

Appendix H-3

Supplemental Traffic Analysis



MEMORANDUM

LINSCOTT
LAW &
GREENSPAN

engineers

To: County of Los Angeles, Department of Public Works Date: April 7, 2020

From: David S. Shender, P.E. LLG Ref: 5-17-0354-1
Jason A. Shender
Linscott, Law & Greenspan, Engineers

Subject: **Supplemental Traffic Analysis – Rancho Los Amigos South Campus**

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This memorandum has been prepared by Linscott, Law & Greenspan, Engineers (LLG) to provide a supplemental traffic analysis for the proposed Rancho Los Amigos South Campus project (“the Project”) located on the south side of Flores Street on 74 acres of County-owned land in the City of Downey, California (the “Project Site”). LLG previously prepared a traffic impact study dated July 8, 2019 (the “original traffic study”) for the Project, which was included as an appendix in the Draft Environmental Impact Report (Draft EIR) for the project. The original traffic study evaluated potential Project-related impacts at 27 intersections in the Project vicinity. The scope of the original traffic study was confirmed when the Los Angeles County Department of Public Works (LACDPW) entered a traffic study Memorandum of Understanding.

This supplemental traffic analysis has been prepared in response to traffic-related comments received from the City of South Gate on the Draft EIR. Specifically, the supplemental traffic analysis addresses the following items:

- Analysis of Intersections Along Firestone Boulevard. As requested by the City of South Gate, an analysis of the Atlantic Avenue / Firestone Boulevard and Garfield Avenue / Firestone Boulevard intersections has been prepared to evaluate potential Project-related impacts at these intersections.
- Alternative Assignment of Project Trips Using Consuelo Street. As requested by the City of South Gate, an alternative assignment of Project-related trips has been prepared. Specifically, the alternative assignment assumes the use of Consuelo Street for trips arriving and departing the Project Site. In conjunction with the alternative assignment of Project trips, analyses of the Paramount Boulevard / Puritan Street and Paramount Boulevard / Consuelo Street intersections have been prepared to evaluate potential Project-related impacts at these intersections. Additionally, an updated analysis of the Paramount Avenue / Gardendale Street intersection (Study Int. No. 20 in the original traffic study) has been prepared to reflect the alternative assignment of Project trips.

Additional details regarding the supplemental traffic analysis are provided in the following sections.

Existing Setting

This supplemental traffic analysis evaluates the potential traffic impact of the Project on the local street system at intersections not analyzed in the original traffic study. The following intersections have been evaluated for potential traffic impacts due to the Project:

1. Atlantic Avenue / Firestone Boulevard (City of South Gate)
2. Garfield Avenue / Firestone Boulevard (City of South Gate)
3. Paramount Boulevard / Puritan Street (City of Downey)
4. Paramount Boulevard / Consuelo Street (City of Downey)

Existing Traffic Volumes

Manual traffic counts of vehicular turning movements were conducted on Wednesday, January 22, 2020 at the four additional study intersections during the weekday morning and afternoon commuter periods to determine the peak hour traffic volumes. The manual traffic counts at the study intersections were conducted from 7:00 AM to 9:00 AM to determine the AM peak commuter hour, and from 4:00 PM to 6:00 PM to determine the PM peak commuter hour. The summary data worksheets of the manual traffic counts at the study intersections are provided in *Appendix A* attached to this memorandum.

Project Trip Assignment

The weekday AM and PM commuter peak hour vehicle trips forecast to be generated by the Project were assigned to the study intersections in the original traffic study. Figure 7-1 of the original traffic study displays the vehicular trip distribution for the Project at the 27 study intersections evaluated in the original traffic study. **Figure 1** displays the vehicular trip distribution for the Project at the additional intersections analyzed in this supplemental traffic analysis based on the updated site access scheme. Additionally, *Figure 1* displays the updated vehicular trip distribution for the Project at the Paramount Boulevard / Gardendale Avenue intersection (Study Int. No. 20 in the original traffic study).

Traffic Impact Analysis Methodology

LLG has prepared intersection Level of Service calculations to evaluate the potential traffic impacts at the additional intersections analyzed in this supplemental traffic analysis, as well as updated calculations at the Paramount Boulevard / Gardendale Avenue intersection due to the alternative site access scheme. The relative impact of the added traffic volumes forecast to be generated by the Project during the AM and PM peak hours was evaluated based on analysis of existing and future operating conditions at the study intersections, without and with the Project.

The traffic impact analysis scenarios and significance of the potential impacts of Project generated traffic at the intersections were identified using the traffic impact criteria set forth by the cities of Downey, South Gate, and Paramount. The individual jurisdictions' impact analysis scenarios and thresholds of significance are provided by reference in the original traffic study.

Analysis of Intersections Along Firestone Boulevard

The traffic impact analysis prepared for the Atlantic Avenue / Firestone Boulevard and Garfield Avenue / Firestone Boulevard study intersections using the ICU methodology and application of the City of South Gate significant traffic impact criteria is summarized in **Table A**. The ICU data worksheets for the analyzed intersections located in the City of South Gate are contained in **Appendix B**.

As shown in column [2] of **Table A**, application of the City of South Gate's threshold criteria to the "Existing with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at either of the additional intersections analyzed located in the City of South Gate. Incremental, but not significant, impacts are noted at the two intersections.

As shown in column [4] of **Table A**, application of the City of South Gate's threshold criteria to the "Future Cumulative with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at either of the additional intersections analyzed located in the City of South Gate. Incremental, but not significant, impacts are noted at the two intersections.

Analysis of Intersections Along Paramount Boulevard

The traffic impact analysis prepared for the Paramount Boulevard / Puritan Street and Paramount Boulevard / Consuelo Street study intersections using the HCM and ICU methodologies and application of the City of Downey significant traffic impact criteria is summarized in **Table B**. The HCM and ICU data worksheets for the additional analyzed intersections located in the City of Downey are contained in **Appendix C** and **D**, respectively.

As shown in column [2] of *Table B*, application of the City of Downey's threshold criteria to the "Existing with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at either of the additional intersections analyzed located in the City of Downey. Incremental, but not significant, impacts are noted at the two intersections.

As shown in column [4] of *Table B*, application of the City of Downey's threshold criteria to the "Future Cumulative with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at either of the additional intersections analyzed located in the City of Downey. Incremental, but not significant, impacts are noted at the two intersections.

Updated Analysis of Paramount Boulevard / Gardendale Street

The updated traffic impact analysis prepared for the Paramount Boulevard / Gardendale Street study intersection (Study Int. No. 20) using the ICU methodology and application of the City of Downey and City of Paramount significant traffic impact criteria utilized by the Cities of South Gate, Downey, and Paramount are summarized in *Table A*, *Table B*, and **Table C**, respectively. The ICU data worksheets for the Paramount Boulevard / Gardendale Street intersection for the Cities of South Gate, Downey and Paramount are contained in *Appendix B*, *Appendix D*, and **Appendix E**, respectively.

As shown in column [2] of *Table A*, application of the City of South Gate's threshold criteria to the "Existing with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at the Paramount Boulevard / Gardendale Street due to the alternative site access pattern. Incremental, but not significant, impacts are noted at intersection based on the City of Downey's threshold criteria.

As shown in column [4] of *Table A*, application of the City of South Gate's threshold criteria to the "Future Cumulative with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at the Paramount Boulevard / Gardendale Street due to the alternative site access pattern. Incremental, but not significant, impacts are noted at intersection based on the City of Downey's threshold criteria.

As shown in column [2] of *Table B*, application of the City of Downey's threshold criteria to the "Existing with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at the Paramount Boulevard / Gardendale Street due to the alternative site access pattern. Incremental, but not significant, impacts are noted at intersection based on the City of Downey's threshold criteria.

As shown in column [4] of *Table B*, application of the City of Downey's threshold criteria to the "Future Cumulative with Project" scenario indicates that the addition of traffic generated by the Project would not create significant impacts at the Paramount Boulevard / Gardendale Street due to the alternative site access pattern. Incremental, but not significant, impacts are noted at intersection based on the City of Downey's threshold criteria.

As shown in column [2] of *Table C*, application of the City of Paramount's threshold criteria to the "Existing with Project" scenario indicates that the addition of traffic generated by the Project is expected to result in a significant impact at the Paramount Boulevard / Gardendale Street due to the alternative site access pattern.

As shown in column [4] of *Table C*, application of the City of Paramount's threshold criteria to the "Future Cumulative with Project" scenario indicates that the addition of traffic generated by the Project is expected to result in a significant impact at the Paramount Boulevard / Gardendale Street due to the alternative site access pattern.

As stated in Section 14.3 of the original traffic study, the intersection is completely built-out. No street improvements would be possible without modifying the existing curb-to-curb street widths, which would likely require the acquisition of private property and removal of a business located adjacent to the intersection, which is considered infeasible. Therefore, as there are no reasonable or feasible mitigation measures available at this intersection, the impact of the Project would remain significant and unavoidable.

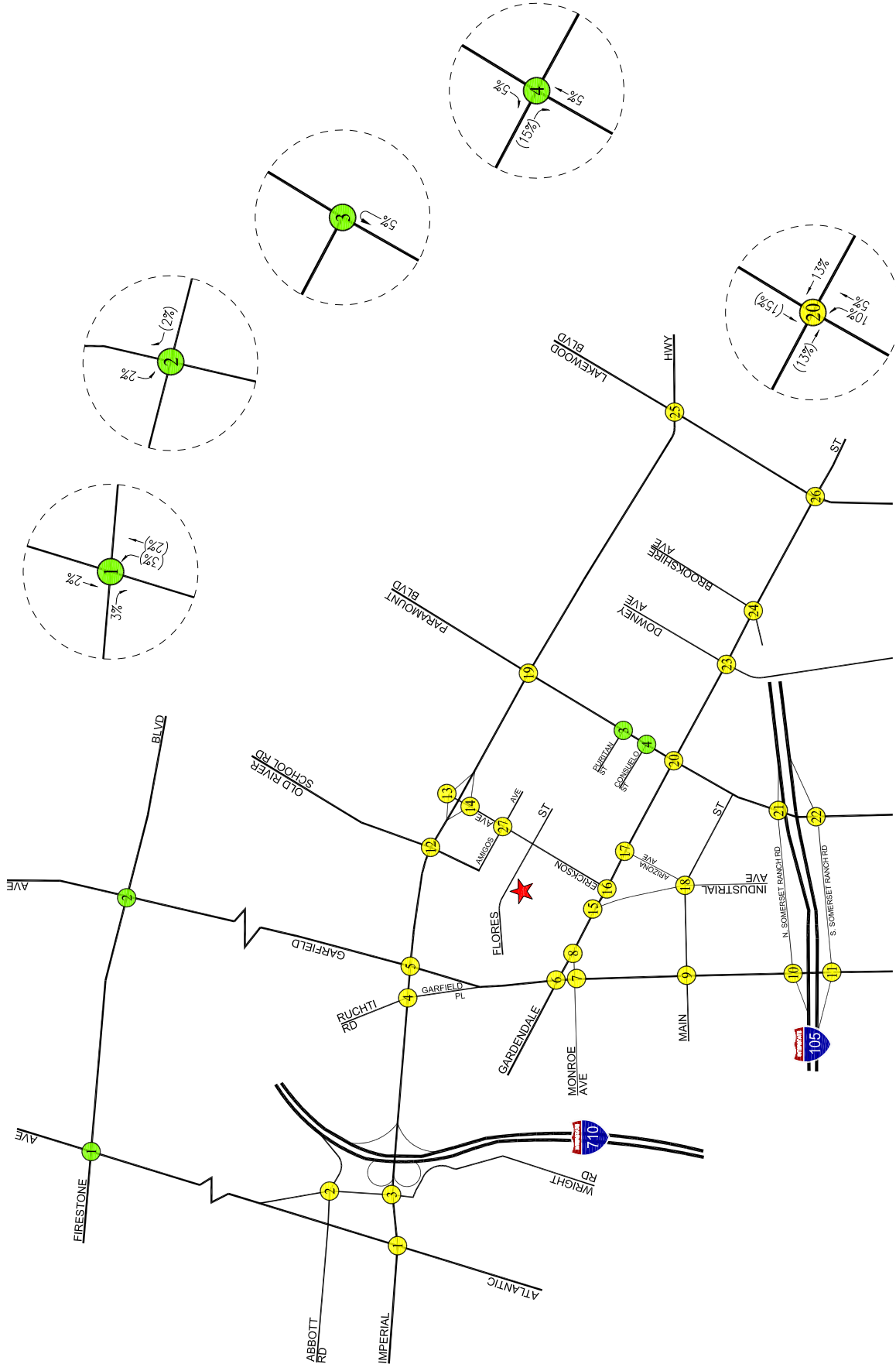


Table A
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
AM AND PM PEAK HOURS
CITY OF SOUTH GATE INTERSECTIONS

07-Apr-20

INTERSECTION	PEAK HOUR	[1]		[2]			[3]		[4]				
		YEAR 2020 EXISTING V/C	LOS	YEAR 2020 EXISTING W/ PROJECT V/C	LOS	CHANGE V/C [(2)-(1)]	SIGNIF. IMPACT [a]	YEAR 2021 FUTURE PROJECT V/C	LOS	CHANGE V/C [(4)-(3)]	SIGNIF. IMPACT [a]		
Paramount Boulevard / Gardendale Street [b]	AM	0.733	C	0.831	D	0.098	NO	0.758	C	0.854	D	0.096	NO
	PM	0.736	C	0.768	C	0.032	NO	0.739	C	0.773	C	0.034	NO
Atlantic Avenue / Firestone Boulevard	AM	0.854	D	0.858	D	0.004	NO	0.862	D	0.865	D	0.003	NO
	PM	0.694	B	0.697	B	0.003	NO	0.718	C	0.721	C	0.003	NO
Garfield Avenue / Firestone Boulevard	AM	0.893	D	0.893	D	0.000	NO	0.909	E	0.909	E	0.000	NO
	PM	0.917	E	0.917	E	0.000	NO	0.936	E	0.936	E	0.000	NO

[a] According to the City of South Gate, a transportation impact is considered significant if the final volume-to-capacity ratio (v/c) equals or exceeds the thresholds shown below:

$$\frac{\text{Level of Service}}{\text{E,F}} \geq \frac{\text{Final V/C}}{> 0.900}$$

[b] Existing Year 2017.

Table B
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
AM AND PM PEAK HOURS
CITY OF DOWNEY INTERSECTIONS

09-Mar-20

INTERSECTION	PEAK HOUR	[1]		[2]		[3]		[4]					
		YEAR 2020 EXISTING		CHANGE IN DELAY OR V/C [2]-(1)		YEAR 2021 FUTURE PROJECT DELAY OR V/C		CHANGE IN DELAY OR V/C [4]-(3)					
		DELAY OR V/C	LOS	YEAR 2020 EXISTING W/PROJECT DELAY OR V/C	LOS	CHANGE IN DELAY OR V/C [2]-(1)	SIGNIF. IMPACT [a]	YEAR 2021 FUTURE PROJECT DELAY OR V/C	LOS	YEAR 2021 FUTURE W/PROJECT DELAY OR V/C	LOS	CHANGE IN DELAY OR V/C [4]-(3)	SIGNIF. IMPACT [a]
Paramount Boulevard / Gardendale Street [b]	AM	0.733	C	0.831	D	0.098	NO	0.758	C	0.854	D	0.096	NO
	PM	0.736	C	0.768	C	0.032	NO	0.739	C	0.773	C	0.034	NO
Paramount Boulevard / Puritan Street [c]	AM	21.7	C	28.3	D	----	----	21.1	C	27.2	D	----	----
	PM	18.2	C	18.7	C	----	----	16.9	C	17.3	C	----	----
	AM	0.521	----	0.556	----	0.035	NO	0.517	----	0.552	----	0.035	NO
	PM	0.511	----	0.511	----	0.000	NO	0.508	----	0.508	----	0.000	NO
Paramount Boulevard / Consuelo Street - Cheyenne Street [c]	AM	13.5	B	14.5	B	----	----	13.5	B	14.4	B	----	----
	PM	14.2	B	19.7	C	----	----	13.9	B	18.5	C	----	----
	AM	0.489	----	0.520	----	0.031	NO	0.475	----	0.506	----	0.031	NO
	PM	0.581	----	0.676	----	0.095	NO	0.579	----	0.673	----	0.094	NO

[a] According to the City of Downey, a transportation impact on an intersection shall be deemed significant in accordance with the following table:

Final V/C	LOS	Project Related Increase in V/C
> 1.00	F	equal to or greater than 0.020

[b] Existing Year 2017.

[c] Two-Way Stop-Controlled Intersection. Reported values represent the delays associated with the most constrained approach of the intersection.

APPENDIX A

MANUAL TRAFFIC COUNT DATA

National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & Firestone Blvd
City: South Gate
Control: Signalized

Project ID: 20-05025-001
Date: 1/22/2020

Total

NS/EW Streets:	Atlantic Ave				Atlantic Ave				Firestone Blvd				Firestone Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	3 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	41	189	16	0	157	108	17	0	40	327	38	0	13	304	50	0	1300
7:15 AM	35	165	16	1	238	166	24	0	38	358	27	0	13	264	46	0	1391
7:30 AM	41	192	18	0	159	187	32	0	64	291	24	0	16	270	50	0	1344
7:45 AM	42	186	15	0	173	152	25	2	54	329	18	1	18	236	59	0	1310
8:00 AM	32	193	21	1	157	151	24	1	54	268	27	1	23	196	57	0	1206
8:15 AM	27	161	9	0	114	133	17	0	33	222	30	0	11	209	51	0	1017
8:30 AM	36	180	15	0	117	98	22	0	23	232	21	0	16	190	49	0	999
8:45 AM	36	130	22	1	117	71	20	0	43	228	13	0	9	219	59	0	968
TOTAL VOLUMES :	NL 290	NT 1396	NR 132	NU 3	SL 1232	ST 1066	SR 181	SU 3	EL 349	ET 2255	ER 198	EU 2	WL 119	WT 1888	WR 421	WU 0	TOTAL 9535
APPROACH %'s :	15.93%	76.66%	7.25%	0.16%	49.64%	42.95%	7.29%	0.12%	12.45%	80.42%	7.06%	0.07%	4.90%	77.76%	17.34%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	159	732	65	1	727	613	98	2	196	1305	107	1	60	1074	205	0	5345
PEAK HR FACTOR :	0.946	0.953	0.903	0.250	0.764	0.820	0.766	0.250	0.766	0.911	0.704	0.250	0.833	0.883	0.869	0.000	0.961
	0.953				0.841				0.951				0.912				

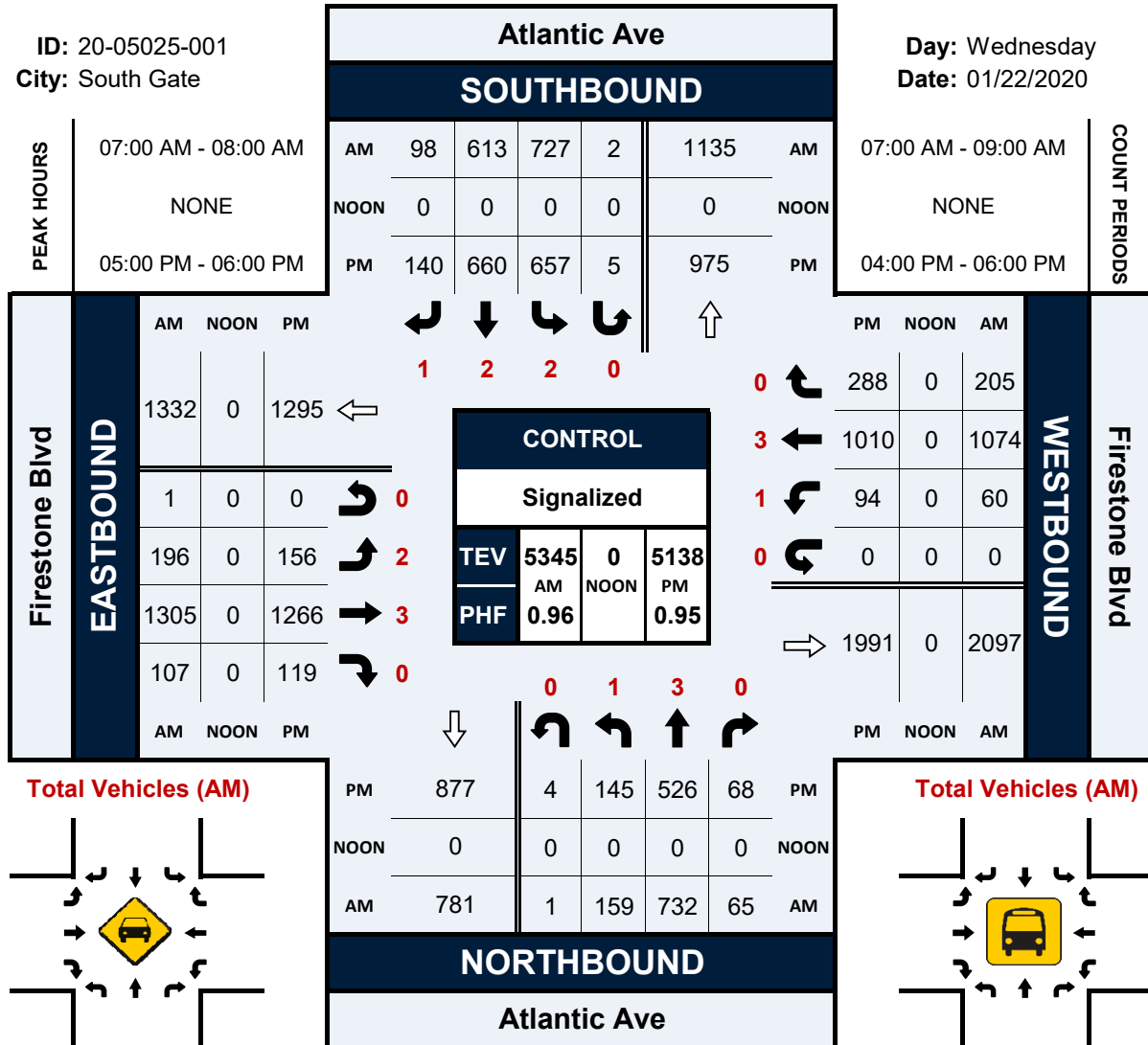
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	3 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	39	124	8	0	174	188	28	2	34	255	37	0	20	213	74	0	1196
4:15 PM	41	146	23	0	138	148	29	2	36	255	28	1	28	224	63	0	1162
4:30 PM	34	118	16	1	162	135	25	2	33	348	29	2	20	254	70	0	1249
4:45 PM	45	138	24	0	170	165	35	0	41	282	29	0	15	231	61	0	1236
5:00 PM	42	121	27	2	177	137	34	0	29	341	35	0	21	256	71	0	1293
5:15 PM	38	155	18	1	172	191	41	1	45	334	30	0	20	245	66	0	1357
5:30 PM	31	123	7	1	133	140	24	2	45	326	30	0	28	294	65	0	1249
5:45 PM	34	127	16	0	175	192	41	2	37	265	24	0	25	215	86	0	1239
TOTAL VOLUMES :	NL 304	NT 1052	NR 139	NU 5	SL 1301	ST 1296	SR 257	SU 11	EL 300	ET 2406	ER 242	EU 3	WL 177	WT 1932	WR 556	WU 0	TOTAL 9981
APPROACH %'s :	20.27%	70.13%	9.27%	0.33%	45.41%	45.24%	8.97%	0.38%	10.17%	81.53%	8.20%	0.10%	6.64%	72.50%	20.86%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	145	526	68	4	657	660	140	5	156	1266	119	0	94	1010	288	0	5138
PEAK HR FACTOR :	0.863	0.848	0.630	0.500	0.928	0.859	0.854	0.625	0.867	0.928	0.850	0.000	0.839	0.859	0.837	0.000	0.947
	0.876				0.891				0.942				0.899				

Atlantic Ave & Firestone Blvd

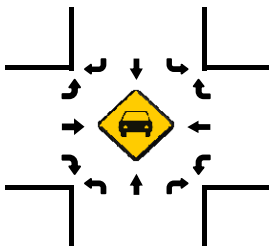
Peak Hour Turning Movement Count

ID: 20-05025-001
City: South Gate

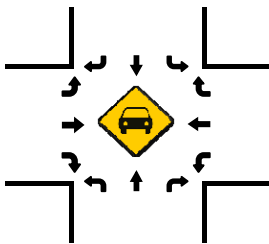
Day: Wednesday
Date: 01/22/2020



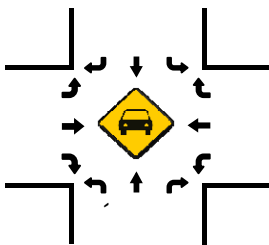
Total Vehicles (AM)



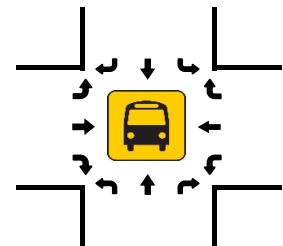
Total Vehicles (NOON)



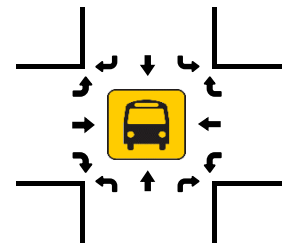
Total Vehicles (PM)



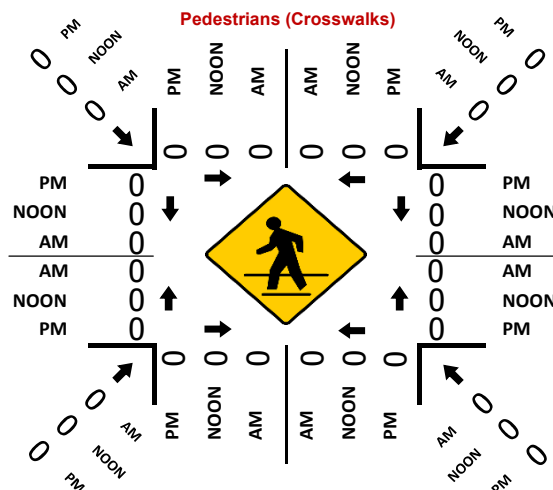
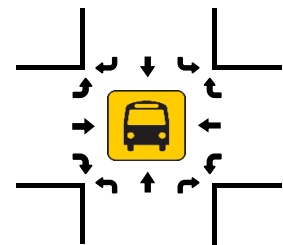
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Garfield Ave & Firestone Blvd
City: South Gate
Control: Signalized

Project ID: 20-05025-002
Date: 1/22/2020

Total

NS/EW Streets:	Garfield Ave				Garfield Ave				Firestone Blvd				Firestone Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	3 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
7:00 AM	204	256	10	0	27	76	165	0	123	161	78	2	11	156	18	0	1287
7:15 AM	203	195	6	0	31	115	151	0	162	164	114	0	17	182	35	0	1375
7:30 AM	172	173	8	0	32	114	156	0	178	175	129	0	11	191	38	0	1377
7:45 AM	181	241	9	0	22	134	134	0	177	194	107	0	12	170	31	1	1413
8:00 AM	142	225	10	0	37	154	136	0	173	177	96	0	19	174	46	0	1389
8:15 AM	147	296	19	0	41	132	136	0	154	136	91	0	16	112	29	0	1309
8:30 AM	153	241	8	0	33	104	86	0	136	144	79	9	22	209	30	0	1254
8:45 AM	157	229	12	0	35	138	98	0	109	166	69	7	15	129	40	0	1204
TOTAL VOLUMES :	1359	1856	82	0	258	967	1062	0	1212	1317	763	18	123	1323	267	1	10608
APPROACH %'s :	41.22%	56.29%	2.49%	0.00%	11.28%	42.28%	46.44%	0.00%	36.62%	39.79%	23.05%	0.54%	7.18%	77.19%	15.58%	0.06%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	698	834	33	0	122	517	577	0	690	710	446	0	59	717	150	1	5554
PEAK HR FACTOR :	0.860	0.865	0.825	0.000	0.824	0.839	0.925	0.000	0.969	0.915	0.864	0.000	0.776	0.938	0.815	0.250	0.983
	0.908				0.930				0.957				0.966				

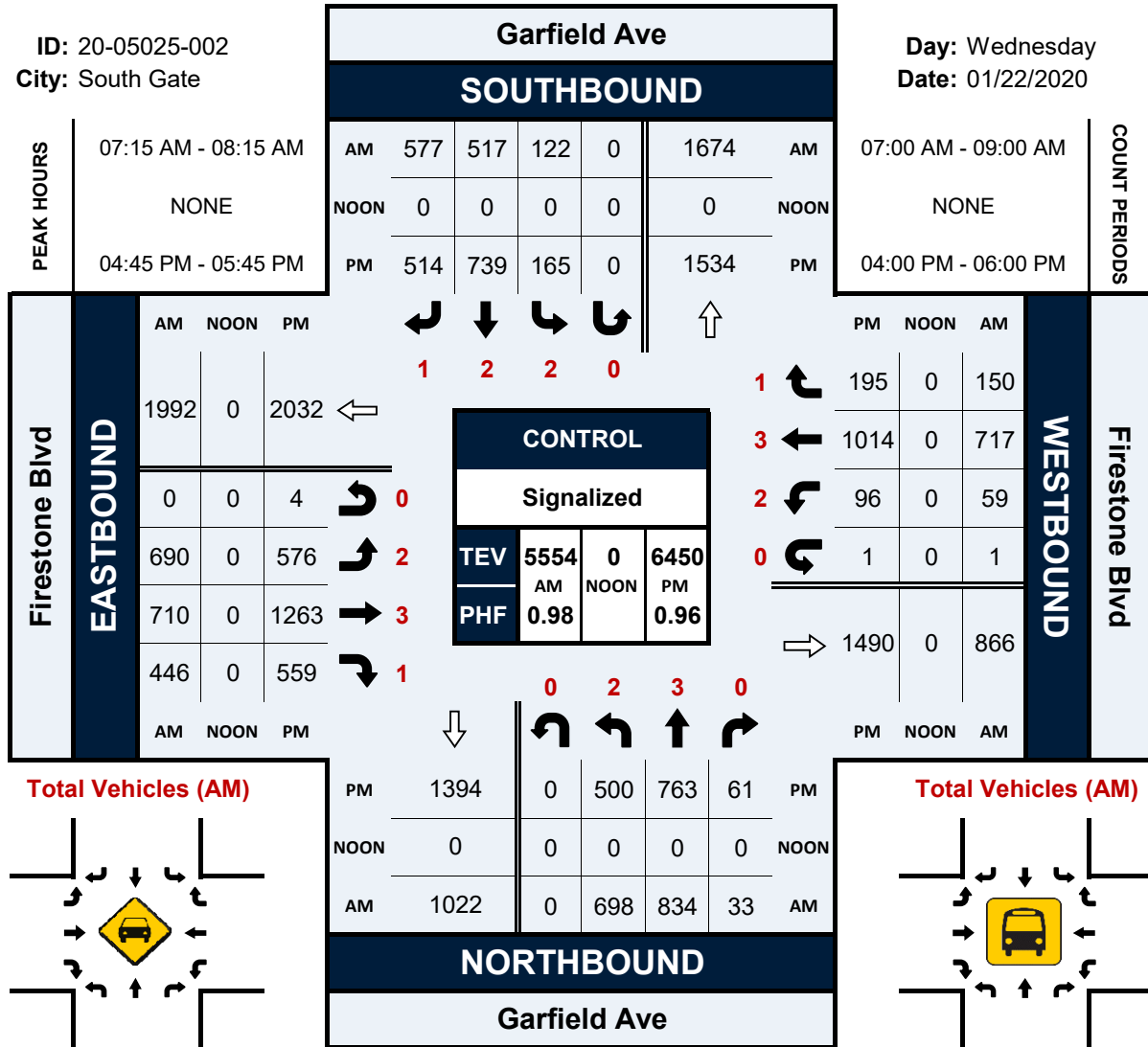
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	3 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
4:00 PM	111	170	15	0	42	168	126	0	163	304	106	1	15	205	39	0	1465
4:15 PM	114	163	22	0	44	165	134	0	160	286	123	1	22	227	55	0	1516
4:30 PM	127	213	14	0	30	140	133	0	158	348	122	0	28	213	40	0	1566
4:45 PM	133	192	18	0	46	195	145	0	132	316	135	0	17	214	44	0	1587
5:00 PM	116	195	17	0	53	185	113	0	147	271	136	0	26	284	55	0	1598
5:15 PM	122	181	15	0	30	158	128	0	163	382	154	2	20	279	50	1	1685
5:30 PM	129	195	11	0	36	201	128	0	134	294	134	2	33	237	46	0	1580
5:45 PM	103	141	17	0	45	144	109	0	161	309	132	0	29	257	51	0	1498
TOTAL VOLUMES :	955	1450	129	0	326	1356	1016	0	1218	2510	1042	6	190	1916	380	1	12495
APPROACH %'s :	37.69%	57.22%	5.09%	0.00%	12.08%	50.26%	37.66%	0.00%	25.50%	52.55%	21.82%	0.13%	7.64%	77.04%	15.28%	0.04%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	500	763	61	0	165	739	514	0	576	1263	559	4	96	1014	195	1	6450
PEAK HR FACTOR :	0.940	0.978	0.847	0.000	0.778	0.919	0.886	0.000	0.883	0.827	0.907	0.500	0.727	0.893	0.886	0.250	0.957
	0.965				0.918				0.857				0.895				

Garfield Ave & Firestone Blvd

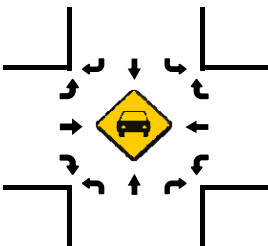
Peak Hour Turning Movement Count

ID: 20-05025-002
City: South Gate

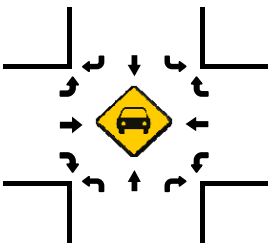
Day: Wednesday
Date: 01/22/2020



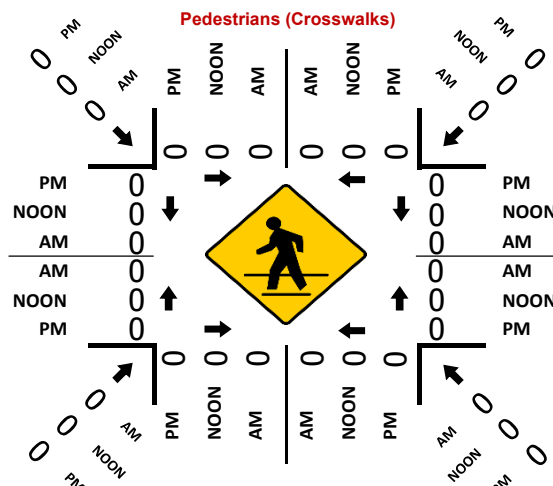
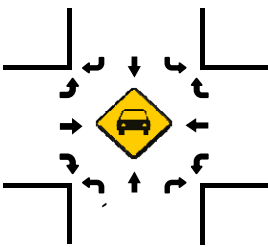
Total Vehicles (AM)



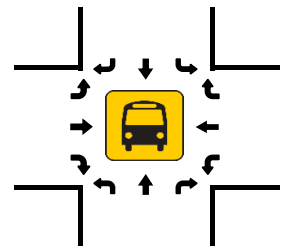
Total Vehicles (NOON)



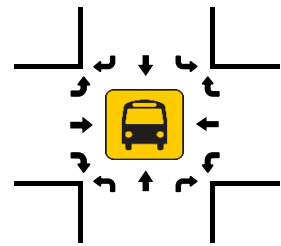
Total Vehicles (PM)



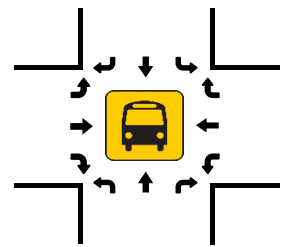
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Paramount Blvd & Puritan St
City: Downey
Control: 1-Way Stop (EB)

Project ID: 20-05025-003
Date: 1/22/2020

Total

NS/EW Streets:	Paramount Blvd				Paramount Blvd				Puritan St				Puritan St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
7:00 AM	2	205	0	30	0	214	0	0	1	0	14	0	0	0	0	0	466
7:15 AM	7	280	0	20	0	215	1	0	0	0	24	0	0	0	0	0	547
7:30 AM	3	228	0	29	0	269	0	0	3	0	15	0	0	0	0	0	547
7:45 AM	6	228	0	38	0	219	2	0	0	0	10	0	0	0	0	0	503
8:00 AM	7	280	0	31	0	223	1	0	2	0	14	0	0	0	0	0	558
8:15 AM	8	238	0	31	0	181	1	0	1	0	12	0	0	0	0	0	472
8:30 AM	4	185	0	31	0	178	2	0	0	0	6	0	0	0	0	0	406
8:45 AM	7	216	0	21	0	155	1	0	0	0	13	0	0	0	0	0	413
TOTAL VOLUMES :	NL 44	NT 1860	NR 0	NU 231	SL 0	ST 1654	SR 8	SU 0	EL 7	ET 0	ER 108	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 3912
APPROACH %'s :	2.06%	87.12%	0.00%	10.82%	0.00%	99.52%	0.48%	0.00%	6.09%	0.00%	93.91%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	23	1016	0	118	0	926	4	0	5	0	63	0	0	0	0	0	2155
PEAK HR FACTOR :	0.821	0.907	0.000	0.776	0.000	0.861	0.500	0.000	0.417	0.000	0.656	0.000	0.000	0.000	0.000	0.000	0.966
	0.910				0.864				0.708								

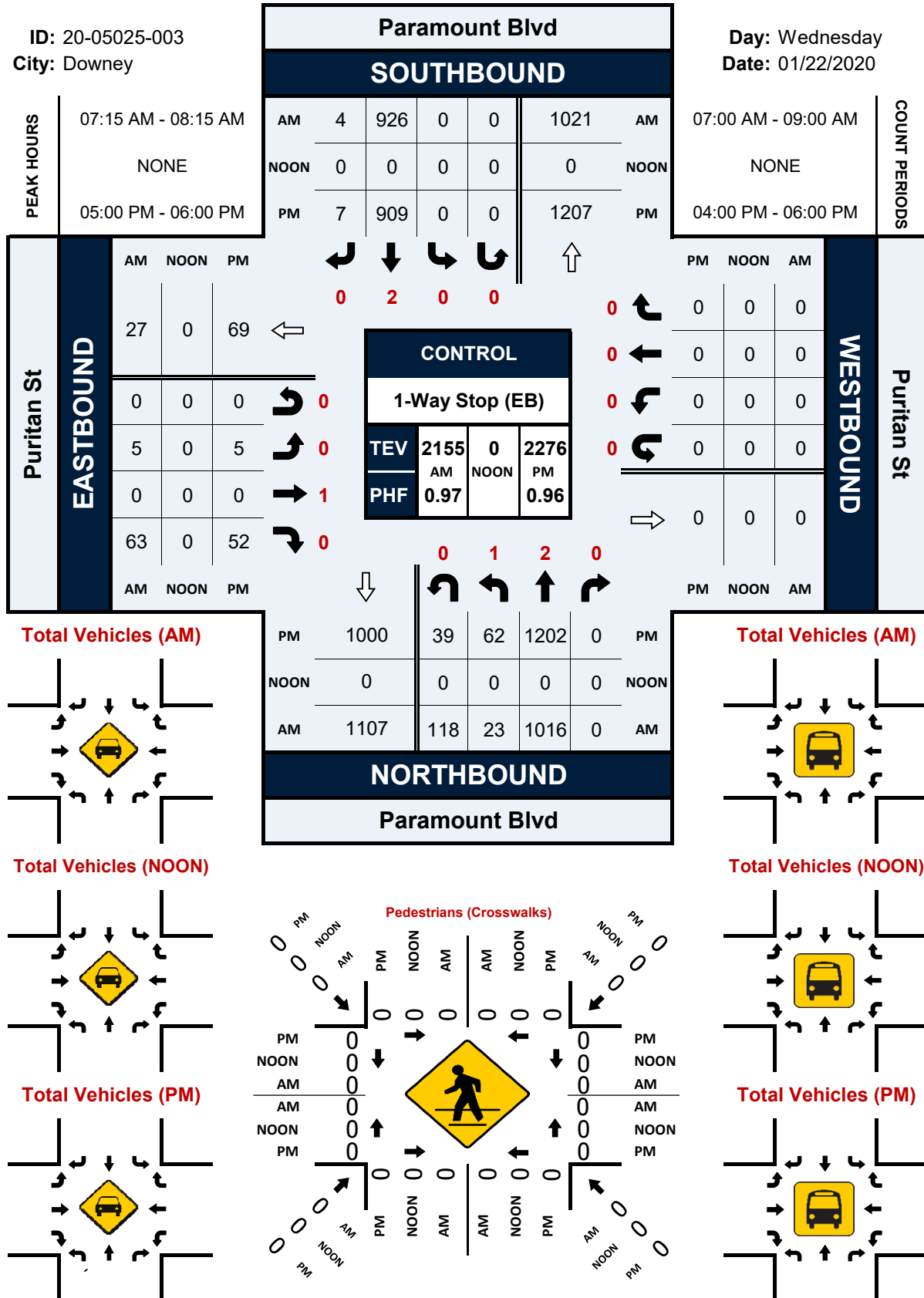
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
4:00 PM	13	269	0	11	0	187	4	0	1	0	12	0	0	0	0	0	497
4:15 PM	11	277	0	11	0	183	2	0	1	0	12	0	0	0	0	0	497
4:30 PM	6	271	0	7	0	214	3	0	2	0	9	0	0	0	0	0	512
4:45 PM	12	295	0	3	0	221	1	0	3	0	13	0	0	0	0	0	548
5:00 PM	13	292	0	10	0	211	2	0	2	0	15	0	0	0	0	0	545
5:15 PM	19	320	0	11	0	232	3	0	2	0	8	0	0	0	0	0	595
5:30 PM	14	291	0	7	0	213	0	0	0	0	18	0	0	0	0	0	543
5:45 PM	16	299	0	11	0	253	2	0	1	0	11	0	0	0	0	0	593
TOTAL VOLUMES :	NL 104	NT 2314	NR 0	NU 71	SL 0	ST 1714	SR 17	SU 0	EL 12	ET 0	ER 98	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 4330
APPROACH %'s :	4.18%	92.97%	0.00%	2.85%	0.00%	99.02%	0.98%	0.00%	10.91%	0.00%	89.09%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	62	1202	0	39	0	909	7	0	5	0	52	0	0	0	0	0	2276
PEAK HR FACTOR :	0.816	0.939	0.000	0.886	0.000	0.898	0.583	0.000	0.625	0.000	0.722	0.000	0.000	0.000	0.000	0.000	0.956
	0.931				0.898				0.792								

Paramount Blvd & Puritan St

Peak Hour Turning Movement Count

ID: 20-05025-003
City: Downey

Day: Wednesday
Date: 01/22/2020



National Data & Surveying Services

Intersection Turning Movement Count

Location: Paramount Blvd & Consuelo St/Cheyenne St

City: Downey

Control: 2-Way Stop (EB/WB)

Project ID: 20-05025-004

Date: 1/22/2020

Total

NS/EW Streets:	Paramount Blvd				Paramount Blvd				Consuelo St/Cheyenne St				Consuelo St/Cheyenne St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	0 ET	1 ER	0 EU	0 WL	0 WT	1 WR	0 WU	
7:00 AM	0	225	0	0	0	224	28	0	0	0	3	0	0	0	8	0	488
7:15 AM	0	303	0	0	0	247	20	0	0	0	11	1	0	0	8	0	590
7:30 AM	0	259	0	0	0	270	35	0	0	0	13	0	0	0	2	0	579
7:45 AM	0	264	0	0	0	236	40	0	0	0	14	0	0	0	3	0	557
8:00 AM	0	314	1	0	0	224	37	0	0	0	14	0	0	0	8	0	598
8:15 AM	0	282	0	0	0	202	30	0	0	0	4	0	0	0	1	0	519
8:30 AM	0	213	0	0	0	176	30	0	0	0	7	0	0	0	1	0	427
8:45 AM	0	245	0	0	0	176	20	0	0	0	2	0	0	0	1	0	444
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	2105	1	0	0	1755	240	0	0	0	68	1	0	0	32	0	4202
	0.00%	99.95%	0.05%	0.00%	0.00%	87.97%	12.03%	0.00%	0.00%	0.00%	98.55%	1.45%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1140	1	0	0	977	132	0	0	0	52	1	0	0	21	0	2324
PEAK HR FACTOR :	0.000	0.908	0.250	0.000	0.000	0.905	0.825	0.000	0.000	0.000	0.929	0.250	0.000	0.000	0.656	0.000	0.972
	0.906				0.909				0.946				0.656				

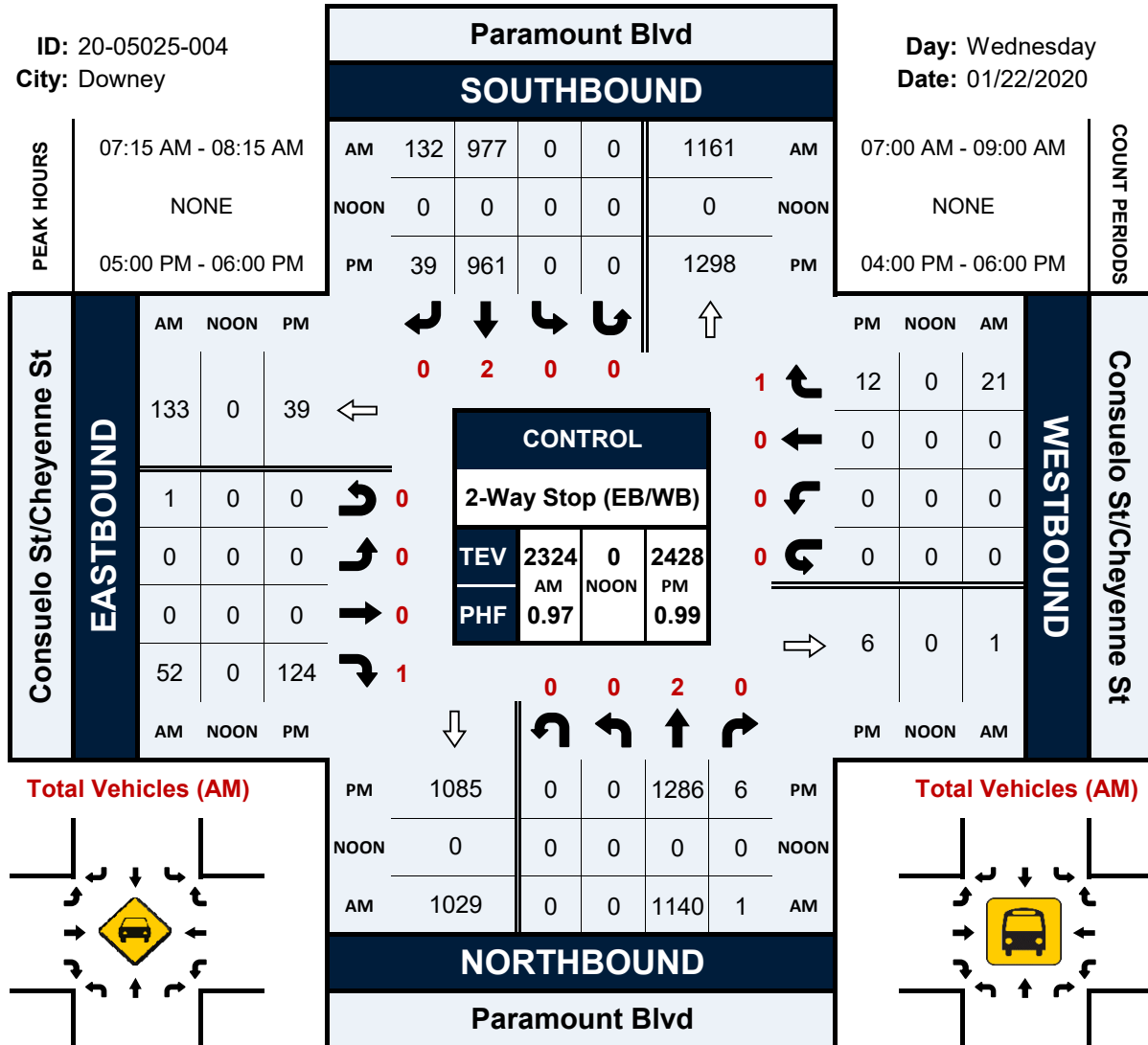
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	0 ET	1 ER	0 EU	0 WL	0 WT	1 WR	0 WU	
4:00 PM	0	283	1	0	0	199	8	0	0	0	28	0	0	0	5	0	524
4:15 PM	0	302	2	0	0	208	5	0	0	0	31	0	0	0	2	0	550
4:30 PM	0	278	1	0	0	215	10	0	0	0	50	0	0	0	3	0	557
4:45 PM	0	316	2	0	0	235	3	0	0	0	30	0	0	0	2	0	588
5:00 PM	0	308	1	0	0	226	11	0	0	0	55	0	0	0	2	0	603
5:15 PM	0	343	1	0	0	236	7	0	0	0	23	0	0	0	5	0	615
5:30 PM	0	320	2	0	0	235	10	0	0	0	27	0	0	0	1	0	595
5:45 PM	0	315	2	0	0	264	11	0	0	0	19	0	0	0	4	0	615
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	2465	12	0	0	1818	65	0	0	0	263	0	0	0	24	0	4647
	0.00%	99.52%	0.48%	0.00%	0.00%	96.55%	3.45%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1286	6	0	0	961	39	0	0	0	124	0	0	0	12	0	2428
PEAK HR FACTOR :	0.000	0.937	0.750	0.000	0.000	0.910	0.886	0.000	0.000	0.000	0.564	0.000	0.000	0.000	0.600	0.000	0.987
	0.939				0.909				0.564				0.600				

Paramount Blvd & Consuelo St/Cheyenne St

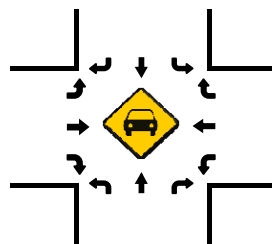
Peak Hour Turning Movement Count

ID: 20-05025-004
City: Downey

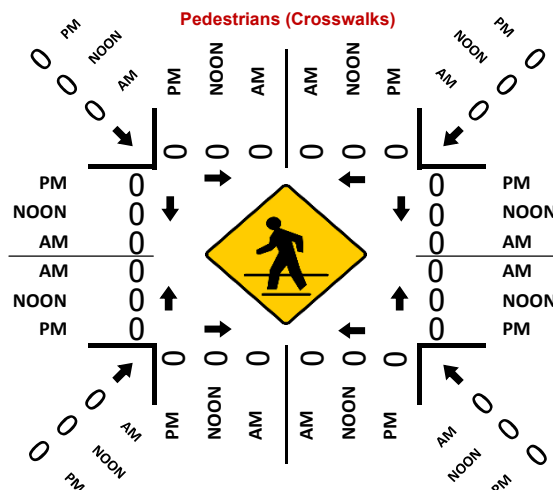
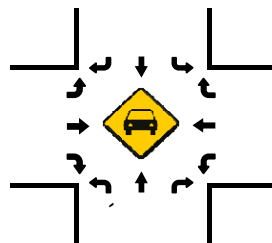
Day: Wednesday
Date: 01/22/2020



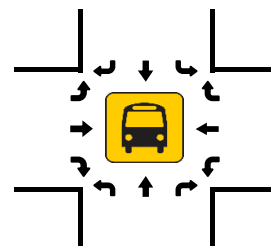
Total Vehicles (NOON)



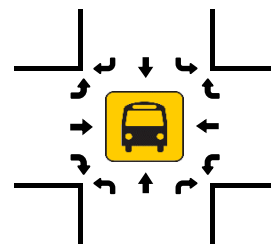
Total Vehicles (PM)



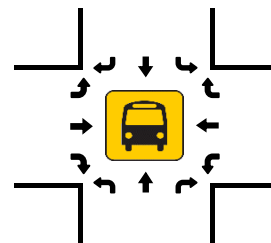
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



APPENDIX B

ICU AND LEVELS OF SERVICE EXPLANATION ICU DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF SOUTH GATE

APPENDIX C

HCM AND LEVELS OF SERVICE EXPLANATION HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF DOWNEY

LEVEL OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2010, level of service for unsignalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incidents, control, traffic, or geometric delay. Only the portion of total delay attributed to the traffic control measures, either traffic signals or stop signs, is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for unsignalized intersections are stated in terms of the average control delay per vehicle. The level of service is determined by the computed or measured control delay and is defined for each minor movement. Average control delay for any particular minor movement is a function of the service time for the approach and the degree of utilization. (Level of service is not defined for the intersection as a whole for two-way stop controlled intersections.)

Level of Service Criteria for TWSC/AWSC Intersections	
Level of Service	Average Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle.

LOS B describes operations with control delay greater than 10 and up to 15 seconds per vehicle.

LOS C describes operations with control delay greater than 15 and up to 25 seconds per vehicle.

LOS D describes operations with control delay greater than 25 and up to 35 seconds per vehicle.

LOS E describes operations with control delay greater than 35 and up to 50 seconds per vehicle.

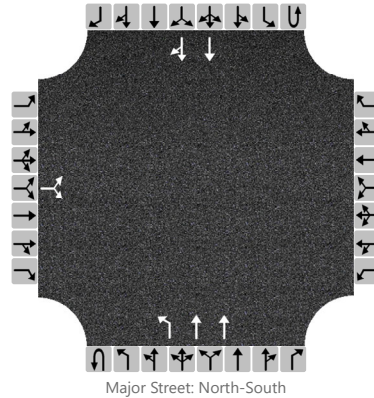
LOS F describes operations with control delay in excess of 50 seconds per vehicle. For two-way stop controlled intersections, LOS F exists when there are insufficient gaps of suitable size to allow side-street demand to safely cross through a major-street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches.

HCS7 Two-Way Stop-Control Report

General Information

Analyst	JAS	Intersection	Paramount / Puritan
Agency/Co.	Linscott, Law & Greenspan	Jurisdiction	City of Downey
Date Performed	3/4/2020	East/West Street	Puritan Street
Analysis Year	2020	North/South Street	Paramount Boulevard
Time Analyzed	Existing - AM	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Rancho Los Amigos South Campus		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		63					118	23	1016				926	4
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			68							141						
Capacity, c (veh/h)			309							355						
v/c Ratio			0.22							0.40						
95% Queue Length, Q ₉₅ (veh)			0.8							1.8						
Control Delay (s/veh)			19.9							21.7						
Level of Service, LOS			C							C						
Approach Delay (s/veh)	19.9								2.6							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

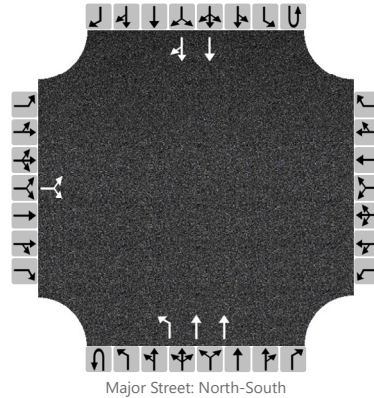
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2020
Time Analyzed	Existing - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Puritan
Jurisdiction	City of Downey
East/West Street	Puritan Street
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		52					39	62	1202				909	7
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

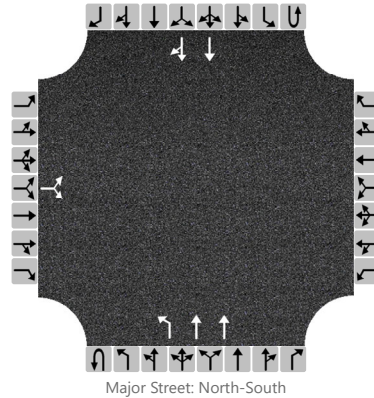
Flow Rate, v (veh/h)			57							101						
Capacity, c (veh/h)			329							505						
v/c Ratio			0.17							0.20						
95% Queue Length, Q ₉₅ (veh)			0.6							0.7						
Control Delay (s/veh)			18.2							13.9						
Level of Service, LOS			C							B						
Approach Delay (s/veh)	18.2								1.1							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

General Information

Analyst	JAS	Intersection	Paramount / Puritan
Agency/Co.	Linscott, Law & Greenspan	Jurisdiction	City of Downey
Date Performed	3/3/2020	East/West Street	Puritan Street
Analysis Year	2020	North/South Street	Paramount Boulevard
Time Analyzed	Existing + Project - AM	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Rancho Los Amigos South Campus		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		63					173	23	1016				926	4
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			68							196						
Capacity, c (veh/h)			236							345						
v/c Ratio			0.29							0.57						
95% Queue Length, Q ₉₅ (veh)			1.2							3.3						
Control Delay (s/veh)			26.3							28.3						
Level of Service, LOS			D							D						
Approach Delay (s/veh)	26.3								4.6							
Approach LOS	D															

HCS7 Two-Way Stop-Control Report

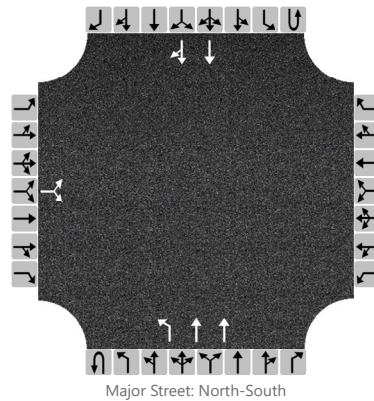
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2020
Time Analyzed	Existing + Project - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Puritan
Jurisdiction	City of Downey
East/West Street	Puritan Street
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		52					49	62	1202				909	7
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			57							111						
Capacity, c (veh/h)			319							483						
v/c Ratio			0.18							0.23						
95% Queue Length, Q ₉₅ (veh)			0.6							0.9						
Control Delay (s/veh)			18.7							14.7						
Level of Service, LOS			C							B						
Approach Delay (s/veh)	18.7								1.2							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

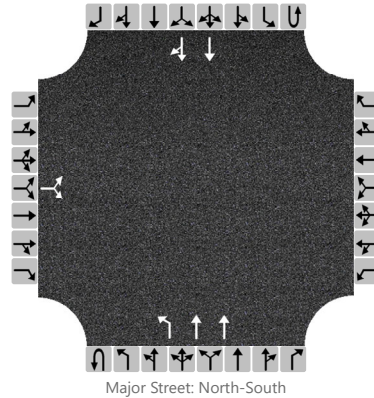
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future - AM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Puritan
Jurisdiction	City of Downey
East/West Street	Puritan Street
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		64					119	23	952				909	4
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			69							142						
Capacity, c (veh/h)			325							363						
v/c Ratio			0.21							0.39						
95% Queue Length, Q ₉₅ (veh)			0.8							1.8						
Control Delay (s/veh)			19.0							21.1						
Level of Service, LOS			C							C						
Approach Delay (s/veh)	19.0								2.7							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

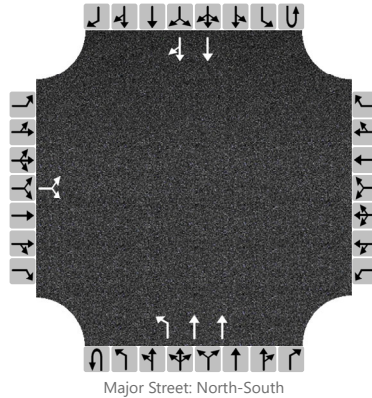
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Puritan
Jurisdiction	City of Downey
East/West Street	Puritan Street
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		53					39	63	1190				845	7
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

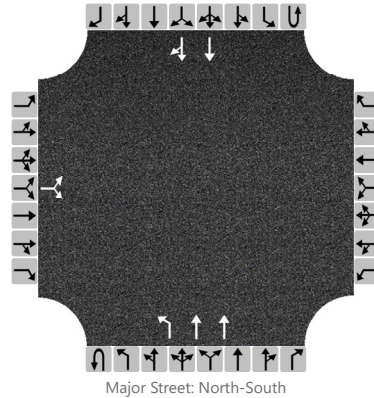
Flow Rate, v (veh/h)			58							102						
Capacity, c (veh/h)			360							549						
v/c Ratio			0.16							0.19						
95% Queue Length, Q ₉₅ (veh)			0.6							0.7						
Control Delay (s/veh)			16.9							13.1						
Level of Service, LOS			C							B						
Approach Delay (s/veh)	16.9								1.0							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

General Information

Analyst	JAS	Intersection	Paramount / Puritan
Agency/Co.	Linscott, Law & Greenspan	Jurisdiction	City of Downey
Date Performed	3/4/2020	East/West Street	Puritan Street
Analysis Year	2021	North/South Street	Paramount Boulevard
Time Analyzed	Future + Project - AM	Peak Hour Factor	1.00
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Rancho Los Amigos South Campus		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		64					174	23	952				909	4
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			69							197						
Capacity, c (veh/h)			253							354						
v/c Ratio			0.27							0.56						
95% Queue Length, Q ₉₅ (veh)			1.1							3.2						
Control Delay (s/veh)			24.4							27.2						
Level of Service, LOS			C							D						
Approach Delay (s/veh)	24.4								4.7							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

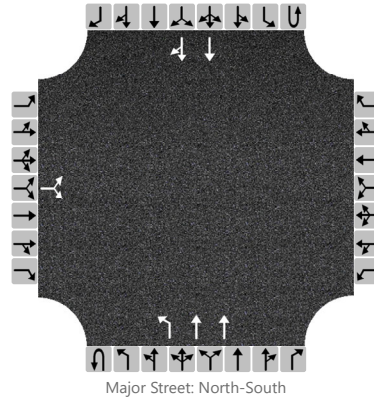
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future + Project - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Puritan
Jurisdiction	City of Downey
East/West Street	Puritan Street
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	0	2	0
Configuration			LR							L	T				T	TR
Volume, V (veh/h)		5		53					49	63	1190				845	7
Percent Heavy Vehicles (%)		3		3					3	3						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9					6.4	4.1						
Critical Headway (sec)		6.86		6.96					6.46	4.16						
Base Follow-Up Headway (sec)		3.5		3.3					2.5	2.2						
Follow-Up Headway (sec)		3.53		3.33					2.53	2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			58							112						
Capacity, c (veh/h)			350							526						
v/c Ratio			0.17							0.21						
95% Queue Length, Q ₉₅ (veh)			0.6							0.8						
Control Delay (s/veh)			17.3							13.7						
Level of Service, LOS			C							B						
Approach Delay (s/veh)	17.3								1.2							
Approach LOS	C															

HCS7 Two-Way Stop-Control Report

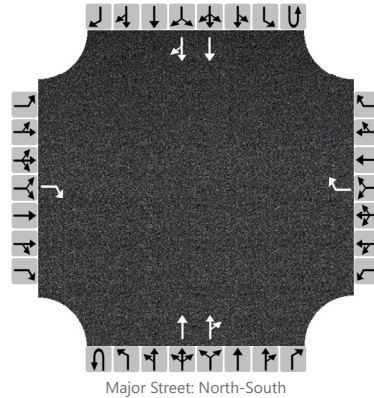
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2020
Time Analyzed	Existing - AM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				52				21			1140	1			977	132
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				52				21								
Capacity, c (veh/h)				473				462								
v/c Ratio				0.11				0.05								
95% Queue Length, Q ₉₅ (veh)				0.4				0.1								
Control Delay (s/veh)				13.5				13.2								
Level of Service, LOS				B				B								
Approach Delay (s/veh)	13.5				13.2											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

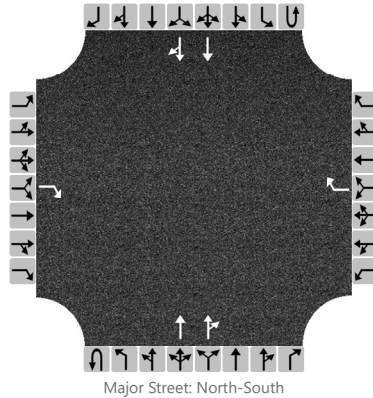
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2020
Time Analyzed	Existing - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				124				12			1286	6			961	39
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				124				12								
Capacity, c (veh/h)				514				412								
v/c Ratio				0.24				0.03								
95% Queue Length, Q ₉₅ (veh)				0.9				0.1								
Control Delay (s/veh)				14.2				14.0								
Level of Service, LOS				B				B								
Approach Delay (s/veh)	14.2				14.0											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

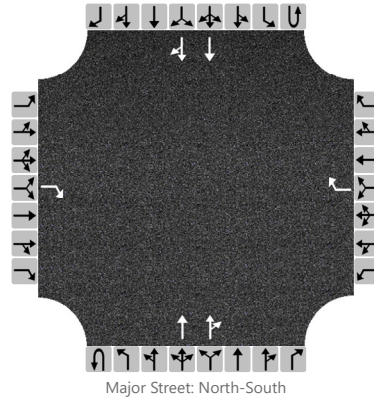
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2020
Time Analyzed	Existing + Project - AM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				74				21			1195	1			977	187
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				74				21								
Capacity, c (veh/h)				454				443								
v/c Ratio				0.16				0.05								
95% Queue Length, Q ₉₅ (veh)				0.6				0.1								
Control Delay (s/veh)				14.5				13.5								
Level of Service, LOS				B				B								
Approach Delay (s/veh)	14.5				13.5											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

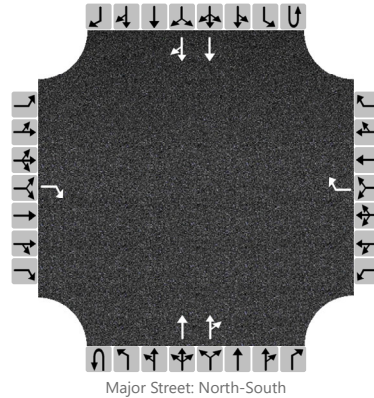
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2020
Time Analyzed	Existing + Project - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				270				12			1296	6			961	49
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				270				12								
Capacity, c (veh/h)				510				409								
v/c Ratio				0.53				0.03								
95% Queue Length, Q ₉₅ (veh)				3.1				0.1								
Control Delay (s/veh)				19.7				14.1								
Level of Service, LOS				C				B								
Approach Delay (s/veh)	19.7				14.1											
Approach LOS	C				B											

HCS7 Two-Way Stop-Control Report

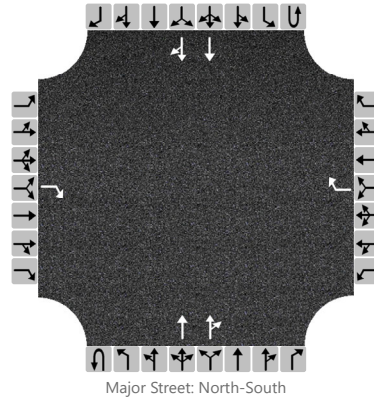
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future - AM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				53				21			1077	1			961	133
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				53				21								
Capacity, c (veh/h)				479				484								
v/c Ratio				0.11				0.04								
95% Queue Length, Q ₉₅ (veh)				0.4				0.1								
Control Delay (s/veh)				13.5				12.8								
Level of Service, LOS				B				B								
Approach Delay (s/veh)	13.5				12.8											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

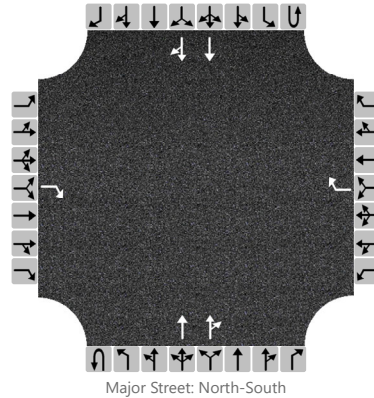
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				125				12			1275	6			898	39
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				125				12								
Capacity, c (veh/h)				539				416								
v/c Ratio				0.23				0.03								
95% Queue Length, Q ₉₅ (veh)				0.9				0.1								
Control Delay (s/veh)				13.7				13.9								
Level of Service, LOS				B				B								
Approach Delay (s/veh)	13.7				13.9											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

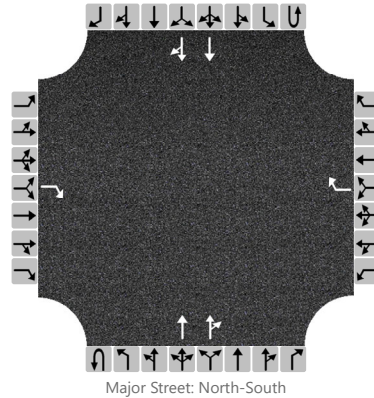
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future + Project - AM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				75				21			1132	1			961	188
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				75				21								
Capacity, c (veh/h)				459				465								
v/c Ratio				0.16				0.05								
95% Queue Length, Q ₉₅ (veh)				0.6				0.1								
Control Delay (s/veh)				14.4				13.1								
Level of Service, LOS				B				B								
Approach Delay (s/veh)	14.4				13.1											
Approach LOS	B				B											

HCS7 Two-Way Stop-Control Report

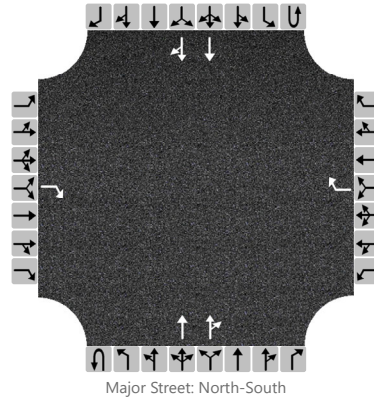
General Information

Analyst	JAS
Agency/Co.	Linscott, Law & Greenspan
Date Performed	3/4/2020
Analysis Year	2021
Time Analyzed	Future + Project - PM
Intersection Orientation	North-South
Project Description	Rancho Los Amigos South Campus

Site Information

Intersection	Paramount / Consuelo
Jurisdiction	City of Downey
East/West Street	Consuelo St.-Cheyenne St.
North/South Street	Paramount Boulevard
Peak Hour Factor	1.00
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	1	0	0	2	0	0	0	2	0
Configuration				R				R			T	TR			T	TR
Volume, V (veh/h)				271				12			1285	6			898	49
Percent Heavy Vehicles (%)				3				3								
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9								
Critical Headway (sec)				6.96				6.96								
Base Follow-Up Headway (sec)				3.3				3.3								
Follow-Up Headway (sec)				3.33				3.33								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				271				12								
Capacity, c (veh/h)				534				412								
v/c Ratio				0.51				0.03								
95% Queue Length, Q ₉₅ (veh)				2.8				0.1								
Control Delay (s/veh)				18.5				14.0								
Level of Service, LOS				C				B								
Approach Delay (s/veh)	18.5				14.0											
Approach LOS	C				B											

INTERSECTION CAPACITY UTILIZATION (ICU) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Levels of Service concept denotes any one of a number of differing combinations of operating conditions which may occur as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 *Highway Capacity Manual*, published by the Transportation Research Board. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

The Intersection Capacity Utilization (ICU) method of intersection capacity analysis has been used in our studies. It directly relates traffic demand and available capacity for key intersection movements, regardless of present signal timing. The capacity per hour of green time for each approach is calculated based on the methods of the *Highway Capacity Manual*. The proportion of total signal time needed by each key movement is determined and compared to the total time available (100 percent of the hour). The result of summing the requirements of the conflicting key movements plus an allowance for clearance times is expressed as a decimal fraction. Conflicting key traffic movements are those opposing movements whose combined green time requirements are greatest.

The resulting ICU represents the proportion of the total hour required to accommodate intersection demand volumes if the key conflicting traffic movements are operating at capacity. Other movements may be operating near capacity, or may be operating at significantly better levels. The ICU may be translated to a Level of Service as tabulated below.

The Levels of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding ICU and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Intersection Capacity Utilization Characteristics		
Level of Service	Load Factor	Equivalent ICU
A	0.0	0.00 - 0.60
B	0.0 - 0.1	0.61 - 0.70
C	0.1 - 0.3	0.71 - 0.80
D	0.3 - 0.7	0.81 - 0.90
E	0.7 - 1.0	0.91 - 1.00
F	Not Applicable	Not Applicable

SERVICE LEVEL A

There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B

This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C

At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more than one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D

This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E

This represents near capacity and capacity operation. At capacity (ICU = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F

Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Gardendale Street
 Project: 5-17-0354-1 / Rancho Los Amigos South Campus
 File: ICU-20

Paramount Boulevard @ Gardendale Street
 Peak hr: AM
 Annual Growth: 1%

Date: 04/07/2020
 Date of Count: 2017
 Projection Year: 2021

CITY OF SOUTH GATE

2017 EXIST. TRAFFIC				2017 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	161	1600	0.101 *	91	252	1600	0.158 *	0	167	1600	0.105 *	91	258	1600	0.162 *
Nb Thru	942	3200	0.294	46	988	3200	0.309	-37	943	3200	0.295	46	989	3200	0.309
Nb Right	91	1600	0.057	0	91	1600	0.057	1	96	1600	0.060	0	96	1600	0.060
Sb Left	114	1600	0.071	0	114	1600	0.071	-15	104	1600	0.065	0	104	1600	0.065
Sb Thru	900	3200	0.281 *	19	919	3200	0.287 *	-11	925	3200	0.289 *	19	944	3200	0.295 *
Sb Right	91	1600	0.057	0	91	1600	0.057	0	95	1600	0.059	0	95	1600	0.059
Eb Left	80	1600	0.050	0	80	1600	0.050 *	0	83	1600	0.052	0	83	1600	0.052 *
Eb Thru	434	3200	0.158 *	16	450	3200	0.163	5	456	3200	0.166 *	16	472	3200	0.171
Eb Right	71	0	-	0	71	0	-	0	74	0	-	0	74	0	-
Wb Left	150	1600	0.094 *	0	150	1600	0.094	1	157	1600	0.098 *	0	157	1600	0.098
Wb Thru	638	3200	0.199	119	757	3200	0.237 *	2	666	3200	0.208	119	785	3200	0.245 *
Wb Right	163	1600	0.102	0	163	1600	0.102	-37	133	1600	0.083	0	133	1600	0.083
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.733			0.831			0.758			0.854			D		
LOS	C			D			C			D			D		

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Gardendale Street
 Project: 5-17-0354-1 / Rancho Los Amigos South Campus
 File: ICU-20

Paramount Boulevard @ Gardendale Street
 Peak hr: PM
 Annual Growth: 1%

Date: 04/07/2020
 Date of Count: 2017
 Projection Year: 2021

CITY OF SOUTH GATE

2017 EXIST. TRAFFIC				2017 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	79	1600	0.049	15	94	1600	0.059	5	87	1600	0.054	15	102	1600	0.064 *
Nb Thru	1046	3200	0.327 *	8	1054	3200	0.329 *	-10	1078	3200	0.337 *	8	1086	3200	0.339
Nb Right	113	1600	0.071	0	113	1600	0.071	2	120	1600	0.075	0	120	1600	0.075
Sb Left	118	1600	0.074 *	0	118	1600	0.074 *	-38	85	1600	0.053 *	0	85	1600	0.053
Sb Thru	946	3200	0.296	110	1056	3200	0.330	-35	949	3200	0.297	110	1059	3200	0.331 *
Sb Right	85	1600	0.053	0	85	1600	0.053	0	88	1600	0.055	0	88	1600	0.055
Eb Left	87	1600	0.054	0	87	1600	0.054	0	90	1600	0.057	0	90	1600	0.057
Eb Thru	459	3200	0.169 *	95	554	3200	0.199 *	5	482	3200	0.179 *	95	577	3200	0.208 *
Eb Right	83	0	-	0	83	0	-	3	89	0	-	0	89	0	-
Wb Left	106	1600	0.066 *	0	106	1600	0.066 *	2	112	1600	0.070 *	0	112	1600	0.070 *
Wb Thru	374	3200	0.117	20	394	3200	0.123	9	398	3200	0.124	20	418	3200	0.131
Wb Right	127	1600	0.079	0	127	1600	0.079	-14	118	1600	0.074	0	118	1600	0.074
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.736			0.768			0.739			0.773			C		
LOS	C			C			C			C			C		

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Atlantic Avenue
 E-W St: Firestone Boulevard
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Atlantic / Firestone

Atlantic Avenue @ Firestone Boulevard

Peak hr: AM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

2020 EXIST. TRAFFIC					2020 W/PROJECT SITE TRAFFIC					2021 WITHOUT PROJECT					2021 W/PROJECT									
Movement	Volume	Capacity	2	V/C Ratio	Added Volume	Total Volume	Capacity	2	V/C Ratio	Added Volume	Total Volume	Capacity	2	V/C Ratio	Added Volume	Total Volume	Capacity	2	V/C Ratio					
Nb Left	160	1600	0.100		4	164	1600	0.103		-2	160	1600	0.100		4	164	1600	0.102						
Nb Thru	732	4800	0.166 *		3	735	4800	0.167 *		-3	736	4800	0.167 *		3	739	4800	0.168 *						
Nb Right	65	0	-		0	65	0	-		0	66	0	-		0	66	0	-						
Sb Left	729	2880	0.253 *		0	729	2880	0.253 *		0	736	2880	0.256 *		0	736	2880	0.256 *						
Sb Thru	613	3200	0.192		22	635	3200	0.198		-7	612	3200	0.191		22	634	3200	0.198						
Sb Right	98	1600	0.061		0	98	1600	0.061		0	99	1600	0.062		0	99	1600	0.062						
Eb Left	197	2880	0.068 *		0	197	2880	0.068		0	199	2880	0.069 *		0	199	2880	0.069						
Eb Thru	1305	4800	0.294		0	1305	4800	0.301 *		3	1321	4800	0.297		0	1321	4800	0.304 *						
Eb Right	107	0	-		33	140	0	-		-4	104	0	-		33	137	0	-						
Wb Left	60	1600	0.038		0	60	1600	0.038 *		0	61	1600	0.038		0	61	1600	0.038 *						
Wb Thru	1074	4800	0.266 *		0	1074	4800	0.266		4	1089	4800	0.270 *		0	1089	4800	0.270						
Wb Right	205	0	-		0	205	0	-		0	207	0	-		0	207	0	-						
Yellow Allowance:																								
					0.100 *					0.100 *					0.100 *									
ICU					0.854					0.858					0.862					0.865				
LOS					D					D					D					D				

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Atlantic Avenue
 E-W St: Firestone Boulevard
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Atlantic / Firestone

Atlantic Avenue @ Firestone Boulevard
 Peak hr: PM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

2020 EXIST. TRAFFIC				2020 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	149	1600	0.093	29	178	1600	0.111	-4	146	1600	0.092	29	175	1600	0.110
Nb Thru	526	4800	0.124 *	19	545	4800	0.128 *	-5	526	4800	0.124 *	19	545	4800	0.128 *
Nb Right	68	0	-	0	68	0	-	0	69	0	-	0	69	0	-
Sb Left	662	2880	0.230 *	0	662	2880	0.230 *	0	669	2880	0.232 *	0	669	2880	0.232 *
Sb Thru	660	3200	0.206	4	664	3200	0.208	-2	665	3200	0.208	4	669	3200	0.209
Sb Right	140	1600	0.088	0	140	1600	0.088	0	141	1600	0.088	0	141	1600	0.088
Eb Left	156	2880	0.054	0	156	2880	0.054	0	158	2880	0.055	0	158	2880	0.055
Eb Thru	1266	4800	0.289 *	0	1266	4800	0.290 *	5	1284	4800	0.292 *	0	1284	4800	0.294 *
Eb Right	119	0	-	6	125	0	-	-1	119	0	-	6	125	0	-
Wb Left	94	1600	0.059 *	0	94	1600	0.059 *	0	95	1600	0.059 *	0	95	1600	0.059 *
Wb Thru	1010	4800	0.270	0	1010	4800	0.270	4	1024	4800	0.274	0	1024	4800	0.274
Wb Right	288	0	-	0	288	0	-	0	291	0	-	0	291	0	-
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.801			0.806			0.808			0.813			D		
LOS	D			D			D			D			D		

* Key conflicting movement as a part of ICU
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INTERSECTION CAPACITY UTILIZATION

N-S St: Garfield Avenue
 E-W St: Firestone Boulevard
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Garfield / Firestone

Garfield Avenue @ Firestone Boulevard
 Peak hr: AM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

CITY OF SOUTH GATE

Movement	2020 EXIST. TRAFFIC			2020 W/PROJECT SITE TRAFFIC			2021 WITHOUT PROJECT			2021 W/PROJECT		
	1	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Ratio
Nb Left	698	2880	0.242 *	0	698	2880	0.242 *	0	705	2880	0.245 *	0.245 *
Nb Thru	834	4800	0.181	0	834	4800	0.181	26	868	4800	0.189	0.189
Nb Right	33	0	-	0	33	0	-	6	39	0	-	-
Sb Left	122	2880	0.042	22	144	2880	0.050	0	123	2880	0.043	0.050
Sb Thru	517	3200	0.162 *	0	517	3200	0.162 *	7	529	3200	0.165 *	0.165 *
Sb Right [3]	577	1600	0.121	0	577	1600	0.121	0	583	1600	0.122	0.122
Eb Left	690	2880	0.240 *	0	690	2880	0.240 *	0	697	2880	0.242 *	0.242 *
Eb Thru	710	4800	0.148	0	710	4800	0.148	8	725	4800	0.151	0.151
Eb Right [3]	446	1600	0.036	0	446	1600	0.036	0	450	1600	0.037	0.037
Wb Left	60	2880	0.021	0	60	2880	0.021	2	63	2880	0.022	0.022
Wb Thru	717	4800	0.149 *	0	717	4800	0.149 *	31	755	4800	0.157 *	0.157 *
Wb Right [3]	150	1600	0.051	3	153	1600	0.046	0	155	1600	0.046	0.046
Yellow Allowance:	0.100 *			0.100 *			0.100 *			0.100 *		
ICU	0.893			0.893			0.909			0.909		
LOS	D			D			E			E		

* Key conflicting movement as a part of ICU

1 Counts conducted by National Data & Surveying Services

2 Capacity expressed in veh/hour of green

3 The southbound right-turn lane has an overlapping phase with the eastbound left-turn phase. The eastbound right-turn lane has an overlapping phase with the northbound left-turn phase. The westbound right-turn lane has an overlapping phase with the southbound left-turn phase.

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INTERSECTION CAPACITY UTILIZATION

N-S St: Garfield Avenue
 E-W St: Firestone Boulevard
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Garfield / Firestone

Garfield Avenue @ Firestone Boulevard
 Peak hr: PM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

CITY OF SOUTH GATE

2020 EXIST. TRAFFIC				2020 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	500	2880	0.174 *	0	500	2880	0.174 *	0	505	2880	0.175 *	0	505	2880	0.175 *
Nb Thru	763	4800	0.172	0	763	4800	0.172	14	785	4800	0.177	0	785	4800	0.177
Nb Right	61	0	-	0	61	0	-	3	65	0	-	0	65	0	-
Sb Left	165	2880	0.057	4	169	2880	0.059	0	167	2880	0.058	4	171	2880	0.059
Sb Thru	739	3200	0.231 *	0	739	3200	0.231 *	24	770	3200	0.241 *	0	770	3200	0.241 *
Sb Right [3]	514	1600	0.120	0	514	1600	0.120	0	519	1600	0.121	0	519	1600	0.121
Eb Left	580	2880	0.201 *	0	580	2880	0.201 *	0	586	2880	0.203 *	0	586	2880	0.203 *
Eb Thru	1263	4800	0.263	0	1263	4800	0.263	31	1307	4800	0.272	0	1307	4800	0.272
Eb Right [3]	559	1600	0.176	0	559	1600	0.176	0	565	1600	0.178	0	565	1600	0.178
Wb Left	97	2880	0.034	0	97	2880	0.034	6	104	2880	0.036	0	104	2880	0.036
Wb Thru	1014	4800	0.211 *	0	1014	4800	0.211 *	17	1041	4800	0.217 *	0	1041	4800	0.217 *
Wb Right [3]	195	1600	0.065	19	214	1600	0.075	0	197	1600	0.065	19	216	1600	0.076
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.917			0.917			0.917			0.936			0.936		
LOS	E			E			E			E			E		

* Key conflicting movement as a part of ICU

1 Counts conducted by National Data & Surveying Services

2 Capacity expressed in veh/hour of green

3 The southbound right-turn lane has an overlapping phase with the eastbound left-turn phase. The eastbound right-turn lane has an overlapping phase with the northbound left-turn phase. The westbound right-turn lane has an overlapping phase with the southbound left-turn phase.

APPENDIX D

ICU AND LEVELS OF SERVICE EXPLANATION ICU DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF DOWNEY

INTERSECTION CAPACITY UTILIZATION (ICU) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Levels of Service concept denotes any one of a number of differing combinations of operating conditions which may occur as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 *Highway Capacity Manual*, published by the Transportation Research Board. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

The Intersection Capacity Utilization (ICU) method of intersection capacity analysis has been used in our studies. It directly relates traffic demand and available capacity for key intersection movements, regardless of present signal timing. The capacity per hour of green time for each approach is calculated based on the methods of the *Highway Capacity Manual*. The proportion of total signal time needed by each key movement is determined and compared to the total time available (100 percent of the hour). The result of summing the requirements of the conflicting key movements plus an allowance for clearance times is expressed as a decimal fraction. Conflicting key traffic movements are those opposing movements whose combined green time requirements are greatest.

The resulting ICU represents the proportion of the total hour required to accommodate intersection demand volumes if the key conflicting traffic movements are operating at capacity. Other movements may be operating near capacity, or may be operating at significantly better levels. The ICU may be translated to a Level of Service as tabulated below.

The Levels of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding ICU and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Intersection Capacity Utilization Characteristics		
Level of Service	Load Factor	Equivalent ICU
A	0.0	0.00 - 0.60
B	0.0 - 0.1	0.61 - 0.70
C	0.1 - 0.3	0.71 - 0.80
D	0.3 - 0.7	0.81 - 0.90
E	0.7 - 1.0	0.91 - 1.00
F	Not Applicable	Not Applicable

SERVICE LEVEL A

There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B

This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C

At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more than one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D

This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E

This represents near capacity and capacity operation. At capacity (ICU = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F

Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Gardendale Street
 Project: 5-17-0354-1 / Rancho Los Amigos South Campus
 File: ICU-20

Paramount Boulevard @ Gardendale Street
 Peak hr: AM
 Annual Growth: 1%

Date: 03/03/2020
 Date of Count: 2017
 Projection Year: 2021

CITY OF DOWNEY

2017 EXIST. TRAFFIC				2017 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT							
Movement	Volume	Capacity	V/C	Added	Total	Volume	Capacity	Ratio	Added	Total	Volume	Capacity	Ratio	Added	Total	Volume	Capacity	Ratio	
Nb Left	161	1600	0.101 *	91	252	1600	0.158 *		0	167	1600	0.105 *		91	258	1600	0.162 *		
Nb Thru	942	3200	0.294	46	988	3200	0.309		-37	943	3200	0.295		46	989	3200	0.309		
Nb Right	91	1600	0.057	0	91	1600	0.057		1	96	1600	0.060		0	96	1600	0.060		
Sb Left	114	1600	0.071	0	114	1600	0.071		-15	104	1600	0.065		0	104	1600	0.065		
Sb Thru	900	3200	0.281 *	19	919	3200	0.287 *		-11	925	3200	0.289 *		19	944	3200	0.295 *		
Sb Right	91	1600	0.057	0	91	1600	0.057		0	95	1600	0.059		0	95	1600	0.059		
Eb Left	80	1600	0.050	0	80	1600	0.050 *		0	83	1600	0.052		0	83	1600	0.052 *		
Eb Thru	434	3200	0.158 *	16	450	3200	0.163		5	456	3200	0.166 *		16	472	3200	0.171		
Eb Right	71	0	-	0	71	0	-		0	74	0	-		0	74	0	-		
Wb Left	150	1600	0.094 *	0	150	1600	0.094		1	157	1600	0.098 *		0	157	1600	0.098		
Wb Thru	638	3200	0.199	119	757	3200	0.237 *		2	666	3200	0.208		119	785	3200	0.245 *		
Wb Right	163	1600	0.102	0	163	1600	0.102		-37	133	1600	0.083		0	133	1600	0.083		
Yellow Allowance:				0.100 *				0.100 *				0.100 *				0.100 *			
ICU	0.733			0.831			0.758									0.854			
LOS	C			D			C									D			

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Gardendale Street
 Project: 5-17-0354-1 / Rancho Los Amigos South Campus
 File: ICU-20

Paramount Boulevard @ Gardendale Street
 Peak hr: PM
 Annual Growth: 1%

Date: 03/03/2020
 Date of Count: 2017
 Projection Year: 2021

CITY OF DOWNEY

2017 EXIST. TRAFFIC				2017 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	79	1600	0.049	15	94	1600	0.059	5	87	1600	0.054	15	102	1600	0.064 *
Nb Thru	1046	3200	0.327 *	8	1054	3200	0.329 *	-10	1078	3200	0.337 *	8	1086	3200	0.339
Nb Right	113	1600	0.071	0	113	1600	0.071	2	120	1600	0.075	0	120	1600	0.075
Sb Left	118	1600	0.074 *	0	118	1600	0.074 *	-38	85	1600	0.053 *	0	85	1600	0.053
Sb Thru	946	3200	0.296	110	1056	3200	0.330	-35	949	3200	0.297	110	1059	3200	0.331 *
Sb Right	85	1600	0.053	0	85	1600	0.053	0	88	1600	0.055	0	88	1600	0.055
Eb Left	87	1600	0.054	0	87	1600	0.054	0	90	1600	0.057	0	90	1600	0.057
Eb Thru	459	3200	0.169 *	95	554	3200	0.199 *	5	482	3200	0.179 *	95	577	3200	0.208 *
Eb Right	83	0	-	0	83	0	-	3	89	0	-	0	89	0	-
Wb Left	106	1600	0.066 *	0	106	1600	0.066 *	2	112	1600	0.070 *	0	112	1600	0.070 *
Wb Thru	374	3200	0.117	20	394	3200	0.123	9	398	3200	0.124	20	418	3200	0.131
Wb Right	127	1600	0.079	0	127	1600	0.079	-14	118	1600	0.074	0	118	1600	0.074
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.736			0.768			0.739			0.773			C		
LOS	C			C			C			C			C		

* Key conflicting movement as a part of ICU
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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Puritan Street
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Paramount/Puritan

Paramount Boulevard @ Puritan Street
 Peak hr: AM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

CITY OF DOWNEY

2020 EXIST. TRAFFIC					2020 W/PROJECT SITE TRAFFIC					2021 WITHOUT PROJECT					2021 W/PROJECT				
Movement	Volume	1	2	V/C	Added	Total	Volume	Capacity	Ratio	Added	Total	Volume	Capacity	Ratio	Added	Total	Volume	Capacity	Ratio
Nb Left	141	0	0	0.088 *	55	196	1600	0.123 *	0	142	1600	0.089 *	55	197	1600	0.123 *			
Nb Thru	1016	0	0	0.318	0	1016	3200	0.318	-74	952	3200	0.298	0	952	3200	0.298			
Nb Right	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-			
Sb Left	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000			
Sb Thru	926	0	0	0.291 *	0	926	3200	0.291 *	-26	909	3200	0.285 *	0	909	3200	0.285 *			
Sb Right	4	0	0	-	0	4	0	-	0	4	0	-	0	4	0	-			
Eb Left	5	0	0	0.003	0	5	0	0.003	0	5	0	0.003	0	5	0	0.003			
Eb Thru	0	0	0	0.043 *	0	0	1600	0.043 *	0	0	1600	0.043 *	0	0	1600	0.043 *			
Eb Right	63	0	0	-	0	63	0	-	0	64	0	-	0	64	0	-			
Wb Left	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *			
Wb Thru	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000			
Wb Right	0	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-			
Yellow Allowance:					0.100 *					0.100 *					0.100 *				
ICU	0.521				0.556					0.517					0.552				
LOS	A				A					A					A				

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 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Puritan Street
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Paramount/Puritan

Paramount Boulevard @ Puritan Street
 Peak hr: PM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

CITY OF DOWNEY

2020 EXIST. TRAFFIC				2020 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	101	1600	0.063	10	111	1600	0.069	0	102	1600	0.064	10	112	1600	0.070
Nb Thru	1202	3200	0.376 *	0	1202	3200	0.376 *	-24	1190	3200	0.372 *	0	1190	3200	0.372 *
Nb Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Sb Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *
Sb Thru	909	3200	0.286	0	909	3200	0.286	-73	845	3200	0.266	0	845	3200	0.266
Sb Right	7	0	-	0	7	0	-	0	7	0	-	0	7	0	-
Eb Left	5	0	0.003	0	5	0	0.003	0	5	0	0.003	0	5	0	0.003
Eb Thru	0	1600	0.036 *	0	0	1600	0.036 *	0	0	1600	0.036 *	0	0	1600	0.036 *
Eb Right	52	0	-	0	52	0	-	0	53	0	-	0	53	0	-
Wb Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *
Wb Thru	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0.000
Wb Right	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.511			0.511			0.511			0.508			0.508		
LOS	A			A			A			A			A		

* Key conflicting movement as a part of ICU
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 2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Consuelo Street-Cheyenne Street
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Paramount/Consuelo

Paramount Boulevard @ Consuelo Street-Cheyenne Street
 Peak hr: AM
 Annual Growth: 1%

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

CITY OF DOWNEY

2020 EXIST. TRAFFIC					2020 W/PROJECT SITE TRAFFIC					2021 WITHOUT PROJECT					2021 W/PROJECT									
Movement	Volume	1	2	V/C	Added	Total	Volume	Capacity	Ratio	Added	Total	Volume	Capacity	Ratio	Added	Total	Volume	Capacity	Ratio					
Nb Left	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000					
Nb Thru	1140	3200	0.357	*	55	1195	3200	0.374	*	-74	1077	3200	0.337		55	1132	3200	0.354						
Nb Right	1	0	-		0	1	0	-		0	1	0	-		0	1	0	-						
Sb Left	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000					
Sb Thru	977	3200	0.347		0	977	3200	0.364		-26	961	3200	0.342	*	0	961	3200	0.359	*					
Sb Right	132	0	-		55	187	0	-		0	133	0	-		55	188	0	-						
Eb Left	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000					
Eb Thru	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000					
Eb Right	52	1600	0.033	*	22	74	1600	0.046	*	0	53	1600	0.033	*	22	75	1600	0.047	*					
Wb Left	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000					
Wb Thru	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0	0.000					
Wb Right	21	1600	0.013		0	21	1600	0.013		0	21	1600	0.013		0	21	1600	0.013						
Yellow Allowance:																								
					0.100					0.100					0.100									
ICU					0.489					0.520					0.475					0.506				
LOS					A					A					A					A				

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
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INTERSECTION CAPACITY UTILIZATION

Paramount Boulevard @ Consuelo Street-Cheyenne Street

Date: 03/04/2020
 Date of Count: 2020
 Projection Year: 2021

N-S St: Paramount Boulevard
 E-W St: Consuelo Street-Cheyenne Street
 Project: 5-17-0354-1 Rancho Los Amigos South Campus
 File: Paramount/Consuelo

CITY OF DOWNEY

2020 EXIST. TRAFFIC				2020 W/PROJECT SITE TRAFFIC				2021 WITHOUT PROJECT				2021 W/PROJECT			
Movement	Volume	Capacity	Ratio	1	2	V/C	Ratio	Added Volume	Total Volume	Capacity	Ratio	Added Volume	Total Volume	Capacity	Ratio
Nb Left	0	0	0.000	0	0	0.000	0.000	0	0	0	0.000	0	0	0	0.000
Nb Thru	1286	3200	0.404 *	10	1296	3200	0.407 *	-24	1275	3200	0.400 *	10	1285	3200	0.403 *
Nb Right	6	0	-	0	6	0	-	0	6	0	-	0	6	0	-
Sb Left	0	0	0.000 *	0	0	0.000 *	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *
Sb Thru	961	3200	0.313	0	961	3200	0.316	-73	898	3200	0.293	0	898	3200	0.296
Sb Right	39	0	-	10	49	0	-	0	39	0	-	10	49	0	-
Eb Left	0	0	0.000	0	0	0.000	0.000	0	0	0	0.000	0	0	0	0.000
Eb Thru	0	0	0.000	0	0	0.000	0.000	0	0	0	0.000	0	0	0	0.000
Eb Right	124	1600	0.078 *	146	270	1600	0.169 *	0	125	1600	0.078 *	146	271	1600	0.170 *
Wb Left	0	0	0.000 *	0	0	0.000 *	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *
Wb Thru	0	0	0.000	0	0	0.000	0.000	0	0	0	0.000	0	0	0	0.000
Wb Right	12	1600	0.008	0	12	1600	0.008	0	12	1600	0.008	0	12	1600	0.008
Yellow Allowance:				0.100 *				0.100 *				0.100 *			
ICU	0.581			0.676			0.579			0.673			0.673		
LOS	A			B			A			B			B		

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green

APPENDIX E

ICU AND LEVELS OF SERVICE EXPLANATION ICU DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF PARAMOUNT

INTERSECTION CAPACITY UTILIZATION (ICU) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Levels of Service concept denotes any one of a number of differing combinations of operating conditions which may occur as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 *Highway Capacity Manual*, published by the Transportation Research Board. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

The Intersection Capacity Utilization (ICU) method of intersection capacity analysis has been used in our studies. It directly relates traffic demand and available capacity for key intersection movements, regardless of present signal timing. The capacity per hour of green time for each approach is calculated based on the methods of the *Highway Capacity Manual*. The proportion of total signal time needed by each key movement is determined and compared to the total time available (100 percent of the hour). The result of summing the requirements of the conflicting key movements plus an allowance for clearance times is expressed as a decimal fraction. Conflicting key traffic movements are those opposing movements whose combined green time requirements are greatest.

The resulting ICU represents the proportion of the total hour required to accommodate intersection demand volumes if the key conflicting traffic movements are operating at capacity. Other movements may be operating near capacity, or may be operating at significantly better levels. The ICU may be translated to a Level of Service as tabulated below.

The Levels of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding ICU and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Intersection Capacity Utilization Characteristics		
Level of Service	Load Factor	Equivalent ICU
A	0.0	0.00 - 0.60
B	0.0 - 0.1	0.61 - 0.70
C	0.1 - 0.3	0.71 - 0.80
D	0.3 - 0.7	0.81 - 0.90
E	0.7 - 1.0	0.91 - 1.00
F	Not Applicable	Not Applicable

SERVICE LEVEL A

There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B

This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C

At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more than one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D

This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E

This represents near capacity and capacity operation. At capacity (ICU = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F

Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Gardendale Street
 Project: 5-17-0354-1 / Rancho Los Amigos South Campus
 File: ICU-20

Paramount Boulevard @ Gardendale Street
 Peak hr: AM
 Annual Growth: 1%
 Date: 03/03/2020
 Date of Count: 2017
 Projection Year: 2021

CITY OF PARAMOUNT

2017 EXIST. TRAFFIC				2017 W/PROJECT SITE TRAFFIC				2021 W/RELATED PROJECTS			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	161	1600	0.101 *	91	252	1600	0.158 *	0	258	1600	0.162 *
Nb Thru	942	3200	0.294	46	988	3200	0.309	-37	989	3200	0.309
Nb Right	91	1600	0.057	0	91	1600	0.057	1	96	1600	0.060
Sb Left	114	1600	0.071	0	114	1600	0.071	-15	104	1600	0.065
Sb Thru	900	3200	0.281 *	19	919	3200	0.287 *	-11	944	3200	0.295 *
Sb Right	91	1600	0.057	0	91	1600	0.057	0	95	1600	0.059
Eb Left	80	1600	0.050	0	80	1600	0.050 *	0	83	1600	0.052 *
Eb Thru	434	3200	0.158 *	16	450	3200	0.163	5	472	3200	0.171
Eb Right	71	0	-	0	71	0	-	0	74	0	-
Wb Left	150	1600	0.094 *	0	150	1600	0.094	1	157	1600	0.098
Wb Thru	638	3200	0.199	119	757	3200	0.237 *	2	785	3200	0.245 *
Wb Right	163	1600	0.102	0	163	1600	0.102	-37	133	1600	0.083
Yellow Allowance:				0.100 *				0.100 *			
ICU	0.733			0.831			0.854			D	
LOS	C			D			D			D	

* Key conflicting movement as a part of ICU

1 Counts conducted by National Data & Surveying Services

2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

N-S St: Paramount Boulevard
 E-W St: Gardendale Street
 Project: 5-17-0354-1 / Rancho Los Amigos South Campus
 File: ICU-20

Paramount Boulevard @ Gardendale Street
 Peak hr: PM
 Annual Growth: 1%
 Date: 03/03/2020
 Date of Count: 2017
 Projection Year: 2021

CITY OF PARAMOUNT

2017 EXIST. TRAFFIC				2017 W/PROJECT SITE TRAFFIC				2021 W/RELATED PROJECTS			
Movement	Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio	Added Volume	Total Volume	Capacity	V/C Ratio
Nb Left	79	1600	0.049	15	94	1600	0.059	5	102	1600	0.064 *
Nb Thru	1046	3200	0.327 *	8	1054	3200	0.329 *	-10	1086	3200	0.339
Nb Right	113	1600	0.071	0	113	1600	0.071	2	120	1600	0.075
Sb Left	118	1600	0.074 *	0	118	1600	0.074 *	-38	85	1600	0.053
Sb Thru	946	3200	0.296	110	1056	3200	0.330	-35	1059	3200	0.331 *
Sb Right	85	1600	0.053	0	85	1600	0.053	0	88	1600	0.055
Eb Left	87	1600	0.054	0	87	1600	0.054	0	90	1600	0.057
Eb Thru	459	3200	0.169 *	95	554	3200	0.199 *	5	577	3200	0.208 *
Eb Right	83	0	-	0	83	0	-	3	89	0	-
Wb Left	106	1600	0.066 *	0	106	1600	0.066 *	2	112	1600	0.070 *
Wb Thru	374	3200	0.117	20	394	3200	0.123	9	418	3200	0.131
Wb Right	127	1600	0.079	0	127	1600	0.079	-14	118	1600	0.074
Yellow Allowance:				0.100 *				0.100 *			
ICU							0.736				0.773
LOS							C				C

* Key conflicting movement as a part of ICU
 1 Counts conducted by National Data & Surveying Services
 2 Capacity expressed in veh/hour of green