	0	0	0	0	0	5	1	0	1	0	7
5:30 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:45 PM	0	0	0	0	0	0	0	7	0	0	5	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	57	1	0	19	0	78
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	98.28%	1.72%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	28	1	0	8	0	37
PEAK HR FACTOR :	0.000			0.000			0.806			0.500			0.936

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	3	0	0	0	0	0	0	27	0	0	9	0	39
4:15 PM	0	0	0	0	0	0	0	30	0	0	6	0	36
4:30 PM	0	0	0	0	0	0	0	18	0	0	12	0	30
4:45 PM	0	0	0	0	0	0	0	27	0	0	3	0	30
5:00 PM	0	0	0	0	0	0	0	24	0	0	6	0	30
5:15 PM	0	0	0	0	0	0	0	15	3	0	3	0	21
5:30 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
5:45 PM	0	0	0	0	0	0	0	21	0	0	15	0	36
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	0	0	0	0	171	3	0	57	0	234
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	98.28%	1.72%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	84	3	0	24	0	111
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Tamarind Ave			Tamarind Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	1	0	1	1	0	1	2	0	1	2	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	2	0	2	0	0	0	0	6	0	0	9	0	18
	3 Axle (PCE)	4	0	0	0	0	0	0	6	0	0	4	0	14
	4 Axle (PCE)	6	0	0	0	0	0	0	30	6	0	21	0	63
	Total Truck (PCE)	12	0	2	0	0	0	0	42	6	0	34	0	95
PM														
PEAK HR VOL	**2 Axle (PCE)**	2	0	0	0	0	0	0	27	5	0	11	0	44
	3 Axle (PCE)	0	0	0	0	0	0	0	28	0	4	16	0	48
	4 Axle (PCE)	0	0	0	0	0	0	0	84	3	0	24	0	111
	Total Truck (PCE)	2	0	0	0	0	0	0	139	8	4	51	0	203

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	43	1	36	0	0	1	3	338	27	38	480	4	970
PM													
Total Volume (Car+Truck)	18	0	35	3	0	4	0	883	45	21	502	0	1510

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Alder Ave and Slover Ave , Fontana

Date: 1/26/2017

Day: Thursday

Project #: 17-6017-005

City: Fontana

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

North: Alder Ave. West: Slover Ave.

CONTROL: 2-Way Stop (NB/SB)

Southbound Approach

	Right (to West)	Through	Left (to East)	Northbound Departure
Lanes	0	1	0	
AM	2	1	3	13
NOON	0	0	0	0
PM	4	2	13	16

Eastbound Approach

	Lanes	AM	NOON	PM
Westbound Departure		536	0	494
Left	0	1	0	8
Through	1	300	0	797
Right	0	36	0	27

Westbound Approach

	AM	NOON	PM	Lanes
Right	11	0	7	1
Through	496	0	464	1
Left	128	0	24	0
Eastbound Departure	399	0	877	

Northbound Approach

	Southbound Departure	Left	Through	Right
AM	165	38	1	96
NOON	0	0	0	0
PM	53	26	1	67
Lanes		0	1	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	6	13
North Leg	NOON	0	0
North Leg	PM	19	16
West Leg	AM	337	536
West Leg	NOON	0	0
West Leg	PM	832	494
East Leg	AM	635	399
East Leg	NOON	0	0
East Leg	PM	495	877
South Leg	AM	135	165
South Leg	NOON	0	0
South Leg	PM	94	53

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	19	0	35
West Leg	873	0	1326
East Leg	1034	0	1372
South Leg	300	0	147

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005
Day: Thursday
Cars
City: Fontana
Date: 1/26/2017
AM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	9	0	24	0	0	2	0	91	20	51	104	0	301
7:15 AM	22	0	52	0	0	0	0	89	7	43	121	1	335
7:30 AM	3	0	7	2	0	0	0	57	4	10	115	5	203
7:45 AM	4	1	11	0	1	0	0	44	5	24	142	5	237
8:00 AM	4	0	10	0	1	2	4	50	2	21	128	0	222
8:15 AM	2	0	12	2	0	1	2	67	0	7	127	3	223
8:30 AM	2	0	5	1	0	0	2	50	1	3	91	0	155
8:45 AM	3	0	6	0	0	0	1	56	0	6	74	1	147
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	49	1	127	5	2	5	9	504	39	165	902	15	1823
APPROACH %'s :	27.68%	0.56%	71.75%	41.67%	16.67%	41.67%	1.63%	91.30%	7.07%	15.25%	83.36%	1.39%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	38	1	94	2	1	2	0	281	36	128	482	11	1076
PEAK HR FACTOR :		0.449			0.625			0.714			0.908		0.803

UTURNS			
NB	SB	EB	WB
		0	
		0	
		0	
		0	
		1	
		0	
		0	
		0	
NB	SB	EB	WB
0	0	1	0

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 | **Day:** Thursday

Cars

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	4	2	10	0	1	0	2	171	5	5	124	0	324
4:15 PM	6	0	8	0	0	7	1	191	4	6	93	0	316
4:30 PM	5	0	4	7	0	3	3	170	3	4	99	3	301
4:45 PM	9	1	14	2	1	1	2	182	11	8	113	0	344
5:00 PM	10	0	33	3	0	0	2	190	6	8	109	2	363
5:15 PM	2	0	13	0	1	0	1	198	6	4	118	1	344
5:30 PM	6	0	4	0	0	1	0	171	7	5	101	0	295
5:45 PM	11	0	18	0	0	0	1	155	1	5	108	1	300
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	53	3	104	12	3	12	12	1428	43	45	865	7	2587
APPROACH %'s :	33.13%	1.88%	65.00%	44.44%	11.11%	44.44%	0.81%	96.29%	2.90%	4.91%	94.33%	0.76%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	26	1	64	12	2	4	8	740	26	24	439	6	1352
PEAK HR FACTOR :		0.529			0.450			0.944			0.953		0.931

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : 2-Way Stop (NB/SB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:30 AM	0	0	1	0	0	0	0	2	0	0	1	0	4
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	0	0	2	0	0	0	0	0	0	1	1	0	4
8:15 AM	0	0	1	0	0	0	0	0	0	1	2	0	4
8:30 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	4	0	0	0	0	8	0	2	8	0	23
APPROACH %'s :	20.00%	0.00%	80.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	20.00%	80.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	7	0	0	4	0	12
PEAK HR FACTOR :	0.250			0.000			0.875			1.000			0.803

CONTROL : 2-Way Stop (NB/SB)

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	0	0	0	0	0	0	0	3	0	0	1.5	0	5
7:15 AM	0	0	0	0	0	0	0	3	0	0	1.5	0	5
7:30 AM	0	0	1.5	0	0	0	0	3	0	0	1.5	0	6
7:45 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
8:00 AM	0	0	3	0	0	0	0	0	0	1.5	1.5	0	6
8:15 AM	0	0	1.5	0	0	0	0	0	0	1.5	3	0	6
8:30 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
8:45 AM	1.5	0	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1.5	0	6	0	0	0	0	12	0	3	12	0	34.5
APPROACH %'s :	20.00%	0.00%	80.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	20.00%	80.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	2	0	0	0	0	11	0	0	6	0	18
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 **Day:** Thursday

2 Axle Trucks

City: Fontana **Date:** 1/26/2017

PM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	0	0	0	0	0	0	0	5	0	0	6	0	11
4:15 PM	0	0	0	0	0	0	0	3	0	0	5	0	8
4:30 PM	0	0	1	0	0	0	0	4	0	0	3	0	8
4:45 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
5:00 PM	0	0	1	0	0	0	0	5	0	0	1	0	7
5:15 PM	0	0	1	0	0	0	0	1	0	0	1	0	3
5:30 PM	0	0	0	0	0	0	0	5	0	0	1	0	6
5:45 PM	0	0	1	0	0	0	0	6	0	0	2	0	9

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	4	0	0	0	0	35	0	0	21	0	60
APPROACH %'s :	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	3	0	0	0	0	16	0	0	7	0	26
PEAK HR FACTOR :	0.750			0.000			0.667			0.583			0.931

CONTROL : 2-Way Stop (NB/SB)

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	0	0	0	0	0	0	0	7.5	0	0	9	0	17
4:15 PM	0	0	0	0	0	0	0	4.5	0	0	7.5	0	12
4:30 PM	0	0	1.5	0	0	0	0	6	0	0	4.5	0	12
4:45 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
5:00 PM	0	0	1.5	0	0	0	0	7.5	0	0	1.5	0	11
5:15 PM	0	0	1.5	0	0	0	0	1.5	0	0	1.5	0	5
5:30 PM	0	0	0	0	0	0	0	7.5	0	0	1.5	0	9
5:45 PM	0	0	1.5	0	0	0	0	9	0	0	3	0	14

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	6	0	0	0	0	52.5	0	0	31.5	0	90
APPROACH %'s :	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	5	0	0	0	0	24	0	0	11	0	39
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 **Day:** Thursday

3 Axle Trucks

City: Fontana **Date:** 1/26/2017

AM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
8:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	7	0	0	5	0	12
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	3	0	0	3	0	6
PEAK HR FACTOR :	0.000			0.000			0.375			0.750			0.803

CONTROL : 2-Way Stop (NB/SB)

PCE CONVERSION (Factor=2)

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	0	0	0	0	0	0	0	4	0	0	2	0	6
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
8:00 AM	0	0	0	0	0	0	0	4	0	0	2	0	6
8:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	14	0	0	10	0	24
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	6	0	0	6	0	12
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	1	0	0	0	0	0	0	2	0	0	4	0	7
4:15 PM	0	0	0	0	0	0	0	3	0	0	3	0	6
4:30 PM	0	0	0	0	0	0	0	3	1	0	2	0	6
4:45 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
5:00 PM	0	0	0	0	0	0	0	2	0	0	4	0	6
5:15 PM	0	0	0	1	0	0	0	3	0	0	4	1	9
5:30 PM	0	0	0	0	0	0	0	4	0	0	2	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	1	0	0	0	23	1	0	21	1	48
APPROACH %'s :	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	95.83%	4.17%	0.00%	95.45%	4.55%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	14	1	0	12	1	29
PEAK HR FACTOR :	0.000			0.250			0.625			0.650			0.931

CONTROL : 2-Way Stop (NB/SB)

PCE CONVERSION (Factor=2)

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	2	0	0	0	0	0	0	4	0	0	8	0	14
4:15 PM	0	0	0	0	0	0	0	6	0	0	6	0	12
4:30 PM	0	0	0	0	0	0	0	6	2	0	4	0	12
4:45 PM	0	0	0	0	0	0	0	12	0	0	4	0	16
5:00 PM	0	0	0	0	0	0	0	4	0	0	8	0	12
5:15 PM	0	0	0	2	0	0	0	6	0	0	8	2	18
5:30 PM	0	0	0	0	0	0	0	8	0	0	4	0	12
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	0	2	0	0	0	46	2	0	42	2	96
APPROACH %'s :	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	95.83%	4.17%	0.00%	95.45%	4.55%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	2	0	0	0	28	2	0	24	2	58
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	0	0	1	1	0	0	0	3	0	0	1	0	6
7:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	1	1	0	0	1	0	3
7:45 AM	0	0	0	0	0	0	0	3	0	0	3	0	6
8:00 AM	0	0	0	0	0	0	0	4	0	0	3	2	9
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
8:30 AM	0	0	1	0	0	0	1	0	0	0	3	0	5
8:45 AM	0	0	0	0	0	0	0	3	0	0	6	0	9
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	2	1	0	0	2	16	0	0	22	2	45
APPROACH %'s :	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	11.11%	88.89%	0.00%	0.00%	91.67%	8.33%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	1	1	0	0	1	9	0	0	7	0	19
PEAK HR FACTOR :	0.250			0.250			0.833			0.583			0.803

CONTROL : 2-Way Stop (NB/SB)

PCE CONVERSION (Factor=3)

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
7:00 AM	0	0	3	3	0	0	0	9	0	0	3	0	18
7:15 AM	0	0	0	0	0	0	0	6	0	0	6	0	12
7:30 AM	0	0	0	0	0	0	3	3	0	0	3	0	9
7:45 AM	0	0	0	0	0	0	0	9	0	0	9	0	18
8:00 AM	0	0	0	0	0	0	0	12	0	0	9	6	27
8:15 AM	0	0	0	0	0	0	0	0	0	0	9	0	9
8:30 AM	0	0	3	0	0	0	3	0	0	0	9	0	15
8:45 AM	0	0	0	0	0	0	0	9	0	0	18	0	27
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	6	3	0	0	6	48	0	0	66	6	135
APPROACH %'s :	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	11.11%	88.89%	0.00%	0.00%	91.67%	8.33%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	3	3	0	0	3	27	0	0	21	0	57
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-005 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
4:15 PM	0	0	0	0	0	0	0	8	1	0	3	0	12
4:30 PM	0	0	0	0	0	0	0	7	0	0	3	0	10
4:45 PM	0	0	0	0	0	0	0	6	0	0	1	0	7
5:00 PM	0	0	0	0	0	0	0	9	0	0	2	0	11
5:15 PM	0	0	0	0	0	0	0	5	0	0	0	0	5
5:30 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:45 PM	0	0	0	1	0	0	0	7	0	0	5	0	13
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	1	0	0	0	54	1	0	18	0	74
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	0.00%	98.18%	1.82%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	27	0	0	6	0	33
PEAK HR FACTOR :	0.000			0.000			0.750			0.500			0.931

CONTROL : 2-Way Stop (NB/SB)

PCE CONVERSION (Factor=3)

NS/EW Streets:	Alder Ave			Alder Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	1	
4:00 PM	0	0	0	0	0	0	0	27	0	0	9	0	36
4:15 PM	0	0	0	0	0	0	0	24	3	0	9	0	36
4:30 PM	0	0	0	0	0	0	0	21	0	0	9	0	30
4:45 PM	0	0	0	0	0	0	0	18	0	0	3	0	21
5:00 PM	0	0	0	0	0	0	0	27	0	0	6	0	33
5:15 PM	0	0	0	0	0	0	0	15	0	0	0	0	15
5:30 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
5:45 PM	0	0	0	3	0	0	0	21	0	0	15	0	39
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	3	0	0	0	162	3	0	54	0	222
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	0.00%	98.18%	1.82%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	81	0	0	18	0	99
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Alder Ave			Alder Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		0	1	0	0	1	0	0	1	0	0	1	1	
						AM								
PEAK HR VOL	2 Axle (PCE)	0	0	2	0	0	0	0	11	0	0	6	0	18
	3 Axle (PCE)	0	0	0	0	0	0	0	6	0	0	6	0	12
	4 Axle (PCE)	0	0	3	3	0	0	3	27	0	0	21	0	57
	Total Truck (PCE)	0	0	5	3	0	0	3	44	0	0	33	0	87
						PM								
PEAK HR VOL	2 Axle (PCE)	0	0	5	0	0	0	0	24	0	0	11	0	39
	3 Axle (PCE)	0	0	0	2	0	0	0	28	2	0	24	2	58
	4 Axle (PCE)	0	0	0	0	0	0	0	81	0	0	18	0	99
	Total Truck (PCE)	0	0	5	2	0	0	0	133	2	0	53	2	196

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
					AM								
Total Volume (Car+Truck)	38	1	99	5	1	2	3	325	36	128	515	11	1163
					PM								
Total Volume (Car+Truck)	26	1	69	14	2	4	8	873	28	24	492	8	1548

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Laurel Ave and Slover Ave , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-006
City:	Bloomington

N

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

CONTROL: Signalized

Laurel Ave

Slover Ave

Southbound Approach

	Right	Thru	Left	Out
Lanes	0	1	0	
AM	2	15	4	28
NOON	0	0	0	0
PM	4	0	2	4

Eastbound Approach

	Lanes	AM	NOON	PM
Out		656	0	483
Left	1	6	0	2
Thru	2	246	0	852
Right	0	176	0	31

Westbound Approach

	AM	NOON	PM	Lanes
Right	22	0	1	0
Thru	591	0	448	2
Left	331	0	30	1
Out	504	0	890	

Northbound Approach

	Out	Left	Thru	Right
AM	522	63	0	254
NOON	0	0	0	0
PM	61	31	1	36
Lanes		0	1	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	21	28
NOON	0	0
PM	6	4

West Leg

	AM	NOON	PM
	656	0	483
	428	0	885

East Leg

	AM	NOON	PM
	944	0	479
	504	0	890

South Leg

AM	522	317
NOON	0	0
PM	61	68

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	49	0	10
West Leg	1084	0	1368
East Leg	1448	0	1369
South Leg	839	0	129

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006 **Day:** Thursday

Cars

City: Bloomington **Date:** 1/26/2017

AM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	14	0	89	1	9	0	2	54	72	162	152	15	570
7:15 AM	33	0	127	0	6	0	0	74	83	136	141	5	605
7:30 AM	9	0	32	0	0	0	0	55	16	24	119	1	256
7:45 AM	6	0	4	0	0	1	1	47	3	7	166	1	236
8:00 AM	8	0	8	1	0	0	3	49	7	20	137	1	234
8:15 AM	9	0	9	0	0	0	1	69	9	17	131	2	247
8:30 AM	7	0	3	0	0	1	2	46	5	5	85	0	154
8:45 AM	5	0	7	0	0	1	3	56	3	4	76	0	155
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	91	0	279	2	15	3	12	450	198	375	1007	25	2457
APPROACH %'s :	24.59%	0.00%	75.41%	10.00%	75.00%	15.00%	1.82%	68.18%	30.00%	26.65%	71.57%	1.78%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	62	0	252	1	15	1	3	230	174	329	578	22	1667
PEAK HR FACTOR :	0.491			0.425			0.648			0.706			0.689

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006 | **Day:** Thursday

Cars

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave					UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND								
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
LANES:	0	1	0	0	1	0	1	2	0	1	2	0						
4:00 PM	11	0	28	1	0	3	1	165	15	17	113	0	354					
4:15 PM	10	0	16	0	0	0	0	186	10	9	97	0	328					
4:30 PM	6	0	12	1	0	2	1	179	6	7	93	0	307					
4:45 PM	7	0	8	1	0	0	1	178	9	8	119	0	331					
5:00 PM	5	1	9	0	0	1	0	218	9	5	112	0	360					
5:15 PM	10	0	7	0	0	0	0	216	6	8	105	0	352					
5:30 PM	5	0	4	0	0	0	0	170	6	15	110	0	310					
5:45 PM	9	0	13	1	0	0	0	160	10	12	97	0	302					
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
TOTAL VOLUMES :	63	1	97	4	0	6	3	1472	71	81	846	0	2644		0	0	0	0
APPROACH %'s :	39.13%	0.62%	60.25%	40.00%	0.00%	60.00%	0.19%	95.21%	4.59%	8.74%	91.26%	0.00%						
PEAK HR START TIME :	430 PM												TOTAL					
PEAK HR VOL :	28	1	36	2	0	3	2	791	30	28	429	0	1350					
PEAK HR FACTOR :		0.903			0.417			0.906			0.900		0.938					

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006

Day: Thursday

2 Axle Trucks

City: Bloomington

Date: 1/26/2017

AM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	2	0	0	0	0	1	1	1	0	0	5
7:15 AM	0	0	0	0	0	0	0	3	0	1	1	0	5
7:30 AM	0	0	0	0	0	0	0	1	1	0	1	0	3
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	0	0	0	0	0	0	0	1	0	1	3	0	5
8:15 AM	1	0	1	0	0	0	0	3	0	0	1	0	6
8:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
8:45 AM	0	0	0	0	0	0	0	1	0	1	0	1	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	3	0	0	0	0	13	2	4	8	1	32
APPROACH %'s :	25.00%	0.00%	75.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	86.67%	13.33%	30.77%	61.54%	7.69%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	2	0	0	0	0	6	2	2	3	0	15
PEAK HR FACTOR :	0.250			0.000			0.667			0.625			0.689

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	3	0	0	0	0	1.5	1.5	1.5	0	0	8
7:15 AM	0	0	0	0	0	0	0	4.5	0	1.5	1.5	0	8
7:30 AM	0	0	0	0	0	0	0	1.5	1.5	0	1.5	0	5
7:45 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
8:00 AM	0	0	0	0	0	0	0	1.5	0	1.5	4.5	0	8
8:15 AM	1.5	0	1.5	0	0	0	0	4.5	0	0	1.5	0	9
8:30 AM	0	0	0	0	0	0	0	3	0	0	1.5	0	5
8:45 AM	0	0	0	0	0	0	0	1.5	0	1.5	0	1.5	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1.5	0	4.5	0	0	0	0	19.5	3	6	12	1.5	48
APPROACH %'s :	25.00%	0.00%	75.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	86.67%	13.33%	30.77%	61.54%	7.69%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	3	0	0	0	0	9	3	3	5	0	23
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	1	0	0	0	0	0	0	4	0	2	3	0	10
4:15 PM	0	0	0	0	0	0	0	3	0	0	3	0	6
4:30 PM	0	0	0	0	0	0	0	4	0	1	3	1	9
4:45 PM	2	0	0	0	0	1	0	7	0	0	0	0	10
5:00 PM	0	0	0	0	0	0	0	5	0	1	1	0	7
5:15 PM	0	0	0	0	0	0	0	4	0	0	1	0	5
5:30 PM	0	0	0	0	0	0	0	5	0	1	0	0	6
5:45 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	0	0	1	0	35	0	5	12	1	57
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	27.78%	66.67%	5.56%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	2	0	0	0	0	1	0	20	0	2	5	1	31
PEAK HR FACTOR :	0.250			0.250			0.714			0.400			0.938

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	1.5	0	0	0	0	0	0	6	0	3	4.5	0	15
4:15 PM	0	0	0	0	0	0	0	4.5	0	0	4.5	0	9
4:30 PM	0	0	0	0	0	0	0	6	0	1.5	4.5	1.5	14
4:45 PM	3	0	0	0	0	1.5	0	10.5	0	0	0	0	15
5:00 PM	0	0	0	0	0	0	0	7.5	0	1.5	1.5	0	11
5:15 PM	0	0	0	0	0	0	0	6	0	0	1.5	0	8
5:30 PM	0	0	0	0	0	0	0	7.5	0	1.5	0	0	9
5:45 PM	0	0	0	0	0	0	0	4.5	0	0	1.5	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4.5	0	0	0	0	1.5	0	52.5	0	7.5	18	1.5	85.5
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	27.78%	66.67%	5.56%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	0	0	0	0	2	0	30	0	3	8	2	47
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	0	0	0	1	0	0	0	0	0	0	1	0	2
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	2	0	1	3	0	6
8:15 AM	0	0	0	1	0	0	0	0	1	0	2	0	4
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	1	0	0	0	0	0	0	1	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	2	0	0	0	7	1	1	8	0	20
APPROACH %'s :	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	87.50%	12.50%	11.11%	88.89%	0.00%	

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	3	0	0	3	0	7
PEAK HR FACTOR :	0.000			0.250			0.375			0.750			0.689

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	4	0	0	2	0	6
7:15 AM	0	0	0	2	0	0	0	0	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
8:00 AM	0	0	0	0	0	0	0	4	0	2	6	0	12
8:15 AM	0	0	0	2	0	0	0	0	2	0	4	0	8
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
8:45 AM	2	0	0	0	0	0	0	2	0	0	0	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	0	4	0	0	0	14	2	2	16	0	40
APPROACH %'s :	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	87.50%	12.50%	11.11%	88.89%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	2	0	0	0	6	0	0	6	0	14
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006

Day: Thursday

3 Axle Trucks

City: Bloomington

Date: 1/26/2017

PM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	2	0	0	4	0	6
4:15 PM	1	0	0	0	0	0	0	2	0	0	0	0	3
4:30 PM	0	0	0	0	0	0	0	6	0	0	0	0	6
4:45 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:00 PM	0	0	0	0	0	0	0	3	0	0	3	0	6
5:15 PM	0	0	0	0	0	0	0	4	0	0	4	0	8
5:30 PM	0	0	0	0	0	0	0	3	1	0	1	0	5
5:45 PM	0	0	0	0	0	0	0	1	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	24	1	0	14	0	40
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	96.00%	4.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	16	0	0	8	0	24
PEAK HR FACTOR :	0.000			0.000			0.667			0.500			0.938

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	4	0	0	8	0	12
4:15 PM	2	0	0	0	0	0	0	4	0	0	0	0	6
4:30 PM	0	0	0	0	0	0	0	12	0	0	0	0	12
4:45 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
5:00 PM	0	0	0	0	0	0	0	6	0	0	6	0	12
5:15 PM	0	0	0	0	0	0	0	8	0	0	8	0	16
5:30 PM	0	0	0	0	0	0	0	6	2	0	2	0	10
5:45 PM	0	0	0	0	0	0	0	2	0	0	2	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	0	0	0	0	0	48	2	0	28	0	80
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	96.00%	4.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	32	0	0	16	0	48
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006 **Day:** Thursday

4 Axle+ Trucks

City: Bloomington **Date:** 1/26/2017

AM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	1	0	1	2	2	0	0	1	0	7
7:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
7:30 AM	1	0	0	0	0	0	0	1	0	0	0	0	2
7:45 AM	0	0	0	1	0	0	1	2	0	0	4	0	8
8:00 AM	1	0	0	0	0	0	1	2	0	0	3	0	7
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
8:30 AM	0	0	0	0	0	1	0	2	0	0	3	1	7
8:45 AM	0	0	0	0	0	0	0	0	1	0	5	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	0	2	0	2	4	11	1	0	21	1	44
APPROACH %'s :	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	25.00%	68.75%	6.25%	0.00%	95.45%	4.55%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	1	0	0	2	0	1	3	7	0	0	7	0	21
PEAK HR FACTOR :	0.250			0.375			0.625			0.438			0.689

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	3	0	3	6	6	0	0	3	0	21
7:15 AM	0	0	0	0	0	0	0	6	0	0	6	0	12
7:30 AM	3	0	0	0	0	0	0	3	0	0	0	0	6
7:45 AM	0	0	0	3	0	0	3	6	0	0	12	0	24
8:00 AM	3	0	0	0	0	0	3	6	0	0	9	0	21
8:15 AM	0	0	0	0	0	0	0	0	0	0	9	0	9
8:30 AM	0	0	0	0	0	3	0	6	0	0	9	3	21
8:45 AM	0	0	0	0	0	0	0	0	3	0	15	0	18
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	0	0	6	0	6	12	33	3	0	63	3	132
APPROACH %'s :	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	25.00%	68.75%	6.25%	0.00%	95.45%	4.55%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	3	0	0	6	0	3	9	21	0	0	21	0	63
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-006

Day: Thursday

4 Axle+ Trucks

City: Bloomington

Date: 1/26/2017

PM

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	8	0	0	3	0	11
4:15 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
4:30 PM	0	0	0	0	0	0	0	6	1	0	4	0	11
4:45 PM	1	0	0	0	0	0	0	8	0	0	1	0	10
5:00 PM	0	0	0	0	0	0	0	7	0	0	1	0	8
5:15 PM	0	0	0	0	0	0	0	4	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:45 PM	0	0	0	0	0	1	0	7	0	0	6	1	15
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	1	0	52	1	0	19	1	75
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	98.11%	1.89%	0.00%	95.00%	5.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	25	1	0	6	0	33
PEAK HR FACTOR :	0.250			0.000			0.813			0.375			0.938

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	24	0	0	9	0	33
4:15 PM	0	0	0	0	0	0	0	27	0	0	9	0	36
4:30 PM	0	0	0	0	0	0	0	18	3	0	12	0	33
4:45 PM	3	0	0	0	0	0	0	24	0	0	3	0	30
5:00 PM	0	0	0	0	0	0	0	21	0	0	3	0	24
5:15 PM	0	0	0	0	0	0	0	12	0	0	0	0	12
5:30 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
5:45 PM	0	0	0	0	0	3	0	21	0	0	18	3	45
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	0	0	3	0	156	3	0	57	3	225
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	98.11%	1.89%	0.00%	95.00%	5.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	0	0	0	0	0	0	75	3	0	18	0	99
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Laurel Ave			Laurel Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		0	1	0	0	1	0	1	2	0	1	2	0	
						AM								
PEAK HR VOL	**2 Axle (PCE)**	0	0	3	0	0	0	0	9	3	3	5	0	23
	3 Axle (PCE)	0	0	0	2	0	0	0	6	0	0	6	0	14
	4 Axle (PCE)	3	0	0	6	0	3	9	21	0	0	21	0	63
	Total Truck (PCE)	3	0	3	8	0	3	9	36	3	3	32	0	100
						PM								
PEAK HR VOL	**2 Axle (PCE)**	3	0	0	0	0	2	0	30	0	3	8	2	47
	3 Axle (PCE)	0	0	0	0	0	0	0	32	0	0	16	0	48
	4 Axle (PCE)	3	0	0	0	0	0	0	75	3	0	18	0	99
	Total Truck (PCE)	6	0	0	0	0	2	0	137	3	3	42	2	194

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
					AM								
Total Volume (Car+Truck)	65	0	255	9	15	4	12	266	177	332	610	22	1767
					PM								
Total Volume (Car+Truck)	34	1	36	2	0	5	2	928	33	31	471	2	1544

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Proposed Site Dwy and Slover Ave , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-007
City:	Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

N

Proposed Site Dwy

Slover Ave

Southbound Approach

	Right	Thru	Left	Out
Lanes	0	1	0	
AM	0	0	1	5
NOON	0	0	0	0
PM	0	0	0	0

Eastbound Approach

	Lanes	AM	NOON	PM
Out		948	0	484
Left	0	2	0	0
Thru	2	504	0	893
Right	0	0	0	0

Westbound Approach

	AM	NOON	PM	Lanes
Right	3	0	0	0
Thru	948	0	484	2
Left	0	0	0	0
Out	505	0	893	

CONTROL
No Control

Northbound Approach

	Out	Left	Thru	Right
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	0	0
Lanes		0	0	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	AM In	AM Out	NOON In	NOON Out	PM In	PM Out
North Leg	1	5	0	0	0	0
East Leg	951	505	0	0	484	893
South Leg	0	0	0	0	0	0
West Leg	506	948	0	0	893	484

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	6	0	0
East Leg	1456	0	1377
South Leg	0	0	0
West Leg	1454	0	1377

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 | **Cars** | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	0	144	0	0	349	2	495
7:15 AM	0	0	0	0	0	0	0	192	0	0	264	0	456
7:30 AM	0	0	0	0	0	0	0	96	0	0	146	0	242
7:45 AM	0	0	0	1	0	0	0	52	0	0	173	1	227
8:00 AM	0	0	0	0	0	0	0	61	0	0	166	0	227
8:15 AM	0	0	0	0	0	0	0	74	0	0	143	0	217
8:30 AM	0	0	0	0	0	0	0	49	0	0	93	0	142
8:45 AM	0	0	0	0	0	0	0	65	0	1	79	0	145
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	1	0	0	0	733	0	1	1413	3	2151
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.07%	99.72%	0.21%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	484	0	0	932	3	1420
PEAK HR FACTOR :		0.000			0.250			0.630			0.666		0.717

UTURNS	NB	SB	EB	WB
7:00 AM				0
7:15 AM				0
7:30 AM				0
7:45 AM				0
8:00 AM				0
8:15 AM				0
8:30 AM				0
8:45 AM				1
	NB	SB	EB	WB
TOTAL	0	0	0	1

CONTROL : No Control

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

Cars

PM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	206	0	0	132	0	338
4:15 PM	0	0	0	0	0	0	0	199	0	0	107	0	306
4:30 PM	0	0	0	0	0	0	0	186	0	0	104	0	290
4:45 PM	0	0	0	0	0	0	0	181	0	0	122	0	303
5:00 PM	0	0	0	0	0	0	0	235	0	0	117	0	352
5:15 PM	0	0	0	0	0	0	0	232	0	0	119	0	351
5:30 PM	0	0	0	0	0	0	0	166	0	0	125	0	291
5:45 PM	0	0	0	0	0	0	2	173	0	0	108	0	283
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	1578	0	0	934	0	2514
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.13%	99.87%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	834	0	0	462	0	1296
PEAK HR FACTOR :		0.000			0.000			0.887			0.947		0.920

CONTROL : No Control

UTURNS

	NB	SB	EB	WB
4:00 PM			0	
4:15 PM			0	
4:30 PM			0	
4:45 PM			0	
5:00 PM			0	
5:15 PM			0	
5:30 PM			0	
5:45 PM			2	
TOTAL	0	0	2	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	0	4	0	0	0	0	4
7:15 AM	0	0	0	0	0	0	0	3	0	0	3	0	6
7:30 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	0	0	0	0	0	0	0	1	0	0	3	0	4
8:15 AM	0	0	0	0	0	0	0	5	0	0	1	0	6
8:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	17	0	0	13	0	30
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	9	0	0	5	0	14
PEAK HR FACTOR :	0.000			0.000			0.563			0.417			0.717

CONTROL : No Control

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	0	6	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	4.5	0	0	4.5	0	9
7:30 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
7:45 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
8:00 AM	0	0	0	0	0	0	0	1.5	0	0	4.5	0	6
8:15 AM	0	0	0	0	0	0	0	7.5	0	0	1.5	0	9
8:30 AM	0	0	0	0	0	0	0	3	0	0	1.5	0	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	4.5	0	5
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	25.5	0	0	19.5	0	45
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	14	0	0	8	0	21
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	4	0	0	5	0	9
4:15 PM	0	0	0	0	0	0	0	3	0	0	3	0	6
4:30 PM	0	0	0	0	0	0	0	3	0	0	5	0	8
4:45 PM	0	0	0	0	0	0	0	6	0	0	0	0	6
5:00 PM	0	0	0	0	0	0	0	5	0	0	2	0	7
5:15 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:30 PM	0	0	0	0	0	0	0	5	0	0	2	0	7
5:45 PM	0	0	0	0	0	0	0	5	0	0	1	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	34	0	0	19	0	53
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	17	0	0	8	0	25
PEAK HR FACTOR :		0.000			0.000			0.708			0.400		0.920

CONTROL : No Control

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	6	0	0	7.5	0	14
4:15 PM	0	0	0	0	0	0	0	4.5	0	0	4.5	0	9
4:30 PM	0	0	0	0	0	0	0	4.5	0	0	7.5	0	12
4:45 PM	0	0	0	0	0	0	0	9	0	0	0	0	9
5:00 PM	0	0	0	0	0	0	0	7.5	0	0	3	0	11
5:15 PM	0	0	0	0	0	0	0	4.5	0	0	1.5	0	6
5:30 PM	0	0	0	0	0	0	0	7.5	0	0	3	0	11
5:45 PM	0	0	0	0	0	0	0	7.5	0	0	1.5	0	9
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	51	0	0	28.5	0	79.5
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	26	0	0	12	0	38
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 **Day:** Thursday

3 Axle Trucks

City: Bloomington **Date:** 1/26/2017

AM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	0	3	0	0	1	0	4
7:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	2	0	0	4	0	6
8:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	3
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	10	0	0	9	0	19
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	5	0	0	3	0	8
PEAK HR FACTOR :	0.000			0.000			0.417			0.750			0.717

CONTROL : No Control

PCE CONVERSION (Factor=2)

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	0	6	0	0	2	0	8
7:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
8:00 AM	0	0	0	0	0	0	0	4	0	0	8	0	12
8:15 AM	0	0	0	0	0	0	0	2	0	0	4	0	6
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	20	0	0	18	0	38
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	10	0	0	6	0	16
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	1	0	0	3	0	4
4:15 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
4:30 PM	0	0	0	0	0	0	0	6	0	0	0	0	6
4:45 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:00 PM	0	0	0	0	0	0	0	3	0	0	4	0	7
5:15 PM	0	0	0	0	0	0	0	5	0	0	3	0	8
5:30 PM	0	0	0	0	0	0	0	2	0	0	2	0	4
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	24	0	0	14	0	38
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	17	0	0	8	0	25
PEAK HR FACTOR :		0.000			0.000			0.708			0.500		0.920

CONTROL : No Control

PCE CONVERSION (Factor=2)

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	2	0	0	6	0	8
4:15 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
4:30 PM	0	0	0	0	0	0	0	12	0	0	0	0	12
4:45 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
5:00 PM	0	0	0	0	0	0	0	6	0	0	8	0	14
5:15 PM	0	0	0	0	0	0	0	10	0	0	6	0	16
5:30 PM	0	0	0	0	0	0	0	4	0	0	4	0	8
5:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	48	0	0	28	0	76
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	34	0	0	16	0	50
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007

Day: Thursday

4 Axle+ Trucks

City: Bloomington

Date: 1/26/2017

AM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	1	1	0	0	1	0	3
7:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	0	0	0	0	0	0	1	3	0	0	4	0	8
8:00 AM	0	0	0	1	0	0	0	1	0	0	3	0	5
8:15 AM	0	0	0	1	0	0	0	0	0	0	2	1	4
8:30 AM	0	0	0	0	0	0	0	1	0	0	3	1	5
8:45 AM	0	0	0	1	0	0	0	2	0	0	5	0	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	3	0	0	2	10	0	0	21	2	38
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	16.67%	83.33%	0.00%	0.00%	91.30%	8.70%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	2	6	0	0	8	0	16
PEAK HR FACTOR :	0.000			0.000			0.500			0.500			0.717

CONTROL : No Control

PCE CONVERSION (Factor=3)

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
7:00 AM	0	0	0	0	0	0	3	3	0	0	3	0	9
7:15 AM	0	0	0	0	0	0	0	6	0	0	6	0	12
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	3
7:45 AM	0	0	0	0	0	0	3	9	0	0	12	0	24
8:00 AM	0	0	0	3	0	0	0	3	0	0	9	0	15
8:15 AM	0	0	0	3	0	0	0	0	0	0	6	3	12
8:30 AM	0	0	0	0	0	0	0	3	0	0	9	3	15
8:45 AM	0	0	0	3	0	0	0	6	0	0	15	0	24
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	9	0	0	6	30	0	0	63	6	114
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	16.67%	83.33%	0.00%	0.00%	91.30%	8.70%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	6	18	0	0	24	0	48
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-007 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	10	0	0	3	0	13
4:15 PM	0	0	0	0	0	0	0	8	0	0	3	0	11
4:30 PM	0	0	0	0	0	0	0	4	0	0	3	0	7
4:45 PM	0	0	0	0	0	0	0	8	0	0	1	0	9
5:00 PM	0	0	0	0	0	0	0	9	0	0	2	0	11
5:15 PM	0	0	0	0	0	0	0	4	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
5:45 PM	0	0	0	0	0	0	1	6	0	0	6	0	13
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	1	52	0	0	19	0	72
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.89%	98.11%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	25	0	0	6	0	31
PEAK HR FACTOR :	0.000			0.000			0.694			0.500			0.920

CONTROL : No Control

PCE CONVERSION (Factor=3)

NS/EW Streets:	Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	0	1	0	0	2	0	0	2	0	
4:00 PM	0	0	0	0	0	0	0	30	0	0	9	0	39
4:15 PM	0	0	0	0	0	0	0	24	0	0	9	0	33
4:30 PM	0	0	0	0	0	0	0	12	0	0	9	0	21
4:45 PM	0	0	0	0	0	0	0	24	0	0	3	0	27
5:00 PM	0	0	0	0	0	0	0	27	0	0	6	0	33
5:15 PM	0	0	0	0	0	0	0	12	0	0	0	0	12
5:30 PM	0	0	0	0	0	0	0	9	0	0	3	0	12
5:45 PM	0	0	0	0	0	0	3	18	0	0	18	0	39
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	3	156	0	0	57	0	216
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.89%	98.11%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	75	0	0	18	0	93
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:

		Proposed Site Dwy			Proposed Site Dwy			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		0	0	0	0	1	0	0	2	0	0	2	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	0	0	0	0	0	0	0	14	0	0	8	0	21
	3 Axle (PCE)	0	0	0	0	0	0	0	10	0	0	6	0	16
	4 Axle (PCE)	0	0	0	0	0	0	6	18	0	0	24	0	48
	Total Truck (PCE)	0	0	0	0	0	0	6	42	0	0	38	0	85
PM														
PEAK HR VOL	**2 Axle (PCE)**	0	0	0	0	0	0	0	26	0	0	12	0	38
	3 Axle (PCE)	0	0	0	0	0	0	0	34	0	0	16	0	50
	4 Axle (PCE)	0	0	0	0	0	0	0	75	0	0	18	0	93
	Total Truck (PCE)	0	0	0	0	0	0	0	135	0	0	46	0	181

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	0	0	0	1	0	0	6	526	0	0	970	3	1505
PM													
Total Volume (Car+Truck)	0	0	0	0	0	0	0	969	0	0	508	0	1477

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Locust Ave and Slover Ave , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-008
City:	Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Locust Ave

Slover Ave

Peak Hour Summary

CONTROL: Signalized

Southbound Approach

	Right	Thru	Left	Out
Lanes	0	1	1	
AM	2	0	4	7
NOON	0	0	0	0
PM	3	2	3	6

Eastbound Approach

	Lanes	AM	NOON	PM
Out		949	0	492
Left	1	3	0	5
Thru	2	413	0	662
Right	0	97	0	225

Westbound Approach

	AM	NOON	PM	Lanes
Right	1	0	1	0
Thru	720	0	360	2
Left	34	0	39	1
Out	487	0	814	

Northbound Approach

	Out	Left	Thru	Right
AM	131	227	3	70
NOON	0	0	0	0
PM	266	129	0	149
Lanes		1	1	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg		
AM	6	7
NOON	0	0
PM	8	6

West Leg	AM	NOON	PM
	949	0	492
	513	0	892

East Leg	AM	NOON	PM
	755	0	400
	487	0	814

South Leg		
AM	131	300
NOON	0	0
PM	266	278

Total Volume Per Leg

	North Leg	South Leg	West Leg	East Leg
AM	13	431	1462	1242
NOON	0	0	0	0
PM	14	544	1384	1214

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

Cars

AM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	97	2	12	2	0	0	1	127	18	5	279	1	544
7:15 AM	65	0	18	0	0	0	0	148	42	8	175	0	456
7:30 AM	29	1	19	2	0	1	0	78	25	12	119	0	286
7:45 AM	35	0	19	0	0	1	0	45	8	9	134	0	251
8:00 AM	26	0	16	3	1	2	0	49	8	13	143	0	261
8:15 AM	34	1	14	0	0	0	3	69	5	14	108	2	250
8:30 AM	22	1	14	1	1	1	0	39	10	7	69	0	165
8:45 AM	21	0	13	0	0	1	2	53	11	4	58	0	163
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	329	5	125	8	2	6	6	608	127	72	1085	3	2376
APPROACH %'s :	71.68%	1.09%	27.23%	50.00%	12.50%	37.50%	0.81%	82.05%	17.14%	6.21%	93.53%	0.26%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	226	3	68	4	0	2	1	398	93	34	707	1	1537
PEAK HR FACTOR :		0.669			0.500			0.647			0.651		0.706

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 **Day:** Thursday

City: Bloomington **Date:** 1/26/2017

Cars

PM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	33	0	27	2	0	0	0	155	59	8	101	1	386
4:15 PM	19	1	37	0	0	1	0	148	48	19	87	0	360
4:30 PM	29	0	41	1	0	0	2	122	59	5	78	0	337
4:45 PM	29	0	39	1	0	1	1	142	41	13	94	1	362
5:00 PM	28	0	29	0	1	2	1	182	55	11	87	0	396
5:15 PM	39	0	37	1	1	0	1	170	57	10	81	0	397
5:30 PM	24	0	26	2	0	0	0	130	43	14	98	1	338
5:45 PM	28	1	25	1	0	2	1	120	46	11	80	1	316
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	229	2	261	8	2	6	6	1169	408	91	706	4	2892
APPROACH %'s :	46.54%	0.41%	53.05%	50.00%	12.50%	37.50%	0.38%	73.85%	25.77%	11.36%	88.14%	0.50%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	125	0	146	3	2	3	5	616	212	39	340	1	1492
PEAK HR FACTOR :	0.891			0.667			0.875			0.880			0.940

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	3
7:15 AM	1	0	0	0	0	0	0	1	1	0	2	0	5
7:30 AM	0	0	0	0	0	0	0	3	0	0	1	0	4
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	1	0	0	0	0	0	0	2	0	2	4	0	9
8:15 AM	0	0	0	0	0	0	0	4	0	0	0	0	4
8:30 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
8:45 AM	1	0	0	0	0	0	0	0	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	0	0	0	0	16	1	2	10	0	32
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	94.12%	5.88%	16.67%	83.33%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	8	1	0	4	0	14
PEAK HR FACTOR :	0.250			0.000			0.750			0.500			0.706

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	4.5	0	0	0	0	5
7:15 AM	1.5	0	0	0	0	0	0	1.5	1.5	0	3	0	8
7:30 AM	0	0	0	0	0	0	0	4.5	0	0	1.5	0	6
7:45 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
8:00 AM	1.5	0	0	0	0	0	0	3	0	3	6	0	14
8:15 AM	0	0	0	0	0	0	0	6	0	0	0	0	6
8:30 AM	0	0	0	0	0	0	0	3	0	0	1.5	0	5
8:45 AM	1.5	0	0	0	0	0	0	0	0	0	1.5	0	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4.5	0	0	0	0	0	0	24	1.5	3	15	0	48
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	94.12%	5.88%	16.67%	83.33%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	2	0	0	0	0	0	0	12	2	0	6	0	21
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 **Day:** Thursday

2 Axle Trucks

City: Bloomington **Date:** 1/26/2017

PM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	1	0	0	0	0	0	0	2	2	0	4	0	9
4:15 PM	1	0	1	0	0	0	0	2	1	0	2	0	7
4:30 PM	2	0	0	0	0	0	0	2	1	0	3	0	8
4:45 PM	0	0	0	0	0	0	0	5	1	0	0	0	6
5:00 PM	0	0	1	0	0	0	0	4	0	0	3	0	8
5:15 PM	0	0	1	0	0	0	0	0	4	0	2	0	7
5:30 PM	0	0	1	0	0	0	0	4	1	0	0	0	6
5:45 PM	2	0	0	0	0	0	0	5	1	0	0	0	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	0	4	0	0	0	0	24	11	0	14	0	59
APPROACH %'s :	60.00%	0.00%	40.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	68.57%	31.43%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	2	0	2	0	0	0	0	11	6	0	8	0	29
PEAK HR FACTOR :	0.500			0.000			0.708			0.667			0.940

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	1.5	0	0	0	0	0	0	3	3	0	6	0	14
4:15 PM	1.5	0	1.5	0	0	0	0	3	1.5	0	3	0	11
4:30 PM	3	0	0	0	0	0	0	3	1.5	0	4.5	0	12
4:45 PM	0	0	0	0	0	0	0	7.5	1.5	0	0	0	9
5:00 PM	0	0	1.5	0	0	0	0	6	0	0	4.5	0	12
5:15 PM	0	0	1.5	0	0	0	0	0	6	0	3	0	11
5:30 PM	0	0	1.5	0	0	0	0	6	1.5	0	0	0	9
5:45 PM	3	0	0	0	0	0	0	7.5	1.5	0	0	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	9	0	6	0	0	0	0	36	16.5	0	21	0	88.5
APPROACH %'s :	60.00%	0.00%	40.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	68.57%	31.43%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	0	3	0	0	0	0	17	9	0	12	0	44
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	2	1	0	0	0	3
7:15 AM	0	0	1	0	0	0	0	1	0	0	1	0	3
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	1	0	0	0	0	0	0	0	1	0	2
8:00 AM	1	0	0	0	0	0	0	2	0	0	4	0	7
8:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	2	0	0	0	0	9	1	0	8	0	21
APPROACH %'s :	33.33%	0.00%	66.67%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	90.00%	10.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	2	0	0	0	0	4	1	0	2	0	9
PEAK HR FACTOR :	0.500			0.000			0.417			0.500			0.706

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	4	2	0	0	0	6
7:15 AM	0	0	2	0	0	0	0	2	0	0	2	0	6
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	0	2	0	0	0	0	0	0	0	2	0	4
8:00 AM	2	0	0	0	0	0	0	4	0	0	8	0	14
8:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	4	0	0	0	0	18	2	0	16	0	42
APPROACH %'s :	33.33%	0.00%	66.67%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	90.00%	10.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	4	0	0	0	0	8	2	0	4	0	18
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	3
4:15 PM	0	0	0	0	0	0	0	4	0	1	1	0	6
4:30 PM	0	0	0	0	0	0	0	4	1	0	0	0	5
4:45 PM	0	0	1	0	0	0	0	2	1	0	0	0	4
5:00 PM	1	0	0	0	0	0	0	3	0	0	4	0	8
5:15 PM	0	0	0	0	0	0	0	1	3	0	3	0	7
5:30 PM	0	0	0	0	0	0	0	3	0	0	2	0	5
5:45 PM	0	0	1	0	0	0	0	1	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	2	0	0	0	0	18	5	1	13	0	40
APPROACH %'s :	33.33%	0.00%	66.67%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	78.26%	21.74%	7.14%	92.86%	0.00%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	0	1	0	0	0	0	10	5	0	7	0	24
PEAK HR FACTOR :	0.500			0.000			0.750			0.438			0.940

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	0	0	0	6	0	6
4:15 PM	0	0	0	0	0	0	0	8	0	2	2	0	12
4:30 PM	0	0	0	0	0	0	0	8	2	0	0	0	10
4:45 PM	0	0	2	0	0	0	0	4	2	0	0	0	8
5:00 PM	2	0	0	0	0	0	0	6	0	0	8	0	16
5:15 PM	0	0	0	0	0	0	0	2	6	0	6	0	14
5:30 PM	0	0	0	0	0	0	0	6	0	0	4	0	10
5:45 PM	0	0	2	0	0	0	0	2	0	0	0	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	4	0	0	0	0	36	10	2	26	0	80
APPROACH %'s :	33.33%	0.00%	66.67%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	78.26%	21.74%	7.14%	92.86%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	2	0	2	0	0	0	0	20	10	0	14	0	48
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	0	0	0	0	0	0	2	0	0	0	2	0	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	2	0	4	0	7
8:00 AM	0	0	0	0	0	0	0	3	0	1	3	0	7
8:15 AM	1	0	0	0	0	0	0	1	0	0	3	0	5
8:30 AM	0	0	0	0	0	1	0	0	0	0	4	0	5
8:45 AM	1	0	0	0	0	0	0	3	0	0	4	0	8
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	2	0	0	0	0	1	2	10	2	1	21	0	39
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	14.29%	71.43%	14.29%	4.55%	95.45%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	2	3	2	0	7	0	14
PEAK HR FACTOR :	0.000			0.000			0.583			0.438			0.706

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
7:00 AM	0	0	0	0	0	0	0	6	0	0	3	0	9
7:15 AM	0	0	0	0	0	0	6	0	0	0	6	0	12
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	3	6	0	12	0	21
8:00 AM	0	0	0	0	0	0	0	9	0	3	9	0	21
8:15 AM	3	0	0	0	0	0	0	3	0	0	9	0	15
8:30 AM	0	0	0	0	0	3	0	0	0	0	12	0	15
8:45 AM	3	0	0	0	0	0	0	9	0	0	12	0	24
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	0	0	0	0	3	6	30	6	3	63	0	117
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	14.29%	71.43%	14.29%	4.55%	95.45%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	6	9	6	0	21	0	42
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-008 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	9	0	0	4	0	13
4:15 PM	0	0	0	0	0	0	0	8	0	0	3	1	12
4:30 PM	1	0	0	0	0	0	0	4	1	0	2	0	8
4:45 PM	0	0	0	0	0	0	0	9	1	0	1	0	11
5:00 PM	0	0	0	0	0	0	0	9	0	0	2	0	11
5:15 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	2	0	0	1	0	3
5:45 PM	2	0	0	0	0	0	0	7	0	0	4	0	13
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	0	0	0	0	51	2	0	17	1	74
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	96.23%	3.77%	0.00%	94.44%	5.56%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	25	2	0	5	0	33
PEAK HR FACTOR :	0.250			0.000			0.675			0.625			0.940

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Locust Ave			Locust Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	0	1	2	0	1	2	0	
4:00 PM	0	0	0	0	0	0	0	27	0	0	12	0	39
4:15 PM	0	0	0	0	0	0	0	24	0	0	9	3	36
4:30 PM	3	0	0	0	0	0	0	12	3	0	6	0	24
4:45 PM	0	0	0	0	0	0	0	27	3	0	3	0	33
5:00 PM	0	0	0	0	0	0	0	27	0	0	6	0	33
5:15 PM	0	0	0	0	0	0	0	9	0	0	0	0	9
5:30 PM	0	0	0	0	0	0	0	6	0	0	3	0	9
5:45 PM	6	0	0	0	0	0	0	21	0	0	12	0	39
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	9	0	0	0	0	0	0	153	6	0	51	3	222
APPROACH %'s :	100.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	96.23%	3.77%	0.00%	94.44%	5.56%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	0	0	0	0	0	0	75	6	0	15	0	99
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Locust Ave			Locust Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	1	0	1	1	0	1	2	0	1	2	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	2	0	0	0	0	0	0	12	2	0	6	0	21
	3 Axle (PCE)	0	0	4	0	0	0	0	8	2	0	4	0	18
	4 Axle (PCE)	0	0	0	0	0	0	6	9	6	0	21	0	42
	Total Truck (PCE)	2	0	4	0	0	0	6	29	10	0	31	0	81
PM														
PEAK HR VOL	**2 Axle (PCE)**	3	0	3	0	0	0	0	17	9	0	12	0	44
	3 Axle (PCE)	2	0	2	0	0	0	0	20	10	0	14	0	48
	4 Axle (PCE)	3	0	0	0	0	0	0	75	6	0	15	0	99
	Total Truck (PCE)	8	0	5	0	0	0	0	112	25	0	41	0	191

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	228	3	72	4	0	2	7	427	103	34	738	1	1618
PM													
Total Volume (Car+Truck)	133	0	151	3	2	3	5	728	237	39	381	1	1683

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Linden Ave and Slover Ave , Bloomington

Date: 1/26/2017

Day: Thursday

Project #: 17-6017-009

City: Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Linden Ave

Slover Ave

N

Peak Hour Summary

Southbound Approach

Lanes	0	1	0	
AM	317	40	0	250
NOON	0	0	0	0
PM	157	74	6	266

Eastbound Approach

Lanes	AM	NOON	PM
	752	0	426
0	177	0	171
1	296	0	594
1	43	0	50

Westbound Approach

AM	NOON	PM	Lanes
5	0	5	0
370	0	245	1
11	0	15	0
332	0	643	

CONTROL

4-Way Stop

Northbound Approach

AM	94	65	68	36
NOON	0	0	0	0
PM	139	24	90	43
Lanes		0	1	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	357	250	
NOON	0	0	
PM	237	266	

West Leg

AM	NOON	PM
752	0	426
516	0	815

East Leg

AM	NOON	PM
386	0	265
332	0	643

South Leg

AM	94	169
NOON	0	0
PM	139	157

Total Volume Per Leg

North Leg

AM	607
NOON	0
PM	503

West Leg

AM	NOON	PM
1268	0	1241

East Leg

AM	NOON	PM
718	0	908

South Leg

AM	263
NOON	0
PM	296

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009 | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

Cars

AM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	26	17	10	0	4	112	57	79	10	3	143	0	461
7:15 AM	24	13	12	0	13	67	64	98	19	1	84	1	396
7:30 AM	8	25	6	0	15	75	35	59	12	5	55	1	296
7:45 AM	6	12	7	0	8	60	20	45	2	2	78	1	241
8:00 AM	4	6	5	3	12	80	22	39	3	3	80	1	258
8:15 AM	4	8	3	0	6	61	19	55	1	3	64	1	225
8:30 AM	4	14	6	0	10	27	14	40	3	5	50	0	173
8:45 AM	3	9	5	0	2	24	20	42	3	7	32	0	147
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	79	104	54	3	70	506	251	457	53	29	586	5	2197
APPROACH %'s :	33.33%	43.88%	22.78%	0.52%	12.09%	87.39%	32.98%	60.05%	6.96%	4.68%	94.52%	0.81%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	64	67	35	0	40	314	176	281	43	11	360	3	1394
PEAK HR FACTOR :		0.783			0.763			0.691			0.640		0.756

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009

Day: Thursday

Cars

City: Bloomington

Date: 1/26/2017

PM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave					UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND								
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
LANES:	0	1	0	0	1	0	0	1	1	0	1	0						
4:00 PM	5	23	12	0	14	25	46	113	7	1	71	0	317					0
4:15 PM	5	17	6	0	19	40	43	134	17	9	62	2	354					0
4:30 PM	8	21	8	0	16	26	48	118	15	4	52	1	317					0
4:45 PM	6	28	12	0	19	40	39	116	19	4	60	2	345					0
5:00 PM	4	17	11	4	24	27	63	146	13	4	53	1	367					0
5:15 PM	5	27	11	1	12	42	34	164	8	4	51	1	360					1
5:30 PM	9	18	9	0	19	47	28	125	8	3	64	0	330					0
5:45 PM	4	10	4	0	25	35	39	108	9	5	54	2	295					0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
TOTAL VOLUMES :	46	161	73	5	148	282	340	1024	96	34	467	9	2685		0	0	0	1
APPROACH %'s :	16.43%	57.50%	26.07%	1.15%	34.02%	64.83%	23.29%	70.14%	6.58%	6.67%	91.57%	1.76%						

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	24	90	43	5	74	156	164	551	48	15	228	4	1402
PEAK HR FACTOR :		0.853			0.890			0.859			0.922		0.955

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009

Day: Thursday

2 Axle Trucks

City: Bloomington

Date: 1/26/2017

AM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	0	1	0	0	0	1	1	3	0	0	0	0	6
7:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
7:30 AM	0	0	0	0	0	0	0	3	0	0	1	0	4
7:45 AM	0	0	1	0	0	0	0	1	0	0	1	0	3
8:00 AM	0	2	1	0	1	2	0	2	0	0	3	0	11
8:15 AM	0	1	0	0	0	0	2	3	0	0	1	0	7
8:30 AM	1	0	0	0	0	0	0	1	1	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	4	2	0	1	3	3	14	1	0	8	0	37
APPROACH %'s :	14.29%	57.14%	28.57%	0.00%	25.00%	75.00%	16.67%	77.78%	5.56%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	1	1	0	0	1	1	8	0	0	3	0	15
PEAK HR FACTOR :	0.500			0.250			0.563			0.750			0.756

CONTROL : 4-Way Stop

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	0	1.5	0	0	0	1.5	1.5	4.5	0	0	0	0	9
7:15 AM	0	0	0	0	0	0	0	1.5	0	0	1.5	0	3
7:30 AM	0	0	0	0	0	0	0	4.5	0	0	1.5	0	6
7:45 AM	0	0	1.5	0	0	0	0	1.5	0	0	1.5	0	5
8:00 AM	0	3	1.5	0	1.5	3	0	3	0	0	4.5	0	17
8:15 AM	0	1.5	0	0	0	0	3	4.5	0	0	1.5	0	11
8:30 AM	1.5	0	0	0	0	0	0	1.5	1.5	0	0	0	5
8:45 AM	0	0	0	0	0	0	0	0	0	0	1.5	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1.5	6	3	0	1.5	4.5	4.5	21	1.5	0	12	0	55.5
APPROACH %'s :	14.29%	57.14%	28.57%	0.00%	25.00%	75.00%	16.67%	77.78%	5.56%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	2	2	0	0	2	2	12	0	0	5	0	23
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
4:00 PM	0	0	0	0	1	2	0	2	0	0	5	0	10
4:15 PM	0	0	0	0	1	1	0	1	2	0	2	0	7
4:30 PM	0	0	1	0	0	1	0	3	0	0	2	0	7
4:45 PM	0	0	0	0	0	0	0	5	0	0	0	0	5
5:00 PM	0	0	0	0	0	0	1	2	1	0	3	0	7
5:15 PM	0	0	0	0	0	0	1	1	0	0	1	0	3
5:30 PM	0	0	0	0	0	1	0	4	1	0	0	0	6
5:45 PM	0	0	0	0	0	0	0	3	1	0	0	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	1	0	2	5	2	21	5	0	13	0	49
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	28.57%	71.43%	7.14%	75.00%	17.86%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	1	2	12	2	0	4	0	21
PEAK HR FACTOR :	0.000			0.250			0.800			0.333			0.955

CONTROL : 4-Way Stop

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
4:00 PM	0	0	0	0	1.5	3	0	3	0	0	7.5	0	15
4:15 PM	0	0	0	0	1.5	1.5	0	1.5	3	0	3	0	11
4:30 PM	0	0	1.5	0	0	1.5	0	4.5	0	0	3	0	11
4:45 PM	0	0	0	0	0	0	0	7.5	0	0	0	0	8
5:00 PM	0	0	0	0	0	0	1.5	3	1.5	0	4.5	0	11
5:15 PM	0	0	0	0	0	0	1.5	1.5	0	0	1.5	0	5
5:30 PM	0	0	0	0	0	1.5	0	6	1.5	0	0	0	9
5:45 PM	0	0	0	0	0	0	0	4.5	1.5	0	0	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	1.5	0	3	7.5	3	31.5	7.5	0	19.5	0	73.5
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	28.57%	71.43%	7.14%	75.00%	17.86%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	2	3	18	3	0	6	0	32
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009 | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

3 Axle Trucks

AM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3
7:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
8:00 AM	0	0	0	1	0	0	0	2	0	1	2	0	6
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	1	0	0	1	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	1	0	1	0	9	1	1	6	0	19
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	50.00%	0.00%	50.00%	0.00%	90.00%	10.00%	14.29%	85.71%	0.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	5	0	0	2	0	8
PEAK HR FACTOR :		0.000			0.250			0.625			0.500		0.756

CONTROL : 4-Way Stop

PCE CONVERSION (Factor=2)

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	0	0	0	0	0	0	0	4	0	0	2	0	6
7:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	4
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
8:00 AM	0	0	0	2	0	0	0	4	0	2	4	0	12
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
8:30 AM	0	0	0	0	0	0	0	2	2	0	0	0	4
8:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	2	0	2	0	18	2	2	12	0	38
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	50.00%	0.00%	50.00%	0.00%	90.00%	10.00%	14.29%	85.71%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	2	0	10	0	0	4	0	16
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
4:00 PM	0	0	0	0	0	0	0	1	0	0	4	0	5
4:15 PM	0	0	0	0	0	0	0	3	0	0	1	0	4
4:30 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
4:45 PM	0	0	0	1	0	0	0	2	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	4	0	0	3	0	7
5:15 PM	0	0	0	0	0	0	0	1	0	0	3	1	5
5:30 PM	0	0	0	0	0	0	0	3	0	0	2	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	1	0	0	0	17	0	0	13	1	32
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	92.86%	7.14%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	10	0	0	8	1	20
PEAK HR FACTOR :	0.000			0.250			0.625			0.563			0.955

CONTROL : 4-Way Stop

PCE CONVERSION (Factor=2)

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
4:00 PM	0	0	0	0	0	0	0	2	0	0	8	0	10
4:15 PM	0	0	0	0	0	0	0	6	0	0	2	0	8
4:30 PM	0	0	0	0	0	0	0	6	0	0	0	0	6
4:45 PM	0	0	0	2	0	0	0	4	0	0	0	0	6
5:00 PM	0	0	0	0	0	0	0	8	0	0	6	0	14
5:15 PM	0	0	0	0	0	0	0	2	0	0	6	2	10
5:30 PM	0	0	0	0	0	0	0	6	0	0	4	0	10
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	2	0	0	0	34	0	0	26	2	64
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	92.86%	7.14%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	0	0	0	2	0	0	0	20	0	0	16	2	40
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	0	0	0	0	0	1	0	0	0	0	1	0	2
7:15 AM	1	0	0	0	0	0	0	1	0	0	1	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	2
7:45 AM	0	0	0	0	0	0	0	1	0	0	2	1	4
8:00 AM	0	0	0	0	1	1	0	5	0	0	3	0	10
8:15 AM	0	0	0	0	0	1	0	1	0	0	2	0	4
8:30 AM	0	1	0	1	0	0	0	0	0	0	4	1	7
8:45 AM	0	0	0	0	0	2	0	4	0	0	4	0	10
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	1	0	1	1	5	0	12	0	0	18	3	42
APPROACH %'s :	50.00%	50.00%	0.00%	14.29%	14.29%	71.43%	0.00%	100.00%	0.00%	0.00%	85.71%	14.29%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	1	0	0	0	0	1	0	2	0	0	5	2	11
PEAK HR FACTOR :	0.250			0.250			0.500			0.583			0.756

CONTROL : 4-Way Stop

PCE CONVERSION (Factor=3)

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
7:00 AM	0	0	0	0	0	3	0	0	0	0	3	0	6
7:15 AM	3	0	0	0	0	0	0	3	0	0	3	0	9
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	3	6
7:45 AM	0	0	0	0	0	0	0	3	0	0	6	3	12
8:00 AM	0	0	0	0	3	3	0	15	0	0	9	0	30
8:15 AM	0	0	0	0	0	3	0	3	0	0	6	0	12
8:30 AM	0	3	0	3	0	0	0	0	0	0	12	3	21
8:45 AM	0	0	0	0	0	6	0	12	0	0	12	0	30
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	3	0	3	3	15	0	36	0	0	54	9	126
APPROACH %'s :	50.00%	50.00%	0.00%	14.29%	14.29%	71.43%	0.00%	100.00%	0.00%	0.00%	85.71%	14.29%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	3	0	0	0	0	3	0	6	0	0	15	6	33
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-009 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
4:00 PM	0	0	0	0	0	0	1	8	0	0	3	0	12
4:15 PM	0	0	0	0	0	0	1	8	0	0	4	0	13
4:30 PM	0	0	0	0	0	1	1	2	0	0	1	0	5
4:45 PM	0	0	0	0	0	0	1	7	0	0	2	0	10
5:00 PM	0	0	0	0	0	0	2	7	0	0	2	0	11
5:15 PM	0	0	0	0	0	0	0	4	0	0	1	0	5
5:30 PM	0	0	0	0	0	0	2	3	0	0	0	0	5
5:45 PM	1	0	0	0	0	0	1	7	0	0	3	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	1	9	46	0	0	16	0	73
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	16.36%	83.64%	0.00%	0.00%	100.00%	0.00%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	5	21	0	0	5	0	31
PEAK HR FACTOR :	0.000			0.000			0.722			0.625			0.955

CONTROL : 4-Way Stop

PCE CONVERSION (Factor=3)

NS/EW Streets:	Linden Ave			Linden Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	1	0	1	0	
4:00 PM	0	0	0	0	0	0	3	24	0	0	9	0	36
4:15 PM	0	0	0	0	0	0	3	24	0	0	12	0	39
4:30 PM	0	0	0	0	0	3	3	6	0	0	3	0	15
4:45 PM	0	0	0	0	0	0	3	21	0	0	6	0	30
5:00 PM	0	0	0	0	0	0	6	21	0	0	6	0	33
5:15 PM	0	0	0	0	0	0	0	12	0	0	3	0	15
5:30 PM	0	0	0	0	0	0	6	9	0	0	0	0	15
5:45 PM	3	0	0	0	0	0	3	21	0	0	9	0	36
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	0	0	0	0	3	27	138	0	0	48	0	219
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	16.36%	83.64%	0.00%	0.00%	100.00%	0.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	15	63	0	0	15	0	93
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Linden Ave			Linden Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		0	1	0	0	1	0	0	1	1	0	1	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	0	2	2	0	0	2	2	12	0	0	5	0	23
	3 Axle (PCE)	0	0	0	0	0	2	0	10	0	0	4	0	16
	4 Axle (PCE)	3	0	0	0	0	3	0	6	0	0	15	6	33
	Total Truck (PCE)	3	2	2	0	0	7	2	28	0	0	24	6	72
PM														
PEAK HR VOL	**2 Axle (PCE)**	0	0	0	0	0	2	3	18	3	0	6	0	32
	3 Axle (PCE)	0	0	0	2	0	0	0	20	0	0	16	2	40
	4 Axle (PCE)	0	0	0	0	0	0	15	63	0	0	15	0	93
	Total Truck (PCE)	0	0	0	2	0	2	18	101	3	0	37	2	165

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	67	69	37	0	40	321	178	309	43	11	384	9	1466
PM													
Total Volume (Car+Truck)	24	90	43	7	74	158	182	652	51	15	265	6	1567

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Cedar Ave and Slover Ave , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-010
City:	Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Peak Hour Summary

N

Cedar Ave

Slover Ave

CONTROL: Signalized

Southbound Approach

	Right	Through	Left	Out
Lanes	0	2	1	
AM	74	754	54	960
NOON	0	0	0	0
PM	54	742	85	988

Eastbound Approach

	Lanes	AM	NOON	PM
Out		302	0	235
Left	1	152	0	178
Through	1	109	0	334
Right	0	63	0	105

Westbound Approach

	AM	NOON	PM	Lanes
Right	58	0	87	1
Through	115	0	105	1
Left	14	0	21	1
Out	176	0	453	

Northbound Approach

	Out	Left	Through	Right
AM	831	113	750	13
NOON	0	0	0	0
PM	868	76	723	34
Lanes		1	2	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period		
North Leg	AM	882	960
North Leg	NOON	0	0
North Leg	PM	881	988
South Leg	AM	831	876
South Leg	NOON	0	0
South Leg	PM	868	833

Leg		AM	NOON	PM
West Leg		302	0	235
West Leg		324	0	617
East Leg		187	0	213
East Leg		176	0	453

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	1842	0	1869
West Leg	626	0	852
East Leg	363	0	666
South Leg	1707	0	1701

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010

City: Bloomington

Cars

AM

Day: Thursday

Date: 1/26/2017

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	37	168	2	7	175	28	36	23	15	3	36	10	540
7:15 AM	24	178	2	6	164	11	46	37	22	7	27	11	535
7:30 AM	21	208	4	13	219	17	35	22	9	3	16	12	579
7:45 AM	25	157	5	18	167	17	31	19	11	1	29	13	493
8:00 AM	17	140	4	5	177	27	31	10	4	2	23	15	455
8:15 AM	12	133	2	12	139	20	27	18	9	2	17	22	413
8:30 AM	13	154	4	8	113	17	27	16	4	1	20	18	395
8:45 AM	9	138	2	7	116	15	22	15	8	6	11	16	365
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	158	1276	25	76	1270	152	255	160	82	25	179	117	3775
APPROACH %'s :	10.83%	87.46%	1.71%	5.07%	84.78%	10.15%	51.31%	32.19%	16.50%	7.79%	55.76%	36.45%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	107	711	13	44	725	73	148	101	57	14	108	46	2147
PEAK HR FACTOR :		0.892			0.845			0.729			0.857		0.927

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010 **Day:** Thursday

Cars

City: Bloomington **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	25	143	6	14	203	18	30	65	17	9	27	25	582
4:15 PM	18	166	7	10	153	19	43	74	32	3	25	16	566
4:30 PM	26	178	5	21	189	11	39	66	22	7	16	25	605
4:45 PM	17	172	9	16	176	14	47	58	20	6	29	17	581
5:00 PM	15	177	11	15	154	15	37	91	21	2	23	12	573
5:15 PM	12	172	8	20	179	11	51	85	38	5	25	22	628
5:30 PM	13	162	8	10	196	11	36	74	22	4	31	28	595
5:45 PM	7	175	12	12	209	11	45	44	28	4	26	19	592
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	133	1345	66	118	1459	110	328	557	200	40	202	164	4722
APPROACH %'s :	8.61%	87.11%	4.27%	6.99%	86.48%	6.52%	30.23%	51.34%	18.43%	9.85%	49.75%	40.39%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	70	699	33	72	698	51	174	300	101	20	93	76	2387
PEAK HR FACTOR :		0.959			0.929			0.826			0.909		0.950

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	0	2	0	0	1	0	1	0	2	0	0	0	6
7:15 AM	1	4	0	0	2	0	0	0	0	0	0	1	8
7:30 AM	1	5	0	0	1	0	1	0	2	0	0	1	11
7:45 AM	1	8	0	0	3	1	0	1	1	0	1	1	17
8:00 AM	0	1	0	0	4	1	2	0	1	0	0	2	11
8:15 AM	0	5	0	1	2	0	4	0	0	0	0	1	13
8:30 AM	0	5	0	1	3	0	1	1	0	0	1	9	21
8:45 AM	0	8	0	3	1	1	0	0	0	0	0	12	25
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	38	0	5	17	3	9	2	6	0	2	27	112
APPROACH %'s :	7.32%	92.68%	0.00%	20.00%	68.00%	12.00%	52.94%	11.76%	35.29%	0.00%	6.90%	93.10%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	3	19	0	0	7	1	2	1	5	0	1	3	42
PEAK HR FACTOR :		0.611			0.500			0.667			0.500		0.927

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	0	3	0	0	1.5	0	1.5	0	3	0	0	0	9
7:15 AM	1.5	6	0	0	3	0	0	0	0	0	0	1.5	12
7:30 AM	1.5	7.5	0	0	1.5	0	1.5	0	3	0	0	1.5	17
7:45 AM	1.5	12	0	0	4.5	1.5	0	1.5	1.5	0	1.5	1.5	26
8:00 AM	0	1.5	0	0	6	1.5	3	0	1.5	0	0	3	17
8:15 AM	0	7.5	0	1.5	3	0	6	0	0	0	0	1.5	20
8:30 AM	0	7.5	0	1.5	4.5	0	1.5	1.5	0	0	1.5	13.5	32
8:45 AM	0	12	0	4.5	1.5	1.5	0	0	0	0	0	18	38
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4.5	57	0	7.5	25.5	4.5	13.5	3	9	0	3	40.5	168
APPROACH %'s :	7.32%	92.68%	0.00%	20.00%	68.00%	12.00%	52.94%	11.76%	35.29%	0.00%	6.90%	93.10%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	5	29	0	0	11	2	3	2	8	0	2	5	63
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	1	3	0	1	1	1	0	2	0	0	2	0	11
4:15 PM	0	4	0	1	3	0	0	2	0	0	1	1	12
4:30 PM	0	3	0	0	2	0	1	3	0	0	2	0	11
4:45 PM	0	1	0	2	4	0	0	2	0	1	0	0	10
5:00 PM	0	4	0	0	6	1	0	1	1	0	1	1	15
5:15 PM	2	2	0	0	1	0	0	2	0	0	0	2	9
5:30 PM	0	2	0	1	4	0	0	1	1	0	0	0	9
5:45 PM	0	1	0	1	4	0	2	3	0	0	1	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	20	0	6	25	2	3	16	2	1	7	4	89
APPROACH %'s :	13.04%	86.96%	0.00%	18.18%	75.76%	6.06%	14.29%	76.19%	9.52%	8.33%	58.33%	33.33%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	2	10	0	2	13	1	1	8	1	1	3	3	45
PEAK HR FACTOR :		0.750			0.571			0.625			0.875		0.950

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	1.5	4.5	0	1.5	1.5	1.5	0	3	0	0	3	0	17
4:15 PM	0	6	0	1.5	4.5	0	0	3	0	0	1.5	1.5	18
4:30 PM	0	4.5	0	0	3	0	1.5	4.5	0	0	3	0	17
4:45 PM	0	1.5	0	3	6	0	0	3	0	1.5	0	0	15
5:00 PM	0	6	0	0	9	1.5	0	1.5	1.5	0	1.5	1.5	23
5:15 PM	3	3	0	0	1.5	0	0	3	0	0	0	3	14
5:30 PM	0	3	0	1.5	6	0	0	1.5	1.5	0	0	0	14
5:45 PM	0	1.5	0	1.5	6	0	3	4.5	0	0	1.5	0	18
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4.5	30	0	9	37.5	3	4.5	24	3	1.5	10.5	6	133.5
APPROACH %'s :	13.04%	86.96%	0.00%	18.18%	75.76%	6.06%	14.29%	76.19%	9.52%	8.33%	58.33%	33.33%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	15	0	3	20	2	2	12	2	2	5	5	68
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010

City: Bloomington

3 Axle Trucks

AM

Day: Thursday

Date: 1/26/2017

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	0	1	0	1	3	0	0	2	0	0	1	1	9
7:15 AM	0	1	0	1	1	0	0	1	0	0	0	0	4
7:30 AM	0	5	0	2	4	0	0	2	0	0	0	0	13
7:45 AM	0	0	0	0	0	0	1	0	0	0	1	0	2
8:00 AM	0	4	0	0	2	2	0	1	1	0	1	2	13
8:15 AM	0	0	0	0	1	0	0	1	0	0	1	0	3
8:30 AM	0	2	0	3	1	0	0	0	0	1	0	1	8
8:45 AM	0	5	0	0	3	0	0	2	0	0	1	0	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	18	0	7	15	2	1	9	1	1	5	4	63
APPROACH %'s :	0.00%	100.00%	0.00%	29.17%	62.50%	8.33%	9.09%	81.82%	9.09%	10.00%	50.00%	40.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	7	0	4	8	0	1	5	0	0	2	1	28
PEAK HR FACTOR :		0.350			0.500			0.750			0.375		0.927

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	0	2	0	2	6	0	0	4	0	0	2	2	18
7:15 AM	0	2	0	2	2	0	0	2	0	0	0	0	8
7:30 AM	0	10	0	4	8	0	0	4	0	0	0	0	26
7:45 AM	0	0	0	0	0	0	2	0	0	0	2	0	4
8:00 AM	0	8	0	0	4	4	0	2	2	0	2	4	26
8:15 AM	0	0	0	0	2	0	0	2	0	0	2	0	6
8:30 AM	0	4	0	6	2	0	0	0	0	2	0	2	16
8:45 AM	0	10	0	0	6	0	0	4	0	0	2	0	22
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	36	0	14	30	4	2	18	2	2	10	8	126
APPROACH %'s :	0.00%	100.00%	0.00%	29.17%	62.50%	8.33%	9.09%	81.82%	9.09%	10.00%	50.00%	40.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	14	0	8	16	0	2	10	0	0	4	2	56
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010 **Day:** Thursday

3 Axle Trucks

City: Bloomington **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	1	0	0	1	0	0	0	0	1	0	2	1	6
4:15 PM	1	0	1	0	3	0	2	2	1	0	0	2	12
4:30 PM	0	3	0	0	6	0	2	2	0	0	0	0	13
4:45 PM	0	1	0	1	3	0	0	3	0	0	0	0	8
5:00 PM	3	2	0	2	4	0	0	2	1	0	2	0	16
5:15 PM	0	1	0	0	1	0	0	1	0	0	3	1	7
5:30 PM	0	1	0	3	2	0	2	1	1	0	2	0	12
5:45 PM	0	1	0	1	2	0	0	1	0	0	0	1	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	9	1	8	21	0	6	12	4	0	9	5	80
APPROACH %'s :	33.33%	60.00%	6.67%	27.59%	72.41%	0.00%	27.27%	54.55%	18.18%	0.00%	64.29%	35.71%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	3	7	0	3	14	0	2	8	1	0	5	1	44
PEAK HR FACTOR :	0.500			0.708			0.688			0.375			0.950

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	2	0	0	2	0	0	0	0	2	0	4	2	12
4:15 PM	2	0	2	0	6	0	4	4	2	0	0	4	24
4:30 PM	0	6	0	0	12	0	4	4	0	0	0	0	26
4:45 PM	0	2	0	2	6	0	0	6	0	0	0	0	16
5:00 PM	6	4	0	4	8	0	0	4	2	0	4	0	32
5:15 PM	0	2	0	0	2	0	0	2	0	0	6	2	14
5:30 PM	0	2	0	6	4	0	4	2	2	0	4	0	24
5:45 PM	0	2	0	2	4	0	0	2	0	0	0	2	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	10	18	2	16	42	0	12	24	8	0	18	10	160
APPROACH %'s :	33.33%	60.00%	6.67%	27.59%	72.41%	0.00%	27.27%	54.55%	18.18%	0.00%	64.29%	35.71%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	6	14	0	6	28	0	4	16	2	0	10	2	88
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	1	4	0	0	3	0	0	0	0	0	0	2	10
7:15 AM	0	1	0	1	6	0	1	1	0	0	1	2	13
7:30 AM	2	3	0	3	2	0	0	0	1	0	0	4	15
7:45 AM	0	5	0	2	3	0	0	1	0	0	3	0	14
8:00 AM	0	6	1	4	7	1	3	0	0	0	2	1	25
8:15 AM	1	5	0	5	2	1	1	1	1	0	0	5	22
8:30 AM	0	3	0	2	1	4	1	1	0	0	2	4	18
8:45 AM	1	4	0	1	4	0	2	0	0	0	3	7	22
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	31	1	18	28	6	8	4	2	0	11	25	139
APPROACH %'s :	13.51%	83.78%	2.70%	34.62%	53.85%	11.54%	57.14%	28.57%	14.29%	0.00%	30.56%	69.44%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	3	13	0	6	14	0	1	2	1	0	4	8	52
PEAK HR FACTOR :		0.800			0.714			0.500			0.750		0.927

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
7:00 AM	3	12	0	0	9	0	0	0	0	0	0	6	30
7:15 AM	0	3	0	3	18	0	3	3	0	0	3	6	39
7:30 AM	6	9	0	9	6	0	0	0	3	0	0	12	45
7:45 AM	0	15	0	6	9	0	0	3	0	0	9	0	42
8:00 AM	0	18	3	12	21	3	9	0	0	0	6	3	75
8:15 AM	3	15	0	15	6	3	3	3	3	0	0	15	66
8:30 AM	0	9	0	6	3	12	3	3	0	0	6	12	54
8:45 AM	3	12	0	3	12	0	6	0	0	0	9	21	66
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	15	93	3	54	84	18	24	12	6	0	33	75	417
APPROACH %'s :	13.51%	83.78%	2.70%	34.62%	53.85%	11.54%	57.14%	28.57%	14.29%	0.00%	30.56%	69.44%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	9	39	0	18	42	0	3	6	3	0	12	24	156
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-010

Day: Thursday

4 Axle+ Trucks

City: Bloomington

Date: 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	1	2	1	0	2	0	0	6	0	0	1	4	17
4:15 PM	1	5	1	4	1	0	1	6	3	2	3	1	28
4:30 PM	0	1	1	2	3	0	0	3	0	0	1	2	13
4:45 PM	1	2	0	1	5	1	0	5	1	0	1	2	19
5:00 PM	0	2	0	3	5	1	1	7	1	0	2	2	24
5:15 PM	0	2	0	2	4	0	0	3	0	0	0	1	12
5:30 PM	0	2	1	1	2	0	1	3	0	0	0	3	13
5:45 PM	1	5	0	1	2	0	1	5	0	1	2	1	19
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	21	4	14	24	2	4	38	5	3	10	16	145
APPROACH %'s :	13.79%	72.41%	13.79%	35.00%	60.00%	5.00%	8.51%	80.85%	10.64%	10.34%	34.48%	55.17%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	1	7	1	8	17	2	1	18	2	0	4	7	68
PEAK HR FACTOR :		0.750			0.750			0.583			0.688		0.950

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	0	1	1	1	
4:00 PM	3	6	3	0	6	0	0	18	0	0	3	12	51
4:15 PM	3	15	3	12	3	0	3	18	9	6	9	3	84
4:30 PM	0	3	3	6	9	0	0	9	0	0	3	6	39
4:45 PM	3	6	0	3	15	3	0	15	3	0	3	6	57
5:00 PM	0	6	0	9	15	3	3	21	3	0	6	6	72
5:15 PM	0	6	0	6	12	0	0	9	0	0	0	3	36
5:30 PM	0	6	3	3	6	0	3	9	0	0	0	9	39
5:45 PM	3	15	0	3	6	0	3	15	0	3	6	3	57
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	63	12	42	72	6	12	114	15	9	30	48	435
APPROACH %'s :	13.79%	72.41%	13.79%	35.00%	60.00%	5.00%	8.51%	80.85%	10.64%	10.34%	34.48%	55.17%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	3	21	3	24	51	6	3	54	6	0	12	21	204
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Truck Summary (PCE)

NS/EW Streets:		Cedar Ave			Cedar Ave			Slover Ave			Slover Ave			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	2	0	1	2	0	1	1	0	1	1	1	
	AM													
PEAK HR VOL	**2 Axle (PCE)**	5	29	0	0	11	2	3	2	8	0	2	5	63
	3 Axle (PCE)	0	14	0	8	16	0	2	10	0	0	4	2	56
	4 Axle (PCE)	9	39	0	18	42	0	3	6	3	0	12	24	156
	Total Truck (PCE)	14	82	0	26	69	2	8	18	11	0	18	31	275
	PM													
PEAK HR VOL	**2 Axle (PCE)**	3	15	0	3	20	2	2	12	2	2	5	5	68
	3 Axle (PCE)	6	14	0	6	28	0	4	16	2	0	10	2	88
	4 Axle (PCE)	3	21	3	24	51	6	3	54	6	0	12	21	204
	Total Truck (PCE)	12	50	3	33	99	8	9	82	10	2	27	28	360

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	121	793	13	70	794	75	156	119	68	14	126	77	2422
PM													
Total Volume (Car+Truck)	82	749	36	105	797	59	183	382	111	22	120	104	2747

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Cedar Ave and Orange St , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-011
City:	Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	415 PM

N

Cedar Ave

Orange St

Peak Hour Summary

CONTROL

Signalized

Southbound Approach

	Right	Thru	Left	Out
Lanes	1	2	1	
AM	412	910	146	1320
NOON	0	0	0	0
PM	233	856	62	1418

Eastbound Approach

	AM	NOON	PM
Out	413	0	252

Lanes	Movement	AM	NOON	PM
1	Left	270	0	268
0.5	Thru	5	0	30
0.5	Right	7	0	17

Westbound Approach

Movement	AM	NOON	PM	Lanes
Right	100	0	178	0
Thru	0	0	13	1
Left	1	0	1	0

	AM	NOON	PM
Out	157	0	94

Northbound Approach

	Out	Left	Thru	Right
AM	918	1	950	6
NOON	0	0	0	0
PM	874	6	972	2
Lanes		1	2	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

North Leg

AM	1468	1320
NOON	0	0
PM	1151	1418

West Leg

	AM	NOON	PM
	413	0	252
	282	0	315

East Leg

	AM	NOON	PM
	101	0	192
	157	0	94

South Leg

AM	918	957
NOON	0	0
PM	874	980

Total Volume Per Leg

	North Leg	West Leg	East Leg	South Leg
AM	2788	695	258	1875
NOON	0	0	0	0
PM	2569	567	286	1854

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011 | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

Cars

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	213	4	26	205	137	71	0	1	1	0	20	678
7:15 AM	0	233	1	40	192	91	85	3	1	0	0	26	672
7:30 AM	0	254	1	36	249	93	66	2	0	0	0	33	734
7:45 AM	1	193	0	40	223	76	39	0	0	0	0	21	593
8:00 AM	1	182	2	29	205	111	26	0	0	1	0	25	582
8:15 AM	0	188	0	27	148	61	35	1	0	1	0	17	478
8:30 AM	2	199	1	18	145	39	29	1	1	1	1	28	465
8:45 AM	0	170	1	21	139	27	30	0	0	0	1	21	410
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	1632	10	237	1506	635	381	7	3	4	2	191	4612
APPROACH %'s :	0.24%	99.15%	0.61%	9.97%	63.33%	26.70%	97.44%	1.79%	0.77%	2.03%	1.02%	96.95%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	1	893	6	142	869	397	261	5	2	1	0	100	2677
PEAK HR FACTOR :		0.882			0.931			0.753			0.765		0.912

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011 | **Day:** Thursday

Cars

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St					UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND								
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0						
4:00 PM	2	187	0	17	215	38	63	8	5	1	2	67	605					
4:15 PM	0	243	1	12	205	63	58	12	6	0	2	57	659					
4:30 PM	0	232	0	13	202	48	70	5	3	0	4	31	608					
4:45 PM	1	228	0	14	211	61	61	5	3	1	1	45	631					
5:00 PM	1	223	1	20	178	52	66	8	2	0	6	45	602					
5:15 PM	2	250	0	15	222	49	61	7	1	1	0	40	648					
5:30 PM	3	220	0	11	214	72	59	1	2	1	0	47	630					
5:45 PM	1	243	0	10	216	53	47	0	2	0	0	38	610					
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
TOTAL VOLUMES :	10	1826	2	112	1663	436	485	46	24	4	15	370	4993		0	0	0	0
APPROACH %'s :	0.54%	99.35%	0.11%	5.07%	75.21%	19.72%	87.39%	8.29%	4.32%	1.03%	3.86%	95.12%						

PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	2	926	2	59	796	224	255	30	14	1	13	178	2500
PEAK HR FACTOR :		0.953			0.943			0.958			0.814		0.948

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	3	0	1	2	2	2	0	0	0	0	0	10
7:15 AM	0	5	0	0	5	0	0	0	0	0	0	0	10
7:30 AM	0	8	0	2	1	0	0	0	0	0	0	0	11
7:45 AM	0	9	0	1	5	0	0	0	0	0	0	0	15
8:00 AM	0	5	0	0	3	5	1	0	0	0	0	1	15
8:15 AM	0	9	0	0	4	0	2	0	0	0	0	0	15
8:30 AM	0	14	0	1	2	0	0	0	0	0	0	0	17
8:45 AM	0	20	1	2	5	1	0	0	0	0	0	0	29
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	73	1	7	27	8	5	0	0	0	0	1	122
APPROACH %'s :	0.00%	98.65%	1.35%	16.67%	64.29%	19.05%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	25	0	4	13	2	2	0	0	0	0	0	46
PEAK HR FACTOR :		0.694			0.792			0.250			0.000		0.912

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	4.5	0	1.5	3	3	3	0	0	0	0	0	15
7:15 AM	0	7.5	0	0	7.5	0	0	0	0	0	0	0	15
7:30 AM	0	12	0	3	1.5	0	0	0	0	0	0	0	17
7:45 AM	0	13.5	0	1.5	7.5	0	0	0	0	0	0	0	23
8:00 AM	0	7.5	0	0	4.5	7.5	1.5	0	0	0	0	1.5	23
8:15 AM	0	13.5	0	0	6	0	3	0	0	0	0	0	23
8:30 AM	0	21	0	1.5	3	0	0	0	0	0	0	0	26
8:45 AM	0	30	1.5	3	7.5	1.5	0	0	0	0	0	0	44
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	109.5	1.5	10.5	40.5	12	7.5	0	0	0	0	1.5	183
APPROACH %'s :	0.00%	98.65%	1.35%	16.67%	64.29%	19.05%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	38	0	6	20	3	3	0	0	0	0	0	69
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
4:00 PM	0	3	0	1	3	1	0	0	0	0	0	0	8
4:15 PM	0	7	0	0	4	0	0	0	0	0	0	0	11
4:30 PM	0	4	0	1	2	1	0	0	0	0	0	0	8
4:45 PM	0	3	0	1	6	0	0	0	0	0	0	0	10
5:00 PM	0	5	0	1	6	0	0	0	0	0	0	0	12
5:15 PM	0	4	0	0	1	0	1	0	0	0	0	1	7
5:30 PM	0	1	0	0	4	1	1	0	0	0	0	0	7
5:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	30	0	4	29	3	2	0	0	0	0	1	69
APPROACH %'s :	0.00%	100.00%	0.00%	11.11%	80.56%	8.33%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	0	19	0	3	18	1	0	0	0	0	0	0	41
PEAK HR FACTOR :		0.679			0.786			0.000			0.000		0.948

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
4:00 PM	0	4.5	0	1.5	4.5	1.5	0	0	0	0	0	0	12
4:15 PM	0	10.5	0	0	6	0	0	0	0	0	0	0	17
4:30 PM	0	6	0	1.5	3	1.5	0	0	0	0	0	0	12
4:45 PM	0	4.5	0	1.5	9	0	0	0	0	0	0	0	15
5:00 PM	0	7.5	0	1.5	9	0	0	0	0	0	0	0	18
5:15 PM	0	6	0	0	1.5	0	1.5	0	0	0	0	1.5	11
5:30 PM	0	1.5	0	0	6	1.5	1.5	0	0	0	0	0	11
5:45 PM	0	4.5	0	0	4.5	0	0	0	0	0	0	0	9
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	45	0	6	43.5	4.5	3	0	0	0	0	1.5	103.5
APPROACH %'s :	0.00%	100.00%	0.00%	11.11%	80.56%	8.33%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	415 AM												TOTAL
PEAK HR VOL :	0	29	0	5	27	2	0	0	0	0	0	0	62
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011 **Day:** Thursday

3 Axle Trucks

City: Bloomington **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	3	0	0	3	2	0	0	0	0	0	0	8
7:15 AM	0	2	0	0	1	0	0	0	0	0	0	0	3
7:30 AM	0	4	0	0	5	0	1	0	1	0	0	0	11
7:45 AM	0	1	0	0	2	1	1	0	0	0	0	0	5
8:00 AM	0	5	0	0	3	0	4	0	0	0	0	0	12
8:15 AM	0	1	0	0	1	1	1	0	0	0	0	0	4
8:30 AM	0	3	0	0	4	0	1	0	0	0	0	0	8
8:45 AM	0	4	0	0	4	1	0	0	0	0	0	0	9
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	23	0	0	23	5	8	0	1	0	0	0	60
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	82.14%	17.86%	88.89%	0.00%	11.11%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	10	0	0	11	3	2	0	1	0	0	0	27
PEAK HR FACTOR :		0.625			0.700			0.375			0.000		0.912

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	6	0	0	6	4	0	0	0	0	0	0	16
7:15 AM	0	4	0	0	2	0	0	0	0	0	0	0	6
7:30 AM	0	8	0	0	10	0	2	0	2	0	0	0	22
7:45 AM	0	2	0	0	4	2	2	0	0	0	0	0	10
8:00 AM	0	10	0	0	6	0	8	0	0	0	0	0	24
8:15 AM	0	2	0	0	2	2	2	0	0	0	0	0	8
8:30 AM	0	6	0	0	8	0	2	0	0	0	0	0	16
8:45 AM	0	8	0	0	8	2	0	0	0	0	0	0	18
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	46	0	0	46	10	16	0	2	0	0	0	120
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	82.14%	17.86%	88.89%	0.00%	11.11%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	20	0	0	22	6	4	0	2	0	0	0	54
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011

Day: Thursday

3 Axle Trucks

City: Bloomington

Date: 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
4:00 PM	0	1	0	1	1	0	0	0	0	0	0	0	3
4:15 PM	0	3	0	0	4	2	0	0	0	0	0	0	9
4:30 PM	0	6	0	0	5	1	0	0	0	0	0	0	12
4:45 PM	0	1	0	0	3	1	0	0	0	0	0	0	5
5:00 PM	0	2	0	0	6	0	0	0	1	0	0	0	9
5:15 PM	0	1	0	0	1	0	1	0	0	0	0	0	3
5:30 PM	0	1	0	0	4	0	0	0	0	0	0	0	5
5:45 PM	0	4	0	0	2	0	0	0	0	0	0	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	19	0	1	26	4	1	0	1	0	0	0	52
APPROACH %'s :	0.00%	100.00%	0.00%	3.23%	83.87%	12.90%	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	0	12	0	0	18	4	0	0	1	0	0	0	35
PEAK HR FACTOR :	0.500			0.917			0.250			0.000			0.948

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
4:00 PM	0	2	0	2	2	0	0	0	0	0	0	0	6
4:15 PM	0	6	0	0	8	4	0	0	0	0	0	0	18
4:30 PM	0	12	0	0	10	2	0	0	0	0	0	0	24
4:45 PM	0	2	0	0	6	2	0	0	0	0	0	0	10
5:00 PM	0	4	0	0	12	0	0	0	2	0	0	0	18
5:15 PM	0	2	0	0	2	0	2	0	0	0	0	0	6
5:30 PM	0	2	0	0	8	0	0	0	0	0	0	0	10
5:45 PM	0	8	0	0	4	0	0	0	0	0	0	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	38	0	2	52	8	2	0	2	0	0	0	104
APPROACH %'s :	0.00%	100.00%	0.00%	3.23%	83.87%	12.90%	50.00%	0.00%	50.00%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	415 AM												TOTAL
PEAK HR VOL :	0	24	0	0	36	8	0	0	2	0	0	0	70
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011

Day: Thursday

4 Axle+ Trucks

City: Bloomington

Date: 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	6	0	0	2	1	1	0	1	0	0	0	11
7:15 AM	0	3	0	0	6	3	0	0	2	0	0	0	14
7:30 AM	0	8	0	0	5	3	2	0	1	0	0	0	19
7:45 AM	0	5	0	0	4	3	2	0	0	0	0	0	14
8:00 AM	0	10	0	0	12	0	2	0	2	0	0	0	26
8:15 AM	0	11	0	0	8	0	2	0	0	0	0	0	21
8:30 AM	0	7	0	0	6	1	2	0	0	0	0	0	16
8:45 AM	0	14	0	0	4	0	5	0	0	0	0	0	23
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	64	0	0	47	11	16	0	6	0	0	0	144
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	81.03%	18.97%	72.73%	0.00%	27.27%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	22	0	0	17	10	5	0	4	0	0	0	58
PEAK HR FACTOR :		0.688			0.750			0.750			0.000		0.912

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
7:00 AM	0	18	0	0	6	3	3	0	3	0	0	0	33
7:15 AM	0	9	0	0	18	9	0	0	6	0	0	0	42
7:30 AM	0	24	0	0	15	9	6	0	3	0	0	0	57
7:45 AM	0	15	0	0	12	9	6	0	0	0	0	0	42
8:00 AM	0	30	0	0	36	0	6	0	6	0	0	0	78
8:15 AM	0	33	0	0	24	0	6	0	0	0	0	0	63
8:30 AM	0	21	0	0	18	3	6	0	0	0	0	0	48
8:45 AM	0	42	0	0	12	0	15	0	0	0	0	0	69
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	192	0	0	141	33	48	0	18	0	0	0	432
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	81.03%	18.97%	72.73%	0.00%	27.27%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	66	0	0	51	30	15	0	12	0	0	0	174
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-011

City: Bloomington

4 Axle+ Trucks

Day: Thursday

Date: 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
4:00 PM	0	6	0	0	2	0	0	0	0	0	0	0	8
4:15 PM	1	6	0	0	6	1	3	0	0	0	0	0	17
4:30 PM	0	4	0	0	4	2	3	0	0	0	0	0	13
4:45 PM	1	3	0	0	6	0	3	0	1	0	0	0	14
5:00 PM	2	2	0	0	8	1	4	0	1	0	0	0	18
5:15 PM	0	5	0	0	4	0	1	0	2	0	0	0	12
5:30 PM	0	6	0	0	1	4	3	0	2	0	0	0	16
5:45 PM	0	6	0	0	4	2	4	0	0	0	0	0	16
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	4	38	0	0	35	10	21	0	6	0	0	0	114
APPROACH %'s :	9.52%	90.48%	0.00%	0.00%	77.78%	22.22%	77.78%	0.00%	22.22%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	4	15	0	0	24	4	13	0	2	0	0	0	62
PEAK HR FACTOR :		0.679			0.778			0.750			0.000		0.948

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			Orange St			Orange St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	0.5	0.5	0	1	0	
4:00 PM	0	18	0	0	6	0	0	0	0	0	0	0	24
4:15 PM	3	18	0	0	18	3	9	0	0	0	0	0	51
4:30 PM	0	12	0	0	12	6	9	0	0	0	0	0	39
4:45 PM	3	9	0	0	18	0	9	0	3	0	0	0	42
5:00 PM	6	6	0	0	24	3	12	0	3	0	0	0	54
5:15 PM	0	15	0	0	12	0	3	0	6	0	0	0	36
5:30 PM	0	18	0	0	3	12	9	0	6	0	0	0	48
5:45 PM	0	18	0	0	12	6	12	0	0	0	0	0	48
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	114	0	0	105	30	63	0	18	0	0	0	342
APPROACH %'s :	9.52%	90.48%	0.00%	0.00%	77.78%	22.22%	77.78%	0.00%	22.22%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	415 AM												TOTAL
PEAK HR VOL :	12	45	0	0	72	12	39	0	6	0	0	0	186
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Truck Summary (PCE)

NS/EW Streets:		Cedar Ave			Cedar Ave			Orange St			Orange St			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	2	0	1	2	1	1	0.5	0.5	0	1	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	0	38	0	6	20	3	3	0	0	0	0	0	69
	3 Axle (PCE)	0	20	0	0	22	6	4	0	2	0	0	0	54
	4 Axle (PCE)	0	66	0	0	51	30	15	0	12	0	0	0	174
	Total Truck (PCE)	0	124	0	6	93	39	22	0	14	0	0	0	297
PM														
PEAK HR VOL	**2 Axle (PCE)**	0	29	0	5	27	2	0	0	0	0	0	0	62
	3 Axle (PCE)	0	24	0	0	36	8	0	0	2	0	0	0	70
	4 Axle (PCE)	12	45	0	0	72	12	39	0	6	0	0	0	186
	Total Truck (PCE)	12	98	0	5	135	22	39	0	8	0	0	0	318

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	1	1017	6	148	962	436	283	5	16	1	0	100	2974
PM													
Total Volume (Car+Truck)	14	1024	2	64	931	246	294	30	22	1	13	178	2818

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Cedar Ave and I-10 EB Ramps , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-012
City:	Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Peak Hour Summary

North: Cedar Ave. West: I-10 EB Ramps.

Southbound Approach

	Right	Thru	Left	Exiting (north leg)
Lanes	0	2	1	
AM	0	1194	432	1428
NOON	0	0	0	0
PM	0	1049	402	1606

Eastbound Approach

	Lanes	AM	NOON	PM
Exiting (west leg)		0	0	0
Left	1.3	468	0	587
Thru	0.3	1	0	3
Right	0.3	282	0	125

Westbound Approach

	AM	NOON	PM	Lanes
Right	0	0	0	0
Thru	0	0	0	0
Left	0	0	0	0
Exiting (east leg)	791	0	779	

Northbound Approach

	Exiting (south leg)	Left	Thru	Right
AM	1476	0	960	358
NOON	0	0	0	0
PM	1174	0	1019	374
Lanes		0	3	1

CONTROL

Signalized

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	1626	1428
North Leg	NOON	0	0
North Leg	PM	1451	1606
East Leg	AM	0	791
East Leg	NOON	0	0
East Leg	PM	0	779
West Leg	AM	751	0
West Leg	NOON	0	0
West Leg	PM	715	0
South Leg	AM	1318	1476
South Leg	NOON	0	0
South Leg	PM	1393	1174

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	3054	0	3057
East Leg	791	0	779
West Leg	751	0	715
South Leg	2794	0	2567

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 | **Day:** Thursday

City: Bloomington | **Date:** 1/26/2017

Cars

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	218	77	94	307	0	91	0	69	0	0	0	856
7:15 AM	0	259	85	102	272	0	105	0	45	0	0	0	868
7:30 AM	0	231	98	100	295	0	132	0	81	0	0	0	937
7:45 AM	0	201	80	118	287	0	112	0	60	0	0	0	858
8:00 AM	0	152	58	103	291	0	100	0	47	0	0	0	751
8:15 AM	0	203	64	103	198	0	100	1	43	0	0	0	712
8:30 AM	0	180	60	94	174	0	74	0	25	0	0	0	607
8:45 AM	0	170	55	86	142	0	110	0	41	0	0	0	604
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1614	577	800	1966	0	824	1	411	0	0	0	6193
APPROACH %'s :	0.00%	73.66%	26.34%	28.92%	71.08%	0.00%	66.67%	0.08%	33.25%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	909	340	414	1161	0	440	0	255	0	0	0	3519
PEAK HR FACTOR :		0.908			0.972			0.816			0.000		0.939

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 **Day:** Thursday

Cars

City: Bloomington **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	239	78	74	237	0	130	1	25	0	0	0	784
4:15 PM	0	263	90	73	263	0	129	0	24	0	0	0	842
4:30 PM	0	257	88	92	231	0	117	0	29	0	0	0	814
4:45 PM	0	228	94	99	266	0	124	2	27	0	0	0	840
5:00 PM	0	247	98	98	231	0	152	0	16	0	0	0	842
5:15 PM	0	253	87	109	248	0	152	1	31	0	0	0	881
5:30 PM	0	249	83	91	264	0	139	0	34	0	0	0	860
5:45 PM	0	251	69	91	254	0	129	0	24	0	0	0	818
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1987	687	727	1994	0	1072	4	210	0	0	0	6681
APPROACH %'s :	0.00%	74.31%	25.69%	26.72%	73.28%	0.00%	83.36%	0.31%	16.33%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	977	362	397	1009	0	567	3	108	0	0	0	3423
PEAK HR FACTOR :		0.970			0.963			0.921			0.000		0.971

	UTURNS			
	NB	SB	EB	WB
4:00 PM		1		
4:15 PM		0		
4:30 PM		0		
4:45 PM		0		
5:00 PM		0		
5:15 PM		0		
5:30 PM		0		
5:45 PM		0		
	NB	SB	EB	WB
TOTAL	0	1	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	7	1	0	2	0	0	0	2	0	0	0	12
7:15 AM	0	3	1	2	4	0	5	0	1	0	0	0	16
7:30 AM	0	7	2	5	3	0	2	0	0	0	0	0	19
7:45 AM	0	8	1	3	6	0	3	0	0	0	0	0	21
8:00 AM	0	2	2	4	6	0	6	0	1	0	0	0	21
8:15 AM	0	7	4	0	2	0	2	0	1	0	0	0	16
8:30 AM	0	11	2	2	2	0	2	0	3	0	0	0	22
8:45 AM	0	16	4	1	8	0	2	0	0	0	0	0	31
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	61	17	17	33	0	22	0	8	0	0	0	158
APPROACH %'s :	0.00%	78.21%	21.79%	34.00%	66.00%	0.00%	73.33%	0.00%	26.67%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	25	5	10	15	0	10	0	3	0	0	0	68
PEAK HR FACTOR :		0.833			0.694			0.542			0.000		0.939

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	10.5	1.5	0	3	0	0	0	3	0	0	0	18
7:15 AM	0	4.5	1.5	3	6	0	7.5	0	1.5	0	0	0	24
7:30 AM	0	10.5	3	7.5	4.5	0	3	0	0	0	0	0	29
7:45 AM	0	12	1.5	4.5	9	0	4.5	0	0	0	0	0	32
8:00 AM	0	3	3	6	9	0	9	0	1.5	0	0	0	32
8:15 AM	0	10.5	6	0	3	0	3	0	1.5	0	0	0	24
8:30 AM	0	16.5	3	3	3	0	3	0	4.5	0	0	0	33
8:45 AM	0	24	6	1.5	12	0	3	0	0	0	0	0	47
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	91.5	25.5	25.5	49.5	0	33	0	12	0	0	0	237
APPROACH %'s :	0.00%	78.21%	21.79%	34.00%	66.00%	0.00%	73.33%	0.00%	26.67%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	38	8	15	23	0	15	0	5	0	0	0	102
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 **Day:** Thursday

2 Axle Trucks

City: Bloomington **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	5	0	2	3	0	3	0	2	0	0	0	15
4:15 PM	0	6	1	0	3	0	1	0	1	0	0	0	12
4:30 PM	0	3	0	0	3	0	3	0	2	0	0	0	11
4:45 PM	0	3	1	0	5	0	2	0	0	0	0	0	11
5:00 PM	0	3	2	2	6	0	1	0	1	0	0	0	15
5:15 PM	0	3	0	1	4	0	1	0	1	0	0	0	10
5:30 PM	0	4	0	0	1	0	3	0	0	0	0	0	8
5:45 PM	0	2	0	3	4	0	6	0	3	0	0	0	18

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	29	4	8	29	0	20	0	10	0	0	0	100
APPROACH %'s :	0.00%	87.88%	12.12%	21.62%	78.38%	0.00%	66.67%	0.00%	33.33%	#DIV/0!	#DIV/0!	#DIV/0!	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	13	3	3	16	0	7	0	2	0	0	0	44
PEAK HR FACTOR :	0.800			0.594			0.750			0.000			0.971

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	7.5	0	3	4.5	0	4.5	0	3	0	0	0	23
4:15 PM	0	9	1.5	0	4.5	0	1.5	0	1.5	0	0	0	18
4:30 PM	0	4.5	0	0	4.5	0	4.5	0	3	0	0	0	17
4:45 PM	0	4.5	1.5	0	7.5	0	3	0	0	0	0	0	17
5:00 PM	0	4.5	3	3	9	0	1.5	0	1.5	0	0	0	23
5:15 PM	0	4.5	0	1.5	6	0	1.5	0	1.5	0	0	0	15
5:30 PM	0	6	0	0	1.5	0	4.5	0	0	0	0	0	12
5:45 PM	0	3	0	4.5	6	0	9	0	4.5	0	0	0	27

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	43.5	6	12	43.5	0	30	0	15	0	0	0	150
APPROACH %'s :	0.00%	87.88%	12.12%	21.62%	78.38%	0.00%	66.67%	0.00%	33.33%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	0	20	5	5	24	0	11	0	3	0	0	0	66
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	2	0	0	3	0	0	0	2	0	0	0	7
7:15 AM	0	1	2	1	0	0	2	0	1	0	0	0	7
7:30 AM	0	4	1	1	3	0	0	0	4	0	0	0	13
7:45 AM	0	1	1	0	1	0	1	0	0	0	0	0	4
8:00 AM	0	8	0	0	3	0	1	0	0	0	0	0	12
8:15 AM	0	1	2	0	0	0	2	0	2	0	0	0	7
8:30 AM	0	0	3	1	1	0	0	0	4	0	0	0	9
8:45 AM	0	4	1	1	2	0	0	0	2	0	0	0	10
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	21	10	4	13	0	6	0	15	0	0	0	69
APPROACH %'s :	0.00%	67.74%	32.26%	23.53%	76.47%	0.00%	28.57%	0.00%	71.43%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	8	4	2	7	0	3	0	7	0	0	0	31
PEAK HR FACTOR :		0.600			0.563			0.625			0.000		0.939

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	4	0	0	6	0	0	0	4	0	0	0	14
7:15 AM	0	2	4	2	0	0	4	0	2	0	0	0	14
7:30 AM	0	8	2	2	6	0	0	0	8	0	0	0	26
7:45 AM	0	2	2	0	2	0	2	0	0	0	0	0	8
8:00 AM	0	16	0	0	6	0	2	0	0	0	0	0	24
8:15 AM	0	2	4	0	0	0	4	0	4	0	0	0	14
8:30 AM	0	0	6	2	2	0	0	0	8	0	0	0	18
8:45 AM	0	8	2	2	4	0	0	0	4	0	0	0	20
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	42	20	8	26	0	12	0	30	0	0	0	138
APPROACH %'s :	0.00%	67.74%	32.26%	23.53%	76.47%	0.00%	28.57%	0.00%	71.43%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	16	8	4	14	0	6	0	14	0	0	0	62
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 **Day:** Thursday

3 Axle Trucks

City: Bloomington **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	4	0	1	2	0	0	0	0	0	0	0	7
4:15 PM	0	3	0	0	3	0	0	0	4	0	0	0	10
4:30 PM	0	4	0	1	3	0	3	0	1	0	0	0	12
4:45 PM	0	2	1	0	4	0	1	0	0	0	0	0	8
5:00 PM	0	1	1	0	4	0	1	0	2	0	0	0	9
5:15 PM	0	2	0	0	1	0	1	0	1	0	0	0	5
5:30 PM	0	1	0	0	2	0	3	0	1	0	0	0	7
5:45 PM	0	3	0	0	3	0	0	0	1	0	0	0	7
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	20	2	2	22	0	9	0	10	0	0	0	65
APPROACH %'s :	0.00%	90.91%	9.09%	8.33%	91.67%	0.00%	47.37%	0.00%	52.63%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	6	2	0	11	0	6	0	4	0	0	0	29
PEAK HR FACTOR :	0.667			0.688			0.625			0.000			0.971

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	8	0	2	4	0	0	0	0	0	0	0	14
4:15 PM	0	6	0	0	6	0	0	0	8	0	0	0	20
4:30 PM	0	8	0	2	6	0	6	0	2	0	0	0	24
4:45 PM	0	4	2	0	8	0	2	0	0	0	0	0	16
5:00 PM	0	2	2	0	8	0	2	0	4	0	0	0	18
5:15 PM	0	4	0	0	2	0	2	0	2	0	0	0	10
5:30 PM	0	2	0	0	4	0	6	0	2	0	0	0	14
5:45 PM	0	6	0	0	6	0	0	0	2	0	0	0	14
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	40	4	4	44	0	18	0	20	0	0	0	130
APPROACH %'s :	0.00%	90.91%	9.09%	8.33%	91.67%	0.00%	47.37%	0.00%	52.63%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	0	12	4	0	22	0	12	0	8	0	0	0	58
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	6	1	2	1	0	5	1	2	0	0	0	18
7:15 AM	0	2	1	1	2	0	7	0	7	0	0	0	20
7:30 AM	0	6	4	0	4	0	2	0	4	0	0	0	20
7:45 AM	0	4	3	3	4	0	1	0	4	0	0	0	19
8:00 AM	0	7	5	3	5	0	2	0	6	0	0	0	28
8:15 AM	0	11	1	2	5	0	9	0	3	0	0	0	31
8:30 AM	0	10	0	1	1	0	4	0	6	0	0	0	22
8:45 AM	0	15	2	1	3	0	12	0	2	0	0	0	35
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	61	17	13	25	0	42	1	34	0	0	0	193
APPROACH %'s :	0.00%	78.21%	21.79%	34.21%	65.79%	0.00%	54.55%	1.30%	44.16%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	18	9	6	11	0	15	1	17	0	0	0	77
PEAK HR FACTOR :		0.675			0.607			0.589			0.000		0.939

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
7:00 AM	0	18	3	6	3	0	15	3	6	0	0	0	54
7:15 AM	0	6	3	3	6	0	21	0	21	0	0	0	60
7:30 AM	0	18	12	0	12	0	6	0	12	0	0	0	60
7:45 AM	0	12	9	9	12	0	3	0	12	0	0	0	57
8:00 AM	0	21	15	9	15	0	6	0	18	0	0	0	84
8:15 AM	0	33	3	6	15	0	27	0	9	0	0	0	93
8:30 AM	0	30	0	3	3	0	12	0	18	0	0	0	66
8:45 AM	0	45	6	3	9	0	36	0	6	0	0	0	105
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	183	51	39	75	0	126	3	102	0	0	0	579
APPROACH %'s :	0.00%	78.21%	21.79%	34.21%	65.79%	0.00%	54.55%	1.30%	44.16%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	54	27	18	33	0	45	3	51	0	0	0	231
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-012 | **Day:** Thursday

4 Axle+ Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	6	2	1	2	0	3	0	3	0	0	0	17
4:15 PM	0	6	3	3	2	0	2	0	2	0	0	0	18
4:30 PM	0	3	0	0	3	0	6	0	4	0	0	0	16
4:45 PM	0	7	2	0	3	0	5	0	2	0	0	0	19
5:00 PM	0	3	1	2	4	0	1	0	5	0	0	0	16
5:15 PM	0	5	3	0	3	0	0	0	4	0	0	0	15
5:30 PM	0	8	1	0	3	0	1	0	0	0	0	0	13
5:45 PM	0	4	3	3	4	0	1	0	2	0	0	0	17
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	42	15	9	24	0	19	0	22	0	0	0	131
APPROACH %'s :	0.00%	73.68%	26.32%	27.27%	72.73%	0.00%	46.34%	0.00%	53.66%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	23	7	2	13	0	7	0	11	0	0	0	63
PEAK HR FACTOR :	0.833			0.625			0.643			0.000			0.971

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
4:00 PM	0	18	6	3	6	0	9	0	9	0	0	0	51
4:15 PM	0	18	9	9	6	0	6	0	6	0	0	0	54
4:30 PM	0	9	0	0	9	0	18	0	12	0	0	0	48
4:45 PM	0	21	6	0	9	0	15	0	6	0	0	0	57
5:00 PM	0	9	3	6	12	0	3	0	15	0	0	0	48
5:15 PM	0	15	9	0	9	0	0	0	12	0	0	0	45
5:30 PM	0	24	3	0	9	0	3	0	0	0	0	0	39
5:45 PM	0	12	9	9	12	0	3	0	6	0	0	0	51
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	126	45	27	72	0	57	0	66	0	0	0	393
APPROACH %'s :	0.00%	73.68%	26.32%	27.27%	72.73%	0.00%	46.34%	0.00%	53.66%	#DIV/0!	#DIV/0!	#DIV/0!	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	0	69	21	6	39	0	21	0	33	0	0	0	189
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Cedar Ave			Cedar Ave			I-10 EB Ramps			I-10 EB Ramps			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		0	3	1	1	2	0	1.3	0.3	0.3	0	0	0	
AM														
PEAK HR VOL	**2 Axle (PCE)**	0	38	8	15	23	0	15	0	5	0	0	0	102
	3 Axle (PCE)	0	16	8	4	14	0	6	0	14	0	0	0	62
	4 Axle (PCE)	0	54	27	18	33	0	45	3	51	0	0	0	231
	Total Truck (PCE)	0	108	43	37	70	0	66	3	70	0	0	0	395
PM														
PEAK HR VOL	**2 Axle (PCE)**	0	20	5	5	24	0	11	0	3	0	0	0	66
	3 Axle (PCE)	0	12	4	0	22	0	12	0	8	0	0	0	58
	4 Axle (PCE)	0	69	21	6	39	0	21	0	33	0	0	0	189
	Total Truck (PCE)	0	101	30	11	85	0	44	0	44	0	0	0	313

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	0	1017	383	451	1231	0	506	3	325	0	0	0	3914
PM													
Total Volume (Car+Truck)	0	1078	392	408	1094	0	611	3	152	0	0	0	3736

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Cedar Ave and I-10 WB Ramps , Bloomington

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-013
City:	Bloomington

AM Peak Hour	700 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Peak Hour Summary

CONTROL: Signalized

N

Cedar Ave

I-10 WB Ramps

Southbound Approach

	Right	Thru	Left	Out (NB exiting)
Lanes	1	3	0	
AM	818	1273	0	1639
NOON	0	0	0	0
PM	517	1200	0	1838

Eastbound Approach

	Lanes	AM	NOON	PM
Out		1080	0	732
Left	0	0	0	0
Thru	0	0	0	0
Right	0	0	0	0

Westbound Approach

	AM	NOON	PM	Lanes
Right	461	0	452	1.3
Thru	8	0	2	0.3
Left	352	0	267	0.3
Out	0	0	0	

Northbound Approach

	Out	Left	Thru	Right
AM	1625	254	1178	0
NOON	0	0	0	0
PM	1467	213	1386	0
Lanes		1	2	0

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period	In	Out
North Leg	AM	2091	1639
North Leg	NOON	0	0
North Leg	PM	1717	1838
West Leg	AM	1080	0
West Leg	NOON	0	0
West Leg	PM	732	0
East Leg	AM	821	0
East Leg	NOON	0	0
East Leg	PM	721	0
South Leg	AM	1625	1432
South Leg	NOON	0	0
South Leg	PM	1467	1599

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	3730	0	3555
West Leg	1080	0	732
East Leg	821	0	721
South Leg	3057	0	3066

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013

City: Bloomington

Cars

AM

Day: Thursday

Date: 1/26/2017

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	59	259	0	0	320	235	0	0	0	84	0	87	1044
7:15 AM	63	304	0	0	298	208	0	0	0	66	2	100	1041
7:30 AM	52	308	0	0	315	181	0	0	0	85	3	118	1062
7:45 AM	51	256	0	0	299	154	0	0	0	104	3	137	1004
8:00 AM	37	230	0	0	299	155	0	0	0	93	1	131	946
8:15 AM	58	238	0	0	243	160	0	0	0	51	0	101	851
8:30 AM	55	206	0	0	219	140	0	0	0	52	0	92	764
8:45 AM	46	230	0	0	189	132	0	0	0	40	2	87	726
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	421	2031	0	0	2182	1365	0	0	0	575	11	853	7438
APPROACH %'s :	17.17%	82.83%	0.00%	0.00%	61.52%	38.48%	#DIV/0!	#DIV/0!	#DIV/0!	39.96%	0.76%	59.28%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	225	1127	0	0	1232	778	0	0	0	339	8	442	4151
PEAK HR FACTOR :		0.921			0.905			0.000			0.808		0.977

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013 | **Day:** Thursday

Cars

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	59	314	0	0	254	117	0	0	0	47	1	96	888
4:15 PM	54	334	0	0	279	111	0	0	0	66	0	117	961
4:30 PM	42	338	0	0	266	131	0	0	0	51	1	125	954
4:45 PM	61	292	0	0	323	101	0	0	0	57	0	112	946
5:00 PM	41	350	0	0	264	126	0	0	0	63	0	101	945
5:15 PM	47	363	0	0	306	133	0	0	0	52	1	116	1018
5:30 PM	50	338	0	0	269	139	0	0	0	82	0	112	990
5:45 PM	39	343	0	0	284	109	0	0	0	65	1	109	950
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	393	2672	0	0	2245	967	0	0	0	483	4	888	7652
APPROACH %'s :	12.82%	87.18%	0.00%	0.00%	69.89%	30.11%	#DIV/0!	#DIV/0!	#DIV/0!	35.13%	0.29%	64.58%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	199	1343	0	0	1162	499	0	0	0	254	1	441	3899
PEAK HR FACTOR :		0.940			0.946			0.000			0.897		0.958

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013

Day: Thursday

2 Axle Trucks

City: Bloomington

Date: 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	2	4	0	0	2	5	0	0	0	1	0	2	16
7:15 AM	2	8	0	0	6	5	0	0	0	2	0	1	24
7:30 AM	3	5	0	0	8	3	0	0	0	0	0	3	22
7:45 AM	3	8	0	0	8	2	0	0	0	1	0	2	24
8:00 AM	3	6	0	0	8	3	0	0	0	1	0	2	23
8:15 AM	0	8	0	0	2	3	0	0	0	0	0	0	13
8:30 AM	9	4	0	0	3	4	0	0	0	1	0	0	21
8:45 AM	12	5	0	0	5	3	0	0	0	2	0	5	32
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	34	48	0	0	42	28	0	0	0	8	0	15	175
APPROACH %'s :	41.46%	58.54%	0.00%	0.00%	60.00%	40.00%	#DIV/0!	#DIV/0!	#DIV/0!	34.78%	0.00%	65.22%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	10	25	0	0	24	15	0	0	0	4	0	8	86
PEAK HR FACTOR :	0.795			0.886			0.000			1.000			0.977

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	3	6	0	0	3	7.5	0	0	0	1.5	0	3	24
7:15 AM	3	12	0	0	9	7.5	0	0	0	3	0	1.5	36
7:30 AM	4.5	7.5	0	0	12	4.5	0	0	0	0	0	4.5	33
7:45 AM	4.5	12	0	0	12	3	0	0	0	1.5	0	3	36
8:00 AM	4.5	9	0	0	12	4.5	0	0	0	1.5	0	3	35
8:15 AM	0	12	0	0	3	4.5	0	0	0	0	0	0	20
8:30 AM	13.5	6	0	0	4.5	6	0	0	0	1.5	0	0	32
8:45 AM	18	7.5	0	0	7.5	4.5	0	0	0	3	0	7.5	48
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	51	72	0	0	63	42	0	0	0	12	0	22.5	262.5
APPROACH %'s :	41.46%	58.54%	0.00%	0.00%	60.00%	40.00%	#DIV/0!	#DIV/0!	#DIV/0!	34.78%	0.00%	65.22%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	15	38	0	0	36	23	0	0	0	6	0	12	129
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013 | **Day:** Thursday

2 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	0	9	0	0	4	0	0	0	0	3	0	2	18
4:15 PM	1	4	0	0	1	0	0	0	0	0	0	0	6
4:30 PM	0	8	0	0	2	1	0	0	0	1	0	0	12
4:45 PM	0	4	0	0	4	1	0	0	0	1	0	0	10
5:00 PM	1	2	0	0	8	2	0	0	0	0	1	0	14
5:15 PM	1	5	0	0	5	0	0	0	0	0	0	1	12
5:30 PM	0	4	0	0	1	1	0	0	0	3	0	0	9
5:45 PM	2	10	0	0	4	0	0	0	0	0	0	1	17
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	46	0	0	29	5	0	0	0	8	1	4	98
APPROACH %'s :	9.80%	90.20%	0.00%	0.00%	85.29%	14.71%	#DIV/0!	#DIV/0!	#DIV/0!	61.54%	7.69%	30.77%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	2	15	0	0	18	4	0	0	0	4	1	1	45
PEAK HR FACTOR :	0.708			0.550			0.000			0.500			0.958

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	0	13.5	0	0	6	0	0	0	0	4.5	0	3	27
4:15 PM	1.5	6	0	0	1.5	0	0	0	0	0	0	0	9
4:30 PM	0	12	0	0	3	1.5	0	0	0	1.5	0	0	18
4:45 PM	0	6	0	0	6	1.5	0	0	0	1.5	0	0	15
5:00 PM	1.5	3	0	0	12	3	0	0	0	0	1.5	0	21
5:15 PM	1.5	7.5	0	0	7.5	0	0	0	0	0	0	1.5	18
5:30 PM	0	6	0	0	1.5	1.5	0	0	0	4.5	0	0	14
5:45 PM	3	15	0	0	6	0	0	0	0	0	0	1.5	26
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	7.5	69	0	0	43.5	7.5	0	0	0	12	1.5	6	147
APPROACH %'s :	9.80%	90.20%	0.00%	0.00%	85.29%	14.71%	#DIV/0!	#DIV/0!	#DIV/0!	61.54%	7.69%	30.77%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	3	23	0	0	27	6	0	0	0	6	2	2	68
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	1	2	0	0	2	2	0	0	0	1	0	0	8
7:15 AM	1	2	0	0	1	1	0	0	0	0	0	2	7
7:30 AM	2	2	0	0	3	0	0	0	0	1	0	1	9
7:45 AM	1	1	0	0	1	1	0	0	0	0	0	2	6
8:00 AM	3	3	0	0	3	2	0	0	0	0	0	3	14
8:15 AM	2	2	0	0	0	0	0	0	0	0	0	1	5
8:30 AM	1	0	0	0	3	1	0	0	0	0	0	1	6
8:45 AM	1	4	0	0	2	2	0	0	0	0	0	0	9
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	12	16	0	0	15	9	0	0	0	2	0	10	64
APPROACH %'s :	42.86%	57.14%	0.00%	0.00%	62.50%	37.50%	#DIV/0!	#DIV/0!	#DIV/0!	16.67%	0.00%	83.33%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	5	7	0	0	7	4	0	0	0	2	0	5	30
PEAK HR FACTOR :	0.750			0.688			0.000			0.875			0.977

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	2	4	0	0	4	4	0	0	0	2	0	0	16
7:15 AM	2	4	0	0	2	2	0	0	0	0	0	4	14
7:30 AM	4	4	0	0	6	0	0	0	0	2	0	2	18
7:45 AM	2	2	0	0	2	2	0	0	0	0	0	4	12
8:00 AM	6	6	0	0	6	4	0	0	0	0	0	6	28
8:15 AM	4	4	0	0	0	0	0	0	0	0	0	2	10
8:30 AM	2	0	0	0	6	2	0	0	0	0	0	2	12
8:45 AM	2	8	0	0	4	4	0	0	0	0	0	0	18
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	24	32	0	0	30	18	0	0	0	4	0	20	128
APPROACH %'s :	42.86%	57.14%	0.00%	0.00%	62.50%	37.50%	#DIV/0!	#DIV/0!	#DIV/0!	16.67%	0.00%	83.33%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	10	14	0	0	14	8	0	0	0	4	0	10	60
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013 | **Day:** Thursday

3 Axle Trucks

City: Bloomington | **Date:** 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	0	5	0	0	2	1	0	0	0	2	0	1	11
4:15 PM	3	0	0	0	1	2	0	0	0	1	0	0	7
4:30 PM	3	2	0	0	5	1	0	0	0	1	0	0	12
4:45 PM	1	4	0	0	1	0	0	0	0	1	0	0	7
5:00 PM	0	1	0	0	5	0	0	0	0	0	0	1	7
5:15 PM	2	2	0	0	0	0	0	0	0	0	0	1	5
5:30 PM	1	0	0	0	5	0	0	0	0	0	0	0	6
5:45 PM	1	4	0	0	0	1	0	0	0	0	0	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	11	18	0	0	19	5	0	0	0	5	0	3	61
APPROACH %'s :	37.93%	62.07%	0.00%	0.00%	79.17%	20.83%	#DIV/0!	#DIV/0!	#DIV/0!	62.50%	0.00%	37.50%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	4	7	0	0	11	0	0	0	0	1	0	2	25
PEAK HR FACTOR :	0.550			0.550			0.000			0.750			0.958

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	0	10	0	0	4	2	0	0	0	4	0	2	22
4:15 PM	6	0	0	0	2	4	0	0	0	2	0	0	14
4:30 PM	6	4	0	0	10	2	0	0	0	2	0	0	24
4:45 PM	2	8	0	0	2	0	0	0	0	2	0	0	14
5:00 PM	0	2	0	0	10	0	0	0	0	0	0	2	14
5:15 PM	4	4	0	0	0	0	0	0	0	0	0	2	10
5:30 PM	2	0	0	0	10	0	0	0	0	0	0	0	12
5:45 PM	2	8	0	0	0	2	0	0	0	0	0	0	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	22	36	0	0	38	10	0	0	0	10	0	6	122
APPROACH %'s :	37.93%	62.07%	0.00%	0.00%	79.17%	20.83%	#DIV/0!	#DIV/0!	#DIV/0!	62.50%	0.00%	37.50%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	8	14	0	0	22	0	0	0	0	2	0	4	50
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013

Day: Thursday

4 Axle+ Trucks

City: Bloomington

Date: 1/26/2017

AM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	5	5	0	0	2	0	0	0	0	1	0	1	14
7:15 AM	2	8	0	0	2	8	0	0	0	1	0	1	22
7:30 AM	3	5	0	0	0	2	0	0	0	4	0	2	16
7:45 AM	4	1	0	0	6	11	0	0	0	1	0	2	25
8:00 AM	6	3	0	0	5	2	0	0	0	3	0	2	21
8:15 AM	9	10	0	0	4	1	0	0	0	3	0	4	31
8:30 AM	7	8	0	0	1	10	0	0	0	3	0	2	31
8:45 AM	13	14	0	0	0	2	0	0	0	2	0	4	35
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	49	54	0	0	20	36	0	0	0	18	0	18	195
APPROACH %'s :	47.57%	52.43%	0.00%	0.00%	35.71%	64.29%	#DIV/0!	#DIV/0!	#DIV/0!	50.00%	0.00%	50.00%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	14	19	0	0	10	21	0	0	0	7	0	6	77
PEAK HR FACTOR :		0.825			0.456			0.000			0.542		0.977

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
7:00 AM	15	15	0	0	6	0	0	0	0	3	0	3	42
7:15 AM	6	24	0	0	6	24	0	0	0	3	0	3	66
7:30 AM	9	15	0	0	0	6	0	0	0	12	0	6	48
7:45 AM	12	3	0	0	18	33	0	0	0	3	0	6	75
8:00 AM	18	9	0	0	15	6	0	0	0	9	0	6	63
8:15 AM	27	30	0	0	12	3	0	0	0	9	0	12	93
8:30 AM	21	24	0	0	3	30	0	0	0	9	0	6	93
8:45 AM	39	42	0	0	0	6	0	0	0	6	0	12	105
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	147	162	0	0	60	108	0	0	0	54	0	54	585
APPROACH %'s :	47.57%	52.43%	0.00%	0.00%	35.71%	64.29%	#DIV/0!	#DIV/0!	#DIV/0!	50.00%	0.00%	50.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	42	57	0	0	30	63	0	0	0	21	0	18	231
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-013

Day: Thursday

4 Axle+ Trucks

City: Bloomington

Date: 1/26/2017

PM

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	4	5	0	0	3	2	0	0	0	2	0	4	20
4:15 PM	1	5	0	0	1	1	0	0	0	1	0	1	10
4:30 PM	4	7	0	0	4	0	0	0	0	1	0	4	20
4:45 PM	1	9	0	0	1	5	0	0	0	1	0	5	22
5:00 PM	1	4	0	0	3	4	0	0	0	2	0	3	17
5:15 PM	3	2	0	0	1	4	0	0	0	2	0	0	12
5:30 PM	3	6	0	0	4	1	0	0	0	3	0	0	17
5:45 PM	3	2	0	0	2	1	0	0	0	2	0	1	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	20	40	0	0	19	18	0	0	0	14	0	18	129
APPROACH %'s :	33.33%	66.67%	0.00%	0.00%	51.35%	48.65%	#DIV/0!	#DIV/0!	#DIV/0!	43.75%	0.00%	56.25%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	8	21	0	0	9	14	0	0	0	8	0	8	68
PEAK HR FACTOR :	0.725			0.821			0.000			0.667			0.958

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
4:00 PM	12	15	0	0	9	6	0	0	0	6	0	12	60
4:15 PM	3	15	0	0	3	3	0	0	0	3	0	3	30
4:30 PM	12	21	0	0	12	0	0	0	0	3	0	12	60
4:45 PM	3	27	0	0	3	15	0	0	0	3	0	15	66
5:00 PM	3	12	0	0	9	12	0	0	0	6	0	9	51
5:15 PM	9	6	0	0	3	12	0	0	0	6	0	0	36
5:30 PM	9	18	0	0	12	3	0	0	0	9	0	0	51
5:45 PM	9	6	0	0	6	3	0	0	0	6	0	3	33
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	60	120	0	0	57	54	0	0	0	42	0	54	387
APPROACH %'s :	33.33%	66.67%	0.00%	0.00%	51.35%	48.65%	#DIV/0!	#DIV/0!	#DIV/0!	43.75%	0.00%	56.25%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	445 AM												TOTAL
PEAK HR VOL :	24	63	0	0	27	42	0	0	0	24	0	24	204
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Cedar Ave			Cedar Ave			I-10 WB Ramps			I-10 WB Ramps			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	2	0	0	3	1	0	0	0	0.3	0.3	1.3	
AM														
PEAK HR VOL	**2 Axle (PCE)**	15	38	0	0	36	23	0	0	0	6	0	12	129
	3 Axle (PCE)	10	14	0	0	14	8	0	0	0	4	0	10	60
	4 Axle (PCE)	42	57	0	0	30	63	0	0	0	21	0	18	231
	Total Truck (PCE)	67	109	0	0	80	94	0	0	0	31	0	40	420
PM														
PEAK HR VOL	**2 Axle (PCE)**	3	23	0	0	27	6	0	0	0	6	2	2	68
	3 Axle (PCE)	8	14	0	0	22	0	0	0	0	2	0	4	50
	4 Axle (PCE)	24	63	0	0	27	42	0	0	0	24	0	24	204
	Total Truck (PCE)	35	100	0	0	76	48	0	0	0	32	2	30	322

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
AM													
Total Volume (Car+Truck)	292	1236	0	0	1312	872	0	0	0	370	8	482	4571
PM													
Total Volume (Car+Truck)	234	1443	0	0	1238	547	0	0	0	286	3	471	4221

ITM Peak Hour Summary

Prepared by:

NDS

National Data & Surveying Services

Sierra Ave and I-10 Ramps , Fontana

Date:	1/26/2017
Day:	Thursday
Project #:	17-6017-014
City:	Fontana

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	430 PM

N

Sierra Ave

I-10 Ramps

Peak Hour Summary

Southbound Approach

	Lanes 1	Lanes 3	Lanes 2		
AM	818	732	558	2171	AM
NOON	0	0	0	0	NOON
PM	850	943	519	2466	PM

Eastbound Approach

		AM	NOON	PM
		1164	0	1277
Lanes	2	880	0	858
Lanes	0	0	0	0
Lanes	1	352	0	355

Westbound Approach

AM	NOON	PM	Lanes
541	0	503	1
0	0	0	0
397	0	450	2
1057	0	1081	

CONTROL
Signalized

Northbound Approach

AM	1481	346	750	499	AM
NOON	0	0	0	0	NOON
PM	1748	427	1105	562	PM
		2	3	1	Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

Leg	Period		
North Leg	AM	2108	2171
North Leg	NOON	0	0
North Leg	PM	2312	2466
South Leg	AM	1481	1595
South Leg	NOON	0	0
South Leg	PM	1748	2094

West Leg	AM	NOON	PM
	1164	0	1277
	1232	0	1213

East Leg	AM	NOON	PM
	938	0	953
	1057	0	1081

Total Volume Per Leg

Leg	AM	NOON	PM
North Leg	4279	0	4778
West Leg	2396	0	2490
East Leg	1995	0	2034
South Leg	3076	0	3842

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014

City: Fontana

Cars

AM

Day: Thursday

Date: 1/26/2017

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	119	137	86	103	194	249	132	0	61	99	0	93	1273
7:15 AM	101	176	136	144	183	213	191	0	48	102	0	110	1404
7:30 AM	82	207	152	162	174	236	192	0	85	88	0	103	1481
7:45 AM	79	174	95	123	184	181	256	0	110	100	0	136	1438
8:00 AM	70	187	103	117	177	168	230	0	94	96	0	184	1426
8:15 AM	77	185	79	86	152	154	246	0	106	83	0	199	1367
8:30 AM	78	176	72	78	144	180	184	0	76	63	0	183	1234
8:45 AM	62	165	85	89	143	173	175	0	88	98	0	173	1251
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	668	1407	808	902	1351	1554	1606	0	668	729	0	1181	10874
APPROACH %'s :	23.17%	48.80%	28.03%	23.69%	35.49%	40.82%	70.62%	0.00%	29.38%	38.17%	0.00%	61.83%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	332	744	486	546	718	798	869	0	337	386	0	533	5749
PEAK HR FACTOR :		0.885			0.901			0.824			0.821		0.970

UTURNS			
NB	SB	EB	WB
2		0	0
0		2	2
0		2	1
2		1	0
0		0	0
0		2	2
0		0	2
0		1	0
NB	SB	EB	WB
4	0	8	7

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014

Day: Thursday

Cars

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	94	293	148	92	213	173	190	0	76	102	0	135	1516
4:15 PM	88	264	112	138	268	192	153	0	104	97	0	159	1575
4:30 PM	128	290	128	139	212	213	203	0	78	97	0	133	1621
4:45 PM	83	258	135	105	260	186	223	0	76	88	0	121	1535
5:00 PM	107	297	123	119	202	226	236	0	83	138	0	127	1658
5:15 PM	97	256	163	153	261	219	185	0	102	121	0	116	1673
5:30 PM	103	279	110	113	230	178	206	0	88	107	0	116	1530
5:45 PM	82	258	130	131	226	175	235	0	88	108	0	130	1563
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	782	2195	1049	990	1872	1562	1631	0	695	858	0	1037	12671
APPROACH %'s :	19.42%	54.52%	26.06%	22.38%	42.31%	35.31%	70.12%	0.00%	29.88%	45.28%	0.00%	54.72%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	415	1101	549	516	935	844	847	0	339	444	0	497	6487
PEAK HR FACTOR :		0.946			0.906			0.929			0.888		0.969

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
		1	1
		0	1
		1	0
		1	1
		0	1
		0	0
		1	1
		0	0
NB	SB	EB	WB
0	0	4	5

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	1	2	0	1	0	3	0	0	1	2	0	0	10
7:15 AM	0	0	0	1	3	2	2	0	0	3	0	0	11
7:30 AM	2	1	3	2	5	1	0	0	0	0	0	1	15
7:45 AM	0	1	4	4	0	5	2	0	2	2	0	1	21
8:00 AM	0	1	2	4	3	2	3	0	0	2	0	1	18
8:15 AM	0	3	1	2	4	2	3	0	2	2	0	2	21
8:30 AM	1	2	2	3	2	1	5	0	1	1	0	3	21
8:45 AM	1	2	2	5	4	1	4	0	2	1	0	1	23
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	5	12	14	22	21	17	19	0	8	13	0	9	140
APPROACH %'s :	16.13%	38.71%	45.16%	36.67%	35.00%	28.33%	70.37%	0.00%	29.63%	59.09%	0.00%	40.91%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	2	3	9	11	11	10	7	0	2	7	0	3	65
PEAK HR FACTOR :	0.583			0.889			0.563			0.833			0.970

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	1.5	3	0	1.5	0	4.5	0	0	1.5	3	0	0	15
7:15 AM	0	0	0	1.5	4.5	3	3	0	0	4.5	0	0	17
7:30 AM	3	1.5	4.5	3	7.5	1.5	0	0	0	0	0	1.5	23
7:45 AM	0	1.5	6	6	0	7.5	3	0	3	3	0	1.5	32
8:00 AM	0	1.5	3	6	4.5	3	4.5	0	0	3	0	1.5	27
8:15 AM	0	4.5	1.5	3	6	3	4.5	0	3	3	0	3	32
8:30 AM	1.5	3	3	4.5	3	1.5	7.5	0	1.5	1.5	0	4.5	32
8:45 AM	1.5	3	3	7.5	6	1.5	6	0	3	1.5	0	1.5	35
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	7.5	18	21	33	31.5	25.5	28.5	0	12	19.5	0	13.5	210
APPROACH %'s :	16.13%	38.71%	45.16%	36.67%	35.00%	28.33%	70.37%	0.00%	29.63%	59.09%	0.00%	40.91%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	3	5	14	17	17	15	11	0	3	11	0	5	98
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014 | **Day:** Thursday

2 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	4	0	3	4	1	0	2	0	1	1	0	0	16
4:15 PM	1	4	0	0	2	0	1	0	2	1	0	1	12
4:30 PM	2	1	2	0	2	0	0	0	1	0	0	2	10
4:45 PM	1	2	0	0	2	0	1	0	3	0	0	0	9
5:00 PM	0	0	1	1	1	0	3	0	1	1	0	1	9
5:15 PM	0	0	0	0	1	1	1	0	1	0	0	1	5
5:30 PM	0	2	0	0	0	2	0	0	2	0	0	0	6
5:45 PM	2	1	0	0	1	1	1	0	0	0	0	1	7
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	10	10	6	5	10	4	9	0	11	3	0	6	74
APPROACH %'s :	38.46%	38.46%	23.08%	26.32%	52.63%	21.05%	45.00%	0.00%	55.00%	33.33%	0.00%	66.67%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	3	3	3	1	6	1	5	0	6	1	0	4	33
PEAK HR FACTOR :	0.450			1.000			0.688			0.625			0.969

CONTROL : Signalized

PCE CONVERSION (Factor=1.5)

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	6	0	4.5	6	1.5	0	3	0	1.5	1.5	0	0	24
4:15 PM	1.5	6	0	0	3	0	1.5	0	3	1.5	0	1.5	18
4:30 PM	3	1.5	3	0	3	0	0	0	1.5	0	0	3	15
4:45 PM	1.5	3	0	0	3	0	1.5	0	4.5	0	0	0	14
5:00 PM	0	0	1.5	1.5	1.5	0	4.5	0	1.5	1.5	0	1.5	14
5:15 PM	0	0	0	0	1.5	1.5	1.5	0	1.5	0	0	1.5	8
5:30 PM	0	3	0	0	0	3	0	0	3	0	0	0	9
5:45 PM	3	1.5	0	0	1.5	1.5	1.5	0	0	0	0	1.5	11
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	15	15	9	7.5	15	6	13.5	0	16.5	4.5	0	9	111
APPROACH %'s :	38.46%	38.46%	23.08%	26.32%	52.63%	21.05%	45.00%	0.00%	55.00%	33.33%	0.00%	66.67%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	5	5	5	2	9	2	8	0	9	2	0	6	50
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	2
7:30 AM	1	1	0	0	0	1	0	0	0	0	0	1	4
7:45 AM	0	0	0	0	1	1	0	0	0	0	0	0	2
8:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	2
8:15 AM	0	1	0	1	0	0	0	0	1	0	0	0	3
8:30 AM	0	1	0	1	0	0	0	0	1	0	0	0	3
8:45 AM	1	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	4	1	5	1	3	0	0	2	0	0	1	20
APPROACH %'s :	37.50%	50.00%	12.50%	55.56%	11.11%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	2	1	1	1	1	3	0	0	0	0	0	1	10
PEAK HR FACTOR :	0.500			0.625			0.000			0.250			0.970

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	0	0	0	4	0	0	0	0	0	0	0	0	4
7:15 AM	0	0	2	0	0	2	0	0	0	0	0	0	4
7:30 AM	2	2	0	0	0	2	0	0	0	0	0	2	8
7:45 AM	0	0	0	0	2	2	0	0	0	0	0	0	4
8:00 AM	2	0	0	2	0	0	0	0	0	0	0	0	4
8:15 AM	0	2	0	2	0	0	0	0	2	0	0	0	6
8:30 AM	0	2	0	2	0	0	0	0	2	0	0	0	6
8:45 AM	2	2	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	8	2	10	2	6	0	0	4	0	0	2	40
APPROACH %'s :	37.50%	50.00%	12.50%	55.56%	11.11%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	4	2	2	2	2	6	0	0	0	0	0	2	20
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014 | **Day:** Thursday

3 Axle Trucks

City: Fontana | **Date:** 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	0	1	0	0	0	0	1	0	2	0	0	1	5
4:15 PM	1	1	2	1	0	0	0	0	0	0	0	1	6
4:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
4:45 PM	2	0	0	0	0	2	1	0	1	0	0	2	8
5:00 PM	1	0	0	0	0	0	0	0	2	1	0	0	4
5:15 PM	2	0	0	0	1	0	2	0	2	0	0	0	7
5:30 PM	1	2	1	0	1	0	0	0	0	0	0	0	5
5:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	3
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	7	7	3	1	2	2	5	0	7	2	0	4	40
APPROACH %'s :	41.18%	41.18%	17.65%	20.00%	40.00%	40.00%	41.67%	0.00%	58.33%	33.33%	0.00%	66.67%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	5	1	0	0	1	2	4	0	5	1	0	2	21
PEAK HR FACTOR :	0.750			0.375			0.563			0.375			0.969

CONTROL : Signalized

PCE CONVERSION (Factor=2)

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	0	2	0	0	0	0	2	0	4	0	0	2	10
4:15 PM	2	2	4	2	0	0	0	0	0	0	0	2	12
4:30 PM	0	2	0	0	0	0	2	0	0	0	0	0	4
4:45 PM	4	0	0	0	0	4	2	0	2	0	0	4	16
5:00 PM	2	0	0	0	0	0	0	0	4	2	0	0	8
5:15 PM	4	0	0	0	2	0	4	0	4	0	0	0	14
5:30 PM	2	4	2	0	2	0	0	0	0	0	0	0	10
5:45 PM	0	4	0	0	0	0	0	0	0	2	0	0	6
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	14	14	6	2	4	4	10	0	14	4	0	8	80
APPROACH %'s :	41.18%	41.18%	17.65%	20.00%	40.00%	40.00%	41.67%	0.00%	58.33%	33.33%	0.00%	66.67%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	10	2	0	0	2	4	8	0	10	2	0	4	42
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014 | **Day:** Thursday

4 Axle+ Trucks

City: Fontana | **Date:** 1/26/2017

AM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	1	0	1	0	0	0	1	0	2	1	0	0	6
7:15 AM	3	0	2	0	0	3	0	0	4	1	0	0	13
7:30 AM	4	0	0	0	0	1	1	0	3	0	0	1	10
7:45 AM	1	1	0	0	0	1	1	0	3	1	0	1	9
8:00 AM	2	1	1	0	2	2	2	0	3	2	0	2	17
8:15 AM	2	0	0	1	0	0	1	0	1	0	0	0	5
8:30 AM	3	1	1	1	0	1	3	0	3	3	0	0	16
8:45 AM	6	0	0	0	0	1	0	0	3	1	0	1	12
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	22	3	5	2	2	9	9	0	22	9	0	5	88
APPROACH %'s :	73.33%	10.00%	16.67%	15.38%	15.38%	69.23%	29.03%	0.00%	70.97%	64.29%	0.00%	35.71%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	10	2	3	0	2	7	4	0	13	4	0	4	49
PEAK HR FACTOR :		0.750			0.563			0.850			0.500		0.970

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
7:00 AM	3	0	3	0	0	0	3	0	6	3	0	0	18
7:15 AM	9	0	6	0	0	9	0	0	12	3	0	0	39
7:30 AM	12	0	0	0	0	3	3	0	9	0	0	3	30
7:45 AM	3	3	0	0	0	3	3	0	9	3	0	3	27
8:00 AM	6	3	3	0	6	6	6	0	9	6	0	6	51
8:15 AM	6	0	0	3	0	0	3	0	3	0	0	0	15
8:30 AM	9	3	3	3	0	3	9	0	9	9	0	0	48
8:45 AM	18	0	0	0	0	3	0	0	9	3	0	3	36
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	66	9	15	6	6	27	27	0	66	27	0	15	264
APPROACH %'s :	73.33%	10.00%	16.67%	15.38%	15.38%	69.23%	29.03%	0.00%	70.97%	64.29%	0.00%	35.71%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	30	6	9	0	6	21	12	0	39	12	0	12	147
PEAK HR FACTOR :		0.000			0.000			0.000			0.000		0.000

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-6017-014

4 Axle+ Trucks

Day: Thursday

City: Fontana

Date: 1/26/2017

PM

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	3	0	3	1	1	0	2	0	5	0	0	0	15
4:15 PM	0	0	1	1	0	1	0	0	4	1	0	2	10
4:30 PM	1	0	3	0	0	1	0	0	3	2	0	0	10
4:45 PM	2	0	5	0	0	1	1	0	2	1	0	0	12
5:00 PM	1	0	0	1	1	1	0	0	0	0	0	0	4
5:15 PM	0	0	2	1	0	0	1	0	0	1	0	0	5
5:30 PM	1	0	2	0	0	1	0	0	1	2	0	3	10
5:45 PM	1	1	0	1	0	0	0	0	4	2	0	0	9
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	9	1	16	5	2	5	4	0	19	9	0	5	75
APPROACH %'s :	34.62%	3.85%	61.54%	41.67%	16.67%	41.67%	17.39%	0.00%	82.61%	64.29%	0.00%	35.71%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	4	0	10	2	1	3	2	0	5	4	0	0	31
PEAK HR FACTOR :	0.500			0.500			0.583			0.500			0.969

CONTROL : Signalized

PCE CONVERSION (Factor=3)

NS/EW Streets:	Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	2	3	1	2	0	1	2	0	1	
4:00 PM	9	0	9	3	3	0	6	0	15	0	0	0	45
4:15 PM	0	0	3	3	0	3	0	0	12	3	0	6	30
4:30 PM	3	0	9	0	0	3	0	0	9	6	0	0	30
4:45 PM	6	0	15	0	0	3	3	0	6	3	0	0	36
5:00 PM	3	0	0	3	3	3	0	0	0	0	0	0	12
5:15 PM	0	0	6	3	0	0	3	0	0	3	0	0	15
5:30 PM	3	0	6	0	0	3	0	0	3	6	0	9	30
5:45 PM	3	3	0	3	0	0	0	0	12	6	0	0	27
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	27	3	48	15	6	15	12	0	57	27	0	15	225
APPROACH %'s :	34.62%	3.85%	61.54%	41.67%	16.67%	41.67%	17.39%	0.00%	82.61%	64.29%	0.00%	35.71%	

NOON Peak Hr Begins at: 0 AM

PEAK HR START TIME :	430 AM												TOTAL
PEAK HR VOL :	12	0	30	6	3	9	6	0	15	12	0	0	93
PEAK HR FACTOR :	0.000			0.000			0.000			0.000			0.000

Truck Summary (PCE)

NS/EW Streets:		Sierra Ave			Sierra Ave			I-10 Ramps			I-10 Ramps			
		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		2	3	1	2	3	1	2	0	1	2	0	1	
					AM									
PEAK HR VOL	2 Axle (PCE)	3	5	14	17	17	15	11	0	3	11	0	5	98
	3 Axle (PCE)	4	2	2	2	2	6	0	0	0	0	0	2	20
	4 Axle (PCE)	30	6	9	0	6	21	12	0	39	12	0	12	147
	Total Truck (PCE)	37	13	25	19	25	42	23	0	42	23	0	19	265
					PM									
PEAK HR VOL	2 Axle (PCE)	5	5	5	2	9	2	8	0	9	2	0	6	50
	3 Axle (PCE)	10	2	0	0	2	4	8	0	10	2	0	4	42
	4 Axle (PCE)	12	0	30	6	3	9	6	0	15	12	0	0	93
	Total Truck (PCE)	27	7	35	8	14	15	22	0	34	16	0	10	185

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
					AM								
Total Volume (Car+Truck)	369	757	511	565	743	840	892	0	379	409	0	552	6014
					PM								
Total Volume (Car+Truck)	442	1108	584	524	949	859	869	0	373	460	0	507	6672

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
07	010	LA		45.277	POMONA, WHITE AVENUE	18600	281000	264000	17700	272000	255000
07	010	LA		45.726	POMONA, GAREY AVENUE	17700	272000	255000	18500	289000	270000
07	010	LA		46.405	POMONA, TOWNE AVENUE	18500	289000	270000	17900	293000	273000
07	010	LA		47.737	POMONA, INDIAN HILL BOULEVARD	17900	293000	273000	18900	293000	273000
07	010	LA		48.265	LOS ANGELES/SAN BERNARDINO COUNTY LINE	18900	293000	273000			
08	010	SBD		0	LOS ANGELES/SAN BERNARDINO COUNTY LINE				17900	253000	246000
08	010	SBD		.681	MONTCLAIR, MONTE VISTA AVENUE	17700	259000	248000	17600	257000	246000
08	010	SBD		1.229	MONTCLAIR, CENTRAL AVENUE	17600	257000	246000	18100	264000	253000
08	010	SBD		2.37	UPLAND, MOUNTAIN AVENUE	18000	263000	252000	18100	264000	253000
08	010	SBD		3.468	UPLAND, JCT. RTE. 83	18100	264000	253000	17200	273000	256000
08	010	SBD		5.238	ONTARIO, FOURTH STREET	17200	273000	256000	17100	271000	254000
08	010	SBD		6.097	ONTARIO, VINEYARD AVENUE	17100	271000	254000	16900	269000	252000
08	010	SBD		7.158	ONTARIO, ARCHIBALD AVENUE	16900	269000	252000	17900	284000	266000
08	010	SBD		8.161	ONTARIO, HAVEN AVENUE	17900	284000	266000	17900	284000	266000
08	010	SBD		9.176	ONTARIO, MILLIKEN AVENUE	17900	284000	266000	17800	283000	265000
08	010	SBD		9.936	ONTARIO, JCT. RTE. 15	18000	273000	265000	16200	258000	250000
08	010	SBD		11.132	ETIWANDA AVENUE	16200	258000	250000	13900	221000	214000
08	010	SBD		13.169	FONTANA, CHERRY AVENUE	13900	221000	214000	13700	217000	210000
08	010	SBD		15.18	CITRUS AVENUE	13700	217000	210000	13500	214000	208000
08	010	SBD		16.22	FONTANA, SIERRA AVENUE	13600	214000	208000	13400	206000	200000
08	010	SBD	R	18.492	BLOOMINGTON, CEDAR AVENUE	13300	206000	200000	13000	202000	196000
08	010	SBD		19.972	RIALTO, RIVERSIDE AVENUE	13100	202000	196000	13300	202000	197000
08	010	SBD		20.965	PEPPER AVENUE	13300	202000	197000	13500	203000	198000
08	010	SBD	R	21.961	COLTON, RANCHO AVENUE	13500	203000	198000	13500	205000	200000
08	010	SBD	R	22.616	COLTON, LA CADENA DRIVE/ NINTH STREET	13500	204000	200000	13800	208000	204000
08	010	SBD	R	23.248	COLTON, MOUNT VERNON AVENUE	13800	208000	204000	13600	204000	200000
08	010	SBD	R	24.24	COLTON, JCT. RTE. 215	13600	204000	200000	15700	235000	230000
08	010	SBD		25.261	WATERMAN AVENUE	15700	235000	230000	13900	209000	205000
08	010	SBD		26.272	TIPPECANOE AVENUE (LOMA LINDA TURNOFF)	13900	209000	205000	13500	202000	198000
08	010	SBD		27.296	MOUNTAIN VIEW AVENUE	13500	202000	198000	13200	198000	194000
08	010	SBD		28.3	CALIFORNIA STREET	13200	198000	194000	13100	195000	191000
08	010	SBD		29.313	ALABAMA STREET OC	12900	193000	189000	12000	180000	176000
08	010	SBD		30.899	REDLANDS, JCT. RTE. 38 NORTH	12000	180000	176000	10000	151000	148000
08	010	SBD		31.012	REDLANDS, SIXTH STREET	10100	151000	148000	12200	165000	157000
08	010	SBD		31.874	REDLANDS, UNIVERSITY STREET	12200	163000	158000	10400	138000	134000
08	010	SBD		32.111	REDLANDS, CYPRESS AVENUE	10400	138000	134000	10700	142000	138000
08	010	SBD		33.128	REDLANDS, FORD STREET/ MORRISON AVENUE	10700	142000	138000	9800	131000	127000
08	010	SBD		33.291	REDLANDS, REDLANDS BOULEVARD	9800	131000	127000	10600	141000	137000
08	010	SBD		34.288	REDLANDS, WABASH AVENUE	10600	141000	137000	10700	142000	138000

OTM32420
07/28/2016
09:36:50

CALTRANS TRAFFIC VOLUMES
LATEST TRAFFIC YEAR SELECTED
PEAK HOUR VOLUME DATA

AM PEAK → Critical Peak

									AM PEAK								PM PEAK					
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH
07	010	LA		34.28	48	O	15	W	6826	5.37	72.81	3.91	5	FRI	OCT	E	6533	5.73	65.27	3.74	14	SUN	MAY
07	010	LA		40.84	173	A	14	W	7011	6.06	56.57	3.43	8	TUE	MAR	E	7580	7.21	51.38	3.71	17	WED	FEB
07	010	LA		47.11	54	B	15	E	9385	6.05	56.78	3.43	11	FRI	AUG	E	9490	6.57	52.9	3.47	17	SAT	AUG
08	010	SBD		9.176	102	B	15	W	9999	5.85	68.61	4.01	6	THU	AUG	W	9999	6.34	63.36	4.01	15	THU	APR
08	010	SBD		31.41	150	B	14	W	8042	7.34	69.69	5.12	8	WED	NOV	E	7355	7.66	61.07	4.68	17	THU	OCT
08	010	RIV	R	19.4	808	A	15	W	5556	9.26	60.1	5.56	11	SUN	APR	W	5166	8.61	60.06	5.17	13	SUN	APR
08	010	RIV	R	58.92	873	A	15	W	1651	12.1	54.38	6.58	12	SUN	MAR	W	1954	14.98	52	7.79	14	SUN	DEC
08	010	RIV	R	149.2	908	A	15	W	1574	10.43	56.01	5.84	11	FRI	JUL	E	1611	9.96	60.02	5.98	13	FRI	MAR
08	010	RIV	R	156.5	909	O	15	E	2003	11.98	56.68	6.79	11	TUE	DEC	E	2262	12.51	61.3	7.67	14	SUN	JUL
04	012	SON	R	15.3	67	A	14	E	3138	6.98	57.75	4.03	7	WED	SEP	W	3267	7.81	53.74	4.2	17	MON	JUN
04	012	SON		20.1	71	A	14	W	1448	9	55.74	5.02	8	MON	DEC	W	1414	9.02	54.3	4.9	15	FRI	DEC
04	012	SON		37.51	73	B	14	E	821	8.12	71.95	5.84	7	TUE	DEC	E	809	9.77	58.97	5.76	14	TUE	MAR
04	012	SON		41.36	5	B	14	W	380	10.23	66.67	6.82	12	SAT	APR	W	398	11.25	63.48	7.14	16	SAT	JUL
04	012	NAP		.24	74	A	14	W	1874	7.15	71.77	5.13	6	WED	JUL	E	2102	8.41	68.42	5.75	16	TUE	JAN
04	012	NAP		2.3	906	B	15	W	2031	8.09	66.83	5.4	7	THU	APR	E	1911	8.24	61.75	5.08	16	TUE	JUL
04	012	SOL		19.17	315	B	14	W	662	8.07	71.57	5.77	7	MON	JUL	E	768	10.18	65.81	6.7	16	FRI	JUL
04	012	SOL		26.28	317	B	14	W	955	7.01	66.88	4.69	6	MON	APR	E	1066	8.78	59.55	5.23	16	FRI	OCT
10	012	SJ	L	23.29	123	B	13	E	693	9.13	60.21	5.5	12	SAT	JUN	E	775	8.93	68.83	6.15	17	FRI	MAR
10	012	CAL		9.927	91	B	13	E	305	8.03	66.45	5.34	7	WED	APR	E	299	8.66	60.4	5.23	17	FRI	JAN
10	012	CAL		9.927	157	A	13	E	481	7.76	69.91	5.42	7	WED	APR	W	499	9.11	61.76	5.63	17	THU	JAN
10	012	CAL		13.87	155	A	15	E	489	11.91	68.49	8.16	8	MON	JAN	W	431	11.62	61.84	7.19	15	TUE	JAN
04	013	ALA		4.262	27	A	15	N	2998	10.02	55.03	5.52	8	TUE	SEP	N	2653	8.78	55.61	4.88	17	TUE	SEP
04	013	ALA		13.91	240	B	15	S	1871	8.51	64.43	5.48	8	THU	SEP	S	1668	9.49	51.55	4.89	15	SAT	JUN
07	014	LA	R	26	779	A	15	S	8762	6.53	78.03	5.1	6	WED	FEB	N	8421	6.98	70.2	4.9	16	MON	FEB
07	014	LA	R	32.24	403	B	14	S	6002	6.35	84.61	5.37	5	MON	FEB	N	5840	7.65	68.3	5.23	17	TUE	FEB
07	014	LA	R	54.2	712	B	15	S	4896	5.9	82.68	4.88	5	TUE	SEP	N	5029	7.71	64.95	5.01	17	THU	OCT
07	014	LA	R	59.80	338	A	14	S	3196	6.98	52.39	3.66	7	WED	FEB	S	4034	8.32	55.49	4.61	16	FRI	FEB
07	014	LA	R	73	63	O	15	N	1634	6.79	67.11	4.56	6	THU	OCT	S	1934	9.6	56.19	5.39	17	THU	DEC
06	014	KER	R	0	927	A	15	N	1403	6.55	68.34	4.48	7	THU	APR	S	1797	9.33	61.48	5.73	17	THU	AUG
06	014	KER	L	16.87	912	O	15	N	826	7.47	65.25	4.88	11	MON	SEP	S	1025	9.74	62.08	6.05	15	FRI	MAY
06	014	KER		22.15	298	A	15	S	466	9.19	78.58	7.22	8	SAT	SEP	N	739	12.98	88.19	11.45	20	MON	SEP
06	014	KER		57.77	301	B	15	N	410	11.68	64.06	7.48	12	FRI	JUL	S	572	13.58	76.88	10.44	15	MON	JAN
06	014	KER		57.77	302	A	15	N	447	11.8	76.15	8.98	8	FRI	JUL	S	570	15.82	72.43	11.46	15	SUN	AUG

2015 Daily Truck Traffic

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK AADT By Axle 2	TRUCK AADT By Axle 3	TRUCK AADT By Axle 4	TRUCK AADT By Axle 5+	TRUCK % TOTAL By Axle 2	TRUCK % TOTAL By Axle 3	TRUCK % TOTAL By Axle 4	TRUCK % TOTAL By Axle 5+	EAL 2-WAY (1000)	YEAR VER/ EST
10	8	SBD	1.229	A	MONTCLAIR, CENTRAL AVE	253,000	16,799	6.64	4,887	1,598	606	9,708	29.09	9.51	3.61	57.79	3,756	05E
10	8	SBD	3.468	B	UPLAND, JCT. RTE. 83	253,000	16,927	6.69	4,924	1,610	611	9,782	29.09	9.51	3.61	57.79	3,785	05E
10	8	SBD	3.468	A	UPLAND, JCT. RTE. 83	256,000	17,126	6.69	4,982	1,629	618	9,897	29.09	9.51	3.61	57.79	3,830	05E
10	8	SBD	9.936	B	ONTARIO, JCT. RTE. 15	265,000	17,729	6.69	5,157	1,686	640	10,246	29.09	9.51	3.61	57.79	3,965	05E
10	8	SBD	9.936	A	ONTARIO, JCT. RTE. 15	250,000	25,574	10.23	6,511	2,606	744	15,713	25.46	10.19	2.91	61.44	5,998	06E
10	8	SBD	11.132	B	ETIWANDA AVE	250,000	25,574	10.23	6,511	2,606	744	15,713	25.46	10.19	2.91	61.44	5,998	06E
10	8	SBD	11.132	A	ETIWANDA AVE	214,000	21,892	10.23	5,574	2,231	637	13,450	25.46	10.19	2.91	61.44	5,134	06V
10	8	SBD	13.169	B	FONTANA, CHERRY AVE	214,000	22,021	10.29	5,871	2,237	650	13,263	26.66	10.16	2.95	60.23	5,083	08V
10	8	SBD	R18.492	B	BLOOMINGTON, CEDAR AVE	200,000	20,458	10.23	4,953	2,138	602	12,765	24.21	10.45	2.94	62.39	4,862	06E
10	8	SBD	R18.492	A	BLOOMINGTON, CEDAR AVE	196,000	19,953	10.18	4,988	1,995	599	12,371	25.00	10.00	3.00	62.00	4,714	06E
10	8	SBD	20.965	B	PEPPER AVE	197,000	19,897	10.10	4,875	1,890	597	12,535	24.50	9.50	3.00	63.00	4,757	06E
10	8	SBD	20.965	A	PEPPER AVE	198,000	19,794	10.00	4,851	1,782	588	12,573	24.50	9.00	2.97	63.50	4,758	06E
10	8	SBD	R23.248	B	COLTON, MOUNT VERNON AVE	204,000	20,176	9.89	4,943	1,816	605	12,812	24.50	9.00	3.00	63.50	4,849	06E
10	8	SBD	R24.24	B	COLTON, JCT. RTE. 215	200,000	22,200	11.10	8,214	2,886	821	10,279	37.00	13.00	3.70	46.30	4,220	84E
10	8	SBD	R24.24	A	COLTON, JCT. RTE. 215	230,000	25,301	11.00	10,348	3,061	886	11,006	40.90	12.10	3.50	43.50	4,571	84V
10	8	SBD	27.296	B	MOUNTAIN VIEW AVE	198,000	26,136	13.20	10,690	3,162	915	11,369	40.90	12.10	3.50	43.50	4,722	84E

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX D

Existing Conditions Synchro Analysis Worksheets

Michael Baker
INTERNATIONAL

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	212	51	101	228	381	77	1019	79	542	756	213
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	262	223	54	106	240	401	81	1073	83	571	796	224
RTOR Reduction (vph)	0	0	47	0	0	89	0	0	53	0	34	0
Lane Group Flow (vph)	262	223	7	106	240	312	81	1073	30	571	986	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	11.0	15.7	15.7	10.9	15.6	41.8	8.0	43.2	43.2	26.2	61.4	
Effective Green, g (s)	11.0	15.7	15.7	10.9	15.6	41.8	8.0	43.2	43.2	26.2	61.4	
Actuated g/C Ratio	0.09	0.13	0.13	0.09	0.13	0.35	0.07	0.36	0.36	0.22	0.51	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	265	438	196	262	435	919	192	1734	540	631	2383	
v/s Ratio Prot	c0.09	0.07		0.04	c0.07	0.07	0.03	c0.22		c0.20	0.21	
v/s Ratio Perm			0.00			0.04			0.02			
v/c Ratio	0.99	0.51	0.04	0.40	0.55	0.34	0.42	0.62	0.06	0.90	0.41	
Uniform Delay, d1	54.4	48.6	45.5	51.5	48.9	28.9	53.8	31.6	25.1	45.7	18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.17	1.15	
Incremental Delay, d2	51.5	0.7	0.1	0.4	1.2	0.1	0.5	1.7	0.2	14.7	0.5	
Delay (s)	105.9	49.2	45.6	51.9	50.1	29.0	54.3	33.3	25.3	68.1	21.3	
Level of Service	F	D	D	D	D	C	D	C	C	E	C	
Approach Delay (s)		76.4			39.0			34.1			38.1	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	506	56	12	473	10	46	30	24	8	11	62
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4803		1583	3131		2891	2926	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4803		1583	3131		2891	2926	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	550	61	13	514	11	50	33	26	9	12	67
RTOR Reduction (vph)	0	0	33	0	2	0	0	16	0	0	46	0
Lane Group Flow (vph)	211	550	28	13	523	0	50	43	0	9	33	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	12.0	51.2	51.2	1.6	40.8		7.2	40.2		1.0	34.0	
Effective Green, g (s)	12.0	51.2	51.2	1.6	40.8		7.2	40.2		1.0	34.0	
Actuated g/C Ratio	0.11	0.47	0.47	0.01	0.37		0.07	0.37		0.01	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	315	2242	698	42	1781		103	1144		26	904	
v/s Ratio Prot	c0.07	0.11		0.00	c0.11		c0.03	c0.01		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.67	0.25	0.04	0.31	0.29		0.49	0.04		0.35	0.04	
Uniform Delay, d1	47.1	17.7	16.0	53.7	24.4		49.6	22.5		54.2	26.6	
Progression Factor	1.00	1.00	1.00	0.99	1.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.3	0.3	0.1	4.1	0.4		3.6	0.1		7.9	0.0	
Delay (s)	52.4	18.0	16.1	57.1	26.5		53.2	22.5		62.0	26.6	
Level of Service	D	B	B	E	C		D	C		E	C	
Approach Delay (s)		26.7			27.2			36.6			30.2	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	239	312	435	100	20	34
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4682		2762	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4682		2762	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	339	473	109	22	37
RTOR Reduction (vph)	0	0	24	0	15	16
Lane Group Flow (vph)	260	339	558	0	25	3
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	23.9	83.0	55.1		19.0	19.0
Effective Green, g (s)	23.9	83.0	55.1		19.0	19.0
Actuated g/C Ratio	0.22	0.75	0.50		0.17	0.17
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	343	2529	2345		477	222
v/s Ratio Prot	c0.16	0.10	c0.12		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.76	0.13	0.24		0.05	0.01
Uniform Delay, d1	40.3	3.7	15.6		38.0	37.7
Progression Factor	1.68	0.54	0.48		1.00	1.00
Incremental Delay, d2	9.1	0.1	0.2		0.2	0.1
Delay (s)	77.1	2.1	7.7		38.2	37.9
Level of Service	E	A	A		D	D
Approach Delay (s)		34.6	7.7		38.1	
Approach LOS		C	A		D	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰	↱		↰	↱	
Volume (vph)	3	338	27	38	480	4	43	1	36	0	0	1
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583	1765	1500	1583	3349		1583	1507			1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1583	1765	1500	1583	3349		1262	1507			1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	367	29	41	522	4	47	1	39	0	0	1
RTOR Reduction (vph)	0	0	12	0	0	0	0	29	0	0	1	0
Lane Group Flow (vph)	3	367	17	41	526	0	47	11	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	63.0	63.0	5.8	67.4		29.0	29.0			29.0	
Effective Green, g (s)	1.4	63.0	63.0	5.8	67.4		29.0	29.0			29.0	
Actuated g/C Ratio	0.01	0.57	0.57	0.05	0.61		0.26	0.26			0.26	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	20	1010	859	83	2052		332	397			395	
v/s Ratio Prot	0.00	c0.21		c0.03	0.16			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.15	0.36	0.02	0.49	0.26		0.14	0.03			0.00	
Uniform Delay, d1	53.7	12.7	10.2	50.7	9.8		31.0	30.0			29.8	
Progression Factor	1.00	0.82	0.31	1.26	1.06		1.00	1.00			1.00	
Incremental Delay, d2	3.5	1.0	0.0	4.5	0.3		0.9	0.1			0.0	
Delay (s)	57.1	11.4	3.2	68.4	10.7		31.9	30.2			29.8	
Level of Service	E	B	A	E	B		C	C			C	
Approach Delay (s)		11.2			14.9			31.1			29.8	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	325	36	128	515	11	38	1	99	5	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	353	39	139	560	12	41	1	108	5	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	572			392			938	1229	196	1028	1243	286
vC1, stage 1 conf vol							379	379		844	844	
vC2, stage 2 conf vol							559	850		184	399	
vCu, unblocked vol	533			392			906	1201	196	997	1215	243
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			89	100	87	98	100	100
cM capacity (veh/h)	1014			1163			386	309	812	276	298	746

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	236	157	139	373	199	150	9
Volume Left	3	0	0	139	0	0	41	5
Volume Right	0	0	39	0	0	12	108	2
cSH	1014	1700	1700	1163	1700	1700	1132	373
Volume to Capacity	0.00	0.14	0.09	0.12	0.22	0.12	0.13	0.02
Queue Length 95th (ft)	0	0	0	10	0	0	11	2
Control Delay (s)	8.6	0.0	0.0	8.5	0.0	0.0	11.6	16.1
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.7			11.6	16.1
Approach LOS							B	C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	266	177	332	610	22	65	0	255	9	15	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1676	1500		1731	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.92	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1306	1500		1622	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	289	192	361	663	24	71	0	277	10	16	4
RTOR Reduction (vph)	0	0	101	0	0	8	0	0	222	0	0	3
Lane Group Flow (vph)	13	289	91	361	663	16	0	71	55	0	26	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	44.7	44.7	31.1	74.4	74.4		22.0	22.0		22.0	22.0
Effective Green, g (s)	1.4	44.7	44.7	31.1	74.4	74.4		22.0	22.0		22.0	22.0
Actuated g/C Ratio	0.01	0.41	0.41	0.28	0.68	0.68		0.20	0.20		0.20	0.20
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	1362	609	447	2267	1014		261	300		324	300
v/s Ratio Prot	0.01	0.09		c0.23	c0.20							
v/s Ratio Perm			0.06			0.01		c0.05	0.04		0.02	0.00
v/c Ratio	0.65	0.21	0.15	0.81	0.29	0.02		0.27	0.18		0.08	0.00
Uniform Delay, d1	54.1	21.2	20.6	36.7	7.2	5.8		37.2	36.5		35.8	35.2
Progression Factor	0.88	0.93	1.28	1.51	0.71	0.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	55.8	0.3	0.5	9.3	0.3	0.0		0.6	0.3		0.5	0.0
Delay (s)	103.5	20.0	27.0	64.7	5.4	0.0		37.8	36.8		36.3	35.2
Level of Service	F	C	C	E	A	A		D	D		D	D
Approach Delay (s)		24.9			25.7			37.0			36.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	427	103	34	738	1	228	3	72	4	0	2
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1261	1765	1500	1260	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	464	112	37	802	1	248	3	78	4	0	2
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	50	0	1	0
Lane Group Flow (vph)	8	464	54	37	802	1	248	3	28	4	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	53.2	53.2	5.6	57.4	57.4	39.0	39.0	39.0	39.0	39.0	
Effective Green, g (s)	1.4	53.2	53.2	5.6	57.4	57.4	39.0	39.0	39.0	39.0	39.0	
Actuated g/C Ratio	0.01	0.48	0.48	0.05	0.52	0.52	0.35	0.35	0.35	0.35	0.35	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1621	725	80	1749	782	447	625	531	446	531	
v/s Ratio Prot	0.01	0.14		c0.02	c0.24			0.00			0.00	
v/s Ratio Perm			0.04			0.00	c0.20		0.02	0.00		
v/c Ratio	0.40	0.29	0.07	0.46	0.46	0.00	0.55	0.00	0.05	0.01	0.00	
Uniform Delay, d1	53.9	17.0	15.2	50.7	16.5	12.6	28.5	23.0	23.3	23.0	22.9	
Progression Factor	1.32	0.58	0.32	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.0	0.4	0.2	4.2	0.9	0.0	4.9	0.0	0.2	0.0	0.0	
Delay (s)	83.2	10.2	5.0	54.9	17.4	12.6	33.4	23.0	23.5	23.0	22.9	
Level of Service	F	B	A	D	B	B	C	C	C	C	C	
Approach Delay (s)		10.2			19.0			31.0			23.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	23
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	178	309	43	0	11	384	9	0	67	69	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	193	336	47	0	12	417	10	0	73	75	40
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	17.5	20.9	18.9
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	71%	0%	100%	93%	11%
Vol Right, %	21%	0%	0%	29%	0%	0%	7%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	173	178	206	146	11	256	137	361
LT Vol	67	178	0	0	11	0	0	0
Through Vol	69	0	206	103	0	256	128	40
RT Vol	37	0	0	43	0	0	9	321
Lane Flow Rate	188	193	224	159	12	278	149	392
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.461	0.462	0.502	0.346	0.029	0.638	0.339	0.811
Departure Headway (Hd)	8.823	8.589	8.066	7.85	8.772	8.249	8.201	7.585
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	410	422	448	460	409	440	439	479
Service Time	6.558	6.314	5.791	5.576	6.499	5.975	5.927	5.285
HCM Lane V/C Ratio	0.459	0.457	0.5	0.346	0.029	0.632	0.339	0.818
HCM Control Delay	18.9	18.5	18.7	14.7	11.8	24.4	15.1	35.4
HCM Lane LOS	C	C	C	B	B	C	C	E
HCM 95th-tile Q	2.4	2.4	2.8	1.5	0.1	4.3	1.5	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	156	119	68	14	126	77	121	793	13	70	794	75
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.94		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3170		1583	3162		1583	3345		1583	3309	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3170		1583	3162		1583	3345		1583	3309	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	129	74	15	137	84	132	862	14	76	863	82
RTOR Reduction (vph)	0	49	0	0	65	0	0	1	0	0	7	0
Lane Group Flow (vph)	170	154	0	15	156	0	132	875	0	76	938	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.6	30.0		1.6	20.0		11.1	35.9		6.5	31.3	
Effective Green, g (s)	11.6	30.0		1.6	20.0		11.1	35.9		6.5	31.3	
Actuated g/C Ratio	0.13	0.33		0.02	0.22		0.12	0.40		0.07	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	204	1056		28	702		195	1334		114	1150	
v/s Ratio Prot	c0.11	0.05		0.01	c0.05		c0.08	0.26		0.05	c0.28	
v/s Ratio Perm												
v/c Ratio	0.83	0.15		0.54	0.22		0.68	0.66		0.67	0.82	
Uniform Delay, d1	38.3	21.0		43.8	28.6		37.7	22.0		40.7	26.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.38	0.65	
Incremental Delay, d2	24.3	0.1		18.3	0.2		9.0	2.5		12.0	5.6	
Delay (s)	62.5	21.1		62.1	28.8		46.7	24.5		68.3	23.0	
Level of Service	E	C		E	C		D	C		E	C	
Approach Delay (s)		40.0			30.9			27.4			26.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	5	16	1	0	100	1	1017	6	148	962	436
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1560			1528		1583	3350		1583	3353	1500
Flt Permitted	0.68	1.00			1.00		0.24	1.00		0.13	1.00	1.00
Satd. Flow (perm)	1128	1560			1527		395	3350		212	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	308	5	17	1	0	109	1	1105	7	161	1046	474
RTOR Reduction (vph)	0	12	0	0	76	0	0	1	0	0	0	86
Lane Group Flow (vph)	308	10	0	0	34	0	1	1111	0	161	1046	388
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	27.3	27.3			27.3		42.7	41.9		54.7	49.9	49.9
Effective Green, g (s)	27.3	27.3			27.3		42.7	41.9		54.7	49.9	49.9
Actuated g/C Ratio	0.30	0.30			0.30		0.47	0.47		0.61	0.55	0.55
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	342	473			463		197	1559		262	1859	831
v/s Ratio Prot		0.01					0.00	c0.33		c0.06	0.31	
v/s Ratio Perm	c0.27				0.02		0.00			0.31		0.26
v/c Ratio	0.90	0.02			0.07		0.01	0.71		0.61	0.56	0.47
Uniform Delay, d1	30.0	22.0			22.3		12.6	19.2		12.5	13.0	12.0
Progression Factor	1.00	1.00			1.00		0.77	0.55		1.33	0.74	0.60
Incremental Delay, d2	25.1	0.0			0.0		0.0	2.3		2.9	0.8	1.3
Delay (s)	55.1	22.0			22.4		9.7	12.9		19.6	10.5	8.6
Level of Service	E	C			C		A	B		B	B	A
Approach Delay (s)		52.9			22.4			12.9			10.8	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	892	0	379	409	0	552	369	757	511	565	743	840
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	970	0	412	445	0	600	401	823	555	614	808	913
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	970	0	412	445	0	600	401	823	555	614	808	913
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	43.1		120.0	43.1		120.0	24.5	25.0	120.0	31.4	31.9	120.0
Effective Green, g (s)	43.1		120.0	43.1		120.0	24.5	25.0	120.0	31.4	31.9	120.0
Actuated g/C Ratio	0.36		1.00	0.36		1.00	0.20	0.21	1.00	0.26	0.27	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1038		1500	1038		1500	590	1003	1500	756	1280	1500
v/s Ratio Prot							0.14	c0.17		c0.21	0.17	
v/s Ratio Perm	c0.34		0.27	0.15		0.40			0.37			0.61
v/c Ratio	0.93		0.27	0.43		0.40	0.68	0.82	0.37	0.81	0.63	0.61
Uniform Delay, d1	37.1		0.0	29.1		0.0	44.1	45.4	0.0	41.5	38.9	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.77	0.77	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.7		0.5	0.2		0.8	5.0	6.1	0.6	9.3	2.4	1.8
Delay (s)	51.8		0.5	29.3		0.8	38.9	40.9	0.6	50.8	41.2	1.8
Level of Service	D		A	C		A	D	D	A	D	D	A
Approach Delay (s)		36.5			12.9			27.9			28.4	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	506	3	325	0	0	0	0	1017	383	451	1231	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.88						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1458						4818	1500	1583	3353	
Flt Permitted	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1458						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	550	3	353	0	0	0	0	1105	416	490	1338	0
RTOR Reduction (vph)	0	37	0	0	0	0	0	0	312	0	0	0
Lane Group Flow (vph)	473	396	0	0	0	0	0	1105	104	490	1338	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	28.0	28.0						22.5	22.5	27.0	53.5	
Effective Green, g (s)	28.0	28.0						22.5	22.5	27.0	53.5	
Actuated g/C Ratio	0.31	0.31						0.25	0.25	0.30	0.59	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	467	453						1204	375	474	1993	
v/s Ratio Prot								c0.23		c0.31	0.40	
v/s Ratio Perm	c0.31	0.27							0.07			
v/c Ratio	1.01	0.88						0.92	0.28	1.03	0.67	
Uniform Delay, d1	31.0	29.3						32.8	27.2	31.5	12.3	
Progression Factor	1.00	1.00						1.21	3.90	1.36	1.37	
Incremental Delay, d2	44.9	17.0						9.5	1.3	39.2	1.0	
Delay (s)	75.9	46.3						49.4	107.5	82.0	17.8	
Level of Service	E	D						D	F	F	B	
Approach Delay (s)		61.8			0.0			65.3			35.0	
Approach LOS		E			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	370	8	482	292	1236	0	0	1312	872
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.98	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1571	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1571	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	402	9	524	317	1343	0	0	1426	948
RTOR Reduction (vph)	0	0	0	0	8	48	0	0	0	0	0	407
Lane Group Flow (vph)	0	0	0	0	482	397	317	1343	0	0	1426	541
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					25.0	25.0	17.0	56.5			35.5	35.5
Effective Green, g (s)					25.0	25.0	17.0	56.5			35.5	35.5
Actuated g/C Ratio					0.28	0.28	0.19	0.63			0.39	0.39
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					436	395	299	2104			1900	591
v/s Ratio Prot							c0.20	0.40			0.30	
v/s Ratio Perm					0.31	0.28						c0.36
v/c Ratio					1.11	1.00	1.06	0.64			0.75	0.92
Uniform Delay, d1					32.5	32.5	36.5	10.4			23.4	25.8
Progression Factor					1.00	1.00	1.37	0.98			1.00	1.00
Incremental Delay, d2					74.9	46.3	47.7	0.5			2.8	21.2
Delay (s)					107.4	78.8	97.7	10.7			26.2	47.0
Level of Service					F	E	F	B			C	D
Approach Delay (s)		0.0			93.8			27.3			34.5	
Approach LOS		A			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	601	129	233	320	759	197	1042	235	642	967	139
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	363	633	136	245	337	799	207	1097	247	676	1018	146
RTOR Reduction (vph)	0	0	106	0	0	72	0	0	168	0	14	0
Lane Group Flow (vph)	363	633	30	245	337	727	207	1097	79	676	1150	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	16.0	28.4	28.4	13.0	25.4	55.4	13.1	34.6	34.6	30.0	51.5	
Effective Green, g (s)	16.0	28.4	28.4	13.0	25.4	55.4	13.1	34.6	34.6	30.0	51.5	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.20	0.43	0.10	0.27	0.27	0.23	0.40	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	355	732	327	289	655	1125	291	1282	399	667	1872	
v/s Ratio Prot	0.13	c0.19		c0.08	0.10	0.15	0.07	c0.23		c0.23	0.24	
v/s Ratio Perm			0.02			0.13			0.05			
v/c Ratio	1.02	0.86	0.09	0.85	0.51	0.65	0.71	0.86	0.20	1.01	0.61	
Uniform Delay, d1	57.0	48.9	40.5	57.5	46.8	29.5	56.6	45.3	37.0	50.0	31.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	53.6	10.3	0.1	19.3	0.5	1.0	6.7	7.5	1.1	38.2	1.5	
Delay (s)	110.6	59.3	40.6	76.8	47.3	30.5	63.3	52.8	38.1	88.2	32.8	
Level of Service	F	E	D	E	D	C	E	D	D	F	C	
Approach Delay (s)		73.5			42.8			51.8			53.2	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	54.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	294	785	52	20	676	47	48	34	24	74	36	268
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4771		1583	3145		2891	2909	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4771		1583	3145		2891	2909	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	853	57	22	735	51	52	37	26	80	39	291
RTOR Reduction (vph)	0	0	29	0	7	0	0	18	0	0	212	0
Lane Group Flow (vph)	320	853	28	22	779	0	52	45	0	80	118	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	16.6	54.6	54.6	1.6	39.6		6.9	33.0		4.8	30.0	
Effective Green, g (s)	16.6	54.6	54.6	1.6	39.6		6.9	33.0		4.8	30.0	
Actuated g/C Ratio	0.15	0.50	0.50	0.01	0.36		0.06	0.30		0.04	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	436	2391	744	42	1717		99	943		126	793	
v/s Ratio Prot	c0.11	0.18		0.01	c0.16		c0.03	0.01		0.03	c0.04	
v/s Ratio Perm			0.02									
v/c Ratio	0.73	0.36	0.04	0.52	0.45		0.53	0.05		0.63	0.15	
Uniform Delay, d1	44.6	17.0	14.2	53.8	26.9		50.0	27.3		51.7	30.3	
Progression Factor	1.00	1.00	1.00	1.12	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.3	0.4	0.1	11.2	0.9		5.0	0.1		10.0	0.1	
Delay (s)	50.9	17.4	14.3	71.5	19.2		54.9	27.4		61.8	30.4	
Level of Service	D	B	B	E	B		D	C		E	C	
Approach Delay (s)		25.9			20.6			39.9			36.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.9
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	63	832	515	40	111	139
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4766		2793	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4766		2793	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	904	560	43	121	151
RTOR Reduction (vph)	0	0	6	0	49	65
Lane Group Flow (vph)	68	904	597	0	137	21
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	8.9	75.0	62.1		27.0	27.0
Effective Green, g (s)	8.9	75.0	62.1		27.0	27.0
Actuated g/C Ratio	0.08	0.68	0.56		0.25	0.25
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	128	2286	2690		685	316
v/s Ratio Prot	c0.04	c0.27	0.13		c0.05	
v/s Ratio Perm						0.02
v/c Ratio	0.53	0.40	0.22		0.20	0.07
Uniform Delay, d1	48.5	7.6	11.9		32.9	31.8
Progression Factor	1.24	0.85	1.14		1.00	1.00
Incremental Delay, d2	4.0	0.5	0.2		0.7	0.4
Delay (s)	64.3	7.0	13.8		33.6	32.2
Level of Service	E	A	B		C	C
Approach Delay (s)		11.0	13.8		33.2	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	883	45	21	502	0	18	0	35	3	0	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1500	1583	3353		1583	1500		1583	1500	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00		0.73	1.00	
Satd. Flow (perm)		1765	1500	1583	3353		1259	1500		1221	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	960	49	23	546	0	20	0	38	3	0	4
RTOR Reduction (vph)	0	0	11	0	0	0	0	35	0	0	4	0
Lane Group Flow (vph)	0	960	38	23	546	0	20	3	0	3	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		84.2	84.2	3.5	91.7		10.1	10.1		10.1	10.1	
Effective Green, g (s)		84.2	84.2	3.5	91.7		10.1	10.1		10.1	10.1	
Actuated g/C Ratio		0.77	0.77	0.03	0.83		0.09	0.09		0.09	0.09	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1351	1148	50	2795		115	137		112	137	
v/s Ratio Prot		c0.54		c0.01	0.16			0.00			0.00	
v/s Ratio Perm			0.03				c0.02			0.00		
v/c Ratio		0.71	0.03	0.46	0.20		0.17	0.03		0.03	0.00	
Uniform Delay, d1		6.6	3.1	52.3	1.8		46.1	45.5		45.5	45.4	
Progression Factor		2.41	3.04	0.79	1.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.0	0.0	6.5	0.2		0.7	0.1		0.1	0.0	
Delay (s)		19.0	9.5	47.9	3.8		46.8	45.5		45.6	45.4	
Level of Service		B	A	D	A		D	D		D	D	
Approach Delay (s)		18.5			5.5			46.0			45.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	873	28	24	492	8	26	1	69	14	2	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	949	30	26	535	9	28	1	75	15	2	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	543			979			1302	1577	490	1084	1588	272
vC1, stage 1 conf vol							982	982		591	591	
vC2, stage 2 conf vol							321	596		492	997	
vCu, unblocked vol	496			979			1269	1549	490	1046	1561	219
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			89	100	86	95	99	99
cM capacity (veh/h)	1044			700			251	278	524	334	259	771

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	9	633	347	26	357	187	104	22
Volume Left	9	0	0	26	0	0	28	15
Volume Right	0	0	30	0	0	9	75	4
cSH	1044	1700	1700	700	1700	1700	729	406
Volume to Capacity	0.01	0.37	0.20	0.04	0.21	0.11	0.14	0.05
Queue Length 95th (ft)	1	0	0	3	0	0	12	4
Control Delay (s)	8.5	0.0	0.0	10.3	0.0	0.0	15.3	15.3
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.5			15.3	15.3
Approach LOS							C	C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	928	33	31	471	2	34	1	36	2	0	5
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1683	1500		1676	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79	1.00		0.73	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1398	1500		1292	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1009	36	34	512	2	37	1	39	2	0	5
RTOR Reduction (vph)	0	0	14	0	0	1	0	0	30	0	0	4
Lane Group Flow (vph)	2	1009	22	34	512	1	0	38	9	0	2	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	68.3	68.3	5.5	72.4	72.4		24.0	24.0		24.0	24.0
Effective Green, g (s)	1.4	68.3	68.3	5.5	72.4	72.4		24.0	24.0		24.0	24.0
Actuated g/C Ratio	0.01	0.62	0.62	0.05	0.66	0.66		0.22	0.22		0.22	0.22
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	2081	931	79	2206	987		305	327		281	327
v/s Ratio Prot	0.00	c0.30		c0.02	0.15							
v/s Ratio Perm			0.01			0.00		c0.03	0.01		0.00	0.00
v/c Ratio	0.10	0.48	0.02	0.43	0.23	0.00		0.12	0.03		0.01	0.00
Uniform Delay, d1	53.7	11.3	8.0	50.7	7.6	6.4		34.6	33.8		33.7	33.6
Progression Factor	0.70	1.36	3.11	1.15	0.90	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	0.7	0.0	3.7	0.2	0.0		0.8	0.1		0.0	0.0
Delay (s)	39.4	16.0	25.0	61.8	7.0	6.4		35.4	34.0		33.7	33.7
Level of Service	D	B	C	E	A	A		D	C		C	C
Approach Delay (s)		16.4			10.4			34.7			33.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	728	237	39	381	1	133	0	151	3	2	3
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583		1500	1583	1606	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75		1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1257		1500	1262	1606	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	791	258	42	414	1	145	0	164	3	2	3
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	113	0	2	0
Lane Group Flow (vph)	5	791	166	42	414	1	145	0	51	3	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	58.0	58.0	5.8	62.4	62.4	34.0		34.0	34.0	34.0	
Effective Green, g (s)	1.4	58.0	58.0	5.8	62.4	62.4	34.0		34.0	34.0	34.0	
Actuated g/C Ratio	0.01	0.53	0.53	0.05	0.57	0.57	0.31		0.31	0.31	0.31	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1767	790	83	1902	850	388		463	390	496	
v/s Ratio Prot	0.00	c0.24		c0.03	0.12						0.00	
v/s Ratio Perm			0.11			0.00	c0.12		0.03	0.00		
v/c Ratio	0.25	0.45	0.21	0.51	0.22	0.00	0.37		0.11	0.01	0.01	
Uniform Delay, d1	53.8	16.1	13.8	50.7	11.7	10.3	29.7		27.2	26.3	26.3	
Progression Factor	1.08	0.76	1.01	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	5.9	0.7	0.5	4.8	0.3	0.0	2.7		0.5	0.0	0.0	
Delay (s)	64.0	13.0	14.5	55.5	12.0	10.3	32.4		27.7	26.4	26.3	
Level of Service	E	B	B	E	B	B	C		C	C	C	
Approach Delay (s)		13.6			16.0			29.9			26.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	25.8
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	182	652	51	0	15	265	6	0	24	90	43
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	198	709	55	0	16	288	7	0	26	98	47
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	32.6	15	16.3
HCM LOS	D	B	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	57%	0%	100%	81%	0%	100%	94%	31%
Vol Right, %	27%	0%	0%	19%	0%	0%	6%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	157	182	435	268	15	177	94	239
LT Vol	24	182	0	0	15	0	0	7
Through Vol	90	0	435	217	0	177	88	74
RT Vol	43	0	0	51	0	0	6	158
Lane Flow Rate	171	198	472	292	16	192	103	260
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.392	0.414	0.92	0.557	0.038	0.422	0.224	0.555
Departure Headway (Hd)	8.279	7.525	7.009	6.872	8.436	7.917	7.871	7.689
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	433	477	515	525	423	453	455	468
Service Time	6.048	5.284	4.768	4.63	6.206	5.687	5.641	5.45
HCM Lane V/C Ratio	0.395	0.415	0.917	0.556	0.038	0.424	0.226	0.556
HCM Control Delay	16.3	15.5	48.8	18	11.5	16.4	12.9	19.7
HCM Lane LOS	C	C	E	C	B	C	B	C
HCM 95th-tile Q	1.8	2	11	3.4	0.1	2.1	0.8	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	183	382	111	22	120	104	82	749	36	105	797	59
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3239		1583	3119		1583	3330		1583	3318	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3239		1583	3119		1583	3330		1583	3318	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	199	415	121	24	130	113	89	814	39	114	866	64
RTOR Reduction (vph)	0	27	0	0	89	0	0	3	0	0	5	0
Lane Group Flow (vph)	199	509	0	24	154	0	89	850	0	114	925	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.8	28.7		3.3	19.2		6.9	32.0		10.0	35.1	
Effective Green, g (s)	12.8	28.7		3.3	19.2		6.9	32.0		10.0	35.1	
Actuated g/C Ratio	0.14	0.32		0.04	0.21		0.08	0.36		0.11	0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	1032		58	665		121	1184		175	1294	
v/s Ratio Prot	c0.13	c0.16		0.02	0.05		0.06	0.26		c0.07	c0.28	
v/s Ratio Perm												
v/c Ratio	0.88	0.49		0.41	0.23		0.74	0.72		0.65	0.71	
Uniform Delay, d1	37.9	24.8		42.4	29.3		40.7	25.1		38.3	23.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.34	0.82	
Incremental Delay, d2	31.0	0.4		4.7	0.2		20.5	3.8		7.1	2.9	
Delay (s)	68.9	25.1		47.1	29.5		61.2	28.8		58.5	21.8	
Level of Service	E	C		D	C		E	C		E	C	
Approach Delay (s)		37.0			31.1			31.9			25.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	294	30	22	1	13	178	14	1024	2	64	931	246
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1653			1543		1583	3352		1583	3353	1500
Flt Permitted	0.56	1.00			1.00		0.20	1.00		0.12	1.00	1.00
Satd. Flow (perm)	933	1653			1543		337	3352		204	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	33	24	1	14	193	15	1113	2	70	1012	267
RTOR Reduction (vph)	0	15	0	0	84	0	0	0	0	0	0	51
Lane Group Flow (vph)	320	42	0	0	124	0	15	1115	0	70	1012	216
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	32.8	32.8			32.8		41.8	41.0		48.6	44.4	44.4
Effective Green, g (s)	32.8	32.8			32.8		41.8	41.0		48.6	44.4	44.4
Actuated g/C Ratio	0.36	0.36			0.36		0.46	0.46		0.54	0.49	0.49
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	340	602			562		167	1527		174	1654	740
v/s Ratio Prot		0.03					0.00	c0.33		c0.02	0.30	
v/s Ratio Perm	c0.34				0.08		0.04			0.20		0.14
v/c Ratio	0.94	0.07			0.22		0.09	0.73		0.40	0.61	0.29
Uniform Delay, d1	27.7	18.6			19.8		13.8	20.0		13.5	16.5	13.5
Progression Factor	1.00	1.00			1.00		0.81	0.59		1.09	0.92	0.89
Incremental Delay, d2	33.4	0.0			0.1		0.2	2.3		1.2	1.3	0.8
Delay (s)	61.1	18.7			19.8		11.3	14.1		15.9	16.6	12.8
Level of Service	E	B			B		B	B		B	B	B
Approach Delay (s)		54.7			19.8			14.0			15.8	
Approach LOS		D			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	869	0	373	460	0	507	442	1108	584	524	949	859
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	945	0	405	500	0	551	480	1204	635	570	1032	934
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	945	0	405	500	0	551	480	1204	635	570	1032	934
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	40.5		120.0	40.5		120.0	23.5	33.0	120.0	26.0	35.5	120.0
Effective Green, g (s)	40.5		120.0	40.5		120.0	23.5	33.0	120.0	26.0	35.5	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.20	0.28	1.00	0.22	0.30	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	975		1500	975		1500	566	1324	1500	626	1425	1500
v/s Ratio Prot							0.17	c0.25		c0.20	0.21	
v/s Ratio Perm	c0.33		0.27	0.17		0.37			0.42			0.62
v/c Ratio	0.97		0.27	0.51		0.37	0.85	0.91	0.42	0.91	0.72	0.62
Uniform Delay, d1	39.1		0.0	31.8		0.0	46.5	42.1	0.0	45.9	37.9	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.4		0.4	0.3		0.7	14.6	10.8	0.9	19.7	3.2	2.0
Delay (s)	60.5		0.4	32.2		0.7	61.2	52.8	0.9	65.5	41.1	2.0
Level of Service	E		A	C		A	E	D	A	E	D	A
Approach Delay (s)		42.5			15.7			40.3			32.2	
Approach LOS		D			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	611	3	152	0	0	0	0	1078	392	408	1094	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1530						4818	1500	1583	3353	
Flt Permitted	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1530						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	664	3	165	0	0	0	0	1172	426	443	1189	0
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	305	0	0	0
Lane Group Flow (vph)	425	380	0	0	0	0	0	1172	121	443	1189	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	26.0	26.0						25.5	25.5	26.0	55.5	
Effective Green, g (s)	26.0	26.0						25.5	25.5	26.0	55.5	
Actuated g/C Ratio	0.29	0.29						0.28	0.28	0.29	0.62	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	434	442						1365	425	457	2067	
v/s Ratio Prot								c0.24		c0.28	0.35	
v/s Ratio Perm	c0.28	0.25							0.08			
v/c Ratio	0.98	0.86						0.86	0.28	0.97	0.58	
Uniform Delay, d1	31.7	30.3						30.5	25.1	31.6	10.2	
Progression Factor	1.00	1.00						1.17	3.51	1.47	1.15	
Incremental Delay, d2	37.3	15.3						5.3	1.2	25.2	0.7	
Delay (s)	69.0	45.5						41.1	89.3	71.7	12.5	
Level of Service	E	D						D	F	E	B	
Approach Delay (s)		57.5			0.0			54.0			28.6	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	286	3	471	234	1443	0	0	1238	547
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.96	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.97	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1552	1425	1583	3353			4818	1500
Flt Permitted					0.97	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1552	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	311	3	512	254	1568	0	0	1346	595
RTOR Reduction (vph)	0	0	0	0	15	47	0	0	0	0	0	373
Lane Group Flow (vph)	0	0	0	0	417	347	254	1568	0	0	1346	222
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					26.9	26.9	17.0	54.6			33.6	33.6
Effective Green, g (s)					26.9	26.9	17.0	54.6			33.6	33.6
Actuated g/C Ratio					0.30	0.30	0.19	0.61			0.37	0.37
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					463	425	299	2034			1798	560
v/s Ratio Prot							c0.16	c0.47			0.28	
v/s Ratio Perm					0.27	0.24						0.15
v/c Ratio					0.90	0.82	0.85	0.77			0.75	0.40
Uniform Delay, d1					30.3	29.3	35.3	13.1			24.5	20.7
Progression Factor					1.00	1.00	1.28	1.11			1.00	1.00
Incremental Delay, d2					19.9	11.5	9.6	1.3			2.9	2.1
Delay (s)					50.2	40.8	54.7	15.8			27.4	22.8
Level of Service					D	D	D	B			C	C
Approach Delay (s)		0.0			45.7			21.2			26.0	
Approach LOS		A			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX E

ITE Trip Generation Rates & Truck Factors

Michael Baker
INTERNATIONAL

Warehousing
(150)

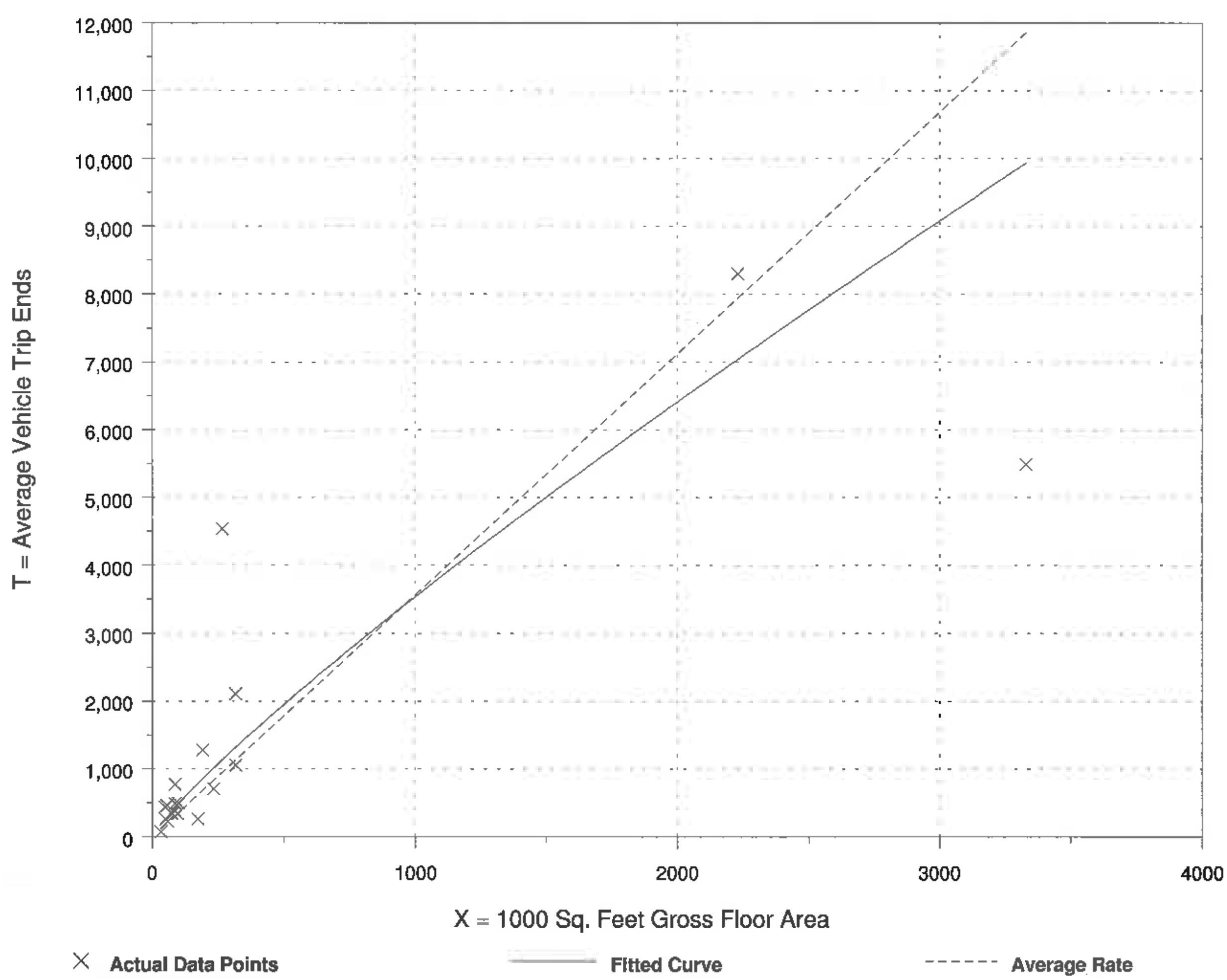
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday

Number of Studies: 18
Average 1000 Sq. Feet GFA: 431
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.56	1.51 - 17.00	3.58

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.86\ Ln(X) + 2.24$ **$R^2 = 0.77$**

Warehousing
(150)

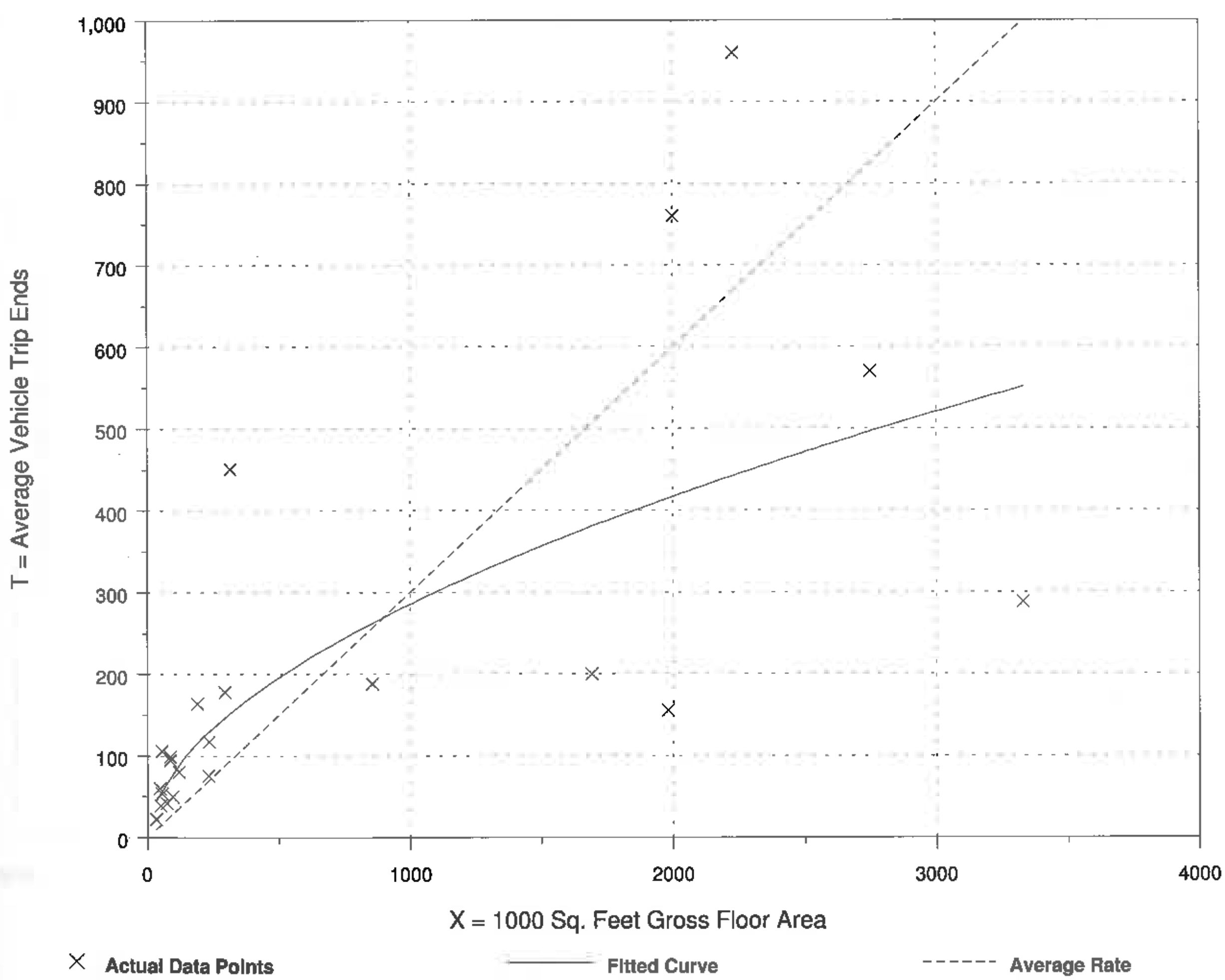
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 23
Average 1000 Sq. Feet GFA: 745
Directional Distribution: 79% entering, 21% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.30	0.08 - 1.93	0.63

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.55\ Ln(X) + 1.88$ $R^2 = 0.67$

Warehousing
(150)

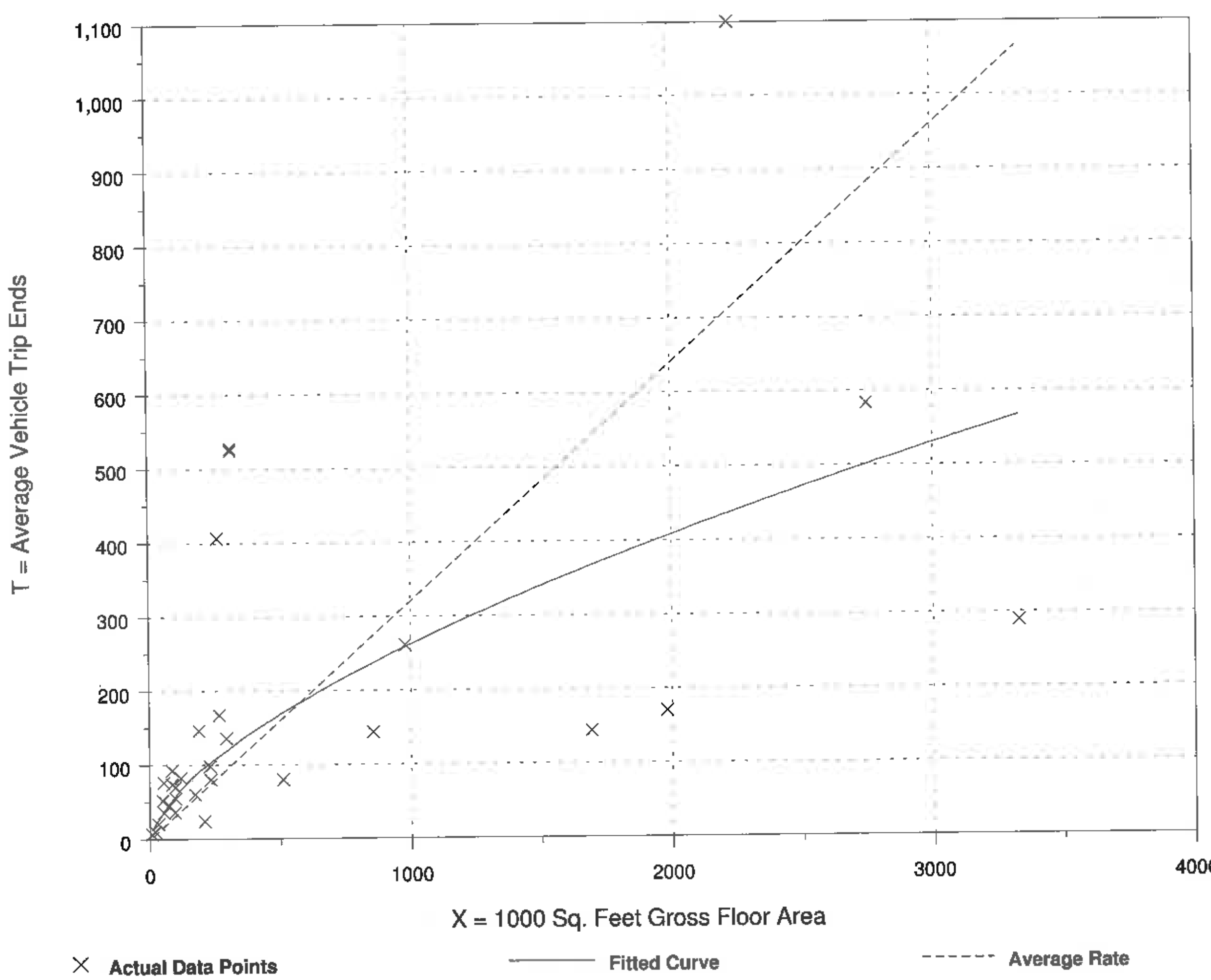
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 31
Average 1000 Sq. Feet GFA: 572
Directional Distribution: 25% entering, 75% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 1.66	0.67

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.64\ Ln(X) + 1.14$

$R^2 = 0.64$

Warehouses are primarily devoted to the storage of materials; they may also include office and maintenance areas. Heavy warehouses are greater than 100,000 square feet G. F. A.

Heavy Warehousing (ITE code 150)

Classification: Heavy Warehouse

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	4.657	3.547	69.959
Mean Trip Rate	2.842	1.970	39.244
Standard Deviation	3.382	2.515	48.279
Linear Regression			
Coefficient	n.a.	n.a.	n.a.
y Intercept	n.a.	n.a.	n.a.
r Squared	n.a.	n.a.	n.a.
Logarithmic Regression	n.a.	n.a.	n.a.
Coefficient	n.a.	n.a.	n.a.
y Intercept	n.a.	n.a.	n.a.
r Squared	n.a.	n.a.	n.a.
Trip Rates			
Target	6.685	5.252	98.888
Thrifty/Big 5	0.000	0.000	0.000
TAB	4.683	2.629	58.087
Sportsmart	0.000	0.000	0.000
Mean Trip Rates	2.842	1.970	39.244

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.091	0.070	1.373	0.034	0.026	0.518
Mean Trip Rate	0.138	0.092	1.941	0.046	0.034	0.710
Standard Deviation	0.096	0.042	0.980	0.021	0.015	0.326
Linear Regression						
Coefficient	0.037	0.032	0.589	0.021	0.016	0.301
y Intercept	23.872	21.235	22.708	6.025	5.638	6.291
r Squared	0.656	0.811	0.798	0.956	0.946	0.950
Logarithmic Regression						
Coefficient	1.001	1.001	1.014	1.001	1.001	1.017
y Intercept	25.094	22.937	23.826	8.090	7.929	8.220
r Squared	0.455	0.649	0.630	0.916	0.902	0.907
Trip Rates						
Target	0.060	0.047	0.888	0.026	0.021	0.390
Thrifty/Big 5	0.165	0.083	1.737	0.045	0.023	0.474
TAB	0.263	0.147	3.256	0.075	0.042	0.930
Sportsmart	0.064	0.090	1.883	0.036	0.050	1.046
Mean Trip Rates	0.138	0.092	1.941	0.046	0.034	0.710

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.095	0.073	1.433	0.034	0.026	0.509
MeanTrip Rate	0.122	0.097	2.016	0.042	0.025	0.529
Standard Deviation	0.041	0.057	1.207	0.031	0.012	0.268
Linear Regression						
Coefficient	0.054	0.042	0.771	0.026	0.023	0.419
y Intercept	17.889	17.592	19.178	3.330	1.584	2.609
r Squared	0.949	0.885	0.896	0.758	0.917	0.905
Logarithmic Regression						
Coefficient	1.001	1.001	1.016	1.002	1.002	1.031
y Intercept	22.051	22.144	22.866	4.646	3.677	4.002
r Squared	0.818	0.731	0.744	0.387	0.616	0.595
Trip Rates						
Target	0.070	0.055	1.036	0.030	0.024	0.444
Thrifty/Big 5	0.170	0.085	1.789	0.080	0.040	0.842
TAB	0.119	0.067	1.473	0.050	0.028	0.620
Sportsmart	0.129	0.180	3.766	0.007	0.010	0.209
Mean Trip Rates	0.122	0.097	2.016	0.042	0.025	0.529

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.309	0.235	4.637	0.040	0.030	0.596
Mean Trip Rate	0.341	0.254	5.249	0.072	0.048	1.027
Standard Deviation	0.107	0.076	1.607	0.057	0.028	0.640
Linear Regression						
Coefficient	0.268	0.215	3.951	-0.002	0.000	0.004
y Intercept	17.625	11.213	19.862	17.946	17.042	17.146
r Squared	0.971	0.983	0.987	0.021	0.002	0.001
Logarithmic Regression						
Coefficient	1.002	1.001	1.025	1.000	1.000	1.001
y Intercept	50.347	48.177	50.856	17.038	16.027	16.167
r Squared	0.900	0.921	0.924	0.005	0.016	0.012
Trip Rates						
Target	0.285	0.224	4.223	0.015	0.012	0.229
Thrifty/Big 5	0.495	0.248	5.211	0.090	0.045	0.947
TAB	0.325	0.182	4.031	0.144	0.081	1.783
Sportsmart	0.257	0.361	7.531	0.039	0.055	1.151
Mean Trip Rates	0.341	0.254	5.249	0.072	0.048	1.027

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: PM Peak Hour Site Total/AM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.417	0.318	6.268	0.044	0.033	0.656
Mean Trip Rate	0.447	0.308	6.335	0.060	0.047	0.997
Standard Deviation	0.263	0.091	1.851	0.029	0.029	0.632
Linear Regression						
Coefficient	0.390	0.323	5.902	0.021	0.016	0.291
y Intercept	11.980	-2.803	10.616	9.850	10.004	10.585
r Squared	0.905	0.973	0.971	0.911	0.801	0.814
Logarithmic Regression						
Coefficient	1.002	1.002	1.030	1.001	1.001	1.013
y Intercept	55.428	49.975	53.560	11.324	11.587	11.874
r Squared	0.726	0.839	0.833	0.785	0.639	0.654
Trip Rates						
Target	0.405	0.318	5.984	0.030	0.024	0.444
Thrifty/Big 5	0.825	0.413	8.684	0.050	0.025	0.526
TAB	0.338	0.189	4.186	0.100	0.056	1.240
Sportsmart	0.221	0.311	6.485	0.061	0.085	1.778
Mean Trip Rates	0.447	0.308	6.335	0.060	0.047	0.997

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	16.95	22.71	60.34	100				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	79.57	3.46	4.64	12.33	100			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	85.66	14.34	46.38	53.62	46.01	53.99	56.58	43.42
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	50.94	49.06	45.00	55.00	30.72	69.28	45.76	54.24

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX F

Existing Plus Project Conditions Synchro Analysis Worksheets

Michael Baker

INTERNATIONAL

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	215	51	102	229	394	77	1019	82	589	756	213
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	262	226	54	107	241	415	81	1073	86	620	796	224
RTOR Reduction (vph)	0	0	47	0	0	87	0	0	56	0	34	0
Lane Group Flow (vph)	262	226	7	107	241	328	81	1073	30	620	986	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	11.0	15.8	15.8	10.8	15.6	42.8	8.1	42.2	42.2	27.2	61.3	
Effective Green, g (s)	11.0	15.8	15.8	10.8	15.6	42.8	8.1	42.2	42.2	27.2	61.3	
Actuated g/C Ratio	0.09	0.13	0.13	0.09	0.13	0.36	0.07	0.35	0.35	0.23	0.51	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	265	441	197	260	435	941	195	1694	527	655	2379	
v/s Ratio Prot	c0.09	0.07		0.04	c0.07	0.08	0.03	c0.22		c0.21	0.21	
v/s Ratio Perm			0.00			0.05			0.02			
v/c Ratio	0.99	0.51	0.04	0.41	0.55	0.35	0.42	0.63	0.06	0.95	0.41	
Uniform Delay, d1	54.4	48.5	45.5	51.6	48.9	28.4	53.7	32.4	25.7	45.7	18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.16	1.11	
Incremental Delay, d2	51.5	0.8	0.1	0.4	1.2	0.1	0.5	1.8	0.2	20.7	0.5	
Delay (s)	105.9	49.3	45.5	52.0	50.2	28.4	54.2	34.3	25.9	73.5	20.7	
Level of Service	F	D	D	D	D	C	D	C	C	E	C	
Approach Delay (s)		76.3			38.6			35.0			40.7	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	559	56	12	488	10	46	30	24	8	11	62
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4803		1583	3131		2891	2926	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4803		1583	3131		2891	2926	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	608	61	13	530	11	50	33	26	9	12	67
RTOR Reduction (vph)	0	0	36	0	2	0	0	15	0	0	43	0
Lane Group Flow (vph)	211	608	25	13	539	0	50	44	0	9	36	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	12.0	45.2	45.2	1.6	34.8		7.8	45.9		1.3	39.4	
Effective Green, g (s)	12.0	45.2	45.2	1.6	34.8		7.8	45.9		1.3	39.4	
Actuated g/C Ratio	0.11	0.41	0.41	0.01	0.32		0.07	0.42		0.01	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	315	1979	616	42	1519		112	1306		34	1048	
v/s Ratio Prot	c0.07	0.13		0.00	c0.11		c0.03	c0.01		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.67	0.31	0.04	0.31	0.35		0.45	0.03		0.26	0.03	
Uniform Delay, d1	47.1	21.8	19.4	53.7	29.0		49.0	18.9		53.9	22.9	
Progression Factor	1.00	1.00	1.00	1.11	0.92		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.3	0.4	0.1	4.1	0.6		2.8	0.0		4.1	0.0	
Delay (s)	52.4	22.2	19.5	63.5	27.4		51.8	19.0		58.0	23.0	
Level of Service	D	C	B	E	C		D	B		E	C	
Approach Delay (s)		29.3			28.2			34.1			26.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	239	365	450	100	20	34
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4686		2762	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4686		2762	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	260	397	489	109	22	37
RTOR Reduction (vph)	0	0	23	0	15	16
Lane Group Flow (vph)	260	397	575	0	25	3
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	23.9	84.0	56.1		18.0	18.0
Effective Green, g (s)	23.9	84.0	56.1		18.0	18.0
Actuated g/C Ratio	0.22	0.76	0.51		0.16	0.16
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	343	2560	2389		451	210
v/s Ratio Prot	c0.16	0.12	c0.12		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.76	0.16	0.24		0.06	0.01
Uniform Delay, d1	40.3	3.5	15.1		38.8	38.6
Progression Factor	1.55	0.57	0.99		1.00	1.00
Incremental Delay, d2	9.1	0.1	0.2		0.2	0.1
Delay (s)	71.6	2.1	15.1		39.1	38.7
Level of Service	E	A	B		D	D
Approach Delay (s)		29.6	15.1		38.9	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	391	27	38	495	4	43	1	36	0	0	1
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583	1765	1500	1583	3349		1583	1507			1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1583	1765	1500	1583	3349		1262	1507			1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	425	29	41	538	4	47	1	39	0	0	1
RTOR Reduction (vph)	0	0	12	0	0	0	0	29	0	0	1	0
Lane Group Flow (vph)	3	425	17	41	542	0	47	11	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	64.0	64.0	5.8	68.4		28.0	28.0			28.0	
Effective Green, g (s)	1.4	64.0	64.0	5.8	68.4		28.0	28.0			28.0	
Actuated g/C Ratio	0.01	0.58	0.58	0.05	0.62		0.25	0.25			0.25	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	20	1026	872	83	2082		321	383			381	
v/s Ratio Prot	0.00	c0.24		c0.03	0.16			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.15	0.41	0.02	0.49	0.26		0.15	0.03			0.00	
Uniform Delay, d1	53.7	12.7	9.7	50.7	9.4		31.7	30.8			30.6	
Progression Factor	0.92	1.43	1.58	0.95	0.66		1.00	1.00			1.00	
Incremental Delay, d2	3.4	1.2	0.0	4.5	0.3		1.0	0.1			0.0	
Delay (s)	52.8	19.3	15.4	52.7	6.5		32.7	30.9			30.6	
Level of Service	D	B	B	D	A		C	C			C	
Approach Delay (s)		19.3			9.7			31.9			30.6	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	378	36	128	530	11	38	1	99	5	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	411	39	139	576	12	41	1	108	5	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	588			450			1004	1303	225	1073	1317	294
vC1, stage 1 conf vol							437	437		860	860	
vC2, stage 2 conf vol							567	866		212	457	
vCu, unblocked vol	548			450			971	1275	225	1041	1289	249
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			89	100	86	98	100	100
cM capacity (veh/h)	1001			1107			369	298	778	266	284	739

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	274	176	139	384	204	150	9
Volume Left	3	0	0	139	0	0	41	5
Volume Right	0	0	39	0	0	12	108	2
cSH	1001	1700	1700	1107	1700	1700	1085	358
Volume to Capacity	0.00	0.16	0.10	0.13	0.23	0.12	0.14	0.02
Queue Length 95th (ft)	0	0	0	11	0	0	12	2
Control Delay (s)	8.6	0.0	0.0	8.7	0.0	0.0	12.0	16.5
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.7			12.0	16.5
Approach LOS							B	C

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	301	195	345	620	22	70	0	258	9	15	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1676	1500		1731	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.92	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1306	1500		1624	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	327	212	375	674	24	76	0	280	10	16	4
RTOR Reduction (vph)	0	0	101	0	0	8	0	0	219	0	0	3
Lane Group Flow (vph)	13	327	111	375	674	16	0	76	61	0	26	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	41.7	41.7	32.1	72.4	72.4		24.0	24.0		24.0	24.0
Effective Green, g (s)	1.4	41.7	41.7	32.1	72.4	72.4		24.0	24.0		24.0	24.0
Actuated g/C Ratio	0.01	0.38	0.38	0.29	0.66	0.66		0.22	0.22		0.22	0.22
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	1271	568	461	2206	987		284	327		354	327
v/s Ratio Prot	0.01	0.10		c0.24	c0.20							
v/s Ratio Perm			0.07			0.01		c0.06	0.04		0.02	0.00
v/c Ratio	0.65	0.26	0.20	0.81	0.31	0.02		0.27	0.19		0.07	0.00
Uniform Delay, d1	54.1	23.5	22.9	36.2	8.0	6.5		35.7	35.0		34.2	33.6
Progression Factor	0.88	1.02	1.39	1.02	1.34	7.60		1.00	1.00		1.00	1.00
Incremental Delay, d2	55.4	0.5	0.8	9.6	0.3	0.0		0.5	0.3		0.4	0.0
Delay (s)	103.0	24.4	32.6	46.6	11.1	49.4		36.2	35.3		34.6	33.7
Level of Service	F	C	C	D	B	D		D	D		C	C
Approach Delay (s)		29.4			24.3			35.5			34.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	320	1	31	524
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	348	1	34	570
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	985	348			349	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	985	348			349	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			97	
cM capacity (veh/h)	267	695			1210	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	349	603
Volume Left	0	0	34
Volume Right	9	1	0
cSH	695	1700	1210
Volume to Capacity	0.01	0.21	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	10.2	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.8
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	542	22	22	986	3	7	0	7	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	589	24	24	1072	3	8	0	8	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.86			0.95			0.88	0.88	0.95	0.88	0.88	0.86
vC, conflicting volume	1075			613			1198	1737	307	1436	1747	538
vC1, stage 1 conf vol							614	614		1121	1121	
vC2, stage 2 conf vol							584	1123		315	626	
vCu, unblocked vol	751			476			683	1293	152	953	1305	123
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			98	100	99	100	100	100
cM capacity (veh/h)	731			1024			456	290	820	277	290	775

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	7	393	220	24	714	361	15	0
Volume Left	7	0	0	24	0	0	8	0
Volume Right	0	0	24	0	0	3	8	0
cSH	731	1700	1700	1024	1700	1700	586	1700
Volume to Capacity	0.01	0.23	0.13	0.02	0.42	0.21	0.03	0.00
Queue Length 95th (ft)	1	0	0	2	0	0	2	0
Control Delay (s)	10.0	0.0	0.0	8.6	0.0	0.0	11.3	0.0
Lane LOS	A			A			B	A
Approach Delay (s)	0.1			0.2			11.3	0.0
Approach LOS							B	A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	437	116	50	773	1	231	3	76	4	0	2
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1261	1765	1500	1260	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	475	126	54	840	1	251	3	83	4	0	2
RTOR Reduction (vph)	0	0	69	0	0	0	0	0	53	0	1	0
Lane Group Flow (vph)	8	475	57	54	840	1	251	3	30	4	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	49.8	49.8	8.0	56.4	56.4	40.0	40.0	40.0	40.0	40.0	
Effective Green, g (s)	1.4	49.8	49.8	8.0	56.4	56.4	40.0	40.0	40.0	40.0	40.0	
Actuated g/C Ratio	0.01	0.45	0.45	0.07	0.51	0.51	0.36	0.36	0.36	0.36	0.36	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1517	679	115	1719	769	458	641	545	458	545	
v/s Ratio Prot	0.01	0.14		c0.03	c0.25			0.00			0.00	
v/s Ratio Perm			0.04			0.00	c0.20		0.02	0.00		
v/c Ratio	0.40	0.31	0.08	0.47	0.49	0.00	0.55	0.00	0.06	0.01	0.00	
Uniform Delay, d1	53.9	19.2	17.1	49.0	17.4	13.1	27.8	22.3	22.7	22.3	22.3	
Progression Factor	1.35	0.53	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.0	0.5	0.2	3.0	1.0	0.0	4.7	0.0	0.2	0.0	0.0	
Delay (s)	84.5	10.6	3.1	52.0	18.4	13.1	32.5	22.3	22.9	22.4	22.3	
Level of Service	F	B	A	D	B	B	C	C	C	C	C	
Approach Delay (s)		10.0			20.4			30.0			22.3	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	1	3	303	137	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	1	3	329	149	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	501	165	180			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	501	165	180			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	529	880	1395			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	333	180
Volume Left	8	3	0
Volume Right	1	0	32
cSH	556	1395	1700
Volume to Capacity	0.02	0.00	0.11
Queue Length 95th (ft)	1	0	0
Control Delay (s)	11.6	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.6	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	26.1
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	178	323	43	0	11	435	9	0	67	69	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	193	351	47	0	12	473	10	0	73	75	40
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	18.6	25.6	19.9
HCM LOS	C	D	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	71%	0%	100%	94%	11%
Vol Right, %	21%	0%	0%	29%	0%	0%	6%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	173	178	215	151	11	290	154	361
LT Vol	67	178	0	0	11	0	0	0
Through Vol	69	0	215	108	0	290	145	40
RT Vol	37	0	0	43	0	0	9	321
Lane Flow Rate	188	193	234	164	12	315	167	392
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.475	0.473	0.538	0.367	0.03	0.734	0.388	0.848
Departure Headway (Hd)	9.1	8.805	8.28	8.071	8.903	8.378	8.336	7.776
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	397	408	435	445	402	432	432	467
Service Time	6.86	6.562	6.037	5.828	6.658	6.134	6.091	5.524
HCM Lane V/C Ratio	0.474	0.473	0.538	0.369	0.03	0.729	0.387	0.839
HCM Control Delay	19.9	19.3	20.3	15.5	11.9	31.1	16.3	40.8
HCM Lane LOS	C	C	C	C	B	D	C	E
HCM 95th-tile Q	2.5	2.5	3.1	1.7	0.1	5.9	1.8	8.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	40	321
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	43	349
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	40.8
HCM LOS	E

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	169	119	69	14	127	77	124	793	13	70	794	122
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3168		1583	3163		1583	3345		1583	3286	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3168		1583	3163		1583	3345		1583	3286	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	184	129	75	15	138	84	135	862	14	76	863	133
RTOR Reduction (vph)	0	50	0	0	65	0	0	1	0	0	13	0
Lane Group Flow (vph)	184	154	0	15	157	0	135	875	0	76	983	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.9	30.3		1.6	20.0		11.4	35.6		6.5	30.7	
Effective Green, g (s)	11.9	30.3		1.6	20.0		11.4	35.6		6.5	30.7	
Actuated g/C Ratio	0.13	0.34		0.02	0.22		0.13	0.40		0.07	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	209	1066		28	702		200	1323		114	1120	
v/s Ratio Prot	c0.12	0.05		0.01	c0.05		c0.09	0.26		0.05	c0.30	
v/s Ratio Perm												
v/c Ratio	0.88	0.14		0.54	0.22		0.68	0.66		0.67	0.88	
Uniform Delay, d1	38.4	20.8		43.8	28.6		37.5	22.3		40.7	27.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.38	0.66	
Incremental Delay, d2	32.1	0.1		18.3	0.2		8.7	2.6		12.1	8.7	
Delay (s)	70.4	20.9		62.1	28.8		46.2	24.9		68.4	27.0	
Level of Service	E	C		E	C		D	C		E	C	
Approach Delay (s)		44.4			30.9			27.7			29.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	283	5	16	1	0	100	1	1030	6	148	1009	436
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1560			1528		1583	3350		1583	3353	1500
Flt Permitted	0.68	1.00			1.00		0.22	1.00		0.12	1.00	1.00
Satd. Flow (perm)	1128	1560			1527		362	3350		204	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	308	5	17	1	0	109	1	1120	7	161	1097	474
RTOR Reduction (vph)	0	12	0	0	76	0	0	1	0	0	0	82
Lane Group Flow (vph)	308	10	0	0	34	0	1	1126	0	161	1097	392
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	27.3	27.3			27.3		42.7	41.9		54.7	49.9	49.9
Effective Green, g (s)	27.3	27.3			27.3		42.7	41.9		54.7	49.9	49.9
Actuated g/C Ratio	0.30	0.30			0.30		0.47	0.47		0.61	0.55	0.55
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	342	473			463		182	1559		258	1859	831
v/s Ratio Prot		0.01					0.00	c0.34		c0.06	0.33	
v/s Ratio Perm	c0.27				0.02		0.00			0.32		0.26
v/c Ratio	0.90	0.02			0.07		0.01	0.72		0.62	0.59	0.47
Uniform Delay, d1	30.0	22.0			22.3		12.7	19.4		12.7	13.3	12.1
Progression Factor	1.00	1.00			1.00		0.88	0.56		1.34	0.75	0.62
Incremental Delay, d2	25.1	0.0			0.0		0.0	2.3		3.3	1.0	1.3
Delay (s)	55.1	22.0			22.4		11.2	13.2		20.3	11.0	8.9
Level of Service	E	C			C		B	B		C	B	A
Approach Delay (s)		52.9			22.4			13.2			11.3	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	892	0	422	409	0	552	381	758	511	565	747	840
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	970	0	459	445	0	600	414	824	555	614	812	913
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	970	0	459	445	0	600	414	824	555	614	812	913
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	42.7		120.0	42.7		120.0	25.5	29.0	120.0	27.8	31.3	120.0
Effective Green, g (s)	42.7		120.0	42.7		120.0	25.5	29.0	120.0	27.8	31.3	120.0
Actuated g/C Ratio	0.36		1.00	0.36		1.00	0.21	0.24	1.00	0.23	0.26	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1028		1500	1028		1500	614	1164	1500	669	1256	1500
v/s Ratio Prot							0.14	c0.17		c0.21	0.17	
v/s Ratio Perm	c0.34		0.31	0.15		0.40			0.37			c0.61
v/c Ratio	0.94		0.31	0.43		0.40	0.67	0.71	0.37	0.92	0.65	0.61
Uniform Delay, d1	37.5		0.0	29.4		0.0	43.4	41.6	0.0	45.0	39.4	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.74	0.72	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.2		0.5	0.2		0.8	4.7	2.9	0.6	19.6	2.6	1.8
Delay (s)	53.7		0.5	29.6		0.8	36.7	33.1	0.6	64.6	42.0	1.8
Level of Service	D		A	C		A	D	C	A	E	D	A
Approach Delay (s)		36.6			13.1			23.8			32.3	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	506	3	325	0	0	0	0	1018	395	451	1277	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.88						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1458						4818	1500	1583	3353	
Flt Permitted	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1458						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	550	3	353	0	0	0	0	1107	429	490	1388	0
RTOR Reduction (vph)	0	32	0	0	0	0	0	0	322	0	0	0
Lane Group Flow (vph)	473	401	0	0	0	0	0	1107	107	490	1388	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	28.0	28.0						22.5	22.5	27.0	53.5	
Effective Green, g (s)	28.0	28.0						22.5	22.5	27.0	53.5	
Actuated g/C Ratio	0.31	0.31						0.25	0.25	0.30	0.59	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	467	453						1204	375	474	1993	
v/s Ratio Prot								c0.23		c0.31	0.41	
v/s Ratio Perm	c0.31	0.27							0.07			
v/c Ratio	1.01	0.88						0.92	0.29	1.03	0.70	
Uniform Delay, d1	31.0	29.5						32.9	27.3	31.5	12.6	
Progression Factor	1.00	1.00						1.22	3.97	1.35	1.39	
Incremental Delay, d2	44.9	18.2						9.6	1.4	40.1	1.2	
Delay (s)	75.9	47.7						49.6	109.5	82.6	18.7	
Level of Service	E	D						D	F	F	B	
Approach Delay (s)		62.4			0.0			66.3			35.3	
Approach LOS		E			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	413	8	482	292	1237	0	0	1315	872
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.98	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1579	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1579	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	449	9	524	317	1345	0	0	1429	948
RTOR Reduction (vph)	0	0	0	0	5	47	0	0	0	0	0	430
Lane Group Flow (vph)	0	0	0	0	511	419	317	1345	0	0	1429	518
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					27.0	27.0	16.0	54.5			34.5	34.5
Effective Green, g (s)					27.0	27.0	16.0	54.5			34.5	34.5
Actuated g/C Ratio					0.30	0.30	0.18	0.61			0.38	0.38
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					473	427	281	2030			1846	575
v/s Ratio Prot							c0.20	0.40			0.30	
v/s Ratio Perm					0.32	0.29						c0.35
v/c Ratio					1.08	0.98	1.13	0.66			0.77	0.90
Uniform Delay, d1					31.5	31.3	37.0	11.7			24.3	26.1
Progression Factor					1.00	1.00	1.36	0.96			1.00	1.00
Incremental Delay, d2					64.8	38.5	72.8	0.6			3.2	19.6
Delay (s)					96.3	69.7	123.3	11.8			27.6	45.8
Level of Service					F	E	F	B			C	D
Approach Delay (s)		0.0			83.7			33.1			34.8	
Approach LOS		A			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	120.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	345	602	129	236	323	806	197	1042	236	657	967	139
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	363	634	136	248	340	848	207	1097	248	692	1018	146
RTOR Reduction (vph)	0	0	106	0	0	71	0	0	168	0	14	0
Lane Group Flow (vph)	363	634	30	248	340	777	207	1097	80	692	1150	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	16.0	28.5	28.5	13.1	25.6	56.6	13.1	33.4	33.4	31.0	51.3	
Effective Green, g (s)	16.0	28.5	28.5	13.1	25.6	56.6	13.1	33.4	33.4	31.0	51.3	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.20	0.44	0.10	0.26	0.26	0.24	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	355	735	328	291	660	1149	291	1237	385	689	1865	
v/s Ratio Prot	0.13	c0.19		c0.09	0.10	0.16	0.07	c0.23		c0.24	0.24	
v/s Ratio Perm			0.02			0.13			0.05			
v/c Ratio	1.02	0.86	0.09	0.85	0.52	0.68	0.71	0.89	0.21	1.00	0.62	
Uniform Delay, d1	57.0	48.9	40.4	57.5	46.7	29.4	56.6	46.5	37.9	49.5	31.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	53.6	10.1	0.1	20.0	0.5	1.3	6.7	9.6	1.2	35.4	1.5	
Delay (s)	110.6	59.0	40.5	77.5	47.2	30.6	63.3	56.1	39.1	84.9	33.0	
Level of Service	F	E	D	E	D	C	E	E	D	F	C	
Approach Delay (s)		73.3			42.6			54.3			52.3	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	294	802	52	20	729	47	48	34	24	74	36	268
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4774		1583	3145		2891	2909	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4774		1583	3145		2891	2909	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	872	57	22	792	51	52	37	26	80	39	291
RTOR Reduction (vph)	0	0	31	0	7	0	0	18	0	0	203	0
Lane Group Flow (vph)	320	872	26	22	836	0	52	45	0	80	127	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	15.8	49.4	49.4	2.8	36.4		7.6	34.8		7.0	33.3	
Effective Green, g (s)	15.8	49.4	49.4	2.8	36.4		7.6	34.8		7.0	33.3	
Actuated g/C Ratio	0.14	0.45	0.45	0.03	0.33		0.07	0.32		0.06	0.30	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	415	2163	673	73	1579		109	994		183	880	
v/s Ratio Prot	c0.11	0.18		0.01	c0.18		c0.03	0.01		0.03	c0.04	
v/s Ratio Perm			0.02									
v/c Ratio	0.77	0.40	0.04	0.30	0.53		0.48	0.05		0.44	0.14	
Uniform Delay, d1	45.4	20.4	17.0	52.6	29.9		49.3	26.1		49.6	28.0	
Progression Factor	1.00	1.00	1.00	1.41	0.71		1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6	0.6	0.1	2.3	1.3		3.3	0.1		1.7	0.1	
Delay (s)	54.0	20.9	17.1	76.7	22.6		52.6	26.2		51.3	28.0	
Level of Service	D	C	B	E	C		D	C		D	C	
Approach Delay (s)		29.2			24.0			38.1			32.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.9
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	63	849	568	40	111	139
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4771		2793	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4771		2793	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	923	617	43	121	151
RTOR Reduction (vph)	0	0	6	0	49	65
Lane Group Flow (vph)	68	923	654	0	137	21
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	8.9	75.0	62.1		27.0	27.0
Effective Green, g (s)	8.9	75.0	62.1		27.0	27.0
Actuated g/C Ratio	0.08	0.68	0.56		0.25	0.25
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	128	2286	2693		685	316
v/s Ratio Prot	c0.04	c0.28	0.14		c0.05	
v/s Ratio Perm						0.02
v/c Ratio	0.53	0.40	0.24		0.20	0.07
Uniform Delay, d1	48.5	7.7	12.1		32.9	31.8
Progression Factor	0.90	1.39	0.94		1.00	1.00
Incremental Delay, d2	4.0	0.5	0.2		0.7	0.4
Delay (s)	47.6	11.2	11.5		33.6	32.2
Level of Service	D	B	B		C	C
Approach Delay (s)		13.7	11.5		33.2	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	900	45	21	555	0	18	0	35	3	0	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1500	1583	3353		1583	1500		1583	1500	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00		0.73	1.00	
Satd. Flow (perm)		1765	1500	1583	3353		1259	1500		1221	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	978	49	23	603	0	20	0	38	3	0	4
RTOR Reduction (vph)	0	0	11	0	0	0	0	35	0	0	4	0
Lane Group Flow (vph)	0	978	38	23	603	0	20	3	0	3	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		84.2	84.2	3.5	91.7		10.1	10.1		10.1	10.1	
Effective Green, g (s)		84.2	84.2	3.5	91.7		10.1	10.1		10.1	10.1	
Actuated g/C Ratio		0.77	0.77	0.03	0.83		0.09	0.09		0.09	0.09	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1351	1148	50	2795		115	137		112	137	
v/s Ratio Prot		c0.55		c0.01	0.18			0.00			0.00	
v/s Ratio Perm			0.03				c0.02			0.00		
v/c Ratio		0.72	0.03	0.46	0.22		0.17	0.03		0.03	0.00	
Uniform Delay, d1		6.8	3.1	52.3	1.9		46.1	45.5		45.5	45.4	
Progression Factor		2.53	3.05	0.86	1.65		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.2	0.0	6.5	0.2		0.7	0.1		0.1	0.0	
Delay (s)		20.3	9.5	51.8	3.2		46.8	45.5		45.6	45.4	
Level of Service		C	A	D	A		D	D		D	D	
Approach Delay (s)		19.8			5.0			46.0			45.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	890	28	24	545	8	26	1	69	14	2	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	967	30	26	592	9	28	1	75	15	2	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	601			998			1349	1653	499	1151	1664	301
vC1, stage 1 conf vol							1000	1000		649	649	
vC2, stage 2 conf vol							349	653		502	1015	
vCu, unblocked vol	553			998			1316	1626	499	1113	1637	246
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			88	100	85	95	99	99
cM capacity (veh/h)	993			689			243	267	517	316	250	739

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	9	645	353	26	395	206	104	22
Volume Left	9	0	0	26	0	0	28	15
Volume Right	0	0	30	0	0	9	75	4
cSH	993	1700	1700	689	1700	1700	719	385
Volume to Capacity	0.01	0.38	0.21	0.04	0.23	0.12	0.15	0.06
Queue Length 95th (ft)	1	0	0	3	0	0	13	4
Control Delay (s)	8.7	0.0	0.0	10.4	0.0	0.0	15.6	15.9
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.4			15.6	15.9
Approach LOS							C	C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	939	39	35	506	2	52	1	49	2	0	5
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1682	1500		1676	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.78	1.00		0.72	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1368	1500		1269	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1021	42	38	550	2	57	1	53	2	0	5
RTOR Reduction (vph)	0	0	19	0	0	1	0	0	38	0	0	4
Lane Group Flow (vph)	2	1021	23	38	550	1	0	58	15	0	2	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	60.1	60.1	5.7	64.4	64.4		32.0	32.0		32.0	32.0
Effective Green, g (s)	1.4	60.1	60.1	5.7	64.4	64.4		32.0	32.0		32.0	32.0
Actuated g/C Ratio	0.01	0.55	0.55	0.05	0.59	0.59		0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	1831	819	82	1963	878		397	436		369	436
v/s Ratio Prot	0.00	c0.30		c0.02	0.16							
v/s Ratio Perm			0.02			0.00		c0.04	0.01		0.00	0.00
v/c Ratio	0.10	0.56	0.03	0.46	0.28	0.00		0.15	0.04		0.01	0.00
Uniform Delay, d1	53.7	16.3	11.5	50.7	11.3	9.5		28.9	27.9		27.7	27.7
Progression Factor	0.90	0.87	2.25	1.14	0.84	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	1.0	0.1	4.0	0.4	0.0		0.8	0.2		0.0	0.0
Delay (s)	50.3	15.1	25.9	61.7	9.9	9.5		29.7	28.1		27.7	27.7
Level of Service	D	B	C	E	A	A		C	C		C	C
Approach Delay (s)		15.6			13.2			28.9			27.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	31	71	0	10	64
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	34	77	0	11	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	168	77			77	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168	77			77	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	816	984			1521	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	35	77	80
Volume Left	1	0	11
Volume Right	34	0	0
cSH	977	1700	1521
Volume to Capacity	0.04	0.05	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	8.8	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	1.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	986	7	7	525	0	22	0	22	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1072	8	8	571	0	24	0	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.95			0.80			0.83	0.83	0.80	0.83	0.83	0.95
vC, conflicting volume	571			1079			1376	1661	540	1146	1665	285
vC1, stage 1 conf vol							1076	1076		586	586	
vC2, stage 2 conf vol							301	586		560	1079	
vCu, unblocked vol	447			607			773	1118	0	494	1122	147
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			93	100	97	100	100	100
cM capacity (veh/h)	1056			776			350	340	870	492	335	831

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	714	365	8	380	190	48	0
Volume Left	0	0	0	8	0	0	24	0
Volume Right	0	0	8	0	0	0	24	0
cSH	1700	1700	1700	776	1700	1700	499	1700
Volume to Capacity	0.00	0.42	0.21	0.01	0.22	0.11	0.10	0.00
Queue Length 95th (ft)	0	0	0	1	0	0	8	0
Control Delay (s)	0.0	0.0	0.0	9.7	0.0	0.0	13.0	0.0
Lane LOS				A			B	A
Approach Delay (s)	0.0			0.1			13.0	0.0
Approach LOS							B	A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	763	241	45	392	1	146	0	168	3	2	3
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583		1500	1583	1606	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75		1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1257		1500	1262	1606	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	829	262	49	426	1	159	0	183	3	2	3
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	126	0	2	0
Lane Group Flow (vph)	5	829	170	49	426	1	159	0	57	3	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	56.3	56.3	7.5	62.4	62.4	34.0		34.0	34.0	34.0	
Effective Green, g (s)	1.4	56.3	56.3	7.5	62.4	62.4	34.0		34.0	34.0	34.0	
Actuated g/C Ratio	0.01	0.51	0.51	0.07	0.57	0.57	0.31		0.31	0.31	0.31	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1716	767	107	1902	850	388		463	390	496	
v/s Ratio Prot	0.00	c0.25		c0.03	0.13						0.00	
v/s Ratio Perm			0.11			0.00	c0.13		0.04	0.00		
v/c Ratio	0.25	0.48	0.22	0.46	0.22	0.00	0.41		0.12	0.01	0.01	
Uniform Delay, d1	53.8	17.4	14.8	49.3	11.8	10.3	30.1		27.3	26.3	26.3	
Progression Factor	1.12	0.75	0.90	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	5.7	0.9	0.6	3.1	0.3	0.0	3.2		0.5	0.0	0.0	
Delay (s)	65.7	14.0	13.9	52.4	12.1	10.3	33.2		27.8	26.4	26.3	
Level of Service	E	B	B	D	B	B	C		C	C	C	
Approach Delay (s)		14.2			16.2			30.3			26.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	3	1	284	278	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	3	1	309	302	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	618	308	313			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	618	308	313			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	452	732	1247			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	36	310	313
Volume Left	33	1	0
Volume Right	3	0	11
cSH	468	1247	1700
Volume to Capacity	0.08	0.00	0.18
Queue Length 95th (ft)	6	0	0
Control Delay (s)	13.3	0.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	31.8
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	182	703	51	0	15	282	6	0	24	90	43
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	198	764	55	0	16	307	7	0	26	98	47
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	42.5	15.6	16.6
HCM LOS	E	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	57%	0%	100%	82%	0%	100%	94%	31%
Vol Right, %	27%	0%	0%	18%	0%	0%	6%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	157	182	469	285	15	188	100	239
LT Vol	24	182	0	0	15	0	0	7
Through Vol	90	0	469	234	0	188	94	74
RT Vol	43	0	0	51	0	0	6	158
Lane Flow Rate	171	198	509	310	16	204	109	260
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.401	0.419	1	0.601	0.039	0.456	0.241	0.567
Departure Headway (Hd)	8.452	7.616	7.1	6.971	8.56	8.041	7.997	7.853
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	471	509	515	426	456	457	465
Service Time	6.1	5.381	4.864	4.735	6.165	5.661	5.619	5.527
HCM Lane V/C Ratio	0.396	0.42	1	0.602	0.038	0.447	0.239	0.559
HCM Control Delay	16.6	15.8	66.6	19.8	11.5	17.2	13.1	20.3
HCM Lane LOS	C	C	F	C	B	C	B	C
HCM 95th-tile Q	1.9	2	13.7	3.9	0.1	2.3	0.9	3.5

Intersection				
Intersection Delay, s/veh				
Intersection LOS				

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	7	74	158
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	8	80	172
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	20.3
HCM LOS	C

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	383	114	22	120	104	84	749	36	105	797	74
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3237		1583	3119		1583	3330		1583	3310	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3237		1583	3119		1583	3330		1583	3310	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	416	124	24	130	113	91	814	39	114	866	80
RTOR Reduction (vph)	0	28	0	0	89	0	0	3	0	0	7	0
Lane Group Flow (vph)	250	512	0	24	154	0	91	850	0	114	939	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.0	29.9		3.3	19.2		8.4	30.8		10.0	32.4	
Effective Green, g (s)	14.0	29.9		3.3	19.2		8.4	30.8		10.0	32.4	
Actuated g/C Ratio	0.16	0.33		0.04	0.21		0.09	0.34		0.11	0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	1075		58	665		147	1139		175	1191	
v/s Ratio Prot	c0.16	c0.16		0.02	0.05		0.06	0.26		c0.07	c0.28	
v/s Ratio Perm												
v/c Ratio	1.02	0.48		0.41	0.23		0.62	0.75		0.65	0.79	
Uniform Delay, d1	38.0	23.8		42.4	29.3		39.3	26.1		38.3	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.34	0.83	
Incremental Delay, d2	61.6	0.3		4.7	0.2		7.5	4.5		7.2	4.5	
Delay (s)	99.6	24.2		47.1	29.5		46.8	30.6		58.5	25.8	
Level of Service	F	C		D	C		D	C		E	C	
Approach Delay (s)		48.0			31.1			32.2			29.3	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	294	30	22	1	13	178	14	1071	2	64	946	246
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1653			1543		1583	3352		1583	3353	1500
Flt Permitted	0.56	1.00			1.00		0.20	1.00		0.11	1.00	1.00
Satd. Flow (perm)	933	1653			1543		326	3352		179	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	33	24	1	14	193	15	1164	2	70	1028	267
RTOR Reduction (vph)	0	15	0	0	81	0	0	0	0	0	0	50
Lane Group Flow (vph)	320	42	0	0	127	0	15	1166	0	70	1028	217
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	32.8	32.8			32.8		41.8	41.0		48.6	44.4	44.4
Effective Green, g (s)	32.8	32.8			32.8		41.8	41.0		48.6	44.4	44.4
Actuated g/C Ratio	0.36	0.36			0.36		0.46	0.46		0.54	0.49	0.49
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	340	602			562		162	1527		162	1654	740
v/s Ratio Prot		0.03					0.00	c0.35		c0.02	0.31	
v/s Ratio Perm	c0.34				0.08		0.04			0.21		0.14
v/c Ratio	0.94	0.07			0.23		0.09	0.76		0.43	0.62	0.29
Uniform Delay, d1	27.7	18.6			19.8		13.9	20.5		14.1	16.7	13.5
Progression Factor	1.00	1.00			1.00		0.79	0.61		1.15	0.87	0.82
Incremental Delay, d2	33.4	0.0			0.1		0.2	2.5		1.5	1.4	0.8
Delay (s)	61.1	18.7			19.9		11.1	15.0		17.7	15.9	11.8
Level of Service	E	B			B		B	B		B	B	B
Approach Delay (s)		54.7			19.9			15.0			15.2	
Approach LOS		D			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	869	0	387	460	0	507	485	1111	584	524	950	859
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	945	0	421	500	0	551	527	1208	635	570	1033	934
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	945	0	421	500	0	551	527	1208	635	570	1033	934
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	40.5		120.0	40.5		120.0	23.5	33.0	120.0	26.0	35.5	120.0
Effective Green, g (s)	40.5		120.0	40.5		120.0	23.5	33.0	120.0	26.0	35.5	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.20	0.28	1.00	0.22	0.30	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	975		1500	975		1500	566	1324	1500	626	1425	1500
v/s Ratio Prot							0.18	c0.25		c0.20	0.21	
v/s Ratio Perm	c0.33		0.28	0.17		0.37			0.42			0.62
v/c Ratio	0.97		0.28	0.51		0.37	0.93	0.91	0.42	0.91	0.72	0.62
Uniform Delay, d1	39.1		0.0	31.8		0.0	47.5	42.1	0.0	45.9	37.9	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.4		0.5	0.3		0.7	24.2	11.1	0.9	19.7	3.2	2.0
Delay (s)	60.5		0.5	32.2		0.7	71.6	53.2	0.9	65.5	41.1	2.0
Level of Service	E		A	C		A	E	D	A	E	D	A
Approach Delay (s)		42.0			15.7			43.3			32.2	
Approach LOS		D			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	611	3	152	0	0	0	0	1081	435	408	1109	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1530						4818	1500	1583	3353	
Flt Permitted	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1530						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	664	3	165	0	0	0	0	1175	473	443	1205	0
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	339	0	0	0
Lane Group Flow (vph)	425	380	0	0	0	0	0	1175	134	443	1205	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	26.0	26.0						25.5	25.5	26.0	55.5	
Effective Green, g (s)	26.0	26.0						25.5	25.5	26.0	55.5	
Actuated g/C Ratio	0.29	0.29						0.28	0.28	0.29	0.62	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	434	442						1365	425	457	2067	
v/s Ratio Prot								c0.24		c0.28	0.36	
v/s Ratio Perm	c0.28	0.25							0.09			
v/c Ratio	0.98	0.86						0.86	0.32	0.97	0.58	
Uniform Delay, d1	31.7	30.3						30.6	25.4	31.6	10.3	
Progression Factor	1.00	1.00						1.23	3.94	1.47	1.18	
Incremental Delay, d2	37.3	15.3						5.2	1.3	25.2	0.7	
Delay (s)	69.0	45.5						42.7	101.3	71.7	12.9	
Level of Service	E	D						D	F	E	B	
Approach Delay (s)		57.5			0.0			59.5			28.7	
Approach LOS		E			A			E			C	

Intersection Summary			
HCM 2000 Control Delay	46.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	300	3	471	234	1446	0	0	1239	547
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.96	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1556	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1556	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	326	3	512	254	1572	0	0	1347	595
RTOR Reduction (vph)	0	0	0	0	13	47	0	0	0	0	0	374
Lane Group Flow (vph)	0	0	0	0	424	357	254	1572	0	0	1347	221
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					27.0	27.0	17.0	54.5			33.5	33.5
Effective Green, g (s)					27.0	27.0	17.0	54.5			33.5	33.5
Actuated g/C Ratio					0.30	0.30	0.19	0.61			0.37	0.37
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					466	427	299	2030			1793	558
v/s Ratio Prot							c0.16	c0.47			0.28	
v/s Ratio Perm					0.27	0.25						0.15
v/c Ratio					0.91	0.84	0.85	0.77			0.75	0.40
Uniform Delay, d1					30.3	29.4	35.3	13.2			24.6	20.8
Progression Factor					1.00	1.00	1.28	1.11			1.00	1.00
Incremental Delay, d2					21.3	13.3	9.6	1.3			3.0	2.1
Delay (s)					51.7	42.7	54.8	16.0			27.6	22.9
Level of Service					D	D	D	B			C	C
Approach Delay (s)		0.0			47.4			21.4			26.1	
Approach LOS		A			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX G

Opening Year 2018 With Ambient Traffic Conditions Without & With Project Synchro Analysis Worksheets

Michael Baker
INTERNATIONAL

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	214	52	102	230	385	78	1029	80	547	764	215
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	264	225	55	107	242	405	82	1083	84	576	804	226
RTOR Reduction (vph)	0	0	48	0	0	89	0	0	54	0	34	0
Lane Group Flow (vph)	264	225	7	107	242	316	82	1083	30	576	996	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	11.0	15.8	15.8	10.8	15.6	41.8	8.0	43.2	43.2	26.2	61.4	
Effective Green, g (s)	11.0	15.8	15.8	10.8	15.6	41.8	8.0	43.2	43.2	26.2	61.4	
Actuated g/C Ratio	0.09	0.13	0.13	0.09	0.13	0.35	0.07	0.36	0.36	0.22	0.51	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	265	441	197	260	435	919	192	1734	540	631	2383	
v/s Ratio Prot	c0.09	0.07		0.04	c0.07	0.08	0.03	c0.22		c0.20	0.21	
v/s Ratio Perm			0.00			0.04			0.02			
v/c Ratio	1.00	0.51	0.04	0.41	0.56	0.34	0.43	0.62	0.06	0.91	0.42	
Uniform Delay, d1	54.5	48.5	45.5	51.6	49.0	29.0	53.8	31.7	25.1	45.8	18.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.17	1.15	
Incremental Delay, d2	53.8	0.7	0.1	0.4	1.2	0.1	0.6	1.7	0.2	15.8	0.5	
Delay (s)	108.3	49.2	45.5	52.0	50.2	29.0	54.4	33.4	25.3	69.4	21.4	
Level of Service	F	D	D	D	D	C	D	C	C	E	C	
Approach Delay (s)		77.5			39.1			34.2			38.6	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	196	511	57	12	478	10	46	30	24	8	11	63
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4803		1583	3131		2891	2925	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4803		1583	3131		2891	2925	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	555	62	13	520	11	50	33	26	9	12	68
RTOR Reduction (vph)	0	0	34	0	2	0	0	16	0	0	46	0
Lane Group Flow (vph)	213	555	28	13	529	0	50	43	0	9	34	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	13.4	49.2	49.2	1.6	37.4		7.8	42.0		1.2	35.4	
Effective Green, g (s)	13.4	49.2	49.2	1.6	37.4		7.8	42.0		1.2	35.4	
Actuated g/C Ratio	0.12	0.45	0.45	0.01	0.34		0.07	0.38		0.01	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	352	2154	670	42	1633		112	1195		31	941	
v/s Ratio Prot	c0.07	0.12		0.00	c0.11		c0.03	c0.01		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.61	0.26	0.04	0.31	0.32		0.45	0.04		0.29	0.04	
Uniform Delay, d1	45.8	19.0	17.1	53.7	26.9		49.0	21.3		54.0	25.6	
Progression Factor	1.00	1.00	1.00	1.01	1.03		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.3	0.1	4.1	0.5		2.8	0.1		5.1	0.0	
Delay (s)	48.7	19.3	17.2	58.5	28.3		51.8	21.4		59.1	25.6	
Level of Service	D	B	B	E	C		D	C		E	C	
Approach Delay (s)		26.7			29.0			35.3			29.0	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	241	315	439	101	20	34
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4682		2762	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4682		2762	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	262	342	477	110	22	37
RTOR Reduction (vph)	0	0	28	0	13	14
Lane Group Flow (vph)	262	342	559	0	27	5
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	23.7	72.0	44.3		30.0	30.0
Effective Green, g (s)	23.7	72.0	44.3		30.0	30.0
Actuated g/C Ratio	0.22	0.65	0.40		0.27	0.27
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	341	2194	1885		753	351
v/s Ratio Prot	c0.17	0.10	c0.12		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.77	0.16	0.30		0.04	0.01
Uniform Delay, d1	40.6	7.3	22.3		29.4	29.2
Progression Factor	1.09	0.17	0.89		1.00	1.00
Incremental Delay, d2	9.9	0.1	0.4		0.1	0.1
Delay (s)	54.1	1.4	20.3		29.5	29.3
Level of Service	D	A	C		C	C
Approach Delay (s)		24.2	20.3		29.4	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	341	27	38	485	4	43	1	36	0	0	1
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583	1765	1500	1583	3349		1583	1507			1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1583	1765	1500	1583	3349		1262	1507			1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	371	29	41	527	4	47	1	39	0	0	1
RTOR Reduction (vph)	0	0	13	0	0	0	0	28	0	0	1	0
Lane Group Flow (vph)	3	371	16	41	531	0	47	12	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	60.0	60.0	5.8	64.4		32.0	32.0			32.0	
Effective Green, g (s)	1.4	60.0	60.0	5.8	64.4		32.0	32.0			32.0	
Actuated g/C Ratio	0.01	0.55	0.55	0.05	0.59		0.29	0.29			0.29	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	20	962	818	83	1960		367	438			436	
v/s Ratio Prot	0.00	c0.21		c0.03	0.16			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.15	0.39	0.02	0.49	0.27		0.13	0.03			0.00	
Uniform Delay, d1	53.7	14.4	11.5	50.7	11.2		28.7	27.9			27.7	
Progression Factor	0.84	1.24	0.74	0.96	0.63		1.00	1.00			1.00	
Incremental Delay, d2	3.5	1.2	0.0	4.5	0.3		0.7	0.1			0.0	
Delay (s)	48.5	19.0	8.6	53.0	7.4		29.4	28.0			27.7	
Level of Service	D	B	A	D	A		C	C			C	
Approach Delay (s)		18.4			10.7			28.8			27.7	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	328	36	129	520	11	38	1	100	5	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	357	39	140	565	12	41	1	109	5	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	577			396			946	1240	198	1037	1254	289
vC1, stage 1 conf vol							383	383		852	852	
vC2, stage 2 conf vol							564	858		185	402	
vCu, unblocked vol	556			396			928	1225	198	1020	1239	265
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			89	100	87	98	100	100
cM capacity (veh/h)	1002			1159			377	304	810	269	293	727

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	238	158	140	377	200	151	9
Volume Left	3	0	0	140	0	0	41	5
Volume Right	0	0	39	0	0	12	109	2
cSH	1002	1700	1700	1159	1700	1700	1126	364
Volume to Capacity	0.00	0.14	0.09	0.12	0.22	0.12	0.13	0.02
Queue Length 95th (ft)	0	0	0	10	0	0	12	2
Control Delay (s)	8.6	0.0	0.0	8.5	0.0	0.0	11.7	16.4
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.7			11.7	16.4
Approach LOS							B	C

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	269	179	335	616	22	66	0	258	9	15	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1676	1500		1731	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.92	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1306	1500		1627	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	292	195	364	670	24	72	0	280	10	16	4
RTOR Reduction (vph)	0	0	102	0	0	8	0	0	216	0	0	3
Lane Group Flow (vph)	13	292	93	364	670	16	0	72	64	0	26	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	41.5	41.5	31.3	71.4	71.4		25.0	25.0		25.0	25.0
Effective Green, g (s)	1.4	41.5	41.5	31.3	71.4	71.4		25.0	25.0		25.0	25.0
Actuated g/C Ratio	0.01	0.38	0.38	0.28	0.65	0.65		0.23	0.23		0.23	0.23
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	1264	565	450	2176	973		296	340		369	340
v/s Ratio Prot	0.01	0.09		c0.23	c0.20							
v/s Ratio Perm			0.06			0.01		c0.06	0.04		0.02	0.00
v/c Ratio	0.65	0.23	0.16	0.81	0.31	0.02		0.24	0.19		0.07	0.00
Uniform Delay, d1	54.1	23.4	22.7	36.6	8.5	6.8		34.8	34.3		33.4	32.9
Progression Factor	0.73	1.02	1.40	1.02	1.39	8.01		1.00	1.00		1.00	1.00
Incremental Delay, d2	55.7	0.4	0.6	9.4	0.3	0.0		0.4	0.3		0.4	0.0
Delay (s)	95.0	24.3	32.5	46.9	12.1	54.9		35.2	34.6		33.7	32.9
Level of Service	F	C	C	D	B	D		D	C		C	C
Approach Delay (s)		29.3			25.0			34.7			33.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	431	104	34	745	1	230	3	73	4	0	2
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1261	1765	1500	1260	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	468	113	37	810	1	250	3	79	4	0	2
RTOR Reduction (vph)	0	0	60	0	0	0	0	0	50	0	1	0
Lane Group Flow (vph)	8	468	53	37	810	1	250	3	29	4	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	51.2	51.2	5.6	55.4	55.4	41.0	41.0	41.0	41.0	41.0	
Effective Green, g (s)	1.4	51.2	51.2	5.6	55.4	55.4	41.0	41.0	41.0	41.0	41.0	
Actuated g/C Ratio	0.01	0.47	0.47	0.05	0.50	0.50	0.37	0.37	0.37	0.37	0.37	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1560	698	80	1688	755	470	657	559	469	559	
v/s Ratio Prot	0.01	0.14		c0.02	c0.24			0.00			0.00	
v/s Ratio Perm			0.04			0.00	c0.20		0.02	0.00		
v/c Ratio	0.40	0.30	0.08	0.46	0.48	0.00	0.53	0.00	0.05	0.01	0.00	
Uniform Delay, d1	53.9	18.3	16.3	50.7	17.9	13.6	27.0	21.7	22.1	21.7	21.7	
Progression Factor	1.36	0.54	0.21	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.1	0.5	0.2	4.2	1.0	0.0	4.3	0.0	0.2	0.0	0.0	
Delay (s)	85.2	10.3	3.6	54.9	18.8	13.6	31.3	21.7	22.3	21.7	21.7	
Level of Service	F	B	A	D	B	B	C	C	C	C	C	
Approach Delay (s)		10.0			20.4			29.0			21.7	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	23.7
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	180	312	43	0	11	388	9	0	68	70	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	196	339	47	0	12	422	10	0	74	76	40
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	17.8	21.5	19.3
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	71%	0%	100%	93%	11%
Vol Right, %	21%	0%	0%	29%	0%	0%	7%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	180	208	147	11	259	138	364
LT Vol	68	180	0	0	11	0	0	0
Through Vol	70	0	208	104	0	259	129	40
RT Vol	37	0	0	43	0	0	9	324
Lane Flow Rate	190	196	226	160	12	281	150	396
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.47	0.47	0.51	0.351	0.029	0.649	0.345	0.824
Departure Headway (Hd)	8.889	8.65	8.127	7.913	8.833	8.31	8.262	7.636
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	407	419	445	455	406	436	436	479
Service Time	6.623	6.378	5.855	5.641	6.561	6.037	5.989	5.336
HCM Lane V/C Ratio	0.467	0.468	0.508	0.352	0.03	0.644	0.344	0.827
HCM Control Delay	19.3	18.8	19	14.9	11.8	25.2	15.3	37.1
HCM Lane LOS	C	C	C	B	B	D	C	E
HCM 95th-tile Q	2.4	2.4	2.8	1.6	0.1	4.5	1.5	8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	40	324
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	43	352
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	37.1
HCM LOS	E

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	158	120	69	14	127	78	122	801	13	71	802	76
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.94		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3169		1583	3161		1583	3345		1583	3309	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3169		1583	3161		1583	3345		1583	3309	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	130	75	15	138	85	133	871	14	77	872	83
RTOR Reduction (vph)	0	50	0	0	66	0	0	1	0	0	7	0
Lane Group Flow (vph)	172	155	0	15	157	0	133	884	0	77	948	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.7	30.1		1.6	20.0		11.2	35.8		6.5	31.1	
Effective Green, g (s)	11.7	30.1		1.6	20.0		11.2	35.8		6.5	31.1	
Actuated g/C Ratio	0.13	0.33		0.02	0.22		0.12	0.40		0.07	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	205	1059		28	702		196	1330		114	1143	
v/s Ratio Prot	c0.11	0.05		0.01	c0.05		c0.08	0.26		0.05	c0.29	
v/s Ratio Perm												
v/c Ratio	0.84	0.15		0.54	0.22		0.68	0.66		0.68	0.83	
Uniform Delay, d1	38.2	21.0		43.8	28.6		37.7	22.2		40.7	27.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.39	0.65	
Incremental Delay, d2	24.8	0.1		18.3	0.2		9.0	2.6		12.9	6.1	
Delay (s)	63.0	21.0		62.1	28.8		46.7	24.8		69.3	23.8	
Level of Service	E	C		E	C		D	C		E	C	
Approach Delay (s)		40.2			30.9			27.7			27.2	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	5	16	1	0	101	1	1027	6	149	972	440
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1560			1528		1583	3350		1583	3353	1500
Flt Permitted	0.67	1.00			1.00		0.23	1.00		0.12	1.00	1.00
Satd. Flow (perm)	1125	1560			1527		385	3350		207	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	5	17	1	0	110	1	1116	7	162	1057	478
RTOR Reduction (vph)	0	12	0	0	77	0	0	1	0	0	0	86
Lane Group Flow (vph)	311	10	0	0	34	0	1	1122	0	162	1057	392
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	27.2	27.2			27.2		43.0	42.0		54.8	49.8	49.8
Effective Green, g (s)	27.2	27.2			27.2		43.0	42.0		54.8	49.8	49.8
Actuated g/C Ratio	0.30	0.30			0.30		0.48	0.47		0.61	0.55	0.55
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	340	471			461		197	1563		260	1855	830
v/s Ratio Prot		0.01					0.00	c0.34		c0.06	0.32	
v/s Ratio Perm	c0.28				0.02		0.00			0.32		0.26
v/c Ratio	0.91	0.02			0.07		0.01	0.72		0.62	0.57	0.47
Uniform Delay, d1	30.3	22.1			22.4		12.5	19.3		12.6	13.1	12.2
Progression Factor	1.00	1.00			1.00		0.70	0.56		1.33	0.69	0.53
Incremental Delay, d2	27.7	0.0			0.0		0.0	2.3		3.2	0.9	1.3
Delay (s)	57.9	22.1			22.4		8.8	13.0		20.0	10.0	7.7
Level of Service	E	C			C		A	B		B	A	A
Approach Delay (s)		55.6			22.4			13.0			10.3	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	901	0	383	413	0	558	373	765	516	571	750	848
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	979	0	416	449	0	607	405	832	561	621	815	922
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	979	0	416	449	0	607	405	832	561	621	815	922
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	43.9		120.0	43.9		120.0	21.5	26.0	120.0	29.6	34.1	120.0
Effective Green, g (s)	43.9		120.0	43.9		120.0	21.5	26.0	120.0	29.6	34.1	120.0
Actuated g/C Ratio	0.37		1.00	0.37		1.00	0.18	0.22	1.00	0.25	0.28	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1057		1500	1057		1500	517	1043	1500	713	1369	1500
v/s Ratio Prot							0.14	c0.17		c0.21	0.17	
v/s Ratio Perm	c0.34		0.28	0.16		0.40			0.37			c0.61
v/c Ratio	0.93		0.28	0.42		0.40	0.78	0.80	0.37	0.87	0.60	0.61
Uniform Delay, d1	36.5		0.0	28.6		0.0	47.0	44.5	0.0	43.4	37.0	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.78	0.76	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.3		0.5	0.2		0.8	9.2	5.1	0.6	13.8	1.9	1.9
Delay (s)	49.8		0.5	28.8		0.8	45.7	39.0	0.6	57.1	38.9	1.9
Level of Service	D		A	C		A	D	D	A	E	D	A
Approach Delay (s)		35.1			12.7			28.5			29.2	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	511	3	328	0	0	0	0	1027	387	456	1243	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.88						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1459						4818	1500	1583	3353	
Flt Permitted	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1459						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	555	3	357	0	0	0	0	1116	421	496	1351	0
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	311	0	0	0
Lane Group Flow (vph)	477	400	0	0	0	0	0	1116	110	496	1351	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	27.0	27.0						23.5	23.5	27.0	54.5	
Effective Green, g (s)	27.0	27.0						23.5	23.5	27.0	54.5	
Actuated g/C Ratio	0.30	0.30						0.26	0.26	0.30	0.61	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	451	437						1258	391	474	2030	
v/s Ratio Prot								c0.23		c0.31	0.40	
v/s Ratio Perm	c0.32	0.27							0.07			
v/c Ratio	1.06	0.91						0.89	0.28	1.05	0.67	
Uniform Delay, d1	31.5	30.4						32.0	26.5	31.5	11.7	
Progression Factor	1.00	1.00						1.21	3.86	1.36	1.32	
Incremental Delay, d2	58.4	23.4						7.0	1.3	43.4	1.0	
Delay (s)	89.9	53.8						45.7	103.6	86.1	16.4	
Level of Service	F	D						D	F	F	B	
Approach Delay (s)		72.6			0.0			61.6			35.1	
Approach LOS		E			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	374	8	487	295	1248	0	0	1325	881
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.98	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1572	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1572	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	407	9	529	321	1357	0	0	1440	958
RTOR Reduction (vph)	0	0	0	0	8	48	0	0	0	0	0	427
Lane Group Flow (vph)	0	0	0	0	487	402	321	1357	0	0	1440	531
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					26.0	26.0	19.0	55.5			32.5	32.5
Effective Green, g (s)					26.0	26.0	19.0	55.5			32.5	32.5
Actuated g/C Ratio					0.29	0.29	0.21	0.62			0.36	0.36
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					454	411	334	2067			1739	541
v/s Ratio Prot							c0.20	0.40			0.30	
v/s Ratio Perm					0.31	0.28						c0.35
v/c Ratio					1.07	0.98	0.96	0.66			0.83	0.98
Uniform Delay, d1					32.0	31.7	35.1	11.1			26.2	28.5
Progression Factor					1.00	1.00	1.37	0.98			1.00	1.00
Incremental Delay, d2					63.2	38.4	20.4	0.6			4.7	34.5
Delay (s)					95.2	70.1	68.5	11.5			30.9	63.0
Level of Service					F	E	E	B			C	E
Approach Delay (s)		0.0			83.2			22.4			43.7	
Approach LOS		A			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	119.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	348	607	130	235	323	767	199	1052	237	648	977	140
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	366	639	137	247	340	807	209	1107	249	682	1028	147
RTOR Reduction (vph)	0	0	107	0	0	71	0	0	168	0	14	0
Lane Group Flow (vph)	366	639	30	247	340	736	209	1107	81	682	1161	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	16.0	28.6	28.6	13.0	25.6	56.6	13.1	33.4	33.4	31.0	51.3	
Effective Green, g (s)	16.0	28.6	28.6	13.0	25.6	56.6	13.1	33.4	33.4	31.0	51.3	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.20	0.44	0.10	0.26	0.26	0.24	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	355	737	330	289	660	1149	291	1237	385	689	1865	
v/s Ratio Prot	0.13	c0.19		c0.09	0.10	0.15	0.07	c0.23		c0.24	0.25	
v/s Ratio Perm			0.02			0.13			0.05			
v/c Ratio	1.03	0.87	0.09	0.85	0.52	0.64	0.72	0.89	0.21	0.99	0.62	
Uniform Delay, d1	57.0	48.9	40.4	57.6	46.7	28.7	56.7	46.6	37.9	49.3	31.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	56.0	10.4	0.1	20.4	0.5	0.9	6.9	10.2	1.2	31.3	1.6	
Delay (s)	113.0	59.3	40.4	78.0	47.2	29.7	63.5	56.8	39.2	80.6	33.2	
Level of Service	F	E	D	E	D	C	E	E	D	F	C	
Approach Delay (s)		74.2			42.5			54.9			50.6	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	793	53	20	683	47	48	34	24	75	36	271
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4771		1583	3145		2891	2909	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4771		1583	3145		2891	2909	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	862	58	22	742	51	52	37	26	82	39	295
RTOR Reduction (vph)	0	0	32	0	7	0	0	18	0	0	204	0
Lane Group Flow (vph)	323	862	26	22	786	0	52	45	0	82	130	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	16.7	49.6	49.6	1.6	34.5		7.9	35.5		7.3	34.0	
Effective Green, g (s)	16.7	49.6	49.6	1.6	34.5		7.9	35.5		7.3	34.0	
Actuated g/C Ratio	0.15	0.45	0.45	0.01	0.31		0.07	0.32		0.07	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	438	2172	676	42	1496		113	1014		191	899	
v/s Ratio Prot	c0.11	0.18		0.01	c0.16		c0.03	0.01		0.03	c0.04	
v/s Ratio Perm			0.02									
v/c Ratio	0.74	0.40	0.04	0.52	0.53		0.46	0.04		0.43	0.14	
Uniform Delay, d1	44.6	20.2	16.9	53.8	31.0		49.0	25.6		49.3	27.5	
Progression Factor	1.00	1.00	1.00	1.14	0.61		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.4	0.5	0.1	11.2	1.3		3.0	0.1		1.6	0.1	
Delay (s)	50.9	20.7	17.0	72.7	20.4		52.0	25.7		50.9	27.6	
Level of Service	D	C	B	E	C		D	C		D	C	
Approach Delay (s)		28.4			21.8			37.6			32.2	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.9
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	64	840	520	40	112	140
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4767		2793	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4767		2793	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	913	565	43	122	152
RTOR Reduction (vph)	0	0	6	0	44	59
Lane Group Flow (vph)	70	913	602	0	143	28
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	9.0	66.0	53.0		36.0	36.0
Effective Green, g (s)	9.0	66.0	53.0		36.0	36.0
Actuated g/C Ratio	0.08	0.60	0.48		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	129	2011	2296		914	421
v/s Ratio Prot	c0.04	c0.27	0.13		c0.05	
v/s Ratio Perm						0.02
v/c Ratio	0.54	0.45	0.26		0.16	0.07
Uniform Delay, d1	48.5	12.1	16.9		26.2	25.5
Progression Factor	1.29	0.78	0.72		1.00	1.00
Incremental Delay, d2	4.4	0.7	0.3		0.4	0.3
Delay (s)	66.9	10.1	12.4		26.6	25.8
Level of Service	E	B	B		C	C
Approach Delay (s)		14.1	12.4		26.3	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	892	45	21	507	0	18	0	35	3	0	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1500	1583	3353		1583	1500		1583	1500	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00		0.73	1.00	
Satd. Flow (perm)		1765	1500	1583	3353		1259	1500		1221	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	970	49	23	551	0	20	0	38	3	0	4
RTOR Reduction (vph)	0	0	11	0	0	0	0	35	0	0	4	0
Lane Group Flow (vph)	0	970	38	23	551	0	20	3	0	3	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		84.2	84.2	3.5	91.7		10.1	10.1		10.1	10.1	
Effective Green, g (s)		84.2	84.2	3.5	91.7		10.1	10.1		10.1	10.1	
Actuated g/C Ratio		0.77	0.77	0.03	0.83		0.09	0.09		0.09	0.09	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1351	1148	50	2795		115	137		112	137	
v/s Ratio Prot		c0.55		c0.01	0.16			0.00			0.00	
v/s Ratio Perm			0.03				c0.02			0.00		
v/c Ratio		0.72	0.03	0.46	0.20		0.17	0.03		0.03	0.00	
Uniform Delay, d1		6.7	3.1	52.3	1.8		46.1	45.5		45.5	45.4	
Progression Factor		2.46	3.14	0.78	1.97		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.1	0.0	6.5	0.2		0.7	0.1		0.1	0.0	
Delay (s)		19.6	9.8	47.5	3.7		46.8	45.5		45.6	45.4	
Level of Service		B	A	D	A		D	D		D	D	
Approach Delay (s)		19.1			5.5			46.0			45.5	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	882	28	24	497	8	26	1	70	14	2	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	959	30	26	540	9	28	1	76	15	2	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	549			989			1315	1592	495	1094	1603	274
vC1, stage 1 conf vol							991	991		597	597	
vC2, stage 2 conf vol							323	601		497	1007	
vCu, unblocked vol	501			989			1282	1565	495	1057	1576	221
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			89	100	85	95	99	99
cM capacity (veh/h)	1039			695			247	275	520	330	256	768

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	9	639	350	26	360	189	105	22
Volume Left	9	0	0	26	0	0	28	15
Volume Right	0	0	30	0	0	9	76	4
cSH	1039	1700	1700	695	1700	1700	721	401
Volume to Capacity	0.01	0.38	0.21	0.04	0.21	0.11	0.15	0.05
Queue Length 95th (ft)	1	0	0	3	0	0	13	4
Control Delay (s)	8.5	0.0	0.0	10.4	0.0	0.0	15.4	15.4
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.5			15.4	15.4
Approach LOS							C	C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	937	33	31	476	2	34	1	36	2	0	5
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1683	1500		1676	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.81	1.00		0.73	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1422	1500		1292	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1018	36	34	517	2	37	1	39	2	0	5
RTOR Reduction (vph)	0	0	17	0	0	1	0	0	27	0	0	3
Lane Group Flow (vph)	2	1018	19	34	517	1	0	38	12	0	2	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	58.3	58.3	5.5	62.4	62.4		34.0	34.0		34.0	34.0
Effective Green, g (s)	1.4	58.3	58.3	5.5	62.4	62.4		34.0	34.0		34.0	34.0
Actuated g/C Ratio	0.01	0.53	0.53	0.05	0.57	0.57		0.31	0.31		0.31	0.31
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	1777	795	79	1902	850		439	463		399	463
v/s Ratio Prot	0.00	c0.30		c0.02	0.15							
v/s Ratio Perm			0.01			0.00		c0.03	0.01		0.00	0.00
v/c Ratio	0.10	0.57	0.02	0.43	0.27	0.00		0.09	0.03		0.01	0.00
Uniform Delay, d1	53.7	17.4	12.3	50.7	12.2	10.3		27.0	26.5		26.3	26.3
Progression Factor	1.07	0.90	1.94	1.15	0.83	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	1.1	0.0	3.7	0.3	0.0		0.4	0.1		0.0	0.0
Delay (s)	59.1	16.8	24.0	62.0	10.4	10.3		27.4	26.6		26.3	26.3
Level of Service	E	B	C	E	B	B		C	C		C	C
Approach Delay (s)		17.1			13.6			27.0			26.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	735	239	39	385	1	134	0	153	3	2	3
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583		1500	1583	1606	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75		1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1257		1500	1262	1606	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	799	260	42	418	1	146	0	166	3	2	3
RTOR Reduction (vph)	0	0	93	0	0	0	0	0	110	0	2	0
Lane Group Flow (vph)	5	799	168	42	418	1	146	0	56	3	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	55.0	55.0	5.8	59.4	59.4	37.0		37.0	37.0	37.0	
Effective Green, g (s)	1.4	55.0	55.0	5.8	59.4	59.4	37.0		37.0	37.0	37.0	
Actuated g/C Ratio	0.01	0.50	0.50	0.05	0.54	0.54	0.34		0.34	0.34	0.34	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1676	750	83	1810	810	422		504	424	540	
v/s Ratio Prot	0.00	c0.24		c0.03	0.12						0.00	
v/s Ratio Perm			0.11			0.00	c0.12		0.04	0.00		
v/c Ratio	0.25	0.48	0.22	0.51	0.23	0.00	0.35		0.11	0.01	0.01	
Uniform Delay, d1	53.8	18.1	15.5	50.7	13.3	11.6	27.4		25.2	24.3	24.3	
Progression Factor	1.15	0.73	0.88	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	5.6	0.8	0.6	4.8	0.3	0.0	2.2		0.4	0.0	0.0	
Delay (s)	67.3	14.0	14.2	55.5	13.6	11.6	29.7		25.6	24.3	24.3	
Level of Service	E	B	B	E	B	B	C		C	C	C	
Approach Delay (s)		14.3			17.4			27.5			24.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	26.8
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	184	659	52	0	15	268	6	0	24	91	43
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	200	716	57	0	16	291	7	0	26	99	47
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	34.2	15.2	16.5
HCM LOS	D	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	58%	0%	100%	81%	0%	100%	94%	31%
Vol Right, %	27%	0%	0%	19%	0%	0%	6%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	158	184	439	272	15	179	95	242
LT Vol	24	184	0	0	15	0	0	7
Through Vol	91	0	439	220	0	179	89	75
RT Vol	43	0	0	52	0	0	6	160
Lane Flow Rate	172	200	478	295	16	194	104	263
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.397	0.42	0.935	0.567	0.038	0.43	0.228	0.565
Departure Headway (Hd)	8.329	7.566	7.05	6.912	8.485	7.966	7.921	7.731
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	431	474	511	520	421	451	452	466
Service Time	6.101	5.328	4.812	4.673	6.258	5.739	5.693	5.493
HCM Lane V/C Ratio	0.399	0.422	0.935	0.567	0.038	0.43	0.23	0.564
HCM Control Delay	16.5	15.7	51.8	18.4	11.6	16.7	13	20.1
HCM Lane LOS	C	C	F	C	B	C	B	C
HCM 95th-tile Q	1.9	2	11.4	3.5	0.1	2.1	0.9	3.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	7	75	160
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	8	82	174
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	20.1
HCM LOS	C

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	386	112	22	121	105	83	756	36	106	805	60
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3240		1583	3120		1583	3330		1583	3318	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3240		1583	3120		1583	3330		1583	3318	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	420	122	24	132	114	90	822	39	115	875	65
RTOR Reduction (vph)	0	27	0	0	90	0	0	3	0	0	6	0
Lane Group Flow (vph)	201	515	0	24	156	0	90	858	0	115	935	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.9	28.8		3.3	19.2		6.9	31.8		10.1	35.0	
Effective Green, g (s)	12.9	28.8		3.3	19.2		6.9	31.8		10.1	35.0	
Actuated g/C Ratio	0.14	0.32		0.04	0.21		0.08	0.35		0.11	0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	1036		58	665		121	1176		177	1290	
v/s Ratio Prot	c0.13	c0.16		0.02	0.05		0.06	0.26		c0.07	c0.28	
v/s Ratio Perm												
v/c Ratio	0.89	0.50		0.41	0.24		0.74	0.73		0.65	0.72	
Uniform Delay, d1	37.8	24.7		42.4	29.3		40.7	25.4		38.3	23.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.34	0.82	
Incremental Delay, d2	31.6	0.4		4.7	0.2		21.7	4.0		6.8	3.0	
Delay (s)	69.5	25.1		47.1	29.5		62.4	29.3		58.1	22.1	
Level of Service	E	C		D	C		E	C		E	C	
Approach Delay (s)		37.1			31.1			32.5			26.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	30	22	1	13	180	14	1034	2	65	940	248
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1653			1543		1583	3352		1583	3353	1500
Flt Permitted	0.56	1.00			1.00		0.19	1.00		0.12	1.00	1.00
Satd. Flow (perm)	929	1653			1543		324	3352		205	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	33	24	1	14	196	15	1124	2	71	1022	270
RTOR Reduction (vph)	0	15	0	0	69	0	0	0	0	0	0	51
Lane Group Flow (vph)	323	42	0	0	142	0	15	1126	0	71	1022	219
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	33.0	33.0			33.0		42.2	41.4		47.8	44.2	44.2
Effective Green, g (s)	33.0	33.0			33.0		42.2	41.4		47.8	44.2	44.2
Actuated g/C Ratio	0.37	0.37			0.37		0.47	0.46		0.53	0.49	0.49
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	340	606			565		163	1541		163	1646	736
v/s Ratio Prot		0.03					0.00	c0.34		c0.02	0.30	
v/s Ratio Perm	c0.35				0.09		0.04			0.21		0.15
v/c Ratio	0.95	0.07			0.25		0.09	0.73		0.44	0.62	0.30
Uniform Delay, d1	27.7	18.5			19.9		13.7	19.8		13.8	16.8	13.6
Progression Factor	1.00	1.00			1.00		0.82	0.59		1.07	0.92	0.89
Incremental Delay, d2	35.1	0.0			0.1		0.2	2.3		1.5	1.4	0.8
Delay (s)	62.8	18.5			20.0		11.4	13.9		16.2	16.8	13.0
Level of Service	E	B			B		B	B		B	B	B
Approach Delay (s)		56.1			20.0			13.9			16.1	
Approach LOS		E			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	878	0	377	465	0	512	446	1119	590	529	958	868
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	954	0	410	505	0	557	485	1216	641	575	1041	943
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	954	0	410	505	0	557	485	1216	641	575	1041	943
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	40.7		120.0	40.7		120.0	23.5	33.0	120.0	25.8	35.3	120.0
Effective Green, g (s)	40.7		120.0	40.7		120.0	23.5	33.0	120.0	25.8	35.3	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.20	0.28	1.00	0.22	0.29	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	980		1500	980		1500	566	1324	1500	621	1417	1500
v/s Ratio Prot							0.17	c0.25		c0.20	0.22	
v/s Ratio Perm	c0.33		0.27	0.17		0.37			0.43			0.63
v/c Ratio	0.97		0.27	0.52		0.37	0.86	0.92	0.43	0.93	0.73	0.63
Uniform Delay, d1	39.1		0.0	31.8		0.0	46.6	42.2	0.0	46.2	38.1	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.3		0.5	0.3		0.7	15.4	11.6	0.9	21.9	3.4	2.0
Delay (s)	61.5		0.5	32.1		0.7	62.0	53.8	0.9	68.0	41.6	2.0
Level of Service	E		A	C		A	E	D	A	E	D	A
Approach Delay (s)		43.1			15.6			41.0			32.9	
Approach LOS		D			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	617	3	154	0	0	0	0	1089	396	412	1105	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.94						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1530						4818	1500	1583	3353	
Flt Permitted	0.95	0.97						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1530						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	671	3	167	0	0	0	0	1184	430	448	1201	0
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	308	0	0	0
Lane Group Flow (vph)	429	385	0	0	0	0	0	1184	122	448	1201	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	26.0	26.0						25.5	25.5	26.0	55.5	
Effective Green, g (s)	26.0	26.0						25.5	25.5	26.0	55.5	
Actuated g/C Ratio	0.29	0.29						0.28	0.28	0.29	0.62	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	434	442						1365	425	457	2067	
v/s Ratio Prot								c0.25		c0.28	0.36	
v/s Ratio Perm	c0.29	0.25							0.08			
v/c Ratio	0.99	0.87						0.87	0.29	0.98	0.58	
Uniform Delay, d1	31.9	30.4						30.6	25.2	31.7	10.3	
Progression Factor	1.00	1.00						1.16	3.28	1.47	1.17	
Incremental Delay, d2	39.7	16.9						5.6	1.2	27.9	0.7	
Delay (s)	71.6	47.3						41.1	83.7	74.7	12.8	
Level of Service	E	D						D	F	E	B	
Approach Delay (s)		59.7			0.0			52.5			29.6	
Approach LOS		E			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	289	3	476	236	1457	0	0	1250	552
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.96	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.97	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1552	1425	1583	3353			4818	1500
Flt Permitted					0.97	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1552	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	314	3	517	257	1584	0	0	1359	600
RTOR Reduction (vph)	0	0	0	0	15	47	0	0	0	0	0	377
Lane Group Flow (vph)	0	0	0	0	421	351	257	1584	0	0	1359	223
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					26.9	26.9	17.1	54.6			33.5	33.5
Effective Green, g (s)					26.9	26.9	17.1	54.6			33.5	33.5
Actuated g/C Ratio					0.30	0.30	0.19	0.61			0.37	0.37
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					463	425	300	2034			1793	558
v/s Ratio Prot							c0.16	c0.47			0.28	
v/s Ratio Perm					0.27	0.25						0.15
v/c Ratio					0.91	0.83	0.86	0.78			0.76	0.40
Uniform Delay, d1					30.4	29.4	35.3	13.2			24.7	20.8
Progression Factor					1.00	1.00	1.28	1.12			1.00	1.00
Incremental Delay, d2					21.3	12.4	9.9	1.3			3.1	2.1
Delay (s)					51.7	41.7	55.1	16.0			27.8	23.0
Level of Service					D	D	E	B			C	C
Approach Delay (s)		0.0			46.9			21.5			26.3	
Approach LOS		A			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX H

Cumulative Project List

Michael Baker
INTERNATIONAL

Cumulative Project's List

#	Project Name	Jurisdiction
1	Caprock Distribution Center	Rialto
2	Coffee Bean & Tea Leaf (Fountainhead)	Rialto
3	Renaissance Specific Plan Revision	Rialto
4	Monarch Hills	Fontana
5	Wal-Mart (North)	Fontana
6	Wal-Mart (South)	Fontana
7	Westgate Specific Plan	Fontana
8	West Valley Logistics Center Specific Plan	Fontana
9	Highland Village Commercial Center	Fontana
10	Sierra Lakes Commercial Center	Fontana
11	Bloomington Option C	San Bernardino County
12	Cedar Avenue Technology Center	San Bernardino County
13	Agua Mansa High-Cube Warehouse	San Bernardino County
14	Three Makars	San Bernardino County
15	APN 0252041580000	San Bernardino County
16	APN 0257081010000	San Bernardino County
17	P201400139	San Bernardino County
18	Affordable Logistics	San Bernardino County
19	Bloomington Affordable Housing	San Bernardino County
20	APN 0256101340000	San Bernardino County
21	APN 060032110000	San Bernardino County
22	APN 0261161250000	San Bernardino County
23	APN 0261172100000	San Bernardino County
24	APN 0274182340000	San Bernardino County
25	APN 0267171090000	San Bernardino County
26	APN 0268011160000	San Bernardino County
27	APN 0270225320000	San Bernardino County
28	APN 0252051060000	San Bernardino County
29	APN 0252151160000 / APN 0252151670000	San Bernardino County
30	APN 025604101000	San Bernardino County
31	APN 0259154130000	San Bernardino County
32	APN 0260121070000	San Bernardino County

Highlighted projects referenced in Traffic Study.

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX I

Opening Year 2018 With Ambient Traffic With Cumulative Project Conditions Without and With Project Synchro Analysis Worksheets

Michael Baker

INTERNATIONAL

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	223	52	102	235	423	78	1032	80	603	764	215
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	264	235	55	107	247	445	82	1086	84	635	804	226
RTOR Reduction (vph)	0	0	48	0	0	87	0	0	55	0	34	0
Lane Group Flow (vph)	264	235	7	107	247	358	82	1086	29	635	996	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	11.0	16.1	16.1	10.7	15.8	43.0	8.0	42.0	42.0	27.2	61.2	
Effective Green, g (s)	11.0	16.1	16.1	10.7	15.8	43.0	8.0	42.0	42.0	27.2	61.2	
Actuated g/C Ratio	0.09	0.13	0.13	0.09	0.13	0.36	0.07	0.35	0.35	0.23	0.51	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	265	449	201	257	441	946	192	1686	525	655	2376	
v/s Ratio Prot	c0.09	0.07		0.04	c0.07	0.09	0.03	c0.23		c0.22	0.21	
v/s Ratio Perm			0.00			0.05			0.02			
v/c Ratio	1.00	0.52	0.04	0.42	0.56	0.38	0.43	0.64	0.06	0.97	0.42	
Uniform Delay, d1	54.5	48.4	45.2	51.7	48.8	28.6	53.8	32.7	25.9	46.0	18.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.17	1.15	
Incremental Delay, d2	53.8	0.8	0.1	0.4	1.3	0.1	0.6	1.9	0.2	24.9	0.5	
Delay (s)	108.3	49.2	45.3	52.1	50.2	28.7	54.4	34.6	26.1	78.7	21.5	
Level of Service	F	D	D	D	D	C	D	C	C	E	C	
Approach Delay (s)		77.0			38.5			35.4			43.3	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	196	576	57	12	520	13	46	30	24	9	11	63
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4800		1583	3131		2891	2925	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4800		1583	3131		2891	2925	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	626	62	13	565	14	50	33	26	10	12	68
RTOR Reduction (vph)	0	0	34	0	3	0	0	16	0	0	47	0
Lane Group Flow (vph)	213	626	28	13	576	0	50	43	0	10	33	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	13.3	50.2	50.2	1.6	38.5		7.7	41.2		1.0	33.6	
Effective Green, g (s)	13.3	50.2	50.2	1.6	38.5		7.7	41.2		1.0	33.6	
Actuated g/C Ratio	0.12	0.46	0.46	0.01	0.35		0.07	0.37		0.01	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.9	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	349	2198	684	42	1680		110	1172		26	893	
v/s Ratio Prot	c0.07	0.13		0.00	c0.12		c0.03	c0.01		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.61	0.28	0.04	0.31	0.34		0.45	0.04		0.38	0.04	
Uniform Delay, d1	45.9	18.7	16.6	53.7	26.4		49.1	21.8		54.2	26.8	
Progression Factor	1.00	1.00	1.00	0.82	1.55		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	0.3	0.1	4.1	0.5		3.0	0.1		9.2	0.0	
Delay (s)	49.0	19.0	16.7	48.0	41.6		52.1	21.9		63.4	26.8	
Level of Service	D	B	B	D	D		D	C		E	C	
Approach Delay (s)		25.9			41.7			35.7			30.9	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.9
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	241	385	485	104	20	34
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4690		2762	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4690		2762	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	262	418	527	113	22	37
RTOR Reduction (vph)	0	0	23	0	14	15
Lane Group Flow (vph)	262	418	617	0	26	4
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	24.0	80.0	52.0		22.0	22.0
Effective Green, g (s)	24.0	80.0	52.0		22.0	22.0
Actuated g/C Ratio	0.22	0.73	0.47		0.20	0.20
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	345	2438	2217		552	257
v/s Ratio Prot	c0.17	0.12	c0.13		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.76	0.17	0.28		0.05	0.01
Uniform Delay, d1	40.3	4.7	17.6		35.5	35.3
Progression Factor	1.72	0.52	0.61		1.00	1.00
Incremental Delay, d2	9.1	0.2	0.3		0.2	0.1
Delay (s)	78.3	2.6	11.0		35.7	35.4
Level of Service	E	A	B		D	D
Approach Delay (s)		31.8	11.0		35.6	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	416	27	38	535	4	43	1	36	0	0	1
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583	1765	1500	1583	3350		1583	1507			1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1583	1765	1500	1583	3350		1262	1507			1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	452	29	41	582	4	47	1	39	0	0	1
RTOR Reduction (vph)	0	0	13	0	0	0	0	28	0	0	1	0
Lane Group Flow (vph)	3	452	16	41	586	0	47	12	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	61.0	61.0	5.8	65.4		31.0	31.0			31.0	
Effective Green, g (s)	1.4	61.0	61.0	5.8	65.4		31.0	31.0			31.0	
Actuated g/C Ratio	0.01	0.55	0.55	0.05	0.59		0.28	0.28			0.28	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	20	978	831	83	1991		355	424			422	
v/s Ratio Prot	0.00	c0.26		c0.03	0.17			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.15	0.46	0.02	0.49	0.29		0.13	0.03			0.00	
Uniform Delay, d1	53.7	14.7	11.0	50.7	11.0		29.5	28.6			28.4	
Progression Factor	1.05	1.00	0.27	1.25	1.04		1.00	1.00			1.00	
Incremental Delay, d2	3.4	1.6	0.0	4.4	0.4		0.8	0.1			0.0	
Delay (s)	59.8	16.2	3.0	67.9	11.8		30.2	28.7			28.4	
Level of Service	E	B	A	E	B		C	C			C	
Approach Delay (s)		15.7			15.5			29.5			28.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	408	36	129	571	11	38	1	100	5	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	443	39	140	621	12	41	1	109	5	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	633			483			1061	1383	241	1136	1396	316
vC1, stage 1 conf vol							470	470		907	907	
vC2, stage 2 conf vol							591	913		229	489	
vCu, unblocked vol	553			483			995	1328	241	1073	1342	225
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			89	100	86	98	100	100
cM capacity (veh/h)	980			1076			362	286	760	255	271	752

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	296	187	140	414	219	151	9
Volume Left	3	0	0	140	0	0	41	5
Volume Right	0	0	39	0	0	12	109	2
cSH	980	1700	1700	1076	1700	1700	1056	343
Volume to Capacity	0.00	0.17	0.11	0.13	0.24	0.13	0.14	0.03
Queue Length 95th (ft)	0	0	0	11	0	0	12	2
Control Delay (s)	8.7	0.0	0.0	8.8	0.0	0.0	12.2	17.0
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.6			12.2	17.0
Approach LOS							B	C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	360	179	335	674	22	66	0	258	9	15	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1676	1500		1731	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.92	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1306	1500		1629	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	391	195	364	733	24	72	0	280	10	16	4
RTOR Reduction (vph)	0	0	75	0	0	9	0	0	214	0	0	3
Lane Group Flow (vph)	13	391	120	364	733	15	0	72	66	0	26	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	40.3	40.3	31.5	70.4	70.4		26.0	26.0		26.0	26.0
Effective Green, g (s)	1.4	40.3	40.3	31.5	70.4	70.4		26.0	26.0		26.0	26.0
Actuated g/C Ratio	0.01	0.37	0.37	0.29	0.64	0.64		0.24	0.24		0.24	0.24
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	1228	549	453	2145	960		308	354		385	354
v/s Ratio Prot	0.01	0.12		c0.23	c0.22							
v/s Ratio Perm			0.08			0.01		c0.06	0.04		0.02	0.00
v/c Ratio	0.65	0.32	0.22	0.80	0.34	0.02		0.23	0.19		0.07	0.00
Uniform Delay, d1	54.1	25.0	24.0	36.4	9.1	7.2		33.9	33.6		32.6	32.1
Progression Factor	1.02	1.26	1.63	0.97	1.26	7.01		1.00	1.00		1.00	1.00
Incremental Delay, d2	55.0	0.7	0.9	9.1	0.4	0.0		0.4	0.3		0.3	0.0
Delay (s)	110.0	32.2	40.1	44.5	11.9	50.5		34.3	33.8		32.9	32.1
Level of Service	F	C	D	D	B	D		C	C		C	C
Approach Delay (s)		36.4			23.3			33.9			32.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	440	104	34	750	39	230	6	73	60	0	2
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1261	1765	1500	1255	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	478	113	37	815	42	250	7	79	65	0	2
RTOR Reduction (vph)	0	0	61	0	0	21	0	0	49	0	1	0
Lane Group Flow (vph)	8	478	52	37	815	21	250	7	30	65	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	50.6	50.6	5.2	54.4	54.4	42.0	42.0	42.0	42.0	42.0	
Effective Green, g (s)	1.4	50.6	50.6	5.2	54.4	54.4	42.0	42.0	42.0	42.0	42.0	
Actuated g/C Ratio	0.01	0.46	0.46	0.05	0.49	0.49	0.38	0.38	0.38	0.38	0.38	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1542	690	74	1658	741	481	673	572	479	572	
v/s Ratio Prot	0.01	0.14		c0.02	c0.24			0.00			0.00	
v/s Ratio Perm			0.03			0.01	c0.20		0.02	0.05		
v/c Ratio	0.40	0.31	0.08	0.50	0.49	0.03	0.52	0.01	0.05	0.14	0.00	
Uniform Delay, d1	53.9	18.7	16.6	51.1	18.6	14.2	26.2	21.1	21.5	22.2	21.0	
Progression Factor	1.36	0.51	0.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.9	0.5	0.2	5.2	1.0	0.1	4.0	0.0	0.2	0.6	0.0	
Delay (s)	85.1	10.0	4.9	56.4	19.6	14.3	30.2	21.1	21.6	22.8	21.0	
Level of Service	F	A	A	E	B	B	C	C	C	C	C	
Approach Delay (s)		10.0			20.9			28.0			22.7	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	28.6
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	180	365	43	0	11	446	9	0	68	70	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	196	397	47	0	12	485	10	0	74	76	40
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	20.7	28.2	20.9
HCM LOS	C	D	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	74%	0%	100%	94%	11%
Vol Right, %	21%	0%	0%	26%	0%	0%	6%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	180	243	165	11	297	158	364
LT Vol	68	180	0	0	11	0	0	0
Through Vol	70	0	243	122	0	297	149	40
RT Vol	37	0	0	43	0	0	9	324
Lane Flow Rate	190	196	264	179	12	323	171	396
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.493	0.486	0.619	0.409	0.03	0.769	0.406	0.876
Departure Headway (Hd)	9.325	8.947	8.422	8.23	9.091	8.565	8.524	7.968
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	386	403	428	437	393	423	422	455
Service Time	7.091	6.709	6.183	5.991	6.853	6.327	6.285	5.722
HCM Lane V/C Ratio	0.492	0.486	0.617	0.41	0.031	0.764	0.405	0.87
HCM Control Delay	20.9	19.9	24	16.6	12.1	34.8	17	45.6
HCM Lane LOS	C	C	C	C	B	D	C	E
HCM 95th-tile Q	2.6	2.6	4.1	2	0.1	6.5	1.9	9.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	40	324
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	43	352
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	45.6
HCM LOS	E

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	187	141	77	23	132	81	129	946	21	71	987	123
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3175		1583	3161		1583	3342		1583	3297	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3175		1583	3161		1583	3342		1583	3297	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	203	153	84	25	143	88	140	1028	23	77	1073	134
RTOR Reduction (vph)	0	57	0	0	71	0	0	1	0	0	9	0
Lane Group Flow (vph)	203	180	0	25	160	0	140	1050	0	77	1198	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.6	32.3		3.5	19.2		13.6	39.7		8.5	34.6	
Effective Green, g (s)	16.6	32.3		3.5	19.2		13.6	39.7		8.5	34.6	
Actuated g/C Ratio	0.17	0.32		0.04	0.19		0.14	0.40		0.08	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	262	1025		55	606		215	1326		134	1140	
v/s Ratio Prot	c0.13	0.06		0.02	c0.05		c0.09	0.31		0.05	c0.36	
v/s Ratio Perm												
v/c Ratio	0.77	0.18		0.45	0.26		0.65	0.79		0.57	1.05	
Uniform Delay, d1	39.9	24.3		47.3	34.4		41.0	26.5		44.0	32.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.3	0.1		5.9	0.2		6.9	4.9		5.8	41.2	
Delay (s)	53.2	24.4		53.2	34.6		47.8	31.4		49.9	73.9	
Level of Service	D	C		D	C		D	C		D	E	
Approach Delay (s)		37.7			36.4			33.3			72.5	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	5	16	6	0	119	1	1170	16	187	1153	440
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1560			1535		1583	3346		1583	3353	1500
Flt Permitted	0.63	1.00			0.99		0.17	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1052	1560			1526		278	3346		140	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	5	17	7	0	129	1	1272	17	203	1253	478
RTOR Reduction (vph)	0	11	0	0	87	0	0	1	0	0	0	63
Lane Group Flow (vph)	311	11	0	0	49	0	1	1288	0	203	1253	415
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	32.4	32.4			32.4		44.4	43.6		59.6	54.8	54.8
Effective Green, g (s)	32.4	32.4			32.4		44.4	43.6		59.6	54.8	54.8
Actuated g/C Ratio	0.32	0.32			0.32		0.44	0.44		0.60	0.55	0.55
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	340	505			494		133	1458		256	1837	822
v/s Ratio Prot		0.01					0.00	c0.39		c0.09	0.37	
v/s Ratio Perm	c0.30				0.03		0.00			0.38		0.28
v/c Ratio	0.91	0.02			0.10		0.01	0.88		0.79	0.68	0.50
Uniform Delay, d1	32.5	23.0			23.6		16.1	25.9		25.5	16.3	14.1
Progression Factor	1.00	1.00			1.00		0.69	0.65		1.00	1.00	1.00
Incremental Delay, d2	27.7	0.0			0.0		0.0	6.0		15.4	2.1	2.2
Delay (s)	60.1	23.0			23.6		11.0	22.9		40.9	18.4	16.3
Level of Service	E	C			C		B	C		D	B	B
Approach Delay (s)		57.7			23.6			22.8			20.2	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	907	0	415	415	0	564	393	781	520	572	772	849
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	986	0	451	451	0	613	427	849	565	622	839	923
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	986	0	451	451	0	613	427	849	565	622	839	923
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	44.0		120.0	44.0		120.0	25.5	24.0	120.0	31.5	30.0	120.0
Effective Green, g (s)	44.0		120.0	44.0		120.0	25.5	24.0	120.0	31.5	30.0	120.0
Actuated g/C Ratio	0.37		1.00	0.37		1.00	0.21	0.20	1.00	0.26	0.25	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1060		1500	1060		1500	614	963	1500	758	1204	1500
v/s Ratio Prot							0.15	c0.18		c0.22	0.17	
v/s Ratio Perm	c0.34		0.30	0.16		0.41			0.38			c0.62
v/c Ratio	0.93		0.30	0.43		0.41	0.70	0.88	0.38	0.82	0.70	0.62
Uniform Delay, d1	36.5		0.0	28.5		0.0	43.7	46.6	0.0	41.6	40.9	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.77	0.77	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.9		0.5	0.2		0.8	5.1	9.3	0.6	9.7	3.4	1.9
Delay (s)	50.4		0.5	28.7		0.8	38.5	45.3	0.6	51.3	44.2	1.9
Level of Service	D		A	C		A	D	D	A	D	D	A
Approach Delay (s)		34.8			12.6			30.0			29.7	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	517	3	433	0	0	0	0	1143	455	456	1398	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.87						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1445						4818	1500	1583	3353	
Flt Permitted	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1445						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	562	3	471	0	0	0	0	1242	495	496	1520	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	366	0	0	0
Lane Group Flow (vph)	506	506	0	0	0	0	0	1242	129	496	1520	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	28.0	28.0						23.5	23.5	26.0	53.5	
Effective Green, g (s)	28.0	28.0						23.5	23.5	26.0	53.5	
Actuated g/C Ratio	0.31	0.31						0.26	0.26	0.29	0.59	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	467	449						1258	391	457	1993	
v/s Ratio Prot								c0.26		c0.31	0.45	
v/s Ratio Perm	0.34	0.35							0.09			
v/c Ratio	1.08	1.13						0.99	0.33	1.09	0.76	
Uniform Delay, d1	31.0	31.0						33.1	26.9	32.0	13.5	
Progression Factor	1.00	1.00						1.30	4.47	1.33	1.41	
Incremental Delay, d2	66.0	81.8						16.3	1.3	53.4	1.2	
Delay (s)	97.0	112.8						59.3	121.6	96.0	20.3	
Level of Service	F	F						E	F	F	C	
Approach Delay (s)		105.1			0.0			77.0			38.9	
Approach LOS		F			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	67.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	427	8	493	363	1303	0	0	1381	882
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.98	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1580	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1580	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	464	9	536	395	1416	0	0	1501	959
RTOR Reduction (vph)	0	0	0	0	5	48	0	0	0	0	0	398
Lane Group Flow (vph)	0	0	0	0	527	429	395	1416	0	0	1501	561
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					25.0	25.0	19.0	56.5			33.5	33.5
Effective Green, g (s)					25.0	25.0	19.0	56.5			33.5	33.5
Actuated g/C Ratio					0.28	0.28	0.21	0.63			0.37	0.37
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					438	395	334	2104			1793	558
v/s Ratio Prot							c0.25	0.42			0.31	
v/s Ratio Perm					0.33	0.30						c0.37
v/c Ratio					1.20	1.09	1.18	0.67			0.84	1.01
Uniform Delay, d1					32.5	32.5	35.5	10.8			25.8	28.2
Progression Factor					1.00	1.00	1.37	1.01			1.00	1.00
Incremental Delay, d2					111.4	70.1	85.2	0.2			4.8	39.4
Delay (s)					143.9	102.6	133.8	11.0			30.6	67.7
Level of Service					F	F	F	B			C	E
Approach Delay (s)		0.0			124.3			37.8			45.1	
Approach LOS		A			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	57.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	126.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	348	612	130	235	333	828	199	1055	237	691	977	140
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	366	644	137	247	351	872	209	1111	249	727	1028	147
RTOR Reduction (vph)	0	0	107	0	0	70	0	0	157	0	14	0
Lane Group Flow (vph)	366	644	30	247	351	802	209	1111	92	727	1161	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.0	28.7	28.7	12.8	26.5	57.5	13.4	33.5	33.5	31.0	51.1	
Effective Green, g (s)	15.0	28.7	28.7	12.8	26.5	57.5	13.4	33.5	33.5	31.0	51.1	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.20	0.44	0.10	0.26	0.26	0.24	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	333	740	331	284	683	1167	297	1241	386	689	1858	
v/s Ratio Prot	c0.13	c0.19		c0.09	0.10	0.16	0.07	c0.23		c0.25	0.25	
v/s Ratio Perm			0.02			0.14			0.06			
v/c Ratio	1.10	0.87	0.09	0.87	0.51	0.69	0.70	0.90	0.24	1.06	0.62	
Uniform Delay, d1	57.5	48.9	40.3	57.8	46.0	29.0	56.4	46.6	38.2	49.5	31.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	78.6	10.8	0.1	22.8	0.5	1.4	6.1	10.2	1.5	49.8	1.6	
Delay (s)	136.1	59.7	40.4	80.6	46.5	30.4	62.4	56.7	39.6	99.3	33.3	
Level of Service	F	E	D	F	D	C	E	E	D	F	C	
Approach Delay (s)		81.8			42.7			54.8			58.5	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	58.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	842	53	20	754	49	48	34	24	78	36	271
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4774		1583	3145		2891	2909	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4774		1583	3145		2891	2909	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	915	58	22	820	53	52	37	26	85	39	295
RTOR Reduction (vph)	0	0	31	0	6	0	0	18	0	0	204	0
Lane Group Flow (vph)	323	915	27	22	867	0	52	45	0	85	130	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	16.7	50.6	50.6	1.6	35.5		7.8	34.6		7.2	34.0	
Effective Green, g (s)	16.7	50.6	50.6	1.6	35.5		7.8	34.6		7.2	34.0	
Actuated g/C Ratio	0.15	0.46	0.46	0.01	0.32		0.07	0.31		0.07	0.31	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	438	2216	690	42	1540		112	989		189	899	
v/s Ratio Prot	c0.11	0.19		0.01	c0.18		c0.03	0.01		0.03	c0.04	
v/s Ratio Perm			0.02									
v/c Ratio	0.74	0.41	0.04	0.52	0.56		0.46	0.05		0.45	0.14	
Uniform Delay, d1	44.6	19.8	16.3	53.8	30.8		49.1	26.2		49.5	27.5	
Progression Factor	1.00	1.00	1.00	1.09	0.93		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.4	0.6	0.1	11.1	1.5		3.0	0.1		1.7	0.1	
Delay (s)	50.9	20.4	16.4	70.0	30.0		52.1	26.3		51.2	27.6	
Level of Service	D	C	B	E	C		D	C		D	C	
Approach Delay (s)		27.8			31.0			38.0			32.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	64	893	597	42	115	140
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4770		2796	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4770		2796	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	971	649	46	125	152
RTOR Reduction (vph)	0	0	6	0	45	62
Lane Group Flow (vph)	70	971	689	0	144	26
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	9.0	69.0	56.0		33.0	33.0
Effective Green, g (s)	9.0	69.0	56.0		33.0	33.0
Actuated g/C Ratio	0.08	0.63	0.51		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	129	2103	2428		838	386
v/s Ratio Prot	c0.04	c0.29	0.14		c0.05	
v/s Ratio Perm						0.02
v/c Ratio	0.54	0.46	0.28		0.17	0.07
Uniform Delay, d1	48.5	10.8	15.5		28.4	27.5
Progression Factor	1.28	0.78	0.92		1.00	1.00
Incremental Delay, d2	4.4	0.7	0.3		0.4	0.3
Delay (s)	66.3	9.1	14.5		28.9	27.9
Level of Service	E	A	B		C	C
Approach Delay (s)		13.0	14.5		28.5	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	950	45	21	590	0	18	0	35	3	0	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1500	1583	3353		1583	1500		1583	1500	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00		0.73	1.00	
Satd. Flow (perm)		1765	1500	1583	3353		1259	1500		1221	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1033	49	23	641	0	20	0	38	3	0	4
RTOR Reduction (vph)	0	0	20	0	0	0	0	28	0	0	3	0
Lane Group Flow (vph)	0	1033	29	23	641	0	20	10	0	3	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		65.0	65.0	2.8	71.8		30.0	30.0		30.0	30.0	
Effective Green, g (s)		65.0	65.0	2.8	71.8		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.59	0.59	0.03	0.65		0.27	0.27		0.27	0.27	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1042	886	40	2188		343	409		333	409	
v/s Ratio Prot		c0.59		c0.01	0.19			0.01			0.00	
v/s Ratio Perm			0.02				c0.02			0.00		
v/c Ratio		0.99	0.03	0.57	0.29		0.06	0.03		0.01	0.00	
Uniform Delay, d1		22.2	9.4	53.0	8.2		29.6	29.3		29.2	29.1	
Progression Factor		1.04	0.41	0.96	0.95		1.00	1.00		1.00	1.00	
Incremental Delay, d2		24.7	0.1	18.1	0.3		0.3	0.1		0.0	0.0	
Delay (s)		47.9	3.9	69.0	8.1		29.9	29.4		29.2	29.1	
Level of Service		D	A	E	A		C	C		C	C	
Approach Delay (s)		45.9			10.2			29.6			29.1	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	941	28	24	585	8	26	1	70	14	2	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	1023	30	26	636	9	28	1	76	15	2	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.96						0.96	0.96		0.96	0.96	0.96
vC, conflicting volume	645			1053			1427	1752	527	1222	1763	322
vC1, stage 1 conf vol							1055	1055		692	692	
vC2, stage 2 conf vol							371	697		529	1071	
vCu, unblocked vol	540			1053			1357	1697	527	1143	1708	203
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			88	100	85	95	99	99
cM capacity (veh/h)	981			657			226	253	496	304	235	769

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	9	682	371	26	424	221	105	22
Volume Left	9	0	0	26	0	0	28	15
Volume Right	0	0	30	0	0	9	76	4
cSH	981	1700	1700	657	1700	1700	687	369
Volume to Capacity	0.01	0.40	0.22	0.04	0.25	0.13	0.15	0.06
Queue Length 95th (ft)	1	0	0	3	0	0	13	5
Control Delay (s)	8.7	0.0	0.0	10.7	0.0	0.0	16.2	16.3
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.4			16.2	16.3
Approach LOS							C	C

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	44.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	1004	33	31	576	2	34	1	36	2	0	5
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1683	1500		1676	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.79	1.00		0.73	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1395	1500		1292	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1091	36	34	626	2	37	1	39	2	0	5
RTOR Reduction (vph)	0	0	13	0	0	1	0	0	31	0	0	4
Lane Group Flow (vph)	2	1091	23	34	626	1	0	38	8	0	2	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	69.3	69.3	5.5	73.4	73.4		23.0	23.0		23.0	23.0
Effective Green, g (s)	1.4	69.3	69.3	5.5	73.4	73.4		23.0	23.0		23.0	23.0
Actuated g/C Ratio	0.01	0.63	0.63	0.05	0.67	0.67		0.21	0.21		0.21	0.21
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	2112	945	79	2237	1000		291	313		270	313
v/s Ratio Prot	0.00	c0.33		c0.02	0.19							
v/s Ratio Perm			0.02			0.00		c0.03	0.01		0.00	0.00
v/c Ratio	0.10	0.52	0.02	0.43	0.28	0.00		0.13	0.03		0.01	0.00
Uniform Delay, d1	53.7	11.2	7.6	50.7	7.5	6.1		35.4	34.6		34.5	34.4
Progression Factor	0.65	1.51	3.74	1.13	0.90	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.5	0.0	3.7	0.3	0.0		0.2	0.0		0.0	0.0
Delay (s)	35.9	17.3	28.6	61.0	7.0	6.1		35.6	34.6		34.5	34.4
Level of Service	D	B	C	E	A	A		D	C		C	C
Approach Delay (s)		17.7			9.8			35.1			34.5	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	0	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1023	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1046	0	0	613	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1137	0	0	666	0	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.95			0.82			0.85	0.85	0.82	0.85	0.85	0.95
vC, conflicting volume	666			1137			1470	1803	568	1235	1803	333
vC1, stage 1 conf vol							1137	1137		666	666	
vC2, stage 2 conf vol							333	666		568	1137	
vCu, unblocked vol	537			732			917	1310	40	640	1310	186
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	973			713			300	302	840	446	302	782

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	758	379	0	444	222	0	0
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.45	0.22	0.00	0.26	0.13	0.00	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS							A	A
Approach Delay (s)	0.0			0.0			0.0	0.0
Approach LOS							A	A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	740	239	39	395	62	134	3	153	46	2	3
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1606	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1257	1765	1500	1260	1606	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	804	260	42	429	67	146	3	166	50	2	3
RTOR Reduction (vph)	0	0	91	0	0	29	0	0	115	0	2	0
Lane Group Flow (vph)	5	804	169	42	429	38	146	3	51	50	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	58.0	58.0	5.8	62.4	62.4	34.0	34.0	34.0	34.0	34.0	
Effective Green, g (s)	1.4	58.0	58.0	5.8	62.4	62.4	34.0	34.0	34.0	34.0	34.0	
Actuated g/C Ratio	0.01	0.53	0.53	0.05	0.57	0.57	0.31	0.31	0.31	0.31	0.31	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1767	790	83	1902	850	388	545	463	389	496	
v/s Ratio Prot	0.00	c0.24		c0.03	0.13			0.00			0.00	
v/s Ratio Perm			0.11			0.03	c0.12		0.03	0.04		
v/c Ratio	0.25	0.46	0.21	0.51	0.23	0.04	0.38	0.01	0.11	0.13	0.01	
Uniform Delay, d1	53.8	16.2	13.9	50.7	11.8	10.6	29.7	26.3	27.2	27.3	26.3	
Progression Factor	1.05	0.93	1.30	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.8	0.8	0.5	4.8	0.3	0.1	2.8	0.0	0.5	0.7	0.0	
Delay (s)	62.3	15.8	18.5	55.5	12.1	10.7	32.5	26.3	27.7	28.0	26.3	
Level of Service	E	B	B	E	B	B	C	C	C	C	C	
Approach Delay (s)		16.7			15.3			29.9			27.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1023	1085	1623			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	0	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	32.4
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	184	721	52	0	15	326	6	0	24	91	43
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	200	784	57	0	16	354	7	0	26	99	47
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	43.4	17	16.9
HCM LOS	E	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	58%	0%	100%	82%	0%	100%	95%	31%
Vol Right, %	27%	0%	0%	18%	0%	0%	5%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	158	184	481	292	15	217	115	242
LT Vol	24	184	0	0	15	0	0	7
Through Vol	91	0	481	240	0	217	109	75
RT Vol	43	0	0	52	0	0	6	160
Lane Flow Rate	172	200	522	318	16	236	125	263
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.404	0.433	1	0.632	0.038	0.522	0.274	0.575
Departure Headway (Hd)	8.471	7.802	7.285	7.156	8.468	7.949	7.911	7.867
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	424	464	502	508	423	454	454	455
Service Time	6.248	5.502	4.985	4.856	6.211	5.708	5.671	5.659
HCM Lane V/C Ratio	0.406	0.431	1.04	0.626	0.038	0.52	0.275	0.578
HCM Control Delay	16.9	16.3	67.2	21.3	11.5	19.1	13.7	20.9
HCM Lane LOS	C	C	F	C	B	C	B	C
HCM 95th-tile Q	1.9	2.1	13.6	4.3	0.1	3	1.1	3.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	7	75	160
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	8	82	174
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	20.9
HCM LOS	C

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	393	119	30	142	108	92	959	46	106	957	90
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3236		1583	3136		1583	3330		1583	3310	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3236		1583	3136		1583	3330		1583	3310	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	258	427	129	33	154	117	100	1042	50	115	1040	98
RTOR Reduction (vph)	0	30	0	0	92	0	0	4	0	0	7	0
Lane Group Flow (vph)	258	526	0	33	179	0	100	1088	0	115	1131	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.0	26.0		5.1	19.1		8.9	32.8		10.1	34.0	
Effective Green, g (s)	12.0	26.0		5.1	19.1		8.9	32.8		10.1	34.0	
Actuated g/C Ratio	0.13	0.29		0.06	0.21		0.10	0.36		0.11	0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	211	934		89	665		156	1213		177	1250	
v/s Ratio Prot	c0.16	c0.16		0.02	0.06		0.06	0.33		c0.07	c0.34	
v/s Ratio Perm												
v/c Ratio	1.22	0.56		0.37	0.27		0.64	0.90		0.65	0.90	
Uniform Delay, d1	39.0	27.2		40.9	29.6		39.0	27.0		38.3	26.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.26	0.78	
Incremental Delay, d2	135.0	0.8		2.6	0.2		8.7	10.5		6.0	8.5	
Delay (s)	174.0	28.0		43.5	29.8		47.7	37.5		54.3	29.2	
Level of Service	F	C		D	C		D	D		D	C	
Approach Delay (s)		74.3			31.3			38.4			31.5	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	30	22	13	13	227	14	1241	5	76	1083	248
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1653			1547		1583	3351		1583	3353	1500
Flt Permitted	0.51	1.00			0.99		0.13	1.00		0.09	1.00	1.00
Satd. Flow (perm)	842	1653			1534		212	3351		158	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	33	24	14	14	247	15	1349	5	83	1177	270
RTOR Reduction (vph)	0	15	0	0	71	0	0	0	0	0	0	49
Lane Group Flow (vph)	323	42	0	0	204	0	15	1354	0	83	1177	221
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	35.0	35.0			35.0		40.6	39.8		45.4	42.2	42.2
Effective Green, g (s)	35.0	35.0			35.0		40.6	39.8		45.4	42.2	42.2
Actuated g/C Ratio	0.39	0.39			0.39		0.45	0.44		0.50	0.47	0.47
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	327	642			596		107	1481		130	1572	703
v/s Ratio Prot		0.03					0.00	c0.40		c0.02	0.35	
v/s Ratio Perm	c0.38				0.13		0.06			0.30		0.15
v/c Ratio	0.99	0.07			0.34		0.14	0.91		0.64	0.75	0.31
Uniform Delay, d1	27.3	17.2			19.4		15.7	23.5		18.0	19.6	14.9
Progression Factor	1.00	1.00			1.00		0.74	0.55		1.24	0.82	0.68
Incremental Delay, d2	45.9	0.0			0.1		0.3	5.2		7.1	2.4	0.8
Delay (s)	73.2	17.3			19.5		11.9	18.2		29.3	18.4	10.9
Level of Service	E	B			B		B	B		C	B	B
Approach Delay (s)		64.8			19.5			18.1			17.7	
Approach LOS		E			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	884	0	400	470	0	518	481	1145	593	530	973	869
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	961	0	435	511	0	563	523	1245	645	576	1058	945
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	961	0	435	511	0	563	523	1245	645	576	1058	945
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	40.8		120.0	40.8		120.0	25.5	34.0	120.0	24.7	33.2	120.0
Effective Green, g (s)	40.8		120.0	40.8		120.0	25.5	34.0	120.0	24.7	33.2	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.21	0.28	1.00	0.21	0.28	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	982		1500	982		1500	614	1365	1500	595	1332	1500
v/s Ratio Prot							0.18	c0.26		c0.20	0.22	
v/s Ratio Perm	c0.33		0.29	0.18		0.38			0.43			c0.63
v/c Ratio	0.98		0.29	0.52		0.38	0.85	0.91	0.43	0.97	0.79	0.63
Uniform Delay, d1	39.2		0.0	31.8		0.0	45.4	41.6	0.0	47.3	40.2	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.3		0.5	0.4		0.7	13.9	10.8	0.9	29.8	5.0	2.0
Delay (s)	62.5		0.5	32.1		0.7	59.4	52.3	0.9	77.1	45.2	2.0
Level of Service	E		A	C		A	E	D	A	E	D	A
Approach Delay (s)		43.2			15.7			40.1			36.5	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	623	3	227	0	0	0	0	1278	507	412	1215	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.92						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.98						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1504						4818	1500	1583	3353	
Flt Permitted	0.95	0.98						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1504						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	677	3	247	0	0	0	0	1389	551	448	1321	0
RTOR Reduction (vph)	0	41	0	0	0	0	0	0	389	0	0	0
Lane Group Flow (vph)	481	405	0	0	0	0	0	1389	162	448	1321	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	27.0	27.0						26.5	26.5	24.0	54.5	
Effective Green, g (s)	27.0	27.0						26.5	26.5	24.0	54.5	
Actuated g/C Ratio	0.30	0.30						0.29	0.29	0.27	0.61	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	451	451						1418	441	422	2030	
v/s Ratio Prot								c0.29		c0.28	0.39	
v/s Ratio Perm	c0.32	0.27							0.11			
v/c Ratio	1.07	0.90						0.98	0.37	1.06	0.65	
Uniform Delay, d1	31.5	30.2						31.5	25.1	33.0	11.6	
Progression Factor	1.00	1.00						1.22	3.86	1.42	1.24	
Incremental Delay, d2	61.2	20.0						13.0	1.2	45.6	0.7	
Delay (s)	92.7	50.2						51.4	98.2	92.4	15.0	
Level of Service	F	D						D	F	F	B	
Approach Delay (s)		72.3			0.0			64.7			34.6	
Approach LOS		E			A			E			C	

Intersection Summary			
HCM 2000 Control Delay	54.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	333	3	482	353	1536	0	0	1289	553
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.97	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1562	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1562	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	362	3	524	384	1670	0	0	1401	601
RTOR Reduction (vph)	0	0	0	0	11	48	0	0	0	0	0	404
Lane Group Flow (vph)	0	0	0	0	454	376	384	1670	0	0	1401	197
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					26.0	26.0	22.0	55.5			29.5	29.5
Effective Green, g (s)					26.0	26.0	22.0	55.5			29.5	29.5
Actuated g/C Ratio					0.29	0.29	0.24	0.62			0.33	0.33
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					451	411	386	2067			1579	491
v/s Ratio Prot							c0.24	0.50			c0.29	
v/s Ratio Perm					0.29	0.26						0.13
v/c Ratio					1.01	0.92	0.99	0.81			0.89	0.40
Uniform Delay, d1					32.0	30.9	33.9	13.2			28.7	23.4
Progression Factor					1.00	1.00	1.32	1.31			1.00	1.00
Incremental Delay, d2					44.2	24.7	21.0	0.9			7.8	2.4
Delay (s)					76.2	55.6	65.9	18.1			36.5	25.8
Level of Service					E	E	E	B			D	C
Approach Delay (s)		0.0			66.4			27.0			33.3	
Approach LOS		A			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	226	52	103	236	436	78	1032	83	650	764	215
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4659	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	264	238	55	108	248	459	82	1086	87	684	804	226
RTOR Reduction (vph)	0	0	48	0	0	86	0	0	57	0	34	0
Lane Group Flow (vph)	264	238	7	108	248	373	82	1086	30	684	996	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.0	16.1	16.1	9.7	15.8	44.0	8.0	42.0	42.0	28.2	62.2	
Effective Green, g (s)	10.0	16.1	16.1	9.7	15.8	44.0	8.0	42.0	42.0	28.2	62.2	
Actuated g/C Ratio	0.08	0.13	0.13	0.08	0.13	0.37	0.07	0.35	0.35	0.23	0.52	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	240	449	201	233	441	968	192	1686	525	679	2414	
v/s Ratio Prot	c0.09	0.07		0.04	c0.07	0.09	0.03	c0.23		c0.24	0.21	
v/s Ratio Perm			0.00			0.05			0.02			
v/c Ratio	1.10	0.53	0.04	0.46	0.56	0.39	0.43	0.64	0.06	1.01	0.41	
Uniform Delay, d1	55.0	48.4	45.2	52.7	48.9	28.0	53.8	32.7	25.9	45.9	17.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.19	1.19	
Incremental Delay, d2	87.5	0.9	0.1	0.5	1.3	0.1	0.6	1.9	0.2	34.0	0.5	
Delay (s)	142.5	49.4	45.3	53.2	50.2	28.1	54.4	34.6	26.1	88.6	21.5	
Level of Service	F	D	D	D	D	C	D	C	C	F	C	
Approach Delay (s)		93.1			38.2			35.3			48.2	
Approach LOS		F			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	196	629	57	12	535	13	46	30	24	9	11	63
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4801		1583	3131		2891	2925	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4801		1583	3131		2891	2925	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	684	62	13	582	14	50	33	26	10	12	68
RTOR Reduction (vph)	0	0	37	0	2	0	0	15	0	0	44	0
Lane Group Flow (vph)	213	684	25	13	594	0	50	44	0	10	36	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	13.3	44.4	44.4	2.4	33.5		7.8	45.9		1.3	39.4	
Effective Green, g (s)	13.3	44.4	44.4	2.4	33.5		7.8	45.9		1.3	39.4	
Actuated g/C Ratio	0.12	0.40	0.40	0.02	0.30		0.07	0.42		0.01	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	349	1944	605	63	1462		112	1306		34	1047	
v/s Ratio Prot	c0.07	0.14		0.00	c0.12		c0.03	c0.01		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.61	0.35	0.04	0.21	0.41		0.45	0.03		0.29	0.03	
Uniform Delay, d1	45.9	22.8	19.9	52.9	30.4		49.0	18.9		53.9	22.9	
Progression Factor	1.00	1.00	1.00	0.92	1.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.1	0.5	0.1	1.6	0.8		2.8	0.0		4.8	0.0	
Delay (s)	49.0	23.3	20.0	50.1	43.1		51.8	19.0		58.7	23.0	
Level of Service	D	C	C	D	D		D	B		E	C	
Approach Delay (s)		28.8			43.2			34.1			26.9	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	241	438	500	104	21	34
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4693		2765	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4693		2765	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	262	476	543	113	23	37
RTOR Reduction (vph)	0	0	22	0	14	15
Lane Group Flow (vph)	262	476	634	0	27	4
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	24.0	77.0	49.0		25.0	25.0
Effective Green, g (s)	24.0	77.0	49.0		25.0	25.0
Actuated g/C Ratio	0.22	0.70	0.45		0.23	0.23
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	345	2347	2090		628	292
v/s Ratio Prot	c0.17	0.14	c0.14		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.76	0.20	0.30		0.04	0.01
Uniform Delay, d1	40.3	5.8	19.6		33.2	33.0
Progression Factor	1.75	0.40	0.64		1.00	1.00
Incremental Delay, d2	9.0	0.2	0.4		0.1	0.1
Delay (s)	79.4	2.5	12.9		33.3	33.0
Level of Service	E	A	B		C	C
Approach Delay (s)		29.8	12.9		33.2	
Approach LOS		C	B		C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	469	27	38	550	4	43	1	36	0	0	1
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583	1765	1500	1583	3350		1583	1507			1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1583	1765	1500	1583	3350		1262	1507			1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	510	29	41	598	4	47	1	39	0	0	1
RTOR Reduction (vph)	0	0	13	0	0	0	0	27	0	0	1	0
Lane Group Flow (vph)	3	510	16	41	602	0	47	13	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	59.6	59.6	5.2	63.4		33.0	33.0			33.0	
Effective Green, g (s)	1.4	59.6	59.6	5.2	63.4		33.0	33.0			33.0	
Actuated g/C Ratio	0.01	0.54	0.54	0.05	0.58		0.30	0.30			0.30	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	20	956	812	74	1930		378	452			450	
v/s Ratio Prot	0.00	c0.29		c0.03	c0.18			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.15	0.53	0.02	0.55	0.31		0.12	0.03			0.00	
Uniform Delay, d1	53.7	16.2	11.7	51.3	12.0		28.0	27.2			27.0	
Progression Factor	1.09	1.18	0.21	1.09	1.09		1.00	1.00			1.00	
Incremental Delay, d2	3.4	2.1	0.0	8.4	0.4		0.7	0.1			0.0	
Delay (s)	62.2	21.3	2.5	64.1	13.5		28.7	27.3			27.0	
Level of Service	E	C	A	E	B		C	C			C	
Approach Delay (s)		20.5			16.8			28.0			27.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	461	36	129	586	11	38	1	100	5	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	501	39	140	637	12	41	1	109	5	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	649			540			1127	1457	270	1181	1470	324
vC1, stage 1 conf vol							527	527		923	923	
vC2, stage 2 conf vol							599	929		258	547	
vCu, unblocked vol	566			540			1061	1402	270	1117	1416	231
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			88	100	85	98	100	100
cM capacity (veh/h)	968			1024			345	275	728	245	257	746

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	334	206	140	425	224	151	9
Volume Left	3	0	0	140	0	0	41	5
Volume Right	0	0	39	0	0	12	109	2
cSH	968	1700	1700	1024	1700	1700	1012	330
Volume to Capacity	0.00	0.20	0.12	0.14	0.25	0.13	0.15	0.03
Queue Length 95th (ft)	0	0	0	12	0	0	13	2
Control Delay (s)	8.7	0.0	0.0	9.1	0.0	0.0	12.5	17.4
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.6			12.5	17.4
Approach LOS							B	C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	395	197	348	684	22	71	0	261	9	15	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1676	1500		1731	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.92	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1306	1500		1624	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	429	214	378	743	24	77	0	284	10	16	4
RTOR Reduction (vph)	0	0	76	0	0	8	0	0	222	0	0	3
Lane Group Flow (vph)	13	429	138	378	743	16	0	77	62	0	26	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.6	41.3	41.3	32.5	72.2	72.2		24.0	24.0		24.0	24.0
Effective Green, g (s)	1.6	41.3	41.3	32.5	72.2	72.2		24.0	24.0		24.0	24.0
Actuated g/C Ratio	0.01	0.38	0.38	0.30	0.66	0.66		0.22	0.22		0.22	0.22
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	23	1258	563	467	2200	984		284	327		354	327
v/s Ratio Prot	0.01	0.13		c0.24	c0.22							
v/s Ratio Perm			0.09			0.01		c0.06	0.04		0.02	0.00
v/c Ratio	0.57	0.34	0.25	0.81	0.34	0.02		0.27	0.19		0.07	0.00
Uniform Delay, d1	53.9	24.6	23.6	35.9	8.3	6.6		35.7	35.1		34.2	33.6
Progression Factor	0.93	1.28	1.66	1.11	1.27	6.74		1.00	1.00		1.00	1.00
Incremental Delay, d2	26.7	0.7	1.0	8.9	0.4	0.0		0.5	0.3		0.4	0.0
Delay (s)	76.9	32.1	40.1	48.8	11.0	44.3		36.2	35.4		34.6	33.7
Level of Service	E	C	D	D	B	D		D	D		C	C
Approach Delay (s)		35.6			24.2			35.5			34.4	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	323	1	31	529
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	351	1	34	575
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	994	352			352	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	994	352			352	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			97	
cM capacity (veh/h)	264	692			1207	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	352	609
Volume Left	0	0	34
Volume Right	9	1	0
cSH	692	1700	1207
Volume to Capacity	0.01	0.21	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	10.3	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.8
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	638	22	22	1054	3	7	0	7	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	693	24	24	1146	3	8	0	8	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.81			0.92			0.85	0.85	0.92	0.85	0.85	0.81
vC, conflicting volume	1149			717			1339	1915	359	1562	1926	574
vC1, stage 1 conf vol							718	718		1195	1195	
vC2, stage 2 conf vol							621	1197		367	730	
vCu, unblocked vol	709			515			612	1290	125	875	1302	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			98	100	99	100	100	100
cM capacity (veh/h)	716			962			441	281	829	276	281	876

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	7	462	255	24	764	385	15	0
Volume Left	7	0	0	24	0	0	8	0
Volume Right	0	0	24	0	0	3	8	0
cSH	716	1700	1700	962	1700	1700	575	1700
Volume to Capacity	0.01	0.27	0.15	0.02	0.45	0.23	0.03	0.00
Queue Length 95th (ft)	1	0	0	2	0	0	2	0
Control Delay (s)	10.1	0.0	0.0	8.8	0.0	0.0	11.4	0.0
Lane LOS	B			A			B	A
Approach Delay (s)	0.1			0.2			11.4	0.0
Approach LOS							B	A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	450	117	50	785	39	233	6	77	60	0	2
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1261	1765	1500	1255	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	489	127	54	853	42	253	7	84	65	0	2
RTOR Reduction (vph)	0	0	78	0	0	24	0	0	46	0	1	0
Lane Group Flow (vph)	8	489	49	54	853	18	253	7	38	65	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	40.1	40.1	7.7	46.4	46.4	50.0	50.0	50.0	50.0	50.0	
Effective Green, g (s)	1.4	40.1	40.1	7.7	46.4	46.4	50.0	50.0	50.0	50.0	50.0	
Actuated g/C Ratio	0.01	0.36	0.36	0.07	0.42	0.42	0.45	0.45	0.45	0.45	0.45	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1222	546	110	1414	632	573	802	681	570	681	
v/s Ratio Prot	0.01	0.15		c0.03	c0.25			0.00			0.00	
v/s Ratio Perm			0.03			0.01	c0.20		0.03	0.05		
v/c Ratio	0.40	0.40	0.09	0.49	0.60	0.03	0.44	0.01	0.06	0.11	0.00	
Uniform Delay, d1	53.9	26.0	23.0	49.3	24.7	18.6	20.5	16.4	16.8	17.3	16.4	
Progression Factor	1.36	0.48	0.17	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.8	0.9	0.3	3.4	1.9	0.1	2.5	0.0	0.2	0.4	0.0	
Delay (s)	84.8	13.4	4.2	52.7	26.6	18.7	22.9	16.4	16.9	17.7	16.4	
Level of Service	F	B	A	D	C	B	C	B	B	B	B	
Approach Delay (s)		12.4			27.7			21.3			17.6	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	1	3	309	138	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	1	3	336	150	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	508	166	182			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	508	166	182			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	523	879	1394			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	339	182
Volume Left	8	3	0
Volume Right	1	0	32
cSH	551	1394	1700
Volume to Capacity	0.02	0.00	0.11
Queue Length 95th (ft)	1	0	0
Control Delay (s)	11.6	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.6	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	33.1
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	180	379	43	0	11	497	9	0	68	70	37
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	196	412	47	0	12	540	10	0	74	76	40
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	22.3	37	21.9
HCM LOS	C	E	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	75%	0%	100%	95%	11%
Vol Right, %	21%	0%	0%	25%	0%	0%	5%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	180	253	169	11	331	175	364
LT Vol	68	180	0	0	11	0	0	0
Through Vol	70	0	253	126	0	331	166	40
RT Vol	37	0	0	43	0	0	9	324
Lane Flow Rate	190	196	275	184	12	360	190	396
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.507	0.497	0.658	0.431	0.031	0.869	0.456	0.901
Departure Headway (Hd)	9.586	9.149	8.622	8.435	9.215	8.689	8.651	8.194
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	375	393	417	425	388	418	416	443
Service Time	7.359	6.919	6.392	6.204	6.984	6.458	6.42	5.952
HCM Lane V/C Ratio	0.507	0.499	0.659	0.433	0.031	0.861	0.457	0.894
HCM Control Delay	21.9	20.7	26.6	17.5	12.3	47.5	18.5	50.7
HCM Lane LOS	C	C	D	C	B	E	C	F
HCM 95th-tile Q	2.8	2.7	4.6	2.1	0.1	8.7	2.3	9.7

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	0	40	324
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	0	43	352
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	50.7
HCM LOS	F

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	141	78	23	133	81	132	946	21	71	987	170
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3173		1583	3163		1583	3342		1583	3279	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3173		1583	3163		1583	3342		1583	3279	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	153	85	25	145	88	143	1028	23	77	1073	185
RTOR Reduction (vph)	0	60	0	0	69	0	0	2	0	0	15	0
Lane Group Flow (vph)	217	178	0	25	164	0	143	1049	0	77	1243	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.0	26.4		2.8	19.2		13.1	38.3		6.5	31.7	
Effective Green, g (s)	10.0	26.4		2.8	19.2		13.1	38.3		6.5	31.7	
Actuated g/C Ratio	0.11	0.29		0.03	0.21		0.15	0.43		0.07	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	930		49	674		230	1422		114	1154	
v/s Ratio Prot	c0.14	0.06		0.02	c0.05		c0.09	0.31		0.05	c0.38	
v/s Ratio Perm												
v/c Ratio	1.24	0.19		0.51	0.24		0.62	0.74		0.68	1.08	
Uniform Delay, d1	40.0	23.8		42.9	29.4		36.1	21.6		40.7	29.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.38	0.44	
Incremental Delay, d2	147.0	0.1		8.7	0.2		5.1	3.5		11.2	46.8	
Delay (s)	187.0	23.9		51.6	29.6		41.3	25.1		67.6	59.8	
Level of Service	F	C		D	C		D	C		E	E	
Approach Delay (s)		101.7			31.7			27.0			60.3	
Approach LOS		F			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	51.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	5	16	6	0	119	1	1183	16	187	1200	440
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1560			1535		1583	3346		1583	3353	1500
Flt Permitted	0.65	1.00			0.99		0.14	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1077	1560			1527		239	3346		169	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	5	17	7	0	129	1	1286	17	203	1304	478
RTOR Reduction (vph)	0	11	0	0	86	0	0	1	0	0	0	62
Lane Group Flow (vph)	311	11	0	0	50	0	1	1302	0	203	1304	416
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	30.2	30.2			30.2		36.5	35.4		51.8	46.7	46.7
Effective Green, g (s)	30.2	30.2			30.2		36.5	35.4		51.8	46.7	46.7
Actuated g/C Ratio	0.34	0.34			0.34		0.41	0.39		0.58	0.52	0.52
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	361	523			512		113	1316		292	1739	778
v/s Ratio Prot		0.01					0.00	c0.39		c0.10	0.39	
v/s Ratio Perm	c0.29				0.03		0.00			0.30		0.28
v/c Ratio	0.86	0.02			0.10		0.01	0.99		0.70	0.75	0.54
Uniform Delay, d1	27.9	20.0			20.5		16.6	27.1		20.1	17.1	14.4
Progression Factor	1.00	1.00			1.00		1.87	0.88		1.46	0.57	0.59
Incremental Delay, d2	18.0	0.0			0.0		0.0	17.7		3.4	1.4	1.3
Delay (s)	45.9	20.0			20.6		31.1	41.7		32.8	11.2	9.7
Level of Service	D	C			C		C	D		C	B	A
Approach Delay (s)		44.2			20.6			41.7			13.0	
Approach LOS		D			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	907	0	458	415	0	564	405	782	520	572	776	849
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	986	0	498	451	0	613	440	850	565	622	843	923
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	986	0	498	451	0	613	440	850	565	622	843	923
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	44.5		120.0	44.5		120.0	24.5	23.0	120.0	32.0	30.5	120.0
Effective Green, g (s)	44.5		120.0	44.5		120.0	24.5	23.0	120.0	32.0	30.5	120.0
Actuated g/C Ratio	0.37		1.00	0.37		1.00	0.20	0.19	1.00	0.27	0.25	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1072		1500	1072		1500	590	923	1500	770	1224	1500
v/s Ratio Prot							0.15	c0.18		c0.22	0.17	
v/s Ratio Perm	c0.34		0.33	0.16		0.41			0.38			c0.62
v/c Ratio	0.92		0.33	0.42		0.41	0.75	0.92	0.38	0.81	0.69	0.62
Uniform Delay, d1	36.0		0.0	28.1		0.0	44.8	47.6	0.0	41.1	40.5	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.78	0.78	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.3		0.6	0.2		0.8	6.5	12.9	0.6	8.9	3.2	1.9
Delay (s)	48.3		0.6	28.3		0.8	41.5	50.0	0.6	50.0	43.6	1.9
Level of Service	D		A	C		A	D	D	A	D	D	A
Approach Delay (s)		32.3			12.5			32.9			29.2	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	✥						↑↑↑	↱	↰	↑↑	
Volume (vph)	517	3	433	0	0	0	0	1144	467	456	1444	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.87						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1445						4818	1500	1583	3353	
Flt Permitted	0.95	0.99						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1445						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	562	3	471	0	0	0	0	1243	508	496	1570	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	375	0	0	0
Lane Group Flow (vph)	506	509	0	0	0	0	0	1243	133	496	1570	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	28.0	28.0						23.5	23.5	26.0	53.5	
Effective Green, g (s)	28.0	28.0						23.5	23.5	26.0	53.5	
Actuated g/C Ratio	0.31	0.31						0.26	0.26	0.29	0.59	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	467	449						1258	391	457	1993	
v/s Ratio Prot								c0.26		c0.31	0.47	
v/s Ratio Perm	0.34	0.35							0.09			
v/c Ratio	1.08	1.13						0.99	0.34	1.09	0.79	
Uniform Delay, d1	31.0	31.0						33.1	27.0	32.0	13.9	
Progression Factor	1.00	1.00						1.31	4.51	0.95	2.16	
Incremental Delay, d2	66.0	84.1						16.4	1.3	50.9	1.1	
Delay (s)	97.0	115.1						59.7	123.0	81.4	31.2	
Level of Service	F	F						E	F	F	C	
Approach Delay (s)		106.3			0.0			78.0			43.2	
Approach LOS		F			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	69.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	470	8	493	363	1304	0	0	1384	882
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.99	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1582	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1582	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	511	9	536	395	1417	0	0	1504	959
RTOR Reduction (vph)	0	0	0	0	4	47	0	0	0	0	0	425
Lane Group Flow (vph)	0	0	0	0	570	435	395	1417	0	0	1504	534
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					27.0	27.0	19.0	54.5			31.5	31.5
Effective Green, g (s)					27.0	27.0	19.0	54.5			31.5	31.5
Actuated g/C Ratio					0.30	0.30	0.21	0.61			0.35	0.35
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					474	427	334	2030			1686	525
v/s Ratio Prot							c0.25	0.42			0.31	
v/s Ratio Perm					0.36	0.31						c0.36
v/c Ratio					1.20	1.02	1.18	0.70			0.89	1.02
Uniform Delay, d1					31.5	31.5	35.5	12.1			27.6	29.2
Progression Factor					1.00	1.00	1.68	0.65			1.00	1.00
Incremental Delay, d2					109.7	48.4	85.2	0.2			7.6	43.6
Delay (s)					141.2	79.9	144.7	8.1			35.3	72.9
Level of Service					F	E	F	A			D	E
Approach Delay (s)		0.0			113.2			37.9			49.9	
Approach LOS		A			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	348	613	130	238	336	875	199	1055	238	706	977	140
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	4818	1500	2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	366	645	137	251	354	921	209	1111	251	743	1028	147
RTOR Reduction (vph)	0	0	107	0	0	70	0	0	156	0	14	0
Lane Group Flow (vph)	366	645	30	251	354	851	209	1111	95	743	1161	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.0	28.8	28.8	12.9	26.7	57.7	13.4	33.3	33.3	31.0	50.9	
Effective Green, g (s)	15.0	28.8	28.8	12.9	26.7	57.7	13.4	33.3	33.3	31.0	50.9	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.21	0.44	0.10	0.26	0.26	0.24	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	333	742	332	286	688	1171	297	1234	384	689	1850	
v/s Ratio Prot	c0.13	c0.19		c0.09	0.11	0.17	0.07	c0.23		c0.26	0.25	
v/s Ratio Perm			0.02			0.15			0.06			
v/c Ratio	1.10	0.87	0.09	0.88	0.51	0.73	0.70	0.90	0.25	1.08	0.63	
Uniform Delay, d1	57.5	48.8	40.2	57.8	45.9	29.7	56.4	46.7	38.4	49.5	31.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	78.6	10.5	0.1	24.1	0.5	1.9	6.1	10.6	1.5	57.4	1.6	
Delay (s)	136.1	59.3	40.3	81.8	46.4	31.6	62.4	57.4	39.9	106.9	33.5	
Level of Service	F	E	D	F	D	C	E	E	D	F	C	
Approach Delay (s)		81.5			43.3			55.3			61.9	
Approach LOS		F			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	859	53	20	807	49	48	34	24	78	36	271
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	4818	1500	2891	4776		1583	3145		2891	2909	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	4818	1500	2891	4776		1583	3145		2891	2909	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	934	58	22	877	53	52	37	26	85	39	295
RTOR Reduction (vph)	0	0	32	0	6	0	0	18	0	0	201	0
Lane Group Flow (vph)	323	934	26	22	924	0	52	45	0	85	133	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	16.3	49.6	49.6	1.6	34.9		7.9	35.4		7.4	34.9	
Effective Green, g (s)	16.3	49.6	49.6	1.6	34.9		7.9	35.4		7.4	34.9	
Actuated g/C Ratio	0.15	0.45	0.45	0.01	0.32		0.07	0.32		0.07	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	428	2172	676	42	1515		113	1012		194	922	
v/s Ratio Prot	c0.11	0.19		0.01	c0.19		c0.03	0.01		0.03	c0.05	
v/s Ratio Perm			0.02									
v/c Ratio	0.75	0.43	0.04	0.52	0.61		0.46	0.04		0.44	0.14	
Uniform Delay, d1	44.9	20.6	16.9	53.8	31.8		49.0	25.7		49.3	26.9	
Progression Factor	1.00	1.00	1.00	1.11	0.95		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	0.6	0.1	11.1	1.8		3.0	0.1		1.6	0.1	
Delay (s)	52.3	21.2	17.0	70.6	32.1		52.0	25.7		50.9	26.9	
Level of Service	D	C	B	E	C		D	C		D	C	
Approach Delay (s)		28.7			32.9			37.6			31.8	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	64	910	650	42	115	140
Ideal Flow (vphpl)	1700	1800	1800	1800	1600	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3353	4774		2796	1289
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3353	4774		2796	1289
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	989	707	46	125	152
RTOR Reduction (vph)	0	0	5	0	43	59
Lane Group Flow (vph)	70	989	748	0	146	29
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	9.0	66.0	53.0		36.0	36.0
Effective Green, g (s)	9.0	66.0	53.0		36.0	36.0
Actuated g/C Ratio	0.08	0.60	0.48		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	129	2011	2300		915	421
v/s Ratio Prot	0.04	c0.29	0.16		c0.05	
v/s Ratio Perm						0.02
v/c Ratio	0.54	0.49	0.33		0.16	0.07
Uniform Delay, d1	48.5	12.5	17.5		26.3	25.5
Progression Factor	1.22	0.86	0.90		1.00	1.00
Incremental Delay, d2	4.3	0.8	0.4		0.4	0.3
Delay (s)	63.7	11.6	16.0		26.6	25.8
Level of Service	E	B	B		C	C
Approach Delay (s)		15.0	16.0		26.4	
Approach LOS		B	B		C	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	967	45	21	643	0	18	0	35	3	0	4
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1500	1583	3353		1583	1500		1583	1500	
Flt Permitted		1.00	1.00	0.95	1.00		0.76	1.00		0.73	1.00	
Satd. Flow (perm)		1765	1500	1583	3353		1259	1500		1221	1500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1051	49	23	699	0	20	0	38	3	0	4
RTOR Reduction (vph)	0	0	20	0	0	0	0	28	0	0	3	0
Lane Group Flow (vph)	0	1051	29	23	699	0	20	10	0	3	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		65.0	65.0	2.8	71.8		30.0	30.0		30.0	30.0	
Effective Green, g (s)		65.0	65.0	2.8	71.8		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.59	0.59	0.03	0.65		0.27	0.27		0.27	0.27	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1042	886	40	2188		343	409		333	409	
v/s Ratio Prot		c0.60		c0.01	0.21			0.01			0.00	
v/s Ratio Perm			0.02				c0.02			0.00		
v/c Ratio		1.01	0.03	0.57	0.32		0.06	0.03		0.01	0.00	
Uniform Delay, d1		22.5	9.4	53.0	8.4		29.6	29.3		29.2	29.1	
Progression Factor		1.06	0.48	0.96	0.94		1.00	1.00		1.00	1.00	
Incremental Delay, d2		28.7	0.1	18.1	0.4		0.3	0.1		0.0	0.0	
Delay (s)		52.7	4.5	69.2	8.3		29.9	29.4		29.2	29.1	
Level of Service		D	A	E	A		C	C		C	C	
Approach Delay (s)		50.5			10.2			29.6			29.1	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	958	28	24	638	8	26	1	70	14	2	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	1041	30	26	693	9	28	1	76	15	2	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	702			1072			1474	1828	536	1289	1839	351
vC1, stage 1 conf vol							1074	1074		750	750	
vC2, stage 2 conf vol							400	754		539	1089	
vCu, unblocked vol	578			1072			1391	1765	536	1196	1776	208
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			87	100	84	95	99	99
cM capacity (veh/h)	941			646			220	244	489	290	227	757

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	9	694	378	26	462	240	105	22
Volume Left	9	0	0	26	0	0	28	15
Volume Right	0	0	30	0	0	9	76	4
cSH	941	1700	1700	646	1700	1700	678	353
Volume to Capacity	0.01	0.41	0.22	0.04	0.27	0.14	0.16	0.06
Queue Length 95th (ft)	1	0	0	3	0	0	14	5
Control Delay (s)	8.9	0.0	0.0	10.8	0.0	0.0	16.5	16.8
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.4			16.5	16.8
Approach LOS							C	C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	1015	39	35	611	2	52	1	49	2	0	5
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1682	1500		1676	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.76	1.00		0.72	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1345	1500		1269	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1103	42	38	664	2	57	1	53	2	0	5
RTOR Reduction (vph)	0	0	16	0	0	1	0	0	42	0	0	4
Lane Group Flow (vph)	2	1103	26	38	664	1	0	58	11	0	2	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	69.1	69.1	5.7	73.4	73.4		23.0	23.0		23.0	23.0
Effective Green, g (s)	1.4	69.1	69.1	5.7	73.4	73.4		23.0	23.0		23.0	23.0
Actuated g/C Ratio	0.01	0.63	0.63	0.05	0.67	0.67		0.21	0.21		0.21	0.21
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	20	2106	942	82	2237	1000		281	313		265	313
v/s Ratio Prot	0.00	c0.33		c0.02	0.20							
v/s Ratio Perm			0.02			0.00		c0.04	0.01		0.00	0.00
v/c Ratio	0.10	0.52	0.03	0.46	0.30	0.00		0.21	0.04		0.01	0.00
Uniform Delay, d1	53.7	11.3	7.7	50.7	7.6	6.1		36.0	34.7		34.5	34.4
Progression Factor	0.65	1.48	3.22	1.16	0.88	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.5	0.0	4.0	0.3	0.0		0.4	0.0		0.1	0.0
Delay (s)	36.0	17.2	25.0	62.8	7.0	6.1		36.3	34.7		34.5	34.4
Level of Service	D	B	C	E	A	A		D	C		C	C
Approach Delay (s)		17.5			10.0			35.6			34.5	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	31	72	0	10	65
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	34	78	0	11	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	171	78			78	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	171	78			78	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	814	982			1520	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	35	78	82
Volume Left	1	0	11
Volume Right	34	0	0
cSH	976	1700	1520
Volume to Capacity	0.04	0.05	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	8.8	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	8.8	0.0	1.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1063	7	7	630	0	22	0	22	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1155	8	8	685	0	24	0	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.94			0.82			0.85	0.85	0.82	0.85	0.85	0.94
vC, conflicting volume	685			1163			1517	1859	582	1302	1863	342
vC1, stage 1 conf vol							1159	1159		700	700	
vC2, stage 2 conf vol							358	700		602	1163	
vCu, unblocked vol	525			753			913	1316	41	660	1321	159
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			92	100	97	100	100	100
cM capacity (veh/h)	971			697			292	295	834	429	290	802

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	770	393	8	457	228	48	0
Volume Left	0	0	0	8	0	0	24	0
Volume Right	0	0	8	0	0	0	24	0
cSH	1700	1700	1700	697	1700	1700	433	1700
Volume to Capacity	0.00	0.45	0.23	0.01	0.27	0.13	0.11	0.00
Queue Length 95th (ft)	0	0	0	1	0	0	9	0
Control Delay (s)	0.0	0.0	0.0	10.2	0.0	0.0	14.3	0.0
Lane LOS				B			B	A
Approach Delay (s)	0.0			0.1			14.3	0.0
Approach LOS							B	A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	775	243	45	406	62	147	3	170	46	2	3
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1765	1500	1583	1606	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1257	1765	1500	1260	1606	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	842	264	49	441	67	160	3	185	50	2	3
RTOR Reduction (vph)	0	0	90	0	0	34	0	0	113	0	2	0
Lane Group Flow (vph)	5	842	174	49	441	33	160	3	72	50	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	47.1	47.1	7.7	53.4	53.4	43.0	43.0	43.0	43.0	43.0	
Effective Green, g (s)	1.4	47.1	47.1	7.7	53.4	53.4	43.0	43.0	43.0	43.0	43.0	
Actuated g/C Ratio	0.01	0.43	0.43	0.07	0.49	0.49	0.39	0.39	0.39	0.39	0.39	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	20	1435	642	110	1627	728	491	689	586	492	627	
v/s Ratio Prot	0.00	c0.25		c0.03	0.13			0.00			0.00	
v/s Ratio Perm			0.12			0.02	c0.13		0.05	0.04		
v/c Ratio	0.25	0.59	0.27	0.45	0.27	0.04	0.33	0.00	0.12	0.10	0.01	
Uniform Delay, d1	53.8	24.0	20.3	49.1	16.8	14.9	23.4	20.4	21.4	21.2	20.4	
Progression Factor	1.02	0.82	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.8	1.6	0.9	2.9	0.4	0.1	1.8	0.0	0.4	0.4	0.0	
Delay (s)	60.5	21.2	21.0	52.0	17.2	15.0	25.1	20.5	21.9	21.7	20.5	
Level of Service	E	C	C	D	B	B	C	C	C	C	C	
Approach Delay (s)		21.3			20.0			23.4			21.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	3	1	290	281	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	3	1	315	305	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	628	311	316			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	628	311	316			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	446	729	1244			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	36	316	316
Volume Left	33	1	0
Volume Right	3	0	11
cSH	463	1244	1700
Volume to Capacity	0.08	0.00	0.19
Queue Length 95th (ft)	6	0	0
Control Delay (s)	13.4	0.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	33.6
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	184	772	52	0	15	343	6	0	24	91	43
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	200	839	57	0	16	373	7	0	26	99	47
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	44.7	17.9	17.2
HCM LOS	E	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	58%	0%	100%	83%	0%	100%	95%	31%
Vol Right, %	27%	0%	0%	17%	0%	0%	5%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	158	184	515	309	15	229	120	242
LT Vol	24	184	0	0	15	0	0	7
Through Vol	91	0	515	257	0	229	114	75
RT Vol	43	0	0	52	0	0	6	160
Lane Flow Rate	172	200	559	336	16	249	131	263
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.41	0.436	1	0.672	0.039	0.554	0.29	0.585
Departure Headway (Hd)	8.597	7.839	7.321	7.199	8.526	8.023	7.988	8.004
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	419	460	498	501	420	450	450	452
Service Time	6.338	5.584	5.067	4.945	6.266	5.763	5.727	5.742
HCM Lane V/C Ratio	0.411	0.435	1.122	0.671	0.038	0.553	0.291	0.582
HCM Control Delay	17.2	16.5	67.6	23.5	11.6	20.3	14	21.5
HCM Lane LOS	C	C	F	C	B	C	B	C
HCM 95th-tile Q	2	2.2	13.5	4.9	0.1	3.3	1.2	3.7

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	7	75	160
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	8	82	174
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	3
HCM Control Delay	21.5
HCM LOS	C

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	284	394	122	30	142	108	94	959	46	106	957	105
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.94		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3234		1583	3136		1583	3330		1583	3303	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3234		1583	3136		1583	3330		1583	3303	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	309	428	133	33	154	117	102	1042	50	115	1040	114
RTOR Reduction (vph)	0	30	0	0	92	0	0	3	0	0	8	0
Lane Group Flow (vph)	309	531	0	33	179	0	102	1089	0	115	1146	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.0	26.8		5.1	18.9		9.0	32.0		10.1	33.1	
Effective Green, g (s)	13.0	26.8		5.1	18.9		9.0	32.0		10.1	33.1	
Actuated g/C Ratio	0.14	0.30		0.06	0.21		0.10	0.36		0.11	0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	963		89	658		158	1184		177	1214	
v/s Ratio Prot	c0.20	c0.16		0.02	0.06		0.06	0.33		c0.07	c0.35	
v/s Ratio Perm												
v/c Ratio	1.36	0.55		0.37	0.27		0.65	0.92		0.65	0.94	
Uniform Delay, d1	38.5	26.5		40.9	29.8		39.0	27.8		38.3	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.26	0.78	
Incremental Delay, d2	185.8	0.7		2.6	0.2		8.7	12.8		5.9	12.3	
Delay (s)	224.3	27.2		43.5	30.0		47.7	40.6		54.0	33.9	
Level of Service	F	C		D	C		D	D		D	C	
Approach Delay (s)		97.2			31.5			41.2			35.8	
Approach LOS		F			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	30	22	13	13	227	14	1288	5	76	1098	248
Ideal Flow (vphpl)	1700	1800	1800	1800	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.94			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1653			1547		1583	3351		1583	3353	1500
Flt Permitted	0.51	1.00			0.99		0.12	1.00		0.09	1.00	1.00
Satd. Flow (perm)	842	1653			1534		204	3351		158	3353	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	33	24	14	14	247	15	1400	5	83	1193	270
RTOR Reduction (vph)	0	15	0	0	69	0	0	0	0	0	0	48
Lane Group Flow (vph)	323	42	0	0	206	0	15	1405	0	83	1193	222
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	35.0	35.0			35.0		40.6	39.8		45.4	42.2	42.2
Effective Green, g (s)	35.0	35.0			35.0		40.6	39.8		45.4	42.2	42.2
Actuated g/C Ratio	0.39	0.39			0.39		0.45	0.44		0.50	0.47	0.47
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	327	642			596		104	1481		130	1572	703
v/s Ratio Prot		0.03					0.00	c0.42		c0.02	0.36	
v/s Ratio Perm	c0.38				0.13		0.06			0.30		0.15
v/c Ratio	0.99	0.07			0.35		0.14	0.95		0.64	0.76	0.32
Uniform Delay, d1	27.3	17.2			19.4		15.8	24.1		18.6	19.7	14.9
Progression Factor	1.00	1.00			1.00		0.80	0.60		1.23	0.81	0.67
Incremental Delay, d2	45.9	0.0			0.1		0.2	6.4		7.1	2.5	0.8
Delay (s)	73.2	17.3			19.5		12.9	20.8		30.0	18.5	10.8
Level of Service	E	B			B		B	C		C	B	B
Approach Delay (s)		64.8			19.5			20.7			17.7	
Approach LOS		E			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	884	0	414	470	0	518	524	1148	593	530	974	869
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	2891		1500	2891		1500	2891	4818	1500	2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	961	0	450	511	0	563	570	1248	645	576	1059	945
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	961	0	450	511	0	563	570	1248	645	576	1059	945
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	40.8		120.0	40.8		120.0	26.5	34.0	120.0	24.7	32.2	120.0
Effective Green, g (s)	40.8		120.0	40.8		120.0	26.5	34.0	120.0	24.7	32.2	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.22	0.28	1.00	0.21	0.27	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	982		1500	982		1500	638	1365	1500	595	1292	1500
v/s Ratio Prot							0.20	c0.26		0.20	c0.22	
v/s Ratio Perm	c0.33		0.30	0.18		0.38			0.43			c0.63
v/c Ratio	0.98		0.30	0.52		0.38	0.89	0.91	0.43	0.97	0.82	0.63
Uniform Delay, d1	39.2		0.0	31.8		0.0	45.4	41.6	0.0	47.3	41.2	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.3		0.5	0.4		0.7	17.4	11.0	0.9	29.8	5.9	2.0
Delay (s)	62.5		0.5	32.1		0.7	62.7	52.5	0.9	77.1	47.1	2.0
Level of Service	E		A	C		A	E	D	A	E	D	A
Approach Delay (s)		42.7			15.7			41.4			37.3	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	623	3	227	0	0	0	0	1281	550	412	1230	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95						0.91	1.00	1.00	0.95	
Frt	1.00	0.92						1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.98						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1504	1504						4818	1500	1583	3353	
Flt Permitted	0.95	0.98						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1504	1504						4818	1500	1583	3353	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	677	3	247	0	0	0	0	1392	598	448	1337	0
RTOR Reduction (vph)	0	40	0	0	0	0	0	0	422	0	0	0
Lane Group Flow (vph)	481	406	0	0	0	0	0	1392	176	448	1337	0
Turn Type	Perm	NA						NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	27.0	27.0						26.5	26.5	24.0	54.5	
Effective Green, g (s)	27.0	27.0						26.5	26.5	24.0	54.5	
Actuated g/C Ratio	0.30	0.30						0.29	0.29	0.27	0.61	
Clearance Time (s)	4.0	4.0						4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0						2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	451	451						1418	441	422	2030	
v/s Ratio Prot								c0.29		c0.28	0.40	
v/s Ratio Perm	c0.32	0.27							0.12			
v/c Ratio	1.07	0.90						0.98	0.40	1.06	0.66	
Uniform Delay, d1	31.5	30.2						31.5	25.4	33.0	11.6	
Progression Factor	1.00	1.00						1.23	3.97	1.41	1.25	
Incremental Delay, d2	61.2	20.7						12.7	1.3	45.3	0.7	
Delay (s)	92.7	50.9						51.5	102.1	91.9	15.2	
Level of Service	F	D						D	F	F	B	
Approach Delay (s)		72.6			0.0			66.7			34.5	
Approach LOS		E			A			E			C	

Intersection Summary			
HCM 2000 Control Delay	55.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	347	3	482	353	1539	0	0	1290	553
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1800	1800	1800
Total Lost time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	1.00
Frt					0.97	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1564	1425	1583	3353			4818	1500
Flt Permitted					0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1564	1425	1583	3353			4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	377	3	524	384	1673	0	0	1402	601
RTOR Reduction (vph)	0	0	0	0	10	48	0	0	0	0	0	404
Lane Group Flow (vph)	0	0	0	0	464	382	384	1673	0	0	1402	197
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					26.0	26.0	22.0	55.5			29.5	29.5
Effective Green, g (s)					26.0	26.0	22.0	55.5			29.5	29.5
Actuated g/C Ratio					0.29	0.29	0.24	0.62			0.33	0.33
Clearance Time (s)					4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					451	411	386	2067			1579	491
v/s Ratio Prot							c0.24	0.50			c0.29	
v/s Ratio Perm					0.30	0.27						0.13
v/c Ratio					1.03	0.93	0.99	0.81			0.89	0.40
Uniform Delay, d1					32.0	31.1	33.9	13.2			28.7	23.4
Progression Factor					1.00	1.00	1.32	1.31			1.00	1.00
Incremental Delay, d2					50.0	27.6	20.9	0.9			7.8	2.4
Delay (s)					82.0	58.7	65.8	18.1			36.5	25.8
Level of Service					F	E	E	B			D	C
Approach Delay (s)		0.0			70.9			27.0			33.3	
Approach LOS		A			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX J

Horizon Year 2038 Conditions Post-Processing Volume Worksheets

Michael Baker
INTERNATIONAL

1 Study Intersection: Slover Avenue / Sierra Avenue
North/South: Sierra Ave.
East/West: Slover Ave.

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
	ADT	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		Horizon Year 2038 Without Project		Horizon Year 2038 With Project	
	AM	PM	Dist. %		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
			Cars	Trucks	Vol.	Vol.																
NBL	77	197					77	197	78	199	78	199	0	0	78	199	78	199	94	239	94	239
NBT	1,019	1,042					1,019	1,042	1,029	1,052	1,029	1,052	3	3	1,032	1,055	1,032	1,055	1,238	1,266	1,238	1,266
NBR	79	235	5%		3	1	82	236	80	237	83	238	0	0	80	237	83	238	96	284	99	285
SBL	542	642	38%	50%	47	15	589	657	547	648	594	663	56	43	603	691	650	706	724	829	771	844
SBT	756	967					756	967	764	977	764	977	0	0	764	977	764	977	917	1,172	917	1,172
SBR	213	139					213	139	215	140	215	140	0	0	215	140	215	140	258	168	258	168
EBL	249	345					249	345	251	348	251	348	0	0	251	348	251	348	301	418	301	418
EBT	212	601	5%		3	1	215	602	214	607	217	608	9	5	223	612	226	613	268	734	271	735
EBR	51	129					51	129	52	130	52	130	0	0	52	130	52	130	62	156	62	156
WBL	101	233	5%		1	3	102	236	102	235	103	238	0	0	102	235	103	238	122	282	123	285
WBT	228	320	5%		1	3	229	323	230	323	231	326	5	10	235	333	236	336	282	400	283	403
WBR	381	759	38%	50%	13	47	394	806	385	767	398	814	38	61	423	828	436	875	508	994	521	1,041

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

2 Study Intersection: Slover Avenue / Production Avenue

North/South: Production Ave.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	46	48					46	48	46	48	46	48	0	0	46	48	46	48	55	58	55	58
NBT	30	34					30	34	30	34	30	34	0	0	30	34	30	34	36	41	36	41
NBR	24	24					24	24	24	24	24	24	0	0	24	24	24	24	29	29	29	29
SBL	8	74					8	74	8	75	8	75	1	3	9	78	9	78	11	94	11	94
SBT	11	36					11	36	11	36	11	36	0	0	11	36	11	36	13	43	13	43
SBR	62	268					62	268	63	271	63	271	0	0	63	271	63	271	76	325	76	325
EBL	194	294					194	294	196	297	196	297	0	0	196	297	196	297	235	356	235	356
EBT	506	785	48%	50%	53	17	559	802	511	793	564	810	65	49	576	842	629	859	691	1,010	744	1,027
EBR	56	52					56	52	57	53	57	53	0	0	57	53	57	53	68	64	68	64
WBL	12	20					12	20	12	20	12	20	0	0	12	20	12	20	14	24	14	24
WBT	473	676	48%	50%	15	53	488	729	478	683	493	736	42	71	520	754	535	807	624	905	639	958
WBR	10	47					10	47	10	47	10	47	3	2	13	49	13	49	16	59	16	59

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

3 Study Intersection: Slover Avenue / Empire Center Boulevard

North/South: Empire Center Blvd.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
NBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
NBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
SBL	20	111					20	111	20	112	20	112	1	3	21	115	21	115	25	138	25	138
SBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBR	34	139					34	139	34	140	34	140	0	0	34	140	34	140	41	168	41	168
EBL	239	63					239	63	241	64	241	64	0	0	241	64	241	64	289	77	289	77
EBT	312	832	48%	50%	53	17	365	849	315	840	368	857	70	53	385	893	438	910	462	1,072	515	1,089
EBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBT	435	515	48%	50%	15	53	450	568	439	520	454	573	46	77	485	597	500	650	582	716	597	769
WBR	100	40					100	40	101	40	101	40	3	2	104	42	104	42	125	50	125	50

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

4 Study Intersection: Slover Avenue / Tamarind Avenue

North/South: Tamarind Ave.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	43	18					43	18	43	18	43	18	0	0	43	18	43	18	52	22	52	22
NBT	1	0					1	0	1	0	1	0	0	0	1	0	1	0	1	0	1	0
NBR	36	35					36	35	36	35	36	35	0	0	36	35	36	35	43	42	43	42
SBL	0	3					0	3	0	3	0	3	0	0	0	3	0	3	0	4	0	4
SBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBR	1	4					1	4	1	4	1	4	0	0	1	4	1	4	1	5	1	5
EBL	3	0					3	0	3	0	3	0	0	0	3	0	3	0	4	0	4	0
EBT	338	883	48%	50%	53	17	391	900	341	892	394	909	75	58	416	950	469	967	499	1,140	552	1,157
EBR	27	45					27	45	27	45	27	45	0	0	27	45	27	45	32	54	32	54
WBL	38	21					38	21	38	21	38	21	0	0	38	21	38	21	46	25	46	25
WBT	480	502	48%	50%	15	53	495	555	485	507	500	560	50	83	535	590	550	643	642	708	657	761
WBR	4	0					4	0	4	0	4	0	0	0	4	0	4	0	5	0	5	0

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

5 Study Intersection: Slover Avenue / Alder Avenue

North/South: Alder Ave.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	38	26					38	26	38	26	38	26	0	0	38	26	38	26	46	31	46	31
NBT	1	1					1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1
NBR	99	69					99	69	100	70	100	70	0	0	100	70	100	70	120	84	120	84
SBL	5	14					5	14	5	14	5	14	0	0	5	14	5	14	6	17	6	17
SBT	1	2					1	2	1	2	1	2	0	0	1	2	1	2	1	2	1	2
SBR	2	4					2	4	2	4	2	4	0	0	2	4	2	4	2	5	2	5
EBL	3	8					3	8	3	8	3	8	0	0	3	8	3	8	4	10	4	10
EBT	325	873	48%	50%	53	17	378	890	328	882	381	899	80	59	408	941	461	958	490	1,129	543	1,146
EBR	36	28					36	28	36	28	36	28	0	0	36	28	36	28	43	34	43	34
WBL	128	24					128	24	129	24	129	24	0	0	129	24	129	24	155	29	155	29
WBT	515	492	48%	50%	15	53	530	545	520	497	535	550	51	88	571	585	586	638	685	702	700	755
WBR	11	8					11	8	11	8	11	8	0	0	11	8	11	8	13	10	13	10

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

6 Study Intersection: Slover Avenue / Laurel Avenue

North/South: Laurel Ave.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	65	34	28%		5	18	70	52	66	34	71	52	0	0	66	34	71	52	79	41	84	59
NBT	0	1					0	1	0	1	0	1	0	0	0	1	0	1	0	1	0	1
NBR	255	36	20%		3	13	258	49	258	36	261	49	0	0	258	36	261	49	310	43	313	56
SBL	9	2					9	2	9	2	9	2	0	0	9	2	9	2	11	2	11	2
SBT	15	0					15	0	15	0	15	0	0	0	15	0	15	0	18	0	18	0
SBR	4	5					4	5	4	5	4	5	0	0	4	5	4	5	5	6	5	6
EBL	12	2					12	2	12	2	12	2	0	0	12	2	12	2	14	2	14	2
EBT	266	928	20%	50%	35	11	301	939	269	937	304	948	91	67	360	1,004	395	1,015	432	1,205	467	1,216
EBR	177	33	28%		18	6	195	39	179	33	197	39	0	0	179	33	197	39	215	40	233	46
WBL	332	31	20%		13	4	345	35	335	31	348	35	0	0	335	31	348	35	402	37	415	41
WBT	610	471	20%	50%	10	35	620	506	616	476	626	511	58	100	674	576	684	611	809	691	819	726
WBR	22	2					22	2	22	2	22	2	0	0	22	2	22	2	26	2	26	2

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

7 Study Intersection: Laurel Avenue / Site Driveway 1

North/South: Laurel Ave.

East/West: Site Dwy 1

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	320	71					320	71	323	72	323	72	0	0	323	72	323	72	388	86	388	86
NBR			2%		1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0
SBL			48%		31	10	31	10	0	0	31	10	0	0	0	0	31	10	0	0	31	10
SBT	524	64					524	64	529	65	529	65	0	0	529	65	529	65	635	78	635	78
SBR							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBT							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL			2%		0	1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
WBT							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR			48%		8	31	8	31	0	0	8	31	0	0	0	0	8	31	0	0	8	31

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

NOTE: OY = E+AMBIENT

8 Study Intersection: Slover Avenue / Site Driveway 2
North/South: Site Dwy 2
East/West: Slover Ave.

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	0	0		50%	7	22	7	22	0	0	7	22	0	0	0	0	7	22	0	0	7	22
NBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0		50%	7	22	7	22	0	0	7	22	0	0	0	0	7	22	0	0	7	22
SBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL	6	0					6	0	6	0	6	0	0	0	6	0	6	0	7	0	7	0
EBT	526	969			16	17	542	986	531	979	547	996	91	67	622	1,046	638	1,063	746	1,255	762	1,272
EBR	0	0		50%	22	7	22	7	0	0	22	7	0	0	0	0	22	7	0	0	22	7
WBL	0	0		50%	22	7	22	7	0	0	22	7	0	0	0	0	22	7	0	0	22	7
WBT	970	508			16	17	986	525	980	513	996	530	58	100	1,038	613	1,054	630	1,246	736	1,262	753
WBR	3	0					3	0	3	0	3	0	0	0	3	0	3	0	4	0	4	0

Red Volumes were manually caluated (Through traffic from both driveways at Int 7 & 10

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

NOTE: OY = E+AMBIENT

9 Study Intersection: Slover Avenue / Locust Avenue

North/South: Locust Ave.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	228	133	20%		3	13	231	146	230	134	233	147	0	0	230	134	233	147	276	161	279	174
NBT	3	0					3	0	3	0	3	0	3	3	6	3	6	3	7	4	7	4
NBR	72	151	25%		4	17	76	168	73	153	77	170	0	0	73	153	77	170	88	184	92	201
SBL	4	3					4	3	4	3	4	3	56	43	60	46	60	46	72	55	72	55
SBT	0	2					0	2	0	2	0	2	0	0	0	2	0	2	0	2	0	2
SBR	2	3					2	3	2	3	2	3	0	0	2	3	2	3	2	4	2	4
EBL	7	5					7	5	7	5	7	5	0	0	7	5	7	5	8	6	8	6
EBT	427	728	20%	50%	10	35	437	763	431	735	441	770	9	5	440	740	450	775	528	888	538	923
EBR	103	237	20%		13	4	116	241	104	239	117	243	0	0	104	239	117	243	125	287	138	291
WBL	34	39	25%		16	6	50	45	34	39	50	45	0	0	34	39	50	45	41	47	57	53
WBT	738	381	20%	50%	35	11	773	392	745	385	780	396	5	10	750	395	785	406	900	474	935	485
WBR	1	1					1	1	1	1	1	1	38	61	39	62	39	62	47	74	47	74

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

10 Study Intersection: Locust Avenue / Site Driveway 3
North/South: Locust Ave.
East/West: Site Dwy 3

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL			5%		3	1	3	1	0	0	3	1	0	0	0	0	3	1	0	0	3	1
NBT	303	284					303	284	306	287	306	287	3	3	309	290	309	290	371	348	371	348
NBR							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBL							0	0	0	0	0	0	56	43	56	43	56	43	67	52	67	52
SBT	137	278					137	278	138	281	138	281	0	0	138	281	138	281	166	337	166	337
SBR			45%		29	10	29	10	0	0	29	10	0	0	0	0	29	10	0	0	29	10
EBL			45%		7	30	7	30	0	0	7	30	0	0	0	0	7	30	0	0	7	30
EBT							0	0	0	0	0	0	9	5	9	5	9	5	11	6	11	6
EBR			5%		1	3	1	3	0	0	1	3	0	0	0	0	1	3	0	0	1	3
WBL							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBT							0	0	0	0	0	0	5	10	5	10	5	10	6	12	6	12
WBR							0	0	0	0	0	0	38	61	38	61	38	61	46	73	46	73

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

11 Study Intersection: Slover Avenue / Linden Avenue

North/South: Linden Ave.

East/West: Slover Ave.

OY Year: 2018

Growth: 1% /year

Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	67	24					67	24	68	24	68	24	0	0	68	24	68	24	82	29	82	29
NBT	69	90					69	90	70	91	70	91	0	0	70	91	70	91	84	109	84	109
NBR	37	43					37	43	37	43	37	43	0	0	37	43	37	43	44	52	44	52
SBL	0	7					0	7	0	7	0	7	0	0	0	7	0	7	0	8	0	8
SBT	40	74					40	74	40	75	40	75	0	0	40	75	40	75	48	90	48	90
SBR	321	158					321	158	324	160	324	160	0	0	324	160	324	160	389	192	389	192
EBL	178	182					178	182	180	184	180	184	0	0	180	184	180	184	216	221	216	221
EBT	309	652	45%	50%	14	51	323	703	312	659	326	710	53	62	365	721	379	772	438	865	452	916
EBR	43	51					43	51	43	52	43	52	0	0	43	52	43	52	52	62	52	62
WBL	11	15					11	15	11	15	11	15	0	0	11	15	11	15	13	18	13	18
WBT	384	265	45%	50%	51	17	435	282	388	268	439	285	58	58	446	326	497	343	535	391	586	408
WBR	9	6					9	6	9	6	9	6	0	0	9	6	9	6	11	7	11	7

BO Without Project Volumes

Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

NOTE: OY = E+AMBIENT

12 Study Intersection: Slover Avenue / Cedar Avenue
North/South: Cedar Ave.
East/West: Slover Ave.

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	121	82	5%		3	2	124	84	122	83	125	85	7	9	129	92	132	94	168	120	171	122
NBT	793	749					793	749	801	756	801	756	145	203	946	959	946	959	1,230	1,247	1,230	1,247
NBR	13	36					13	36	13	36	13	36	8	10	21	46	21	46	27	60	27	60
SBL	70	105					70	105	71	106	71	106	0	0	71	106	71	106	92	138	92	138
SBT	794	797					794	797	802	805	802	805	185	152	987	957	987	957	1,283	1,244	1,283	1,244
SBR	75	59	38%	50%	47	15	122	74	76	60	123	75	47	30	123	90	170	105	160	117	207	132
EBL	156	183	38%	50%	13	47	169	230	158	185	171	232	29	52	187	237	200	284	224	284	237	331
EBT	119	382	2%		0	1	119	383	120	386	120	387	21	7	141	393	141	394	169	472	169	473
EBR	68	111	5%		1	3	69	114	69	112	70	115	8	7	77	119	78	122	92	143	93	146
WBL	14	22					14	22	14	22	14	22	9	8	23	30	23	30	28	36	28	36
WBT	126	120	2%		1	0	127	120	127	121	128	121	5	21	132	142	133	142	158	170	159	170
WBR	77	104					77	104	78	105	78	105	3	3	81	108	81	108	97	130	97	130

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

NOTE: OY = E+AMBIENT

13 Study Intersection: Cedar Avenue / Orange Street

North/South:	Cedar Ave.
East/West:	Orange Street

OY Year:	2018
Growth:	1% /year
Total Growth	0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	1	14					1	14	1	14	1	14	0	0	1	14	1	14	1	18	1	18
NBT	1,017	1,024	38%	50%	13	47	1,030	1,071	1,027	1,034	1,040	1,081	143	207	1,170	1,241	1,183	1,288	1,521	1,613	1,534	1,660
NBR	6	2					6	2	6	2	6	2	10	3	16	5	16	5	21	7	21	7
SBL	148	64					148	64	149	65	149	65	38	11	187	76	187	76	243	99	243	99
SBT	962	931	38%	50%	47	15	1,009	946	972	940	1,019	955	181	143	1,153	1,083	1,200	1,098	1,499	1,408	1,546	1,423
SBR	436	246					436	246	440	248	440	248	0	0	440	248	440	248	572	322	572	322
EBL	283	294					283	294	286	297	286	297	0	0	286	297	286	297	343	356	343	356
EBT	5	30					5	30	5	30	5	30	0	0	5	30	5	30	6	36	6	36
EBR	16	22					16	22	16	22	16	22	0	0	16	22	16	22	19	26	19	26
WBL	1	1					1	1	1	1	1	1	5	12	6	13	6	13	7	16	7	16
WBT	0	13					0	13	0	13	0	13	0	0	0	13	0	13	0	16	0	16
WBR	100	178					100	178	101	180	101	180	18	47	119	227	119	227	143	272	143	272

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

14 Study Intersection: Sierra Avenue / I-10 Ramps
North/South: Sierra Avenue
East/West: I-10 Ramps

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	369	442	33%	50%	12	43	381	485	373	446	385	489	20	35	393	481	405	524	472	577	484	620
NBT	757	1,108	5%		1	3	758	1,111	765	1,119	766	1,122	16	26	781	1,145	782	1,148	937	1,374	938	1,377
NBR	511	584					511	584	516	590	516	590	4	3	520	593	520	593	624	712	624	712
SBL	565	524					565	524	571	529	571	529	1	1	572	530	572	530	686	636	686	636
SBT	743	949	5%		4	1	747	950	750	958	754	959	22	15	772	973	776	974	926	1,168	930	1,169
SBR	840	859					840	859	848	868	848	868	1	1	849	869	849	869	1,019	1,043	1,019	1,043
EBL	892	869					892	869	901	878	901	878	6	6	907	884	907	884	1,088	1,061	1,088	1,061
EBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR	379	373	33%	50%	43	14	422	387	383	377	426	391	32	23	415	400	458	414	498	480	541	494
WBL	409	460					409	460	413	465	413	465	2	5	415	470	415	470	498	564	498	564
WBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR	552	507					552	507	558	512	558	512	6	6	564	518	564	518	677	622	677	622

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

15 Study Intersection: Cedar Avenue / I-10 EB Ramps
North/South: Cedar Ave.
East/West: I-10 EB Ramps

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	1,017	1,078	5%		1	3	1,018	1,081	1,027	1,089	1,028	1,092	116	189	1,143	1,278	1,144	1,281	1,486	1,661	1,487	1,664
NBR	383	392	33%	50%	12	43	395	435	387	396	399	439	68	111	455	507	467	550	592	659	604	702
SBL	451	408					451	408	456	412	456	412	0	0	456	412	456	412	593	536	593	536
SBT	1,231	1,094	38%	50%	46	15	1,277	1,109	1,243	1,105	1,289	1,120	155	110	1,398	1,215	1,444	1,230	1,817	1,580	1,863	1,595
SBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBL	506	611					506	611	511	617	511	617	6	6	517	623	517	623	620	748	620	748
EBT	3	3					3	3	3	3	3	3	0	0	3	3	3	3	4	4	4	4
EBR	325	152					325	152	328	154	328	154	105	73	433	227	433	227	520	272	520	272
WBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

16 Study Intersection: Cedar Avenue / I-10 WB Ramps
North/South: Cedar Ave.
East/West: I-10 WB Ramps

OY Year: 2018
Growth: 1% /year
Total Growth 0.01

	Trip Gen						
		AM Peak Hour			PM Peak Hour		
	ADT	Total	In	Out	Total	In	Out
Cars	974	82	65	17	88	22	66
Trucks	629	55	43	13	55	13	43

	Existing (PCE)		Project Only				E+P		OY		OY+P		Cum. Proj. Only		OY+CP		OY+CP+P		BO Without Proj.		BO With Proj.	
			Dist. %		AM	PM																
	AM	PM	Cars	Trucks	Vol.	Vol.	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBL	292	234					292	234	295	236	295	236	68	117	363	353	363	353	472	459	472	459
NBT	1,236	1,443	5%		1	3	1,237	1,446	1,248	1,457	1,249	1,460	55	79	1,303	1,536	1,304	1,539	1,694	1,997	1,695	2,000
NBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBT	1,312	1,238	5%		3	1	1,315	1,239	1,325	1,250	1,328	1,251	56	39	1,381	1,289	1,384	1,290	1,795	1,676	1,798	1,677
SBR	872	547					872	547	881	552	881	552	1	1	882	553	882	553	1,147	719	1,147	719
EBL	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	370	286	33%	50%	43	14	413	300	374	289	417	303	53	44	427	333	470	347	512	400	555	414
WBT	8	3					8	3	8	3	8	3	0	0	8	3	8	3	10	4	10	4
WBR	482	471					482	471	487	476	487	476	6	6	493	482	493	482	592	578	592	578

BO Without Project Volumes
Assume 1% per year growth along Sierra/Slover. Assume 1.5% per year growth along Cedar

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX K

Horizon Year 2038 Conditions Without and With Project Synchro Analysis Worksheets

Michael Baker
INTERNATIONAL

Horizon Year 2038 Without Project

Synchro Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	268	62	122	282	508	94	1238	96	724	917	258
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1800	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4918	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4918	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	282	65	128	297	535	99	1303	101	762	965	272
RTOR Reduction (vph)	0	0	56	0	0	91	0	0	65	0	36	0
Lane Group Flow (vph)	317	282	9	128	297	444	99	1303	36	762	1201	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	13.7	17.0	17.0	13.4	16.7	39.7	10.0	42.6	42.6	23.0	55.6	
Effective Green, g (s)	13.7	17.0	17.0	13.4	16.7	39.7	10.0	42.6	42.6	23.0	55.6	
Actuated g/C Ratio	0.11	0.14	0.14	0.11	0.14	0.33	0.08	0.36	0.36	0.19	0.46	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	350	501	224	343	492	873	256	1805	561	588	2278	
v/s Ratio Prot	c0.10	0.08		0.04	c0.08	0.10	0.03	c0.26		c0.25	0.24	
v/s Ratio Perm			0.01			0.07			0.02			
v/c Ratio	0.91	0.56	0.04	0.37	0.60	0.51	0.39	0.72	0.06	1.30	0.53	
Uniform Delay, d1	52.5	48.0	44.5	49.4	48.5	32.3	52.1	33.6	25.5	48.5	22.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.06	0.99	
Incremental Delay, d2	25.4	1.2	0.1	0.2	1.8	0.2	0.4	2.5	0.2	143.6	0.7	
Delay (s)	77.9	49.2	44.5	49.7	50.3	32.5	52.4	36.1	25.8	195.1	23.4	
Level of Service	E	D	D	D	D	C	D	D	C	F	C	
Approach Delay (s)		62.4			40.3			36.5			88.8	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	235	691	68	14	624	16	55	36	29	11	13	76
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3072	5085	1583	3072	5067		1676	3300		3072	3085	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3072	5085	1583	3072	5067		1676	3300		3072	3085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	751	74	15	678	17	60	39	32	12	14	83
RTOR Reduction (vph)	0	0	41	0	3	0	0	20	0	0	57	0
Lane Group Flow (vph)	255	751	33	15	692	0	60	51	0	12	40	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	14.1	49.2	49.2	1.6	36.7		8.2	42.0		1.2	35.0	
Effective Green, g (s)	14.1	49.2	49.2	1.6	36.7		8.2	42.0		1.2	35.0	
Actuated g/C Ratio	0.13	0.45	0.45	0.01	0.33		0.07	0.38		0.01	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	393	2274	708	44	1690		124	1260		33	981	
v/s Ratio Prot	c0.08	0.15		0.00	c0.14		c0.04	c0.02		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.65	0.33	0.05	0.34	0.41		0.48	0.04		0.36	0.04	
Uniform Delay, d1	45.6	19.7	17.2	53.7	28.3		48.9	21.3		54.0	25.9	
Progression Factor	1.00	1.00	1.00	0.87	1.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	0.4	0.1	4.4	0.7		3.0	0.1		6.7	0.0	
Delay (s)	49.3	20.1	17.3	51.2	45.7		51.8	21.4		60.7	25.9	
Level of Service	D	C	B	D	D		D	C		E	C	
Approach Delay (s)		26.8			45.8			35.3			29.8	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	289	462	582	125	25	41
Ideal Flow (vphpl)	1800	1900	1900	1900	1700	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1676	3539	4950		2935	1365
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1676	3539	4950		2935	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	314	502	633	136	27	45
RTOR Reduction (vph)	0	0	23	0	17	18
Lane Group Flow (vph)	314	502	746	0	32	5
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	26.5	78.0	47.5		24.0	24.0
Effective Green, g (s)	26.5	78.0	47.5		24.0	24.0
Actuated g/C Ratio	0.24	0.71	0.43		0.22	0.22
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	403	2509	2137		640	297
v/s Ratio Prot	c0.19	0.14	c0.15		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.78	0.20	0.35		0.05	0.02
Uniform Delay, d1	39.0	5.4	20.9		34.0	33.7
Progression Factor	1.79	0.52	0.61		1.00	1.00
Incremental Delay, d2	9.0	0.2	0.4		0.1	0.1
Delay (s)	78.8	3.0	13.2		34.1	33.8
Level of Service	E	A	B		C	C
Approach Delay (s)		32.2	13.2		34.0	
Approach LOS		C	B		C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	499	32	46	642	5	52	1	43	0	0	1
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1676	1863	1583	1676	3535		1676	1589			1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1676	1863	1583	1676	3535		1336	1589			1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	542	35	50	698	5	57	1	47	0	0	1
RTOR Reduction (vph)	0	0	17	0	0	0	0	33	0	0	1	0
Lane Group Flow (vph)	4	542	18	50	703	0	57	15	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	57.4	57.4	7.4	63.4		33.0	33.0			33.0	
Effective Green, g (s)	1.4	57.4	57.4	7.4	63.4		33.0	33.0			33.0	
Actuated g/C Ratio	0.01	0.52	0.52	0.07	0.58		0.30	0.30			0.30	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	21	972	826	112	2037		400	476			474	
v/s Ratio Prot	0.00	c0.29		c0.03	0.20			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.19	0.56	0.02	0.45	0.34		0.14	0.03			0.00	
Uniform Delay, d1	53.7	17.7	12.7	49.3	12.3		28.2	27.2			27.0	
Progression Factor	1.10	1.06	0.28	1.29	1.12		1.00	1.00			1.00	
Incremental Delay, d2	4.4	2.3	0.0	2.7	0.4		0.7	0.1			0.0	
Delay (s)	63.3	21.0	3.6	66.3	14.2		28.9	27.3			27.0	
Level of Service	E	C	A	E	B		C	C			C	
Approach Delay (s)		20.3			17.6			28.2			27.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	490	43	155	685	13	46	1	120	6	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	533	47	168	745	14	50	1	130	7	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	759			579			1274	1660	290	1364	1677	379
vC1, stage 1 conf vol							565	565		1089	1089	
vC2, stage 2 conf vol							710	1096		276	588	
vCu, unblocked vol	595			579			1149	1563	290	1245	1580	188
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			83			84	100	82	97	99	100
cM capacity (veh/h)	911			991			309	231	707	198	213	766

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	355	224	168	496	262	182	10
Volume Left	4	0	0	168	0	0	50	7
Volume Right	0	0	47	0	0	14	130	2
cSH	911	1700	1700	991	1700	1700	984	257
Volume to Capacity	0.00	0.21	0.13	0.17	0.29	0.15	0.18	0.04
Queue Length 95th (ft)	0	0	0	15	0	0	17	3
Control Delay (s)	9.0	0.0	0.0	9.4	0.0	0.0	13.4	20.6
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.7			13.4	20.6
Approach LOS							B	C

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	432	215	402	809	26	79	0	310	11	18	5
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583		1770	1583		1828	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.91	1.00
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583		1372	1583		1704	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	470	234	437	879	28	86	0	337	12	20	5
RTOR Reduction (vph)	0	0	80	0	0	10	0	0	263	0	0	4
Lane Group Flow (vph)	15	470	154	437	879	18	0	86	74	0	32	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	2.8	39.2	39.2	34.6	71.0	71.0		24.0	24.0		24.0	24.0
Effective Green, g (s)	2.8	39.2	39.2	34.6	71.0	71.0		24.0	24.0		24.0	24.0
Actuated g/C Ratio	0.03	0.36	0.36	0.31	0.65	0.65		0.22	0.22		0.22	0.22
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	42	1261	564	527	2284	1021		299	345		371	345
v/s Ratio Prot	0.01	0.13		c0.26	c0.25							
v/s Ratio Perm			0.10			0.01		c0.06	0.05		0.02	0.00
v/c Ratio	0.36	0.37	0.27	0.83	0.38	0.02		0.29	0.21		0.09	0.00
Uniform Delay, d1	52.7	26.3	25.2	35.0	9.2	7.0		35.9	35.3		34.3	33.6
Progression Factor	0.95	1.32	1.72	1.01	1.20	4.65		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.9	0.8	1.1	9.2	0.4	0.0		0.5	0.3		0.5	0.0
Delay (s)	54.9	35.6	44.5	44.6	11.5	32.6		36.4	35.6		34.7	33.7
Level of Service	D	D	D	D	B	C		D	D		C	C
Approach Delay (s)		38.9			22.7			35.7			34.6	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	528	125	41	900	47	276	7	88	72	0	2
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583	1676	1863	1583	1676	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583	1335	1863	1583	1328	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	574	136	45	978	51	300	8	96	78	0	2
RTOR Reduction (vph)	0	0	72	0	0	25	0	0	59	0	1	0
Lane Group Flow (vph)	9	574	64	45	978	26	300	8	37	78	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	50.2	50.2	5.6	54.4	54.4	42.0	42.0	42.0	42.0	42.0	
Effective Green, g (s)	1.4	50.2	50.2	5.6	54.4	54.4	42.0	42.0	42.0	42.0	42.0	
Actuated g/C Ratio	0.01	0.46	0.46	0.05	0.49	0.49	0.38	0.38	0.38	0.38	0.38	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	1615	722	85	1750	782	509	711	604	507	604	
v/s Ratio Prot	0.01	0.16		c0.03	c0.28			0.00			0.00	
v/s Ratio Perm			0.04			0.02	c0.22		0.02	0.06		
v/c Ratio	0.43	0.36	0.09	0.53	0.56	0.03	0.59	0.01	0.06	0.15	0.00	
Uniform Delay, d1	53.9	19.4	16.9	50.9	19.4	14.3	27.1	21.1	21.5	22.3	21.0	
Progression Factor	1.34	0.49	0.25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.3	0.6	0.2	5.8	1.3	0.1	4.9	0.0	0.2	0.6	0.0	
Delay (s)	84.7	10.1	4.4	56.8	20.7	14.4	32.1	21.1	21.7	23.0	21.0	
Level of Service	F	B	A	E	C	B	C	C	C	C	C	
Approach Delay (s)		9.9			21.9			29.4			22.9	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	46.1
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	216	438	52	0	13	535	11	0	82	84	44
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	235	476	57	0	14	582	12	0	89	91	48
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	29.4	51.6	27.9
HCM LOS	D	F	D

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	74%	0%	100%	94%	11%
Vol Right, %	21%	0%	0%	26%	0%	0%	6%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	216	292	198	13	357	189	437
LT Vol	82	216	0	0	13	0	0	0
Through Vol	84	0	292	146	0	357	178	48
RT Vol	44	0	0	52	0	0	11	389
Lane Flow Rate	228	235	317	215	14	388	206	475
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.627	0.615	0.787	0.523	0.037	0.974	0.515	1
Departure Headway (Hd)	9.882	9.424	8.925	8.741	9.542	9.042	9.002	8.799
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	365	383	406	413	376	403	401	413
Service Time	7.632	7.167	6.668	6.484	7.283	6.783	6.743	6.574
HCM Lane V/C Ratio	0.625	0.614	0.781	0.521	0.037	0.963	0.514	1.15
HCM Control Delay	27.9	26.2	37.7	20.7	12.7	69.3	21	74.8
HCM Lane LOS	D	D	E	C	B	F	C	F
HCM 95th-tile Q	4.1	3.9	6.8	2.9	0.1	11.4	2.8	12.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	224	169	92	28	158	97	168	1230	27	92	1283	160
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	3352		1676	3337		1676	3528		1676	3481	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1676	3352		1676	3337		1676	3528		1676	3481	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	178	97	29	166	102	177	1295	28	97	1351	168
RTOR Reduction (vph)	0	55	0	0	83	0	0	1	0	0	8	0
Lane Group Flow (vph)	236	220	0	29	185	0	177	1322	0	97	1511	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	18.0	34.6		5.2	21.8		15.5	54.5		9.7	48.7	
Effective Green, g (s)	18.0	34.6		5.2	21.8		15.5	54.5		9.7	48.7	
Actuated g/C Ratio	0.15	0.29		0.04	0.18		0.13	0.45		0.08	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	251	966		72	606		216	1602		135	1412	
v/s Ratio Prot	c0.14	0.07		0.02	c0.06		c0.11	0.37		0.06	c0.43	
v/s Ratio Perm												
v/c Ratio	0.94	0.23		0.40	0.31		0.82	0.83		0.72	1.07	
Uniform Delay, d1	50.5	32.5		55.9	42.5		50.9	28.6		53.8	35.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.29	0.57	
Incremental Delay, d2	40.6	0.1		3.7	0.3		20.9	5.0		11.8	41.7	
Delay (s)	91.1	32.6		59.5	42.8		71.8	33.6		81.0	62.2	
Level of Service	F	C		E	D		E	C		F	E	
Approach Delay (s)		59.6			44.5			38.1			63.3	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	343	6	19	7	0	143	1	1521	21	243	1499	572
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1648			1619		1676	3718		1676	3725	1583
Flt Permitted	0.59	1.00			0.99		0.08	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1045	1648			1611		147	3718		147	3725	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	361	6	20	7	0	151	1	1601	22	256	1578	602
RTOR Reduction (vph)	0	13	0	0	99	0	0	1	0	0	0	238
Lane Group Flow (vph)	361	13	0	0	59	0	1	1622	0	256	1578	364
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	41.0	41.0			41.0		48.8	48.8		66.2	66.2	66.2
Effective Green, g (s)	41.0	41.0			41.0		48.8	48.8		66.2	66.2	66.2
Actuated g/C Ratio	0.34	0.34			0.34		0.41	0.41		0.55	0.55	0.55
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	357	563			550		69	1511		312	2054	873
v/s Ratio Prot		0.01					0.00	c0.44		0.12	c0.42	
v/s Ratio Perm	c0.35				0.04		0.01			0.33		0.23
v/c Ratio	1.01	0.02			0.11		0.01	1.07		0.82	0.77	0.42
Uniform Delay, d1	39.5	26.2			27.0		28.5	35.6		45.6	20.9	15.7
Progression Factor	1.00	1.00			1.00		1.31	0.77		1.00	1.00	1.00
Incremental Delay, d2	50.5	0.0			0.0		0.0	41.4		15.7	2.8	1.5
Delay (s)	90.0	26.2			27.0		37.3	68.8		61.4	23.8	17.1
Level of Service	F	C			C		D	E		E	C	B
Approach Delay (s)		85.7			27.0			68.8			26.1	
Approach LOS		F			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1088	0	498	498	0	677	472	937	624	686	926	1019
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1183	0	541	541	0	736	513	1018	678	746	1007	1108
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1183	0	541	541	0	736	513	1018	678	746	1007	1108
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	45.0		120.0	45.0		120.0	21.5	26.0	120.0	28.5	33.0	120.0
Effective Green, g (s)	45.0		120.0	45.0		120.0	21.5	26.0	120.0	28.5	33.0	120.0
Actuated g/C Ratio	0.38		1.00	0.38		1.00	0.18	0.22	1.00	0.24	0.28	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1152		1583	1152		1583	550	1101	1583	729	1398	1583
v/s Ratio Prot							0.17	c0.20		c0.24	0.20	
v/s Ratio Perm	c0.39		0.34	0.18		0.46			0.43			c0.70
v/c Ratio	1.03		0.34	0.47		0.46	0.93	0.92	0.43	1.02	0.72	0.70
Uniform Delay, d1	37.5		0.0	28.4		0.0	48.5	46.0	0.0	45.8	39.3	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.76	0.74	1.00	1.00	1.00	1.00
Incremental Delay, d2	33.6		0.6	0.2		1.0	19.0	10.5	0.6	39.4	3.2	2.6
Delay (s)	71.1		0.6	28.7		1.0	55.8	44.7	0.6	85.1	42.6	2.6
Level of Service	E		A	C		A	E	D	A	F	D	A
Approach Delay (s)		49.0			12.7			33.7			38.2	
Approach LOS		D			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	620	4	520	0	0	0	0	1486	592	593	1817	0
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1900	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	1686	1583					5085	1583	3072	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	1686	1583					5085	1583	3072	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	653	4	547	0	0	0	0	1564	623	624	1913	0
RTOR Reduction (vph)	0	0	46	0	0	0	0	0	405	0	0	0
Lane Group Flow (vph)	326	331	501	0	0	0	0	1564	218	624	1913	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	28.0	28.0	28.0					31.5	31.5	18.0	53.5	
Effective Green, g (s)	28.0	28.0	28.0					31.5	31.5	18.0	53.5	
Actuated g/C Ratio	0.31	0.31	0.31					0.35	0.35	0.20	0.59	
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	495	524	492					1779	554	614	3022	
v/s Ratio Prot								c0.31		c0.20	0.38	
v/s Ratio Perm	0.20	0.20	c0.32						0.14			
v/c Ratio	0.66	0.63	1.02					0.88	0.39	1.02	0.63	
Uniform Delay, d1	26.9	26.6	31.0					27.5	22.1	36.0	11.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.24	1.02	
Incremental Delay, d2	3.2	2.5	45.2					6.6	2.1	32.2	0.6	
Delay (s)	30.0	29.1	76.2					34.0	24.1	77.0	12.7	
Level of Service	C	C	E					C	C	E	B	
Approach Delay (s)		50.7			0.0			31.2			28.5	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	512	10	592	472	1694	0	0	1795	1147
Ideal Flow (vphpl)	1900	1900	1900	1800	1900	1800	1700	1900	1900	1900	1900	1800
Total Lost time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor				0.95	0.95	0.88	0.97	0.91			0.91	0.88
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1593	1689	2640	3072	5085			5085	2640
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1593	1689	2640	3072	5085			5085	2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	539	11	623	497	1783	0	0	1889	1207
RTOR Reduction (vph)	0	0	0	0	0	51	0	0	0	0	0	593
Lane Group Flow (vph)	0	0	0	275	275	572	497	1783	0	0	1889	614
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				21.8	21.8	21.8	16.7	59.7			39.0	39.0
Effective Green, g (s)				21.8	21.8	21.8	16.7	59.7			39.0	39.0
Actuated g/C Ratio				0.24	0.24	0.24	0.19	0.66			0.43	0.43
Clearance Time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				385	409	639	570	3373			2203	1144
v/s Ratio Prot							c0.16	0.35			c0.37	
v/s Ratio Perm				0.17	0.16	c0.22						0.23
v/c Ratio				0.71	0.67	0.90	0.87	0.53			0.86	0.54
Uniform Delay, d1				31.2	30.9	33.0	35.6	7.9			23.0	18.8
Progression Factor				1.00	1.00	1.00	1.26	0.77			1.00	1.00
Incremental Delay, d2				6.2	4.3	15.1	8.7	0.4			4.6	1.8
Delay (s)				37.4	35.2	48.1	53.5	6.4			27.6	20.6
Level of Service				D	D	D	D	A			C	C
Approach Delay (s)		0.0			42.5			16.7			24.9	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	418	734	156	282	400	994	239	1266	284	829	1172	168
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1800	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4990	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4990	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	440	773	164	297	421	1046	252	1333	299	873	1234	177
RTOR Reduction (vph)	0	0	126	0	0	70	0	0	151	0	14	0
Lane Group Flow (vph)	440	773	38	297	421	976	252	1333	148	873	1397	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.0	30.5	30.5	12.5	28.0	58.0	12.6	33.0	33.0	30.0	50.4	
Effective Green, g (s)	15.0	30.5	30.5	12.5	28.0	58.0	12.6	33.0	33.0	30.0	50.4	
Actuated g/C Ratio	0.12	0.23	0.23	0.10	0.22	0.45	0.10	0.25	0.25	0.23	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	354	830	371	295	762	1177	297	1290	401	708	1934	
v/s Ratio Prot	c0.14	c0.22		c0.10	0.12	0.19	0.08	c0.26		c0.28	0.28	
v/s Ratio Perm			0.02			0.18			0.09			
v/c Ratio	1.24	0.93	0.10	1.01	0.55	0.83	0.85	1.03	0.37	1.23	0.72	
Uniform Delay, d1	57.5	48.7	39.0	58.8	45.4	31.7	57.8	48.5	39.9	50.0	33.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	131.0	16.9	0.1	54.1	0.7	4.7	18.9	34.1	2.6	116.9	2.4	
Delay (s)	188.5	65.6	39.1	112.9	46.1	36.4	76.7	82.6	42.5	166.9	36.2	
Level of Service	F	E	D	F	D	D	E	F	D	F	D	
Approach Delay (s)		101.7			51.6			75.4			86.2	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	78.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	356	1010	64	24	905	59	58	41	29	94	43	325
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3072	5085	1583	3072	5039		1676	3319		3072	3071	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3072	5085	1583	3072	5039		1676	3319		3072	3071	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	1098	70	26	984	64	63	45	32	102	47	353
RTOR Reduction (vph)	0	0	36	0	6	0	0	23	0	0	250	0
Lane Group Flow (vph)	387	1098	34	26	1042	0	63	54	0	102	150	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	20.2	57.8	57.8	2.4	40.0		8.7	34.5		9.3	35.1	
Effective Green, g (s)	20.2	57.8	57.8	2.4	40.0		8.7	34.5		9.3	35.1	
Actuated g/C Ratio	0.17	0.48	0.48	0.02	0.33		0.07	0.29		0.08	0.29	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	517	2449	762	61	1679		121	954		238	898	
v/s Ratio Prot	c0.13	0.22		0.01	c0.21		c0.04	0.02		0.03	c0.05	
v/s Ratio Perm			0.02									
v/c Ratio	0.75	0.45	0.04	0.43	0.62		0.52	0.06		0.43	0.17	
Uniform Delay, d1	47.5	20.6	16.5	58.1	33.6		53.6	31.0		52.8	31.6	
Progression Factor	1.00	1.00	1.00	1.09	0.83		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	0.6	0.1	4.6	1.7		4.0	0.1		1.2	0.1	
Delay (s)	53.4	21.2	16.6	68.0	29.7		57.6	31.1		54.1	31.7	
Level of Service	D	C	B	E	C		E	C		D	C	
Approach Delay (s)		29.0			30.6			43.0			36.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	77	1072	716	50	138	168
Ideal Flow (vphpl)	1800	1900	1900	1900	1700	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1676	3539	5036		2971	1365
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1676	3539	5036		2971	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	1165	778	54	150	183
RTOR Reduction (vph)	0	0	5	0	57	79
Lane Group Flow (vph)	84	1165	827	0	170	27
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	10.0	81.0	67.0		31.0	31.0
Effective Green, g (s)	10.0	81.0	67.0		31.0	31.0
Actuated g/C Ratio	0.08	0.68	0.56		0.26	0.26
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	139	2388	2811		767	352
v/s Ratio Prot	c0.05	c0.33	0.16		c0.06	
v/s Ratio Perm						0.02
v/c Ratio	0.60	0.49	0.29		0.22	0.08
Uniform Delay, d1	53.1	9.4	14.0		35.0	33.7
Progression Factor	1.35	0.72	1.40		1.00	1.00
Incremental Delay, d2	6.7	0.7	0.3		0.7	0.4
Delay (s)	78.6	7.5	19.9		35.7	34.1
Level of Service	E	A	B		D	C
Approach Delay (s)		12.3	19.9		35.2	
Approach LOS		B	B		D	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1140	54	25	708	0	22	0	42	4	0	5
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863	1583	1676	3539		1676	1583		1676	1583	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00		0.73	1.00	
Satd. Flow (perm)		1863	1583	1676	3539		1331	1583		1285	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1200	57	26	745	0	23	0	44	4	0	5
RTOR Reduction (vph)	0	0	17	0	0	0	0	33	0	0	4	0
Lane Group Flow (vph)	0	1200	40	26	745	0	23	11	0	4	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		73.6	73.6	4.2	81.8		30.0	30.0		30.0	30.0	
Effective Green, g (s)		73.6	73.6	4.2	81.8		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.61	0.61	0.04	0.68		0.25	0.25		0.25	0.25	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1142	970	58	2412		332	395		321	395	
v/s Ratio Prot		c0.64		c0.02	0.21			0.01			0.00	
v/s Ratio Perm			0.03				c0.02			0.00		
v/c Ratio		1.05	0.04	0.45	0.31		0.07	0.03		0.01	0.00	
Uniform Delay, d1		23.2	9.2	56.8	7.7		34.3	34.0		33.9	33.8	
Progression Factor		0.84	0.17	1.00	0.71		1.00	1.00		1.00	1.00	
Incremental Delay, d2		39.8	0.1	5.3	0.3		0.4	0.1		0.0	0.0	
Delay (s)		59.3	1.6	62.2	5.8		34.7	34.1		33.9	33.8	
Level of Service		E	A	E	A		C	C		C	C	
Approach Delay (s)		56.7			7.7			34.3			33.8	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1129	34	29	702	10	31	1	84	17	2	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1227	37	32	763	11	34	1	91	18	2	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	774			1264			1713	2104	632	1467	2117	387
vC1, stage 1 conf vol							1267	1267		832	832	
vC2, stage 2 conf vol							446	837		636	1286	
vCu, unblocked vol	623			1264			1626	2044	632	1363	2057	210
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			80	99	78	92	99	99
cM capacity (veh/h)	894			546			168	199	423	236	177	746

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	11	818	446	32	509	265	126	26
Volume Left	11	0	0	32	0	0	34	18
Volume Right	0	0	37	0	0	11	91	5
cSH	894	1700	1700	546	1700	1700	584	290
Volume to Capacity	0.01	0.48	0.26	0.06	0.30	0.16	0.22	0.09
Queue Length 95th (ft)	1	0	0	5	0	0	20	7
Control Delay (s)	9.1	0.0	0.0	12.0	0.0	0.0	20.2	19.6
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.5			20.2	19.6
Approach LOS							C	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	1205	40	37	691	2	41	1	43	2	0	6
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583		1776	1583		1770	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.77	1.00		0.73	1.00
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583		1438	1583		1354	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1310	43	40	751	2	45	1	47	2	0	7
RTOR Reduction (vph)	0	0	15	0	0	1	0	0	38	0	0	6
Lane Group Flow (vph)	2	1310	28	40	751	1	0	46	9	0	2	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	77.7	77.7	7.1	83.4	83.4		23.0	23.0		23.0	23.0
Effective Green, g (s)	1.4	77.7	77.7	7.1	83.4	83.4		23.0	23.0		23.0	23.0
Actuated g/C Ratio	0.01	0.65	0.65	0.06	0.70	0.70		0.19	0.19		0.19	0.19
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	19	2291	1024	99	2459	1100		275	303		259	303
v/s Ratio Prot	0.00	c0.37		c0.02	0.21							
v/s Ratio Perm			0.02			0.00		c0.03	0.01		0.00	0.00
v/c Ratio	0.11	0.57	0.03	0.40	0.31	0.00		0.17	0.03		0.01	0.00
Uniform Delay, d1	58.7	11.8	7.6	54.4	7.1	5.6		40.5	39.4		39.3	39.2
Progression Factor	0.64	1.45	2.69	1.15	0.92	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.5	0.0	2.6	0.3	0.0		0.3	0.0		0.1	0.0
Delay (s)	38.6	17.7	20.4	65.0	6.8	5.6		40.8	39.5		39.3	39.3
Level of Service	D	B	C	E	A	A		D	D		D	D
Approach Delay (s)		17.8			9.8			40.1			39.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	888	287	47	474	74	161	4	184	55	2	4
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583	1676	1863	1583	1676	1676	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583	1330	1863	1583	1333	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	965	312	51	515	80	175	4	200	60	2	4
RTOR Reduction (vph)	0	0	84	0	0	32	0	0	142	0	3	0
Lane Group Flow (vph)	7	965	228	51	515	48	175	4	58	60	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	64.9	64.9	7.9	71.4	71.4	35.0	35.0	35.0	35.0	35.0	
Effective Green, g (s)	1.4	64.9	64.9	7.9	71.4	71.4	35.0	35.0	35.0	35.0	35.0	
Actuated g/C Ratio	0.01	0.54	0.54	0.07	0.60	0.60	0.29	0.29	0.29	0.29	0.29	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	19	1914	856	110	2105	941	387	543	461	388	488	
v/s Ratio Prot	0.00	c0.27		c0.03	0.15			0.00			0.00	
v/s Ratio Perm			0.14			0.03	c0.13		0.04	0.05		
v/c Ratio	0.37	0.50	0.27	0.46	0.24	0.05	0.45	0.01	0.13	0.15	0.01	
Uniform Delay, d1	58.9	17.4	14.8	54.0	11.5	10.1	34.7	30.2	31.3	31.5	30.2	
Progression Factor	0.98	1.02	1.39	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.9	0.8	0.6	3.1	0.3	0.1	3.8	0.0	0.6	0.8	0.0	
Delay (s)	67.8	18.6	21.2	57.1	11.8	10.2	38.5	30.2	31.8	32.4	30.2	
Level of Service	E	B	C	E	B	B	D	C	C	C	C	
Approach Delay (s)		19.5			15.2			34.9			32.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	41.2
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	221	865	62	0	18	391	7	0	29	109	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	240	940	67	0	20	425	8	0	32	118	57
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	52.7	23.8	22
HCM LOS	F	C	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	57%	0%	100%	82%	0%	100%	95%	31%
Vol Right, %	27%	0%	0%	18%	0%	0%	5%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	221	577	350	18	261	137	290
LT Vol	29	221	0	0	18	0	0	8
Through Vol	109	0	577	288	0	261	130	90
RT Vol	52	0	0	62	0	0	7	192
Lane Flow Rate	207	240	627	381	20	283	149	315
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.529	0.575	1	0.842	0.05	0.685	0.359	0.749
Departure Headway (Hd)	9.217	8.611	8.089	7.959	9.205	8.7	8.664	8.549
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	390	418	451	453	388	414	413	422
Service Time	6.994	6.397	5.874	5.744	6.98	6.475	6.439	6.317
HCM Lane V/C Ratio	0.531	0.574	1.39	0.841	0.052	0.684	0.361	0.746
HCM Control Delay	22	22.5	71.5	40.9	12.5	28.5	16.3	32.9
HCM Lane LOS	C	C	F	E	B	D	C	D
HCM 95th-tile Q	3	3.5	12.9	8.3	0.2	5	1.6	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	284	472	143	36	170	130	120	1247	60	138	1244	117
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.98		1.00	*0.98	
Frt	1.00	0.97		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	3416		1676	3309		1676	3626		1676	3604	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1676	3416		1676	3309		1676	3626		1676	3604	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	299	497	151	38	179	137	126	1313	63	145	1309	123
RTOR Reduction (vph)	0	24	0	0	112	0	0	3	0	0	6	0
Lane Group Flow (vph)	299	624	0	38	204	0	126	1373	0	145	1426	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	21.0	38.6		4.2	21.8		11.6	48.6		12.6	49.6	
Effective Green, g (s)	21.0	38.6		4.2	21.8		11.6	48.6		12.6	49.6	
Actuated g/C Ratio	0.18	0.32		0.04	0.18		0.10	0.41		0.10	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	1098		58	601		162	1468		175	1489	
v/s Ratio Prot	c0.18	c0.18		0.02	0.06		0.08	0.38		c0.09	c0.40	
v/s Ratio Perm												
v/c Ratio	1.02	0.57		0.66	0.34		0.78	0.94		0.83	0.96	
Uniform Delay, d1	49.5	33.8		57.2	42.8		52.9	34.2		52.6	34.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.35	0.57	
Incremental Delay, d2	57.9	0.7		23.6	0.3		20.6	12.4		17.3	10.5	
Delay (s)	107.4	34.5		80.7	43.2		73.5	46.6		88.6	29.9	
Level of Service	F	C		F	D		E	D		F	C	
Approach Delay (s)		57.5			47.2			48.9			35.3	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	356	36	26	16	16	272	18	1613	7	99	1408	322
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	0.94			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1747			1634		1676	3723		1676	3725	1583
Flt Permitted	0.47	1.00			0.99		0.08	1.00		0.08	1.00	1.00
Satd. Flow (perm)	831	1747			1617		144	3723		144	3725	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	375	38	27	17	17	286	19	1698	7	104	1482	339
RTOR Reduction (vph)	0	16	0	0	50	0	0	0	0	0	0	145
Lane Group Flow (vph)	375	49	0	0	270	0	19	1705	0	104	1482	194
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	51.0	51.0			51.0		50.6	50.6		55.4	55.4	55.4
Effective Green, g (s)	51.0	51.0			51.0		50.6	50.6		55.4	55.4	55.4
Actuated g/C Ratio	0.42	0.42			0.42		0.42	0.42		0.46	0.46	0.46
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	353	742			687		81	1569		148	1719	730
v/s Ratio Prot		0.03					0.00	c0.46		0.04	c0.40	
v/s Ratio Perm	c0.45				0.17		0.10			0.29		0.12
v/c Ratio	1.06	0.07			0.39		0.23	1.09		0.70	0.86	0.27
Uniform Delay, d1	34.5	20.4			23.8		28.8	34.7		52.5	28.9	19.8
Progression Factor	1.00	1.00			1.00		1.07	0.73		1.00	1.00	1.00
Incremental Delay, d2	65.3	0.0			0.1		0.7	44.6		14.0	6.0	0.9
Delay (s)	99.8	20.4			24.0		31.6	70.0		66.5	34.9	20.7
Level of Service	F	C			C		C	E		E	C	C
Approach Delay (s)		88.1			24.0			69.6			34.1	
Approach LOS		F			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1061	0	480	564	0	622	577	1374	712	636	1168	1043
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1117	0	505	594	0	655	607	1446	749	669	1229	1098
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1117	0	505	594	0	655	607	1446	749	669	1229	1098
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	41.0		120.0	41.0		120.0	24.5	34.0	120.0	24.5	34.0	120.0
Effective Green, g (s)	41.0		120.0	41.0		120.0	24.5	34.0	120.0	24.5	34.0	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.20	0.28	1.00	0.20	0.28	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1049		1583	1049		1583	627	1440	1583	627	1440	1583
v/s Ratio Prot							0.20	c0.28		c0.22	0.24	
v/s Ratio Perm	c0.36		0.32	0.19		0.41			0.47			0.69
v/c Ratio	1.06		0.32	0.57		0.41	0.97	1.00	0.47	1.07	0.85	0.69
Uniform Delay, d1	39.5		0.0	32.2		0.0	47.4	43.0	0.0	47.8	40.6	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.8		0.5	0.6		0.8	28.9	24.7	1.0	55.1	6.6	2.5
Delay (s)	86.3		0.5	32.8		0.8	76.3	67.7	1.0	102.9	47.3	2.5
Level of Service	F		A	C		A	E	E	A	F	D	A
Approach Delay (s)		59.6			16.0			51.7			43.3	
Approach LOS		E			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	748	4	272	0	0	0	0	1661	659	536	1580	0
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1900	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	1686	1583					5085	1583	3072	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	1686	1583					5085	1583	3072	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	787	4	286	0	0	0	0	1748	694	564	1663	0
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	384	0	0	0
Lane Group Flow (vph)	393	398	237	0	0	0	0	1748	310	564	1663	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	24.3	24.3	24.3					35.4	35.4	17.8	57.2	
Effective Green, g (s)	24.3	24.3	24.3					35.4	35.4	17.8	57.2	
Actuated g/C Ratio	0.27	0.27	0.27					0.39	0.39	0.20	0.64	
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	430	455	427					2000	622	607	3231	
v/s Ratio Prot								c0.34		c0.18	0.33	
v/s Ratio Perm	c0.25	0.24	0.15						0.20			
v/c Ratio	0.91	0.87	0.56					0.87	0.50	0.93	0.51	
Uniform Delay, d1	31.8	31.4	28.2					25.2	20.6	35.5	8.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.40	0.65	
Incremental Delay, d2	23.6	16.8	1.6					5.7	2.8	17.0	0.5	
Delay (s)	55.5	48.2	29.8					30.9	23.4	66.6	6.2	
Level of Service	E	D	C					C	C	E	A	
Approach Delay (s)		46.0			0.0			28.8			21.5	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	400	4	578	459	1997	0	0	1676	719
Ideal Flow (vphpl)	1900	1900	1900	1800	1900	1800	1700	1900	1900	1900	1900	1800
Total Lost time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor				0.95	0.95	0.88	0.97	0.91			0.91	0.88
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1593	1687	2640	3072	5085			5085	2640
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1593	1687	2640	3072	5085			5085	2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	421	4	608	483	2102	0	0	1764	757
RTOR Reduction (vph)	0	0	0	0	0	51	0	0	0	0	0	424
Lane Group Flow (vph)	0	0	0	210	215	557	483	2102	0	0	1764	333
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				21.4	21.4	21.4	16.5	60.1			39.6	39.6
Effective Green, g (s)				21.4	21.4	21.4	16.5	60.1			39.6	39.6
Actuated g/C Ratio				0.24	0.24	0.24	0.18	0.67			0.44	0.44
Clearance Time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				378	401	627	563	3395			2237	1161
v/s Ratio Prot							c0.16	0.41			c0.35	
v/s Ratio Perm				0.13	0.13	c0.21						0.13
v/c Ratio				0.56	0.54	0.89	0.86	0.62			0.79	0.29
Uniform Delay, d1				30.1	30.0	33.1	35.6	8.5			21.6	16.2
Progression Factor				1.00	1.00	1.00	1.19	0.82			1.00	1.00
Incremental Delay, d2				1.8	1.4	14.3	6.5	0.4			2.9	0.6
Delay (s)				31.9	31.3	47.5	48.7	7.3			24.5	16.8
Level of Service				C	C	D	D	A			C	B
Approach Delay (s)		0.0			41.0			15.1			22.2	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Horizon Year 2038 With Project
Synchro Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	271	62	123	283	521	94	1238	99	771	917	258
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1800	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4918	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4918	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	285	65	129	298	548	99	1303	104	812	965	272
RTOR Reduction (vph)	0	0	56	0	0	87	0	0	67	0	35	0
Lane Group Flow (vph)	317	285	9	129	298	461	99	1303	37	812	1202	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	10.0	17.0	17.0	9.8	16.8	42.8	10.0	43.2	43.2	26.0	59.2	
Effective Green, g (s)	10.0	17.0	17.0	9.8	16.8	42.8	10.0	43.2	43.2	26.0	59.2	
Actuated g/C Ratio	0.08	0.14	0.14	0.08	0.14	0.36	0.08	0.36	0.36	0.22	0.49	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	256	501	224	250	495	941	256	1830	569	665	2426	
v/s Ratio Prot	c0.10	0.08		0.04	c0.08	0.11	0.03	c0.26		c0.26	0.24	
v/s Ratio Perm			0.01			0.07			0.02			
v/c Ratio	1.24	0.57	0.04	0.52	0.60	0.49	0.39	0.71	0.07	1.22	0.50	
Uniform Delay, d1	55.0	48.1	44.5	52.8	48.5	30.1	52.1	33.0	25.2	47.0	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.13	1.11	
Incremental Delay, d2	136.0	1.2	0.1	0.7	1.7	0.1	0.4	2.4	0.2	110.2	0.6	
Delay (s)	191.0	49.3	44.5	53.6	50.2	30.2	52.4	35.4	25.4	163.5	23.3	
Level of Service	F	D	D	D	D	C	D	D	C	F	C	
Approach Delay (s)		116.2			39.4			35.9			78.8	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	63.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	235	744	68	14	639	16	55	36	29	11	13	76
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.93		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3072	5085	1583	3072	5067		1676	3300		3072	3085	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3072	5085	1583	3072	5067		1676	3300		3072	3085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	809	74	15	695	17	60	39	32	12	14	83
RTOR Reduction (vph)	0	0	44	0	2	0	0	19	0	0	54	0
Lane Group Flow (vph)	255	809	30	15	710	0	60	52	0	12	43	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	14.1	44.1	44.1	2.7	32.7		8.2	45.9		1.3	39.0	
Effective Green, g (s)	14.1	44.1	44.1	2.7	32.7		8.2	45.9		1.3	39.0	
Actuated g/C Ratio	0.13	0.40	0.40	0.02	0.30		0.07	0.42		0.01	0.35	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	393	2038	634	75	1506		124	1377		36	1093	
v/s Ratio Prot	c0.08	0.16		0.00	c0.14		c0.04	c0.02		0.00	0.01	
v/s Ratio Perm			0.02									
v/c Ratio	0.65	0.40	0.05	0.20	0.47		0.48	0.04		0.33	0.04	
Uniform Delay, d1	45.6	23.5	20.1	52.6	31.6		48.9	19.0		53.9	23.2	
Progression Factor	1.00	1.00	1.00	0.87	1.34		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	0.6	0.1	1.3	1.0		3.0	0.1		5.4	0.0	
Delay (s)	49.3	24.1	20.3	46.8	43.3		51.8	19.0		59.3	23.3	
Level of Service	D	C	C	D	D		D	B		E	C	
Approach Delay (s)		29.5			43.4			34.0			27.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	289	515	597	125	25	41
Ideal Flow (vphpl)	1800	1900	1900	1900	1700	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.97		0.93	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1676	3539	4953		2935	1365
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1676	3539	4953		2935	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	314	560	649	136	27	45
RTOR Reduction (vph)	0	0	23	0	17	17
Lane Group Flow (vph)	314	560	762	0	32	6
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	26.5	75.0	44.5		27.0	27.0
Effective Green, g (s)	26.5	75.0	44.5		27.0	27.0
Actuated g/C Ratio	0.24	0.68	0.40		0.25	0.25
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	403	2412	2003		720	335
v/s Ratio Prot	c0.19	0.16	c0.15		c0.01	
v/s Ratio Perm						0.00
v/c Ratio	0.78	0.23	0.38		0.04	0.02
Uniform Delay, d1	39.0	6.6	23.1		31.7	31.4
Progression Factor	1.79	0.48	0.71		1.00	1.00
Incremental Delay, d2	8.9	0.2	0.5		0.1	0.1
Delay (s)	78.7	3.4	16.9		31.8	31.5
Level of Service	E	A	B		C	C
Approach Delay (s)		30.4	16.9		31.7	
Approach LOS		C	B		C	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	552	32	46	657	5	52	1	43	0	0	1
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1676	1863	1583	1676	3536		1676	1589			1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	1.00			1.00	
Satd. Flow (perm)	1676	1863	1583	1676	3536		1336	1589			1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	600	35	50	714	5	57	1	47	0	0	1
RTOR Reduction (vph)	0	0	17	0	0	0	0	33	0	0	1	0
Lane Group Flow (vph)	4	600	18	50	719	0	57	15	0	0	0	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	1.4	57.6	57.6	7.2	63.4		33.0	33.0			33.0	
Effective Green, g (s)	1.4	57.6	57.6	7.2	63.4		33.0	33.0			33.0	
Actuated g/C Ratio	0.01	0.52	0.52	0.07	0.58		0.30	0.30			0.30	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	21	975	828	109	2038		400	476			474	
v/s Ratio Prot	0.00	c0.32		c0.03	0.20			0.01			0.00	
v/s Ratio Perm			0.01				c0.04					
v/c Ratio	0.19	0.62	0.02	0.46	0.35		0.14	0.03			0.00	
Uniform Delay, d1	53.7	18.4	12.6	49.5	12.4		28.2	27.2			27.0	
Progression Factor	1.07	1.19	1.01	1.23	1.15		1.00	1.00			1.00	
Incremental Delay, d2	4.3	2.9	0.0	2.9	0.5		0.7	0.1			0.0	
Delay (s)	61.8	24.7	12.8	63.8	14.8		28.9	27.3			27.0	
Level of Service	E	C	B	E	B		C	C			C	
Approach Delay (s)		24.3			17.9			28.2			27.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	543	43	155	700	13	46	1	120	6	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	590	47	168	761	14	50	1	130	7	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	775			637			1340	1734	318	1409	1751	388
vC1, stage 1 conf vol							622	622		1105	1105	
vC2, stage 2 conf vol							718	1112		304	646	
vCu, unblocked vol	613			637			1220	1642	318	1294	1660	198
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			82			83	100	81	97	99	100
cM capacity (veh/h)	897			943			293	222	677	189	200	755

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	393	243	168	507	268	182	10
Volume Left	4	0	0	168	0	0	50	7
Volume Right	0	0	47	0	0	14	130	2
cSH	897	1700	1700	943	1700	1700	942	245
Volume to Capacity	0.00	0.23	0.14	0.18	0.30	0.16	0.19	0.04
Queue Length 95th (ft)	0	0	0	16	0	0	18	3
Control Delay (s)	9.0	0.0	0.0	9.6	0.0	0.0	13.9	21.4
Lane LOS	A			A			B	C
Approach Delay (s)	0.1			1.7			13.9	21.4
Approach LOS							B	C

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	467	233	415	819	26	84	0	313	11	18	5
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.98	1.00
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583		1770	1583		1828	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.91	1.00
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583		1372	1583		1700	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	508	253	451	890	28	91	0	340	12	20	5
RTOR Reduction (vph)	0	0	80	0	0	10	0	0	269	0	0	4
Lane Group Flow (vph)	15	508	173	451	890	18	0	91	71	0	32	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	2.8	39.2	39.2	35.6	72.0	72.0		23.0	23.0		23.0	23.0
Effective Green, g (s)	2.8	39.2	39.2	35.6	72.0	72.0		23.0	23.0		23.0	23.0
Actuated g/C Ratio	0.03	0.36	0.36	0.32	0.65	0.65		0.21	0.21		0.21	0.21
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	42	1261	564	542	2316	1036		286	330		355	330
v/s Ratio Prot	0.01	0.14		c0.27	c0.25							
v/s Ratio Perm			0.11			0.01		c0.07	0.04		0.02	0.00
v/c Ratio	0.36	0.40	0.31	0.83	0.38	0.02		0.32	0.22		0.09	0.00
Uniform Delay, d1	52.7	26.6	25.6	34.4	8.8	6.6		36.9	36.0		35.1	34.4
Progression Factor	1.06	1.24	1.50	1.15	1.26	4.80		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.8	0.9	1.3	8.9	0.4	0.0		0.6	0.3		0.5	0.0
Delay (s)	60.7	33.9	39.8	48.6	11.5	31.9		37.5	36.4		35.6	34.4
Level of Service	E	C	D	D	B	C		D	D		D	C
Approach Delay (s)		36.3			24.1			36.6			35.4	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	388	1	31	635
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	422	1	34	690
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	1180	422			423	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1180	422			423	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			97	
cM capacity (veh/h)	204	631			1136	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	423	724
Volume Left	0	0	34
Volume Right	9	1	0
cSH	631	1700	1136
Volume to Capacity	0.01	0.25	0.03
Queue Length 95th (ft)	1	0	2
Control Delay (s)	10.8	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	0.8
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	762	22	22	1262	4	7	0	7	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	828	24	24	1372	4	8	0	8	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.77			0.90			0.82	0.82	0.90	0.82	0.82	0.77
vC, conflicting volume	1376			852			1589	2279	426	1859	2289	688
vC1, stage 1 conf vol							855	855		1422	1422	
vC2, stage 2 conf vol							734	1424		437	867	
vCu, unblocked vol	879			606			707	1552	131	1037	1563	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			98	100	99	100	100	100
cM capacity (veh/h)	585			869			378	220	802	206	222	830

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	8	552	300	24	914	462	15	0
Volume Left	8	0	0	24	0	0	8	0
Volume Right	0	0	24	0	0	4	8	0
cSH	585	1700	1700	869	1700	1700	514	1700
Volume to Capacity	0.01	0.32	0.18	0.03	0.54	0.27	0.03	0.00
Queue Length 95th (ft)	1	0	0	2	0	0	2	0
Control Delay (s)	11.2	0.0	0.0	9.3	0.0	0.0	12.2	0.0
Lane LOS	B			A			B	A
Approach Delay (s)	0.1			0.2			12.2	0.0
Approach LOS							B	A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	538	138	57	935	47	279	7	92	72	0	2
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583	1676	1863	1583	1676	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.76	1.00	1.00	0.75	1.00	
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583	1335	1863	1583	1328	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	585	150	62	1016	51	303	8	100	78	0	2
RTOR Reduction (vph)	0	0	77	0	0	29	0	0	55	0	1	0
Lane Group Flow (vph)	9	585	73	62	1016	22	303	8	45	78	1	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	40.3	40.3	7.5	46.4	46.4	50.0	50.0	50.0	50.0	50.0	
Effective Green, g (s)	1.4	40.3	40.3	7.5	46.4	46.4	50.0	50.0	50.0	50.0	50.0	
Actuated g/C Ratio	0.01	0.37	0.37	0.07	0.42	0.42	0.45	0.45	0.45	0.45	0.45	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	1296	579	114	1492	667	606	846	719	603	719	
v/s Ratio Prot	0.01	0.17		c0.04	c0.29			0.00			0.00	
v/s Ratio Perm			0.05			0.01	c0.23		0.03	0.06		
v/c Ratio	0.43	0.45	0.13	0.54	0.68	0.03	0.50	0.01	0.06	0.13	0.00	
Uniform Delay, d1	53.9	26.5	23.2	49.6	25.8	18.6	21.2	16.4	16.8	17.4	16.4	
Progression Factor	1.28	0.49	0.19	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.2	1.0	0.4	5.2	2.5	0.1	2.9	0.0	0.2	0.4	0.0	
Delay (s)	81.4	14.1	4.7	54.8	28.3	18.7	24.1	16.5	17.0	17.8	16.4	
Level of Service	F	B	A	D	C	B	C	B	B	B	B	
Approach Delay (s)		13.0			29.3			22.2			17.8	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	1	3	371	166	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	1	3	403	180	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	606	196	212			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	606	196	212			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	459	845	1358			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	407	212
Volume Left	8	3	0
Volume Right	1	0	32
cSH	487	1358	1700
Volume to Capacity	0.02	0.00	0.12
Queue Length 95th (ft)	1	0	0
Control Delay (s)	12.5	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	12.5	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	48.4
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	216	452	52	0	13	586	11	0	82	84	44
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	235	491	57	0	14	637	12	0	89	91	48
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	31.3	56.6	28.8
HCM LOS	D	F	D

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	39%	100%	0%	0%	100%	0%	0%	0%
Vol Thru, %	40%	0%	100%	74%	0%	100%	95%	11%
Vol Right, %	21%	0%	0%	26%	0%	0%	5%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	216	301	203	13	391	206	437
LT Vol	82	216	0	0	13	0	0	0
Through Vol	84	0	301	151	0	391	195	48
RT Vol	44	0	0	52	0	0	11	389
Lane Flow Rate	228	235	328	220	14	425	224	475
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.636	0.619	0.818	0.539	0.038	1	0.564	1
Departure Headway (Hd)	10.032	9.489	8.99	8.81	9.592	9.092	9.055	8.818
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	361	383	403	410	374	399	399	413
Service Time	7.757	7.214	6.715	6.535	7.325	6.826	6.788	6.518
HCM Lane V/C Ratio	0.632	0.614	0.814	0.537	0.037	1.065	0.561	1.15
HCM Control Delay	28.8	26.5	41.4	21.4	12.7	75.9	22.9	74.5
HCM Lane LOS	D	D	E	C	B	F	C	F
HCM 95th-tile Q	4.2	4	7.4	3.1	0.1	12.2	3.4	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	237	169	93	28	159	97	171	1230	27	92	1283	207
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*1.00		1.00	*1.00	
Frt	1.00	0.95		1.00	0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	3351		1676	3338		1676	3714		1676	3648	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1676	3351		1676	3338		1676	3714		1676	3648	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	249	178	98	29	167	102	180	1295	28	97	1351	218
RTOR Reduction (vph)	0	63	0	0	81	0	0	1	0	0	11	0
Lane Group Flow (vph)	249	213	0	29	188	0	180	1322	0	97	1558	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	19.0	35.6		5.2	21.8		15.1	53.9		9.3	48.1	
Effective Green, g (s)	19.0	35.6		5.2	21.8		15.1	53.9		9.3	48.1	
Actuated g/C Ratio	0.16	0.30		0.04	0.18		0.13	0.45		0.08	0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	265	994		72	606		210	1668		129	1462	
v/s Ratio Prot	c0.15	0.06		0.02	c0.06		c0.11	0.36		0.06	c0.43	
v/s Ratio Perm												
v/c Ratio	0.94	0.21		0.40	0.31		0.86	0.79		0.75	1.07	
Uniform Delay, d1	49.9	31.7		55.9	42.6		51.4	28.3		54.2	36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.21	0.66	
Incremental Delay, d2	38.7	0.1		3.7	0.3		27.4	4.0		14.9	39.4	
Delay (s)	88.6	31.8		59.5	42.9		78.8	32.2		80.6	63.3	
Level of Service	F	C		E	D		E	C		F	E	
Approach Delay (s)		58.8			44.5			37.8			64.3	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	52.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	343	6	19	7	0	143	1	1534	21	243	1546	572
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	0.88			0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1648			1619		1676	3718		1676	3725	1583
Flt Permitted	0.60	1.00			0.99		0.08	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1052	1648			1611		148	3718		148	3725	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	361	6	20	7	0	151	1	1615	22	256	1627	602
RTOR Reduction (vph)	0	13	0	0	98	0	0	1	0	0	0	227
Lane Group Flow (vph)	361	13	0	0	60	0	1	1636	0	256	1627	375
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	42.0	42.0			42.0		48.8	48.8		65.0	65.0	65.0
Effective Green, g (s)	42.0	42.0			42.0		48.8	48.8		65.0	65.0	65.0
Actuated g/C Ratio	0.35	0.35			0.35		0.41	0.41		0.54	0.54	0.54
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	368	576			563		72	1511		299	2017	857
v/s Ratio Prot		0.01					0.00	c0.44		0.12	c0.44	
v/s Ratio Perm	c0.34				0.04		0.01			0.34		0.24
v/c Ratio	0.98	0.02			0.11		0.01	1.08		0.86	0.81	0.44
Uniform Delay, d1	38.6	25.6			26.3		29.1	35.6		46.6	22.4	16.5
Progression Factor	1.00	1.00			1.00		1.20	0.67		1.00	1.00	1.00
Incremental Delay, d2	41.5	0.0			0.0		0.0	45.3		20.6	3.6	1.6
Delay (s)	80.1	25.6			26.4		35.1	69.0		67.2	26.0	18.1
Level of Service	F	C			C		D	E		E	C	B
Approach Delay (s)		76.5			26.4			69.0			28.3	
Approach LOS		E			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1088	0	541	498	0	677	484	938	624	686	930	1019
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1183	0	588	541	0	736	526	1020	678	746	1011	1108
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1183	0	588	541	0	736	526	1020	678	746	1011	1108
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	47.0		120.0	47.0		120.0	23.5	24.0	120.0	28.5	29.0	120.0
Effective Green, g (s)	47.0		120.0	47.0		120.0	23.5	24.0	120.0	28.5	29.0	120.0
Actuated g/C Ratio	0.39		1.00	0.39		1.00	0.20	0.20	1.00	0.24	0.24	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1203		1583	1203		1583	601	1017	1583	729	1228	1583
v/s Ratio Prot							0.17	c0.20		c0.24	0.20	
v/s Ratio Perm	c0.39		0.37	0.18		0.46			0.43			0.70
v/c Ratio	0.98		0.37	0.45		0.46	0.88	1.00	0.43	1.02	0.82	0.70
Uniform Delay, d1	36.1		0.0	27.0		0.0	46.8	48.0	0.0	45.8	43.1	0.0
Progression Factor	1.00		1.00	1.00		1.00	0.77	0.76	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.9		0.7	0.2		1.0	11.7	23.8	0.6	39.4	6.3	2.6
Delay (s)	58.0		0.7	27.1		1.0	47.5	60.5	0.6	85.1	49.4	2.6
Level of Service	E		A	C		A	D	E	A	F	D	A
Approach Delay (s)		38.9			12.1			39.2			40.6	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	620	4	520	0	0	0	0	1487	604	593	1863	0
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1900	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	1686	1583					5085	1583	3072	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	1686	1583					5085	1583	3072	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	653	4	547	0	0	0	0	1565	636	624	1961	0
RTOR Reduction (vph)	0	0	45	0	0	0	0	0	428	0	0	0
Lane Group Flow (vph)	326	331	502	0	0	0	0	1565	208	624	1961	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	29.9	29.9	29.9					29.5	29.5	18.1	51.6	
Effective Green, g (s)	29.9	29.9	29.9					29.5	29.5	18.1	51.6	
Actuated g/C Ratio	0.33	0.33	0.33					0.33	0.33	0.20	0.57	
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	529	560	525					1666	518	617	2915	
v/s Ratio Prot								c0.31		c0.20	0.39	
v/s Ratio Perm	0.20	0.20	c0.32						0.13			
v/c Ratio	0.62	0.59	0.96					0.94	0.40	1.01	0.67	
Uniform Delay, d1	25.2	25.0	29.4					29.4	23.4	36.0	13.3	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.27	1.09	
Incremental Delay, d2	2.1	1.7	28.4					11.7	2.3	29.6	0.7	
Delay (s)	27.4	26.6	57.8					41.1	25.7	75.2	15.2	
Level of Service	C	C	E					D	C	E	B	
Approach Delay (s)		41.0			0.0			36.7			29.7	
Approach LOS		D			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	555	10	592	472	1695	0	0	1798	1147
Ideal Flow (vphpl)	1900	1900	1900	1800	1900	1800	1700	1900	1900	1900	1900	1800
Total Lost time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor				0.95	0.95	0.88	0.97	0.91			0.91	0.88
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1593	1688	2640	3072	5085			5085	2640
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1593	1688	2640	3072	5085			5085	2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	584	11	623	497	1784	0	0	1893	1207
RTOR Reduction (vph)	0	0	0	0	0	50	0	0	0	0	0	611
Lane Group Flow (vph)	0	0	0	298	297	573	497	1784	0	0	1893	596
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				23.2	23.2	23.2	17.4	58.3			36.9	36.9
Effective Green, g (s)				23.2	23.2	23.2	17.4	58.3			36.9	36.9
Actuated g/C Ratio				0.26	0.26	0.26	0.19	0.65			0.41	0.41
Clearance Time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				410	435	680	593	3293			2084	1082
v/s Ratio Prot							c0.16	0.35			c0.37	
v/s Ratio Perm				0.19	0.18	c0.22						0.23
v/c Ratio				0.73	0.68	0.84	0.84	0.54			0.91	0.55
Uniform Delay, d1				30.5	30.1	31.7	34.9	8.6			25.0	20.2
Progression Factor				1.00	1.00	1.00	1.27	0.79			1.00	1.00
Incremental Delay, d2				6.3	4.4	9.3	5.8	0.4			7.3	2.0
Delay (s)				36.8	34.5	41.0	50.1	7.1			32.2	22.3
Level of Service				D	C	D	D	A			C	C
Approach Delay (s)		0.0			38.4			16.5			28.4	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	418	735	156	285	403	1041	239	1266	285	844	1172	168
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1800	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4990	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3072	3539	1583	3072	3539	2640	3072	5085	1583	3072	4990	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	440	774	164	300	424	1096	252	1333	300	888	1234	177
RTOR Reduction (vph)	0	0	126	0	0	70	0	0	151	0	14	0
Lane Group Flow (vph)	440	774	38	300	424	1026	252	1333	149	888	1397	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.0	30.5	30.5	12.5	28.0	58.0	12.6	33.0	33.0	30.0	50.4	
Effective Green, g (s)	15.0	30.5	30.5	12.5	28.0	58.0	12.6	33.0	33.0	30.0	50.4	
Actuated g/C Ratio	0.12	0.23	0.23	0.10	0.22	0.45	0.10	0.25	0.25	0.23	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5	3.5	2.0	3.5	
Lane Grp Cap (vph)	354	830	371	295	762	1177	297	1290	401	708	1934	
v/s Ratio Prot	c0.14	0.22		0.10	0.12	c0.20	0.08	c0.26		c0.29	0.28	
v/s Ratio Perm			0.02			0.19			0.09			
v/c Ratio	1.24	0.93	0.10	1.02	0.56	0.87	0.85	1.03	0.37	1.25	0.72	
Uniform Delay, d1	57.5	48.7	39.0	58.8	45.5	32.6	57.8	48.5	40.0	50.0	33.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	131.0	17.0	0.1	56.8	0.7	7.1	18.9	34.1	2.6	125.8	2.4	
Delay (s)	188.5	65.8	39.1	115.5	46.2	39.7	76.7	82.6	42.6	175.8	36.2	
Level of Service	F	E	D	F	D	D	E	F	D	F	D	
Approach Delay (s)		101.8			53.7			75.4			90.1	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	79.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	356	1027	64	24	958	59	58	41	29	94	43	325
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3072	5085	1583	3072	5041		1676	3319		3072	3071	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3072	5085	1583	3072	5041		1676	3319		3072	3071	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	387	1116	70	26	1041	64	63	45	32	102	47	353
RTOR Reduction (vph)	0	0	38	0	6	0	0	22	0	0	241	0
Lane Group Flow (vph)	387	1116	32	26	1099	0	63	55	0	102	159	0
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									
Actuated Green, G (s)	20.2	54.8	54.8	2.4	37.0		8.7	37.5		9.3	38.1	
Effective Green, g (s)	20.2	54.8	54.8	2.4	37.0		8.7	37.5		9.3	38.1	
Actuated g/C Ratio	0.17	0.46	0.46	0.02	0.31		0.07	0.31		0.08	0.32	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	517	2322	722	61	1554		121	1037		238	975	
v/s Ratio Prot	c0.13	0.22		0.01	c0.22		c0.04	0.02		0.03	c0.05	
v/s Ratio Perm			0.02									
v/c Ratio	0.75	0.48	0.04	0.43	0.71		0.52	0.05		0.43	0.16	
Uniform Delay, d1	47.5	22.7	18.1	58.1	36.7		53.6	28.8		52.8	29.5	
Progression Factor	1.00	1.00	1.00	1.09	0.80		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	0.7	0.1	4.6	2.7		4.0	0.1		1.2	0.1	
Delay (s)	53.4	23.4	18.2	68.0	32.2		57.6	28.9		54.1	29.6	
Level of Service	D	C	B	E	C		E	C		D	C	
Approach Delay (s)		30.5			33.0			41.9			34.5	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	77	1089	769	50	138	168
Ideal Flow (vphpl)	1800	1900	1900	1900	1700	1800
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.91		0.97	0.91
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1676	3539	5039		2971	1365
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1676	3539	5039		2971	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	1184	836	54	150	183
RTOR Reduction (vph)	0	0	5	0	54	74
Lane Group Flow (vph)	84	1184	885	0	173	32
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases						4
Actuated Green, G (s)	10.0	76.0	62.0		36.0	36.0
Effective Green, g (s)	10.0	76.0	62.0		36.0	36.0
Actuated g/C Ratio	0.08	0.63	0.52		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	139	2241	2603		891	409
v/s Ratio Prot	0.05	c0.33	0.18		c0.06	
v/s Ratio Perm						0.02
v/c Ratio	0.60	0.53	0.34		0.19	0.08
Uniform Delay, d1	53.1	12.1	17.0		31.2	30.1
Progression Factor	1.37	0.68	1.17		1.00	1.00
Incremental Delay, d2	6.7	0.8	0.3		0.5	0.4
Delay (s)	79.6	9.1	20.3		31.7	30.5
Level of Service	E	A	C		C	C
Approach Delay (s)		13.8	20.3		31.3	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1157	54	25	761	0	22	0	42	4	0	5
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863	1583	1676	3539		1676	1583		1676	1583	
Flt Permitted		1.00	1.00	0.95	1.00		0.75	1.00		0.73	1.00	
Satd. Flow (perm)		1863	1583	1676	3539		1331	1583		1285	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1218	57	26	801	0	23	0	44	4	0	5
RTOR Reduction (vph)	0	0	18	0	0	0	0	33	0	0	4	0
Lane Group Flow (vph)	0	1218	39	26	801	0	23	11	0	4	1	0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)		72.6	72.6	4.2	80.8		31.0	31.0		31.0	31.0	
Effective Green, g (s)		72.6	72.6	4.2	80.8		31.0	31.0		31.0	31.0	
Actuated g/C Ratio		0.60	0.60	0.04	0.67		0.26	0.26		0.26	0.26	
Clearance Time (s)		4.2	4.2	4.0	4.2		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		1127	957	58	2382		343	408		331	408	
v/s Ratio Prot		c0.65		0.02	c0.23			0.01			0.00	
v/s Ratio Perm			0.02				c0.02			0.00		
v/c Ratio		1.08	0.04	0.45	0.34		0.07	0.03		0.01	0.00	
Uniform Delay, d1		23.7	9.6	56.8	8.3		33.6	33.2		33.1	33.0	
Progression Factor		0.84	0.09	1.04	0.69		1.00	1.00		1.00	1.00	
Incremental Delay, d2		50.0	0.1	5.3	0.4		0.4	0.1		0.0	0.0	
Delay (s)		69.9	0.9	64.0	6.1		34.0	33.4		33.1	33.0	
Level of Service		E	A	E	A		C	C		C	C	
Approach Delay (s)		66.8			7.9			33.6			33.1	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	1146	34	29	755	10	31	1	84	17	2	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	1246	37	32	821	11	34	1	91	18	2	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									3			3
Median type		None			TWLTL							
Median storage veh)					2							
Upstream signal (ft)					1305							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	832			1283			1760	2180	641	1534	2193	416
vC1, stage 1 conf vol							1286	1286		889	889	
vC2, stage 2 conf vol							474	895		645	1304	
vCu, unblocked vol	665			1283			1665	2118	641	1422	2132	217
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			79	99	78	92	99	99
cM capacity (veh/h)	854			537			163	192	417	225	171	731

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	11	830	452	32	547	284	126	26
Volume Left	11	0	0	32	0	0	34	18
Volume Right	0	0	37	0	0	11	91	5
cSH	854	1700	1700	537	1700	1700	576	277
Volume to Capacity	0.01	0.49	0.27	0.06	0.32	0.17	0.22	0.09
Queue Length 95th (ft)	1	0	0	5	0	0	21	8
Control Delay (s)	9.3	0.0	0.0	12.1	0.0	0.0	20.6	20.4
Lane LOS	A			B			C	C
Approach Delay (s)	0.1			0.4			20.6	20.4
Approach LOS							C	C

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	51.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	1216	46	41	726	2	59	1	56	2	0	6
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583		1775	1583		1770	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.75	1.00		0.71	1.00
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583		1396	1583		1331	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	1322	50	45	789	2	64	1	61	2	0	7
RTOR Reduction (vph)	0	0	16	0	0	1	0	0	49	0	0	6
Lane Group Flow (vph)	2	1322	34	45	789	1	0	65	12	0	2	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	1.4	77.3	77.3	7.5	83.4	83.4		23.0	23.0		23.0	23.0
Effective Green, g (s)	1.4	77.3	77.3	7.5	83.4	83.4		23.0	23.0		23.0	23.0
Actuated g/C Ratio	0.01	0.64	0.64	0.06	0.70	0.70		0.19	0.19		0.19	0.19
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2		4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	19	2279	1019	104	2459	1100		267	303		255	303
v/s Ratio Prot	0.00	c0.37		c0.03	0.22							
v/s Ratio Perm			0.02			0.00		c0.05	0.01		0.00	0.00
v/c Ratio	0.11	0.58	0.03	0.43	0.32	0.00		0.24	0.04		0.01	0.00
Uniform Delay, d1	58.7	12.1	7.8	54.2	7.2	5.6		41.1	39.5		39.3	39.2
Progression Factor	0.63	1.49	2.51	1.19	0.89	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	0.4	0.0	2.8	0.3	0.0		0.5	0.1		0.1	0.0
Delay (s)	37.9	18.5	19.5	67.2	6.7	5.6		41.6	39.5		39.3	39.3
Level of Service	D	B	B	E	A	A		D	D		D	D
Approach Delay (s)		18.5			10.0			40.6			39.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	31	86	0	10	78
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	34	93	0	11	85
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						370
pX, platoon unblocked						
vC, conflicting volume	200	93			93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200	93			93	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			99	
cM capacity (veh/h)	783	964			1501	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	35	93	96
Volume Left	1	0	11
Volume Right	34	0	0
cSH	957	1700	1501
Volume to Capacity	0.04	0.05	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	8.9	0.0	0.9
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	0.9
Approach LOS	A		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1272	7	7	753	0	22	0	22	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1383	8	8	818	0	24	0	24	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		672			648							
pX, platoon unblocked	0.92			0.78			0.82	0.82	0.78	0.82	0.82	0.92
vC, conflicting volume	818			1390			1811	2220	695	1549	2224	409
vC1, stage 1 conf vol							1386	1386		834	834	
vC2, stage 2 conf vol							424	834		715	1390	
vCu, unblocked vol	631			933			1111	1611	40	791	1615	186
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			89	100	97	100	100	100
cM capacity (veh/h)	873			568			217	233	796	364	227	759

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	922	468	8	546	273	48	0
Volume Left	0	0	0	8	0	0	24	0
Volume Right	0	0	8	0	0	0	24	0
cSH	1700	1700	1700	568	1700	1700	341	1700
Volume to Capacity	0.00	0.54	0.28	0.01	0.32	0.16	0.14	0.00
Queue Length 95th (ft)	0	0	0	1	0	0	12	0
Control Delay (s)	0.0	0.0	0.0	11.4	0.0	0.0	17.3	0.0
Lane LOS				B			C	A
Approach Delay (s)	0.0			0.1			17.3	0.0
Approach LOS							C	A

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	923	291	53	485	74	174	4	201	55	2	4
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1676	3539	1583	1676	3539	1583	1676	1863	1583	1676	1676	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.75	1.00	1.00	0.76	1.00	
Satd. Flow (perm)	1676	3539	1583	1676	3539	1583	1330	1863	1583	1333	1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1003	316	58	527	80	189	4	218	60	2	4
RTOR Reduction (vph)	0	0	85	0	0	38	0	0	119	0	3	0
Lane Group Flow (vph)	7	1003	231	58	527	42	189	4	99	60	3	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			3			3	
Permitted Phases			2			6	3		3	3		
Actuated Green, G (s)	1.4	55.7	55.7	8.1	62.4	62.4	44.0	44.0	44.0	44.0	44.0	
Effective Green, g (s)	1.4	55.7	55.7	8.1	62.4	62.4	44.0	44.0	44.0	44.0	44.0	
Actuated g/C Ratio	0.01	0.46	0.46	0.07	0.52	0.52	0.37	0.37	0.37	0.37	0.37	
Clearance Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	19	1642	734	113	1840	823	487	683	580	488	614	
v/s Ratio Prot	0.00	c0.28		c0.03	0.15			0.00			0.00	
v/s Ratio Perm			0.15			0.03	c0.14		0.06	0.05		
v/c Ratio	0.37	0.61	0.32	0.51	0.29	0.05	0.39	0.01	0.17	0.12	0.01	
Uniform Delay, d1	58.9	24.0	20.2	54.0	16.2	14.2	28.1	24.1	25.7	25.2	24.1	
Progression Factor	1.03	0.86	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.0	1.4	1.0	3.9	0.4	0.1	2.3	0.0	0.6	0.5	0.0	
Delay (s)	70.7	22.1	21.4	57.9	16.6	14.3	30.4	24.1	26.3	25.7	24.1	
Level of Service	E	C	C	E	B	B	C	C	C	C	C	
Approach Delay (s)		22.2			20.0			28.2			25.6	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	3	1	348	337	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	3	1	378	366	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					305	
pX, platoon unblocked						
vC, conflicting volume	752	372	377			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	752	372	377			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	100	100			
cM capacity (veh/h)	378	674	1181			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	36	379	377
Volume Left	33	1	0
Volume Right	3	0	11
cSH	393	1181	1700
Volume to Capacity	0.09	0.00	0.22
Queue Length 95th (ft)	7	0	0
Control Delay (s)	15.1	0.0	0.0
Lane LOS	C	A	
Approach Delay (s)	15.1	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	43.5
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	221	916	62	0	18	408	7	0	29	109	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	240	996	67	0	20	443	8	0	32	118	57
Number of Lanes	0	1	2	0	0	1	2	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	3	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	3
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	3
HCM Control Delay	55.7	25.6	22.4
HCM LOS	F	D	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	15%	100%	0%	0%	100%	0%	0%	3%
Vol Thru, %	57%	0%	100%	83%	0%	100%	95%	31%
Vol Right, %	27%	0%	0%	17%	0%	0%	5%	66%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	221	611	367	18	272	143	290
LT Vol	29	221	0	0	18	0	0	8
Through Vol	109	0	611	305	0	272	136	90
RT Vol	52	0	0	62	0	0	7	192
Lane Flow Rate	207	240	664	399	20	296	155	315
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.534	0.579	1	0.891	0.05	0.719	0.376	0.756
Departure Headway (Hd)	9.311	8.683	8.16	8.036	9.254	8.749	8.714	8.637
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	386	413	445	447	386	411	412	419
Service Time	7.091	6.47	5.947	5.823	7.029	6.524	6.489	6.408
HCM Lane V/C Ratio	0.536	0.581	1.492	0.893	0.052	0.72	0.376	0.752
HCM Control Delay	22.4	22.8	71.9	48.4	12.5	31.1	16.7	33.8
HCM Lane LOS	C	C	F	E	B	D	C	D
HCM 95th-tile Q	3	3.5	12.8	9.5	0.2	5.5	1.7	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	331	473	146	36	170	130	122	1247	60	138	1244	132
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	*0.98		1.00	*0.98	
Frt	1.00	0.96		1.00	0.93		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1676	3414		1676	3309		1676	3626		1676	3598	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1676	3414		1676	3309		1676	3626		1676	3598	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	348	498	154	38	179	137	128	1313	63	145	1309	139
RTOR Reduction (vph)	0	25	0	0	112	0	0	3	0	0	7	0
Lane Group Flow (vph)	348	627	0	38	204	0	128	1373	0	145	1441	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	23.0	40.0		4.8	21.8		11.3	46.1		13.1	47.9	
Effective Green, g (s)	23.0	40.0		4.8	21.8		11.3	46.1		13.1	47.9	
Actuated g/C Ratio	0.19	0.33		0.04	0.18		0.09	0.38		0.11	0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	1138		67	601		157	1392		182	1436	
v/s Ratio Prot	c0.21	c0.18		0.02	0.06		0.08	0.38		c0.09	c0.40	
v/s Ratio Perm												
v/c Ratio	1.08	0.55		0.57	0.34		0.82	0.99		0.80	1.00	
Uniform Delay, d1	48.5	32.7		56.6	42.8		53.3	36.6		52.2	36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.51	0.43	
Incremental Delay, d2	74.5	0.6		10.6	0.3		26.7	21.1		13.9	19.6	
Delay (s)	123.0	33.2		67.1	43.2		80.0	57.7		92.9	35.2	
Level of Service	F	C		E	D		E	E		F	D	
Approach Delay (s)		64.5			45.7			59.6			40.4	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	356	36	26	16	16	272	18	1660	7	99	1423	322
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	*1.00		1.00	*1.00	1.00
Frt	1.00	0.94			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1676	1747			1634		1676	3723		1676	3725	1583
Flt Permitted	0.46	1.00			0.99		0.08	1.00		0.08	1.00	1.00
Satd. Flow (perm)	814	1747			1617		141	3723		141	3725	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	375	38	27	17	17	286	19	1747	7	104	1498	339
RTOR Reduction (vph)	0	16	0	0	62	0	0	0	0	0	0	144
Lane Group Flow (vph)	375	49	0	0	258	0	19	1754	0	104	1498	195
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	49.0	49.0			49.0		51.6	51.6		57.4	57.4	57.4
Effective Green, g (s)	49.0	49.0			49.0		51.6	51.6		57.4	57.4	57.4
Actuated g/C Ratio	0.41	0.41			0.41		0.43	0.43		0.48	0.48	0.48
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0		3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	332	713			660		81	1600		162	1781	757
v/s Ratio Prot		0.03					0.00	c0.47		0.04	c0.40	
v/s Ratio Perm	c0.46				0.16		0.10			0.27		0.12
v/c Ratio	1.13	0.07			0.39		0.23	1.10		0.64	0.84	0.26
Uniform Delay, d1	35.5	21.6			25.0		28.1	34.2		51.5	27.3	18.6
Progression Factor	1.00	1.00			1.00		1.03	0.69		1.00	1.00	1.00
Incremental Delay, d2	89.2	0.0			0.1		0.5	47.4		8.4	5.0	0.8
Delay (s)	124.7	21.6			25.1		29.6	71.1		59.9	32.3	19.4
Level of Service	F	C			C		C	E		E	C	B
Approach Delay (s)		109.5			25.1			70.6			31.6	
Approach LOS		F			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	54.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1061	0	494	564	0	622	620	1377	712	636	1169	1043
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0		4.0	6.0		4.0	7.5	7.0	4.0	7.5	7.0	4.0
Lane Util. Factor	0.97		1.00	0.97		1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00		0.85	1.00		0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3072		1583	3072		1583	3072	5085	1583	3072	5085	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1117	0	520	594	0	655	653	1449	749	669	1231	1098
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1117	0	520	594	0	655	653	1449	749	669	1231	1098
Turn Type	Perm		Free	Perm		Free	Prot	NA	Free	Prot	NA	Free
Protected Phases							5	2		1	6	
Permitted Phases	3		Free	7		Free			Free			Free
Actuated Green, G (s)	41.0		120.0	41.0		120.0	26.5	34.0	120.0	24.5	32.0	120.0
Effective Green, g (s)	41.0		120.0	41.0		120.0	26.5	34.0	120.0	24.5	32.0	120.0
Actuated g/C Ratio	0.34		1.00	0.34		1.00	0.22	0.28	1.00	0.20	0.27	1.00
Clearance Time (s)	6.0			6.0			7.5	7.0		7.5	7.0	
Vehicle Extension (s)	2.5			2.5			2.0	5.0		3.5	5.0	
Lane Grp Cap (vph)	1049		1583	1049		1583	678	1440	1583	627	1356	1583
v/s Ratio Prot							0.21	c0.28		0.22	c0.24	
v/s Ratio Perm	c0.36		0.33	0.19		0.41			0.47			c0.69
v/c Ratio	1.06		0.33	0.57		0.41	0.96	1.01	0.47	1.07	0.91	0.69
Uniform Delay, d1	39.5		0.0	32.2		0.0	46.3	43.0	0.0	47.8	42.6	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.8		0.6	0.6		0.8	26.6	25.2	1.0	55.1	10.4	2.5
Delay (s)	86.3		0.6	32.8		0.8	72.9	68.2	1.0	102.9	53.0	2.5
Level of Service	F		A	C		A	E	E	A	F	D	A
Approach Delay (s)		59.0			16.0			51.6			45.7	
Approach LOS		E			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	748	4	272	0	0	0	0	1664	702	536	1595	0
Ideal Flow (vphpl)	1800	1900	1900	1900	1900	1900	1900	1900	1900	1700	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Lane Util. Factor	0.95	0.95	1.00					0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1593	1686	1583					5085	1583	3072	5085	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1593	1686	1583					5085	1583	3072	5085	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	787	4	286	0	0	0	0	1752	739	564	1679	0
RTOR Reduction (vph)	0	0	49	0	0	0	0	0	384	0	0	0
Lane Group Flow (vph)	393	398	237	0	0	0	0	1752	355	564	1679	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	24.3	24.3	24.3					35.4	35.4	17.8	57.2	
Effective Green, g (s)	24.3	24.3	24.3					35.4	35.4	17.8	57.2	
Actuated g/C Ratio	0.27	0.27	0.27					0.39	0.39	0.20	0.64	
Clearance Time (s)	4.0	4.0	4.0					4.5	4.5	4.0	4.5	
Vehicle Extension (s)	3.0	3.0	3.0					2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	430	455	427					2000	622	607	3231	
v/s Ratio Prot								c0.34		c0.18	0.33	
v/s Ratio Perm	c0.25	0.24	0.15						0.22			
v/c Ratio	0.91	0.87	0.56					0.88	0.57	0.93	0.52	
Uniform Delay, d1	31.8	31.4	28.2					25.3	21.4	35.5	8.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.32	0.88	
Incremental Delay, d2	23.6	16.8	1.6					5.8	3.8	14.6	0.4	
Delay (s)	55.5	48.2	29.8					31.0	25.1	61.4	8.2	
Level of Service	E	D	C					C	C	E	A	
Approach Delay (s)		46.0			0.0			29.3			21.6	
Approach LOS		D			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	414	4	578	459	2000	0	0	1677	719
Ideal Flow (vphpl)	1900	1900	1900	1800	1900	1800	1700	1900	1900	1900	1900	1800
Total Lost time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Lane Util. Factor				0.95	0.95	0.88	0.97	0.91			0.91	0.88
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1593	1687	2640	3072	5085			5085	2640
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1593	1687	2640	3072	5085			5085	2640
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	436	4	608	483	2105	0	0	1765	757
RTOR Reduction (vph)	0	0	0	0	0	50	0	0	0	0	0	442
Lane Group Flow (vph)	0	0	0	218	222	558	483	2105	0	0	1765	315
Turn Type				Perm	NA	Perm	Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				23.4	23.4	23.4	16.7	58.1			37.4	37.4
Effective Green, g (s)				23.4	23.4	23.4	16.7	58.1			37.4	37.4
Actuated g/C Ratio				0.26	0.26	0.26	0.19	0.65			0.42	0.42
Clearance Time (s)				4.0	4.0	4.0	4.0	4.5			4.5	4.5
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				414	438	686	570	3282			2113	1097
v/s Ratio Prot							c0.16	0.41			c0.35	
v/s Ratio Perm				0.14	0.13	c0.21						0.12
v/c Ratio				0.53	0.51	0.81	0.85	0.64			0.84	0.29
Uniform Delay, d1				28.6	28.4	31.3	35.4	9.6			23.5	17.5
Progression Factor				1.00	1.00	1.00	1.17	0.88			1.00	1.00
Incremental Delay, d2				1.2	0.9	7.3	5.8	0.5			4.1	0.7
Delay (s)				29.8	29.3	38.6	47.2	8.9			27.6	18.1
Level of Service				C	C	D	D	A			C	B
Approach Delay (s)		0.0			34.8			16.1			24.8	
Approach LOS		A			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX L

Traffic Signal Warrants

Michael Baker
INTERNATIONAL

HORIZON YEAR 2038 WITH PROJECT CONDITIONS
PEAK HOUR VOLUME WARRANT
URBAN CONDITIONS

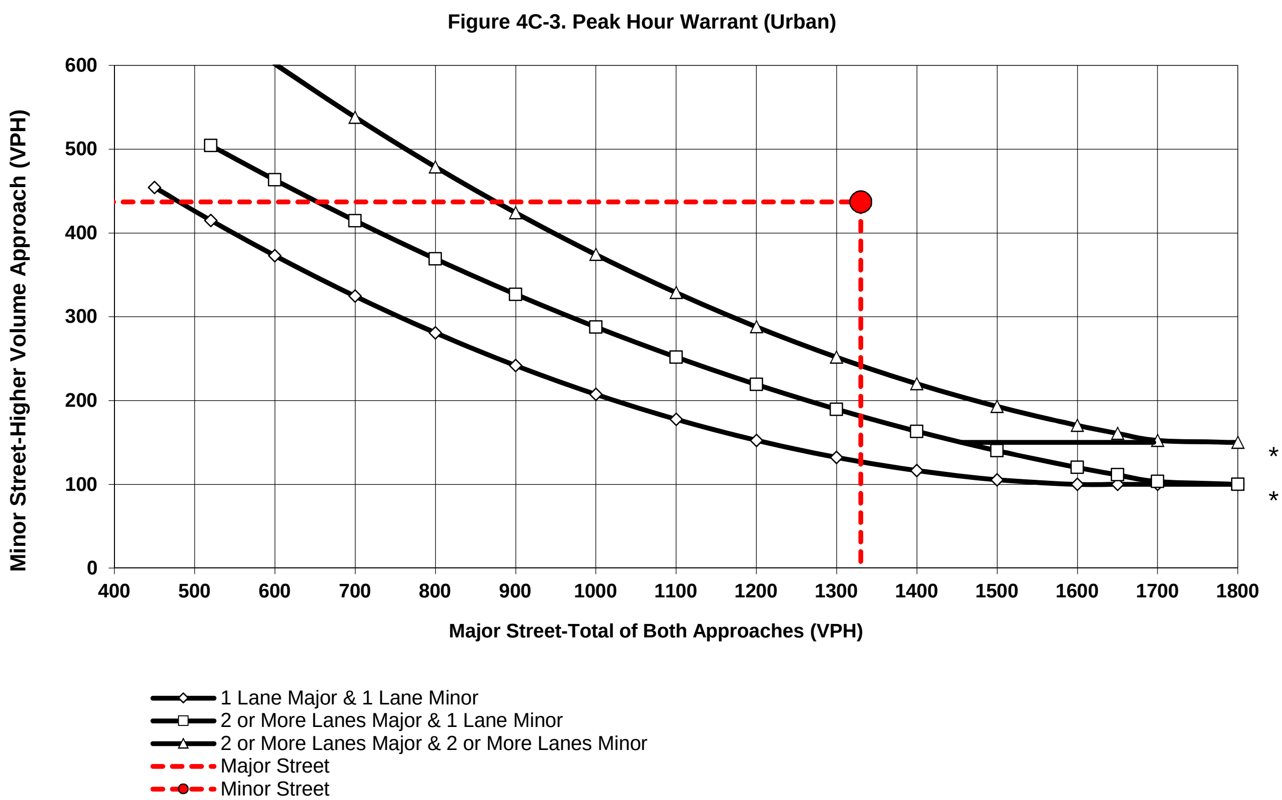
Peak Hour: **AM**

Major Street: **Slover Avenue** **Minor Street:** **Linden Avenue**

Total of Both Approaches (VPH): **1330**
Number of Approach Lanes: **2**

Higher Volume Approach (VPH): **437**
Number of Approach Lanes: **1**

SIGNAL WARRANT SATISFIED



* Note:
150 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Horizon Year 2038 With Project Conditions
AM Peak Hour Volume Warrant
Slover Avenue / Linden Avenue

HORIZON YEAR 2038 WITH PROJECT CONDITIONS
PEAK HOUR VOLUME WARRANT
URBAN CONDITIONS

Peak Hour: **PM**

Major Street: **Slover Avenue**

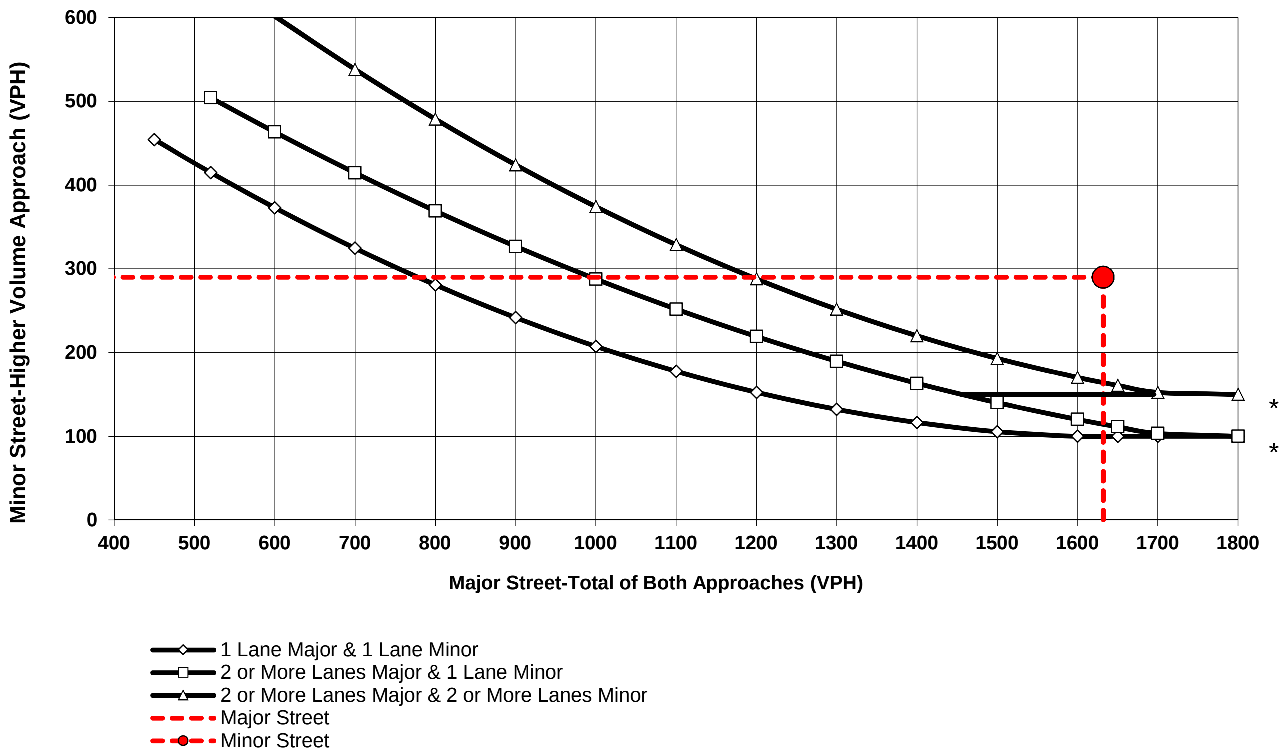
Total of Both Approaches (VPH): **1632**
Number of Approach Lanes: **2**

Minor Street: **Linden Avenue**

Higher Volume Approach (VPH): **290**
Number of Approach Lanes: **1**

SIGNAL WARRANT SATISFIED

Figure 4C-3. Peak Hour Warrant (Urban)



* Note:
150 vph Applies as the Lower Threshold Volume for a Minor Street Approach with Two or More Lanes and 100 vph Applies as the Lower Threshold Volume for a Minor Street Approach with One Lane.

Source: California MUTCD 2014 Revision 1

Horizon Year 2038 With Project Conditions
PM Peak Hour Volume Warrant
Slover Avenue / Linden Avenue

Bloomington Business Center

TRAFFIC IMPACT ANALYSIS

APPENDIX M

Fair Share Contribution Calculations and Mitigation Synchro Worksheets

Michael Baker

INTERNATIONAL

11. Slover Avenue / Linden Avenue
Horizon Year 2038
AM Peak Hour

Movement	Existing	Horizon Year 2038 Without Project	Horizon Year 2038 With Project
NBL	77	94	94
NBT	1,019	1,238	1,238
NBR	79	96	99
SBL	542	724	771
SBT	756	917	917
SBR	213	258	258
EBL	249	301	301
EBT	212	268	271
EBR	51	62	62
WBL	101	122	123
WBT	228	282	283
WBR	381	508	521
Total	**3908**	**4870**	**4938**

Project Trips (With Project - No Project) >>	68
Intersection Volume Increase (Horizon Year With Project - Existing) >>	1,030
Fair Share % (Project Trips / Total Existing to Cumulative Volume Increase) >>	**6.6%**

11. Slover Avenue / Linden Avenue
Horizon Year 2038
PM Peak Hour

Movement	Existing	Horizon Year 2038 Without Project	Horizon Year 2038 With Project
NBL	197	239	239
NBT	1,042	1,266	1,266
NBR	235	284	285
SBL	642	829	844
SBT	967	1,172	1,172
SBR	139	168	168
EBL	345	418	418
EBT	601	734	735
EBR	129	156	156
WBL	233	282	285
WBT	320	400	403
WBR	759	994	1,041
Total	**5609**	**6942**	**7012**

Project Trips (With Project - No Project) >>	70
Intersection Volume Increase (Horizon Year With Project - Existing) >>	1,403
Fair Share % (Project Trips / Total Existing to Cumulative Volume Increase) >>	**5.0%**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	348	608	130	238	326	814	199	1052	238	663	977	140
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	*0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	6245		2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	6245		2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	366	640	137	251	343	857	209	1107	251	698	1028	147
RTOR Reduction (vph)	0	0	107	0	0	70	0	31	0	0	13	0
Lane Group Flow (vph)	366	640	30	251	343	787	209	1327	0	698	1162	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	16.0	28.6	28.6	13.1	25.7	57.7	13.4	32.3		32.0	50.9	
Effective Green, g (s)	16.0	28.6	28.6	13.1	25.7	57.7	13.4	32.3		32.0	50.9	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.20	0.44	0.10	0.25		0.25	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5		2.0	3.5	
Lane Grp Cap (vph)	355	737	330	291	662	1171	297	1551		711	1850	
v/s Ratio Prot	0.13	c0.19		c0.09	0.10	0.17	0.07	c0.21		c0.24	0.25	
v/s Ratio Perm			0.02			0.13						
v/c Ratio	1.03	0.87	0.09	0.86	0.52	0.67	0.70	0.86		0.98	0.63	
Uniform Delay, d1	57.0	48.9	40.4	57.6	46.6	28.7	56.4	46.6		48.7	31.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	56.0	10.5	0.1	21.5	0.5	1.2	6.1	6.3		29.0	1.6	
Delay (s)	113.0	59.4	40.4	79.1	47.1	29.9	62.4	52.9		77.7	33.5	
Level of Service	F	E	D	E	D	C	E	D		E	C	
Approach Delay (s)		74.3			42.5			54.2			50.0	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	348	613	130	238	336	875	199	1055	238	706	977	140
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	*0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	2891	3353	1500	2891	3353	2640	2891	6246		2891	4727	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	2891	3353	1500	2891	3353	2640	2891	6246		2891	4727	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	366	645	137	251	354	921	209	1111	251	743	1028	147
RTOR Reduction (vph)	0	0	107	0	0	69	0	31	0	0	14	0
Lane Group Flow (vph)	366	645	30	251	354	852	209	1331	0	743	1161	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	15.0	28.8	28.8	12.9	26.7	58.7	13.4	32.3		32.0	50.9	
Effective Green, g (s)	15.0	28.8	28.8	12.9	26.7	58.7	13.4	32.3		32.0	50.9	
Actuated g/C Ratio	0.12	0.22	0.22	0.10	0.21	0.45	0.10	0.25		0.25	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5		2.0	3.5	
Lane Grp Cap (vph)	333	742	332	286	688	1192	297	1551		711	1850	
v/s Ratio Prot	c0.13	c0.19		c0.09	0.11	0.18	0.07	c0.21		c0.26	0.25	
v/s Ratio Perm			0.02			0.15						
v/c Ratio	1.10	0.87	0.09	0.88	0.51	0.71	0.70	0.86		1.05	0.63	
Uniform Delay, d1	57.5	48.8	40.2	57.8	45.9	28.9	56.4	46.7		49.0	31.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	78.6	10.5	0.1	24.1	0.5	1.7	6.1	6.4		46.1	1.6	
Delay (s)	136.1	59.3	40.3	81.8	46.4	30.6	62.4	53.1		95.1	33.5	
Level of Service	F	E	D	F	D	C	E	D		F	C	
Approach Delay (s)		81.5			42.7			54.3			57.4	
Approach LOS		F			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	57.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	271	62	123	283	521	94	1238	99	771	917	258
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1800	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	*0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3072	3539	1583	3072	3539	2640	3072	6705		3072	4918	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3072	3539	1583	3072	3539	2640	3072	6705		3072	4918	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	317	285	65	129	298	548	99	1303	104	812	965	272
RTOR Reduction (vph)	0	0	56	0	0	86	0	10	0	0	35	0
Lane Group Flow (vph)	317	285	9	129	298	462	99	1397	0	812	1202	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	10.0	17.0	17.0	9.8	16.8	43.8	10.0	42.2		27.0	59.2	
Effective Green, g (s)	10.0	17.0	17.0	9.8	16.8	43.8	10.0	42.2		27.0	59.2	
Actuated g/C Ratio	0.08	0.14	0.14	0.08	0.14	0.36	0.08	0.35		0.22	0.49	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5		2.0	3.5	
Lane Grp Cap (vph)	256	501	224	250	495	963	256	2357		691	2426	
v/s Ratio Prot	c0.10	0.08		0.04	c0.08	0.11	0.03	c0.21		c0.26	0.24	
v/s Ratio Perm			0.01			0.07						
v/c Ratio	1.24	0.57	0.04	0.52	0.60	0.48	0.39	0.59		1.18	0.50	
Uniform Delay, d1	55.0	48.1	44.5	52.8	48.5	29.3	52.1	31.9		46.5	20.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.99	1.02	
Incremental Delay, d2	136.0	1.2	0.1	0.7	1.7	0.1	0.4	1.1		90.9	0.6	
Delay (s)	191.0	49.3	44.5	53.6	50.2	29.5	52.4	33.0		137.1	21.4	
Level of Service	F	D	D	D	D	C	D	C		F	C	
Approach Delay (s)		116.2			39.0			34.2			67.2	
Approach LOS		F			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	418	735	156	285	403	1041	239	1266	285	844	1172	168
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1800	1700	1900	1900	1700	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.88	0.97	*0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3072	3539	1583	3072	3539	2640	3072	6594		3072	4990	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3072	3539	1583	3072	3539	2640	3072	6594		3072	4990	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	440	774	164	300	424	1096	252	1333	300	888	1234	177
RTOR Reduction (vph)	0	0	126	0	0	70	0	31	0	0	14	0
Lane Group Flow (vph)	440	774	38	300	424	1026	252	1602	0	888	1397	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	15.0	30.5	30.5	12.5	28.0	58.0	12.6	33.0		30.0	50.4	
Effective Green, g (s)	15.0	30.5	30.5	12.5	28.0	58.0	12.6	33.0		30.0	50.4	
Actuated g/C Ratio	0.12	0.23	0.23	0.10	0.22	0.45	0.10	0.25		0.23	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	1.5	2.5	2.5	1.5	2.5	2.0	2.0	3.5		2.0	3.5	
Lane Grp Cap (vph)	354	830	371	295	762	1177	297	1673		708	1934	
v/s Ratio Prot	c0.14	0.22		0.10	0.12	c0.20	0.08	c0.24		c0.29	0.28	
v/s Ratio Perm			0.02			0.19						
v/c Ratio	1.24	0.93	0.10	1.02	0.56	0.87	0.85	0.96		1.25	0.72	
Uniform Delay, d1	57.5	48.7	39.0	58.8	45.5	32.6	57.8	47.8		50.0	33.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	131.0	17.0	0.1	56.8	0.7	7.1	18.9	14.0		125.8	2.4	
Delay (s)	188.5	65.8	39.1	115.5	46.2	39.7	76.7	61.8		175.8	36.2	
Level of Service	F	E	D	F	D	D	E	E		F	D	
Approach Delay (s)		101.8			53.7			63.8			90.1	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	76.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	452	52	13	586	11	82	84	44	1	48	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			0.97			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1770	3484		1770	3529			1775			1639	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (perm)	1770	3484		1770	3529			1775			1639	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	235	491	57	14	637	12	89	91	48	1	52	423
RTOR Reduction (vph)	0	8	0	0	1	0	0	8	0	0	261	0
Lane Group Flow (vph)	235	540	0	14	648	0	0	220	0	0	215	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	18.1	46.2		2.8	30.9			18.0			27.0	
Effective Green, g (s)	18.1	46.2		2.8	30.9			18.0			27.0	
Actuated g/C Ratio	0.16	0.42		0.03	0.28			0.16			0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	291	1463		45	991			290			402	
v/s Ratio Prot	c0.13	0.16		0.01	c0.18			c0.12			c0.13	
v/s Ratio Perm												
v/c Ratio	0.81	0.37		0.31	0.65			0.76			0.53	
Uniform Delay, d1	44.3	21.9		52.7	34.8			43.9			36.0	
Progression Factor	1.18	1.51		1.00	1.00			1.00			1.00	
Incremental Delay, d2	14.4	0.7		3.9	3.4			16.8			5.0	
Delay (s)	66.5	33.7		56.6	38.2			60.7			41.1	
Level of Service	E	C		E	D			E			D	
Approach Delay (s)		43.6			38.6			60.7			41.1	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	916	62	18	408	7	29	109	52	8	90	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.96			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3506		1770	3530			1780			1694	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (perm)	1770	3506		1770	3530			1780			1694	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	240	996	67	20	443	8	32	118	57	9	98	209
RTOR Reduction (vph)	0	4	0	0	1	0	0	12	0	0	64	0
Lane Group Flow (vph)	240	1059	0	20	450	0	0	195	0	0	252	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	19.4	47.2		2.8	30.6			19.0			25.0	
Effective Green, g (s)	19.4	47.2		2.8	30.6			19.0			25.0	
Actuated g/C Ratio	0.18	0.43		0.03	0.28			0.17			0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	312	1504		45	981			307			385	
v/s Ratio Prot	c0.14	c0.30		0.01	0.13			c0.11			c0.15	
v/s Ratio Perm												
v/c Ratio	0.77	0.70		0.44	0.46			0.63			0.65	
Uniform Delay, d1	43.2	25.7		52.8	32.9			42.3			38.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	10.9	2.8		6.9	1.5			9.6			8.4	
Delay (s)	54.0	28.5		59.7	34.4			51.9			47.0	
Level of Service	D	C		E	C			D			D	
Approach Delay (s)		33.2			35.5			51.9			47.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Truck Trip Generation Study

City of Fontana
County of San Bernardino
State of California

August 2003

TRUCK TRIP GENERATION STUDY

CITY OFFICIALS

Honorable Mark Nuaimi, Mayor
Honorable Janice Rutherford, Mayor Pro Tem
Honorable John B. Roberts, Council Member
Honorable Josie Gonzales, Council Member
Honorable Acquanetta Warren, Council Member
Kenneth R. Hunt, City Manager

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Traffic Counts by

Counts Unlimited

Barbara Sackett, President

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CITY OF FONTANA

Location

The City of Fontana is located in Southern California in the southwestern portion of San Bernardino County. Fontana is situated approximately 50 miles east of the City of Los Angeles, approximately 110 miles north of the City of San Diego, and approximately 15 miles west of the Cities of Riverside and San Bernardino. The City is bordered to the north by the San Bernardino National Forest, to the east by the City of Rialto, and to the west by the City of Rancho Cucamonga, and by the City of Ontario, the Jurupa Hills and the unincorporated areas of Riverside County located to the south. The region in which Fontana is located is often referred to as the Inland Empire.

History

In 1913, the town site of Fontana was officially founded by A.B. Miller between Foothill Boulevard and the Santa Fe railroad line. Over 4,000 people from the local area showed up on June 7, 1913, to celebrate the opening of the town site. The first three prominent buildings erected in the town site, the grammar school, packing house, and Pacific Electric Railway Depot, were constructed in 1914.

During the period extending from 1915 through 1920, agricultural activity in the region was extremely successful. During this time, water development ensued and the planting of citrus and deciduous orchards expanded. The orchards produced numerous varieties of oranges, along with lemons and seedless grapefruit. The Fontana Development Company continued to increase the acreage being planted and, by the end of 1920, approximately 5,000 acres of citrus orchards and approximately 12,000 acres of deciduous orchards had been planted. In addition, approximately 1,000 acres of peanuts, barley, sweet potatoes, hay, and the like had been cultivated, and grapes, poultry, and swine were also leading commodities. Diversifications of the agricultural industry in the Fontana area, in addition to the entire Southern California region, were in no small part due to the efforts of A.B. Miller.

The popularity of Fontana as a prime location for establishing an orchard, vineyard, or poultry house led to a dramatic rise in the population within the community. From 1924 to 1926, the City of Fontana doubled in size, reaching an estimated population of 4,200 citizens. Although the reliance on agriculture and livestock would dominate Fontana until the early 1940s, economic change was on the horizon.

In 1942, the economic focus of the City of Fontana was shifted with the opening of the Kaiser Steel Mill. By the end of the 1940s, there were over 8,000 people employed by Kaiser Steel in Fontana, with a payroll of approximately $38 million (approximately $262 million in year 2000 dollars, when adjusted for inflation). In an attempt to keep pace with Fontana's rapidly growing population, residential development also flourished and, during 1949, building permits totaled $16,197,525 (approximately $112 million in year 2000 dollars). The result of this industrial boom meant that the orchards, which had once dominated the Fontana landscape, were being replaced by companies such as the Basalt Rock Company (manufacturers of steel and concrete pipe), the Western Steel Company, the Taylor Forge and Pipe Works, the Graver Tank and Manufacturing Company (manufacturers of steel tanks), and the West Coast Loading Corporation (manufacturers of flares).

The City of Fontana was incorporated June 25, 1952, during this boom in the economy. By 1954, Fontana's population totaled approximately 15,000 residents. The economy of Fontana continued to be dominated by the steel industry until the late 1970s, when Kaiser Steel began to reduce production and trimmed their workforce. In 1984, Kaiser Steel ceased production altogether at the Fontana plant, but the plate steel and rolling mill plant was acquired by the California Steel Industry (CSI) and is still in operation today employing a work force of over 1,000.

Present

Today the City of Fontana covers approximately 36 square miles, while its sphere of influence encompasses an area of approximately 56 square miles. According to the U.S. Bureau of the Census, the population of Fontana has risen from 87,535 in 1990 to 139,100 in 2002, which is an increase of over 47 percent. The California Department of Finance estimates that the 2003 population in Fontana has grown to 145,770, which is an increase of over 970 percent since 1954.

The economy of Fontana has gone through many permutations since the early reliance of the economy on agriculture until the early 1940s, which was followed by the dominance of the steel industry until the 1980s. Today the economy is supported by the many distribution centers located in Fontana because of the City's location to major good movement transportation routes like: Interstate 10; Interstate 15; Interstate 60; the recently completed Interstate 210; the Burlington Northern and Santa Fe and Union Pacific Railroads; the Ontario International Airport; and, the ports of Los Angeles and Long Beach. These distribution centers include Target, Sears, Napa Auto Parts, Mercedes Benz, Big 5 Sporting Goods, and Home Shopping Network. In addition, Metrolink provides local rail connection to surrounding communities throughout Southern California.

1. PURPOSE AND BACKGROUND

PURPOSE AND BACKGROUND

A truck trip generation study was completed for the City of Fontana in 1992. This was an innovative project, with the findings from the study published in the ITE Journal in 1994. This was one of the first published studies on truck trip generation. However, the study was completed in the early 1990s when California was in the midst of a severe recession. The City of Fontana initiated this current study to determine truck trip generation data to reflect more normal economic conditions.

Extensive areas have been developed as industrial and warehouse uses both within and adjacent to Fontana. These uses generate a high volume of large truck traffic that significantly impacts local area freeways and arterials.

The purpose of this study is to evaluate the vehicle trip generation characteristics of several land use categories that typically generate significant volumes of truck traffic. The study presents equations that are to be used to predict the vehicle trip generation characteristics for the land use categories that have been evaluated.

The methodology of this study is structured to follow procedures of the ITE trip generation manual. This study contributes to the relatively limited information provided by the ITE trip generation manual on truck internal land uses by addressing several land uses that are not covered by this manual and by presenting vehicle trip generation rates with break down by axles.

The study is based solely on locally collected data. The study results may be most applicable to local conditions in Southern California.

SIGNIFICANCE TO THE INLAND EMPIRE

The Inland Empire area has had a significant growth over the last two decades in truck intense land use developments. The strategic location of the Inland Empire, well served by major East-West and North-South national and international freight lines, both rail, freeway and air freight airports, draws national and international freight carriers, warehousing and logistic industries to locate in the Inland Empire. The Interstate 10 and Interstate 15 confluence has the highest number of trucks in the nation, and some of the regional arterials have 30% to 40% truck traffic.

The tremendous growth in truck intense land uses in the Inland Empire area has created a major impact on the regional and local circulation system. Many two-lane rural routes which once served local citrus farms or vineyards, now serve as major truck routes. Most of these roads do not have the traffic handling capacity and the infrastructure capacity to accommodate this shift in land use, particularly the increase in truck traffic. Therefore the need arises for studies such as this one, in order to provide a valuable tool to public agencies staff and officials in planning land use developments and roadway infrastructure development capable of handling the area's growth.

Local governmental agencies such as the City of Fontana as well as regional transportation agencies, such as San Bernardino County Transportation Department, San Bernardino County Associated Governments (SANBAG), Riverside Transportation Commission (RCTC), CALTRANS, and Southern California Association of Governments (SCAG), all have a need to properly identify and forecast truck impacts to our highway system. This study has been conducted in consultations with these agencies.

This study will be a primary tool in the preparation of Traffic Impact Analysis (TIA's) for Congestion Management Plan (CMP) compliance in southern California, since it reflects trip making with local characteristics. The results of this study will be utilized in several regional and sub-regional transportation studies to help determine the impact of truck traffic on our circulation system. It is also anticipated that the data in this study will be incorporated in the Institute of Transportation Engineers (ITE) Trip Generation Manual.

2. DEFINITION OF TERMS

DEFINITION OF TERMS

Land Use Categories

Warehousing (ITE code 150)

Warehouses are primarily devoted to the storage of materials; they may also include office and maintenance areas.

Light warehouses are 100,000 square feet G. F. A. or less.

Heavy warehouses are greater than 100,000 square feet G. F. A.

General Light Industrial (ITE code 110)

Light industrial facilities usually employ fewer than 500 persons and have an emphasis on activities other than manufacturing. Nevertheless, the distinction between light industrial and manufacturing (ITE code 140) is sometimes vague. Typical light industrial activities include printing plants, material testing laboratories, assemblers of data processing equipment, and power stations. All of the facilities surveyed are freestanding and devoted to a single use.

General Heavy Industrial (ITE code 120)

Heavy industrial facilities usually have a high number of employees per industrial plant and could also be categorized as manufacturing facilities (ITE code 140). The distinction between heavy industrial and manufacturing is vague. However, heavy industrial uses are limited to the manufacturing of large items.

Industrial Park (ITE code 130)

Industrial parks are areas containing a number of industrial or related facilities. They are characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contained highly diversified facilities, some with a large number of small businesses and others with one or two dominant industries.

Truck Sales and Leasing (not an ITE category)

Facilities included in this category are primarily for the sale and leasing of new heavy duty commercial vehicles, 10,000 GVW, or greater. Typically, the facilities are located along major arterials in either commercial or industrial areas. The facilities can also include maintenance services, part sales, and used truck sales.

Used Truck Lots (not an ITE category)

Facilities included in this category are similar to the category, truck sales and leasing, however, they are primarily for the sale of used heavy duty commercial vehicles (10,000 GVW, or greater). Typically, the facilities are located along major arterials in either commercial or industrial areas. The facilities can also include maintenance services, and part sales.

Truck Terminal (ITE code 030)

Truck terminals are facilities where goods are transferred between trucks, or trucks and railroads.

Truck Stops (not an ITE category)

The primary function of a truck stop is to provide fueling for truckers. Ancillary services include maintenance services, restaurants, and the sale of sundries. The general motoring public also extensively uses these facilities.

Vehicle Classifications

Passenger Vehicles (Pass Veh)

Motorcycles, passenger cars, pickups, vans, and other two-axle, four tire vehicles. Included in this class are campers, motorhomes, ambulances, minibuses, hearses, carryalls, including vehicles pulling recreational or other light trailers.

Large 2 Axle (Lge 2 Ax)

Buses, including all vehicles manufactured as passenger carrying vehicles with two axles and six tires, or three or more axles. Two-axle truck tractors without trailers. Two-axle, six-tire single unit trucks, including camping and recreational vehicles, motorhomes, and large step vans having two axles and dual rear tires.

3 Axle

Three-axle, single-unit trucks. All vehicles on a single frame having three axles, including three-axle buses and tractors.

4+ Axle

Four or more axle single unit trucks. Single trailer trucks (combos), including all vehicles consisting of two units, of which the pulling unit is a tractor or a single unit truck. Multi-trailer trucks (combos), including all vehicles consisting of three or more units of which the pulling unit is a tractor or a single unit truck. The most common truck in this category is the 5-axle 18 wheeler semi-tractor-trailer.

Statistical Terms

Independent Variable

A physical and measurable unit describing the site generator that can be used to predict the value of the dependent variable (trip ends). In this study, four independent variables have been used. These are: number of employees, gross building area, acreage, and vehicle fueling positions (for truck stops only).

Dependent Variable

The result of the trip generation equation, i.e., trip ends.

Weighted Average Trip Rate

The weighted average trip rate is calculated by summing all trip ends and all independent variable units (e.g. number of employees) and then dividing the sum of the trip ends by the sum of the independent variable units. This is the method preferred by ITE to calculate the average trip rate.

Mean Trip Rate

The average trip rate of the sample set. This is calculated by computing the trip rate for each site in the sample set, then summing the trip rates and dividing by the number of samples.

Standard Deviation

A measure of how widely dispersed the data points are around the calculated average. The lower in the standard deviation, meaning the less dispersion there is in the data, the better the data fit. In this study, the standard deviation has been calculated in relation to the mean trip rate.

Regression Equation

An equation expressing the relationship between the independent variable and the dependent variable.

Linear Regression

An equation that, when plotted, shows a linear relationship between the independent variable and the dependent variable. The equation is expressed in the following form:

dependent variable = coefficient * independent variable + y intercept

Logarithmic Regression

An equation that, when plotted, shows a curvilinear relationship between the independent variable and the dependent variable. The equation is expressed in the following form:

dependent variable = y intercept * coefficient ^ independent variable

r squared

Also known as the "Coefficient of Determination". A measure of the variance in the dependent variable with the independent variable. As the r squared value increases towards 1.0, the better the correlation between the dependent and independent variable. In this study, a regression equation must have an r squared value of 0.8 or greater to be considered appropriate for use.

Miscellaneous Terms

Street Trip Rate

This is the one-hour weekday trip generation rate for 7 a.m. to 8 a.m. and 5 p.m. to 6 p.m., and corresponds to the "average trip rate for the peak hour of the adjacent street traffic" from the ITE trip generation manual. These hours are the peak hours of traffic flow in the area of the surveyed sites.

Site Trip Rate

This is the vehicle trip generation rate during the hour of highest volume of traffic entering and exiting the surveyed site during the AM or PM hours. This corresponds to the "average trip rate for the peak hour of the generator."

Gross Building Area

This term corresponds to "gross floor area" as used in the ITE trip generation manual.

Vehicle Fueling Positions

The number of vehicles that can be fueled simultaneously at a truck stop.

3. METHODOLOGY

Fontana TMC

METHODOLOGY

Site Selection

Most sites that were analyzed in the study are located in Fontana or adjacent areas in unincorporated San Bernardino County, Ontario, and Rancho Cucamonga. Only one site is located outside of this area; a truck stop, located in Palm Springs.

The following criteria were considered in the selection of sites to be analyzed:

- **The site is freestanding.** The site does not share parking areas or driveways with adjacent developments.
- **Cooperation of the site occupant.** The site occupant voluntarily agreed to participate in the study by allowing driveway counts, and provide information about the site such as the number of on-site employees.
- **Availability of data concerning the site.** Data were available from public records concerning site characteristics such as building gross floor area and acreage.

Site Traffic Counts

Traffic counts for the study were collected in late 2002 by the firm of Counts Unlimited, Inc. of Moreno Valley, California. Traffic counting consisted of three tasks that are discussed as follows:

1) Midblock 24-hour Counts

Midblock traffic counts were taken at 10 arterial locations using automatic traffic counters. These counts were taken for 24-hour periods, recorded in 15-minute increments. The purpose of these counts was to identify a.m. and p.m. peak hours of traffic on arterial streets in the area encompassing the sites that were analyzed. From these data, it was determined that the peak hours with the highest traffic volumes are 7:00 to 8:00 a.m. in the morning, and 5:00 to 6:00 p.m. in the afternoon.

2) Driveway 24-hour Counts

Driveway traffic counts were taken at the driveways of all sites except two truck stops. Automatic traffic counters (ATCs) were used to tabulate 24-hour counts, recorded in 15-minute increments. The purpose of these counts was to identify the a.m. and p.m. peak hours of total vehicle trip generation of each site. These counts were also used to estimate the daily (24-hour) total vehicle trip generation of each site.

In addition, it was subsequently found that the ATCs were not accurately tabulating the total number of vehicles entering and exiting any individual site or driveway. The ATCs could not accurately tabulate vehicle classifications. Due to the high percentage of multi-axle vehicles, the ATCs consistently tabulated a greater number of vehicles than actually occurred.

To correct this deficiency, driveway 24-hour counts were concurrently collected manually and with the ATCs at eight sites, and the results compared.

This analysis showed that, on average, the manual counts were only forty-four (44) percent of the ATCs' counts. The results of this analysis are shown in Appendix B.

This factor was applied to the driveway 24-hour counts for all remaining sites that were not manually counted, for the purpose of calculating 24-hour trip generation rates.

3) Driveway Peak Period Counts

Manual traffic counts were taken for each site driveway, except two truck stops. The counts were collected for a.m. and p.m. peak periods, and recorded in 15-minute increments. At a minimum, these periods encompassed 7:00 a.m. to 8:00 a.m. and 5:00 p.m. to 6:00 p.m. plus the peak hours of site vehicle trip generation identified by the driveway 24-hour counts. The manual counts quantified entering and exiting trips. In addition, the manual counts quantified the following vehicle classifications: passenger vehicles, large 2-axle vehicles, 3-axle vehicles, and 4-axle vehicles or greater.

Calculation of Trip Generation Rates and Equations

A total of nine land use classifications were analyzed in this study. Except as noted, the following statistical information pertaining to trip generation rates were calculated for each land use classification:

- Weighted average trip rate of the sample set
- Mean trip rate of the sample set
- Standard deviation of the sample set
- y intercept and coefficient of the linear regression equation
- y intercept and coefficient of the logarithmic regression equation
- r square value of the linear and logarithmic regression equation

Except for truck stops, trip generation statistics were calculated for three independent variables, including:

- Number of employees
- Gross building area, measured in 1000 square feet (KSF)
- Acres

The statistics were calculated for five periods:

- Daily (24-hour)
- a.m. peak hour street
- p.m. peak hour street
- a.m. peak hour site
- p.m. peak hour site

For all periods, except daily, trip generation statistics were calculated for total vehicle trips (including passenger vehicles), and truck trips (excluding passenger vehicles). Trip generation statistics for daily truck trips were not calculated because vehicle classifications counts could not be obtained from the driveway 24-hour counts.

According to the Institute of Transportation Engineers (ITE) [1], the weighted average trip rate is to be preferred over the mean trip rate. Sites in the sample set with a large variance from the mean have excessive influence over the average rate, therefore the weighted average trip rate is recommended. The mean trip rate is also reported for the purpose of measuring the size of the variance of the sample set, when compared to the standard deviation.

LINEST and LOGEST functions of the Microsoft Excel software application were used to calculate y intercept, coefficients, and r square statistics for the linear and logarithmic regression equations. Statistical data for linear regression and logarithmic regression equations were not reported if there were less than four sites in the sample set, or if there was a 0 value reported in the sample set.

Truck Stops

Trip generation statistics were calculated for two independent variables, the number of fueling positions and acres. The sample set for truck stops included two sites for which there were only p.m. peak period driveway counts. Due to this limitation in available count data, trip generation regression statistics were computed for the following only:

- p.m. peak hour street
- p.m. peak hour site

[1] Institute of Transportation Engineers, “Trip Generation 6th Edition, An Informational Report of the Institute of Transportation Engineers,” Volume 3, 1997, p. 17.

However, weighted average trip rate and mean trip rate of truck stops were computed for all five periods.

Criteria for Recommending Trip Generation Rates and Equations

A list of recommended trip generation rates is reported in the section of this report entitled, "Summary of Recommended Trip Generation Rates." For all land use classifications, the weighted average trip rates are reported.

Any regression equation which has an r square value of .80 or greater is also reported. An r square value of .80 or greater indicates a high degree of correlation between the independent variable (number of employees, gross floor area, acres, or number of fueling positions) and the dependent variable (total vehicle or truck trips).

Regression equations that have an r square value less than .80 are not reported. Regression equations that have an r square value of .50 or greater to less than .80 are identified as marginal.

4. HOW TO USE THIS MANUAL

HOW TO USE THIS MANUAL

Information in this report is to be used to compute site trip generation of total vehicles and large trucks for land uses included in the following categories:

- Light Warehousing
- Heavy Warehousing
- General Light Industrial
- General Heavy Industrial
- Industrial Park
- Truck Sales and Leasing
- Used Truck Sales
- Truck Terminals
- Truck Stops

The main body of this report includes Chapters 5, 6, and 7 which contain the results of the trip generation analysis for the land use categories listed above. Chapters 5 and 6 contain summaries of recommended data to be used to calculate total vehicle and large truck trip generation. Chapter 7 contains more detailed information on the analysis of each land use category addressed in this report. In addition, the appendix lists detailed information on each site that has been included in the study.

Using Trip Generation Rates and Equations

For all land use classifications, except truck stops, trip generation rates and equations are reported for three independent variables. These are: number of employees, gross building area, and acres. For truck stops, the only independent variable is number of fueling positions.

Rates and equations for total vehicle trip generation are reported for five time periods:

- a.m. peak hour - street
- p.m. peak hour - street
- a.m. peak hour - site
- p.m. peak hour - site
- Daily

Rates and equations for large truck trip generation are reported for all the same periods, except the daily time period.

Trip generation has been computed by the following methods:

- Weighted average trip rate
- Linear regression equation
- Logarithmic regression equation

Examples of Trip Generation Rates and Equations
Example: 25,000 square feet gross building area,
Used Truck Sales,
a.m. peak hour (street)

	Equation Form	Equation	Result - a.m. peak hour trips
Weighted average trip rate	Number of trips = weighted average trip rate * X	25 * 1.132	28
Linear regression	Number of trips = coefficient * X + y intercept	.932 * 25 + 5.537	29
Logarithmic regression	Number of trips = y intercept * coefficient ^ X	10.979 * 1.027 ^ 25	21

The results of the computations for all land use classifications, vehicle classifications, independent variables, and time periods are reported in Chapter 7.

The recommended trip generation rates and equations are summarized in Chapter 5. In all cases, weighted average trip rates are reported in Chapter 5. Also, linear regression and logarithmic regression equations are reported when a high correlation has been determined to exist between the dependent and independent variable as measured by the r square statistic.

Selection of Appropriate Trip Generation Rate or Equation

Guidance for the selection of an appropriate trip generation rate or equation is found in Chapter 3, "Guidelines for Estimating Trip Generation" of the Trip Generation Handbook, An ITE Recommended Practice, Institute of Transportation Engineers, March 2001.

Users are cautioned to not use regression equations when the independent variable is small and the equation's y intercept is a large positive or negative value. Also, logarithmic equations may not be appropriate when the independent variable is greatly outside the range of the size of the sample set from which the equations are derived.

Using Vehicle Mix and Enter/Exit Splits

Vehicle mix and enter/exit splits by land use classifications are summarized in Chapter 6. These data are also in Chapter 7.

Vehicle mix is expressed as a percentage of each vehicle classification that has been counted. Vehicle mix has been calculated for two conditions, which are as follows:

Condition #1: mix of all large trucks

Example:

	Lge 2 Ax	3 Axle	4 + Axle	Total
%age:	26.3	42.9	30.8	100

Condition # 2: mix of all vehicles

Example:

	Pass Veh	Lge 2 Ax	3 Axle	4 + Axle	Total
%age:	73.7	4.9	12.1	9.2	100

Condition #1 mix is to be applied to computation of large truck trip generation for a.m. and p.m. peak hours. Condition #2 mix is to be applied to computation of the total daily vehicle trip generation.

Using Enter/Exit Splits

Enter/exit splits are expressed as percentages for four time periods, which are the following:

- a.m. peak hour - site
- p.m. peak hour - site
- a.m. peak hour - street
- p.m. peak hour - street

For each period, splits are provided for total vehicles and large trucks. For the daily period, it is assumed that the split between entering and exiting trips is typically a 50/50 split.

Application of Vehicle Mix and Enter/Exit Split Factors
Example: 25,000 square feet gross building area, Used Truck Sales

Calculation of a.m. peak hour (street) total vehicles enter/exit split:

1. Calculate a.m. peak hour (street) total vehicle trip generation:
   Linear regression equation: .932 * 25 + 5.537 = 29 vehicle trips

2. Calculate enter/exit split (street):

	Enter:	Exit:
%age:	68.85	31.15
Vehicle trips:	20	9

Calculation of a.m. peak hour (street) large truck vehicle mix and enter/exit split:

1. Calculate a.m. peak hour (street) large truck trip generation:
   Linear regression: .387 * 25 - 1.172 = 9 large truck trips

2. Calculate vehicle mix (Condition #1 - large truck mix):

	Lge 2 Ax	3 Axle	4 + Axle	Total
%age:	26.3	42.9	30.8	100
Large truck trips:	2	4	3	9

3. Calculate enter/exit split (street):

	Enter:	Exit:
%age:	48.78	51.22
Vehicle trips:	4	5

Calculation of daily total vehicle mix and enter/exit split:

1. Calculate daily total vehicle trip generation:
   Linear regression: 40.401 * 25 + 5.993 = 1016 vehicle trips

2. Calculate vehicle mix (Condition #2 -total vehicle mix):

	Pass Veh	Lge 2 Ax	3 Axle	4 + Axle	Total
%age:	73.7	4.9	12.1	9.2	100
Vehicle trips:	749	50	123	93	1,015

3. Calculate enter/exit split, assume 50/50 split

a. Total vehicle:

	Enter:	Exit:
%age:	50	50
Vehicle trips:	508	508

b. Large truck:

	Enter:	Exit:
%age:	50	50
Large truck trips:	133	133

5. SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS

Classification: Light Warehouse

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	3.713*X	Marginal	Marginal	1.659*X	Marginal	4156.615*.991^X	35.874*X	Marginal	Marginal
AM Street									
Total Vehicles	0.273*X	n.a.	n.a.	0.122*X	Marginal	Marginal	2.637*X	Marginal	Marginal
Trucks	0.051*X	-0.041+10.328	15.349*0.989^X	0.023*X	Marginal	n.a.	0.497*X	Marginal	Marginal
PM Street									
Total Vehicles	0.201*X	n.a.	n.a.	0.090*X	n.a.	n.a.	1.946*X	n.a.	n.a.
Trucks	0.047*X	n.a.	Marginal	0.021*X	0.051*X-7.461	0.463*1.010^X	0.454*X	n.a.	n.a.
AM Site									
Total Vehicles	0.327*X	n.a.	n.a.	0.146*X	n.a.	n.a.	3.156*X	Marginal	Marginal
Trucks	0.065*X	n.a.	Marginal	0.029*X	n.a.	n.a.	0.627*X	Marginal	Marginal
PM Site									
Total Vehicles	0.282*X	0.221*X+6.813	13.375*1.007^X	0.126*X	n.a.	n.a.	2.726*X	Marginal	Marginal
Trucks	0.074*X	n.a.	n.a.	0.033*X	n.a.	n.a.	0.713*X	Marginal	Marginal

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. “X” is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Heavy Warehouse

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	4.657*X	n.a.	n.a.	3.547*x	n.a.	n.a.	69.959*X	n.a.	n.a.
AM Street									
Total Vehicles	0.091*X	Marginal	n.a.	0.070*X	0.032*X+21.235	Marginal	1.373*X	0.589*X+22.708	Marginal
Trucks	0.034*X	0.021*X+6.025	8.090*1.001^X	0.026*X	0.016*X+5.638	7.929*1.001^X	0.518*X	0.301*X+6.291	8.220*1.017^X
PM Street									
Total Vehicles	0.095*X	0.054*X+17.889	22.051*1.001^X	0.073*X	0.042*X+17.592	Marginal	1.433*X	0.771*X+19.178	Marginal
Trucks	0.034*X	Marginal	n.a.	0.026*X	0.023*X+1.584	Marginal	0.509*X	0.419*X2.609	Marginal
AM Site									
Total Vehicles	0.309*X	0.268*X+17.625	50.347*1.002^X	0.235*X	0.215*X+11.213	48.177*1.001^X	4.637*X	3.951*X+19.862	50.856*1.025^X
Trucks	0.040*X	n.a.	n.a.	0.030*X	n.a.	n.a.	0.596*X	n.a.	n.a.
PM Site									
Total Vehicles	0.417*X	0.390*X+11.980	Marginal	0.318*X	0.323*X-2.803	49.975*1.002^X	6.268*X	5.902*X+10.616	50.560*1.030^X
Trucks	0.044*X	0.021*X+9.850	Marginal	0.033*X	0.016*X+10.004	Marginal	0.656*X	0.291*X+10.585	Marginal

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Light Industrial

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	8.046*X	9.322*X-55.491	64.160X1.035^X	11.744*X	Marginal	n.a.	37.313*X	35.607*X+16.007	87.895*1.132^X
AM Street									
Total Vehicles	0.466*X	Marginal	Marginal	0.679*X	n.a.	n.a.	2.159*X	n.a.	Marginal
Trucks	0.184*X	n.a.	n.a.	0.268*X	n.a.	n.a.	0.853*X	n.a.	n.a.
PM Street									
Total Vehicles	0.299*X	Marginal	Marginal	0.436*X	0.193*X+7.240	8.152*1.013^X	1.386*X	Marginal	6.258*1.070^X
Trucks	0.069*X	0.093*X-1.026	0.570*1.034^X	0.101*X	0.056*X+1.323	Marginal	0.320*X	0.329*X-.090	0.835*1.122^X
AM Site									
Total Vehicles	0.787*X	1.004*X-9.410	7.306*1.032^X	1.149*X	0.615*X+15.911	Marginal	3.651*X	3.729*X-0.725	9.947*1.119^X
Trucks	0.224*X	n.a.	n.a.	0.327*X	Marginal	15.086*0.977^X	1.039*X	n.a.	n.a.
PM Site									
Total Vehicles	1.069*X	1.224*X-6.744	12.310*1.028^X	1.560*X	0.742*X+24.373	26.078*1.015^X	4.957*X	4.345*X-5.749	16.771*1.098^X
Trucks	0.201*X	n.a.	n.a.	0.294*X	n.a.	n.a.	0.933*X	n.a.	n.a.

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Heavy Industrial

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	3.787*X	n.a.	n.a.	7.541*X	n.a.	n.a.	71.607*X	n.a.	n.a.
AM Street									
Total Vehicles	0.237*X	n.a.	n.a.	0.473*X	n.a.	n.a.	4.490*X	n.a.	n.a.
Trucks	0.105*X	n.a.	n.a.	0.209*X	n.a.	n.a.	1.985*X	n.a.	n.a.
PM Street									
Total Vehicles	0.158*X	Marginal	Marginal	0.315*X	Marginal	n.a.	2.993*X	Marginal	n.a.
Trucks	0.058*X	n.a.	n.a.	0.116*X	n.a.	n.a.	1.100*X	n.a.	n.a.
AM Site									
Total Vehicles	0.352*X	0.177*X+27.122	28.109*1.003^X	0.701*X	n.a.	n.a.	6.659*X	n.a.	n.a.
Trucks	0.095*X	n.a.	n.a.	0.190*X	n.a.	n.a.	1.802*X	n.a.	n.a.
PM Site									
Total Vehicles	0.278*X	0.059*X+33.809	33.793*1.001^X	0.553*X	Marginal	Marginal	5.254*X	n.a.	n.a.
Trucks	0.126*X	n.a.	n.a.	0.251*X	n.a.	n.a.	2.382*X	n.a.	n.a.

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Industrial Park

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	2.485*X	1.638*X+156.726	188.297*1.004^X	1.236*X	Marginal	Marginal	24.805*X	n.a.	Marginal
AM Street									
Total Vehicles	0.191*X	Marginal	Marginal	0.095*X	n.a.	n.a.	1.902*X	n.a.	n.a.
Trucks	0.078*X	Marginal	Marginal	0.039*X	n.a.	n.a.	0.782*X	n.a.	n.a.
PM Street			Marginal						
Total Vehicles	0.193*X	Marginal	Marginal	0.096*X	n.a.	n.a.	1.929*X	n.a.	n.a.
Trucks	0.097*X	Marginal	Marginal	0.048*X	n.a.	n.a.	0.971*X	n.a.	n.a.
AM Site									
Total Vehicles	0.265*X	Marginal	Marginal	0.132*X	n.a.	n.a.	2.644*X	n.a.	n.a.
Trucks	0.053*X	n.a.	n.a.	0.026*X	n.a.	n.a.	0.526*X	n.a.	n.a.
PM Site									
Total Vehicles	0.382*X	0.397*X-2.740	16.146*1.007^X	0.190*X	n.a.	n.a.	3.818*X	n.a.	n.a.
Trucks	0.120*X	Marginal	Marginal	0.060*X	n.a.	n.a.	1.201*X	n.a.	n.a.

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Truck Sales and Leasing

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	10.380*X	10.161*X+14.571	44.902*1.035^X	23.517*X	Marginal	Marginal	129.691*X	136.639X-36.982	36.432*1.590^X
AM Street									
Total Vehicles	0.605*X	0.638*X-2.148	0.927*1.047^X	1.371*X	1.208*X+4.795	Marginal	7.562*X	Marginal	0.764*1.830^X
Trucks	0.056*X	0.063X-0.410	n.a.	0.128*X	Marginal	n.a.	0.705*X	0.839*X-0.717	n.a.
PM Street									
Total Vehicles	0.556*X	0.551*X+0.336	2.806*1.032^X	1.261*X	1.018*X+7.110	Marginal	6.952*X	Marginal	2.492*1.524^X
Trucks	0.098*X	Marginal	1.819*1.017^X	0.221*X	Marginal	Marginal	1.221*X	Marginal	1.672*1.247^X
AM Site									
Total Vehicles	0.883*X	0.871*X+0.836	2.890*1.038^X	2.002*X	1.597*X+11.883	Marginal	11.038*X	Marginal	2.453*1.635^X
Trucks	0.308*X	Marginal	3.103*1.024^X	0.698*X	Marginal	Marginal	3.852*X	n.a.	2.793*1.367^X
PM Site									
Total Vehicles	0.823*X	0.656*X+11.133	12.591*1.019^X	1.865*X	1.160*X+20.711	Marginal	10.287*X	Marginal	11.783*1.285^X
Trucks	0.297*X	Marginal	4.732*1.018^X	0.673*X	0.530*X+4.190	5.839*1.034^X	3.711*X	n.a.	Marginal

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Used Truck Sales

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regres-sion	Logarithmic Regres-sion	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	20.874*X	n.a.	n.a.	20.039*X	20.671-17.428	137.430*1.033^X	67.996*X	94.942*X-219.206	102.271*1.159^X
AM Street									
Total Vehicles	1.179*X	n.a.	n.a.	1.132*X	0.932*X+5.537	10.979*1.027^X	3.841*X	4.233*X-3.183	8.786*1.124^X
Trucks	0.358*X	n.a.	n.a.	0.344*X	0.387*X-1.172	n.a.	1.168*X	1.753XX-4.759	n.a.
PM Street									
Total Vehicles	1.481*X	n.a.	n.a.	1.422*X	1.122*X+8.283	13.124*1.028^X	4.825*X	5.024*X-1.622	Marginal
Trucks	0.226*X	n.a.	n.a.	0.217*X	Marginal	n.a.	0.738*X	Marginal	n.a.
AM Site									
Total Vehicles	1.764*X	n.a.	n.a.	1.694*X	1.155*X+14.876	22.051*1.020^X	5.747*X	5.323*X+3.450	18.125*1.097^X
Trucks	0.594*X	n.a.	n.a.	0.571*X	0.503*X+1.855	n.a.	1.936*X	2.309X-3.030	n.a.
PM Site									
Total Vehicles	1.575*X	n.a.	n.a.	1.513*X	.973*X+14.899	Marginal	5.132*X	4.617*X+4.193	Marginal
Trucks	0.481*X	n.a.	n.a.	0.462*X	.396*X+1.812	Marginal	1.567*X	1.847X-2.272	Marginal

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Truck Terminals

	NO. OF EMPLOYEES			GROSS BUILDING AREA (KSF)			ACRES		
Period	Weighted Average Trips	Linear Regres-sion	Logarithmic Regres-sion	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily									
Total Vehicles	3.428*X	1.844*X+480.332	Marginal	16.857*X	Marginal	n.a.	42.582*X	27.391*X+370.843	Marginal
AM Street									
Total Vehicles	0.104*X	n.a.	n.a.	0.511*X	n.a.	n.a.	1.290*X	n.a.	n.a.
Trucks	0.047*X	n.a.	n.a.	0.231*X	n.a.	n.a.	0.584*X	n.a.	n.a.
PM Street									
Total Vehicles	0.122*X	Marginal	Marginal	0.600*X	n.a.	n.a.	1.516*X	Marginal	Marginal
Trucks	0.062*X	Marginal	Marginal	0.304*X	n.a.	n.a.	0.768*X	0.408*X+8.790	Marginal
AM Site									
Total Vehicles	0.157*X	Marginal	n.a.	0.770*X	n.a.	n.a.	1.946*X	n.a.	n.a.
Trucks	0.059*X	n.a.	Marginal	0.288*X	Marginal	Marginal	0.727*X	n.a.	n.a.
PM Site									
Total Vehicles	0.176*X	n.a.	n.a.	0.864*X	n.a.	n.a.	2.181*X	Marginal	n.a.
Trucks	0.091*X	n.a.	n.a.	0.446*X	n.a.	n.a.	1.126*X	n.a.	n.a.

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

SUMMARY OF RECOMMENDED TRIP GENERATION RATES AND EQUATIONS (Cont'd)

Classification: Truck Stops

	NO. OF FUELING POSITIONS			ACRES		
Period	Weighted Average Trips	Linear Regression	Logarithmic Regression	Weighted Average Trips	Linear Regression	Logarithmic Regression
Daily						
Total Vehicles	34.565*X	n.a.	n.a.	319.730*X	n.a.	n.a.
AM Street						
Total Vehicles	2.257*X	n.a.	n.a.	20.875*X	n.a.	n.a.
Trucks	1.189*X	n.a.	n.a.	11.000*X	n.a.	n.a.
PM Street						
Total Vehicles	8.216*X	n.a.	n.a.	76.000*X	n.a.	n.a.
Trucks	4.811*X	n.a.	n.a.	44.500*X	n.a.	n.a.
AM Site						
Total Vehicles	2.324*X	n.a.	n.a.	21.500*X	n.a.	n.a.
Trucks	1.878*X	n.a.	n.a.	17.375*X	n.a.	n.a.
PM Site						
Total Vehicles	9.500*X	n.a.	n.a.	87.875*X	n.a.	n.a.
Trucks	5.000*X	n.a.	n.a.	46.250*X	n.a.	n.a.

Note: All symbols are per Microsoft Excel (+, -, *, and ^) add, subtract, multiply and raise to a power. "X" is the independent variable.

6. VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY

Classification: Light Warehouse

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	**3 Axle**	**4+ Axle**	**Total**				
	24.7	20.6	54.6	100.0				
	Pass Veh	**Lge 2 Ax**	**3 Axle**	**4+ Axle**	**Total**			
	80.3	5.2	4.5	10.0	100.0			
	Site Entering & Exiting							
	a.m.				**p.m.**			
	Total Enter	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**	**Total Enter**	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**
Split	73.97	26.03	62.07	37.93	23.81	76.19	45.45	54.55
	Street Entering & Exiting							
	a.m.				**p.m.**			
	Total Enter	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**	**Total Enter**	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**
Split	73.77	26.23	65.22	34.78	20.00	80.00	31.58	68.42

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	16.95	22.71	60.34	100				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	79.57	3.46	4.64	12.33	100			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	85.66	14.34	46.38	53.62	46.01	53.99	56.58	43.42
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	50.94	49.06	45.00	55.00	30.72	69.28	45.76	54.24

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	32.7	17.9	49.4	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	78.6	8.0	3.9	9.5	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	64.96	35.04	41.03	58.97	43.01	56.99	42.86	57.14
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	60.49	39.51	37.50	62.50	29.17	70.83	66.67	33.33

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	11.1	36.0	53.0	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	61.2	6.1	12.7	19.9	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	65.60	34.40	50.85	49.15	43.02	56.98	58.82	41.18
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	69.39	30.61	47.69	52.31	28.42	71.58	55.56	44.44

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	7.9	7.1	85.0	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	52.8	4.0	3.3	39.8	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	68.88	31.12	58.97	41.03	43.11	56.89	51.69	48.31
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	60.99	39.01	50.00	50.00	32.87	67.13	37.50	62.50

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Sales and Leasing

Recommended Large Truck Mix (%)

Lge 2 Ax	3 Axle	4+ Axle	Total
42.8	33.0	24.2	100.0

Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
72.7	11.7	9.0	6.6	100.0

Site Entering & Exiting

	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	40.90	59.10	48.94	51.06	51.70	48.30	55.14	44.86

Street Entering & Exiting

	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	46.85	53.15	52.86	47.14	36.21	63.79	50.98	49.02

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	26.3	42.9	30.8	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	73.7	4.9	12.1	9.2	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	47.59	52.41	39.68	60.32	53.29	46.71	49.02	50.98
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	68.85	31.15	48.78	51.22	29.94	70.06	33.33	66.67

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	11.9	24.4	63.7	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	46.0	6.1	13.9	34.0	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	51.27	48.73	49.23	50.77	46.36	53.64	66.39	33.61
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	52.86	47.14	43.75	56.25	60.80	39.20	66.30	33.70

VEHICLE MIX AND ENTER/EXIT SPLITS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	4.9	16.2	78.9	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	44.1	2.2	9.0	44.6	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	52.33	47.67	53.96	46.04	50.92	49.08	54.86	45.14
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	46.11	53.89	45.45	54.55	50.00	50.00	53.09	46.91

7. TRIP GENERATION ANALYSIS BY LAND USE CATEGORY

Warehouses are primarily devoted to the storage of materials; they may also include office and maintenance areas.
Light warehouses are 100,000 square feet G. F. A. or less.

Light Warehousing (ITE code 150)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY

Classification: Light Warehouse

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	3.713	1.659	35.874
Mean Trip Rate	6.755	1.710	37.111
Standard Deviation	6.868	.638	14.695
Linear Regression			
Coefficient	1.149	-3.676	-63.690
y Intercept	286.492	1334.121	1151.451
r Squared	.700	.791	.606
Logarithmic Regression			
Coefficient	1.003	.991	.855
y Intercept	296.840	4156.615	2444.849
r Squared	.642	.838	.597
Trip Rates			
JR Distribution	17.006	1.319	29.653
Medline Industries	4.044	2.196	40.511
Kumo Tires	3.561	1.020	22.222
Barth & Dryfuss	2.409	2.307	56.058
Mean Trip Rates	6.755	1.710	37.111

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Warehouse

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.273	0.122	2.637	0.051	0.023	0.497
Mean Trip Rate	0.516	0.116	2.505	0.148	0.022	0.479
Standard Deviation	0.479	0.086	1.886	0.205	0.013	0.292
Linear Regression						
Coefficient	-0.098	0.802	14.280	-0.041	0.082	1.907
y Intercept	41.493	-170.055	-134.646	10.328	-14.692	-16.306
r Squared	0.102	0.750	0.607	0.961	0.422	0.587
Logarithmic Regression						
Coefficient	0.996	1.022	1.517	0.989	1.019	1.817
y Intercept	36.190	0.099	0.197	15.349	0.040	0.004
r Squared	0.179	0.765	0.700	0.915	0.279	0.724
Trip Rates						
JR Distribution	1.000	0.078	1.744	0.450	0.035	0.785
Medline Industries	0.150	0.081	1.503	0.042	0.023	0.417
Kumo Tires	0.854	0.244	5.327	0.098	0.028	0.609
Barth & Dryfuss	0.062	0.060	1.448	0.004	0.004	0.103
Mean Trip Rates	0.516	0.116	2.505	0.148	0.022	0.479

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Warehouse

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.201	0.090	1.946	0.047	0.021	0.454
Mean Trip Rate	0.291	0.088	1.913	0.109	0.021	0.451
Standard Deviation	0.198	0.047	1.049	0.130	0.004	0.095
Linear Regression						
Coefficient	0.025	0.294	5.354	-0.012	0.051	0.725
y Intercept	19.723	-50.989	-39.423	6.623	-7.461	-3.138
r Squared	0.023	0.350	0.296	0.497	0.937	0.487
Logarithmic Regression						
Coefficient	1.003	1.008	1.200	0.998	1.010	1.144
y Intercept	13.650	2.340	2.315	6.677	0.463	1.071
r Squared	0.146	0.125	0.150	0.534	0.919	0.464
Trip Rates						
JR Distribution	0.400	0.031	0.697	0.300	0.023	0.523
Medline Industries	0.158	0.086	1.586	0.033	0.018	0.334
Kumo Tires	0.512	0.147	3.196	0.085	0.024	0.533
Barth & Dryfuss	0.093	0.089	2.172	0.018	0.017	0.414
Mean Trip Rates	0.291	0.088	1.913	0.109	0.021	0.451

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Warehouse

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.327	0.146	3.156	0.065	0.029	0.627
Mean Trip Rate	0.475	0.143	2.951	0.131	0.029	0.599
Standard Deviation	0.366	0.127	2.548	0.123	0.023	0.406
Linear Regression						
Coefficient	-0.088	0.487	20.387	-0.027	-0.008	2.736
y Intercept	46.310	-85.325	-199.280	10.259	9.205	-24.386
r Squared	0.050	0.171	0.763	0.210	0.002	0.610
Logarithmic Regression						
Coefficient	0.996	1.013	2.074	0.991	1.008	2.007
y Intercept	35.703	1.015	0.005	14.712	0.723	0.002
r Squared	0.080	0.090	0.786	0.505	0.039	0.782
Trip Rates						
JR Distribution	0.500	0.039	0.872	0.300	0.023	0.523
Medline Industries	0.442	0.240	4.424	0.108	0.059	1.085
Kumo Tires	0.927	0.265	5.784	0.110	0.031	0.685
Barth & Dryfuss	0.031	0.030	0.724	0.004	0.004	0.103
Mean Trip Rates	0.475	0.143	2.951	0.131	0.029	0.599

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Warehouse

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.282	0.126	2.724	0.074	0.033	0.713
Mean Trip Rate	0.392	0.130	2.903	0.137	0.033	0.699
Standard Deviation	0.272	0.088	2.236	0.118	0.013	0.209
Linear Regression						
Coefficient	0.221	-0.324	-11.027	-0.010	0.021	1.894
y Intercept	6.813	112.420	159.026	9.361	3.001	-13.658
r Squared	0.938	0.222	0.658	0.071	0.035	0.730
Logarithmic Regression						
Coefficient	1.007	0.990	0.753	0.998	1.003	1.282
y Intercept	13.375	340.838	733.582	9.196	3.740	0.440
r Squared	0.993	0.259	0.527	0.102	0.042	0.766
Trip Rates						
JR Distribution	0.800	0.062	1.395	0.300	0.023	0.523
Medline Industries	0.233	0.127	2.337	0.092	0.050	0.918
Kumo Tires	0.268	0.077	1.674	0.134	0.038	0.837
Barth & Dryfuss	0.267	0.255	6.205	0.022	0.021	0.517
Mean Trip Rates	0.392	0.130	2.903	0.137	0.033	0.699

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Warehouse

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	24.7	20.6	54.6	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	80.3	5.2	4.5	10.0	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	73.97	26.03	62.07	37.93	23.81	76.19	45.45	54.55
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	73.77	26.23	65.22	34.78	20.00	80.00	31.58	68.42

Warehouses are primarily devoted to the storage of materials; they may also include office and maintenance areas.
Heavy warehouses are greater than 100,000 square feet G. F. A.

Heavy Warehousing (ITE code 150)

Classification: Heavy Warehouse

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	4.657	3.547	69.959
Mean Trip Rate	2.842	1.970	39.244
Standard Deviation	3.382	2.515	48.279
Linear Regression			
Coefficient	n.a.	n.a.	n.a.
y Intercept	n.a.	n.a.	n.a.
r Squared	n.a.	n.a.	n.a.
Logarithmic Regression	n.a.	n.a.	n.a.
Coefficient	n.a.	n.a.	n.a.
y Intercept	n.a.	n.a.	n.a.
r Squared	n.a.	n.a.	n.a.
Trip Rates			
Target	6.685	5.252	98.888
Thrifty/Big 5	0.000	0.000	0.000
TAB	4.683	2.629	58.087
Sportsmart	0.000	0.000	0.000
Mean Trip Rates	2.842	1.970	39.244

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.091	0.070	1.373	0.034	0.026	0.518
Mean Trip Rate	0.138	0.092	1.941	0.046	0.034	0.710
Standard Deviation	0.096	0.042	0.980	0.021	0.015	0.326
Linear Regression						
Coefficient	0.037	0.032	0.589	0.021	0.016	0.301
y Intercept	23.872	21.235	22.708	6.025	5.638	6.291
r Squared	0.656	0.811	0.798	0.956	0.946	0.950
Logarithmic Regression						
Coefficient	1.001	1.001	1.014	1.001	1.001	1.017
y Intercept	25.094	22.937	23.826	8.090	7.929	8.220
r Squared	0.455	0.649	0.630	0.916	0.902	0.907
Trip Rates						
Target	0.060	0.047	0.888	0.026	0.021	0.390
Thrifty/Big 5	0.165	0.083	1.737	0.045	0.023	0.474
TAB	0.263	0.147	3.256	0.075	0.042	0.930
Sportsmart	0.064	0.090	1.883	0.036	0.050	1.046
Mean Trip Rates	0.138	0.092	1.941	0.046	0.034	0.710

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.095	0.073	1.433	0.034	0.026	0.509
MeanTrip Rate	0.122	0.097	2.016	0.042	0.025	0.529
Standard Deviation	0.041	0.057	1.207	0.031	0.012	0.268
Linear Regression						
Coefficient	0.054	0.042	0.771	0.026	0.023	0.419
y Intercept	17.889	17.592	19.178	3.330	1.584	2.609
r Squared	0.949	0.885	0.896	0.758	0.917	0.905
Logarithmic Regression						
Coefficient	1.001	1.001	1.016	1.002	1.002	1.031
y Intercept	22.051	22.144	22.866	4.646	3.677	4.002
r Squared	0.818	0.731	0.744	0.387	0.616	0.595
Trip Rates						
Target	0.070	0.055	1.036	0.030	0.024	0.444
Thrifty/Big 5	0.170	0.085	1.789	0.080	0.040	0.842
TAB	0.119	0.067	1.473	0.050	0.028	0.620
Sportsmart	0.129	0.180	3.766	0.007	0.010	0.209
Mean Trip Rates	0.122	0.097	2.016	0.042	0.025	0.529

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.309	0.235	4.637	0.040	0.030	0.596
Mean Trip Rate	0.341	0.254	5.249	0.072	0.048	1.027
Standard Deviation	0.107	0.076	1.607	0.057	0.028	0.640
Linear Regression						
Coefficient	0.268	0.215	3.951	-0.002	0.000	0.004
y Intercept	17.625	11.213	19.862	17.946	17.042	17.146
r Squared	0.971	0.983	0.987	0.021	0.002	0.001
Logarithmic Regression						
Coefficient	1.002	1.001	1.025	1.000	1.000	1.001
y Intercept	50.347	48.177	50.856	17.038	16.027	16.167
r Squared	0.900	0.921	0.924	0.005	0.016	0.012
Trip Rates						
Target	0.285	0.224	4.223	0.015	0.012	0.229
Thrifty/Big 5	0.495	0.248	5.211	0.090	0.045	0.947
TAB	0.325	0.182	4.031	0.144	0.081	1.783
Sportsmart	0.257	0.361	7.531	0.039	0.055	1.151
Mean Trip Rates	0.341	0.254	5.249	0.072	0.048	1.027

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

Period: PM Peak Hour Site Total/AM Peak Hour Site Truck

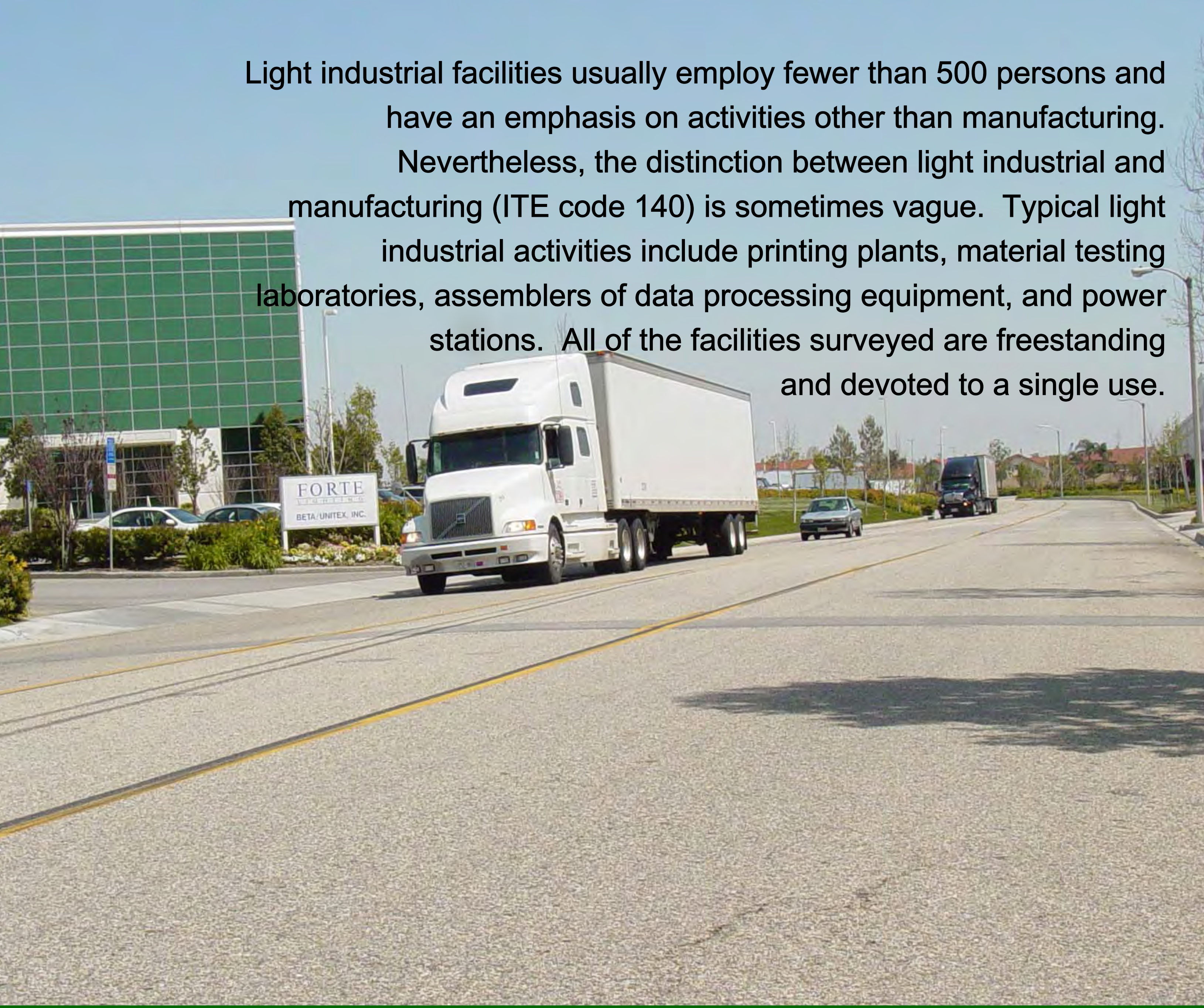
	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.417	0.318	6.268	0.044	0.033	0.656
Mean Trip Rate	0.447	0.308	6.335	0.060	0.047	0.997
Standard Deviation	0.263	0.091	1.851	0.029	0.029	0.632
Linear Regression						
Coefficient	0.390	0.323	5.902	0.021	0.016	0.291
y Intercept	11.980	-2.803	10.616	9.850	10.004	10.585
r Squared	0.905	0.973	0.971	0.911	0.801	0.814
Logarithmic Regression						
Coefficient	1.002	1.002	1.030	1.001	1.001	1.013
y Intercept	55.428	49.975	53.560	11.324	11.587	11.874
r Squared	0.726	0.839	0.833	0.785	0.639	0.654
Trip Rates						
Target	0.405	0.318	5.984	0.030	0.024	0.444
Thrifty/Big 5	0.825	0.413	8.684	0.050	0.025	0.526
TAB	0.338	0.189	4.186	0.100	0.056	1.240
Sportsmart	0.221	0.311	6.485	0.061	0.085	1.778
Mean Trip Rates	0.447	0.308	6.335	0.060	0.047	0.997

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Warehouse

<table>
<tr><td></td><td colspan="8">Recommended Large Truck Mix (%)</td></tr>
<tr><td></td><td>Lge 2 Ax</td><td>3 Axle</td><td>4+ Axle</td><td>Total</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>16.95</td><td>22.71</td><td>60.34</td><td>100</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Pass Veh</td><td>Lge 2 Ax</td><td>3 Axle</td><td>4+ Axle</td><td>Total</td><td></td><td></td><td></td></tr>
<tr><td></td><td>79.57</td><td>3.46</td><td>4.64</td><td>12.33</td><td>100</td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="8">Site Entering & Exiting</td></tr>
<tr><td></td><td colspan="4">a.m.</td><td colspan="4">p.m.</td></tr>
<tr><td></td><td>Total Enter</td><td>Total Exit</td><td>Large Truck Enter</td><td>Large Truck Exit</td><td>Total Enter</td><td>Total Exit</td><td>Large Truck Enter</td><td>Large Truck Exit</td></tr>
<tr><td>Split</td><td>85.66</td><td>14.34</td><td>46.38</td><td>53.62</td><td>46.01</td><td>53.99</td><td>56.58</td><td>43.42</td></tr>
<tr><td></td><td colspan="8">Street Entering & Exiting</td></tr>
<tr><td></td><td colspan="4">a.m.</td><td colspan="4">p.m.</td></tr>
<tr><td></td><td>Total Enter</td><td>Total Exit</td><td>Large Truck Enter</td><td>Large Truck Exit</td><td>Total Enter</td><td>Total Exit</td><td>Large Truck Enter</td><td>Large Truck Exit</td></tr>
<tr><td>Split</td><td>50.94</td><td>49.06</td><td>45.00</td><td>55.00</td><td>30.72</td><td>69.28</td><td>45.76</td><td>54.24</td></tr>
</table>

Light industrial facilities usually employ fewer than 500 persons and have an emphasis on activities other than manufacturing. Nevertheless, the distinction between light industrial and manufacturing (ITE code 140) is sometimes vague. Typical light industrial activities include printing plants, material testing laboratories, assemblers of data processing equipment, and power stations. All of the facilities surveyed are freestanding and devoted to a single use.



Light Industrial (ITE code 110)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	8.046	11.744	37.313
Mean Trip Rate	7.646	21.615	38.017
Standard Deviation	2.532	19.861	6.565
Linear Regression			
Coefficient	9.322	5.047	35.607
y Intercept	-55.491	199.586	16.007
r Squared	0.811	0.665	0.938
Logarithmic Regression			
Coefficient	1.035	1.015	1.132
y Intercept	64.160	178.220	87.895
r Squared	0.820	0.463	0.864
Trip Rates			
G & F Pallets	5.693	15.180	40.123
H Master Halco-Fence	9.014	7.427	35.952
Angelus Blocks	10.525	51.006	45.761
Peterman Lumber	5.353	12.848	30.231
Mean Trip Rates	7.646	21.615	38.017

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.466	0.679	2.159	0.184	0.268	0.853
Mean Trip Rate	0.451	1.222	2.369	0.193	0.642	0.998
Standard Deviation	0.178	0.805	1.133	0.116	0.660	0.537
Linear Regression						
Coefficient	0.415	0.134	1.149	0.058	-0.041	0.116
y Intercept	2.205	16.245	9.471	5.491	9.212	6.910
r Squared	0.564	0.166	0.343	0.058	0.080	0.019
Logarithmic Regression						
Coefficient	1.032	1.011	1.100	1.017	0.998	1.048
y Intercept	4.162	12.004	6.714	2.961	6.624	4.037
r Squared	0.698	0.215	0.504	0.193	0.006	0.114
Trip Rates						
G & F Pallets	0.313	0.833	2.203	0.125	0.333	0.881
H Master Halco-Fence	0.357	0.294	1.425	0.071	0.059	0.285
Angelus Blocks	0.425	2.060	1.848	0.325	1.575	1.413
Peterman Lumber	0.708	1.700	4.000	0.250	0.600	1.412
Mean Trip Rates	0.451	1.222	2.369	0.193	0.642	0.998

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.299	0.436	1.386	0.069	0.101	0.320
Mean Trip Rate	0.336	0.861	1.870	0.065	0.157	0.338
Standard Deviation	0.164	0.587	1.404	0.015	0.070	0.092
Linear Regression						
Coefficient	0.264	0.193	1.036	0.093	0.056	0.329
y Intercept	1.505	7.240	3.282	-1.026	1.323	-0.090
r Squared	0.643	0.961	0.783	0.912	0.943	0.916
Logarithmic Regression						
Coefficient	1.017	1.013	1.070	1.034	1.018	1.122
y Intercept	5.591	8.152	6.258	0.570	1.452	0.835
r Squared	0.649	0.950	0.798	0.994	0.760	0.921
Trip Rates						
G & F Pallets	0.563	1.500	3.965	0.063	0.167	0.441
H Master Halco-Fence	0.343	0.282	1.368	0.086	0.071	0.342
Angelus Blocks	0.250	1.212	1.087	0.050	0.242	0.217
Peterman Lumber	0.188	0.450	1.059	0.063	0.150	0.353
Mean Trip Rates	0.336	0.861	1.870	0.065	0.157	0.338

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.787	1.149	3.651	0.224	0.327	1.039
Mean Trip Rate	0.757	1.928	3.902	0.301	1.004	1.724
Standard Deviation	0.160	1.165	0.974	0.210	0.885	1.408
Linear Regression						
Coefficient	1.004	0.615	3.729	-0.116	-0.135	-0.459
y Intercept	-9.410	15.911	-0.725	14.783	13.782	14.051
r Squared	0.883	0.928	0.965	0.165	0.632	0.206
Logarithmic Regression						
Coefficient	1.032	1.017	1.119	0.975	0.977	0.905
y Intercept	7.306	17.503	9.947	22.606	15.086	19.323
r Squared	0.972	0.745	0.990	0.358	0.849	0.448
Trip Rates						
G & F Pallets	0.750	2.000	5.286	0.500	1.333	3.524
H Master Halco-Fence	0.971	0.800	3.875	0.029	0.024	0.114
Angelus Blocks	0.725	3.513	3.152	0.425	2.060	1.848
Peterman Lumber	0.583	1.400	3.294	0.250	0.600	1.412
Mean Trip Rates	0.757	1.928	3.902	0.301	1.004	1.724

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	1.069	1.560	4.957	0.201	0.294	0.933
Mean Trip Rate	1.071	2.673	5.707	0.320	1.061	1.915
Standard Deviation	0.205	1.298	2.222	0.336	1.120	2.370
Linear Regression						
Coefficient	1.224	0.742	4.345	-0.199	-0.124	-0.563
y Intercept	-6.744	24.373	5.749	17.400	12.438	14.032
r Squared	0.914	0.940	0.912	0.407	0.441	0.259
Logarithmic Regression						
Coefficient	1.028	1.015	1.098	0.971	0.983	0.918
y Intercept	12.310	26.078	16.771	23.765	10.826	14.679
r Squared	0.986	0.798	0.920	0.525	0.476	0.351
Trip Rates						
G & F Pallets	1.250	3.333	8.811	0.750	2.000	5.286
H Master Halco-Fence	1.229	1.012	4.900	0.043	0.035	0.171
Angelus Blocks	0.825	3.998	3.587	0.425	2.060	1.848
Peterman Lumber	0.979	2.350	5.529	0.063	0.150	0.353
Mean Trip Rates	1.071	2.673	5.707	0.320	1.061	1.915

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Light Industrial

Recommended Large Truck Mix (%)

Lge 2 Ax	3 Axle	4+ Axle	Total
32.7	17.9	49.4	100.0

Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
78.6	8.0	3.9	9.5	100.0

Site Entering & Exiting

	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	64.96	35.04	41.03	58.97	43.01	56.99	42.86	57.14

Street Entering & Exiting

	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	60.49	39.51	37.50	62.50	29.17	70.83	66.67	33.33

Heavy industrial facilities usually have a high number of employees per industrial plant and could also be categorized as manufacturing facilities (ITE code 140). The distinction between heavy industrial and manufacturing is vague. However, heavy industrial uses are limited to the manufacturing of large items.

Heavy Industrial (ITE code 120)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	3.787	7.541	71.607
Mean Trip Rate	16.899	n.a.	95.274
Standard Deviation	20.058	n.a.	90.883
Linear Regression			
Coefficient	-1.301	-0.729	9.472
y Intercept	787.394	642.786	508.575
r Squared	0.250	0.024	0.023
Logarithmic Regression			
Coefficient	0.998	1.000	1.036
y Intercept	696.928	471.928	356.436
r Squared	0.278	0.000	0.097
Trip Rates			
James Hardie	2.966	3.274	36.687
Robertson Ready Mix	44.051	n.a.	229.064
Forged Metals	0.589	3.193	40.078
All State Recycling	19.993	7.850	75.266
Mean Trip Rates	16.899	n.a.	95.274

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	0.237	0.473	4.490	0.105	0.209	1.985
Mean Trip Rate	0.784	n.a	5.712	0.458	n.a	2.539
Standard Deviation	0.759	n.a	2.800	0.773	n.a	3.925
Linear Regression						
Coefficient	0.032	0.065	1.189	-0.051	-0.033	0.424
y Intercept	31.805	31.668	27.022	24.156	18.826	12.779
r Squared	0.152	0.193	0.368	0.186	0.024	0.022
Logarithmic Regression						
Coefficient	1.001	1.002	1.036	0.995	1.003	1.121
y Intercept	28.520	29.616	25.721	12.964	5.150	2.509
r Squared	0.197	0.151	0.295	0.171	0.019	0.188
Trip Rates						
James Hardie	0.211	0.233	2.616	0.088	0.097	1.090
Robertson Ready Mix	1.692	n.a.	8.800	1.615	n.a.	8.400
Forged Metals	0.106	0.573	7.198	0.003	0.015	0.195
All State Recycling	1.125	0.442	4.235	0.125	0.049	0.471
Mean Trip Rates	0.784	n.a.	5.712	0.458	n.a.	2.539

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TOTAL		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.158	0.315	2.993	0.058	0.116	1.100
Mean Trip Rate	0.444	n.a.	3.648	0.228	n.a.	1.720
Standard Deviation	0.380	n.a.	1.684	0.387	n.a.	1.943
Linear Regression						
Coefficient	0.049	0.088	1.188	-0.004	-0.066	-0.630
y Intercept	16.868	17.667	14.772	9.694	14.103	14.153
r Squared	0.565	0.543	0.573	0.006	0.388	0.206
Logarithmic Regression						
Coefficient	1.002	1.004	1.051	1.002	0.992	0.929
y Intercept	15.595	17.015	14.907	3.581	8.521	8.677
r Squared	0.546	0.378	0.431	0.042	0.219	0.121
Trip Rates						
James Hardie	0.159	0.175	1.962	0.009	0.010	0.109
Robertson Ready Mix	0.846	n.a.	4.400	0.808	n.a.	4.200
Forged Metals	0.083	0.449	5.642	0.034	0.186	2.335
All State Recycling	0.688	0.270	2.588	0.063	0.025	0.235
Mean Trip Rates	0.444	n.a.	3.648	0.228	n.a.	1.720

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.352	0.701	6.659	0.095	0.190	1.802
Mean Trip Rate	0.914	n.a.	8.392	0.379	n.a.	2.030
Standard Deviation	0.869	n.a.	5.686	0.430	n.a.	2.113
Linear Regression						
Coefficient	0.177	0.215	2.025	-0.028	0.052	1.210
y Intercept	27.122	37.807	37.922	19.127	10.687	4.844
r Squared	0.953	0.425	0.218	0.119	0.123	0.380
Logarithmic Regression						
Coefficient	1.003	1.005	1.045	n.a.	n.a.	n.a.
y Intercept	28.109	33.507	33.519	n.a.	n.a.	n.a.
r Squared	0.900	0.489	0.254	n.a.	n.a.	n.a.
Trip Rates						
James Hardie	0.326	0.360	4.033	0.119	0.131	1.471
Robertson Ready Mix	0.962	n.a.	5.000	0.962	n.a.	5.000
Forged Metals	0.243	1.317	16.537	0.000	0.000	0.000
All State Recycling	2.125	0.834	8.000	0.438	0.172	1.647
Mean Trip Rates	0.914	n.a.	8.392	0.379	n.a.	2.030

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.278	0.553	5.254	0.126	0.251	2.382
Mean Trip Rate	0.947	n.a.	6.894	0.526	n.a.	3.068
Standard Deviation	0.923	n.a.	2.943	0.608	n.a.	2.656
Linear Regression						
Coefficient	0.059	0.090	1.028	-0.032	0.000	0.571
y Intercept	33.809	35.972	34.585	24.436	19.494	14.826
r Squared	0.851	0.597	0.445	0.163	0.000	0.091
Logarithmic Regression						
Coefficient	1.001	1.002	1.024	0.998	1.001	1.044
y Intercept	33.793	35.704	34.567	21.330	15.107	11.400
r Squared	0.859	0.576	0.431	0.161	0.014	0.172
Trip Rates						
James Hardie	0.233	0.258	2.888	0.110	0.122	1.362
Robertson Ready Mix	1.346	n.a.	7.000	1.346	n.a.	7.000
Forged Metals	0.146	0.790	9.922	0.023	0.124	1.556
All State Recycling	2.063	0.810	7.765	0.625	0.245	2.353
Mean Trip Rates	0.947	n.a.	6.894	0.526	n.a.	3.068

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Heavy Industrial

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	11.1	36.0	53.0	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	61.2	6.1	12.7	19.9	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	65.60	34.40	50.85	49.15	43.02	56.98	58.82	41.18
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	69.39	30.61	47.69	52.31	28.42	71.58	55.56	44.44

Industrial parks are areas containing a number of industrial or related facilities. They are characterized by a varied mix of manufacturing, services, and warehouse facilities.

Industrial Park (ITE code 130)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	2.485	1.236	24.805
Mean Trip Rate	3.465	2.691	48.392
Standard Deviation	2.328	2.834	46.320
Linear Regression			
Coefficient	1.638	0.480	9.381
y Intercept	156.726	281.071	285.841
r Squared	0.819	0.574	0.486
Logarithmic Regression			
Coefficient	1.004	1.001	1.026
y Intercept	188.297	260.728	260.033
r Squared	0.869	0.617	0.558
Trip Rates			
Herman Engr & Man	6.893	6.896	116.180
Arrowhead	2.203	1.717	39.456
Schlosser Company	1.848	1.424	22.828
Excel Logistics	2.915	0.729	15.104
Mean Trip Rates	3.465	2.691	48.392

sTRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.191	0.095	1.902	0.078	0.039	0.782
Mean Trip Rate	0.301	0.259	4.658	0.075	0.060	1.190
Standard Deviation	0.293	0.322	5.354	0.056	0.053	1.142
Linear Regression						
Coefficient	0.148	0.004	-0.073	0.124	0.005	-0.023
y Intercept	7.937	33.826	36.596	-8.419	12.688	14.922
r Squared	0.514	0.003	0.002	0.537	0.007	0.000
Logarithmic Regression						
Coefficient	1.004	1.000	0.999	1.009	1.001	1.012
y Intercept	15.894	29.562	31.435	1.631	6.024	6.638
r Squared	0.557	0.006	0.000	0.741	0.056	0.024
Trip Rates						
Herman Engr & Man	0.733	0.734	12.360	0.100	0.100	1.685
Arrowhead	0.233	0.182	4.179	0.143	0.112	2.567
Schlosser Company	0.119	0.092	1.471	0.029	0.022	0.353
Excel Logistics	0.120	0.030	0.622	0.030	0.008	0.155
Mean Trip Rates	0.301	0.259	4.658	0.075	0.060	1.190

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.193	0.096	1.929	0.097	0.048	0.971
Mean Trip Rate	0.264	0.226	4.118	0.104	0.084	1.624
Standard Deviation	0.215	0.239	4.039	0.072	0.076	1.474
Linear Regression						
Coefficient	0.196	-0.002	-0.189	0.139	0.006	-0.007
y Intercept	-0.449	36.323	39.259	-7.783	15.596	18.122
r Squared	0.560	0.000	0.009	0.539	0.009	0.000
Logarithmic Regression						
Coefficient	1.005	1.000	0.995	1.008	1.001	1.010
y Intercept	11.387	30.047	31.701	2.898	8.738	9.602
r Squared	0.607	0.003	0.012	0.702	0.059	0.023
Trip Rates						
Herman Engr & Man	0.567	0.567	9.551	0.167	0.167	2.809
Arrowhead	0.263	0.205	4.716	0.167	0.130	2.985
Schlosser Company	0.143	0.110	1.765	0.038	0.029	0.471
Excel Logistics	0.085	0.021	0.440	0.045	0.011	0.233
Mean Trip Rates	0.264	0.226	4.118	0.104	0.084	1.624

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.265	0.132	2.644	0.053	0.026	0.526
Mean Trip Rate	0.406	0.351	6.321	0.131	0.125	2.197
Standard Deviation	0.384	0.422	7.023	0.205	0.208	3.468
Linear Regression						
Coefficient	0.225	-0.001	-0.236	0.020	-0.011	-0.320
y Intercept	7.339	49.317	53.370	5.987	13.674	15.680
r Squared	0.509	0.000	0.010	0.043	0.094	0.191
Logarithmic Regression						
Coefficient	1.004	1.000	0.995	n.a.	n.a.	n.a.
y Intercept	20.177	42.995	45.748	n.a.	n.a.	n.a.
r Squared	0.536	0.002	0.014	n.a.	n.a.	n.a.
Trip Rates						
Herman Engr & Man	0.967	0.967	16.292	0.433	0.434	7.303
Arrowhead	0.340	0.265	6.090	0.080	0.062	1.433
Schlosser Company	0.176	0.136	2.176	0.000	0.000	0.000
Excel Logistics	0.140	0.035	0.725	0.010	0.003	0.052
Mean Trip Rates	0.406	0.351	6.321	0.131	0.125	2.197

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.382	0.190	3.818	0.120	0.060	1.201
Mean Trip Rate	0.441	0.349	6.429	0.143	0.117	2.212
Standard Deviation	0.193	0.265	4.559	0.105	0.116	2.084
Linear Regression						
Coefficient	0.397	0.026	0.393	0.154	0.010	0.043
y Intercept	-2.740	61.106	63.464	-6.228	18.503	21.450
r Squared	0.816	0.028	0.014	0.523	0.018	0.001
Logarithmic Regression						
Coefficient	1.007	1.001	1.017	1.006	1.001	1.011
y Intercept	16.146	41.914	41.775	4.869	11.470	12.702
r Squared	0.952	0.116	0.106	0.604	0.084	0.033
Trip Rates						
Herman Engr & Man	0.700	0.700	11.798	0.267	0.267	4.494
Arrowhead	0.457	0.356	8.179	0.193	0.151	3.463
Schlosser Company	0.362	0.279	4.471	0.043	0.033	0.529
Excel Logistics	0.245	0.061	1.269	0.070	0.018	0.363
Mean Trip Rates	0.441	0.349	6.429	0.143	0.117	2.212

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Industrial Park

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	7.9	7.1	85.0	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	52.8	4.0	3.3	39.8	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	68.88	31.12	58.97	41.03	43.11	56.89	51.69	48.31
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	60.99	39.01	50.00	50.00	32.87	67.13	37.50	62.50

Facilities included in this category are primarily for the sale and leasing of new heavy duty commercial vehicles, 10,000 GVW, or greater. Typically, the facilities are located along major arterials in either commercial or industrial areas. The facilities can also include maintenance services, part sales, and used truck sales.

Truck Sales and Leasing (not an ITE category)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Sales and Leasing

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	10.380	23.517	129.691
Mean Trip Rate	11.626	30.031	116.763
Standard Deviation	2.624	14.272	32.265
Linear Regression			
Coefficient	10.161	14.874	136.639
y Intercept	14.571	253.696	-36.982
r Squared	0.998	0.684	0.965
Logarithmic Regression			
Coefficient	1.035	1.049	1.590
y Intercept	44.902	105.898	36.432
r Squared	0.981	0.619	0.978
Trip Rates			
Kenworth	10.493	22.233	138.512
Peterbuilt	10.000	16.473	141.694
Trans-West Truck Cntr.	10.463	49.029	115.091
Sam's Truck Sales, Inc.	15.547	32.389	71.754
Mean Trip Rates	11.626	30.031	116.763

Classification: Truck Sales and Leasing

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.605	1.371	7.562	0.056	0.128	0.705
Mean Trip Rate	0.535	1.313	6.306	0.042	0.117	0.539
Standard Deviation	0.201	0.539	4.148	0.030	0.104	0.391
Linear Regression						
Coefficient	0.638	1.208	7.765	0.063	0.091	0.839
y Intercept	-2.148	4.795	-1.080	-0.410	1.077	-0.717
r Squared	0.835	0.959	0.663	0.888	0.603	0.855
Logarithmic Regression						
Coefficient	1.047	1.072	1.830	n.a	n.a.	n.a
y Intercept	0.927	2.490	0.764	n.a.	n.a.	n.a
r Squared	0.977	0.728	0.924	n.a	n.a.	n.a
Trip Rates						
Kenworth	0.586	1.241	7.733	0.071	0.150	0.933
Peterbuilt	0.793	1.306	11.238	0.046	0.076	0.651
Trans-West Truck Cntr.	0.429	2.008	4.714	0.052	0.243	0.571
Sam's Truck Sales, Inc.	0.333	0.694	1.538	0.000	0.000	0.000
Mean Trip Rate	0.535	1.313	6.306	0.042	0.117	0.539

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Sales and Leasing

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.556	1.261	6.952	0.098	0.221	1.221
Mean Trip Rate	0.660	1.575	6.506	0.234	0.531	1.628
Standard Deviation	0.253	0.511	2.470	0.290	0.581	1.019
Linear Regression						
Coefficient	0.551	1.018	6.791	0.080	0.120	1.057
y Intercept	0.336	7.110	0.853	1.186	2.976	0.877
r Squared	0.869	0.948	0.705	0.703	0.508	0.658
Logarithmic Regression						
Coefficient	1.032	1.051	1.524	1.017	1.024	1.247
y Intercept	2.806	5.446	2.492	1.819	2.700	1.672
r Squared	0.978	0.760	0.910	0.921	0.616	0.892
Trip Rates						
Kenworth	0.535	1.134	7.067	0.121	0.257	1.600
Peterbuilt	0.690	1.136	9.772	0.069	0.114	0.977
Trans-West Truck Cntr.	0.416	1.947	4.571	0.078	0.365	0.857
Sam's Truck Sales, Inc.	1.000	2.083	4.615	0.667	1.389	3.077
Mean Trip Rate	0.660	1.575	6.506	0.234	0.531	1.628

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Sales and Leasing

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.883	2.002	11.038	0.308	0.698	3.852
Mean Trip Rate	0.912	2.252	9.774	0.479	1.147	4.123
Standard Deviation	0.214	0.799	5.051	0.362	0.754	1.651
Linear Regression						
Coefficient	0.871	1.597	10.795	0.252	0.458	3.155
y Intercept	0.836	11.883	1.296	3.754	7.061	3.708
r Squared	0.817	0.878	0.671	0.570	0.603	0.479
Logarithmic Regression						
Coefficient	1.038	1.058	1.635	1.024	1.036	1.367
y Intercept	2.890	6.496	2.453	3.103	5.154	2.793
r Squared	0.961	0.708	0.913	0.841	0.628	0.800
Trip Rates						
Kenworth	0.747	1.584	9.867	0.182	0.385	2.400
Peterbuilt	1.172	1.931	16.612	0.437	0.720	6.189
Trans-West Truck Cntr.	0.727	3.408	8.000	0.299	1.400	3.286
Sam's Truck Sales, Inc.	1.000	2.083	4.615	1.000	2.083	4.615
Mean Trip Rate	0.912	2.252	9.774	0.479	1.147	4.123

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Sales and Leasing

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.823	1.865	10.287	0.297	0.673	3.711
Mean Trip Rate	1.671	3.841	12.608	0.627	1.379	4.704
Standard Deviation	1.779	3.557	5.509	0.702	1.405	2.682
Linear Regression						
Coefficient	0.656	1.160	8.249	0.236	0.530	2.631
y Intercept	11.133	20.711	10.843	4.087	4.190	5.744
r Squared	0.881	0.881	0.745	0.529	0.858	0.354
Logarithmic Regression						
Coefficient	1.019	1.031	1.285	1.018	1.034	1.246
y Intercept	12.591	18.519	11.783	4.732	5.839	4.823
r Squared	0.959	0.763	0.887	0.811	0.903	0.656
Trip Rates						
Kenworth	0.697	1.477	9.200	0.222	0.471	2.933
Peterbuilt	0.954	1.572	13.518	0.437	0.720	6.189
Trans-West Truck Cntr.	0.701	3.286	7.714	0.182	0.852	2.000
Sam's Truck Sales, Inc.	4.333	9.028	20.000	1.667	3.472	7.692
Mean Trip Rates	1.671	3.841	12.608	0.627	1.379	4.704

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Sales and Leasing

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	**3 Axle**	**4+ Axle**	**Total**				
	42.8	33.0	24.2	100.0				
	Pass Veh	**Lge 2 Ax**	**3 Axle**	**4+ Axle**	**Total**			
	72.7	11.7	9.0	6.6	100.0			
	Site Entering & Exiting							
	a.m.				**p.m.**			
	Total Enter	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**	**Total Enter**	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**
Split	40.90	59.10	48.94	51.06	51.70	48.30	55.14	44.86
	Street Entering & Exiting							
	a.m.				**p.m.**			
	Total Enter	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**	**Total Enter**	**Total Exit**	**Large Truck Enter**	**Large Truck Exit**
Split	46.85	53.15	52.86	47.14	36.21	63.79	50.98	49.02

Facilities included in this category are primarily for the sale of used heavy duty commercial vehicles, 10,000 GVW, or greater. Typically, the facilities are located along major arterials in either commercial or industrial areas.

Used Truck Sales (not an ITE category)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	20.874	20.039	67.996
Mean Trip Rate	24.702	24.242	55.201
Standard Deviation	31.090	12.604	20.243
Linear Regression			
Coefficient	-5.828	20.671	94.942
y Intercept	707.592	-17.428	-219.206
r Squared	0.014	0.987	1.000
Logarithmic Regression			
Coefficient	1.009	1.033	1.159
y Intercept	265.680	137.430	102.271
r Squared	0.014	0.974	0.948
Trip Rates			
Arrow	13.640	42.625	35.074
SelecTruck-Freightliner	71.100	20.737	83.335
TCI	7.400	14.000	51.800
TEC CAL	6.666	19.606	50.596
Mean Trip Rates	24.702	24.242	55.201

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

Period: AM Peak Hour Street Total/AM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	No. of Employees	Gross Building Area (KSF)	Acres	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	1.179	1.132	3.841	0.358	0.344	1.168
Mean Trip Rate	1.383	1.661	3.609	0.386	0.247	0.863
Standard Deviation	1.400	0.984	0.803	0.595	0.168	0.649
Linear Regression						
Coefficient	-0.120	0.932	4.233	-0.036	0.387	1.753
y Intercept	34.420	5.537	-3.183	10.458	-1.172	-4.759
r Squared	0.003	1.000	0.991	0.002	1.000	0.987
Logarithmic Regression						
Coefficient	1.013	1.027	1.124	n.a.	n.a.	n.a.
y Intercept	16.312	10.979	8.786	n.a.	n.a.	n.a.
r Squared	0.039	0.941	0.886	n.a.	n.a.	n.a.
Trip Rates						
Arrow	1.000	3.125	2.571	0.000	0.000	0.000
SelecTruck-Freightliner	3.455	1.008	4.049	1.273	0.371	1.492
TCI	0.629	1.189	4.400	0.171	0.324	1.200
TEC CAL	0.450	1.324	3.416	0.100	0.294	0.759
Mean Trip Rates	1.383	1.661	3.609	0.386	0.247	0.863

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	1.481	1.422	4.825	0.226	0.217	0.738
Mean Trip Rate	1.677	1.945	4.614	0.235	0.171	0.650
Standard Deviation	1.685	0.833	1.857	0.322	0.230	0.854
Linear Regression						
Coefficient	0.016	1.122	5.024	0.015	0.200	0.860
y Intercept	38.817	8.283	-1.622	5.590	0.480	-0.999
r Squared	0.000	0.988	0.952	0.001	0.785	0.697
Logarithmic Regression						
Coefficient	1.022	1.028	1.125	n.a.	n.a.	n.a.
y Intercept	15.777	13.124	10.680	n.a.	n.a.	n.a.
r Squared	0.095	0.839	0.752	n.a.	n.a.	n.a.
Trip Rates						
Arrow	1.000	3.125	2.571	0.000	0.000	0.000
SelecTruck-Freightliner	4.182	1.220	4.901	0.682	0.199	0.799
TCI	1.000	1.892	7.000	0.257	0.486	1.800
TEC CAL	0.525	1.544	3.985	0.000	0.000	0.000
Mean Trip Rates	1.677	1.945	4.614	0.235	0.171	0.650

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

Period: AM Peak Hour Site Total/PM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	1.764	1.694	5.747	0.594	0.571	1.936
Mean Trip Rate	2.309	3.572	6.047	0.829	1.171	1.858
Standard Deviation	1.931	3.875	1.194	0.829	1.552	1.155
Linear Regression						
Coefficient	-0.576	1.155	5.323	-0.435	0.503	2.309
y Intercept	62.007	14.876	3.450	27.267	1.855	-3.030
r Squared	0.044	0.968	0.987	0.120	0.884	0.893
Logarithmic Regression						
Coefficient	0.990	1.020	1.097	0.939	1.032	1.150
y Intercept	49.852	22.051	18.125	43.553	3.472	2.633
r Squared	0.042	0.971	0.982	0.323	0.431	0.416
Trip Rates						
Arrow	3.000	9.375	7.714	1.111	3.472	2.857
SelecTruck-Freightliner	4.727	1.379	5.541	1.864	0.544	2.184
TCI	0.857	1.622	6.000	0.314	0.595	2.200
TEC CAL	0.650	1.912	4.934	0.025	0.074	0.190
Mean Trip Rates	2.309	3.572	6.047	0.829	1.171	1.858

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	1.575	1.513	5.132	0.481	0.462	1.567
Mean Trip Rate	2.195	3.732	5.565	0.687	1.027	1.525
Standard Deviation	1.896	4.721	2.440	0.683	1.402	0.850
Linear Regression						
Coefficient	-0.753	0.973	4.617	-0.369	0.396	1.847
y Intercept	61.705	14.899	4.193	22.534	1.812	-2.272
r Squared	0.094	0.855	0.925	0.140	0.884	0.922
Logarithmic Regression						
Coefficient	0.980	1.019	1.096	0.959	1.026	1.127
y Intercept	57.602	19.892	15.795	25.697	4.223	3.235
r Squared	0.146	0.660	0.762	0.329	0.681	0.715
Trip Rates						
Arrow	3.444	10.764	8.857	1.000	3.125	2.571
SelecTruck-Freightliner	4.182	1.220	4.901	1.500	0.437	1.758
TCI	0.429	0.811	3.000	0.171	0.324	1.200
TEC CAL	0.725	2.132	5.503	0.075	0.221	0.569
Mean Trip Rates	2.195	3.732	5.565	0.687	1.027	1.525

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Used Truck Sales

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	26.3	42.9	30.8	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	73.7	4.9	12.1	9.2	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	47.59	52.41	39.68	60.32	53.29	46.71	49.02	50.98
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	68.85	31.15	48.78	51.22	29.94	70.06	33.33	66.67

Truck terminals are facilities where goods are transferred between trucks, or trucks and railroads.

Truck Terminal (ITE code 030)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

Period: Total Daily Traffic

Statistics	No. of Employees	Gross Building Area (KSF)	Acres
Weighted Average Trips	3.428	16.857	42.582
Mean Trip Rate	5.490	32.775	52.500
Standard Deviation	2.930	34.597	28.337
Linear Regression			
Coefficient	1.844	8.249	27.391
y Intercept	480.332	530.855	370.843
r Squared	0.928	0.776	0.831
Logarithmic Regression			
Coefficient	1.002	1.007	1.027
y Intercept	507.692	555.870	455.905
r Squared	0.728	0.512	0.653
Trip Rates			
Arrow	9.423	11.461	44.172
SelecTruck-Freightliner	5.444	24.102	94.556
TCI	4.711	83.905	36.663
TEC CAL	2.379	11.631	34.608
Mean Trip Rates	5.490	32.775	52.500

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

Period: AM Peak Hour Street Total/PM Peak Hour Street Truck

	AM PEAK HOUR STREET TOTAL			AM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.104	0.511	1.290	0.047	0.231	0.584
Mean Trip Rate	0.222	1.314	2.033	0.101	0.542	0.940
Standard Deviation	0.156	1.516	1.510	0.074	0.556	0.763
Linear Regression						
Coefficient	0.003	-0.018	0.011	0.003	0.005	0.007
y Intercept	30.620	32.615	31.227	13.401	13.931	14.087
r Squared	0.006	0.010	0.000	0.024	0.003	0.001
Logarithmic Regression						
Coefficient	1.000	1.000	1.004	1.000	1.001	1.004
y Intercept	26.759	29.118	26.724	11.714	12.427	11.971
r Squared	0.041	0.000	0.026	0.078	0.020	0.032
Trip Rates						
T N T Bestway	0.417	0.507	1.953	0.194	0.236	0.911
Overnite Transportation	0.237	1.048	4.113	0.116	0.513	2.011
USF Bestway	0.198	3.524	1.540	0.075	1.333	0.583
Roadway Express Inc.	0.036	0.177	0.527	0.018	0.086	0.255
Mean Trip Rates	0.222	1.314	2.033	0.101	0.542	0.940

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL			PM PEAK HOUR STREET TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.122	0.600	1.516	0.062	0.304	0.768
Mean Trip Rate	0.269	1.550	2.095	0.142	0.756	1.004
Standard Deviation	0.241	1.960	0.881	0.151	0.963	0.490
Linear Regression						
Coefficient	0.030	0.100	0.539	0.022	0.090	0.408
y Intercept	28.013	30.811	23.851	11.941	13.195	8.790
r Squared	0.542	0.260	0.726	0.637	0.428	0.853
Logarithmic Regression						
Coefficient	1.001	1.003	1.015	1.001	1.004	1.022
y Intercept	27.150	29.520	24.203	11.951	12.871	9.925
r Squared	0.519	0.235	0.685	0.498	0.310	0.739
Trip Rates						
T N T Bestway	0.611	0.743	2.865	0.361	0.439	1.693
Overnite Transportation	0.153	0.676	2.651	0.047	0.210	0.823
USF Bestway	0.251	4.476	1.956	0.123	2.190	0.957
Roadway Express Inc.	0.063	0.306	0.909	0.038	0.183	0.545
Mean Trip Rates	0.269	1.550	2.095	0.142	0.756	1.004

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL			AM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.157	0.770	1.946	0.059	0.288	0.727
Mean Trip Rate	0.293	1.776	2.714	0.156	0.977	1.243
Standard Deviation	0.183	2.027	1.692	0.136	1.333	0.812
Linear Regression						
Coefficient	0.044	0.167	0.642	-0.018	-0.123	-0.233
y Intercept	34.247	37.172	31.833	23.314	25.337	23.437
r Squared	0.550	0.337	0.481	0.318	0.598	0.208
Logarithmic Regression						
Coefficient	1.001	1.004	1.016	0.998	0.991	0.979
y Intercept	30.970	33.976	29.010	23.595	26.045	25.025
r Squared	0.441	0.231	0.396	0.509	0.758	0.405
Trip Rates						
T N T Bestway	0.528	0.642	2.474	0.333	0.405	1.563
Overnite Transportation	0.295	1.305	5.119	0.116	0.513	2.011
USF Bestway	0.267	4.762	2.081	0.166	2.952	1.290
Roadway Express Inc.	0.081	0.397	1.182	0.008	0.037	0.109
Mean Trip Rates	0.293	1.776	2.714	0.156	0.977	1.243

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL			PM PEAK HOUR SITE TRUCK		
Statistics	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**	**No. of Employees**	**Gross Building Area (KSF)**	**Acres**
Weighted Average Trips	0.176	0.864	2.181	0.091	0.446	1.126
Mean Trip Rate	0.335	2.310	2.891	0.194	1.269	1.697
Standard Deviation	0.222	3.107	1.276	0.135	1.650	1.047
Linear Regression						
Coefficient	0.043	0.125	0.786	0.002	-0.033	0.063
y Intercept	40.073	45.548	34.058	26.907	29.562	25.968
r Squared	0.388	0.134	0.516	0.003	0.042	0.015
Logarithmic Regression						
Coefficient	1.001	1.003	1.018	1.000	1.000	1.005
y Intercept	35.506	40.255	31.450	23.461	26.204	22.491
r Squared	0.378	0.132	0.461	0.035	0.005	0.050
Trip Rates						
T N T Bestway	0.611	0.743	2.865	0.361	0.439	1.693
Overnite Transportation	0.253	1.118	4.388	0.174	0.769	3.016
USF Bestway	0.390	6.952	3.038	0.209	3.714	1.623
Roadway Express Inc.	0.088	0.428	1.273	0.031	0.153	0.455
Mean Trip Rates	0.335	2.310	2.891	0.194	1.269	1.697

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Terminals

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	11.9	24.4	63.7	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	46.0	6.1	13.9	34.0	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	51.27	48.73	49.23	50.77	46.36	53.64	66.39	33.61
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	52.86	47.14	43.75	56.25	60.80	39.20	66.30	33.70

The primary function of a truck stop is to provide fueling for truckers. Ancillary services include maintenance services, restaurants, and the sale of sundries. The general motoring public also extensively uses these facilities.

Truck Stops (not an ITE category)

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

Period: Total Daily Traffic

	TOTAL DAILY TRAFFIC	TOTAL DAILY TRAFFIC
Statistics	**No. of Fueling Positions**	**Acres**
Weighted Average Trips	34.565	319.730
Mean Trip Rate	63.946	359.657
Standard Deviation	39.016	219.535
Linear Regression		
Coefficient	n.a.	n.a.
y Intercept	n.a.	n.a.
r Squared	n.a.	n.a.
Logarithmic Regression		
Coefficient	n.a.	n.a.
y Intercept	n.a.	n.a.
r Squared	n.a.	n.a.
Trip Rates		
3 Sisters Truck Stop	79.400	272.380
A-Z Fuel Stop	48.490	446.930
Pilot Truck Stop	0.000	0.000
T/A Truck Stop	0.000	0.000
Mean Trip Rates	63.946	359.657

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

Period: AM Peak Hour Site Total/PM Peak Hour Site Truck

	AM PEAK HOUR STREET TOTAL		AM PEAK HOUR STREET TRUCK	
Statistics	**No. of Fueling Positions**	**Acres**	**No. of Fueling Positions**	**Acres**
Weighted Average Trips	2.257	20.875	1.189	11.000
Mean Trip Rate	2.088	32.149	1.675	16.700
Standard Deviation	2.441	15.144	2.311	0.155
Linear Regression				
Coefficient	n.a.	n.a.	n.a.	n.a.
y Intercept	n.a.	n.a.	n.a.	n.a.
r Squared	n.a.	n.a.	n.a.	n.a.
Logarithmic Regression				
Coefficient	n.a.	n.a.	n.a.	n.a.
y Intercept	n.a.	n.a.	n.a.	n.a.
r Squared	n.a.	n.a.	n.a.	n.a.
Trip Rates				
3 Sisters Truck Stop	3.700	21.441	4.900	16.810
A-Z Fuel Stop	4.650	42.857	1.800	16.590
Pilot Truck Stop	0.000	n.a.	0.000	n.a.
T/A Truck Stop	0.000	n.a.	0.000	n.a.
Mean Trip Rates	2.088	32.149	1.675	16.700

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

Period: PM Peak Hour Street Total/PM Peak Hour Street Truck

	PM PEAK HOUR STREET TOTAL		PM PEAK HOUR STREET TRUCK	
Statistics	**No. of Fueling Positions**	**Acres**	**No. of Fueling Positions**	**Acres**
Weighted Average Trips	8.216	76.000	4.811	44.500
Mean Trip Rate	8.548	32.149	5.371	16.700
Standard Deviation	4.535	15.144	2.760	0.155
Linear Regression				
Coefficient	-16.176	n.a.	-6.412	n.a.
y Intercept	451.265	n.a.	207.618	n.a.
r Squared	0.297	n.a.	0.085	n.a.
Logarithmic Regression				
Coefficient	0.885	n.a.	0.897	n.a.
y Intercept	1339.042	n.a.	575.237	n.a.
r Squared	0.365	n.a.	0.170	n.a.
Trip Rates				
3 Sisters Truck Stop	4.600	21.441	4.900	16.810
A-Z Fuel Stop	4.650	42.857	1.800	16.590
Pilot Truck Stop	12.733	n.a.	6.467	n.a.
T/A Truck Stop	12.211	n.a.	8.316	n.a.
Mean Trip Rates	8.548	32.149	5.371	16.700

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

Period: AM Peak Hour Site Total/AM Peak Hour Site Truck

	AM PEAK HOUR SITE TOTAL		AM PEAK HOUR SITE TRUCK	
Statistics	**No. of Fueling Positions**	**Acres**	**No. of Fueling Positions**	**Acres**
Weighted Average Trips	2.324	21.500	1.878	17.375
Mean Trip Rate	2.150	21.550	1.738	17.852
Standard Deviation	2.949	0.154	2.319	1.474
Linear Regression				
Coefficient	n.a.	n.a.	n.a	n.a.
y Intercept	n.a.	n.a.	n.a	n.a.
r Squared	n.a.	n.a.	n.a	n.a.
Logarithmic Regression				
Coefficient	n.a.	n.a.	n.a	n.a.
y Intercept	n.a.	n.a.	n.a	n.a.
r Squared	n.a.	n.a.	n.a	n.a.
Trip Rates				
3 Sisters Truck Stop	6.250	21.441	4.900	16.810
A-Z Fuel Stop	2.350	21.659	2.050	18.894
Pilot Truck Stop	0.000	n.a.	0.000	n.a.
T/A Truck Stop	0.000	n.a.	0.000	n.a.
Mean Trip Rates	2.150	21.550	1.738	17.852

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

Period: PM Peak Hour Site Total/PM Peak Hour Site Truck

	PM PEAK HOUR SITE TOTAL		PM PEAK HOUR SITE TRUCK	
Statistics	**No. of Fueling Positions**	**Acres**	**No. of Fueling Positions**	**Acres**
Weighted Average Trips	9.500	87.875	5.000	46.250
Mean Trip Rate	9.907	28.693	5.288	15.317
Standard Deviation	6.281	10.256	3.360	2.111
Linear Regression				
Coefficient	-20.735	n.a.	-0.529	n.a.
y Intercept	559.353	n.a.	102.294	n.a.
r Squared	0.222	n.a.	0.000	n.a.
Logarithmic Regression				
Coefficient	0.860	n.a.	0.950	n.a.
y Intercept	2476.988	n.a.	197.298	n.a.
r Squared	0.319	n.a.	0.027	n.a.
Trip Rates				
3 Sisters Truck Stop	5.100	21.441	4.900	16.810
A-Z Fuel Stop	3.900	35.945	1.500	13.825
Pilot Truck Stop	14.733	n.a.	5.067	n.a.
T/A Truck Stop	15.895	n.a.	9.684	n.a.
Mean Trip Rates	9.907	28.693	5.288	15.317

TRIP GENERATION ANALYSIS BY LAND USE CATEGORY (Cont'd)

Classification: Truck Stops

	Recommended Large Truck Mix (%)							
	Lge 2 Ax	3 Axle	4+ Axle	Total				
	4.9	16.2	78.9	100.0				
	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total			
	44.1	2.2	9.0	44.6	100.0			
	Site Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	52.33	47.67	53.96	46.04	50.92	49.08	54.86	45.14
	Street Entering & Exiting							
	a.m.				p.m.			
	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit	Total Enter	Total Exit	Large Truck Enter	Large Truck Exit
Split	46.11	53.89	45.45	54.55	50.00	50.00	53.09	46.91

APPENDICES

A. Surveyed Site List
B. Analysis of 24-hour Driveway Counts
C. Peak Arterial Locations

APPENDIX A – SURVEYED SITE LIST

Land Uses	Name of Site	ID. No	Location of Site	Peak Hour AM	Peak Hour PM	No. of Employees	Gross Area
Warehouse, Light (< 100TSF)	JR Distribution	3	10850 Business	6:45-7:45	16:30-17:30	20	257,810
	Medline Industries	22	14650 Meyer Canyon	6:15-7:15	13:45-14:45	120	221,000
	Kumo Tires	23	14605 Miller Ave.	7:15-8:15	17:15-18:15	82	286,353
	Barth & Dryfuss	24	1150 S. Etiwanda	6:45-7:45	15:45-16:45	225	235,000
Warehouse, Heavy (>100TSF)	Target	4	14750 Miller Ave.	5:00-6:00	15:45-16:45	1,100	1,400,000
	Thrifty/Big 5	5	7351 McGuire	4:00-5:00	13:15-14:15	200	400,000
	TAB	6	13050 Marlay Ave	6:00-7:00	14:45-15:45	160	285,000
	Sportsmart	25	12925 Marlay Ave	5:15-6:15	14:30-15:30	280	199,580
Industrial, Light	G & F Pallets	26	10407 Elm Ave.	7:15-8:15	13:15-14:15	16	6,000
	H Master Halco-Fence	27	9121 Cherry Ave.	5:00-6:00	13:15-14:15	70	84,960
	Angelus Blocks	28	14515 Whittram Ave	8:00-9:00	13:15-14:15	40	8,254
	Peterman Lumber	38	10330 Elm Ave	6:45-7:45	14:00-15:00	48	20,000
Industrial, Heavy	James Hardie	13	10573 Beech	7:15-8:15	13:45-14:45	227	205,633
	Robertson Ready Mix	15	13792 Slover Ave.	7:00-8:00	16:45-17:45	26	120
	Forged Metals	29	10901 Elm Avenue	3:00-4:00	13:45-14:45	350	64,520
	All State Recycling	39	8889 Etiwanda	10:15-11:15	12:45-13:45	16	40,750
Industrial Park	Herman Engr &Manufc	18	8827 Rochester	10:00-11:00	16:45-17:45	30	29,987
	Arrowhead	31	5772 Jurupa /Etiwanda	4:15-5:15	13:15-14:15	300	385,000
	Schlosser Company	32	11711 Arrow	4:00-5:00	15:15-16:15	210	272,500
	Excel Logistics	40	101 Napa-off	3:15-4:15	11:45-12:45	200	800,000
Truck Sales and Leasing	Kenworth	19	9730 Cherry Ave.	7:30-8:30	16:45-17:45	99	46,725
	Peterbuilt	20	14490 Slover Ave	11:00-12:00	13:30-14:30	87	52,813
	Trans-West Truck Cntr.	21	10150 Cherry Ave.	9:30-10:30	13:15-14:15	77	16,432
	Sam's Truck Sales, Inc	43	15083 Valley Blvd	7:45-8:45	16:00-17:00	3	1,440
Used Truck Sales	Arrow	33	10175 Cherry Ave	10:30-11:30	14:00-15:00	9	2,880
	SelecTruck-Freightliner	34	13750 Valley Blvd	11:15-12:15	16:45-17:45	22	75,432
	TCI	35	Cherry/Merill	10:45-11:45	16:45-17:45	35	18,500
	TEC CAL	41	14085 Valley	7:45-8:45	12:45-13:45	40	13,600
Truck Terminals	T N T Bestway	46	10691 Poplar	10:15-11:15	16:45-17:45	36	29,600
	Overnite Transportation	36	9880 Banana Ave.	10:45-11:45	18:30-19:30	190	42,920
	USF Bestway	37	10661 Etiwanda Ave.	9:30-10:30	19:45-20:45	187	10,500
	Roadway Express Inc.	47	18298 Slover Ave.	6:15-7:15	14:30-15:30	800	163,650
Truck Stops	3 Sisters Truck Stop	44	14416 Slover	9:30-10:30	12:15-13:15	22	14800
	A-Z Fuel Stop	45	14529 SanBerdo	7:00-8:00	15:45-16:45	6	4000

APPENDIX B – ANALYSIS OF 24 HOUR DRIVEWAY COUNTS (comparison of manual counts to ATC data)

	A	B	C
Site # Site Name	Manual Count	Tube Count	Col. A/Col. B
6 Marley	593.00	1406.00	.42
20 Peterbilt	870.00	2135.00	.41
23 Kumo	292.00	818.00	.36
28 Angeles	421.00	1164.00	.36
29 Forged Metals	206.00	1042.00	.20
35 TCI	583.00	810.00	.72
37 Bestw ay	881.00	1782.00	.49
44 3 Sisters	1588.00	2861.00	.56
Sum	534.00	12018.00	.45
Mean Col. C			.44
Standard Deviation Col C.			.15

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOFHCICH.twf
Start Date: 8/5/2002
Start Time: 12:00:00 PM
Site Code: 000043101334
CITY OF FONTANA
FOOTHILL BOULEVARD
B/CITRUS AVENUE & CHERRY AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
8/5/2002	12:00:00 PM	0	703	124	3	20	4	0	7	2	0	1	0	0
8/5/2002	1:00:00 PM	2	847	158	4	29	6	0	12	3	1	2	0	0
8/5/2002	2:00:00 PM	2	987	206	9	24	4	0	15	5	1	0	0	1
8/5/2002	3:00:00 PM	5	1219	190	4	25	5	0	11	5	0	2	1	1
8/5/2002	4:00:00 PM	3	1033	167	4	19	3	0	15	2	1	0	1	0
8/5/2002	5:00:00 PM	3	1195	190	7	26	2	0	12	3	0	0	0	1
8/5/2002	6:00:00 PM	5	898	169	3	25	1	0	4	4	0	0	0	0
8/5/2002	7:00:00 PM	4	723	119	2	7	3	0	5	2	0	0	0	0
8/5/2002	8:00:00 PM	3	526	76	2	3	1	0	2	1	0	1	0	0
8/5/2002	9:00:00 PM	3	461	73	1	6	2	0	0	0	0	0	0	1
8/5/2002	10:00:00 PM	2	384	52	1	2	3	0	1	0	0	0	0	0
8/5/2002	11:00:00 PM	0	278	36	0	2	1	0	0	1	0	0	0	0
8/6/2002	12:00:00 AM	0	222	30	1	3	0	0	2	0	0	1	0	0
8/6/2002	1:00:00 AM	0	126	23	0	1	0	0	1	0	0	0	0	0
8/6/2002	2:00:00 AM	0	85	15	0	0	3	0	0	1	0	0	0	0
8/6/2002	3:00:00 AM	0	96	11	0	1	1	0	0	0	0	0	0	0
8/6/2002	4:00:00 AM	1	103	18	3	2	1	0	1	0	0	0	0	0
8/6/2002	5:00:00 AM	0	167	25	1	4	3	0	2	0	0	0	0	0
8/6/2002	6:00:00 AM	3	360	64	5	10	0	0	4	1	0	0	0	0
8/6/2002	7:00:00 AM	4	552	97	7	21	1	0	1	2	0	0	0	0
8/6/2002	8:00:00 AM	1	493	102	0	15	4	1	7	4	0	0	0	0
8/6/2002	9:00:00 AM	2	506	101	4	22	3	0	5	6	1	0	0	0
8/6/2002	10:00:00 AM	0	565	92	8	16	5	0	8	2	0	0	0	1
8/6/2002	11:00:00 AM	0	702	137	5	23	1	0	6	0	0	0	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOFHCICH.twf
Start Date: 8/5/2002
Start Time: 12:00:00 PM
Site Code: 000043101334
CITY OF FONTANA
FOOTHILL BOULEVARD
B/CITRUS AVENUE & CHERRY AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
8/5/2002	12:00:00 PM	5	642	179	6	26	3	0	8	14	0	0	0	0
8/5/2002	1:00:00 PM	3	704	174	6	33	2	0	7	10	0	2	0	0
8/5/2002	2:00:00 PM	4	846	207	10	20	8	0	2	6	0	0	0	0
8/5/2002	3:00:00 PM	2	679	148	3	21	5	0	4	10	0	0	0	1
8/5/2002	4:00:00 PM	4	755	134	5	26	4	0	11	8	0	1	1	0
8/5/2002	5:00:00 PM	3	709	186	2	21	6	0	5	2	2	0	0	0
8/5/2002	6:00:00 PM	2	646	142	2	16	7	0	1	5	0	0	1	0
8/5/2002	7:00:00 PM	3	545	130	1	7	1	0	5	6	0	0	0	0
8/5/2002	8:00:00 PM	2	453	119	1	9	0	0	3	5	0	1	0	0
8/5/2002	9:00:00 PM	6	402	66	1	8	1	0	1	7	0	0	0	0
8/5/2002	10:00:00 PM	0	274	51	0	3	2	0	1	5	0	0	0	0
8/5/2002	11:00:00 PM	0	164	25	0	1	0	0	0	0	0	0	0	0
8/6/2002	12:00:00 AM	0	101	21	0	1	0	0	0	0	0	0	0	0
8/6/2002	1:00:00 AM	0	63	15	0	2	2	0	1	3	0	1	0	0
8/6/2002	2:00:00 AM	1	66	19	0	4	0	0	2	7	0	0	0	0
8/6/2002	3:00:00 AM	1	137	50	2	4	1	0	1	1	0	0	0	0
8/6/2002	4:00:00 AM	3	421	135	2	12	2	0	3	3	0	0	0	0
8/6/2002	5:00:00 AM	5	814	210	3	29	0	0	2	7	0	0	0	0
8/6/2002	6:00:00 AM	6	807	220	4	26	4	0	6	4	0	0	1	0
8/6/2002	7:00:00 AM	5	874	242	3	25	1	0	4	8	0	0	0	0
8/6/2002	8:00:00 AM	3	589	163	8	17	4	0	3	7	0	0	0	0
8/6/2002	9:00:00 AM	4	562	148	5	30	3	0	3	12	0	0	0	0
8/6/2002	10:00:00 AM	6	561	134	5	23	4	0	7	10	0	0	1	0
8/6/2002	11:00:00 AM	4	613	163	5	24	4	0	6	8	0	0	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Trip Generation\FOVAWOCH.TWF
Start Date: 7/30/2002
Start Time: 12:00:00 AM
Site Code: 43106355
Station ID: FOVAWOCH
CITY OF FONTANA
VALLEY BOULEVARD
WEST OF CHERRY AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/30/2002	12:00:00 AM	0	47	15	0	5	3	0	0	18	0	2	0	2
7/30/2002	1:00:00 AM	1	27	11	0	3	6	0	0	18	0	1	0	2
7/30/2002	2:00:00 AM	0	26	10	0	3	1	0	1	13	0	2	0	0
7/30/2002	3:00:00 AM	1	19	6	2	1	7	0	0	16	0	1	0	0
7/30/2002	4:00:00 AM	2	30	7	1	3	7	0	1	18	1	1	2	0
7/30/2002	5:00:00 AM	2	48	13	2	6	5	0	2	24	1	1	0	1
7/30/2002	6:00:00 AM	2	100	37	4	12	5	0	3	30	1	1	0	0
7/30/2002	7:00:00 AM	1	140	48	6	18	9	0	0	26	0	2	0	0
7/30/2002	8:00:00 AM	3	116	52	7	19	11	0	7	31	0	1	1	1
7/30/2002	9:00:00 AM	3	125	59	5	34	12	0	3	51	0	2	0	0
7/30/2002	10:00:00 AM	3	135	64	7	22	15	0	7	51	1	0	3	1
7/30/2002	11:00:00 AM	3	161	81	10	36	10	0	7	36	0	1	0	1
7/30/2002	12:00:00 PM	2	196	90	11	37	16	1	8	58	1	1	2	0
7/30/2002	1:00:00 PM	5	245	99	17	31	18	0	7	48	0	1	0	0
7/30/2002	2:00:00 PM	3	313	126	8	50	13	1	8	58	0	0	2	0
7/30/2002	3:00:00 PM	6	446	132	6	53	19	0	7	59	1	2	1	1
7/30/2002	4:00:00 PM	3	430	130	9	43	14	1	5	77	0	0	1	0
7/30/2002	5:00:00 PM	6	381	117	11	42	5	0	5	61	0	0	0	2
7/30/2002	6:00:00 PM	1	197	57	4	21	9	0	4	53	0	1	0	1
7/30/2002	7:00:00 PM	0	133	51	4	15	5	0	2	27	0	2	0	1
7/30/2002	8:00:00 PM	2	105	41	5	12	5	0	2	33	0	2	0	0
7/30/2002	9:00:00 PM	1	92	23	2	9	5	0	0	27	0	1	0	0
7/30/2002	10:00:00 PM	1	78	18	1	3	5	0	1	9	0	2	0	0
7/30/2002	11:00:00 PM	1	64	16	3	5	5	0	0	16	0	1	0	0

CITY OF FONTANA
Visual Classification Count
From a turning movement count request by the city on 2/20/2002

Cherry Ave N/O Valley Blvd

Interval Beginning	Northbound Pass Veh	Northbound Lge 2-3 Ax	Northbound 4+ Axle	Northbound Total		Southbound Pass Veh	Southbound Lge 2-3 Ax	Southbound 4+ Axle	Southbound Total
6:00	111	10	12	**133**		109	18	17	**144**
6:15	112	11	19	**142**		130	19	24	**173**
6:30	211	22	17	**250**		173	28	26	**227**
6:45	172	7	17	**196**		153	27	18	**198**
7:00	158	15	22	**195**		211	24	16	**251**
7:15	176	10	21	**207**		182	15	22	**219**
7:30	140	13	16	**169**		173	22	25	**220**
7:45	182	12	26	**220**		141	29	24	**194**
8:00	101	16	15	**132**		132	38	22	**192**
8:15	116	25	29	**170**		140	38	34	**212**
8:30	92	28	27	**147**		134	41	21	**196**
8:45	103	20	25	**148**		130	38	34	**202**
Total	**1674**	**189**	**246**	**2109**		**1808**	**337**	**283**	**2428**

11:00	132	23	38	193		112	40	36	**188**
11:15	129	16	32	177		114	43	32	**189**
11:30	117	16	35	168		117	42	26	**185**
11:45	116	20	25	161		95	36	20	**151**
12:00	118	21	27	166		138	43	29	**210**
12:15	121	27	17	165		135	29	27	**191**
12:30	126	25	25	176		123	27	26	**176**
12:45	120	10	24	154		125	38	17	**180**
Total	**979**	**158**	**223**	**1360**		**959**	**298**	**213**	**1470**

15:00	136	18	12	166		142	19	19	**180**
15:15	132	16	13	161		152	20	12	**184**
15:30	138	8	12	158		170	23	14	**207**
15:45	139	18	7	164		164	26	21	**211**
16:00	147	10	6	163		224	12	17	**253**
16:15	145	9	11	165		186	9	23	**218**
16:30	113	12	7	132		147	11	13	**171**
16:45	117	4	10	131		179	8	18	**205**
17:00	121	6	6	133		165	14	14	**193**
17:15	126	4	12	142		175	11	15	**201**
17:30	115	3	6	124		177	9	11	**197**
17:45	113	4	9	126		181	12	11	**204**
18:00	93	5	6	104		156	18	14	**188**
18:15	113	2	4	119		117	8	5	**130**
18:30	104	1	5	110		134	3	16	**153**
18:45	123	3	10	136		107	3	7	**117**
Total	**1975**	**123**	**136**	**2234**		**2576**	**206**	**230**	**3012**

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOSBWOBE.TWF
Start Date: 7/24/2002
Start Time: 7:00:00 AM
Site Code: 43107858
CITY OF FONTANA
SAN BERNARDINO AVENUE
W/O BEECH AVE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/24/2002	7:00:00 AM	0	274	47	7	20	1	0	2	0	0	0	0	0
7/24/2002	8:00:00 AM	2	265	49	11	7	5	0	0	0	0	0	0	0
7/24/2002	9:00:00 AM	0	234	31	9	14	3	0	2	6	0	0	0	0
7/24/2002	10:00:00 AM	2	261	58	13	11	3	0	1	12	0	0	0	0
7/24/2002	11:00:00 AM	1	243	71	10	13	4	0	1	5	0	0	0	1
7/24/2002	12:00:00 PM	3	329	65	13	22	2	0	0	2	0	0	0	1
7/24/2002	1:00:00 PM	5	380	76	9	13	1	0	3	4	0	1	0	0
7/24/2002	2:00:00 PM	2	424	101	6	14	5	0	3	7	0	0	0	1
7/24/2002	3:00:00 PM	1	571	129	11	14	2	0	3	4	1	1	0	0
7/24/2002	4:00:00 PM	1	559	111	12	22	3	0	4	3	0	0	0	0
7/24/2002	5:00:00 PM	3	556	99	7	21	4	1	4	5	0	0	0	0
7/24/2002	6:00:00 PM	0	523	95	7	7	1	1	1	2	0	0	0	0
7/24/2002	7:00:00 PM	0	439	91	3	2	1	0	0	2	0	0	0	0
7/24/2002	8:00:00 PM	3	326	61	3	12	0	0	0	2	0	0	0	0
7/24/2002	9:00:00 PM	0	263	43	4	1	0	0	0	0	0	0	0	0
7/24/2002	10:00:00 PM	0	179	25	2	0	0	0	0	1	0	0	0	0
7/24/2002	11:00:00 PM	1	98	22	0	0	0	0	0	0	0	0	0	0
7/25/2002	12:00:00 AM	0	42	6	0	0	0	0	0	0	0	0	0	0
7/25/2002	1:00:00 AM	0	17	3	0	0	0	0	0	1	0	0	0	0
7/25/2002	2:00:00 AM	0	26	3	0	1	0	0	0	0	0	0	0	0
7/25/2002	3:00:00 AM	0	34	7	0	0	1	0	0	1	0	0	0	0
7/25/2002	4:00:00 AM	0	67	13	1	1	0	0	0	2	0	0	0	0
7/25/2002	5:00:00 AM	0	149	39	2	6	0	0	0	3	0	0	0	0
7/25/2002	6:00:00 AM	0	227	50	5	11	2	0	2	2	0	1	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOVAWOCI.twf
Start Date: 8/5/2002
Start Time: 12:00:00 PM
Site Code: 431059
CITY OF FONTANA
VALLEY BOULEVARD
W/CITRUS AVENUE
24 HR DIRECTIONAL CLASSIFICATON COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
8/5/2002	12:00:00 PM	0	338	132	6	38	6	0	13	9	0	0	0	0
8/5/2002	1:00:00 PM	2	347	127	9	41	1	0	14	4	0	0	1	0
8/5/2002	2:00:00 PM	1	468	169	10	45	4	0	10	10	0	3	1	0
8/5/2002	3:00:00 PM	1	537	175	11	39	4	0	5	5	0	5	0	1
8/5/2002	4:00:00 PM	1	579	191	2	43	4	0	9	11	0	2	0	0
8/5/2002	5:00:00 PM	0	639	162	1	31	4	0	3	6	0	0	0	0
8/5/2002	6:00:00 PM	0	408	95	9	17	3	0	4	6	0	1	0	0
8/5/2002	7:00:00 PM	0	285	90	6	31	1	0	4	6	0	1	1	0
8/5/2002	8:00:00 PM	1	177	60	3	27	1	0	1	4	0	0	0	0
8/5/2002	9:00:00 PM	0	165	35	1	12	0	0	1	4	0	0	0	0
8/5/2002	10:00:00 PM	0	92	35	1	8	0	0	0	4	0	0	0	0
8/5/2002	11:00:00 PM	0	82	26	0	9	0	0	2	1	0	0	0	0
8/6/2002	12:00:00 AM	0	34	18	0	2	0	0	1	0	0	0	0	0
8/6/2002	1:00:00 AM	0	35	5	1	6	1	0	0	1	0	0	0	0
8/6/2002	2:00:00 AM	0	25	9	2	3	0	0	0	1	0	0	0	0
8/6/2002	3:00:00 AM	0	25	13	0	1	1	0	1	1	0	0	0	0
8/6/2002	4:00:00 AM	0	54	20	3	4	0	0	3	1	0	0	0	0
8/6/2002	5:00:00 AM	0	128	37	2	13	1	0	2	4	0	1	0	0
8/6/2002	6:00:00 AM	0	195	62	5	19	0	0	3	5	0	0	0	0
8/6/2002	7:00:00 AM	2	256	86	8	32	4	0	7	5	0	1	0	0
8/6/2002	8:00:00 AM	1	246	88	8	34	1	0	6	6	0	0	0	0
8/6/2002	9:00:00 AM	3	212	102	8	46	2	0	6	14	0	0	0	0
8/6/2002	10:00:00 AM	1	229	97	13	46	5	0	9	5	0	0	0	0
8/6/2002	11:00:00 AM	0	293	132	10	39	2	0	11	7	0	3	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOVAWOCI.twf
Start Date: 8/5/2002
Start Time: 12:00:00 PM
Site Code: 431059
CITY OF FONTANA
VALLEY BOULEVARD
W/CITRUS AVENUE
24 HR DIRECTIONAL CLASSIFICATON COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
8/5/2002	12:00:00 PM	0	421	126	8	37	7	0	11	10	1	1	0	0
8/5/2002	1:00:00 PM	0	400	102	7	18	5	0	7	23	1	1	0	0
8/5/2002	2:00:00 PM	0	407	107	6	32	7	0	4	21	1	1	0	0
8/5/2002	3:00:00 PM	1	443	96	6	27	7	0	6	16	0	0	0	0
8/5/2002	4:00:00 PM	2	421	95	3	17	6	0	2	11	0	0	0	1
8/5/2002	5:00:00 PM	2	417	83	4	16	1	0	1	10	1	0	0	1
8/5/2002	6:00:00 PM	0	370	61	1	13	2	0	0	6	0	0	1	0
8/5/2002	7:00:00 PM	2	322	53	2	7	2	0	1	9	0	0	0	0
8/5/2002	8:00:00 PM	1	308	51	1	2	2	0	0	5	0	1	0	0
8/5/2002	9:00:00 PM	0	234	48	2	9	0	0	0	8	0	0	0	0
8/5/2002	10:00:00 PM	0	140	26	2	3	0	0	0	5	0	0	0	0
8/5/2002	11:00:00 PM	0	88	11	0	3	0	0	1	1	0	0	0	0
8/6/2002	12:00:00 AM	0	52	5	0	2	0	0	0	4	0	1	0	0
8/6/2002	1:00:00 AM	1	43	7	0	0	1	0	0	1	0	0	0	0
8/6/2002	2:00:00 AM	0	32	7	0	2	0	0	0	2	0	0	0	0
8/6/2002	3:00:00 AM	0	34	4	0	4	0	0	0	2	0	0	0	0
8/6/2002	4:00:00 AM	0	100	28	0	3	0	0	0	2	0	0	0	0
8/6/2002	5:00:00 AM	4	250	35	1	7	1	0	3	6	0	1	1	0
8/6/2002	6:00:00 AM	3	303	85	4	17	5	0	0	8	0	0	1	0
8/6/2002	7:00:00 AM	3	372	77	1	13	1	0	1	8	0	0	0	0
8/6/2002	8:00:00 AM	1	275	63	9	31	4	0	3	12	1	1	0	0
8/6/2002	9:00:00 AM	1	282	91	6	32	5	0	5	12	0	0	0	0
8/6/2002	10:00:00 AM	1	281	94	7	39	3	0	4	18	1	0	0	0
8/6/2002	11:00:00 AM	2	351	92	8	42	7	0	5	15	0	0	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOETSOSL.TWF
Start Date: 7/30/2002
Start Time: 5:00:00 PM
Site Code: 43106361
CITY OF FONTANA
ETIWANDA AVENUE
SOUTH OF SLOVER AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/30/2002	5:00:00 PM	9	484	79	4	26	13	0	19	60	1	4	0	2
7/30/2002	6:00:00 PM	6	284	67	4	11	15	0	10	54	1	4	1	2
7/30/2002	7:00:00 PM	5	304	49	1	7	11	0	11	39	2	3	0	1
7/30/2002	8:00:00 PM	3	258	32	2	2	11	0	4	33	3	2	1	1
7/30/2002	9:00:00 PM	4	233	27	2	4	6	0	5	49	0	1	0	0
7/30/2002	10:00:00 PM	1	225	23	0	1	6	0	1	39	2	1	1	0
7/30/2002	11:00:00 PM	2	131	18	0	3	8	0	3	36	0	3	0	0
7/31/2002	12:00:00 AM	2	89	9	1	2	6	0	1	31	0	9	0	1
7/31/2002	1:00:00 AM	2	82	12	0	0	5	0	0	25	1	2	0	0
7/31/2002	2:00:00 AM	1	95	10	0	7	6	0	1	23	0	3	0	1
7/31/2002	3:00:00 AM	0	166	25	0	3	10	0	9	31	0	3	1	0
7/31/2002	4:00:00 AM	2	390	58	0	5	11	0	14	30	0	2	1	2
7/31/2002	5:00:00 AM	5	747	110	2	20	9	0	19	45	5	10	1	0
7/31/2002	6:00:00 AM	4	588	115	6	7	12	0	17	52	2	8	2	2
7/31/2002	7:00:00 AM	4	515	119	9	13	16	0	25	68	5	10	3	1
7/31/2002	8:00:00 AM	0	330	83	9	31	12	0	23	83	4	9	0	1
7/31/2002	9:00:00 AM	0	295	69	8	30	9	0	14	100	1	9	1	1
7/31/2002	10:00:00 AM	1	267	94	7	45	12	0	22	77	2	4	3	1
7/31/2002	11:00:00 AM	2	284	92	12	29	27	0	16	82	2	8	2	2
7/31/2002	12:00:00 PM	1	336	89	6	34	29	0	16	95	2	4	1	1
7/31/2002	1:00:00 PM	0	451	122	15	33	28	0	21	81	1	5	1	1
7/31/2002	2:00:00 PM	3	593	103	12	34	26	0	24	87	1	7	1	2
7/31/2002	3:00:00 PM	1	484	111	3	36	21	0	15	70	0	3	0	0
7/31/2002	4:00:00 PM	0	446	81	5	27	14	0	17	56	4	0	1	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOMUSOSLNC.twf
Start Date: 7/30/2002
Start Time: 4:00:00 PM
Site Code: 431084
CITY OF FONTANA
MULBERRRY AVENUE
S/SLOVER AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/30/2002	4:00:00 PM	1	141	33	4	11	8	1	7	22	0	3	0	0
7/30/2002	5:00:00 PM	0	120	26	3	6	3	0	7	21	0	3	0	2
7/30/2002	6:00:00 PM	0	93	23	3	4	1	0	5	8	0	4	0	0
7/30/2002	7:00:00 PM	1	74	13	1	3	4	0	3	7	0	1	0	0
7/30/2002	8:00:00 PM	0	41	9	0	2	1	0	2	8	0	1	0	0
7/30/2002	9:00:00 PM	0	44	6	0	1	1	0	1	4	0	3	0	0
7/30/2002	10:00:00 PM	0	22	6	0	0	1	0	0	6	0	8	0	0
7/30/2002	11:00:00 PM	1	38	4	0	0	0	0	0	6	0	9	0	0
7/31/2002	12:00:00 AM	0	31	8	0	0	1	0	0	6	0	11	0	0
7/31/2002	1:00:00 AM	0	14	3	0	1	3	0	0	0	0	3	0	0
7/31/2002	2:00:00 AM	0	18	3	0	1	4	0	0	2	0	3	0	0
7/31/2002	3:00:00 AM	1	41	8	0	0	3	0	2	2	0	6	0	0
7/31/2002	4:00:00 AM	0	59	10	0	2	2	0	0	1	0	6	0	0
7/31/2002	5:00:00 AM	1	99	22	1	5	3	0	4	4	0	3	0	0
7/31/2002	6:00:00 AM	1	154	40	0	9	8	0	3	6	1	15	1	2
7/31/2002	7:00:00 AM	2	232	55	3	16	3	0	6	9	0	6	0	3
7/31/2002	8:00:00 AM	1	82	33	2	11	7	0	2	18	0	2	0	1
7/31/2002	9:00:00 AM	0	77	21	3	9	8	0	8	17	0	7	0	2
7/31/2002	10:00:00 AM	0	86	30	3	11	2	1	6	26	0	2	0	0
7/31/2002	11:00:00 AM	1	99	45	2	15	5	0	8	16	0	4	0	2
7/31/2002	12:00:00 PM	0	118	54	3	17	2	0	5	18	0	2	1	0
7/31/2002	1:00:00 PM	1	112	34	1	10	7	0	5	29	1	3	1	0
7/31/2002	2:00:00 PM	2	111	31	9	10	6	0	12	20	0	5	2	2
7/31/2002	3:00:00 PM	1	136	48	7	12	3	0	8	16	2	1	1	2

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOMUSOSLSC.twf
Start Date: 7/30/2002
Start Time: 4:00:00 PM
Site Code: 431055
CITY OF FONTANA
MULBERRY AVENUE
S/SLOVER AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/30/2002	4:00:00 PM	1	137	41	4	24	3	0	6	10	0	0	1	0
7/30/2002	5:00:00 PM	1	119	61	0	20	4	0	2	8	0	4	0	0
7/30/2002	6:00:00 PM	1	92	27	0	10	1	0	10	6	0	3	0	0
7/30/2002	7:00:00 PM	1	61	17	2	9	1	0	7	4	0	3	0	0
7/30/2002	8:00:00 PM	0	52	11	0	1	3	0	1	2	0	1	0	0
7/30/2002	9:00:00 PM	0	33	15	0	2	1	0	1	2	0	2	0	0
7/30/2002	10:00:00 PM	0	33	17	0	4	0	0	0	3	0	2	0	0
7/30/2002	11:00:00 PM	0	31	9	0	1	1	0	0	5	0	3	0	0
7/31/2002	12:00:00 AM	0	23	8	0	3	2	0	2	2	0	1	0	0
7/31/2002	1:00:00 AM	0	12	0	0	1	0	0	1	2	0	2	0	0
7/31/2002	2:00:00 AM	0	14	2	0	2	0	0	0	3	0	2	0	0
7/31/2002	3:00:00 AM	0	31	12	0	4	1	0	0	4	0	3	0	0
7/31/2002	4:00:00 AM	1	52	14	0	4	3	0	1	4	0	2	0	0
7/31/2002	5:00:00 AM	2	129	35	2	5	3	0	4	6	0	3	0	0
7/31/2002	6:00:00 AM	0	102	41	6	12	1	0	8	13	0	4	0	0
7/31/2002	7:00:00 AM	2	126	38	3	14	1	0	12	12	0	2	0	0
7/31/2002	8:00:00 AM	1	89	27	2	21	2	0	10	15	0	0	0	0
7/31/2002	9:00:00 AM	1	94	34	7	16	6	0	9	15	0	1	0	0
7/31/2002	10:00:00 AM	0	66	26	3	17	3	0	9	14	1	4	0	0
7/31/2002	11:00:00 AM	0	81	26	3	22	5	0	8	9	0	0	0	0
7/31/2002	12:00:00 PM	0	84	35	2	25	5	0	14	17	0	0	0	0
7/31/2002	1:00:00 PM	0	96	31	3	15	7	0	4	18	0	4	1	0
7/31/2002	2:00:00 PM	1	82	44	3	24	4	0	4	9	0	6	0	0
7/31/2002	3:00:00 PM	0	131	48	3	24	4	0	7	9	1	5	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOVAWOCH.twf
Start Date: 7/30/2002
Start Time: 12:00:00 AM
Site Code: 43106355
CITY OF FONTANA
VALLEY BOULEVARD
WEST OF CHERRY AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/30/2002	12:00:00 AM	0	60	17	1	3	3	0	4	11	1	0	0	1
7/30/2002	1:00:00 AM	0	32	9	0	1	3	0	3	15	0	2	0	0
7/30/2002	2:00:00 AM	0	25	6	4	1	5	0	1	18	0	1	0	0
7/30/2002	3:00:00 AM	2	31	7	0	4	6	1	0	18	0	0	0	1
7/30/2002	4:00:00 AM	0	53	19	4	3	9	0	1	14	0	1	1	0
7/30/2002	5:00:00 AM	2	152	55	3	6	16	0	1	12	0	1	1	0
7/30/2002	6:00:00 AM	2	352	107	7	28	27	0	4	23	0	4	0	0
7/30/2002	7:00:00 AM	4	363	120	10	31	21	0	5	24	0	3	0	0
7/30/2002	8:00:00 AM	4	391	112	15	51	11	0	5	32	0	3	1	0
7/30/2002	9:00:00 AM	0	209	80	14	26	5	0	4	31	0	0	0	0
7/30/2002	10:00:00 AM	2	193	86	18	42	6	0	7	31	0	0	2	1
7/30/2002	11:00:00 AM	3	213	100	18	24	10	0	5	41	0	3	0	0
7/30/2002	12:00:00 PM	1	239	93	16	36	10	1	4	45	0	1	0	1
7/30/2002	1:00:00 PM	2	248	110	17	26	11	0	10	30	0	0	1	2
7/30/2002	2:00:00 PM	4	300	116	19	32	7	0	8	51	2	0	0	0
7/30/2002	3:00:00 PM	4	329	103	18	42	9	0	8	52	0	0	2	1
7/30/2002	4:00:00 PM	2	295	109	13	35	10	1	1	34	0	0	2	0
7/30/2002	5:00:00 PM	4	246	93	12	31	7	0	3	37	1	0	1	0
7/30/2002	6:00:00 PM	19	222	81	8	25	6	1	7	36	0	0	0	0
7/30/2002	7:00:00 PM	11	131	50	12	7	2	0	4	25	0	2	0	1
7/30/2002	8:00:00 PM	7	116	34	4	12	2	0	2	24	0	0	0	0
7/30/2002	9:00:00 PM	6	129	49	4	6	3	1	3	16	0	0	0	0
7/30/2002	10:00:00 PM	4	84	26	2	3	7	0	3	14	0	0	0	0
7/30/2002	11:00:00 PM	8	56	25	1	4	4	0	3	16	0	2	0	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOCHSOSL.twf
Start Date: 8/6/2002
Start Time: 1:00:00 PM
Site Code: 36099012
CITY OF FONTANA
CHERRY AVENUE
S/SLOVER AVE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
8/6/2002	1:00:00 PM	5	608	107	7	29	13	6	9	21	0	3	0	0
8/6/2002	2:00:00 PM	10	528	104	2	30	15	0	12	33	0	1	2	1
8/6/2002	3:00:00 PM	4	547	98	4	30	19	2	15	24	0	0	0	0
8/6/2002	4:00:00 PM	6	538	98	8	21	13	3	12	28	1	1	2	0
8/6/2002	5:00:00 PM	4	615	90	4	13	10	3	9	20	1	1	3	1
8/6/2002	6:00:00 PM	6	656	89	4	10	5	0	13	21	0	3	0	0
8/6/2002	7:00:00 PM	9	629	84	4	12	10	0	9	9	0	0	0	0
8/6/2002	8:00:00 PM	0	646	72	2	7	8	1	2	10	0	0	0	0
8/6/2002	9:00:00 PM	3	497	54	2	12	4	2	8	10	1	5	1	2
8/6/2002	10:00:00 PM	4	396	45	3	2	5	0	5	10	1	6	1	0
8/6/2002	11:00:00 PM	2	273	29	0	2	4	0	5	10	0	4	2	1
8/7/2002	12:00:00 AM	1	175	20	0	2	3	0	0	10	0	7	3	7
8/7/2002	1:00:00 AM	2	118	13	0	1	5	0	2	8	0	3	0	2
8/7/2002	2:00:00 AM	1	73	7	0	2	9	0	0	4	0	2	1	0
8/7/2002	3:00:00 AM	2	98	18	1	4	3	0	4	6	0	0	0	1
8/7/2002	4:00:00 AM	1	229	43	0	6	3	0	2	14	0	5	0	0
8/7/2002	5:00:00 AM	1	391	74	1	14	8	0	6	18	1	4	0	0
8/7/2002	6:00:00 AM	3	472	106	5	33	17	1	5	8	0	6	1	0
8/7/2002	7:00:00 AM	4	585	108	8	34	13	2	6	15	1	3	2	0
8/7/2002	8:00:00 AM	5	466	99	4	36	16	1	8	26	1	2	0	2
8/7/2002	9:00:00 AM	7	462	98	7	40	16	2	7	23	1	3	0	4
8/7/2002	10:00:00 AM	7	438	102	5	31	16	0	12	23	2	1	0	4
8/7/2002	11:00:00 AM	6	465	116	7	27	18	2	22	30	1	1	2	0
8/7/2002	12:00:00 PM	3	539	116	2	36	4	1	10	38	2	0	0	1

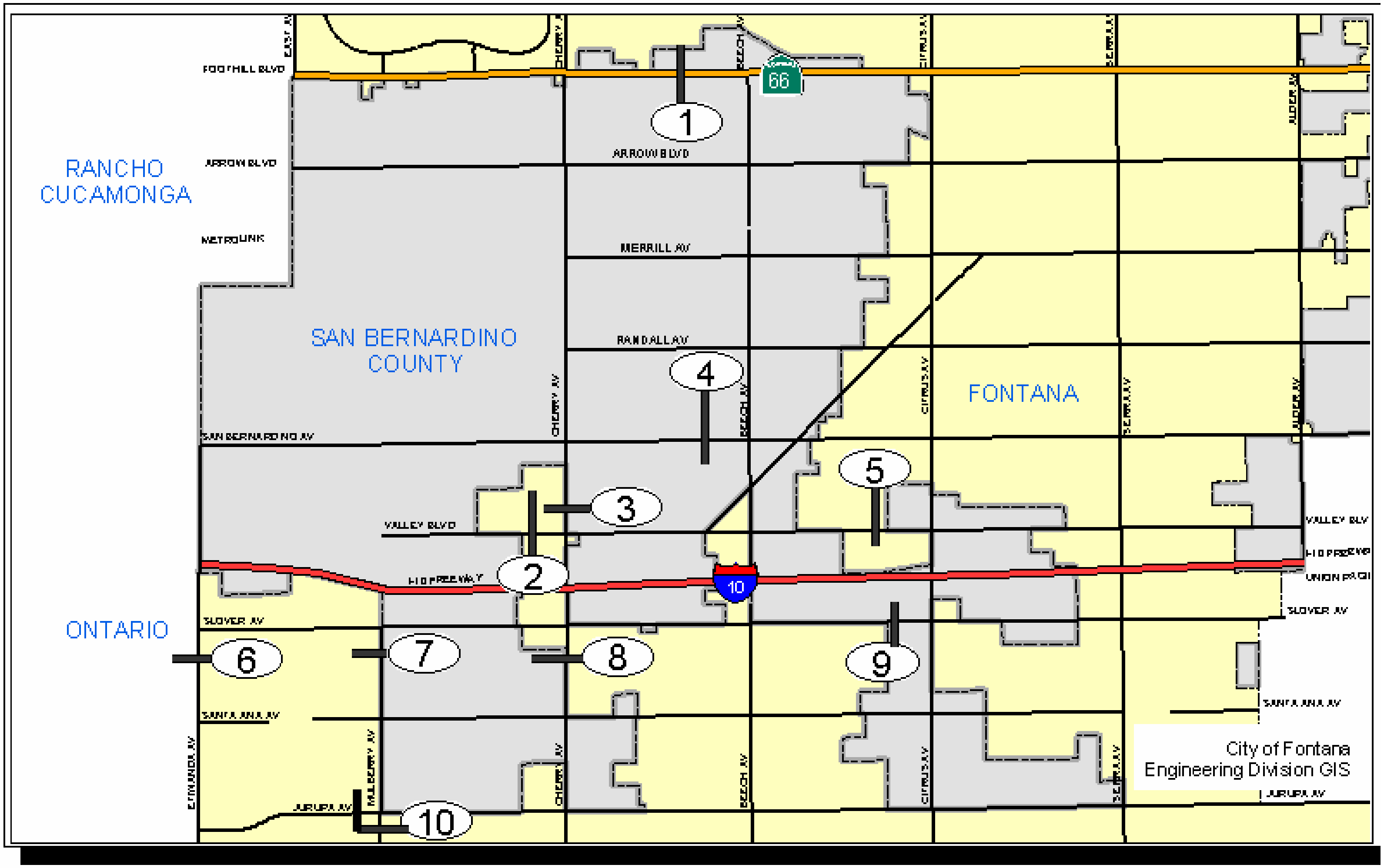
File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOSLWOCI.TWF
Start Date: 7/24/2002
Start Time: 7:00:00 AM
Site Code: 43108079
CITY OF FONTANA
SLOVER AVENUE
WEST OF CITRUS AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/24/2002	7:00:00 AM	3	481	88	6	25	3	0	10	42	1	7	0	1
7/24/2002	8:00:00 AM	2	412	104	10	26	10	0	11	43	2	4	2	2
7/24/2002	9:00:00 AM	1	356	109	1	24	6	0	14	42	1	6	1	2
7/24/2002	10:00:00 AM	0	390	102	6	30	16	0	15	46	3	9	0	1
7/24/2002	11:00:00 AM	1	544	154	5	30	17	0	12	49	1	6	1	1
7/24/2002	12:00:00 PM	2	525	129	9	35	12	0	16	47	4	6	2	13
7/24/2002	1:00:00 PM	2	526	130	7	16	15	0	17	48	2	8	2	9
7/24/2002	2:00:00 PM	3	640	123	7	19	11	0	14	20	4	4	0	5
7/24/2002	3:00:00 PM	2	637	114	13	25	9	0	21	30	5	1	1	5
7/24/2002	4:00:00 PM	2	564	98	10	17	10	0	11	25	5	3	3	15
7/24/2002	5:00:00 PM	1	601	94	4	14	10	0	11	24	2	3	0	0
7/24/2002	6:00:00 PM	1	353	44	2	8	5	0	9	21	0	3	0	0
7/24/2002	7:00:00 PM	3	284	57	2	6	8	0	9	18	0	2	0	0
7/24/2002	8:00:00 PM	1	230	38	3	9	6	0	9	9	0	0	0	1
7/24/2002	9:00:00 PM	2	185	26	1	8	4	0	8	6	1	2	0	2
7/24/2002	10:00:00 PM	1	147	28	0	3	1	0	6	2	0	1	0	0
7/24/2002	11:00:00 PM	1	93	11	0	2	0	0	2	5	0	2	0	0
7/25/2002	12:00:00 AM	1	53	6	1	0	3	0	6	7	0	7	0	0
7/25/2002	1:00:00 AM	0	31	7	1	0	2	0	6	2	0	9	0	0
7/25/2002	2:00:00 AM	0	32	8	0	0	2	0	2	5	0	4	0	0
7/25/2002	3:00:00 AM	1	87	17	2	1	1	0	4	4	0	3	0	0
7/25/2002	4:00:00 AM	3	173	37	2	2	4	0	6	6	0	7	1	0
7/25/2002	5:00:00 AM	3	394	71	3	8	6	0	5	20	1	8	1	1
7/25/2002	6:00:00 AM	3	451	71	8	22	5	0	14	22	3	8	1	0

File Name: C:\Program Files\JAMAR\TraxPro\Data Files\FOJUWOMU.TWF
Start Date: 7/24/2002
Start Time: 12:00:00 AM
Site Code: 43103235
CITY OF FONTANA
JURUPA AVENUE
WEST OF MULBERRY AVENUE
24 HR DIRECTIONAL CLASSIFICATION COUNT

Date	Time	Bikes	Cars & Trlrs	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>5 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axl Multi
7/24/2002	12:00:00 AM	0	117	32	1	3	2	0	1	8	0	4	0	0
7/24/2002	1:00:00 AM	2	86	19	1	8	1	0	3	2	0	2	0	0
7/24/2002	2:00:00 AM	0	62	13	2	4	1	0	0	4	0	1	0	0
7/24/2002	3:00:00 AM	2	83	30	2	5	2	0	3	7	0	4	0	0
7/24/2002	4:00:00 AM	1	183	57	4	11	6	0	3	14	0	4	0	0
7/24/2002	5:00:00 AM	2	435	89	7	19	9	0	6	19	0	6	1	0
7/24/2002	6:00:00 AM	5	575	139	5	38	6	0	16	15	0	16	0	0
7/24/2002	7:00:00 AM	4	603	176	10	45	7	0	18	18	1	4	0	0
7/24/2002	8:00:00 AM	5	462	122	11	39	4	0	25	37	0	5	1	0
7/24/2002	9:00:00 AM	5	386	102	16	48	11	0	22	28	0	1	1	0
7/24/2002	10:00:00 AM	2	359	116	11	70	11	0	31	34	0	2	1	1
7/24/2002	11:00:00 AM	1	429	111	19	67	10	0	22	31	0	3	0	0
7/24/2002	12:00:00 PM	7	508	154	21	52	7	0	28	33	0	1	0	0
7/24/2002	1:00:00 PM	1	498	148	17	54	7	0	29	35	0	3	0	0
7/24/2002	2:00:00 PM	4	649	192	19	65	7	0	36	34	0	7	0	2
7/24/2002	3:00:00 PM	8	829	205	30	82	3	0	38	40	0	15	0	0
7/24/2002	4:00:00 PM	5	863	224	18	56	10	0	42	21	1	6	0	0
7/24/2002	5:00:00 PM	8	921	215	5	58	5	0	47	20	0	8	1	0
7/24/2002	6:00:00 PM	2	639	178	7	49	4	0	42	17	0	7	0	0
7/24/2002	7:00:00 PM	0	470	109	2	24	5	0	31	12	0	11	0	1
7/24/2002	8:00:00 PM	2	372	72	2	21	2	0	19	3	0	4	0	0
7/24/2002	9:00:00 PM	1	337	81	4	11	6	1	6	4	0	5	0	0
7/24/2002	10:00:00 PM	0	260	63	4	11	4	0	9	6	0	0	0	0
7/24/2002	11:00:00 PM	0	160	35	2	5	5	0	7	4	0	6	0	0

APPENDIX C – Peak Arterial Locations



1. Foothill Blvd. between Citrus and Cherry.
2. Valley Blvd. West of Cherry.
3. Cherry Ave North of Valley Blvd.
4. San Bernardino Ave. West of Beech Ave.
5. Valley Blvd. West of Citrus.
6. Etiwanda Ave. South of Slover.
7. Mulberry Avenue South of Slover Avenue.
8. Cherry Ave. South of Slover.
9. Slover Ave. West of Citrus and
10. Jurupa Avenue West of Mulberry Avenue.


TRUCK CENTER
VALLEY

COUNTY OF SAN BERNARDINO
TRAFFIC IMPACT STUDY GUIDELINES

Revised April 9, 2014

The current guidelines are found in Chapter 10 of the Road Planning and Design Standards. This document can be accessed online from the Land Development page under the Department of Land Use Services website.

The direct link is: http://www.sbcounty.gov/Uploads/lus/PW/ROADPLANNINGDESIGNSTANDARDS.pdf

Since the Road Planning and Design Standards have not been modified in many years, additional guidance has been developed with the guidelines contained herein. Staff hopes to incorporate these changes when the Road Planning and Design Standards are next updated.

Developers and Engineers are cautioned that in the event of a conflict between Chapter 10, as currently adopted, and the proposed guidelines on the following pages, the adopted version of Chapter 10 shall take precedence.

Engineers and developers are encouraged to contact the Traffic Division of the Public Works Department if there are any concerns about interpreting differences between Chapter 10 and the draft guidelines contained herein.

County of San Bernardino Draft Interim

TRAFFIC IMPACT STUDY GUIDELINES

10.1 INTRODUCTION

The purpose of Traffic Impact Study (TIS) Guidelines is to provide a general guide in assessing the potential traffic impacts of any proposed development projects, General Plan Amendments and changes in zoning in the County of San Bernardino. This TIS guide presents the required format (See Exhibit 'A') and methodology that is generally required to be utilized in the study preparation.

These are general guidelines for the preparation of a TIS Report. The Department of Public Works reserves the right to modify the TIS requirements based on the unique characteristics of a particular project.

The TIS must be prepared by a registered Traffic Engineer (State of California) or a registered Civil Engineer with experience in traffic.

The TIS must contain a Title page that includes, at a minimum, the Tract or Parcel number of the project, the developer's name and address and the Traffic Engineer's name, Traffic Engineer's signature, address, phone number and stamp.

To avoid unnecessary delays or revisions and to stream line the TIS preparation and review process, the applicant shall submit and have approved, by the Department of Public Works Traffic Division, a "Scope for Traffic Study" prior to the preparation and submittal of a draft TIS. An electronic version of this document in Word format is available from the Traffic Division.

10.2 NEED FOR TRAFFIC STUDY

The County of San Bernardino, Department of Public Works may require a Traffic Impact Study (TIS) be prepared for development projects, Specific and Area Plans, or requests, by the developers, for General Plan Amendments. The TIS may be required for any development, regardless of size, if there are concerns over safety or operational issues such as congestion, delay, LOS, etc. Prior to the developer filing an application with Land Use Services Department, the Traffic Division will determine both whether a TIS is required and what type of TIS should be prepared.

The requirement to prepare a TIS will be based upon, but not limited to, one or more of the following criteria:

- If a project generates 100 or more trips without consideration of pass-by trips during any peak hour.
- If a project is located within 300 feet of the intersection of two streets designated as Collector or higher in the County's General Plan or the Department's Master Plan or impacted intersection as determined by the Traffic Division.
- If this project creates safety or operational concerns.

If a project generates less than 100 trips without consideration of pass-by trips during any peak hour, a study maybe required if there are special concerns.

The Traffic Division also reserves the right to require an applicant to prepare additional traffic analysis based on the project location, configuration, unique aspects of the project, proximity to major roadways, interchanges or intersections, evaluating corner site distance at the driveways or other requirements as determined by the Traffic Division.

10.3 TYPES OF TRAFFIC IMPACT STUDY

The type of study used will depend on the location of the project, the amount of project trips generated and whether the project falls within a fee plan area. As noted previously, Traffic Division will determine the type of study to be submitted by the developer. There are two types of TIS that may be requested by the Department of Public Works:

1. **Traffic Impact Study:** This type is required when thresholds are met and conducted based on these guidelines. Since these guidelines are in compliance with SANBAG guidelines, a TIS required by the County may be used to meet requirements for a TIS under the SANBAG Congestion Management Program.

2. **Letter Report:** A letter to address the significant impacts of the project in the immediate area. This type of report is primarily intended for specific concerns or small projects and thus limited to special situations.

10.4 COORDINATION WITH THE DEPARTMENT OF PUBLIC WORKS

Prior to filing an application with Land Use Services, the developer should obtain a Traffic Study Determination Form from Land Use Service**s** or the Traffic Division and submit the completed form to Department of Public Works at Land Use Office or Traffic Division. Traffic Division will then make a determination regarding the need for and type of TIS.

If a TIS is needed, the developer should retain the services of a qualified registered Traffic or a registered Civil Engineer with experience in traffic engineering and initiate the process of finalizing a scoping agreement that will govern the conduct of the TIS. Studies submitted for review without an approved scoping agreement may be subject to significant revisions and will increase the cost for review that will be charged to the developer by the Department.

The TIS will need to be completed and submitted at the time an application is filed with Land Use Services. The applicant shall obtain the approval of the submitted TIS prior to the approval of the proposed project.

10.5 SCOPE OF TRAFFIC IMPACT STUDY

10.5.1 STUDY AREA BOUNDARIES

The area to be studied shall include all intersections which the proposed project will add 50 or more trips during any peak hour. All key intersections within this study area must be analyzed to identify impacts to capacity and Level of Service (LOS). The study intersections shall be listed in the “Scope for Traffic Study” for review and approval by the Traffic Division.

At a minimum, the following subject/locations shall be studied:

a) Site access driveways
b) On-site circulation
c) Roadway(s) adjacent to the project
d) Intersections in the immediate vicinity of the project
e) Pedestrian and bicycle circulation
f) Consistency with County Plans and Policies
g) Transit (bus and light commuter rail) accessibility to project site
h) Any intersection on which the project will add 50 or more peak hour project trips

If special concerns exist for projects with less than 50 peak hour trips, the applicant should study items a) to d). For projects with more than 50 trips but less than 100, the applicant should study items a) to f).

10.5.2 STUDY SCENARIOS

The following study scenarios shall be included for intersection capacity analysis:

a) Existing Conditions
b) Project Opening Year with Ambient Traffic
c) Project Opening Year with Ambient Traffic and Proposed Project
d) Project Opening Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project
e) Project Opening Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project with Mitigation (if required)

Traffic studies that are part of an EIR process shall also include the following:

a) Build-out Year with Ambient Traffic
b) Build-out Year with Ambient Traffic and Proposed Project
c) Build-out Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project
d) Build-out Year with Ambient Traffic, Cumulative Project Traffic and Proposed Project plus Mitigation (if required)

Background Traffic will be developed per Section 4.4 “Trip Forecasts” of this document.
Projects with phased openings will study items b), c), d), and e) for each phase.

10.6 TRAFFIC DATA

10.6.1 TRAFFIC COUNTS

Data for existing traffic conditions shall be collected for the project using the following guidelines:

- Peak period turning movement counts at all study intersections and driveways including bicycle and pedestrian counts at intersections with high non-automotive use. For intersections with high percentages of heavy vehicles, turning movement counts will count heavy vehicles separately.
- Average Daily Traffic (ADT) for all roadways within study area and vehicle classification counts in areas with a high percentage of heavy vehicle use.
- Traffic counts shall not be used if more than one (1) year old without prior Traffic Division approval.
- Traffic data shall not be collected on weeks that include a holiday and non-school session time periods unless approved by the Traffic Division.
- Traffic data shall not be collected between Thanksgiving and the first week of the new year without prior Traffic Division approval.
- Traffic counts shall be conducted on Tuesdays, Wednesdays, or Thursdays.

Unless directed otherwise by the Traffic Division, counts will be collected during the following time frames:

- Morning (7:00a.m. to 9:00 a.m.)
- Afternoon/evening (4:00 p.m. to 6:00 p.m.)
- Midday and “School-Release” peak hours – As directed by the Traffic Division
- Other peak hours, off-peak, weekend or special event, may also be required

Count data shall be included in the study appendices.

10.6.2 TRIP GENERATION

The latest edition of the Institute of Transportation Engineers’ (ITE) Trip Generation shall be used for trip generation forecasts unless otherwise directed by the Traffic Division. The proposed trip generation shall be listed in the “Scope for Traffic Study” for review and approval by the Traffic Division.

For projects that anticipate the generation of significant truck traffic, all truck trips shall be converted into passenger car equivalents (PCE) for the capacity analysis.

10.6.3 TRIP DISTRIBUTION

A graphical representation of the proposed project trip distribution should be based on the relative location of population, commercial, recreational and employment centers; existing peak hour link and turning movement volumes; ADT volumes; proximity to regional transportation corridors and/or knowledge of local and regional traffic circulation. A preliminary trip distribution pattern shall be submitted in the "Scope for Traffic Study" for review and approval by the Traffic Division

For studies that are in support of an EIR, the Traffic Division may require additional information such as select zone analysis from the SCAG Travel Demand Model, the County of San Bernardino's traffic assignment model or other available data sources. The trip distribution may be further refined, after consultation with the Traffic Division, based on consideration of following factors:

- Type of proposed development
- Location and intensity of development
- Conditions on the roadway network in the vicinity
- Similar land use in the vicinity
- Truck route system
- As directed by Traffic Division

10.6.4 TRIP FORECASTS

For Opening Year and Future Year conditions, an annual growth factor will be provided to the applicant by the Traffic Division. For larger projects, the SANBAG Regional and sub regional models should be used. The need for an analysis based on regional models will be identified during the scoping process.

For all projects, the applicant shall include cumulative projects to the study. A list of proposed and approved developments can be obtained from the County's Land Use Services Planning Division. At a minimum, future projects located within a distance of twice the study area should be included. Projects outside that radius should be included if the traffic generated by that project can reasonably be expected to impact a study intersection and/or road segment.

10.7 TRAFFIC ANALYSIS METHODOLOGY

10.7.1 INTERSECTION ANALYSIS

Intersection analyses shall be performed using the latest version of the Transportation Research Board, Highway Capacity Manual (HCM) methodology.

The following assumptions are to be used in the analysis:

- Optimized signal timing for non-coordinated intersections.
- For coordinated intersections, the existing coordination timing plan should be obtained from the responsible agency.
- Two (2) second lost time/phase
- 1800 vphgpl for exclusive thru and right turn lanes
- 1700 vphgpl for exclusive left turn lanes
- 1600 vphgpl for exclusive dual left turn lanes

Saturation flow rates may also be used based on actual field measurements of particular intersections with approval from the Traffic Division.

Signal timing recommendations may also be required by the Traffic Division.

10.7.2 TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis shall be performed for all unsignalized study intersections for the project opening year and build-out year conditions. Traffic signal warrant analysis shall be performed using the latest edition of the California MUTCD. The warrant analysis shall be included in the study appendices.

In determining the location of a new traffic signal on an arterial street or approaching an arterial street, traffic progression and simulation analysis may be required using Synchro/SimTraffic software or equivalent at the direction of the Traffic Division.

10.7.3 SITE ACCESS ANALYSIS

The following analyses shall be performed to improve the project access circulation and to limit driveways and local street access on arterial streets:

a) **Intersection Sight Distance -** All on-site intersections, project access driveways or streets to public roadways shall provide adequate sight distance. Adequate intersection sight distance shall be determined using the Caltrans Highway Design Manual.
b) **Driveway Length and gated Entrance –** Primary project driveways shall have a throat of sufficient length to allow vehicles to enter the project area without causing subsequent vehicles to back out onto the County street system. A turn around shall be provided at all gated entrances.
c) **Limit Driveway Impacts -** Driveways and local streets access on arterial streets shall be limited to minimize the impacts on arterial streets. Driveways should be located so as to maintain a reasonable distance from an adjacent intersection and/or driveway. Whenever possible, driveways shall be consolidated with adjacent properties.
d) **Corner Clearance –** A driveway should be a sufficient distance from a signalized intersection so that right-turn egress movements do not interfere with the right-turn queue at the intersection. In addition, every effort should be made to provide right-turn egress movements with sufficient distance to enter the left-turn pocket at the adjacent intersection.
e) **Right turn lanes at driveways -** If the project right turn peak hour volume is 50 or more vehicles, a right-turn deceleration lane shall be reviewed for appropriateness on all driveways accessing major arterial and secondary streets. The length of right turn lane should be sufficient to allow a vehicle traveling at the posted speed to decelerate before entering the driveway as outlined in the Caltrans Highway Design Manual.
f) Adequacy of pedestrian facilities
g) Bicycle accessibility
h) Accessibility from adjacent transit stops

10.7.4 SAFETY AND OPERATION IMPROVEMENT ANALYSIS

The TIS shall analyze opening year roadway conditions to determine if safety and/or operational improvements are necessary due to an increase in traffic from the project or cumulative projects. The following improvements shall be analyzed:

a) Addition of through lane(s), right turn lane(s) and left turn lane(s)
b) Left and/or right turn lane pocket length (queue length)
c) Bus turnouts – Coordinate potential bus top locations on arterial streets adjacent to the proposed project site with local transit agencies. Review appropriateness of bus turnouts for each of the identified bus stop locations.
d) Parking restrictions on adjacent streets
e) Free Right turn lane - Free right turn lane shall be considered when right turn volumes exceed 300 vehicles per hour.
f) Traffic Signal Coordination - For new or modified traffic signals, the Traffic Division may require traffic simulation and coordination timing plans using the latest Synchro software. The traffic

simulation and coordination timing plan shall include signalized intersections as identified by the Traffic Division. A copy of the Synchro files shall be available to the Traffic Division for review.

g) Bicycle Circulation - Identify and implement bike lane facilities adjacent to the project site in accordance with the County's Bicycle Master Plan.

10.8 DETERMINATION OF IMPACTS

The following criteria shall be used to determine if the addition of project traffic should be considered to have a significant impact and feasible measures must be identified to mitigate the impacts.

10.8.1 SIGNALIZED INTERSECTIONS

Any study intersection that is operating at a LOS 'A', 'B', 'C' or 'D' for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS 'E' or 'F' shall mitigate the impact to bring the intersection back to at least LOS 'D'.

Any study intersection that is operating at a LOS 'E' or 'F' for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.

For scenarios which include the addition of Cumulative Project Traffic (i.e. shared impacts), study intersections shall be mitigated to LOS 'D' or better in the Valley and Mountain regions and LOS 'C' or better in the Desert regions of the County.

10.8.2 UNSIGNALIZED INTERSECTIONS

An impact is considered significant if the study determines that either section a) **or** both sections b) and c) occur.

a) The addition of project related traffic causes the intersection to move from a LOS 'D' or better to a LOS 'E' or worse

OR

b) The project contributes additional traffic to an intersection that is already projected to operate at an LOS 'E' or 'F' with background traffic (per Section 10.5.2 b))

AND

c) One or both of the following conditions are met:
   1) The project adds ten (10) or more trips to any approach
   2) The intersection meets the peak hour traffic signal warrant after the addition of project traffic (per Section 10.5.2 c)).

Once a significant impact has been identified, mitigation shall be provided as follows:

1. For scenarios involving project traffic but not Cumulative Project Traffic, the LOS shall be mitigated to either LOS 'D' or better for case a) above or to pre-project LOS and delay for case b) above.
2. For scenarios that include Cumulative Project Traffic study intersections shall be mitigated to LOS 'D' or better in the Valley and Mountain regions and LOS 'C' or better in the Desert regions of the County.

10.8.3 INCONSISTENCY WITH ADOPTED PLANS SUPPORTING NON-AUTOMOTIVE USE

A significant impact occurs if the project is inconsistent with adopted plans supporting non-automotive use.

10.9 MITIGATIONS FOR TRAFFIC IMPACTS

The TIS will evaluate and recommend mitigations to address all findings of significant impact. As part of the final acceptance of a traffic study, the Traffic Division will review and approve any required improvements or fair share contributions necessary to mitigate the traffic related impacts from the development. These mitigations will be included as part of the conditions of approval and will be in addition to any improvements required by any other Divisions of Public Works and/or Departments. Any traffic mitigations based on a traffic study will be in addition to any other fees related to Regional Development Mitigation Plans and Local Area Transportation Facilities Plans or any fees required by other Divisions of Public Works and/or Departments.

Fair share contributions required as mitigations in a traffic impact study and subsequently listed in the conditions of approval shall be required before a building permit will be issued. Improvements required as mitigation in a traffic impact study and subsequently listed in the conditions of approval shall be completed prior to occupancy.

For more information on transportation fees related to traffic impacts, please see Chapter 11 of the Road Planning and Design Standards.

10.9.1 COUNTY MITIGATION FEE PLANS

The study shall state if the proposed project falls within any of the adopted fee plans in the County's unincorporated areas. Further information can be found on the following website: http://www.sbcounty.gov/dpw/transportation/transportation_planning.asp

10.9.2 FAIR SHARE CONTRIBUTIONS

For mitigations that are needed where the applicant is not solely responsible, a fair share computation shall be computed and reported for each such mitigation. The fair share amount should be calculated using the following formula:

$$Fair\ share = \frac{project\ trips}{project\ trips + future\ development\ trips} \times 100\%$$

EXHIBIT A

TRAFFIC IMPACT STUDY (TIS FORMAT)

1. Executive Summary
2. Introduction
    a. Purpose of the TIS and study objective
    b. Project location and vicinity map (Exhibit)
    c. Project size, description, etc
    d. Existing and Proposed land use and zoning
    e. Site plan and proposed project (Exhibit)
    f. Proposed project opening year and phase opening
    g. Committed (funded) roadway improvements
3. Existing Condition
    a. Existing roadway network
    b. Existing traffic control and intersection geometrics (Exhibit)
    c. Existing traffic volumes – AM and PM peak hour and ADT (Exhibit)
    d. Existing Level of Service (LOS) at intersections (Table)
    e. Existing bicycle facilities (Exhibit)
    f. Existing transit facilities (Exhibit)
    g. Existing pedestrian facilities
4. Future Condition (Both Opening Year and Build-Out Year Conditions, if required)
    a. Project Traffic (Opening Year(s))
        i. Trip generation (Table)
        ii. Trip distribution and assignment (Exhibit)
        iii. Project peak hour turning movement and ADT (Exhibit)
    b. Cumulative project traffic
        i. Identify location of previously approved and proposed development projects (if required)
    c. Ambient Traffic
        i. Peak hour turning movement and ADT (Exhibit)
        ii. Ambient traffic growth rate
    d. Ambient Traffic plus Cumulative Project Traffic
        i. Trip generation, distribution and assignment of cumulative projects if required. (Exhibit)
        ii. Total Ambient and Cumulative peak hour turning movement and ADT. (Exhibit)
    e. Total Traffic
        i. Project plus Ambient and Cumulative Traffic peak hour turning movement and ADT for opening year(s). (Exhibit)
5. Traffic Analysis
    a. Analysis Methodology.
    b. Level of Service of each study intersection for Ambient and Cumulative Traffic; Ambient and Cumulative plus Project; and Ambient and Cumulative Traffic plus Project with Mitigation. (Table)
6. Traffic Impacts
    a. Determination of significant impacts for intersections
    b. Site Access Analysis
    c. Safety and Operation Improvement Analysis
7. Mitigations and Recommendations

a. Proposed mitigation measures at significantly impacted intersections
b. Traffic Signal Warrant Analysis
c. Recommended Improvements categorized by whether they are included in fee plan or not. (Identify if these improvements are included in an adopted fee program)

8. Appendix
    a. Traffic Counts
    b. Analysis worksheets
    c. Signal warrants
    d. Copies of the traffic models

APPENDIX C

GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

APPENDIX C
GUIDELINES FOR CMP TRAFFIC IMPACT ANALYSIS REPORTS IN SAN BERNARDINO COUNTY

These guidelines describe the key elements required for preparing Traffic Impact Analysis Reports (TIA Reports) for the Congestion Management Program (CMP) in San Bernardino County. The purpose of these guidelines is to achieve a common approach to preparation of TIA Reports by all jurisdictions, thereby reducing inconsistencies and disagreements on how such studies should be performed.

TIA Reports shall be prepared by local jurisdictions when local criteria and thresholds indicate they are necessary. However, TIA Reports must be prepared to satisfy CMP requirements, except as noted below, when a proposed change in land use, development project, or at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation or other CMA-approved data source. Pass-by trips shall not be considered in the threshold determination. However, industrial, warehousing and truck projects shall convert trucks to PCE's before applying the threshold.

Jurisdictions that have implemented qualifying development mitigation programs that achieve development contribution requirements established by the SANBAG Development Mitigation Nexus Study are not required to prepare TIA reports for CMA review. However, until these jurisdictions have agreements with Caltrans regarding State highway facilities within the jurisdiction, any project meeting the CMP threshold of 250 two-way peak hour trips that expects to add at least 50 peak hour trips to a State highway facility is required to prepare a TIA report for Caltrans' review. If a project is forecast to generate 100 to 250 peak hour trips and expects to add at least 50 peak hour trips to a State highway facility, the jurisdiction should consult with Caltrans to determine the need for a TIA report. Refer to Figure C-1 at the end of this Appendix for a flow chart that defines when TIA reports need to be prepared.

Projects shall not be split to avoid the CMP requirements. If an additional phase of a project, when added to the preceding phases, causes the sum of the phases to exceed the threshold, the entire project must be analyzed as a unit. The analysis must be conducted when the phases are anticipated and should not wait for later phases, even if earlier phases alone would not exceed the threshold.

Locally determined criteria may be developed which are more stringent than those identified above. Individual development projects, parcels, or proposals in the same geographic vicinity that can reasonably be combined into a single project for analysis purposes which meets the threshold requirements for a TIA Report shall be analyzed as a single project.

TIA REVIEW

All TIA Reports shall be copied to the CMA. If a TIA Report is prepared by the local jurisdiction as stated above, and if the TIA Report determines that the project would add 50 or more 2-way peak-hour trips to a CMP arterial within another jurisdiction or 100 2-way peak-hour trips to a freeway, that jurisdiction (and Caltrans, if a state highway) shall be provided a copy of the TIA Report by the permitting jurisdiction. However, these criteria are not intended to determine when a local jurisdiction prepares a TIA Report.

It is the responsibility of the local jurisdiction to provide review copies of the TIA Report to the CMA and to potentially impacted jurisdictions so that review will occur in concert with the permitting jurisdiction's project review schedule, and prior to any approval or permitting activity. (Note: the transmittal letter shall indicate the agencies receiving the TIA report.) The period allotted for review shall be stipulated by the permitting jurisdiction but shall not be less than 15 working days from the date the CMA receives the report. To establish the date of receipt, it is encouraged the report be transmitted by certified mail. Should serious technical flaws be identified in the TIA Report such that the permitting jurisdiction chooses to recirculate the TIA Report, the recirculated document shall be reviewed no later than 10 working days from the date of receipt.

Note: Caltrans' review period is 30 days, consistent with CEQA. Lack of comment by Caltrans does not imply acceptance. If an encroachment permit will be required for the project, it is recommended that the jurisdiction work with Caltrans to resolve any outstanding comments before proceeding to project approval.

The reports focus on the potential impacts of land use decisions on the CMP system. These reports are used in conjunction with modeling for the CMP system to forecast transportation deficiencies in San Bernardino County. While there are unique aspects to many projects, the approach outlined here can be applied to the vast majority of projects. The preparer of the report is responsible for presenting all the relevant information that would be helpful in making transportation-related decisions. The guidelines presented here should be regarded as typical minimum requirements. They are not a substitute for exercising good planning and engineering judgment. Local agencies may wish to include additional requirements for traffic analysis beyond those for the CMP. Only the CMP requirements are addressed here; any requirements added by a jurisdiction apply only in that jurisdiction, unless otherwise agreed.

Other information relating to the preparation of a TIA Report may be found in Chapter 4 of the Congestion Management Program for San Bernardino County. Preparers of TIA Reports should consult the CMP for additional detail.

Implications of CMP Review

The authority to make land use decisions rests with local jurisdictions. A Land Use/Transportation Analysis Program consistent with the CMP guidelines has the potential to influence local land use decisions by requiring full evaluation and disclosure of impacts to the regional transportation system, regardless of jurisdictional boundaries. Local jurisdictions are required to maintain the adopted standards on the CMP system, so it is essential that local jurisdictions consider the necessary actions and costs required to mitigate impacts that result from local land use decisions.

The success of the program relies on consistency with applicable regional plans and the cooperative efforts of local jurisdictions, Caltrans, and the CMA. If an integration of land use decisions and the provision of transportation facilities is not accomplished as required by the program, a jurisdiction which fails to mitigate deficiencies on the CMP system caused by its land use decisions will face withholding of its Proposition 111 gas tax increment funds.

Content of the TIA TIA Report

The TIA Report may be contained within other similar documents (e.g. an EIR prepared under CEQA), or it may be an independent document. The intent is to address all CMP concerns without duplication of other work. In some jurisdictions, the TIA Report may be prepared by the developer or developer's consultant. In other jurisdictions, the TIA Report may be prepared by the jurisdiction or jurisdiction's consultant. In either case, it is in the interest of all parties that the participants fully understand and come to agreement on the assumptions and methodology prior to conducting the actual analysis. This is particularly important when considering using assumptions that vary from the norm. The local jurisdiction may request a meeting with the developer and/or preparer of the TIA Report to discuss the methodology prior to the initiation of work on the analysis. A meeting with the CMA and/or Caltrans, where applicable, is also encouraged to address issues associated with large or extraordinary projects.

The following outline and commentary represents the recommended structure for the TIA Report.

I. Introduction.

Set the stage for the analysis, providing background information necessary for the unfamiliar reader to understand the magnitude of the project, location of the project, and special characteristics.

A. Project, general plan, or specific plan description.

The description must include project size by land use type, location of project, approximate location of proposed access points to the local and regional roadway system, and movements from adjacent streets allowed into and out of the project. This should be shown in a site diagram. Special characteristics of the site, such as unusual daily or seasonal peaking characteristics or heavy involvement of truck traffic, should be mentioned. If the description is included in another part of a more comprehensive document, that is acceptable.

B. Analysis methodology.

Provide a general description (overview) of the process used to analyze the project. Analysis years should be specified and the approach to the modeling/traffic forecasting process should be explained. The sources of information should be identified. The study area and method for level of service analysis for the various roadway types should be identified. At a minimum, the study area must include all freeway links with 100 or more peak-hour project trips (two-way) and other CMP roadways with 50 or more peak-hour project trips (two-way). The study area does not end with a city or county boundary. The study area is defined by the magnitude of project trips alone. In most cases, the analysis need not extend more than five miles beyond the project site, even if there are more than 50 project trips on an arterial and 100 project trips on a freeway. However, analysis of projects in isolated areas with few access routes should be continued until the 100 or 50-trip threshold is met. Within the defined study area, all "key intersections," as listed in the most current CMP, must be analyzed. Key intersections represent intersections of CMP roadways plus those additional intersections recognized by local jurisdictions and/or SANBAG to be important to mobility on CMP roadways. At a minimum, key intersections will include signalized intersections operating at LOS D or below. The distribution of traffic must be shown for all roadways on which project trips occur (except those for internal circulation), whether or not they are on the CMP network.

The analysis of traffic operations and level of service is to be provided for the following conditions and is to include an assessment of traffic mitigation requirements for project opening day and future conditions.

1. Existing conditions – the conditions at the time of TIA preparation without the inclusion of the project generated trips. Existing deficiencies should be identified, but mitigation analysis is not required. The existing conditions analysis must include the full project impact area as defined above.

2. Project opening day conditions - the conditions on the opening day of the project for two scenarios: 1) excluding the project traffic, and 2) including the project traffic. Assume full trip generation impact of the site. Full mitigation analysis is to be performed for project opening day conditions. If it is deemed more appropriate because of the nature of the project, another intermediate scenario may be included to focus on the access requirements and/or immediate area surrounding the project, subject to a request by the local jurisdiction. The methodology used for distribution of project traffic at project opening day conditions is at the discretion of the local jurisdiction.

3. Future conditions - the conditions for two model forecast year scenarios: 1) excluding the project traffic, and 2) including the project traffic. Full mitigation analysis is to be performed for future conditions. In addition, a staging analysis of mitigations may be required for large projects constructed over a long time period. The need for a staging analysis will be determined by the local jurisdiction.

The analysis of the project opening day and future condition shall be based on, at a minimum, the PM peak-hour of the adjacent street traffic. An analysis of the AM peak-hour of the adjacent street traffic is also required for developments containing residential land uses, and may be required for other types of development at local discretion. Analysis may be required for peak-hours other than the AM and PM peak for some land uses. This determination will be made by the local jurisdiction. The peak traffic generation hour of the development, if different from peak AM and PM hours, must also be identified, and the total vehicle trips during the peak-hour of the generator must be estimated. This will facilitate a decision regarding the need to evaluate time periods other than the peak-hours of the adjacent streets.

Note: For State highway facilities, analysis of future conditions for is only required for the following: 1) jurisdictions that have not adopted qualifying development mitigation programs that achieve development contribution requirements established by the SANBAG Development Mitigation Nexus Study, and 2) State highway facilities that are not included in the SANBAG Development Mitigation Nexus Study or are not subject to an agreement with Caltrans.

II. Existing conditions.

A. Existing roadway system.

Provide a map and brief written description of the roadway network. The number and type of lanes on freeways, principal arterials, and other impacted roadways should be identified. Signalized intersections and plans for signalization should be identified. The existing number of lanes at key CMP intersections should be clearly identified on a graphic or in conjunction with the level of service analysis output. Maps of the CMP network are available in the Congestion Management Program documentation, available from the CMA. Also describe the relevant portions of the future network as specified with officially approved funding sources.

B. Existing volumes.

Existing average weekday daily traffic (AWDT) should be identified for the CMP links in the study area. Historic volume growth trends in the study area should be shown. Consult the local jurisdiction, Caltrans, and San Bernardino County for additional information.

C. Existing levels of service.

A level of service analysis must be conducted on all existing segments and intersections on the CMP network potentially impacted by the project or plan (as defined by the thresholds in Section I. B). Urban segments (i.e., segments on roadways that are generally signalized with spacing less than 2 miles) do not require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections. Freeway mainline must be analyzed, and ramp/weaving analysis may be required at local discretion, if a ramp or weaving problem is anticipated. Chapter 2 of the CMP presents the acceptable LOS methodologies, based on the 2000 Highway Capacity Manual. Several software packages are available for conducting LOS analysis for signalized intersections, freeways, and other types of roadways. The software package and version used must be identified. Normally, the existing LOS analysis for intersections will be run using optimized signal timing, since the future analysis will normally need to be run using optimized timing. Signal timing optimization should consider pedestrian safety and signal coordination requirements. Minimum times should be no less than 10 seconds.

Saturation flow rates are considered as average field measured saturation flow rates, and in no case shall the adjusted saturation flow rates of the 2000 Highway Capacity Software be allowed to go lower than the specified saturation flow rates listed on page C-13, when field data are not available. However, there shall be no restriction on minimum saturation flow rates if actual saturation flow rates are available.

Default lost time is two seconds per phase, and a clearance signal time of three seconds. Without local data to show otherwise, a peak-hour factor of 0.95 may be assumed for existing and full generation scenarios. Variations from these values must be documented and justified. LOS analyses should be field-verified so that the results are reasonably consistent with observation and errors in the analysis are more likely to be caught. A brief commentary on existing problem areas must be included in this section, bringing existing problems to the attention of the readers.

Only project opening day and future scenarios with project require that traffic operational problems be mitigated to provide LOS E or better operation. If the lead agency or an affected adjacent jurisdiction requires mitigation to a higher LOS, this takes precedence over the CMP requirements. The LOS threshold for State highway facilities will be the same as the jurisdiction where the facility is located but no greater than a 45 second average delay per vehicle in the peak hour (middle of LOS “D”). Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

D. Related general plan issues.

The relationship to the general plan may be identified. This section should provide general background information from the Traffic Circulation Element of the General Plan, including plans for the ultimate number of lanes, new roadways planned for the future, and other information that provides a context for how the proposed project interrelates with the future planned transportation system.

III. Future conditions.

A. Traffic forecasts.

One of the primary products of the TIA is the comparison of future traffic conditions with and without the project. The primary forecasts will be for the CMP forecast year (consult the CMA for the most currently applicable forecast years). If a project is phased over a development period past the CMP forecast year, a buildout forecast with forecast background traffic must also be provided. There are two components of the forecast that need to be considered: background traffic and project traffic. Acceptable methodologies for these forecasts are described below.

1. Project Traffic Forecasts - Two basic alternatives are available for forecasting project traffic:

   Manual method - Generate project trips using rates from the ITE Trip Generation report. Distribute and assign the trips based on the location of the project relative to the remainder of the urban area and on the type of land use. Rather than relying on pure judgment to develop the distribution of project traffic, the future year CMP model select zone needs to be obtained from SCAG to determine the distribution pattern. The percentage distribution should be reasonably related to the location of and the number of trips generated by zones surrounding the project. Computer-assisted trip distribution and assignment methods may be used as long as they reasonably represent the travel characteristics of the area in which the project is located. It should be noted that the model does not forecast project trucks. Therefore distribution needs to be made in a reasonable manner.

   Use of local model - Create a zone or zones that represent the project (if not already contained in the local model). The CMP model may be used if new zones are created to represent the project (it is unlikely that the CMP model will already have zones small enough to represent the project). The zone or zones should include the exact representation of driveway locations with centroid connectors. It is important that the driveway representations be exact to produce acceptable turning movement volumes. Some adjustments to the turning movement volumes may be needed, depending on the adequacy of this representation. (See page C-14.)

The above methodologies may produce different results, both in the generation of trips and the distribution of trips. However, both methods will have application, depending on the jurisdiction and on the type and size of project. It should be noted that a model select zone run shall be used for distribution and ITE trip generation rates for project trips.

2. Background Traffic Forecasts - Background traffic refers to all traffic other than the traffic associated with the project itself. The background traffic shall include intersection turning movement and segment truck volumes by classification (converted to PCE's) as shown on page C-12 on arterial streets, interchange ramps, and mainline freeway lanes. Future scenarios shall use the truck model (converted to PCEs) or 150 percent of the existing truck volume for arterials and freeway ramps and 160 percent for mainline freeway lanes in a special generator area such as found in the City of Fontana (between I-15 and Citrus Avenue, and between San Bernardino Avenue and Jurupa Avenue).

   Several alternatives for forecasting background traffic are:

   For project opening day analysis - Use accepted growth rates provided by the jurisdictions in which the analysis is to take place. Each jurisdiction's growth rates should be used for intersections and segments within that jurisdiction. A table of growth rates may be available from the jurisdictions.

   For horizon year - The traffic passenger vehicle and truck classification (in PCEs) models will provide the needed forecasts and if requested, passenger vehicle background plus project forecasts. Local models may also be used to generate intersection and segment forecasts, if a traffic refinement process is properly applied to maximize the quality and reasonableness of the forecasts. Alternatively, the CMP model may be used to generate growth factors by subarea, which may be applied to existing intersection and segment volumes. The separate forecasting of background traffic by each TIA Report preparer is redundant, will only create conflict among reports, and should be avoided by the city/county providing an acceptable background forecast for use by all TIA Report preparers. Ideally, cities and/or the County should establish the background forecasts annually for use by project applicants. Until the city/county is in a position to produce these forecasts on a routine basis, they may wish to use the results of the background forecasts from prior acceptable TIA Reports as the basis for background forecasts for other TIA Reports. The availability of such forecasts should be established before initiating the preparation of a TIA Report. If the CMP model is being used as the basis for the forecast, assume that the project is not included in the CMP model forecast (unless it can be definitively proven otherwise). If a local model is being used, the background traffic will be derived by subtracting the project traffic from the forecast where the project is already represented in the model. Where the project is not represented in the model, the background traffic can be directly derived from the model (with appropriate refinement to maintain quality and reasonableness of the forecasts).

A Note on Methodology for General Plans and Specific Plans:

In the case of analysis of general plan revisions/updates or specific plans, the same approach is applied as above. However, the "project" to be analyzed shall consist of the proposed land use. For threshold determination use the difference between the previously approved general plan and the proposed revision to the general plan. Unless otherwise agreed by the local jurisdiction, the analysis must assume the maximum intensity of land uses allowed (i.e., worst case) on the parcels to which the revision applies. All new specific plans must be analyzed based on worst case assumptions. Although general plans may not identify specific access locations, the analysis must assume access locations that are reasonable, based on the location and size of the plan.

B. Traffic added by project, general plan revision/update, or specific plan.

The methods for generating and distributing project trips must be consistent with the appropriate methodology listed above. The total number of trips generated by the project must be specified by land use. The source of the trip generation rates must be documented. Project trips (inbound and outbound) must be identified on a graphic map for both the peak hour or hours being studied.

Any assumed reductions in trip generation rates, such as internal trips, and transit/TDM reductions must be documented. Pass-by trips may be allowed only for retail uses and fast-food restaurants. The pass-by and internal trip percentages and methodology must be consistent with the estimates and methodology contained in the latest ITE Trip Generation handbook. The internal trip percentage must be justified by having a mixed-use development of sufficient size. In special cases, larger reductions may be allowed; but these must be documented and justified. Reductions for transit or TDM must be accompanied by an explanation of how the strategies will actually be implemented and may require a monitoring program.

Industrial and warehouse truck uses must also show the estimated number and distribution of truck trips (in PCE's) for the same hours. Appendix I contains guidelines for trip generation rates and truck percentages for industrial and warehouse land uses. Appendix I indicates trip rates to be used from either the latest edition of ITE's *Trip Generation* report or from the City of Fontana *Truck Trip Generation Study*, dated August 2003, depending on type of industrial or warehouse use. Appendix I also contains a memo specific to the use of trip generation rates for "high-cube warehouse". Trip generation rates for common carriers such as Yellow Freight, Roadway, or Swift shall be determined using the latest edition of ITE's *Trip Generation* report or a site specific study approved by the local jurisdiction.

C. Transit and TDM considerations.

Transit and travel demand management strategies are a consideration in many development projects. Requirements within each jurisdiction are contained in the local TDM ordinance, to be adopted by each local jurisdiction as part of the CMP requirements. Examples of items to include are location of transit stops in relationship to the proposed project, designation of ridesharing coordinator, posting of information on transit routes and ridesharing information, provision of transit passes, etc..

D. Traffic model forecasts.

Provide a map showing link volumes by direction. All CMP arterial links with 50 or more peak-hour project trips (two-way) and freeway links with 100 or more peak-hour project trips (two-way) must be shown. The factor to derive a peak-hour from the three-hour AM peak period is 0.38. The factor to derive a peak-hour from the four-hour PM peak is 0.28. All model forecasts shall be post processed.

Appendix H contains guidelines for model post processing.

E. Future levels of service.

Compute levels of service for CMP segments and intersections based on the procedures in the 2000 Highway Capacity Manual and subsequent updates. Refer to the procedures adopted in Chapter 2 of the CMP and the assumptions specified in section II.C of this appendix. Copies of the volumes, intersection geometry, capacity analysis worksheets, and all relevant assumptions must be included as appendices to the TIA Report. It should be noted that the v/c ratio and implied level of service that can be output by travel demand models are different from the level of service analysis prescribed in this section. The capacities used in the model are not typically the same capacities as used in the capacity analysis.

Intersections and segments on State highway facilities should be analyzed as a coordinated system. Left turn, through and right turn lane queuing analysis is highly desirable to validate an intersection's LOS. This more detailed analysis is meant to ensure the various movements do not overflow and impede adjacent movements, and is left to the discretion of the local agency.

F. Description of projected level of service problems.

Identify resulting levels of service for intersections and segments, as appropriate, on a map for applicable peak-hours. Describe in the text the nature of expected level of service problems. Describe any other impacts that the project may also have on the CMP roadway network, particularly access requirements.

G. Project contribution to total new volumes (forecast minus existing) on analyzed links.

Compute the ratio of traffic generated by the proposed development to the total new traffic (including project traffic) generated between the existing condition and forecast year for each analyzed link or intersection. The purpose of this calculation is to identify the proportion of volume increase that can be attributed to the proposed project. This will be a necessary component of any deficiency plans prepared under the CMP at a later date. The calculations are to be conducted for all applicable peak-hours. The results may be shown on a map or in a table by percentages to the nearest tenth of a percent.

IV. Project mitigation.

The mitigation of project impacts is designed to identify potential level of service problems and to address them before they actually occur. This will also provide a framework for negotiations between the local jurisdiction and the project developer. The CMA will not be involved in these negotiations unless requested by a local jurisdiction. Impacts beyond the boundaries of the jurisdiction must be identified in the same fashion as impacts within the jurisdictional boundary. Impacted local agencies outside the boundary will be provided an opportunity for review of the TIA Report. Negotiations with these outside jurisdictions and with Caltrans are a possible outcome, depending on the magnitude and nature of the impacts. For the CMP, the mitigations must bring the roadway into conformance with the LOS standards established for the CMP. However, local agencies may require conformance to higher standards, and these must be considered in consultation with the local jurisdiction. Measures to address local needs that are independent from the CMP network should be included in the TIA Report for continuity purposes. Consult the local jurisdiction to determine requirements which may be beyond the requirements of the CMP. The information required in this part of the TIA Report is described below.

A. Other transportation improvements already programmed and fully funded.

Only transportation improvements that are fully funded should be assumed in forecast.

B. Roadway improvements needed to maintain CMP level of service standard.

These should include an evaluation of intersection turn lanes, signalization, signal coordination, and link lane additions, at a minimum. If a freeway is involved, lane requirements and ramp treatments to solve level of service deficiencies must be examined. Prior studies on the same sections may be furnished to the preparer of the TIA, and such studies may be referenced if they do, in fact, provide the necessary mitigation for the proposed project. However, the calculation of percentage of contribution of the project to the growth in traffic must still be provided for the appropriate peak-hours, as described earlier. If the physical or environmental constraints make mitigation unlikely, then the contribution may be used to improve level of service elsewhere on the system or another location that would relieve the impact. The point of referencing a previously conducted study is to avoid unnecessary duplication of effort on the same sections of roadway. Copies of previously conducted relevant studies in the area may be obtained from the local jurisdictions or the CMA, including any plans resulting from the annual modeling runs for the CMP.

C. Other improvements needed to maintain the LOS standard.

In some cases, additional transit and TDM strategies beyond what was in the original assumptions may be necessary to provide an adequate mitigation. These must be described and the method for implementation must be discussed.

D. Level of service with improvements.

The level of service with improvements must be computed and shown on a map or table along with the traffic level of service without improvements. Delay values, freeway volume/capacity ratios, or other measures of level of service must be included in the results (could be in an appendix) along with the letter designation.

E. Cost estimates.

The costs of mitigating deficiencies must be estimated for deficiencies that occur either within or outside the boundaries of the jurisdiction. The costs must be identified separately for each jurisdiction and for Caltrans roadways. Prior studies and cost estimates by SANBAG, Caltrans and other jurisdictions may be referenced, or the Preliminary Construction Cost Estimates provided in Appendix G may be used. Used together with the analysis conducted in Section III.G, this will provide an approximation of project contribution to the needed improvements. This estimate is prepared for discussion purposes with the local jurisdiction and with neighboring jurisdictions and Caltrans. It does not imply any legal responsibility or formula for contributions to mitigations. If a mitigation is identified as necessary to bring a deficiency into conformance with the level of service standard, but physical or environmental constraints make the improvement impractical, an equivalent contribution should be considered to improve the LOS elsewhere on the system or another location providing direct relief.

F. Relationship to other elements.

While the measures required to address air quality problems are not required for the TIA Report, they may be required as part of a CEQA review. The

TIA Report may be integrated with environmental documents prepared for CEQA requirements. This is at the discretion of the local jurisdiction.

V. Conclusions and recommendations.

A. Summary of proposed mitigations and costs.

Provide a summary of the impacts, proposed mitigations, and the costs of the mitigations. A cost estimate for the proposed mitigations must be included. Generalized unit costs will be available from either Caltrans, the local jurisdiction, or Appendix G. The source of the unit cost estimates used must be specified in the TIA Report.

B. Other recommendations.

List any other recommendations that should be brought to the attention of the local jurisdiction, the CMA, or Caltrans. This may include anticipated problems beyond the forecast year or on portions of the network not analyzed.

<u>Summary List of Typical Figures and Tables to Be Included in a TIA Report.</u>

- Project location and 5 mile limit study area (map)
- Project size by land use (table)
- Trips generated by land use for AM and PM weekday peak-hours of adjacent street traffic and for daily traffic inbound and outbound (table) and other applicable peak-hours
- List of other planned transportation improvements affecting the project
- Existing intersection and link volumes and levels of service (map)
- Distribution and assignment of project trips (map)
- Forecast traffic without project and with project for applicable peak-hours (map or table)
- Levels of service without project and with project (map or table)
- Improvements required to mitigate project opening day and forecast year scenario impacts (map and/or table)
- Ratio of project traffic to new traffic (new traffic means the difference between existing and forecast) on analyzed links or intersections (map or table)
- Improvement costs by jurisdiction and for Caltrans roadways

<u>SUMMARY OF ANALYSIS ASSUMPTIONS FOR THE CMP TRAFFIC IMPACT ANALYSIS GUIDELINES</u>

<u>Level of Service Analysis Procedures and Assumptions</u>

<u>Intersections</u>

- 2000 HCM operational analysis.
- Optimized signal timing/phasing for future signal analysis, unless assumed to be in a coordinated system, in which case estimated actual cycle length is used. The maximum cycle length for a single

signalized intersection or system should be 130 seconds.

- 10 second minimum phase time, including change interval.

- Average arrivals, unless a coordinated signal system dictates otherwise.

- Ideal lane width (12 feet).

- 2 second lost time/phase.

- "Required" solution if analysis by Webster.

- Exclusive right turn lane is assumed to exist if pavement is wide enough to permit a separate right turn, even if it is not striped. (Minimum 20' from curb line to lane stripe.)

- A full saturation flow rate can be assumed for an extra lane provided on the upstream of the intersection only if this lane also extends at least 600 ft downstream of the intersection (or to the next downstream intersection).

- PHF = 0.95 for future analysis.

- The lane utilization factor may also be set at 1.00 when the v/c ratio for the lane group approaches 1.0, as lanes tend to be more equally utilized in such situations.

- For light duty trucks (such as service vehicles, buses, RV's and dual rear wheels) use a PCE of 1.5. For medium duty trucks with 3 axles use a PCE of 2.0. For heavy duty trucks with 4 axles, use a PCE of 3.0.

- Industrial, warehousing and other Projects with high truck percentages should convert to PCE's before applying thresholds.

- When field saturation flow rates and any special intersection characteristics are not available, the following field adjusted saturation flow rates are recommended for analysis.

<u>Existing and Opening Day Scenarios</u>

- Exclusive thru: 1800 vphgpl
- Exclusive left: 1700 vphgpl
- Exclusive right: 1800 vphgpl
- Exclusive double left: 1600 vphgpl
- Exclusive triple left: 1500 vphgpl or less

<u>Future Scenarios</u>

- Exclusive thru: 1900 vphgpl
- Exclusive left: 1800 vphgpl
- Exclusive double left: 1700 vphgpl
- Exclusive right: 1900 vphgpl
- Exclusive double right: 1800 vphgpl
- Exclusive triple left: 1600 vphgpl

<u>Note:</u> Existing field saturation flow rates should be used if they are available

and any special traffic or geometric characteristics should also be taken into account if known to affect traffic flow.

Freeways

- Capacity of 2,300 vehicles/hour/lane (1600/hr/lane/HOV)
- Use Caltrans truck percentages (includes trucks, buses and RV's)
- Peak-hour factor of 0.98 for congested areas and 0.95 for less congested areas
- Directional distribution of 55% and 45%, if using non-directional volumes from Caltrans volume book
- Design speed of 70 mph
- Volumes used from Caltrans' annual volume book are assumed to be PM peak-hour. AM peak mainline volumes assumed as 90% of PM peak, if using Caltrans volume book

Stop Controlled Intersections

- 2000 HCM for 2-way and 4-way stops

Project-Related Assumptions

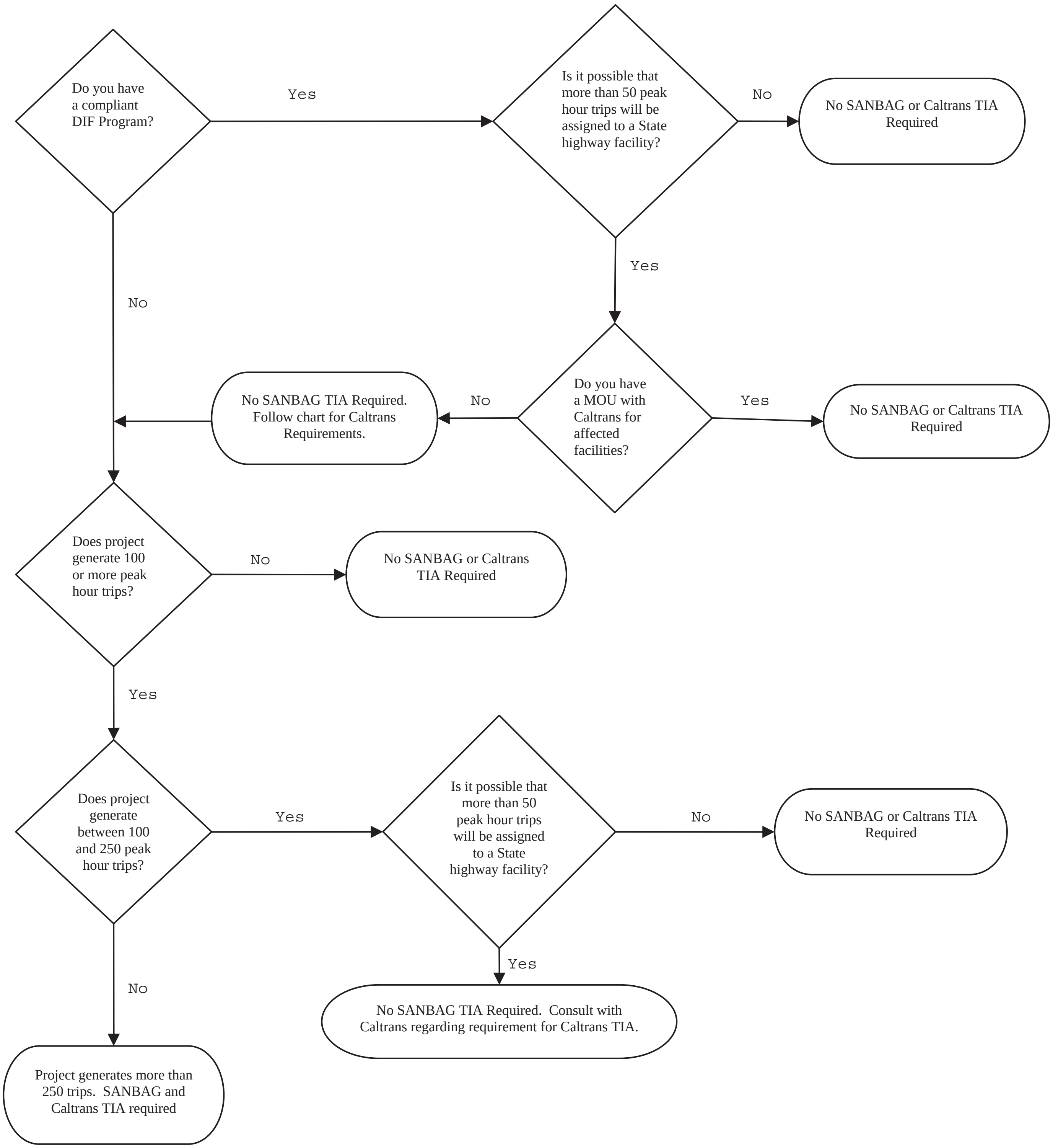
- Use the latest ITE Trip Generation handbook for mixed use internal trip percentages. Higher percentages must be fully justified.
- Pass by trips - Retail uses and fast food restaurants only
    - Use ITE procedures to estimate percentage
    - For analysis at entry points into site, driveway volume is not reduced (i.e., trip generation rate is still the same). Rather, trips are redistributed based on the assumed prevalent directions of pass-by trips (see recommended ITE procedure).
- Reductions for transit or TDM are a maximum of 10% unless higher can be justified.

Other

- If a new traffic generating development project (other than a single family residential unit) within a federally designated urbanized area abuts a state highway or abuts a highway that intersects a State highway within 500 feet of that intersection, the local jurisdiction in which the development occurs must notify Caltrans and the CMA.
- The TIA procedures will be reviewed biannually. Forward comments to the CMA.
- Industrial warehouse and truck projects may distribute <u>only</u> truck trips by hand. (Employee trip distribution shall be modeled.)
- Intersections will be considered deficient (LOS “F”) if the critical v/c ratio equals or exceeds 1.0, even if the level of service defined by the delay value is above the defined LOS standard.
- All the computer-generated traffic forecasts need to be refined for use in TIA reports to provide the best estimate of future volumes possible. Traffic forecasts should be post processed by using “B”

turns software available through SCAG's Riverside Office or another approved methodolgy as found in the Federal Transportation Research Board Report 255. However, the post processing of turning movements is restricted to local models only.

Figure C-1: Peak Hour Trip Generation Thresholds for Preparation of SANBAG and Caltrans TIA Reports



Warehousing
(150)

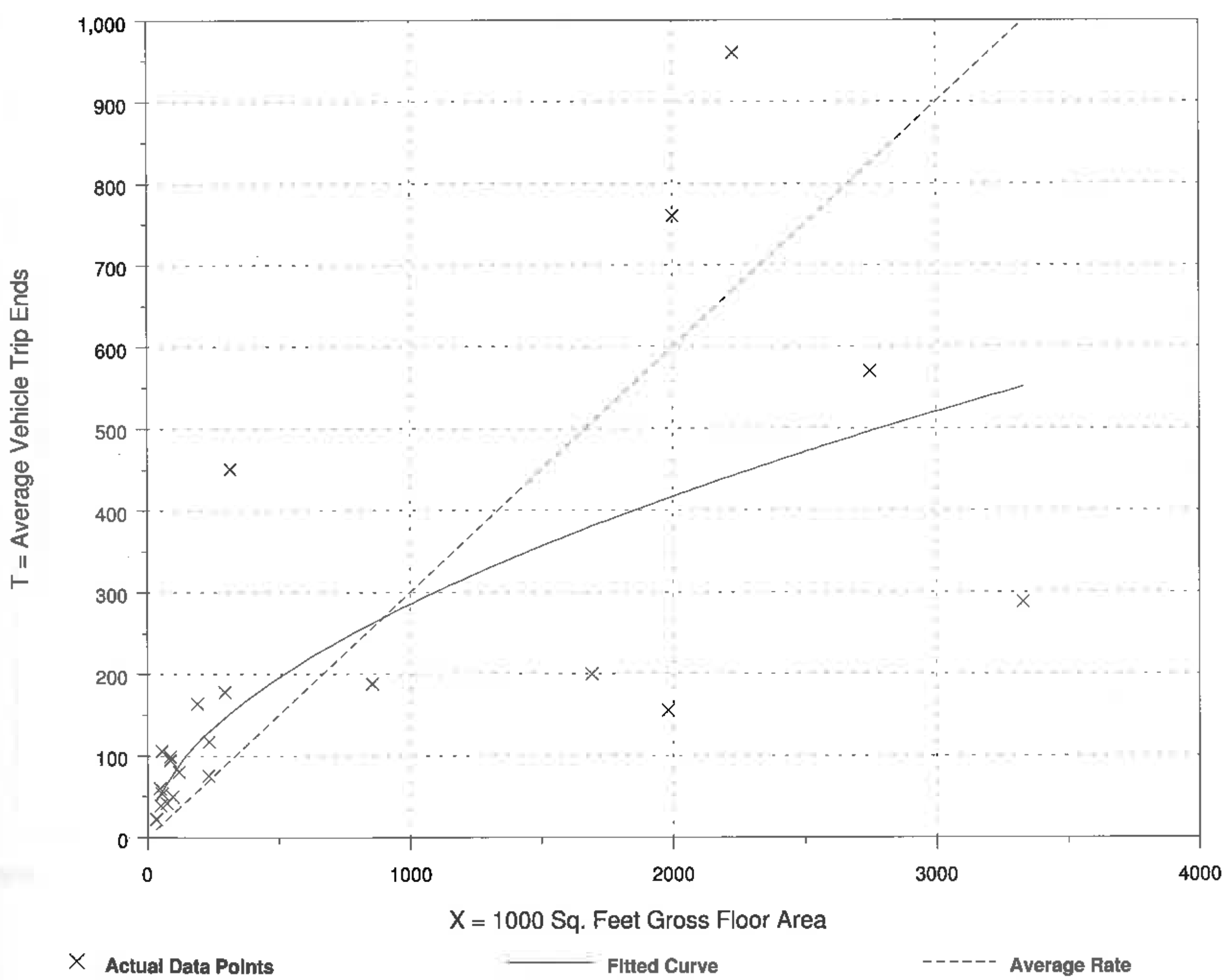
Average Vehicle Trip Ends vs:	**1000 Sq. Feet Gross Floor Area**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.

Number of Studies:	23
Average 1000 Sq. Feet GFA:	745
Directional Distribution:	79% entering, 21% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.30	0.08 - 1.93	0.63

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.55\ Ln(X) + 1.88$ $\qquad R^2 = 0.67$

Warehousing
(150)

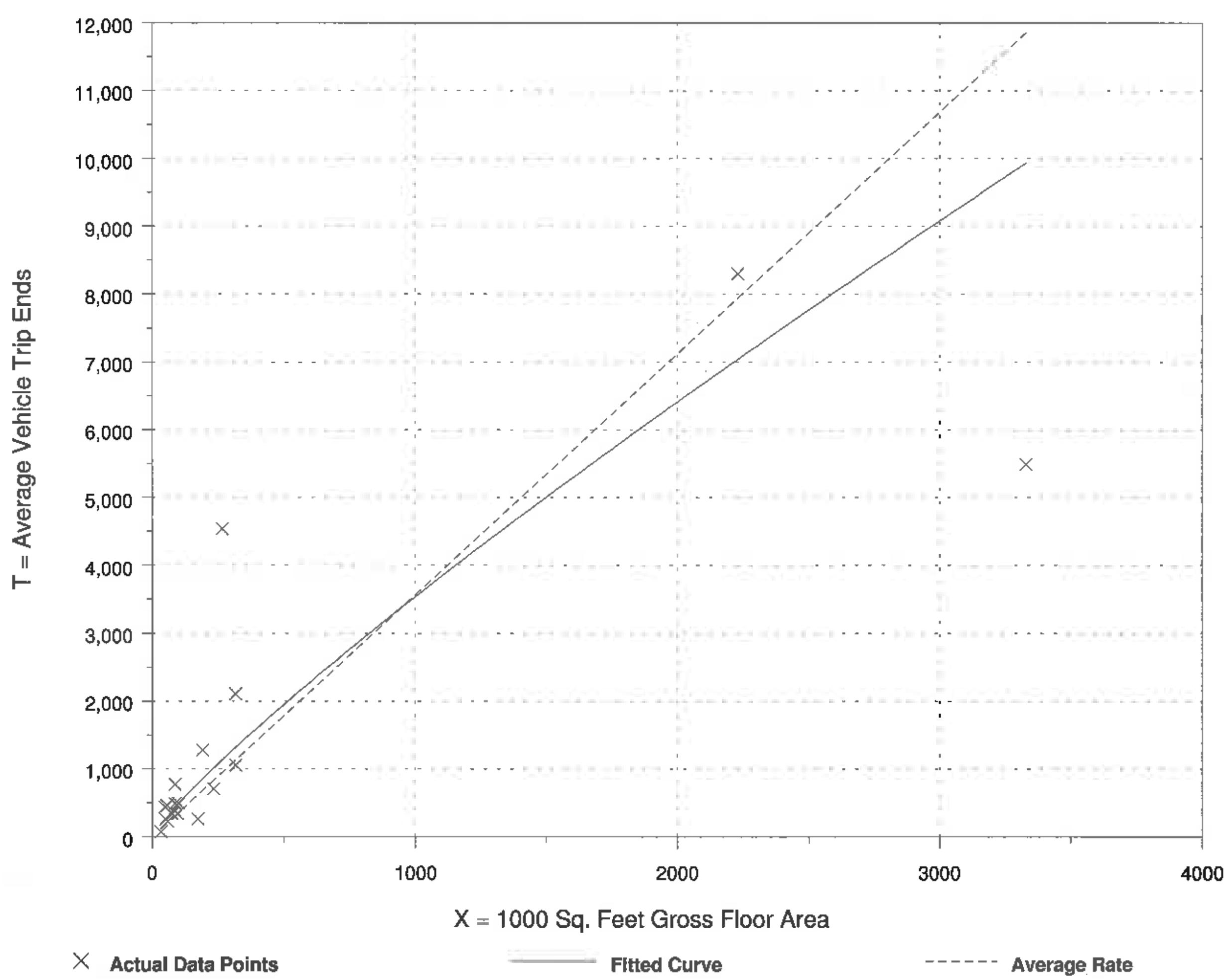
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday

Number of Studies: 18
Average 1000 Sq. Feet GFA: 431
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.56	1.51 - 17.00	3.58

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.86 Ln(X) + 2.24 $R^2 = 0.77$

Warehousing
(150)

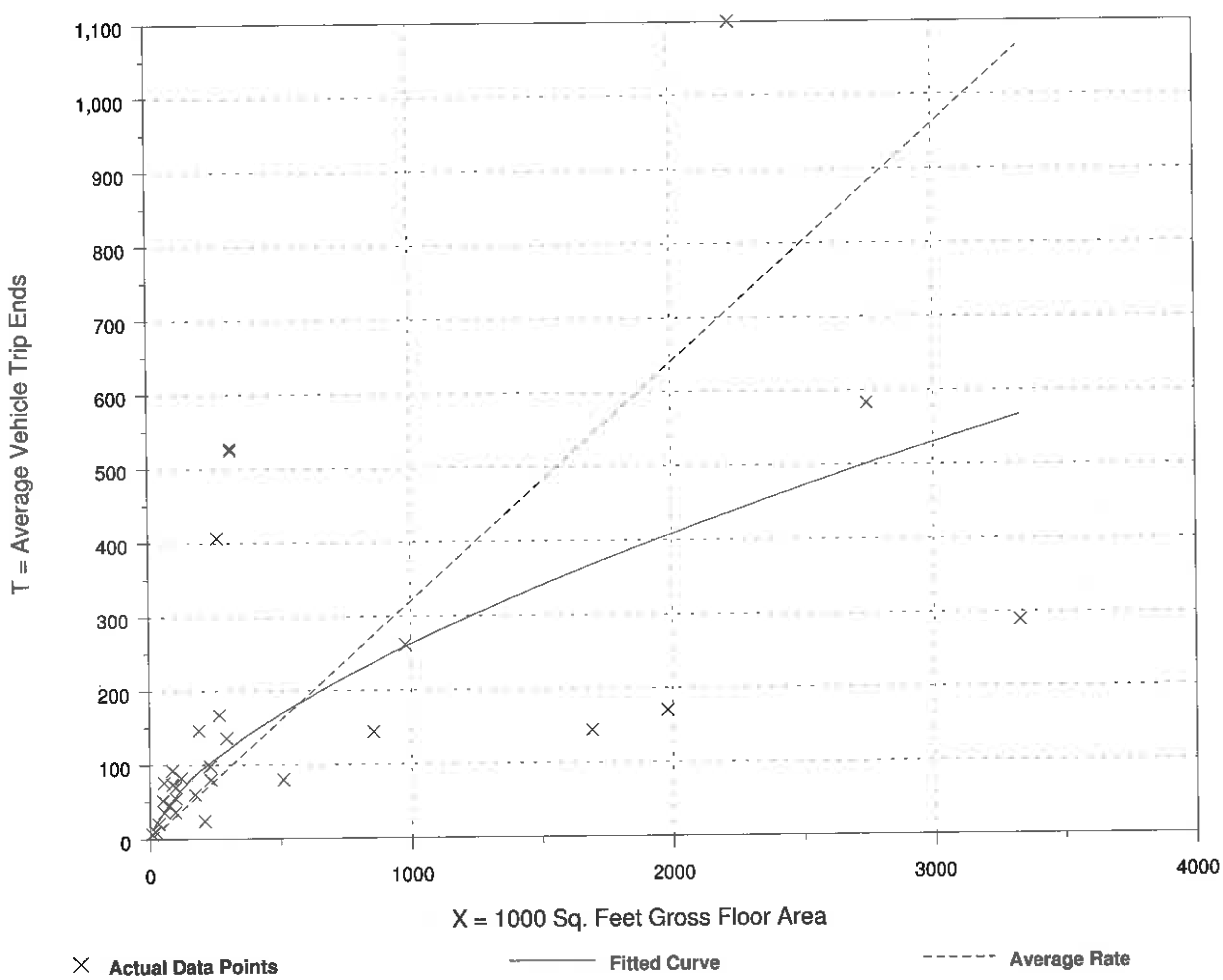
Average Vehicle Trip Ends vs:	**1000 Sq. Feet Gross Floor Area**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.**

Number of Studies: 31
Average 1000 Sq. Feet GFA: 572
Directional Distribution: 25% entering, 75% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 1.66	0.67

Data Plot and Equation



Fitted Curve Equation: $Ln(T) = 0.64\ Ln(X) + 1.14$ $R^2 = 0.64$