

From: Mychal Loomis, Kimley-Horn and Associates

To: Marlon Pangilinan and George Ghossain, City of San Diego

Date: March 15, 2016

Re: North Park & Uptown Updated Residential Densities Traffic Evaluation Summary of Findings
for the Cluster Community Plan Update

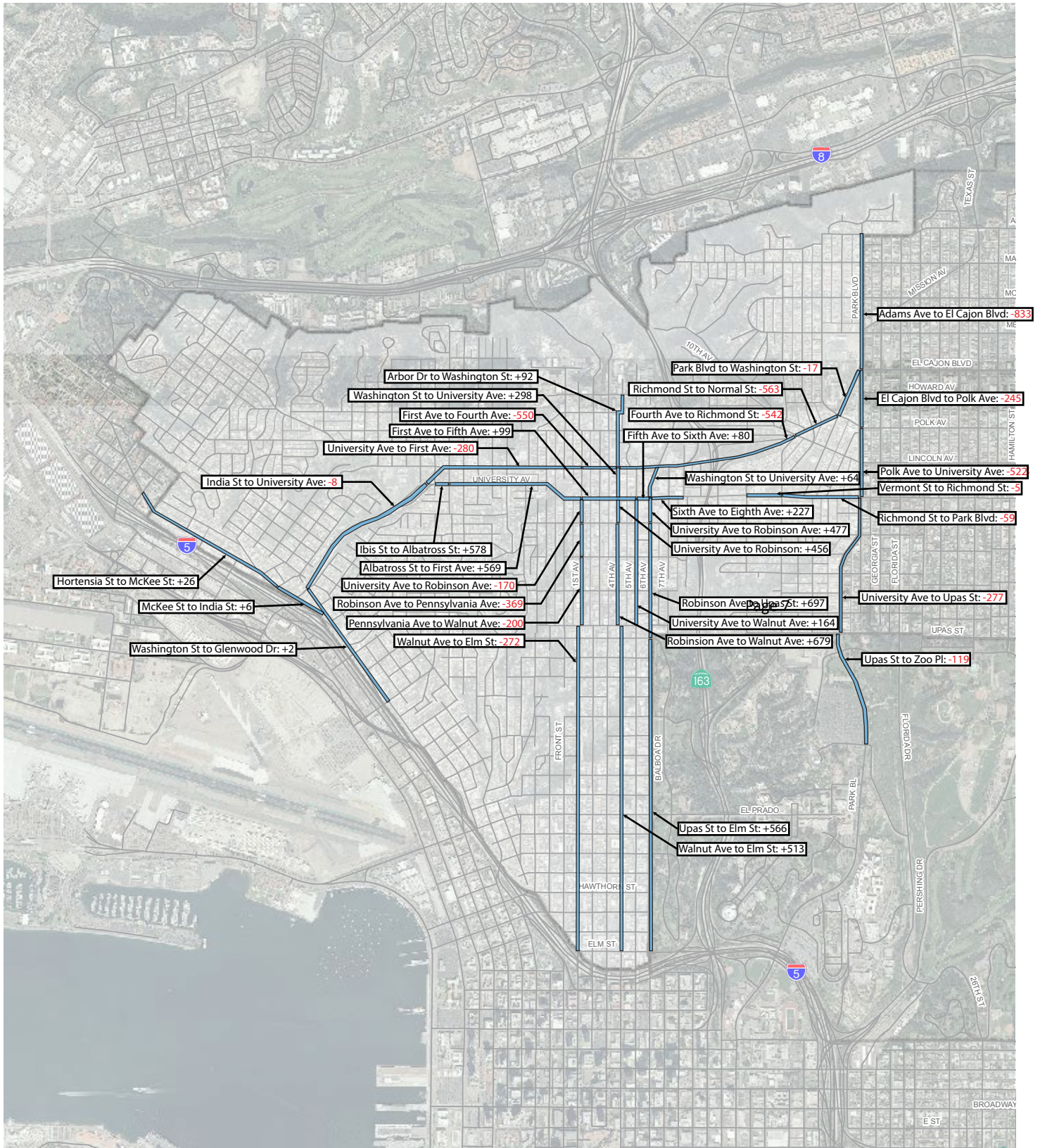
This memorandum summarizes the results of the traffic evaluation to reflect updated residential densities within the study area of the Cluster Community Plan Update (CPU). City staff provided the specific changes by traffic analysis zones (TAZs) including new trip generation volumes and high-level assumptions of traffic distribution patterns.

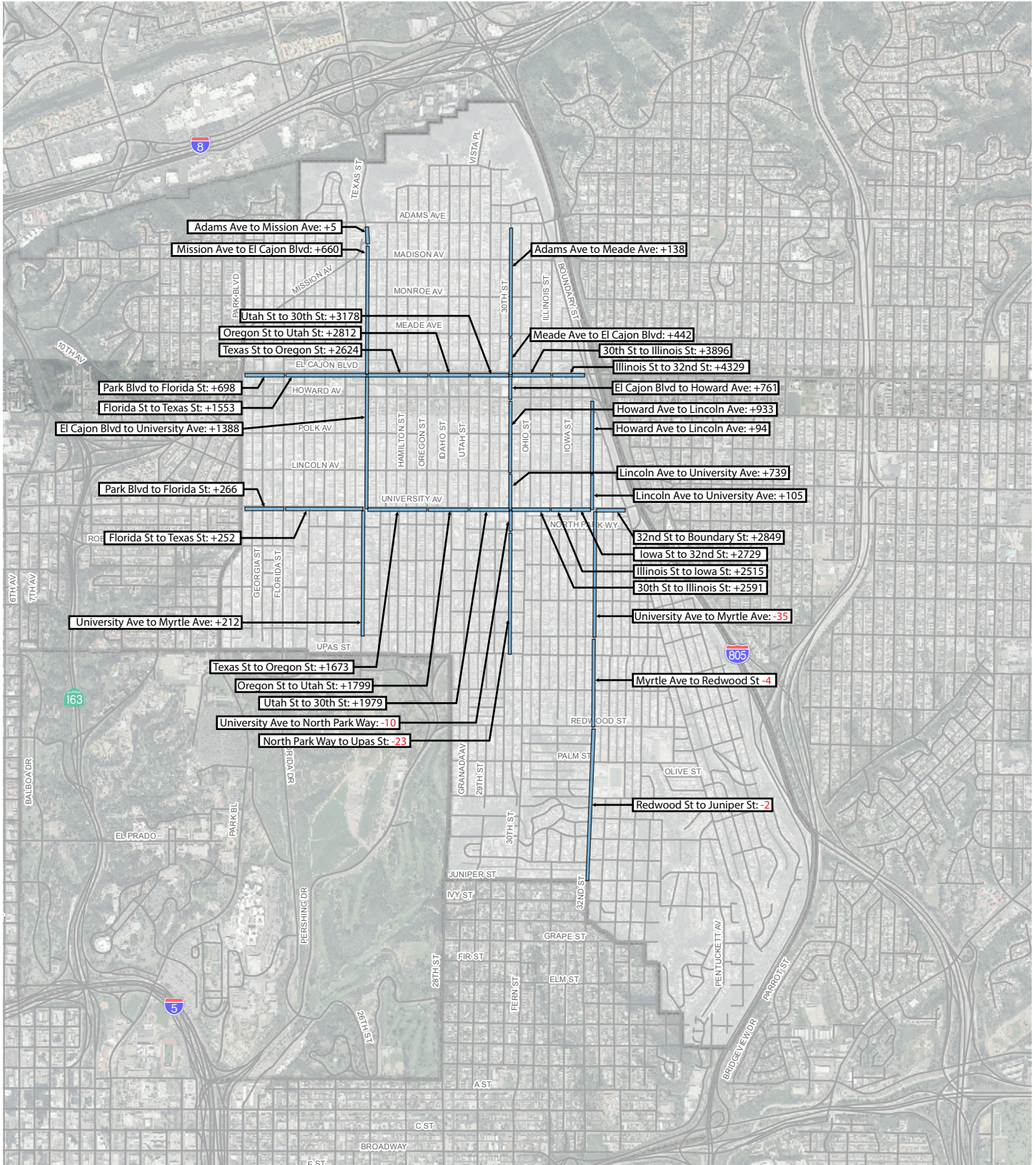
Approach Methodology

The City-provided TAZ changes were incorporated into the analysis completed for future year by adjusting roadway segment volumes where applicable given the location of the TAZ. Adjusted TAZs were residential and mixed land uses. Given the TAZs proximity to local freeways it was assumed that the trip distribution of these uses were similar and primarily distribute to and from the freeways via major local arterials. The collector roads feeding the local arterials were taken into account where applicable.

After daily trip volumes were adjusted and assigned to the roadway network, a comparative assessment was conducted between the previous roadway segment volumes and the adjusted roadway segment volumes. Typically, daily volumes fluctuate no more than 10% throughout a typical week (i.e., Tuesday, Wednesday, and Thursday typical weekdays). To ensure changes in ADT weren't attributed to this daily volume fluctuation, segments were identified for further consideration if the volumes when compared to the original analysis were greater than a 5% difference for at least two consecutive segments, or greater than 10% for any single segment. Locations where changes resulted in less than this criteria was considered a marginal change whose impacts to the traffic analysis would likely be negligible or de minimis.

A full list of all TAZ assumptions and the corresponding change in volume along each roadway segment can be seen in the Attachments.





Locations Requiring Additional Assessment

The locations described below and outlined in Exhibit 3 and 4 were selected for additional assessment using the criteria given the percent difference in volume subsequent to the updated residential densities. The updated results for these locations are provided in this evaluation. Significant impacts are not expected at the remaining CPU study intersection.

Roadway Segments

Park Boulevard between Adams Avenue and El Cajon Boulevard: 5-6% decrease

30th Street between El Cajon Boulevard and University Avenue: 5-6% increase

El Cajon Boulevard between Texas Street and 32nd Street: 7-8% increase

Texas Street between El Cajon Boulevard and University Avenue: 9-11% increase

University Avenue between Texas Street and Boundary Street: 7-12% increase

Intersections

32. El Cajon Boulevard and Texas Street

- a. Increase movements to and from the east leg of intersection by 8%
- b. Increase movements to and from the south leg of intersection by 11%
- c. Increase movements that include the east and south leg by the higher value, 11%

33. El Cajon Boulevard and 30th Street

- a. Increase movements to and from the east and west legs of intersection by 8%
- b. Increase movements to and from the south leg of intersection by 6%
- c. Increase movements that include the east or west leg and south leg by the higher value, 8%

34. El Cajon Boulevard and I-805 SB Ramps

- a. Increase movements to and from the east and west leg of intersection by 7%

35. El Cajon Boulevard and I-805 NB Ramps

- a. Increase movements to and from the west leg of intersection by 7%

36. University Avenue and Texas Street

- a. Increase movements to and from the east leg of intersection by 7%
- b. Increase movements to and from the north leg of intersection by 9%
- c. Increase movements that include the east and north leg by the higher value, 9%

37. University Avenue and 30th Street

- a. Increase movements to and from the east and west legs of intersection by 11%
- b. Increase movements to and from the north leg of intersection by 5%
- c. Increase movements that include the east or west leg and north leg by the higher value, 11%

38. University Avenue and Boundary Street

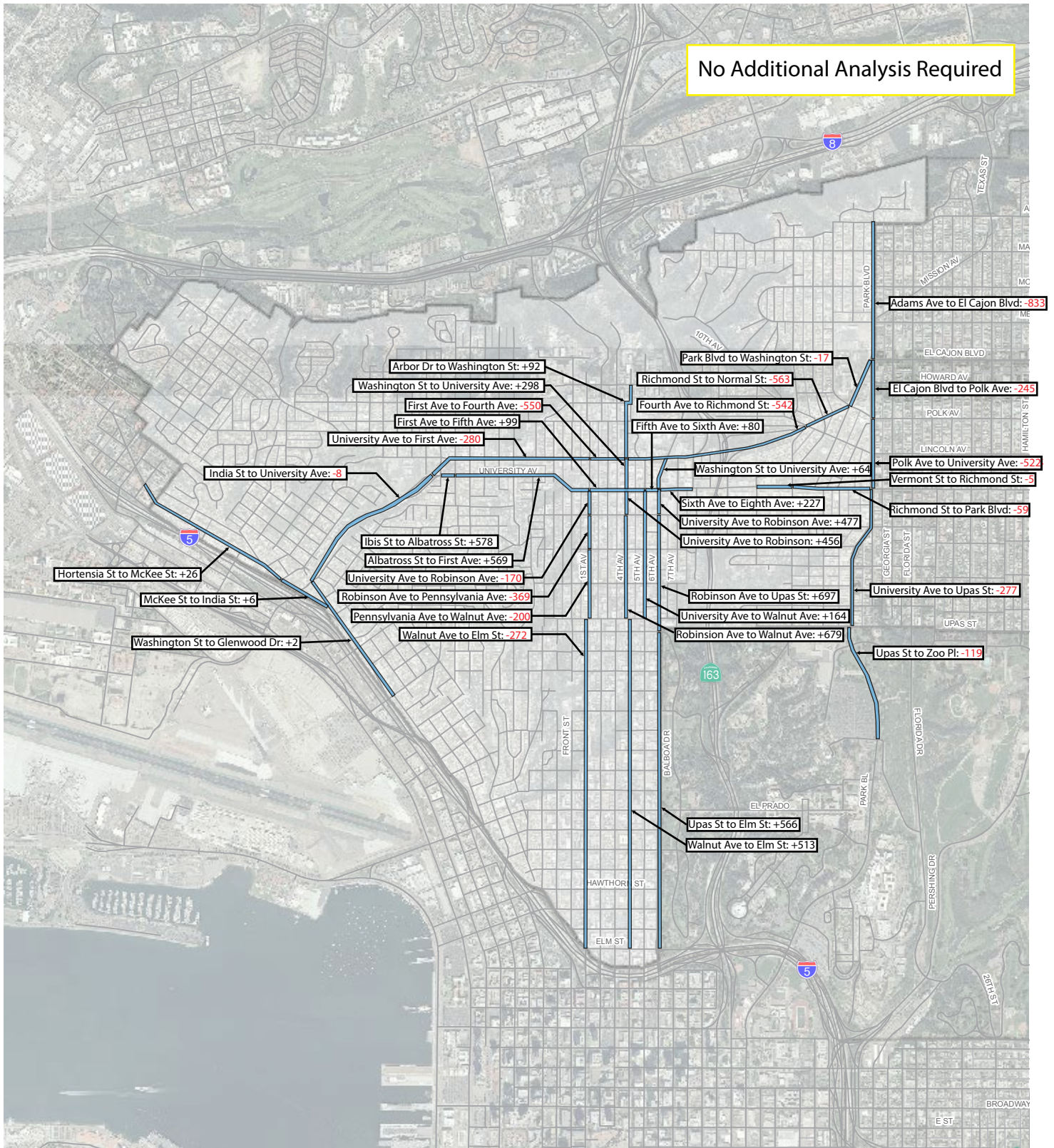
- a. Increase movements to and from the west leg of intersection by 10%

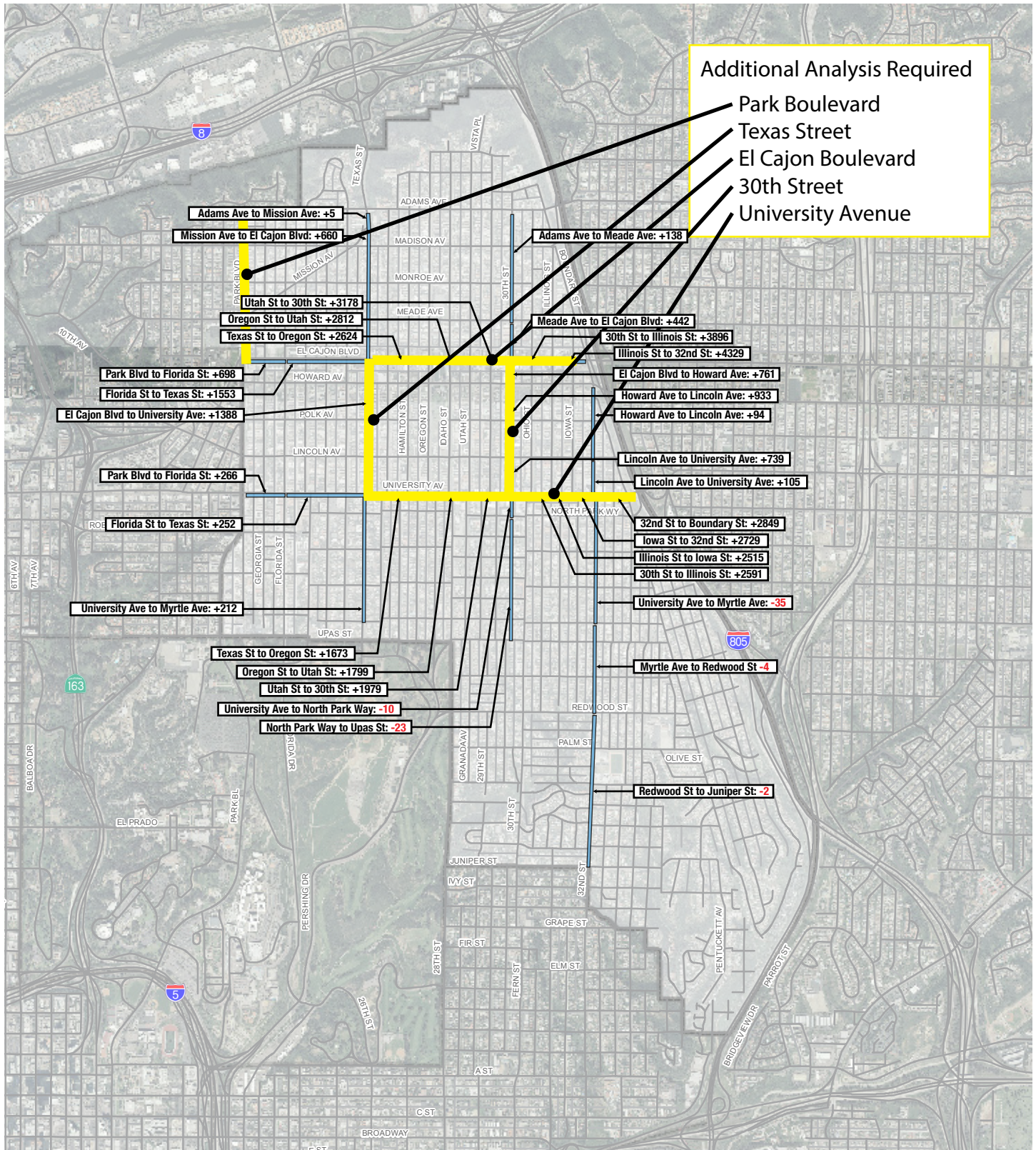
39. University Avenue and I-805 NB Ramps

- a. Increase movements to and from the west leg of intersection by 5%

40. North Park Way/I-805 SB Ramps and Boundary Street/33rd Street

- a. Increase movements to and from the north leg of intersection by 5%





No locations within the Uptown community would experience increase in volumes as a result of the residential density updates. All locations that may have potential impacts from the updated residential densities are within the North Park community. Park Boulevard would have a decrease in volumes.

Potential Impacts to Roadway Segments

Table 1 provides a comparison of roadway segment analysis between the residential density assumptions originally studied in the CPU and the updated residential densities. Table 2 provides an updated roadway segment impact analysis when compared to existing conditions. The previous impact analysis tables are provided as an Attachment for reference, and would be updated with tables in this document.

The decrease in volumes on Park Boulevard would result in similar roadway operations. The volume reductions would not remove any potential impacts.

The increase in volumes on 30th Street would result in the segment between El Cajon Boulevard and Howard Avenue changing from a LOS D to a LOS E. This would be a new significant impact. To mitigate this impact, the segment would need to be widening to a 4-lane collector.

The increase in volumes on El Cajon Boulevard would result in the segment between Oregon Street and Utah Street changing from a LOS D to a LOS E. This would be a new significant impact. To mitigate this impact, the segment would need to be widened to an 8-lane major arterial or reclassified as a six-lane prime arterial (which would also require widening).

The increase in volumes on Texas Street would result in the segment between El Cajon Boulevard and Howard Avenue changing from a LOS D to a LOS E. This would be a new significant impact. To mitigate this impact, the segment would need to be widening to a 4-lane collector.

The increase in volumes on University Avenue would result in the same number and locations of significant impacts.

As discussed in the CPU study, recommended mitigations should be limited to modifications within the current public right of way. Mitigating the new impacts above would require widening of roadways and impacts to adjacent properties. The above mitigations are, therefore, not recommended.

Potential Impacts to Intersections

Table 3 provides a comparison of intersection analysis between the residential density assumptions originally studied in the CPU and the updated residential densities. Table 4 provides an updated intersection impact analysis when compared to existing conditions. The previous impact analysis tables are provided as an Attachment for reference, and would be updated with tables in this document.

The increase in volumes would create a new significant impact at the intersection of University Avenue and Boundary Street during the PM peak. To mitigate this impact, the southbound approach would need to be restriped to have exclusive right-turn, through, and left-turn lanes. This would require repurposing of the right-of-way and a signal modification to adjust pole locations. The resulting post-mitigation results are provided in Table 5.

The increase in volumes would create a new significant impact at the intersection of University Avenue and I-805 Northbound Ramps during the AM peak. There was already an impact at this location during the PM peak. The previous mitigation identified at this location still applies and was not recommended.

The impacts at the intersections of El Cajon Boulevard and 30th Street, El Cajon Boulevard and I-805 Southbound Ramps, University Avenue and 30th Street, and North Park Way and I-805 SB Ramps are consistent with the previous impact evaluation. Mitigations identified in the original CPU analysis were not recommended at these locations and would continue to not be recommended for the same reasons.

ROADWAY SEGMENT	ROADWAY FUNCTIONAL CLASSIFICATION	CPU STUDY EVALUATION				UPDATED RESIDENTIAL DENSITIES			
		LOSE CAPACITY	FUTURE ADT	V/C RATIO (a)	LOS	CHANGE IN ADT	FUTURE ADT	V/C RATIO (a)	LOS
Park Blvd									
Adams Ave to Mission Ave	2 Lane Collector (continuous left-turn lane)	15,000	14,893	0.993	E	-832.8	14,060	0.937	E
Mission Ave to El Cajon Blvd	3 Lane Collector (no center lane)	11,500	16,300	1.417	F	-832.8	15,467	1.345	F
30th St									
El Cajon Blvd to Howard Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,684	0.846	D	760.5	13,445	0.896	E
Howard Ave to Lincoln Ave	2 Lane Collector (continuous left-turn lane)	15,000	17,900	1.193	F	933.3	18,833	1.256	F
Lincoln Ave to University Ave	2 Lane Collector (continuous left-turn lane)	15,000	14,000	0.933	E	738.9	14,739	0.983	E
El Cajon Blvd									
Texas St to Oregon St	6 Lane Major Arterial	50,000	34,800	0.696	C	2623.95	37,424	0.748	C
Oregon St to Utah St	6 Lane Major Arterial	50,000	42,800	0.856	D	2811.6	45,612	0.912	E
Utah St to 30th St	6 Lane Major Arterial	50,000	39,800	0.796	C	3177.9	42,978	0.860	D
30th St to Illinois St	6 Lane Major Arterial	50,000	48,800	0.976	E	3896.4	52,696	1.054	F
Illinois St to I-805 Ramps	6 Lane Major Arterial	50,000	58,900	1.178	F	4329	63,229	1.265	F
Texas St									
El Cajon Blvd to Howard Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,700	0.847	D	1338	14,038	0.936	E
Howard Ave to University Ave	2 Lane Collector (continuous left-turn lane)	15,000	14,400	0.960	E	1338	15,738	1.049	F
University Ave									
Texas St to Oregon St	4 Lane Collector (no center lane)	15,000	23,700	1.580	F	1672.95	25,373	1.692	F
Oregon St to Utah St	4 Lane Collector (no center lane)	15,000	22,900	1.527	F	1798.8	24,699	1.647	F
Utah St to 30th St	4 Lane Collector (no center lane)	15,000	20,800	1.387	F	1978.5	22,779	1.519	F
30th St to Illinois St	3 Lane Collector (no center lane)	11,500	22,800	1.983	F	2591.4	25,391	2.208	F
Illinois St to 32nd St	3 Lane Collector (no center lane)	11,500	22,600	1.965	F	2728.5	25,329	2.203	F
32nd St to Boundary St	4 Lane Collector (no center lane)	15,000	29,600	1.973	F	2848.8	32,449	2.163	F

Notes:

Bold values indicate roadway segments operating at LOS E or F.

Capacity for non-standard roadway classifications were provided by City of San Diego staff.

(a) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

K:\SND_TPTD\09524002_Land Use Change Evaluation\24002\RS01-Land use changes\slam\NEW 2035 w/ out Lane Red

ROADWAY SEGMENT	ROADWAY FUNCTIONAL CLASSIFICATION	LOS E CAPACITY	EXISTING		FUTURE		Δ in ADT	Δ in V/C	SIGNIFI CANT?		
			ADT	V/C RATIO (a)	LOS	ADT				V/C RATIO (a)	LOS
Park Blvd											
Adams Ave to Mission Ave	2 Lane Collector (continuous left-turn lane)	15,000	14,839	0.989	E	14,060	0.937	E	-779	-0.052	NO
Mission Ave to El Cajon Blvd	3 Lane Collector (no center lane)	11,500	11,806	1.027	F	15,467	1.345	F	3661	0.318	YES
30th St											
El Cajon Blvd to Howard Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,684	0.846	D	13,445	0.896	E	761	0.050	YES
Howard Ave to Lincoln Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,703	0.847	D	18,833	1.256	F	6130	0.409	YES
Lincoln Ave to University Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,500	0.833	D	14,739	0.983	E	2239	0.150	YES
El Cajon Blvd											
Texas St to Oregon St	6 Lane Major Arterial	50,000	24,479	0.490	B	37,424	0.748	C	12945	0.258	NO
Oregon St to Utah St	6 Lane Major Arterial	50,000	32,468	0.649	C	45,612	0.912	E	13144	0.263	YES
Utah St to 30th St	6 Lane Major Arterial	50,000	32,191	0.644	C	42,978	0.860	D	10787	0.216	NO
30th St to Illinois St	6 Lane Major Arterial	50,000	39,116	0.782	C	52,696	1.054	F	13580	0.272	YES
Illinois St to I-805 Ramps	6 Lane Major Arterial	50,000	46,062	0.921	E	63,229	1.265	F	17167	0.344	YES
Texas St											
El Cajon Blvd to Howard Ave	2 Lane Collector (continuous left-turn lane)	15,000	10,404	0.694	D	14,038	0.936	E	3634	0.242	YES
Howard Ave to University Ave	2 Lane Collector (continuous left-turn lane)	15,000	9,461	0.631	C	15,738	1.049	F	6277	0.418	YES
University Ave											
Texas St to Oregon St	4 Lane Collector (no center lane)	15,000	20,058	1.337	F	25,373	1.692	F	5315	0.355	YES
Oregon St to Utah St	4 Lane Collector (no center lane)	15,000	20,361	1.357	F	24,699	1.647	F	4338	0.290	YES
Utah St to 30th St	4 Lane Collector (no center lane)	15,000	19,173	1.278	F	22,779	1.519	F	3606	0.241	YES
30th St to Illinois St	3 Lane Collector (no center lane)	11,500	21,100	1.835	F	25,391	2.208	F	4291	0.373	YES
Illinois St to 32nd St	3 Lane Collector (no center lane)	11,500	19,644	1.708	F	25,329	2.203	F	5685	0.495	YES
32nd St to Boundary St	4 Lane Collector (no center lane)	15,000	25,568	1.705	F	32,449	2.163	F	6881	0.458	YES

Notes:
Bold values indicate roadway segments operating at LOS E or F.
 Capacity for non-standard roadway classifications were provided by City of San Diego staff.
 (a) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

		INTERSECTION	PEAK HOUR	CPU STUDY EVALUATION		UPDATED RESIDENTIAL DENSITIES	
				FUTURE	FUTURE	FUTURE	FUTURE
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)
32		El Cajon Blvd & Texas St	AM	37.6	D	38.9	D
			PM	85.3	F	100.3	F
33		El Cajon Blvd & 30th St	AM	29.7	C	31.4	C
			PM	68.1	E	84.4	F
34		El Cajon Blvd & I-805 SB Ramps	AM	21.9	C	24.3	C
			PM	96.8	F	119.9	F
35		El Cajon Blvd & I-805 NB Ramps	AM	30.1	C	32.3	C
			PM	24.7	C	25.3	C
36		University Ave & Texas St	AM	25.5	C	35.2	D
			PM	49.5	D	48.1	D
37		University Ave & 30th St	AM	26.5	C	26.9	C
			PM	57.8	E	73.7	E
38		University Ave & Boundary St	AM	26.0	C	30.2	C
			PM	50.0	D	60.4	E
39		University Ave & I-805 NB Ramps	AM	45.5	D	58.8	E
			PM	80.9	F	93.9	F
40		North Park Way/I-805 SB Ramps & Boundary St	AM	18.1	C	20.7	C
			PM	134.8	F	45.2	E

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one-way or two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 8

K:\SND_TPTO\095240042_Land Use Change Evaluation\240042IN02_Land use changes.xlsx\Summary

	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	Existing		Future		SIGNIFICANT?
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	Δ (c)
32	El Cajon Blvd & Texas St	Signal	AM	35.9	D	38.9	D	3.0
			PM	106.8	F	100.3	F	-6.5
33	El Cajon Blvd & 30th St	Signal	AM	26.0	C	31.4	C	5.4
			PM	50.2	D	84.4	F	34.2
34	El Cajon Blvd & I-805 SB Ramps	Signal	AM	18.4	B	24.3	C	5.9
			PM	80.9	F	119.9	F	39.0
35	El Cajon Blvd & I-805 NB Ramps	Signal	AM	27.9	C	32.3	C	4.4
			PM	19.2	B	25.3	C	6.1
36	University Ave & Texas St	Signal	AM	19.5	B	35.2	D	15.7
			PM	72.7	E	48.1	D	-24.6
37	University Ave & 30th St	Signal	AM	25.0	C	26.9	C	1.9
			PM	49.2	D	73.7	E	24.5
38	University Ave & Boundary St	Signal	AM	23.0	C	30.2	C	7.2
			PM	42.1	D	60.4	E	18.3
39	University Ave & I-805 NB Ramps	Signal	AM	29.0	C	58.8	E	29.8
			PM	35.6	D	93.9	F	58.3
40	North Park Way/I-805 SB Ramps & Boundary St/33rd St	All-Way Stop	AM	18.1	C	20.7	C	2.6
			PM	10.6	B	45.2	E	34.6

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one-way or two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 8

K:\SND_TPT09524042_Land Use Change Evaluation\240042IN02_land use changes.xlsx\NEW Future1

INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	Future Before Mitigation		Future After Mitigation	
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)
38 University Ave & Boundary St	Signal	AM	30.2	C	29.8	C
		PM	60.4	E	53.9	D

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one-way or two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 8

K:\SND_TPTO\095240042\Land Use Change Evaluation\240042\N02_land use changes.xlsx\NEW Mitigation

Attachments

- *TAZ Distribution Assumptions*
- *Original Roadway Segment Impact Analysis Summary*
- *Original Intersection Impact Analysis Summary*
- *Synchro Worksheets*

ATTACHMENT
FUTURE Without Lane Reductions – Original Evaluation
Roadway Segment Impact Analysis Summary

ROADWAY SEGMENT	ROADWAY FUNCTIONAL CLASSIFICATION	LOS E CAPACITY	EXISTING			FUTURE			Δ in ADT	Δ in V/C	SIGNIFICANT?
			ADT	V/C RATIO (a)	LOS	ADT	V/C RATIO (a)	LOS			
Park Blvd											
Adams Ave to Mission Ave	2 Lane Collector (continuous left-turn lane)	15,000	14,839	0.989	E	14,893	0.993	E	54	0.004	NO
Mission Ave to El Cajon Blvd	3 Lane Collector (no center lane)	11,500	11,806	1.027	F	16,300	1.417	F	4,494	0.390	YES
30th St											
El Cajon Blvd to Howard Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,684	0.846	D	12,684	0.846	E	0	0.000	NO
Howard Ave to Lincoln Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,703	0.847	D	17,900	1.193	F	5,197	0.346	YES
Lincoln Ave to University Ave	2 Lane Collector (continuous left-turn lane)	15,000	12,500	0.833	D	14,000	0.933	E	1,500	0.100	YES
El Cajon Blvd											
Texas St to Oregon St	6 Lane Major Arterial	50,000	24,479	0.490	B	34,800	0.696	C	10,321	0.206	NO
Oregon St to Utah St	6 Lane Major Arterial	50,000	32,468	0.649	C	42,800	0.856	E	10,332	0.207	NO
Utah St to 30th St	6 Lane Major Arterial	50,000	32,191	0.644	C	39,800	0.796	D	7,609	0.152	NO
30th St to Illinois St	6 Lane Major Arterial	50,000	39,116	0.782	C	48,800	0.976	F	9,684	0.194	YES
Illinois St to I-805 Ramps	6 Lane Major Arterial	50,000	46,062	0.921	E	58,900	1.178	F	12,838	0.257	YES
Texas St											
El Cajon Blvd to Howard Ave	2 Lane Collector (continuous left-turn lane)	15,000	10,404	0.694	D	12,700	0.847	E	2,296	0.153	NO
Howard Ave to University Ave	2 Lane Collector (continuous left-turn lane)	15,000	9,461	0.631	C	14,400	0.960	F	4,939	0.329	YES
University Ave											
Texas St to Oregon St	4 Lane Collector (no center lane)	15,000	20,058	1.337	F	23,700	1.580	F	3,642	0.243	YES
Oregon St to Utah St	4 Lane Collector (no center lane)	15,000	20,361	1.357	F	22,900	1.527	F	2,539	0.170	YES
Utah St to 30th St	4 Lane Collector (no center lane)	15,000	19,173	1.278	F	20,800	1.387	F	1,627	0.109	YES
30th St to Illinois St	3 Lane Collector (no center lane)	11,500	21,100	1.835	F	22,800	1.983	F	1,700	0.148	YES
Illinois St to 32nd St	3 Lane Collector (no center lane)	11,500	19,644	1.708	F	22,600	1.965	F	2,956	0.257	YES
32nd St to Boundary St	4 Lane Collector (no center lane)	15,000	25,568	1.705	F	29,600	1.973	F	4,032	0.268	YES

Notes:

Bold values indicate roadway segments operating at LOS E or F.

Capacity for non-standard roadway classifications were provided by City of San Diego staff.

(a) The v/c Ratio is calculated by dividing the ADT volume by each respective roadway segment's capacity.

ATTACHMENT
FUTURE Without Lane Reductions - Original Evaluation
Intersection Impact Analysis Summary

INTERSECTION		TRAFFIC CONTROL	PEAK HOUR	Existing		Future			
				DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	Δ (c)	SIGNIFICANT?
32	El Cajon Blvd & Texas St	Signal	AM	35.9	D	37.6	D	1.7	NO
			PM	106.8	F	85.3	F	-21.5	NO
33	El Cajon Blvd & 30th St	Signal	AM	26.0	C	29.7	C	3.7	NO
			PM	50.2	D	68.1	E	17.9	YES
34	El Cajon Blvd & I-805 SB Ramps	Signal	AM	18.4	B	21.9	C	3.5	NO
			PM	80.9	F	96.8	F	15.9	YES
35	El Cajon Blvd & I-805 NB Ramps	Signal	AM	27.9	C	30.1	C	2.2	NO
			PM	19.2	B	24.7	C	5.5	NO
36	University Ave & Texas St	Signal	AM	19.5	B	25.5	C	6.0	NO
			PM	72.7	E	49.5	D	-23.2	NO
37	University Ave & 30th St	Signal	AM	25.0	C	26.5	C	1.5	NO
			PM	49.2	D	57.8	E	8.6	YES
38	University Ave & Boundary St	Signal	AM	23.0	C	26.0	C	3.0	NO
			PM	42.1	D	50.0	D	7.9	NO
39	University Ave & I-805 NB Ramps	Signal	AM	29.0	C	45.5	D	16.5	NO
			PM	35.6	D	80.9	F	45.3	YES
40	North Park Way/I-805 SB Ramps & Boundary St/33rd St	All-Way Stop	AM	18.1	C	18.1	C	0.0	NO
			PM	10.6	B	134.8	F	124.2	YES

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one-way or two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the 2000 Highway Capacity Manual and performed using Synchro 8

ROADWAY SEGMENT	TAZ 3109		TAZ 3143		TAZ 3146		TAZ 3180		TAZ 3182		TAZ 3226		TAZ 3227		TAZ 3277		TAZ 3280		TAZ 3281		TAZ 3386		
	Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		
	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	
First Ave																							
Archer Dr to Washington Ave				0		0		0		0		0		0		0		0		0		0	
Washington Ave to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to Robinson Ave				0		0		0		0		0		0		0		0		0		0	
Robinson Ave to Pennsylvania Ave				0		0		0		0		0		0		0		0		0		0	
Pennsylvania Ave to Walnut Ave				0		0		0		0		0		0		0		0		0		0	
Walnut Ave to Laurel St				0		0		0		0		0		0		0		0		0		0	
Laurel St to Juniper St				0		0		0		0		0		0		0		0		0		0	
Juniper St to Grape St				0		0		0		0		0		0		0		0		0		0	
Grape St to Elm St				0		0		0		0		0		0		0		0		0		0	
South Ave																							
Archer Dr to Washington Ave				0		0		0		0		0		0		0		0		0		0	
Washington Ave to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to Robinson Ave				0		0		0		0		0		0		0		0		0		0	
Robinson Ave to Walnut Ave				0		0		0		0		0		0		0		0		0		0	
Walnut Ave to Laurel St				0		0		0		0		0		0		0		0		0		0	
Laurel St to Grape St				0		0		0		0		0		0		0		0		0		0	
Grape St to Elm St				0		0		0		0		0		0		0		0		0		0	
South Ave																							
Washington Ave to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to Robinson Ave				0		0		0		0		0		0		0		0		0		0	
Robinson Ave to Walnut Ave				0		0		0		0		0		0		0		0		0		0	
Walnut St to Laurel St				0		0		0		0		0		0		0		0		0		0	
Laurel St to Hawthorn St				0		0		0		0		0		0		0		0		0		0	
Hawthorn St to Grape St				0		0		0		0		0		0		0		0		0		0	
Grape St to Elm St				0		0		0		0		0		0		0		0		0		0	
South Ave																							
Washington St to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to Robinson Ave				0		0		0		0		0		0		0		0		0		0	
Robinson Ave to Upas St				0		0		0		0		0		0		0		0		0		0	
Upas St to Laurel St				0		0		0		0		0		0		0		0		0		0	
Laurel St to Juniper St				0		0		0		0		0		0		0		0		0		0	
Juniper St to Grape St				0		0		0		0		0		0		0		0		0		0	
Grape St to Elm St				0		0		0		0		0		0		0		0		0		0	
Julius St																							
Washington St to Greenwood Dr				0		0		0		0		0		0		0		0		0		0	
Greenwood Dr to Sassafras St				0		0		0		0		0		0		0		0		0		0	
Sassafras St to Redwood St				0		0		0		0		0		0		0		0		0		0	
Redwood St to Palm St				0		0		0		0		0		0		0		0		0		0	
Park Blvd to Washington St				0		0		0		0		0		0		0		0		0		0	
Washington St to University Ave				0		0		0		0		0		0		0		0		0		0	
Park Blvd																							
Adams Ave to Mission Ave				0		0		0		0		0		0		0		0		0		0	
Mission Ave to El Capin Blvd				0		0		0		0		0		0		0		0		0		0	
El Capin Blvd to Polk Ave				0		0		0		0		0		0		0		0		0		0	
Polk Ave to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to Robinson Ave				0		0		0		0		0		0		0		0		0		0	
Robinson Ave to Upas St				0		0		0		0		0		0		0		0		0		0	
Upas St to Gap Pl				0		0		0		0		0		0		0		0		0		0	
San Diego Ave																							
Hortensia St to McKee St				0		0		0		0		0		0		0		0		0		0	
McKee St to Washington St				0		0		0		0		0		0		0		0		0		0	
Washington St to India St				0		0		0		0		0		0		0		0		0		0	
University Ave																							
Bin St to Albarron St				0		0		0		0		0		0		0		0		0		0	
Albarron St to First Ave				0		0		0		0		0		0		0		0		0		0	
First Ave to Fifth Ave				0		0		0		0		0		0		0		0		0		0	
Fifth Ave to Sixth Ave				0		0		0		0		0		0		0		0		0		0	
Sixth Ave to Eighth Ave				0		0		0		0		0		0		0		0		0		0	
Vermont St to Richmond St				0		0		0		0		0		0		0		0		0		0	
Richmond St to Park Blvd				0		0		0		0		0		0		0		0		0		0	
Third Ave to South Ave																							
Michigan Ave																							
India St to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to First Ave				0		0		0		0		0		0		0		0		0		0	
First Ave to Fourth Ave				0		0		0		0		0		0		0		0		0		0	
Fourth Ave to Fifth Ave				0		0		0		0		0		0		0		0		0		0	
Fifth Ave to Sixth Ave				0		0		0		0		0		0		0		0		0		0	
Sixth Ave to Richmond St				0		0		0		0		0		0		0		0		0		0	
Richmond St to Normal St				0		0		0		0		0		0		0		0		0		0	
30th St																							
Adams Ave to Meade Ave				0		100%		72		30%		-7.2		0		0		0		0		0	
Meade Ave to El Capin Blvd				0		100%		72		30%		-7.2		0		30%		-1.8		0		0	
El Capin Blvd to Howard Ave				0		30%		21.6		30%		-7.2		0		30%		-1.8		0		0	
Howard Ave to Lincoln Ave				0		30%		21.6		30%		-7.2		0		30%		-1.8		0		0	
Lincoln Ave to University Ave				0		30%		21.6		30%		-7.2		0		30%		-1.8		0		0	
University Ave to North Park Way				0				21.6		30%		-7.2		0		30%		-1.8		0		0	
North Park Way Ave to Upas St				0																15%		3.6	
Upas St to Redwood St				0																		0	
Redwood St to Juniper St				0																		0	
32nd St																							
Howard Ave to Lincoln Ave				0		0		0		0		0		0		0		0		0		0	
Lincoln Ave to University Ave				0		0		0		0		0		0		0		0		0		0	
University Ave to Myrtle Ave				0		0		0		0		0		0		0		0		0		0	
Myrtle Ave to Upas St				0		0		0		0		0		0		0		0		0		0	
Upas St St to Redwood St				0		0		0		0		0		0		0		0		0		0	
Redwood St to Juniper St				0		0		0		0		0		0		0		0		0		0	
El Capin Blvd																							
Park Blvd to Florida St				0		0		0		0		0		35%		-48.3		19%		40.95		0	0
Florida St to Texas St				0		0		0		0		0		70%		-96.6		35%		81.9		0	0
Texas St to Oregon St				30%		1.8		0		0		4.2		70%		-2.1		50%		0		0	0
Oregon St to Utah St				30%		1.8		0		0		4.2		70%		-4.2		70%		117		146.25	0
Utah St to 30th St				30%		1.8																	

ROADWAY SEGMENT	TAZ 3387		TAZ 3415		TAZ 3489		TAZ 3509		TAZ 3521		TAZ 3547		TAZ 4684		TAZ 4685		TAZ 4686		TAZ 4687		TAZ 4688	
	Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =	
	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign
First Ave																						
Archer Dr to Washington Ave		0		0		0		0		0		0		0		0		0		0		
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0		
Robinson Ave to Pennsylvania Ave		0		0		0		0		0		0		0		0		0		0		
Pennsylvania Ave to Walnut Ave		0		0		0		0		0		0		0		0		0		0		
Walnut Ave to Laurel St		0		0		0		0		0		0		0		0		0		0		
Laurel St to Juniper St		0		0		0		0		0		0		0		0		0		0		
Juniper St to Grape St		0		0		0		0		0		0		0		0		0		0		
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0		
South Ave																						
Archer Dr to Washington Ave		0		0		0		0		0		0		0		0		0		0		
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0		
Robinson Ave to Walnut Ave		0		0		0		0		0		0		0		0		0		0		
Walnut Ave to Laurel St		0		0		0		0		0		0		0		0		0		0		
Laurel St to Grape St		0		0		0		0		0		0		0		0		0		0		
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0		
South Ave																						
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0		
Robinson Ave to Walnut Ave		0		0		0		0		0		0		0		0		0		0		
Walnut St to Laurel St		0		0		0		0		0		0		0		0		0		0		
Laurel St to Hawthorn St		0		0		0		0		0		0		0		0		0		0		
Hawthorn St to Grape St		0		0		0		0		0		0		0		0		0		0		
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0		
South Ave																						
Washington St to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0		
Robinson Ave to Upas St		0		0		0		0		0		0		0		0		0		0		
Upas St to Laurel St		0		0		0		0		0		0		0		0		0		0		
Laurel St to Juniper St		0		0		0		0		0		0		0		0		0		0		
Juniper St to Grape St		0		0		0		0		0		0		0		0		0		0		
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0		
Julia St																						
Washington St to Greenwood Dr		0		0		0		0		0		0		0		0		0		0		
Greenwood Dr to Sanderson St		0		0		0		0		0		0		0		0		0		0		
Sanderson St to Redwood St		0		0		0		0		0		0		0		0		0		0		
Redwood St to Palm St		0		0		0		0		0		0		0		0		0		0		
Park Blvd to Washington St		0		0		0		0		0		0		0		0		0		0		
Washington St to University Ave		0		0		0		0		0		0		0		0		0		0		
Park Blvd																						
Adams Ave to Mission Ave		0		0		0		0		0		0		0		0		0		0		
Mission Ave to El Cajon Blvd		0		0		0		0		0		0		0		0		0		0		
El Cajon Blvd to Polk Ave		0		0		0		0		0		0		0		0		0		0		
Polk Ave to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0		
Robinson Ave to Upas St		0		0		0		0		0		0		0		0		0		0		
Upas St to Zoo Pl		0		0		0		0		0		0		0		0		0		0		
San Diego Ave																						
Hortensia St to McKee St		0		0		0		0		0		0		0		0		0		0		
McKee St to Washington St		0		0		0		0		0		0		0		0		0		0		
Washington St to India St		0		0		0		0		0		0		0		0		0		0		
University Ave																						
Bin St to Albatross St		0		0		0		0		0		0		0		0		0		0		
Albatross St to First Ave		0		0		0		0		0		0		0		0		0		0		
First Ave to Fifth Ave		0		0		0		0		0		0		0		0		0		0		
Fifth Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0		
Sixth Ave to Eighth Ave		0		0		0		0		0		0		0		0		0		0		
Vermont St to Richmond St		0		0		0		0		0		0		0		0		0		0		
Richmond St to Park Blvd		0		0		0		0		0		0		0		0		0		0		
Park Blvd																						
Third Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0		
Michigan Ave																						
India St to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to First Ave		0		0		0		0		0		0		0		0		0		0		
First Ave to Fourth Ave		0		0		0		0		0		0		0		0		0		0		
Fourth Ave to Fifth Ave		0		0		0		0		0		0		0		0		0		0		
Fifth Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0		
Sixth Ave to Richmond St		0		0		0		0		0		0		0		0		0		0		
Richmond St to Normal St		0		0		0		0		0		0		0		0		0		0		
30th St																						
Adams Ave to Meade Ave		0		0		0		0		0		0		0		0		0		0		
Meade Ave to El Cajon Blvd		0		0		0		0		0		0		0		0		0		0		
El Cajon Blvd to Howard Ave		0		0		0		0		0		0		0		0		0		0		
Howard Ave to Lincoln Ave		0		0		0		0		0		0		0		0		0		0		
Lincoln Ave to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to North Park Way	15%	-22.5		0		0		0		0		0		0		0		0		0		
North Park Way Ave to Upas St	15%	-22.5		0		0		0		0		0		0		0		0		0		
Upas St to Redwood St		0		0		0		0		0		0		0		0		0		0		
Redwood St to Juniper St		0		0		0	70%	-4.2	70%	-4.2	70%	8.4	0	0	0	0	0	0	0	0	0	
32nd St																						
Howard Ave to Lincoln Ave		0		0		0		0		0		0		0		0		0		0		
Lincoln Ave to University Ave		0		0		0		0		0		0		0		0		0		0		
University Ave to Myrtle Ave		0		0	70%	-4.2		0		0		0		0		0		0		0		
Myrtle Ave to Upas St		0		0	70%	-4.2		0		0		0		0		0		0		0		
Upas St St to Redwood St		0		0	70%	-4.2		0		0		0		0		0		0		0		
Redwood St to Juniper St		0		0	30%	-1.8		0		0		0		0		0		0		0		
El Cajon Blvd																						
Park Blvd to Florida St		0	30%	-126		0		0		0		0	100%	468		0		0		0	0	
Florida St to Texas St		0	30%	-126		0		0		0		0	100%	468		450		0		0	0	
Texas St to Oregon St		0	30%	-126		0		0		0		0	70%	327.6		315	30%	181.8	30%	365.4	0	
Oregon St to Utah St		0	30%	-126		0		0		0		0	70%	327.6		315	30%	181.8	30%	365.4	0	
Utah St to 30th St		0	30%	-126		0		0														

ROADWAY SEGMENT	TAZ 4688		TAZ 4691		TAZ 4692		TAZ 4693		TAZ 4694		TAZ 4695		TAZ 4696		TAZ 4697		TAZ 4698		TAZ 4699		TAZ 4700		
	Change in ADT = 270		Change in ADT = 594		Change in ADT = -24		Change in ADT = 408		Change in ADT = -24		Change in ADT = 30		Change in ADT = 480		Change in ADT = 846		Change in ADT = 66		Change in ADT = 72		Change in ADT = 12		
	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	
First Ave																							
Archer Dr to Washington Ave		0		0		0		0		0		0		0		0		0		0			
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0			
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0			
Robinson Ave to Pennsylvania Ave		0		0		0		0		0		0		0		0		0		0			
Pennsylvania Ave to Walnut Ave		0		0		0		0		0		0		0		0		0		0			
Walnut Ave to Laurel St		0		0		0		0		0		0		0		0		0		0			
Laurel St to Juniper St		0		0		0		0		0		0		0		0		0		0			
Juniper St to Grape St		0		0		0		0		0		0		0		0		0		0			
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0			
South Ave																							
Archer Dr to Washington Ave		0		0		0		0		0		0		0		0		0		0			
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0			
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0			
Robinson Ave to Walnut Ave		0		0		0		0		0		0		0		0		0		0			
Walnut Ave to Laurel St		0		0		0		0		0		0		0		0		0		0			
Laurel St to Grape St		0		0		0		0		0		0		0		0		0		0			
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0			
South Ave																							
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0			
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0			
Robinson Ave to Walnut Ave		0		0		0		0		0		0		0		0		0		0			
Walnut St to Laurel St		0		0		0		0		0		0		0		0		0		0			
Laurel St to Hawthorn St		0		0		0		0		0		0		0		0		0		0			
Hawthorn St to Grape St		0		0		0		0		0		0		0		0		0		0			
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0			
South Ave																							
Washington St to University Ave		0		0		0		0		0		0		0		0		0		0			
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0			
Robinson Ave to Upas St		0		0		0		0		0		0		0		0		0		0			
Upas St to Laurel St		0		0		0		0		0		0		0		0		0		0			
Laurel St to Juniper St		0		0		0		0		0		0		0		0		0		0			
Juniper St to Grape St		0		0		0		0		0		0		0		0		0		0			
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0			
Julia St																							
Washington St to Greenwood Dr		0		0		0		0		0		0		0		0		0		0			
Greenwood Dr to Sanderson St		0		0		0		0		0		0		0		0		0		0			
Sanderson St to Redwood St		0		0		0		0		0		0		0		0		0		0			
Redwood St to Palm St		0		0		0		0		0		0		0		0		0		0			
Park Blvd to Washington St		0		0		0		0		0		0		0		0		0		0			
Washington St to University Ave		0		0		0		0		0		0		0		0		0		0			
Park Blvd																							
Adams Ave to Mission Ave		0		0		0		0		0		0		0		0		0		0			
Mission Ave to El Cajon Blvd		0		0		0		0		0		0		0		0		0		0			
El Cajon Blvd to Polk Ave		0		0		0		0		0		0		0		0		0		0			
Polk Ave to University Ave		0		0		0		0		0		0		0		0		0		0			
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0			
Robinson Ave to Upas St		0		0		0		0		0		0		0		0		0		0			
Upas St to Zoo Pl		0		0		0		0		0		0		0		0		0		0			
San Diego Ave																							
Hortensia St to McKee St		0		0		0		0		0		0		0		0		0		0			
McKee St to Washington St		0		0		0		0		0		0		0		0		0		0			
Washington St to India St		0		0		0		0		0		0		0		0		0		0			
University Ave																							
Bin St to Albarron St		0		0		0		0		0		0		0		0		0		0			
Albarron St to First Ave		0		0		0		0		0		0		0		0		0		0			
First Ave to Fifth Ave		0		0		0		0		0		0		0		0		0		0			
Fifth Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0			
Sixth Ave to Eighth Ave		0		0		0		0		0		0		0		0		0		0			
Vermont St to Richmond St		0		0		0		0		0		0		0		0		0		0			
Richmond St to Park Blvd		0		0		0		0		0		0		0		0		0		0			
Park Blvd																							
Third Ave to South Ave		0		0		0		0		0		0		0		0		0		0			
University Ave																							
India St to University Ave		0		0		0		0		0		0		0		0		0		0			
University Ave to First Ave		0		0		0		0		0		0		0		0		0		0			
First Ave to Fourth Ave		0		0		0		0		0		0		0		0		0		0			
Fourth Ave to Fifth Ave		0		0		0		0		0		0		0		0		0		0			
Fifth Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0			
Sixth Ave to Richmond St		0		0		0		0		0		0		0		0		0		0			
Richmond St to Normal St		0		0		0		0		0		0		0		0		0		0			
30th St																							
Adams Ave to Meade Ave		0		0		0		0		0		100%		30		0		0		60%		43.2	
Meade Ave to El Cajon Blvd	30%	81				0				0		100%		30		144		0		60%		43.2	
El Cajon Blvd to Howard Ave	30%		35%	207.9		30%		122.4		30%		-7.2		9		144		30%		19.8		21.6	
Howard Ave to Lincoln Ave	30%	81	65%	386.1		30%		122.4		30%		-7.2		9		144		30%		19.8		21.6	
Lincoln Ave to University Ave	35%	94.5	30%	178.2		-7.2		122.4		30%		-7.2		9		144		30%		19.8		21.6	
University Ave to North Park Way		0		0		0		0		30%		-7.2		0		0		30%		19.8		0	
North Park Way Ave to Upas St		0		0		0		0		0		0		0		0		0		0		0	
Upas St to Redwood St		0		0		0		0		0		0		0		0		0		0		0	
Redwood St to Juniper St		0		0		0		0		0		0		0		0		0		0		0	
32nd St																							
Howard Ave to Lincoln Ave		0		0		0		0		0		0		0		0		0		0		0	
Lincoln Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0	
University Ave to Myrtle Ave		0		0		0		0		0		0		0		0		0		0		0	
Myrtle Ave to Upas St		0		0		0		0		0		0		0		0		0		0		0	
Upas St St to Redwood St		0		0		0		0		0		0		0		0		0		0		0	
Redwood St to Juniper St		0		0		0		0		0		0		0		0		0		0		0	
El Cajon Blvd																							
Park Blvd to Florida St		0		0		0		0		0		0		0		0		0		0		0	
Florida St to Texas St		0		0		0		0		0		0		0		0		0		0		0	
Texas St to Oregon St		0		0		0		0		0		0		0		70%		592.2		0			

ROADWAY SEGMENT	TAZ 3392		TAZ 3411		TAZ 3414		TAZ 3424		TAZ 3468		TAZ 3487		TAZ 3472		TAZ 3473		TAZ 3485		TAZ 3486		TAZ 3523	
	Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =		Change in ADT =	
	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign	Dist %	Assign
First Ave																						
Ather Dr to Washington Ave		0		0		0		0		0		0		0		0		0		0		0
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to Robinson Ave		0		0		0		0	25%	163.5		0	50%	-27	50%	-306		0		0		0
Robinson Ave to Pennsylvania Ave		0		0		0		0	25%	163.5		0	80%	-43.2	80%	-488.6		0		0		0
Pennsylvania Ave to Walnut Ave		0		0		0		0		0		0	30%	-16.2	30%	-183.6		0		0		0
Walnut Ave to Laurel St		0		0		0		0		0		0	30%	-16.2	30%	-183.6	50%	30		0	100%	-102
Laurel St to Juniper St		0		0		0		0		0		0	30%	-16.2	30%	-183.6	50%	30		0	100%	-102
Juniper St to Grape St		0		0		0		0		0		0	30%	-16.2	30%	-183.6	50%	30		0	100%	-102
Grape St to Elm St		0		0		0		0		0		0	30%	-16.2	30%	-183.6	50%	30		0	100%	-102
South Ave																						
Ather Dr to Washington Ave		0		0		0		0		0		0		0		0		0		0		0
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to Robinson Ave		0		0		0		0	30%	196.2		0		0		0		0		0		0
Robinson Ave to Walnut Ave		0		0		0		0	30%	196.2		0		0		0		0		0		0
Walnut Ave to Laurel St		0		0		0		0		0		0		0		0	50%	30		0		0
Laurel St to Grape St		0		0		0		0		0		0		0		0	50%	30		0		0
Grape St to Elm St		0		0		0		0		0		0		0		0	50%	30		0		0
South Ave																						
Washington Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to Robinson Ave		0		0		0		0	25%	163.5		0		0		0		0		0		0
Robinson Ave to Walnut Ave		0		0		0		0	25%	163.5		0		0		0		0		0		0
Walnut St to Laurel St		0		0		0		0		0		0		0		0		0		0		0
Laurel St to Hawthorn St		0		0		0		0		0		0		0		0		0		0		0
Hawthorn St to Grape St		0		0		0		0		0		0		0		0		0		0		0
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0		0
South Ave																						
Washington St to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to Robinson Ave		0	30%	3.6		0		0	20%	130.8		0		0		0		0		0		0
Robinson Ave to Upas St		0		0		0		0	20%	130.8		0		0		0		0		0		0
Upas St to Laurel St		0		0		0		0		0		0		0		0		0		0		0
Laurel St to Juniper St		0		0		0		0		0		0		0		0		0		0		0
Juniper St to Grape St		0		0		0		0		0		0		0		0		0		0		0
Grape St to Elm St		0		0		0		0		0		0		0		0		0		0		0
Julia St																						
Washington St to Greenwood Dr		0		0	25%	25.5	25%	4.5		0	25%	3		0		0		0	25%	-22.5		0
Greenwood Dr to Sanderson St		0		0	25%	25.5	25%	4.5		0	25%	3		0		0		0	25%	-22.5		0
Sanderson St to Redwood St		0		0		0		0		0		0		0		0		0		0		0
Redwood St to Palm St		0		0		0		0		0		0		0		0		0		0		0
Park Blvd to Washington St		0		0		0		0		0		0		0		0		0		0		0
Washington St to University Ave		0		0		0		0		0		0		0		0		0		0		0
Park Blvd																						
Adams Ave to Mission Ave		0		0		0		0		0		0		0		0		0		0		0
Mission Ave to El Cajon Blvd		0		0		0		0		0		0		0		0		0		0		0
El Cajon Blvd to Polk Ave		0		0		0		0		0		0		0		0		0		0		0
Polk Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to Robinson Ave		0		0		0		0		0		0		0		0		0		0		0
Robinson Ave to Upas St		0		0		0		0		0		0		0		0		0		0		0
Upas St to Zoo Pl		0		0		0		0		0		0		0		0		0		0		0
San Diego Ave																						
Hortensia St to McKee St		0		0	25%	25.5		0		0		0		0		0		0		0		0
McKee St to Washington St		0		0	25%	25.5		0	25%	0	25%	3		0		0		0	25%	-22.5		0
University Ave		0		0	25%	25.5		0	25%	0	25%	3		0		0		0	25%	-22.5		0
Bin St to Alhambra St		0		0		0		0	50%	327		0		0		0		0		0		0
Alhambra St to First Ave		0		0		0		0	50%	327		0		0		0		0		0		0
First Ave to Fifth Ave	70%	-4.2		0	-4.2	0		0	50%	327		0	70%	-37.8	70%	-428.4		0		0		0
Fifth Ave to Sixth Ave	70%	-4.2		0	-4.2	0		0	50%	327		0	70%	-37.8	70%	-428.4		0		0		0
Sixth Ave to Eighth Ave	70%	-4.2	100%	12	0	0		0	50%	327		0	70%	-37.8	70%	-428.4		0		0		0
Vermont St to Richmond St	70%	-4.2	100%	12	0	0		0	50%	327		0	70%	-37.8	70%	-428.4		0		0		0
Richmond St to Park Blvd	70%	-4.2	100%	12	0	0		0	50%	327		0	70%	-37.8	70%	-428.4		0		0		0
Fourth Ave																						
Third Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0		0
Michigan St																						
Indiana St to University Ave		0		0		0		0	50%	327		0		0		0		0		0		0
University Ave to First Ave		0		0		0		0		0		0		0		0		0		0		0
First Ave to Fourth Ave		0		0		0		0		0		0		0		0		0		0		0
Fourth Ave to Fifth Ave		0		0		0		0		0		0		0		0		0		0		0
Fifth Ave to Sixth Ave		0		0		0		0		0		0		0		0		0		0		0
Sixth Ave to Richmond St		0		0		0		0		0		0		0		0		0		0		0
Richmond St to Normal St		0		0		0		0		0		0		0		0		0		0		0
30th St																						
Adams Ave to Meade Ave		0		0		0		0		0		0		0		0		0		0		0
Meade Ave to El Cajon Blvd		0		0		0		0		0		0		0		0		0		0		0
El Cajon Blvd to Howard Ave		0		0		0		0		0		0		0		0		0		0		0
Howard Ave to Lincoln Ave		0		0		0		0		0		0		0		0		0		0		0
Lincoln Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to North Park Way		0		0		0		0		0		0		0		0		0		0		0
North Park Way Ave to Upas St		0		0		0		0		0		0		0		0		0		0		0
Upas St to Redwood St		0		0		0		0		0		0		0		0		0		0		0
Redwood St to Juniper St		0		0		0		0		0		0		0		0		0		0		0
32nd St																						
Howard Ave to Lincoln Ave		0		0		0		0		0		0		0		0		0		0		0
Lincoln Ave to University Ave		0		0		0		0		0		0		0		0		0		0		0
University Ave to Myrtle Ave		0		0		0		0		0		0		0		0		0		0		0
Myrtle Ave to Upas St		0		0		0		0		0		0		0		0		0		0		0
Upas St St to Redwood St		0		0		0		0		0		0		0		0		0		0		0
Redwood St to Juniper St		0		0																		

ROADWAY SEGMENT	TAZ 4710		TAZ 4713						NOTES
	Change in ADT =		Change in ADT =		2035 ADT	Total ADT Change	% Change	Resulting 2035 ADT	
	Dist %	Assign	Dist %	Assign					
Archer Dr to Washington Ave		0		0	7,500	0	0%	7500	
Washington Ave to University Ave		0		0	9,100	0	0%	9100	
University Ave to Robinson Ave		0		0	16,300	-169.5	-1%	16130	
Robinson Ave to Pennsylvania Ave		0		0	11,500	-360.3	-3%	11131	
Pennsylvania Ave to Walnut Ave		0		0	12,800	-199.5	-2%	12600	
Walnut Ave to Laurel St		0		0	11,900	-271.8	-2%	11628	
Laurel St to Juniper St		0		0	8,400	-271.8	-3%	8128	
Juniper St to Grape St		0		0	6,800	-271.8	-4%	6528	
Grape St to Elm St		0		0	4,500	-271.8	-6%	4228	
South Ave									
Archer Dr to Washington Ave		0		0	14,900	92.4	1%	14992	
Washington Ave to University Ave	15%	167.4	30%	37.8	18,400	297.6	3%	18698	
University Ave to Robinson Ave	15%	167.4		0	12,900	456	4%	13356	
Robinson Ave to Walnut Ave	35%	390.6		0	11,400	679.2	6%	12079	
Walnut Ave to Laurel St	35%	390.6		0	15,100	513	3%	15613	
Laurel St to Grape St	35%	390.6		0	13,700	513	4%	14213	
Grape St to Elm St	35%	390.6		0	9,700	513	5%	10213	
South Ave									
Washington Ave to University Ave		0		0	11,800	0	0%	11800	
University Ave to Robinson Ave		0		0	14,000	163.5	1%	14164	
Robinson Ave to Walnut Ave		0		0	15,800	163.5	1%	15964	
Walnut St to Laurel St		0		0	14,800	0	0%	14800	
Laurel St to Hawthorn St		0		0	14,400	0	0%	14400	
Hawthorn St to Grape St		0		0	14,300	0	0%	14300	
Grape St to Elm St		0		0	10,100	0	0%	10100	
South Ave									
Washington St to University Ave		0		0	45,100	63.6	0%	45164	
University Ave to Robinson Ave	15%	167.4		0	32,600	477	1%	33077	
Robinson Ave to Upas St	35%	390.6		0	29,900	696.6	2%	30597	
Upas St to Laurel St	35%	390.6		0	25,900	565.8	2%	26466	
Laurel St to Juniper St	35%	390.6		0	16,400	565.8	3%	17166	
Juniper St to Grape St	35%	390.6		0	18,700	565.8	3%	19266	
Grape St to Elm St	35%	390.6		0	20,300	565.8	3%	20866	
Julius St									
Washington St to Greenwood Dr		0		0	11,000	1.5	0%	11002	
Greenwood Dr to Sassafras St		0		0	10,700	1.5	0%	10702	
Sassafras St to Redwood St		0		0	30,000	0	0%	30000	
Redwood St to Palm St		0		0	21,300	0	0%	21300	
South Ave									
Park Blvd to Washington St		0		0	28,300	-16.8	0%	28283	
Washington St to University Ave		0		0	4,974	0	0%	4974	
Park Blvd									
Adams Ave to Mission Ave		0		0	14,803	-832.8	-6%	14060	
Mission Ave to El Cajon Blvd		0		0	16,300	-832.8	-5%	15467	
El Cajon Blvd to Polk Ave		0		0	18,600	-244.8	-1%	18355	
Polk Ave to University Ave		0		0	22,500	-522	-2%	21978	
University Ave to Robinson Ave		0		0	19,800	-277.2	-1%	19523	
Robinson Ave to Upas St		0		0	17,500	-277.2	-2%	16923	
Upas St to Zoo Pl		0		0	17,700	-118.8	-1%	17581	
San Diego Ave									
Hortensia St to McKee St		0		0	10,500	25.5	0%	10526	
McKee St to Washington St		0		0	18,200	6	0%	18206	
Washington St to India St		0		0	7,100	6	0%	7106	
University Ave									
Bin St to Albarron St	15%	167.4	15%	18.9	14,700	577.5	4%	15278	
Albarron St to First Ave	15%	167.4	15%	18.9	20,800	569.1	3%	21369	
First Ave to Fifth Ave	15%	167.4	15%	18.9	14,100	98.7	1%	14199	
Fifth Ave to Sixth Ave	15%	167.4		0	24,900	79.8	0%	24980	

HCM Signalized Intersection Capacity Analysis

62: Texas St & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	397	18	51	764	121	72	320	26	102	179	97
Future Volume (vph)	102	397	18	51	764	121	72	320	26	102	179	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.98			0.99			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	5035		1770	4920			3471			3329	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (perm)	1770	5035		1770	4920			3471			3329	
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)	111	432	20	55	830	132	78	348	28	111	195	105
RTOR Reduction (vph)	0	3	0	0	14	0	0	4	0	0	27	0
Lane Group Flow (vph)	111	449	0	55	948	0	0	450	0	0	384	0
Confl. Peds. (#/hr)			14			17			8			19
Confl. Bikes (#/hr)						2			3			
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases												
Actuated Green, G (s)	10.9	59.4		7.5	56.0			21.7			22.3	
Effective Green, g (s)	10.9	59.4		7.5	56.0			21.7			22.3	
Actuated g/C Ratio	0.08	0.46		0.06	0.43			0.17			0.17	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	6.8		2.0	6.8			2.0			2.0	
Lane Grp Cap (vph)	148	2300		102	2119			579			571	
v/s Ratio Prot	c0.06	c0.09		0.03	c0.19			c0.13			c0.12	
v/s Ratio Perm												
v/c Ratio	0.75	0.20		0.54	0.45			0.78			0.67	
Uniform Delay, d1	58.2	21.0		59.6	26.1			51.8			50.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	17.1	0.2		2.7	0.7			5.9			2.5	
Delay (s)	75.3	21.2		62.3	26.8			57.8			52.9	
Level of Service	E	C		E	C			E			D	
Approach Delay (s)		31.9			28.7			57.8			52.9	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM 2000 Control Delay		38.9			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		130.0			Sum of lost time (s)			19.1				
Intersection Capacity Utilization		73.7%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

65: 30th St & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	702	43	89	1102	110	77	153	86	156	148	54
Future Volume (vph)	37	702	43	89	1102	110	77	153	86	156	148	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0		4.4	5.0		4.4	4.9		4.4	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5017		1770	4974		1770	1742		1770	1765	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5017		1770	4974		1770	1742		1770	1765	
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)	40	763	47	97	1198	120	84	166	93	170	161	59
RTOR Reduction (vph)	0	5	0	0	8	0	0	22	0	0	13	0
Lane Group Flow (vph)	40	805	0	97	1310	0	84	237	0	170	207	0
Confl. Peds. (#/hr)			23			27			22			40
Confl. Bikes (#/hr)			2			1			2			5
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	4.9	43.6		9.1	47.8		8.1	24.9		11.7	28.5	
Effective Green, g (s)	4.9	43.6		9.1	47.8		8.1	24.9		11.7	28.5	
Actuated g/C Ratio	0.05	0.40		0.08	0.44		0.07	0.23		0.11	0.26	
Clearance Time (s)	4.4	5.0		4.4	5.0		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	80	2025		149	2201		132	401		191	465	
v/s Ratio Prot	0.02	0.16		c0.05	c0.26		0.05	c0.14		c0.10	c0.12	
v/s Ratio Perm												
v/c Ratio	0.50	0.40		0.65	0.60		0.64	0.59		0.89	0.44	
Uniform Delay, d1	50.4	22.9		47.9	22.8		48.5	37.0		47.5	33.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.6		7.5	1.2		7.2	1.6		35.6	0.2	
Delay (s)	52.1	23.5		55.4	24.0		55.7	38.6		83.1	33.4	
Level of Service	D	C		E	C		E	D		F	C	
Approach Delay (s)		24.8			26.1			42.8			55.1	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM 2000 Control Delay			31.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			108.0			Sum of lost time (s)			18.7			
Intersection Capacity Utilization			75.2%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

67: I-805 SB Ramps & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑↑					↑	↑	↑
Traffic Volume (vph)	0	967	608	203	1265	0	0	0	0	159	2	457
Future Volume (vph)	0	967	608	203	1265	0	0	0	0	159	2	457
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					5.0	5.0	5.0
Lane Util. Factor		0.91	1.00	0.97	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00					1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1559	3433	5085					1681	1687	1557
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1559	3433	5085					1681	1687	1557
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	661	221	1375	0	0	0	0	173	2	497
RTOR Reduction (vph)	0	0	365	0	0	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	1051	296	221	1375	0	0	0	0	88	87	447
Confl. Peds. (#/hr)			2			1			1			4
Confl. Bikes (#/hr)												1
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						8	
Permitted Phases			2							8		8
Actuated Green, G (s)		43.0	43.0	11.8	59.0					27.0	27.0	27.0
Effective Green, g (s)		43.0	43.0	11.8	59.0					27.0	27.0	27.0
Actuated g/C Ratio		0.45	0.45	0.12	0.61					0.28	0.28	0.28
Clearance Time (s)		5.0	5.0	4.2	5.0					5.0	5.0	5.0
Vehicle Extension (s)		5.5	5.5	3.0	4.8					2.0	2.0	2.0
Lane Grp Cap (vph)		2277	698	421	3125					472	474	437
v/s Ratio Prot		0.21		c0.06	c0.27							
v/s Ratio Perm			0.19							0.05	0.05	c0.29
v/c Ratio		0.46	0.42	0.52	0.44					0.19	0.18	1.02
Uniform Delay, d1		18.4	18.1	39.5	9.8					26.2	26.1	34.5
Progression Factor		1.00	1.00	1.03	0.58					1.00	1.00	1.00
Incremental Delay, d2		0.7	1.9	0.8	0.3					0.1	0.1	48.8
Delay (s)		19.1	19.9	41.4	5.9					26.2	26.2	83.3
Level of Service		B	B	D	A					C	C	F
Approach Delay (s)		19.4			10.9			0.0			68.4	
Approach LOS		B			B			A			E	
Intersection Summary												
HCM 2000 Control Delay			24.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			96.0			Sum of lost time (s)				14.2		
Intersection Capacity Utilization			76.7%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

68: I-805 NB Ramps & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	707	417	0	0	751	453	714	4	134	0	0	0
Future Volume (vph)	707	417	0	0	751	453	714	4	134	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0		5.0	5.0	5.0			
Lane Util. Factor	0.97	0.91			0.91		0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	0.99			
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			
Frt	1.00	1.00			0.94		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			4774		1681	1686	1563			
Flt Permitted	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			4774		1681	1686	1563			
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)	768	453	0	0	816	492	776	4	146	0	0	0
RTOR Reduction (vph)	0	0	0	0	113	0	0	0	105	0	0	0
Lane Group Flow (vph)	768	453	0	0	1195	0	388	392	41	0	0	0
Confl. Peds. (#/hr)			4			1			1			
Confl. Bikes (#/hr)			1									
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases							4		4			
Actuated Green, G (s)	24.1	59.1			30.8		26.9	26.9	26.9			
Effective Green, g (s)	24.1	59.1			30.8		26.9	26.9	26.9			
Actuated g/C Ratio	0.25	0.62			0.32		0.28	0.28	0.28			
Clearance Time (s)	4.2	5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)	3.0	4.2			5.3		2.0	2.0	2.0			
Lane Grp Cap (vph)	861	3130			1531		471	472	437			
v/s Ratio Prot	c0.22	0.09			c0.25							
v/s Ratio Perm							0.23	0.23	0.03			
v/c Ratio	0.89	0.14			0.78		0.82	0.83	0.09			
Uniform Delay, d1	34.7	7.8			29.5		32.3	32.4	25.5			
Progression Factor	0.68	1.05			1.00		1.00	1.00	1.00			
Incremental Delay, d2	10.8	0.1			4.0		10.6	11.3	0.0			
Delay (s)	34.4	8.3			33.5		43.0	43.7	25.6			
Level of Service	C	A			C		D	D	C			
Approach Delay (s)		24.7			33.5			40.5			0.0	
Approach LOS		C			C			D			A	
Intersection Summary												
HCM 2000 Control Delay			32.3				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			96.0				Sum of lost time (s)		14.2			
Intersection Capacity Utilization			76.7%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

73: Texas St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	280	32	10	413	33	124	89	12	47	77	125
Future Volume (vph)	98	280	32	10	413	33	124	89	12	47	77	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3473		1770	3486		1770	1830		1770	1690	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3473		1770	3486		1770	1830		1770	1690	
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)	107	304	35	11	449	36	135	97	13	51	84	136
RTOR Reduction (vph)	0	9	0	0	7	0	0	5	0	0	63	0
Lane Group Flow (vph)	107	330	0	11	478	0	135	105	0	51	157	0
Confl. Peds. (#/hr)			6			16						
Confl. Bikes (#/hr)			2			10						
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases												
Actuated Green, G (s)	4.3	20.1		0.5	16.3		9.0	9.0		5.4	5.4	
Effective Green, g (s)	4.3	20.1		0.5	16.3		9.0	9.0		5.4	5.4	
Actuated g/C Ratio	0.07	0.34		0.01	0.28		0.15	0.15		0.09	0.09	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.0	4.0	
Vehicle Extension (s)	2.0	2.2		2.0	2.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	129	1183		15	963		270	279		162	154	
v/s Ratio Prot	c0.06	c0.10		0.01	c0.14		c0.08	0.06		0.03	c0.09	
v/s Ratio Perm												
v/c Ratio	0.83	0.28		0.73	0.50		0.50	0.38		0.31	1.02	
Uniform Delay, d1	27.0	14.2		29.2	17.9		22.9	22.5		25.1	26.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	32.3	0.1		93.0	0.2		0.5	0.3		0.4	78.3	
Delay (s)	59.3	14.2		122.2	18.1		23.5	22.8		25.5	105.1	
Level of Service	E	B		F	B		C	C		C	F	
Approach Delay (s)		25.0			20.4			23.2			90.1	
Approach LOS		C			C			C			F	
Intersection Summary												
HCM 2000 Control Delay			35.2			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			59.0			Sum of lost time (s)				21.5		
Intersection Capacity Utilization			53.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

75: 30th St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	381	40	122	402	54	68	200	114	56	207	63
Future Volume (vph)	83	381	40	122	402	54	68	200	114	56	207	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9		4.4	4.9		3.4	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3460		1770	3397		1770	1726		1770	1761	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3460		1770	3397		1770	1726		1770	1761	
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)	90	414	43	133	437	59	74	217	124	61	225	68
RTOR Reduction (vph)	0	9	0	0	12	0	0	27	0	0	15	0
Lane Group Flow (vph)	90	448	0	133	484	0	74	314	0	61	278	0
Confl. Peds. (#/hr)			38			85			40			82
Confl. Bikes (#/hr)			4			6			7			4
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.3	25.1		9.0	27.8		6.1	23.6		4.7	21.2	
Effective Green, g (s)	6.3	25.1		9.0	27.8		6.1	23.6		4.7	21.2	
Actuated g/C Ratio	0.08	0.31		0.11	0.35		0.08	0.30		0.06	0.26	
Clearance Time (s)	4.4	4.9		4.4	4.9		4.4	4.9		3.4	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	139	1085		199	1180		134	509		103	466	
v/s Ratio Prot	0.05	0.13		c0.08	c0.14		c0.04	c0.18		0.03	0.16	
v/s Ratio Perm												
v/c Ratio	0.65	0.41		0.67	0.41		0.55	0.62		0.59	0.60	
Uniform Delay, d1	35.8	21.6		34.1	19.9		35.6	24.3		36.7	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	1.2		6.4	1.1		2.8	1.6		5.9	1.4	
Delay (s)	43.3	22.8		40.5	20.9		38.4	25.9		42.7	27.0	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		26.2			25.1			28.1			29.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay	26.9			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			18.6					
Intersection Capacity Utilization	66.5%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

77: Boundary St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↗		↔↔			↔↔	↗		↔↔	↗
Traffic Volume (vph)	8	963	177	220	513	0	138	8	121	29	86	1
Future Volume (vph)	8	963	177	220	513	0	138	8	121	29	86	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95			0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.96		1.00			1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00			0.99	0.85		1.00	0.85
Flt Protected		1.00	1.00		0.99			0.96	1.00		0.99	1.00
Satd. Flow (prot)		3538	1527		3487			1675	1482		1839	1583
Flt Permitted		1.00	1.00		0.99			0.67	1.00		0.88	1.00
Satd. Flow (perm)		3538	1527		3487			1167	1482		1645	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	1047	192	239	558	0	150	9	132	32	93	1
RTOR Reduction (vph)	0	0	66	0	0	0	0	5	96	0	0	1
Lane Group Flow (vph)	0	1056	126	0	797	0	0	167	23	0	125	0
Confl. Peds. (#/hr)			5			11			2			
Confl. Bikes (#/hr)			2			4						
Turn Type	Split	NA	Perm	Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	2	2		1	1			8			4	
Permitted Phases			2				8		8	4		4
Actuated Green, G (s)		23.0	23.0		19.9			13.6	13.6		13.6	13.6
Effective Green, g (s)		23.0	23.0		19.9			13.6	13.6		13.6	13.6
Actuated g/C Ratio		0.33	0.33		0.28			0.19	0.19		0.19	0.19
Clearance Time (s)		4.5	4.5		4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		1162	501		991			226	287		319	307
v/s Ratio Prot		c0.30			c0.23							
v/s Ratio Perm			0.08					c0.14	0.02		0.08	0.00
v/c Ratio		0.91	0.25		0.80			0.74	0.08		0.39	0.00
Uniform Delay, d1		22.5	17.2		23.2			26.5	23.1		24.6	22.7
Progression Factor		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		12.0	1.2		4.5			10.4	0.0		0.3	0.0
Delay (s)		34.4	18.4		27.8			36.9	23.1		24.9	22.7
Level of Service		C	B		C			D	C		C	C
Approach Delay (s)		32.0			27.8			31.3			24.9	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			75.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

78: I-805 NB Ramps & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	323	755	340	366	16	355	114	168	32	73	18
Future Volume (vph)	12	323	755	340	366	16	355	114	168	32	73	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6		4.6			4.6			4.6	
Lane Util. Factor		0.95	1.00		0.95			0.95			1.00	
Frpb, ped/bikes		1.00	0.98		1.00			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		1.00			0.96			0.98	
Flt Protected		1.00	1.00		0.98			0.97			0.99	
Satd. Flow (prot)		3533	1551		3445			3291			1802	
Flt Permitted		1.00	1.00		0.98			0.76			0.67	
Satd. Flow (perm)		3533	1551		3445			2556			1224	
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	351	821	370	398	17	386	124	183	35	79	20
RTOR Reduction (vph)	0	0	368	0	2	0	0	54	0	0	9	0
Lane Group Flow (vph)	0	364	453	0	783	0	0	639	0	0	125	0
Confl. Peds. (#/hr)			6			10			7			
Confl. Bikes (#/hr)			3			3						
Turn Type	Split	NA	Perm	Split	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		1	1			4			4	
Permitted Phases			2				4			4		
Actuated Green, G (s)		17.0	17.0		18.1			19.1			19.1	
Effective Green, g (s)		17.0	17.0		18.1			19.1			19.1	
Actuated g/C Ratio		0.25	0.25		0.27			0.28			0.28	
Clearance Time (s)		4.6	4.6		4.6			4.6			4.6	
Vehicle Extension (s)		2.0	2.0		2.0			2.0			2.0	
Lane Grp Cap (vph)		883	387		916			717			343	
v/s Ratio Prot		0.10			c0.23							
v/s Ratio Perm			c0.29					c0.25			0.10	
v/c Ratio		0.41	1.17		0.85			0.93dl			0.36	
Uniform Delay, d1		21.3	25.5		23.7			23.5			19.6	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.4	100.8		7.6			13.0			0.2	
Delay (s)		22.7	126.3		31.3			36.5			19.8	
Level of Service		C	F		C			D			B	
Approach Delay (s)		94.5			31.3			36.5			19.8	
Approach LOS		F			C			D			B	
Intersection Summary												
HCM 2000 Control Delay			58.8				HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			68.0				Sum of lost time (s)			13.8		
Intersection Capacity Utilization			86.1%				ICU Level of Service			E		
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 80: 33rd St/Boundary St & N Park Way/I-805 SB Ramps

3/10/2016

																			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR							
Lane Configurations																			
Sign Control		Stop			Stop			Stop			Stop								
Traffic Volume (vph)	0	128	8	92	128	263	44	0	81	425	30	64							
Future Volume (vph)	0	128	8	92	128	263	44	0	81	425	30	64							
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	139	9	100	139	286	48	0	88	462	33	70							
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1														
Volume Total (vph)	148	239	286	136	565														
Volume Left (vph)	0	100	0	48	462														
Volume Right (vph)	9	0	286	88	70														
Hadj (s)	0.00	0.12	-0.57	-0.28	0.12														
Departure Headway (s)	6.5	6.4	3.2	6.0	5.6														
Degree Utilization, x	0.27	0.43	0.25	0.23	0.87														
Capacity (veh/h)	509	527	1112	555	565														
Control Delay (s)	11.9	14.1	7.3	10.7	34.9														
Approach Delay (s)	11.9	10.4		10.7	34.9														
Approach LOS	B	B		B	D														
Intersection Summary																			
Delay	20.7																		
Level of Service	C																		
Intersection Capacity Utilization	64.9%			ICU Level of Service				C											
Analysis Period (min)	15																		

HCM Signalized Intersection Capacity Analysis

62: Texas St & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↰↰		↰	↰↰↰			↰↰			↰↰	
Traffic Volume (vph)	256	980	38	73	700	147	52	371	68	402	700	199
Future Volume (vph)	256	980	38	73	700	147	52	371	68	402	700	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91			0.95			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	5041		1770	4900			3426			3393	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (perm)	1770	5041		1770	4900			3426			3393	
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)	278	1065	41	79	761	160	57	403	74	437	761	216
RTOR Reduction (vph)	0	3	0	0	21	0	0	9	0	0	10	0
Lane Group Flow (vph)	278	1103	0	79	900	0	0	525	0	0	1404	0
Confl. Peds. (#/hr)			13			8			23			8
Confl. Bikes (#/hr)			5			2			2			2
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases												
Actuated Green, G (s)	24.6	41.4		9.4	26.2			28.0			52.1	
Effective Green, g (s)	24.6	41.4		9.4	26.2			28.0			52.1	
Actuated g/C Ratio	0.16	0.28		0.06	0.17			0.19			0.35	
Clearance Time (s)	4.4	4.9		4.4	4.9			4.9			4.9	
Vehicle Extension (s)	2.0	6.8		2.0	6.8			2.0			2.0	
Lane Grp Cap (vph)	290	1391		110	855			639			1178	
v/s Ratio Prot	c0.16	0.22		0.04	c0.18			c0.15			c0.41	
v/s Ratio Perm												
v/c Ratio	0.96	0.79		0.72	1.05			0.82			1.19	
Uniform Delay, d1	62.2	50.3		69.0	61.9			58.6			49.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	40.9	4.7		16.9	45.4			8.0			95.0	
Delay (s)	103.1	55.0		85.9	107.3			66.6			144.0	
Level of Service	F	E		F	F			E			F	
Approach Delay (s)		64.7			105.6			66.6			144.0	
Approach LOS		E			F			E			F	
Intersection Summary												
HCM 2000 Control Delay		100.3			HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio		1.04										
Actuated Cycle Length (s)		150.0			Sum of lost time (s)			19.1				
Intersection Capacity Utilization		105.9%			ICU Level of Service			G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

65: 30th St & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	1432	135	214	1356	119	143	334	152	227	444	107
Future Volume (vph)	113	1432	135	214	1356	119	143	334	152	227	444	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	5.0		4.4	5.0		4.4	4.9		4.4	4.9	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4913		1770	4958		1770	1742		1770	1780	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4913		1770	4958		1770	1742		1770	1780	
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)	123	1557	147	233	1474	129	155	363	165	247	483	116
RTOR Reduction (vph)	0	8	0	0	7	0	0	12	0	0	6	0
Lane Group Flow (vph)	123	1696	0	233	1596	0	155	516	0	247	593	0
Confl. Peds. (#/hr)			64			40			38			58
Confl. Bikes (#/hr)			6			7			10			12
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	12.0	45.0		18.0	51.0		12.8	39.3		19.0	45.5	
Effective Green, g (s)	12.0	45.0		18.0	51.0		12.8	39.3		19.0	45.5	
Actuated g/C Ratio	0.09	0.32		0.13	0.36		0.09	0.28		0.14	0.32	
Clearance Time (s)	4.4	5.0		4.4	5.0		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	2.0	6.0		2.0	6.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	151	1579		227	1806		161	489		240	578	
v/s Ratio Prot	0.07	c0.35		c0.13	0.32		0.09	0.30		c0.14	c0.33	
v/s Ratio Perm												
v/c Ratio	0.81	1.07		1.03	0.88		0.96	1.06		1.03	1.03	
Uniform Delay, d1	62.9	47.5		61.0	41.7		63.4	50.4		60.5	47.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.2	45.4		66.8	6.7		59.2	56.3		65.9	44.2	
Delay (s)	89.1	92.9		127.8	48.4		122.5	106.7		126.4	91.4	
Level of Service	F	F		F	D		F	F		F	F	
Approach Delay (s)		92.7			58.5			110.3			101.6	
Approach LOS		F			E			F			F	
Intersection Summary												
HCM 2000 Control Delay	84.4			HCM 2000 Level of Service			F					
HCM 2000 Volume to Capacity ratio	1.06											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)			18.7					
Intersection Capacity Utilization	102.3%			ICU Level of Service			G					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

67: I-805 SB Ramps & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑↑					↑	↑	↑
Traffic Volume (vph)	0	1315	835	375	1100	0	0	0	0	865	6	1164
Future Volume (vph)	0	1315	835	375	1100	0	0	0	0	865	6	1164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	4.2	5.0					5.0	5.0	5.0
Lane Util. Factor		0.91	1.00	0.97	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1523	3433	5085					1681	1687	1562
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1523	3433	5085					1681	1687	1562
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	1429	908	408	1196	0	0	0	0	940	7	1265
RTOR Reduction (vph)	0	0	573	0	0	0	0	0	0	0	0	27
Lane Group Flow (vph)	0	1429	335	408	1196	0	0	0	0	470	477	1238
Confl. Peds. (#/hr)			11			7						1
Confl. Bikes (#/hr)			5			3						
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						8	
Permitted Phases			2							8		8
Actuated Green, G (s)		27.0	27.0	15.8	47.0					63.0	63.0	63.0
Effective Green, g (s)		27.0	27.0	15.8	47.0					63.0	63.0	63.0
Actuated g/C Ratio		0.22	0.22	0.13	0.39					0.52	0.52	0.52
Clearance Time (s)		5.0	5.0	4.2	5.0					5.0	5.0	5.0
Vehicle Extension (s)		5.5	5.5	3.0	4.8					2.0	2.0	2.0
Lane Grp Cap (vph)		1144	342	452	1991					882	885	820
v/s Ratio Prot		c0.28		c0.12	0.24							
v/s Ratio Perm			0.22							0.28	0.28	c0.79
v/c Ratio		1.25	0.98	0.90	0.60					0.53	0.54	1.51
Uniform Delay, d1		46.5	46.2	51.3	29.0					18.8	18.9	28.5
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		119.5	44.0	21.0	1.3					0.3	0.3	235.9
Delay (s)		166.0	90.2	72.3	30.4					19.1	19.2	264.4
Level of Service		F	F	E	C					B	B	F
Approach Delay (s)		136.6			41.1			0.0			159.4	
Approach LOS		F			D			A			F	
Intersection Summary												
HCM 2000 Control Delay		119.9		HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio		1.35										
Actuated Cycle Length (s)		120.0		Sum of lost time (s)				14.2				
Intersection Capacity Utilization		101.8%		ICU Level of Service				G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

68: I-805 NB Ramps & El Cajon Blvd

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	423	1810	0	0	1042	349	479	2	301	0	0	0
Future Volume (vph)	423	1810	0	0	1042	349	479	2	301	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.0			5.0		5.0	5.0	5.0			
Lane Util. Factor	0.97	0.91			0.91		0.95	0.95	1.00			
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			
Frt	1.00	1.00			0.96		1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (prot)	3433	5085			4859		1681	1686	1555			
Flt Permitted	0.95	1.00			1.00		0.95	0.95	1.00			
Satd. Flow (perm)	3433	5085			4859		1681	1686	1555			
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)	460	1967	0	0	1133	379	521	2	327	0	0	0
RTOR Reduction (vph)	0	0	0	0	42	0	0	0	45	0	0	0
Lane Group Flow (vph)	460	1967	0	0	1470	0	260	263	282	0	0	0
Confl. Peds. (#/hr)			15			7			4			
Confl. Bikes (#/hr)			2			5			1			
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5	2			6			4				
Permitted Phases							4		4			
Actuated Green, G (s)	20.8	80.8			55.8		25.2	25.2	25.2			
Effective Green, g (s)	20.8	80.8			55.8		25.2	25.2	25.2			
Actuated g/C Ratio	0.18	0.70			0.48		0.22	0.22	0.22			
Clearance Time (s)	4.2	5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)	3.0	4.2			5.3		2.0	2.0	2.0			
Lane Grp Cap (vph)	615	3541			2337		365	366	337			
v/s Ratio Prot	c0.13	0.39			c0.30							
v/s Ratio Perm							0.15	0.16	c0.18			
v/c Ratio	0.75	0.56			0.63		0.71	0.72	0.84			
Uniform Delay, d1	45.1	8.7			22.4		42.0	42.1	43.4			
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00			
Incremental Delay, d2	5.0	0.6			1.3		5.4	5.5	15.6			
Delay (s)	50.1	9.3			23.7		47.4	47.6	59.0			
Level of Service	D	A			C		D	D	E			
Approach Delay (s)		17.1			23.7			51.9			0.0	
Approach LOS		B			C			D			A	
Intersection Summary												
HCM 2000 Control Delay		25.3			HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		116.0			Sum of lost time (s)				14.2			
Intersection Capacity Utilization		101.8%			ICU Level of Service				G			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

73: Texas St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	770	48	14	592	87	61	193	34	245	193	122
Future Volume (vph)	152	770	48	14	592	87	61	193	34	245	193	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.98		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3490		1770	3413		1770	1802		1770	1727	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3490		1770	3413		1770	1802		1770	1727	
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)	165	837	52	15	643	95	66	210	37	266	210	133
RTOR Reduction (vph)	0	3	0	0	10	0	0	6	0	0	20	0
Lane Group Flow (vph)	165	886	0	15	728	0	66	241	0	266	323	0
Confl. Peds. (#/hr)			20			42			28			17
Confl. Bikes (#/hr)			18			12			3			2
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases												
Actuated Green, G (s)	10.2	34.0		2.3	26.1		15.5	15.5		19.3	19.3	
Effective Green, g (s)	10.2	34.0		2.3	26.1		15.5	15.5		19.3	19.3	
Actuated g/C Ratio	0.10	0.34		0.02	0.26		0.16	0.16		0.19	0.19	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5		4.0	4.0	
Vehicle Extension (s)	2.0	2.2		2.0	2.1		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	180	1188		40	892		274	279		342	333	
v/s Ratio Prot	c0.09	c0.25		0.01	0.21		0.04	c0.13		0.15	c0.19	
v/s Ratio Perm												
v/c Ratio	0.92	0.75		0.38	0.82		0.24	0.86		0.78	0.97	
Uniform Delay, d1	44.4	29.1		48.0	34.6		37.0	41.1		38.2	40.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	43.0	2.3		2.1	5.6		0.2	22.4		9.7	40.4	
Delay (s)	87.3	31.4		50.2	40.2		37.2	63.6		48.0	80.4	
Level of Service	F	C		D	D		D	E		D	F	
Approach Delay (s)		40.2			40.4			58.0			66.2	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			48.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			99.8			Sum of lost time (s)			21.5			
Intersection Capacity Utilization			68.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

75: 30th St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	677	90	168	503	93	109	435	149	148	574	138
Future Volume (vph)	162	677	90	168	503	93	109	435	149	148	574	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.4	4.9		4.4	4.9		4.4	4.9		3.4	4.9	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.97		1.00	0.94		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3374		1770	3264		1770	1749		1770	1759	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3374		1770	3264		1770	1749		1770	1759	
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)	176	736	98	183	547	101	118	473	162	161	624	150
RTOR Reduction (vph)	0	11	0	0	15	0	0	12	0	0	8	0
Lane Group Flow (vph)	176	823	0	183	633	0	118	623	0	161	766	0
Confl. Peds. (#/hr)			103			134			66			113
Confl. Bikes (#/hr)			10			9			8			4
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	24.1		10.2	23.9		7.0	39.5		8.6	40.1	
Effective Green, g (s)	10.4	24.1		10.2	23.9		7.0	39.5		8.6	40.1	
Actuated g/C Ratio	0.10	0.24		0.10	0.24		0.07	0.40		0.09	0.40	
Clearance Time (s)	4.4	4.9		4.4	4.9		4.4	4.9		3.4	4.9	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	184	813		180	780		123	690		152	705	
v/s Ratio Prot	0.10	c0.24		c0.10	0.19		0.07	0.36		c0.09	c0.44	
v/s Ratio Perm												
v/c Ratio	0.96	1.01		1.02	0.81		0.96	0.90		1.06	1.09	
Uniform Delay, d1	44.6	38.0		44.9	35.9		46.4	28.4		45.7	29.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	52.9	34.8		71.5	9.0		67.2	14.8		89.6	59.6	
Delay (s)	97.5	72.7		116.4	44.9		113.6	43.3		135.3	89.6	
Level of Service	F	E		F	D		F	D		F	F	
Approach Delay (s)		77.0			60.6			54.3			97.4	
Approach LOS		E			E			D			F	
Intersection Summary												
HCM 2000 Control Delay		73.7			HCM 2000 Level of Service			E				
HCM 2000 Volume to Capacity ratio		1.07										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			18.6				
Intersection Capacity Utilization		93.0%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

77: Boundary St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1019	278	265	705	2	183	19	271	39	144	3
Future Volume (vph)	9	1019	278	265	705	2	183	19	271	39	144	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			4.5	4.5		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95			0.95	0.95		1.00	1.00
Frpb, ped/bikes		1.00	0.85		1.00			1.00	0.96		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00			0.98	0.85		1.00	0.85
Flt Protected		1.00	1.00		0.99			0.96	1.00		0.99	1.00
Satd. Flow (prot)		3538	1345		3490			1663	1445		1843	1557
Flt Permitted		1.00	1.00		0.99			0.52	1.00		0.76	1.00
Satd. Flow (perm)		3538	1345		3490			891	1445		1423	1557
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)	10	1108	302	288	766	2	199	21	295	42	157	3
RTOR Reduction (vph)	0	0	78	0	0	0	0	5	200	0	0	2
Lane Group Flow (vph)	0	1118	224	0	1056	0	0	245	65	0	199	1
Confl. Peds. (#/hr)			32			28			13			4
Confl. Bikes (#/hr)			10			8			2			
Turn Type	Split	NA	Perm	Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	2	2		1	1			8			4	
Permitted Phases			2				8		8	4		4
Actuated Green, G (s)		32.5	32.5		29.5			24.5	24.5		24.5	24.5
Effective Green, g (s)		32.5	32.5		29.5			24.5	24.5		24.5	24.5
Actuated g/C Ratio		0.32	0.32		0.29			0.24	0.24		0.24	0.24
Clearance Time (s)		4.5	4.5		4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		1149	437		1029			218	354		348	381
v/s Ratio Prot		c0.32			c0.30							
v/s Ratio Perm			0.17					c0.27	0.04		0.14	0.00
v/c Ratio		0.97	0.51		1.03			1.12	0.18		0.57	0.00
Uniform Delay, d1		33.3	27.3		35.2			37.8	29.8		33.1	28.5
Progression Factor		1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		20.8	4.3		34.9			97.8	0.1		1.4	0.0
Delay (s)		54.1	31.6		70.2			135.5	29.9		34.6	28.5
Level of Service		D	C		E			F	C		C	C
Approach Delay (s)		49.3			70.2			81.2			34.5	
Approach LOS		D			E			F			C	
Intersection Summary												
HCM 2000 Control Delay			60.4									HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			100.0									Sum of lost time (s) 13.5
Intersection Capacity Utilization			97.5%									ICU Level of Service F
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

78: I-805 NB Ramps & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	614	676	192	439	22	500	204	269	72	44	43
Future Volume (vph)	16	614	676	192	439	22	500	204	269	72	44	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6	4.6		4.6			4.6			4.6	
Lane Util. Factor		0.95	1.00		0.95			0.95			1.00	
Frpb, ped/bikes		1.00	0.95		1.00			0.99			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.99			0.96			0.96	
Flt Protected		1.00	1.00		0.99			0.97			0.98	
Satd. Flow (prot)		3535	1505		3462			3276			1755	
Flt Permitted		1.00	1.00		0.99			0.72			0.27	
Satd. Flow (perm)		3535	1505		3462			2409			484	
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)	17	667	735	209	477	24	543	222	292	78	48	47
RTOR Reduction (vph)	0	0	201	0	2	0	0	36	0	0	12	0
Lane Group Flow (vph)	0	684	534	0	708	0	0	1021	0	0	161	0
Confl. Peds. (#/hr)			21			32			14			
Confl. Bikes (#/hr)			8			5			1			
Turn Type	Split	NA	Perm	Split	NA		Perm	NA		Perm	NA	
Protected Phases	2	2		1	1			4			4	
Permitted Phases			2				4			4		
Actuated Green, G (s)		34.1	34.1		20.6			41.5			41.5	
Effective Green, g (s)		34.1	34.1		20.6			41.5			41.5	
Actuated g/C Ratio		0.31	0.31		0.19			0.38			0.38	
Clearance Time (s)		4.6	4.6		4.6			4.6			4.6	
Vehicle Extension (s)		2.0	2.0		2.0			2.0			2.0	
Lane Grp Cap (vph)		1095	466		648			908			182	
v/s Ratio Prot		0.19			c0.20							
v/s Ratio Perm			c0.36					c0.42			0.33	
v/c Ratio		0.62	1.15		1.09			1.14dl			0.88	
Uniform Delay, d1		32.5	37.9		44.7			34.2			32.0	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		2.7	88.4		63.0			70.2			35.0	
Delay (s)		35.2	126.4		107.7			104.5			66.9	
Level of Service		D	F		F			F			E	
Approach Delay (s)		82.4			107.7			104.5			66.9	
Approach LOS		F			F			F			E	
Intersection Summary												
HCM 2000 Control Delay			93.9			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			13.8			
Intersection Capacity Utilization			89.5%			ICU Level of Service			E			
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 80: 33rd St/Boundary St & N Park Way/I-805 SB Ramps

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	263	41	317	209	600	47	0	85	543	105	102
Future Volume (vph)	0	263	41	317	209	600	47	0	85	543	105	102
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	286	45	345	227	652	51	0	92	590	114	111
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total (vph)	331	572	652	143	815							
Volume Left (vph)	0	345	0	51	590							
Volume Right (vph)	45	0	652	92	111							
Hadj (s)	-0.05	0.15	-0.57	-0.28	0.10							
Departure Headway (s)	7.8	7.5	3.2	8.5	7.5							
Degree Utilization, x	0.72	1.00	0.58	0.34	1.00							
Capacity (veh/h)	452	572	1118	392	815							
Control Delay (s)	28.3	68.8	10.5	15.9	68.5							
Approach Delay (s)	28.3	37.7		15.9	68.5							
Approach LOS	D	E		C	F							
Intersection Summary												
Delay			45.2									
Level of Service			E									
Intersection Capacity Utilization			103.5%	ICU Level of Service					G			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

77: Boundary St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↗		↔↔			↔	↗	↘	↖	↗
Traffic Volume (vph)	8	963	177	220	513	0	138	8	121	29	86	1
Future Volume (vph)	8	963	177	220	513	0	138	8	121	29	86	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		0.95	1.00		0.95			0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes		1.00	0.98		1.00			1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00			0.99	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.99			0.96	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3538	1550		3487			1675	1482	1770	1863	1583
Flt Permitted		1.00	1.00		0.99			0.69	1.00	0.56	1.00	1.00
Satd. Flow (perm)		3538	1550		3487			1203	1482	1034	1863	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	1047	192	239	558	0	150	9	132	32	93	1
RTOR Reduction (vph)	0	0	66	0	0	0	0	5	96	0	0	1
Lane Group Flow (vph)	0	1056	126	0	797	0	0	167	23	32	93	0
Confl. Peds. (#/hr)			5			11			2			
Confl. Bikes (#/hr)			2			4						
Turn Type	Split	NA	Perm	Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	2	2		1	1			8			4	
Permitted Phases			2				8		8	4		4
Actuated Green, G (s)		23.1	23.1		20.0			13.4	13.4	13.4	13.4	13.4
Effective Green, g (s)		23.1	23.1		20.0			13.4	13.4	13.4	13.4	13.4
Actuated g/C Ratio		0.33	0.33		0.29			0.19	0.19	0.19	0.19	0.19
Clearance Time (s)		4.5	4.5		4.5			4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0			2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		1167	511		996			230	283	197	356	303
v/s Ratio Prot		c0.30			c0.23						0.05	
v/s Ratio Perm			0.08					c0.14	0.02	0.03		0.00
v/c Ratio		0.90	0.25		0.80			0.73	0.08	0.16	0.26	0.00
Uniform Delay, d1		22.4	17.1		23.1			26.6	23.2	23.6	24.1	22.9
Progression Factor		1.00	1.00		1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		11.6	1.1		4.4			9.3	0.0	0.1	0.1	0.0
Delay (s)		34.0	18.2		27.6			35.9	23.3	23.8	24.2	22.9
Level of Service		C	B		C			D	C	C	C	C
Approach Delay (s)		31.5			27.6			30.7			24.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.8									
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			70.0									
Intersection Capacity Utilization			75.9%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

77: Boundary St & University Ave

3/10/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1019	278	265	705	2	183	19	271	39	144	3
Future Volume (vph)	9	1019	278	265	705	2	183	19	271	39	144	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5			4.5	4.5	4.5	4.5	4.5
Lane Util. Factor		0.95	1.00		0.95			0.95	0.95	1.00	1.00	1.00
Frpb, ped/bikes		1.00	0.91		1.00			1.00	0.96	1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00			1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00			0.98	0.85	1.00	1.00	0.85
Flt Protected		1.00	1.00		0.99			0.96	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3538	1441		3490			1663	1445	1770	1863	1556
Flt Permitted		1.00	1.00		0.99			0.58	1.00	0.36	1.00	1.00
Satd. Flow (perm)		3538	1441		3490			1006	1445	678	1863	1556
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)	10	1108	302	288	766	2	199	21	295	42	157	3
RTOR Reduction (vph)	0	0	78	0	0	0	0	5	205	0	0	2
Lane Group Flow (vph)	0	1118	224	0	1056	0	0	245	60	42	157	1
Confl. Peds. (#/hr)			32			28			13			4
Confl. Bikes (#/hr)			10			8			2			
Turn Type	Split	NA	Perm	Split	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	2	2		1	1			8			4	
Permitted Phases			2				8		8	4		4
Actuated Green, G (s)		33.5	33.5		30.5			22.5	22.5	22.5	22.5	22.5
Effective Green, g (s)		33.5	33.5		30.5			22.5	22.5	22.5	22.5	22.5
Actuated g/C Ratio		0.34	0.34		0.30			0.22	0.22	0.22	0.22	0.22
Clearance Time (s)		4.5	4.5		4.5			4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0			2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		1185	482		1064			226	325	152	419	350
v/s Ratio Prot		c0.32			c0.30						0.08	
v/s Ratio Perm			0.16					c0.24	0.04	0.06		0.00
v/c Ratio		0.94	0.47		0.99			1.09	0.18	0.28	0.37	0.00
Uniform Delay, d1		32.3	26.2		34.6			38.8	31.3	32.0	32.8	30.0
Progression Factor		1.00	1.00		1.00			1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		15.7	3.2		25.6			84.5	0.1	0.4	0.2	0.0
Delay (s)		48.0	29.4		60.2			123.3	31.4	32.4	33.0	30.0
Level of Service		D	C		E			F	C	C	C	C
Approach Delay (s)		44.1			60.2			76.0			32.8	
Approach LOS		D			E			E			C	
Intersection Summary												
HCM 2000 Control Delay			53.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			13.5		
Intersection Capacity Utilization			95.3%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												