

Appendix A

Scoping Meeting Notes



Desert Sands TIS Scoping Meeting

May 19, 2016

Attendees:

Raquel Michel – City of Albuquerque

Patrick Byrd – Lee Engineering

Jonathon Kruse – Lee Engineering

Doug Hughes – Goodwin & Associates

1. Introductions
2. Discussion of Scope for TIS
 - a. Study Intersections (Study intersections proposed were acceptable to the City)
 - i. 98th Street & Colobel Avenue
 - ii. 98th Street & Site Access
 - iii. Colobel Avenue & Mesa Arenoso Drive Future development possible west of Mesa Arenoso Drive but will not affect this study.
 - iv. 98th Street & Blake Street
 - v. 98th Street & Dennis Chavez
 - b. ITE Trip Generation (Trip generation methodology was acceptable to the City)
 - i. 216 Single-Family Detached Housing (Code 210)
 - ii. 31 Residential Condominium/Townhouse (Code 230)No pass-by trips
 - c. Trip Distribution & Assignment
 - i. Existing direction traffic patterns
 - ii. Existing Employment Centers
 - iii. Major Routes to Employment Centers-MRCOG 2 mile circle analysis not anticipated. Will distribute trips based on land use and counts. Details to follow in count submittal and trip distribution letter.
-City wide emphasis on employment and shopping centers.
 - d. Traffic Demand Scenarios (Analysis scenarios were acceptable to the City)
 - i. Existing (No-Build)
 - ii. Project Build Out Year (No-Build)
 - iii. Project Build Out Year (Full Build Out)
 - e. Background Traffic Development (Background traffic development methodology was acceptable to the City)
 - i. Buildout anticipated for 2019
 - ii. Growth rate based on historical growth and growth predicted by MRCOG
 - iii. Known Adjacent Developments
 - f. Initial Infrastructure Assumptions
 - i. 98th Street (Principal Arterial – 156' ROW & Four-Lane Section)



- ii. Colobel Avenue (Minor Collector – 60' ROW & Two-Lane Section)
- g. Required Analysis & Methodology (**Proposed analyses was acceptable to the City except where noted**)
 - i. LOS Capacity analysis (Synchro Version 9.0)
 - ii. Queue demands (Synchro)
 - iii. Auxiliary Lane Needs
 - iv. Signal warrant analysis for 98th Street intersections with:
 - 1. Colobel Avenue
 - 2. Blake Road**Analyses based on warrants and engineering judgement.**
 - v. Access Management Analysis
 - 1. Access Location
 - 2. Access Number
 - 3. Access Spacing
 - vi. Crash Data (**Based on City input, crash analysis removed from study.**)
 - 1. MRCOG Data Base
- 3. Agency Input (Comments & Issues)
 - Schedule: Plat ready for submittal. Waiting on TIS.**
 - CABQ peak hours: 7am to 9am and 4pm to 6pm.**
 - Agency Coordination: Send draft to John Mackenzie**
 - Draft Report: submitted on paper with counts on PDF.**
 - Final Submittal: One paper copy and one PDF copy.**
 - Submittal Fee: \$150 with application form**
 - CABQ will send scoping letter template.**
- 4. Action Items
 - a. Lee will count study intersections as determined in this meeting
 - b. Once counts have been collected, Lee will provide a scoping letter documenting traffic counts and existing signal timing conditions.
 - c. **CABQ to send scoping letter template.**

Appendix B

Traffic Counts

98th Street and Blake Street



Lee Engineering, LLC
Phoenix, Arizona - Dallas, Texas
Oklahoma City, Oklahoma - San Antonio, Texas
Albuquerque, New Mexico, United States
jkruse@lee-eng.com

Count Name: NM188.02 Desert Sands TIS
Site Code: 98th & Blake
Start Date: 05/24/2016
Page No: 1

Turning Movement Data

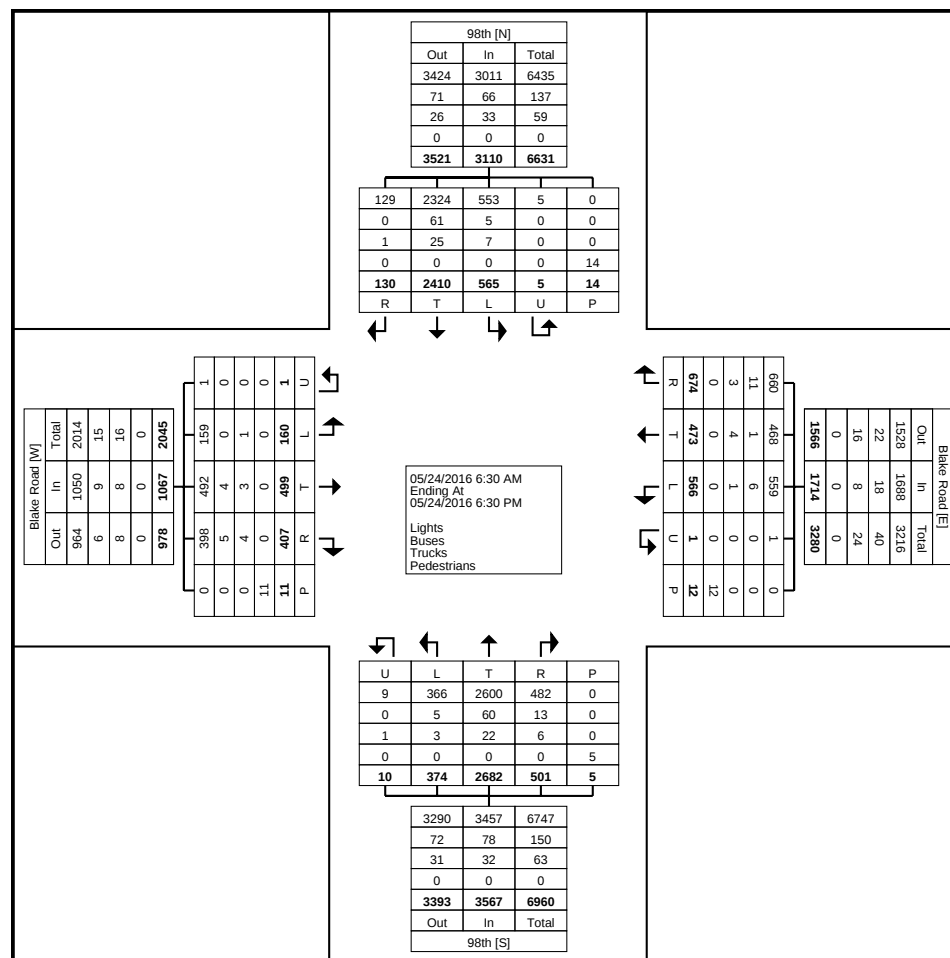
Start Time	98th Southbound						Blake Road Westbound						98th Northbound						Blake Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:30 AM	1	40	5	0	0	46	10	4	6	0	0	20	10	52	4	0	0	66	22	14	5	0	0	41	173
6:45 AM	0	79	1	0	0	80	7	3	11	0	0	21	18	72	3	0	0	93	12	16	9	0	0	37	231
Hourly Total	1	119	6	0	0	126	17	7	17	0	0	41	28	124	7	0	0	159	34	30	14	0	0	78	404
7:00 AM	0	122	10	0	0	132	9	2	22	0	0	33	12	68	5	0	0	85	17	15	8	0	0	40	290
7:15 AM	0	89	13	0	0	102	13	7	15	0	0	35	27	110	7	0	0	144	25	17	9	0	0	51	332
7:30 AM	0	71	15	0	0	86	14	6	4	0	0	24	25	74	9	0	1	108	29	18	3	0	0	50	268
7:45 AM	2	43	18	0	0	63	14	5	6	0	0	25	17	54	5	0	0	76	14	12	2	1	0	29	193
Hourly Total	2	325	56	0	0	383	50	20	47	0	0	117	81	306	26	0	1	413	85	62	22	1	0	170	1083
8:00 AM	1	46	12	0	0	59	10	9	6	0	0	25	12	49	7	0	0	68	7	22	5	0	1	34	186
8:15 AM	1	37	7	0	0	45	16	5	15	0	0	36	10	46	4	0	0	60	8	12	7	0	1	27	168
8:30 AM	0	43	14	0	0	57	9	5	8	0	0	22	11	62	6	0	0	79	8	12	4	0	0	24	182
8:45 AM	1	33	8	0	0	42	13	3	9	0	1	25	7	62	1	0	1	70	10	8	1	0	0	19	156
Hourly Total	3	159	41	0	0	203	48	22	38	0	1	108	40	219	18	0	1	277	33	54	17	0	2	104	692
9:00 AM	1	29	13	0	2	43	7	1	4	0	0	12	5	42	2	0	0	49	6	10	2	0	0	18	122
9:15 AM	0	27	4	0	0	31	8	4	7	0	0	19	9	39	3	0	0	51	7	3	4	0	0	14	115
9:30 AM	2	27	5	0	0	34	12	7	4	0	0	23	5	49	4	0	0	58	1	10	4	0	0	15	130
9:45 AM	6	31	10	0	0	47	9	5	6	0	0	20	12	51	4	0	0	67	5	5	3	0	0	13	147
Hourly Total	9	114	32	0	2	155	36	17	21	0	0	74	31	181	13	0	0	225	19	28	13	0	0	60	514
10:00 AM	2	32	14	0	0	48	10	3	7	0	0	20	6	41	3	0	0	50	2	9	4	0	2	15	133
10:15 AM	2	29	9	0	0	40	13	5	3	0	0	21	7	49	3	1	0	60	1	9	2	0	0	12	133
10:30 AM	0	26	7	0	1	33	14	6	3	0	0	23	4	36	3	0	0	43	1	6	2	0	0	9	108
10:45 AM	0	29	8	0	0	37	4	6	5	0	0	15	7	33	5	0	0	45	6	5	3	0	0	14	111
Hourly Total	4	116	38	0	1	158	41	20	18	0	0	79	24	159	14	1	0	198	10	29	11	0	2	50	485
11:00 AM	0	26	7	0	0	33	15	10	4	0	0	29	8	48	6	0	0	62	2	7	0	0	0	9	133
11:15 AM	0	31	5	0	0	36	9	7	4	0	0	20	5	27	5	0	0	37	5	9	1	0	0	15	108
11:30 AM	0	37	10	0	0	47	10	7	12	0	0	29	9	46	2	0	0	57	6	3	1	0	0	10	143
11:45 AM	5	41	8	1	0	55	6	7	7	0	1	20	3	39	6	0	0	48	10	13	4	0	0	27	150
Hourly Total	5	135	30	1	0	171	40	31	27	0	1	98	25	160	19	0	0	204	23	32	6	0	0	61	534
12:00 PM	2	33	3	0	0	38	8	9	13	0	4	30	7	36	6	0	0	49	4	7	4	0	0	15	132
12:15 PM	2	56	17	1	0	76	11	5	16	0	0	32	3	28	5	1	0	37	7	8	3	0	1	18	163
12:30 PM	1	39	13	0	0	53	9	6	11	0	0	26	7	40	2	0	0	49	5	7	4	0	0	16	144
12:45 PM	2	29	11	0	0	42	10	17	10	0	0	37	8	37	4	0	0	49	8	9	3	0	0	20	148
Hourly Total	7	157	44	1	0	209	38	37	50	0	4	125	25	141	17	1	0	184	24	31	14	0	1	69	587
1:00 PM	2	34	8	0	0	44	14	10	9	0	3	33	18	46	4	0	0	68	3	6	2	0	0	11	156
1:15 PM	3	35	18	0	1	56	10	14	9	0	1	33	5	40	15	2	0	62	6	5	4	0	0	15	166
1:30 PM	3	41	11	0	0	55	11	12	11	0	1	34	8	58	6	0	0	72	10	8	1	0	2	19	180
1:45 PM	3	51	17	0	0	71	15	11	11	0	0	37	5	48	7	0	0	60	12	13	1	0	0	26	194

Hourly Total	11	161	54	0	1	226	50	47	40	0	5	137	36	192	32	2	0	262	31	32	8	0	2	71	696
2:00 PM	3	52	13	3	1	71	17	12	18	0	0	47	12	52	18	0	0	82	13	8	0	0	0	21	221
2:15 PM	3	57	10	0	0	70	19	13	9	0	0	41	13	65	9	0	0	87	6	7	2	0	1	15	213
2:30 PM	3	47	13	0	0	63	14	6	16	0	1	36	15	99	2	0	0	116	6	11	4	0	1	21	236
2:45 PM	0	50	17	0	0	67	12	8	11	0	0	31	22	91	9	1	0	123	3	11	4	0	0	18	239
Hourly Total	9	206	53	3	1	271	62	39	54	0	1	155	62	307	38	1	0	408	28	37	10	0	2	75	909
3:00 PM	1	52	11	0	0	64	18	10	6	0	0	34	8	56	2	0	2	66	7	14	1	0	1	22	186
3:15 PM	4	61	17	0	4	82	21	23	27	0	0	71	9	67	6	0	0	82	9	13	2	0	1	24	259
3:30 PM	6	65	18	0	1	89	14	9	18	1	0	42	9	44	7	0	0	60	10	9	2	0	0	21	212
3:45 PM	3	55	18	0	0	76	18	17	23	0	0	58	11	72	13	0	0	96	9	18	4	0	0	31	261
Hourly Total	14	233	64	0	5	311	71	59	74	1	0	205	37	239	28	0	2	304	35	54	9	0	2	98	918
4:00 PM	3	79	11	0	0	93	15	18	20	0	0	53	8	88	16	0	1	112	5	20	3	0	0	28	286
4:15 PM	9	64	17	0	2	90	17	17	9	0	0	43	11	58	10	0	0	79	7	7	3	0	0	17	229
4:30 PM	2	62	14	0	0	78	26	21	23	0	0	70	16	55	5	1	0	77	10	10	3	0	0	23	248
4:45 PM	7	68	14	0	0	89	25	19	17	0	0	61	10	62	11	0	0	83	15	9	4	0	0	28	261
Hourly Total	21	273	56	0	2	350	83	75	69	0	0	227	45	263	42	1	1	351	37	46	13	0	0	96	1024
5:00 PM	4	83	10	0	0	97	22	15	17	0	0	54	14	61	9	0	0	84	12	6	2	0	0	20	255
5:15 PM	8	75	15	0	0	98	25	16	20	0	0	61	4	71	22	0	0	97	8	10	3	0	0	21	277
5:30 PM	5	68	15	0	2	88	26	16	22	0	0	64	10	58	25	1	0	94	5	14	5	0	0	24	270
5:45 PM	12	63	10	0	0	85	26	19	18	0	0	63	15	76	28	1	0	120	9	16	2	0	0	27	295
Hourly Total	29	289	50	0	2	368	99	66	77	0	0	242	43	266	84	2	0	395	34	46	12	0	0	92	1097
6:00 PM	8	57	16	0	0	81	25	19	17	0	0	61	10	64	22	2	0	98	7	7	3	0	0	17	257
6:15 PM	7	66	25	0	0	98	14	14	17	0	0	45	14	61	14	0	0	89	7	11	8	0	0	26	258
Grand Total	130	2410	565	5	14	3110	674	473	566	1	12	1714	501	2682	374	10	5	3567	407	499	160	1	11	1067	9458
Approach %	4.2	77.5	18.2	0.2	-	-	39.3	27.6	33.0	0.1	-	-	14.0	75.2	10.5	0.3	-	-	38.1	46.8	15.0	0.1	-	-	-
Total %	1.4	25.5	6.0	0.1	-	32.9	7.1	5.0	6.0	0.0	-	18.1	5.3	28.4	4.0	0.1	-	37.7	4.3	5.3	1.7	0.0	-	11.3	-
Lights	129	2324	553	5	-	3011	660	468	559	1	-	1688	482	2600	366	9	-	3457	398	492	159	1	-	1050	9206
% Lights	99.2	96.4	97.9	100.0	-	96.8	97.9	98.9	98.8	100.0	-	98.5	96.2	96.9	97.9	90.0	-	96.9	97.8	98.6	99.4	100.0	-	98.4	97.3
Buses	0	61	5	0	-	66	11	1	6	0	-	18	13	60	5	0	-	78	5	4	0	0	-	9	171
% Buses	0.0	2.5	0.9	0.0	-	2.1	1.6	0.2	1.1	0.0	-	1.1	2.6	2.2	1.3	0.0	-	2.2	1.2	0.8	0.0	0.0	-	0.8	1.8
Trucks	1	25	7	0	-	33	3	4	1	0	-	8	6	22	3	1	-	32	4	3	1	0	-	8	81
% Trucks	0.8	1.0	1.2	0.0	-	1.1	0.4	0.8	0.2	0.0	-	0.5	1.2	0.8	0.8	10.0	-	0.9	1.0	0.6	0.6	0.0	-	0.7	0.9
Pedestrians	-	-	-	-	14	-	-	-	-	-	12	-	-	-	-	-	5	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: NM188.02 Desert Sands TIS
Site Code: 98th & Blake
Start Date: 05/24/2016
Page No: 3



Turning Movement Data Plot



Lee Engineering, LLC
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Count Name: NM188.02 Desert Sands TIS
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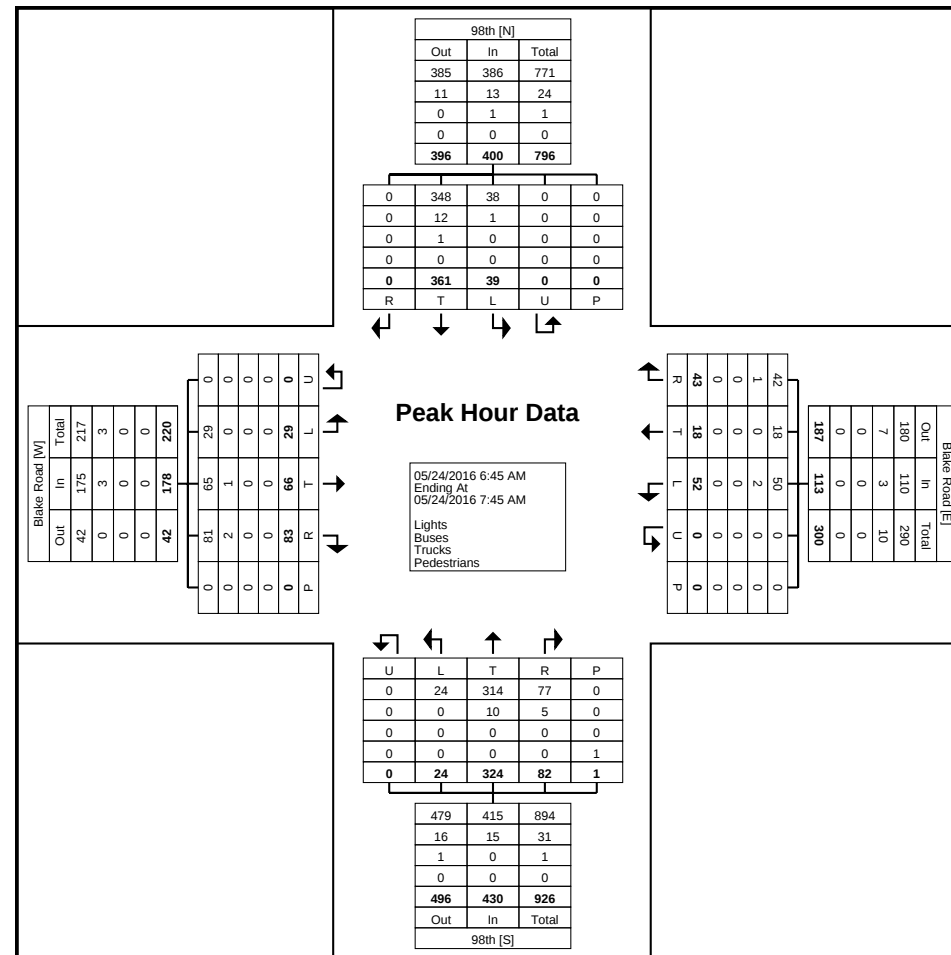
Turning Movement Peak Hour Data (6:45 AM)

Start Time	98th Southbound						Blake Road Westbound						98th Northbound						Blake Road Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:45 AM	0	79	1	0	0	80	7	3	11	0	0	21	18	72	3	0	0	93	12	16	9	0	0	37	231
7:00 AM	0	122	10	0	0	132	9	2	22	0	0	33	12	68	5	0	0	85	17	15	8	0	0	40	290
7:15 AM	0	89	13	0	0	102	13	7	15	0	0	35	27	110	7	0	0	144	25	17	9	0	0	51	332
7:30 AM	0	71	15	0	0	86	14	6	4	0	0	24	25	74	9	0	1	108	29	18	3	0	0	50	268
Total	0	361	39	0	0	400	43	18	52	0	0	113	82	324	24	0	1	430	83	66	29	0	0	178	1121
Approach %	0.0	90.3	9.8	0.0	-	-	38.1	15.9	46.0	0.0	-	-	19.1	75.3	5.6	0.0	-	-	46.6	37.1	16.3	0.0	-	-	-
Total %	0.0	32.2	3.5	0.0	-	35.7	3.8	1.6	4.6	0.0	-	10.1	7.3	28.9	2.1	0.0	-	38.4	7.4	5.9	2.6	0.0	-	15.9	-
PHF	0.000	0.740	0.650	0.000	-	0.758	0.768	0.643	0.591	0.000	-	0.807	0.759	0.736	0.667	0.000	-	0.747	0.716	0.917	0.806	0.000	-	0.873	0.844
Lights	0	348	38	0	-	386	42	18	50	0	-	110	77	314	24	0	-	415	81	65	29	0	-	175	1086
% Lights	-	96.4	97.4	-	-	96.5	97.7	100.0	96.2	-	-	97.3	93.9	96.9	100.0	-	-	96.5	97.6	98.5	100.0	-	-	98.3	96.9
Buses	0	12	1	0	-	13	1	0	2	0	-	3	5	10	0	0	-	15	2	1	0	0	-	3	34
% Buses	-	3.3	2.6	-	-	3.3	2.3	0.0	3.8	-	-	2.7	6.1	3.1	0.0	-	-	3.5	2.4	1.5	0.0	-	-	1.7	3.0
Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Trucks	-	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Site Code: 98th & Blake
Start Date: 05/24/2016
Page No: 5





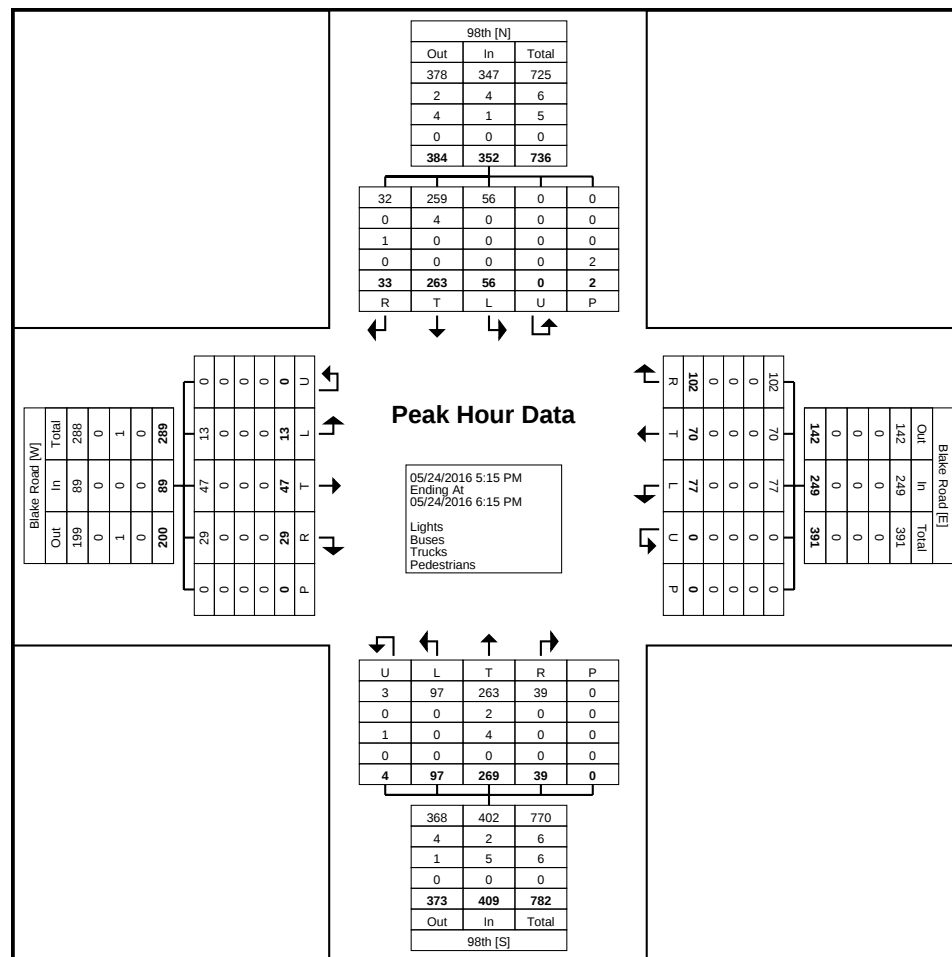
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Count Name: NM188.02 Desert Sands TIS
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98th Street and Colobel Avenue



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Count Name: NM188.02 Desert Sands TIS
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Start Date: 05/24/2016
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Turning Movement Data

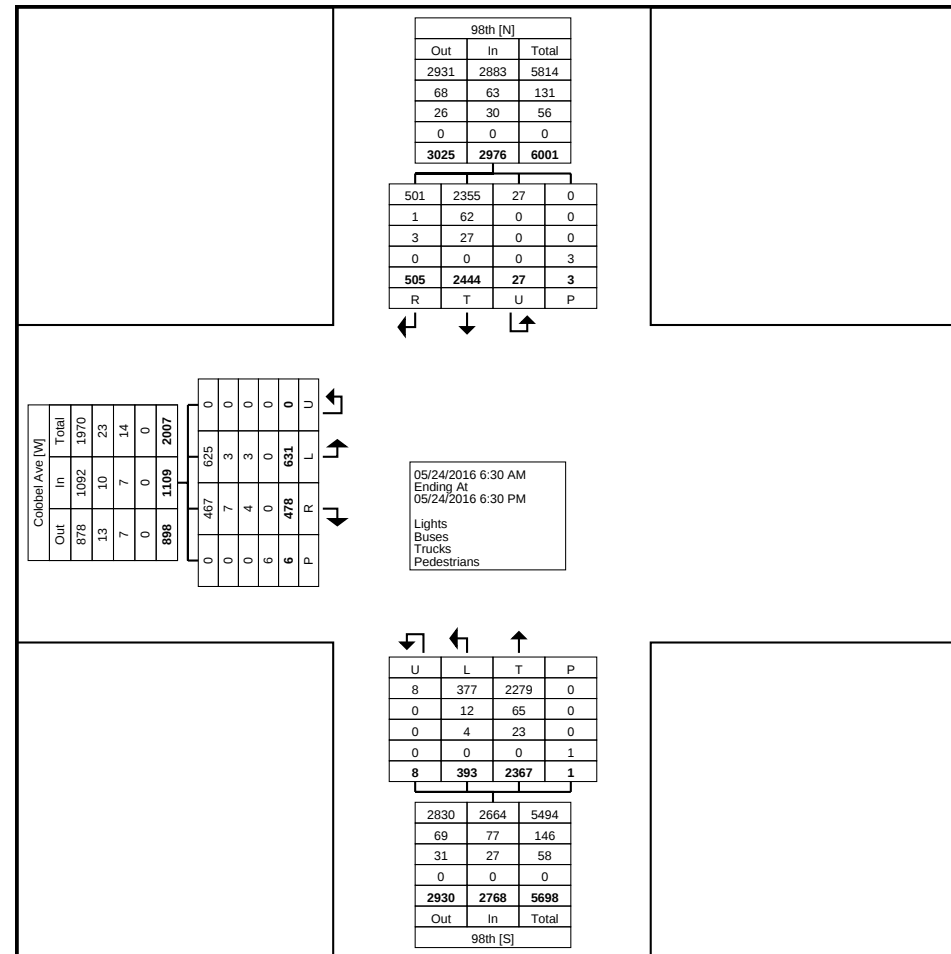
Start Time	98th Southbound					98th Northbound					Colobel Ave Eastbound					Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	
6:30 AM	1	73	0	0	74	39	3	1	0	43	23	16	0	1	39	156
6:45 AM	4	99	0	0	103	57	6	0	0	63	25	26	0	0	51	217
Hourly Total	5	172	0	0	177	96	9	1	0	106	48	42	0	1	90	373
7:00 AM	6	148	0	0	154	51	8	0	0	59	33	22	0	0	55	268
7:15 AM	5	112	1	0	118	110	4	1	0	115	30	25	0	0	55	288
7:30 AM	9	75	0	0	84	55	3	0	0	58	16	27	0	0	43	185
7:45 AM	6	56	0	0	62	29	7	0	0	36	18	17	0	0	35	133
Hourly Total	26	391	1	0	418	245	22	1	0	268	97	91	0	0	188	874
8:00 AM	5	52	0	0	57	42	5	0	0	47	12	8	0	0	20	124
8:15 AM	4	56	0	0	60	38	5	0	0	43	16	12	0	0	28	131
8:30 AM	6	56	1	0	63	46	12	0	0	58	14	20	0	0	34	155
8:45 AM	5	48	0	0	53	42	3	0	0	45	6	12	0	0	18	116
Hourly Total	20	212	1	0	233	168	25	0	0	193	48	52	0	0	100	526
9:00 AM	6	34	0	0	40	33	3	0	0	36	7	10	0	0	17	93
9:15 AM	5	33	0	0	38	34	5	0	0	39	8	12	0	0	20	97
9:30 AM	5	25	0	0	30	37	6	0	0	43	9	9	0	1	18	91
9:45 AM	9	37	0	0	46	37	4	0	0	41	6	14	0	0	20	107
Hourly Total	25	129	0	0	154	141	18	0	0	159	30	45	0	1	75	388
10:00 AM	8	23	0	0	31	33	4	0	0	37	2	10	0	0	12	80
10:15 AM	6	25	0	0	31	31	6	1	0	38	6	15	0	2	21	90
10:30 AM	4	23	0	0	27	26	2	0	0	28	5	8	0	0	13	68
10:45 AM	3	40	0	0	43	34	4	0	0	38	4	8	0	0	12	93
Hourly Total	21	111	0	0	132	124	16	1	0	141	17	41	0	2	58	331
11:00 AM	3	25	0	1	28	41	3	0	0	44	6	18	0	0	24	96
11:15 AM	6	35	0	0	41	23	5	0	0	28	4	8	0	0	12	81
11:30 AM	6	33	0	0	39	39	0	0	0	39	10	9	0	0	19	97
11:45 AM	9	41	1	0	51	30	2	0	0	32	4	6	0	0	10	93
Hourly Total	24	134	1	1	159	133	10	0	0	143	24	41	0	0	65	367
12:00 PM	10	24	0	1	34	35	5	0	0	40	10	7	0	0	17	91
12:15 PM	12	36	0	0	48	42	4	0	0	46	4	7	0	0	11	105
12:30 PM	11	30	0	0	41	33	7	0	0	40	4	7	0	0	11	92
12:45 PM	9	37	0	0	46	33	3	0	0	36	2	8	0	0	10	92
Hourly Total	42	127	0	1	169	143	19	0	0	162	20	29	0	0	49	380
1:00 PM	10	33	1	0	44	36	10	0	0	46	6	8	0	0	14	104
1:15 PM	11	45	1	0	57	36	3	0	0	39	8	8	0	0	16	112
1:30 PM	5	50	0	0	55	48	6	0	0	54	5	8	0	0	13	122
1:45 PM	10	36	0	0	46	37	6	0	0	43	7	8	0	0	15	104
Hourly Total	36	164	2	0	202	157	25	0	0	182	26	32	0	0	58	442

2:00 PM	13	49	0	0	62	39	7	1	0	47	7	8	0	0	15	124
2:15 PM	8	53	0	0	61	57	12	0	0	69	7	17	0	0	24	154
2:30 PM	7	57	0	0	64	79	6	0	0	85	14	13	0	0	27	176
2:45 PM	8	45	0	0	53	88	14	0	0	102	12	16	0	0	28	183
Hourly Total	36	204	0	0	240	263	39	1	0	303	40	54	0	0	94	637
3:00 PM	9	55	0	0	64	50	7	0	0	57	10	12	0	0	22	143
3:15 PM	28	54	0	0	82	53	11	0	0	64	11	8	0	0	19	165
3:30 PM	16	66	0	0	82	47	13	0	0	60	10	14	0	0	24	166
3:45 PM	17	56	0	1	73	78	11	1	0	90	4	13	0	0	17	180
Hourly Total	70	231	0	1	301	228	42	1	0	271	35	47	0	0	82	654
4:00 PM	21	54	0	0	75	74	20	1	0	95	15	13	0	0	28	198
4:15 PM	12	64	1	0	77	63	19	0	1	82	4	16	0	0	20	179
4:30 PM	16	45	0	0	61	54	11	0	0	65	13	8	0	0	21	147
4:45 PM	14	79	0	0	93	66	11	2	0	79	13	17	0	0	30	202
Hourly Total	63	242	1	0	306	257	61	3	1	321	45	54	0	0	99	726
5:00 PM	29	57	0	0	86	71	20	0	0	91	5	19	0	1	24	201
5:15 PM	23	63	3	0	89	70	23	0	0	93	14	16	0	0	30	212
5:30 PM	24	50	4	0	78	74	23	0	0	97	9	14	0	0	23	198
5:45 PM	22	50	3	0	75	81	16	0	0	97	7	15	0	0	22	194
Hourly Total	98	220	10	0	328	296	82	0	0	378	35	64	0	1	99	805
6:00 PM	20	52	11	0	83	59	13	0	0	72	9	23	0	0	32	187
6:15 PM	19	55	0	0	74	57	12	0	0	69	4	16	0	1	20	163
Grand Total	505	2444	27	3	2976	2367	393	8	1	2768	478	631	0	6	1109	6853
Approach %	17.0	82.1	0.9	-	-	85.5	14.2	0.3	-	-	43.1	56.9	0.0	-	-	-
Total %	7.4	35.7	0.4	-	43.4	34.5	5.7	0.1	-	40.4	7.0	9.2	0.0	-	16.2	-
Lights	501	2355	27	-	2883	2279	377	8	-	2664	467	625	0	-	1092	6639
% Lights	99.2	96.4	100.0	-	96.9	96.3	95.9	100.0	-	96.2	97.7	99.0	-	-	98.5	96.9
Buses	1	62	0	-	63	65	12	0	-	77	7	3	0	-	10	150
% Buses	0.2	2.5	0.0	-	2.1	2.7	3.1	0.0	-	2.8	1.5	0.5	-	-	0.9	2.2
Trucks	3	27	0	-	30	23	4	0	-	27	4	3	0	-	7	64
% Trucks	0.6	1.1	0.0	-	1.0	1.0	1.0	0.0	-	1.0	0.8	0.5	-	-	0.6	0.9
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	6	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: NM188.02 Desert Sands TIS
Site Code: 98th & Colobel
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Turning Movement Data Plot



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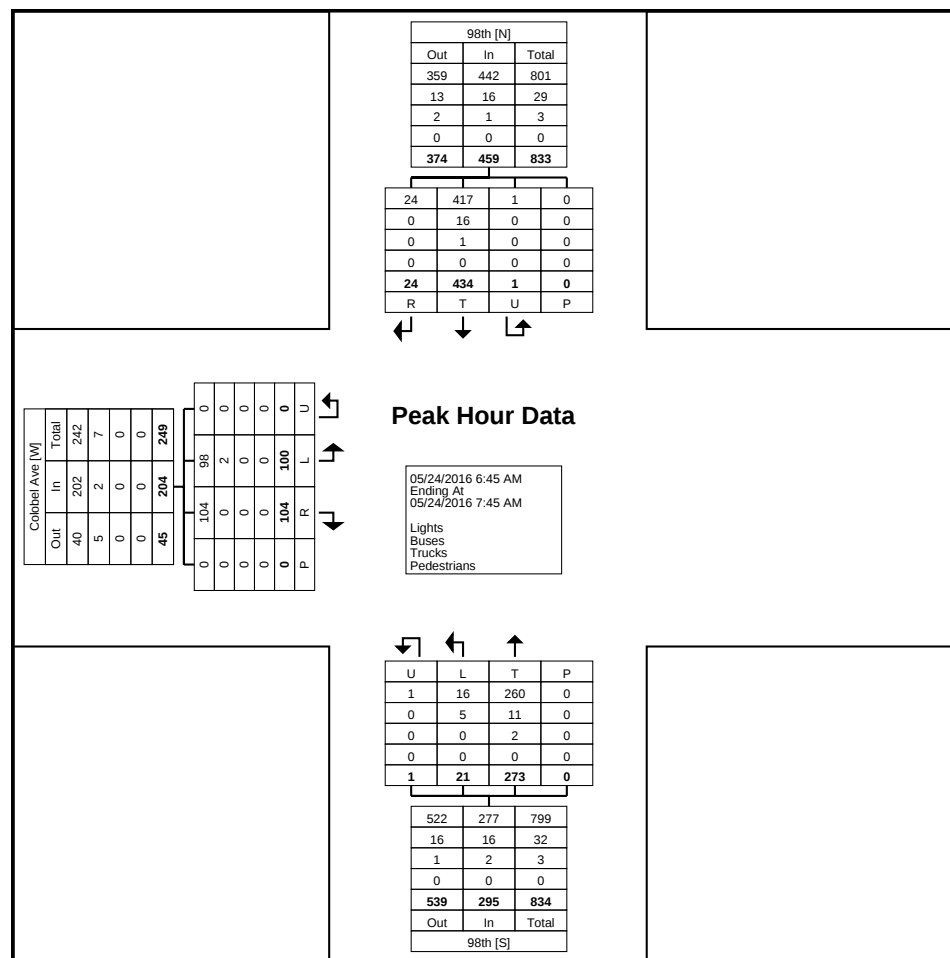
Turning Movement Peak Hour Data (6:45 AM)

[illegible]



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Count Name: NM188.02 Desert Sands TIS
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Turning Movement Peak Hour Data Plot (6:45 AM)



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Count Name: NM188.02 Desert Sands TIS
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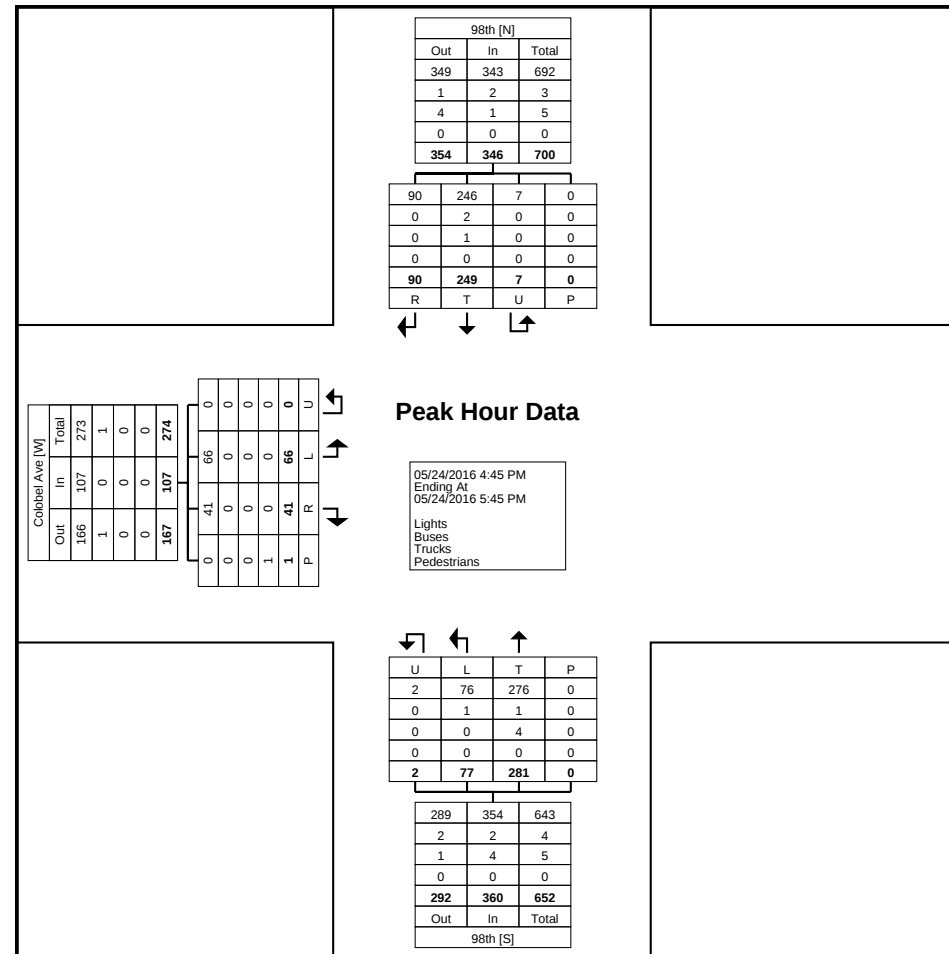
Turning Movement Peak Hour Data (4:45 PM)

Start Time	98th Southbound					98th Northbound					Colobel Ave Eastbound					Int. Total
	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	
4:45 PM	14	79	0	0	93	66	11	2	0	79	13	17	0	0	30	202
5:00 PM	29	57	0	0	86	71	20	0	0	91	5	19	0	1	24	201
5:15 PM	23	63	3	0	89	70	23	0	0	93	14	16	0	0	30	212
5:30 PM	24	50	4	0	78	74	23	0	0	97	9	14	0	0	23	198
Total	90	249	7	0	346	281	77	2	0	360	41	66	0	1	107	813
Approach %	26.0	72.0	2.0	-	-	78.1	21.4	0.6	-	-	38.3	61.7	0.0	-	-	-
Total %	11.1	30.6	0.9	-	42.6	34.6	9.5	0.2	-	44.3	5.0	8.1	0.0	-	13.2	-
PHF	0.776	0.788	0.438	-	0.930	0.949	0.837	0.250	-	0.928	0.732	0.868	0.000	-	0.892	0.959
Lights	90	246	7	-	343	276	76	2	-	354	41	66	0	-	107	804
% Lights	100.0	98.8	100.0	-	99.1	98.2	98.7	100.0	-	98.3	100.0	100.0	-	-	100.0	98.9
Buses	0	2	0	-	2	1	1	0	-	2	0	0	0	-	0	4
% Buses	0.0	0.8	0.0	-	0.6	0.4	1.3	0.0	-	0.6	0.0	0.0	-	-	0.0	0.5
Trucks	0	1	0	-	1	4	0	0	-	4	0	0	0	-	0	5
% Trucks	0.0	0.4	0.0	-	0.3	1.4	0.0	0.0	-	1.1	0.0	0.0	-	-	0.0	0.6
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



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Turning Movement Peak Hour Data Plot (4:45 PM)

Colobel Avenue & Mesa Arenoso



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Count Name: NM188.02 Desert Sands TIS
Site Code: Pauza & Colobel
Start Date: 05/24/2016
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Turning Movement Data

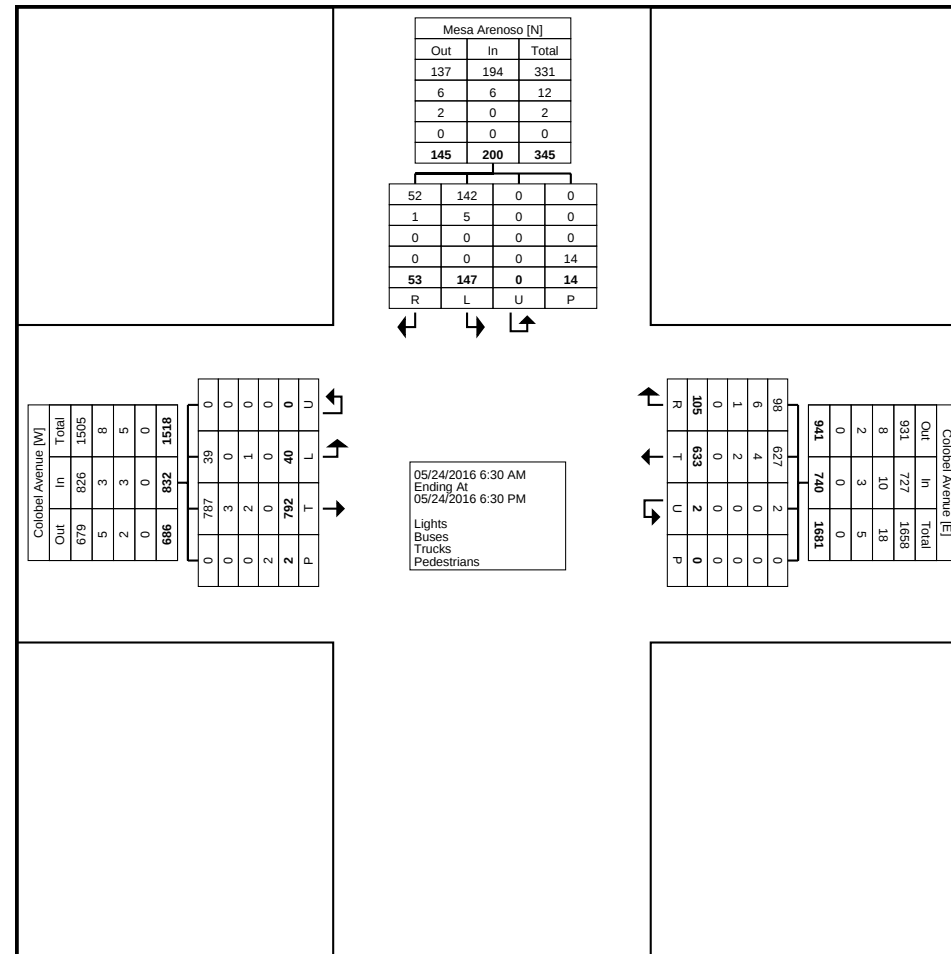
Start Time	Mesa Arenoso Southbound					Colobel Avenue Westbound					Colobel Avenue Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
6:30 AM	1	5	0	1	6	1	4	0	0	5	27	1	0	0	28	39
6:45 AM	0	6	0	0	6	3	5	0	0	8	35	2	0	0	37	51
Hourly Total	1	11	0	1	12	4	9	0	0	13	62	3	0	0	65	90
7:00 AM	1	13	0	0	14	2	10	0	0	12	34	1	0	0	35	61
7:15 AM	1	8	0	1	9	0	5	0	0	5	31	2	0	0	33	47
7:30 AM	1	3	0	0	4	3	9	0	0	12	32	0	0	0	32	48
7:45 AM	0	2	0	0	2	1	8	0	0	9	27	1	0	0	28	39
Hourly Total	3	26	0	1	29	6	32	0	0	38	124	4	0	0	128	195
8:00 AM	2	2	0	0	4	2	8	0	0	10	11	0	0	0	11	25
8:15 AM	0	4	0	2	4	0	8	0	0	8	19	1	0	0	20	32
8:30 AM	3	4	0	0	7	1	13	0	0	14	26	0	0	0	26	47
8:45 AM	0	1	0	0	1	1	6	0	0	7	13	1	0	0	14	22
Hourly Total	5	11	0	2	16	4	35	0	0	39	69	2	0	0	71	126
9:00 AM	0	1	0	0	1	1	6	0	0	7	12	1	0	0	13	21
9:15 AM	0	2	0	0	2	2	7	0	0	9	14	0	0	0	14	25
9:30 AM	0	2	0	0	2	2	7	0	0	9	10	0	0	0	10	21
9:45 AM	0	3	0	0	3	2	11	0	0	13	15	2	0	0	17	33
Hourly Total	0	8	0	0	8	7	31	0	0	38	51	3	0	0	54	100
10:00 AM	1	0	0	0	1	0	6	2	0	8	10	1	0	0	11	20
10:15 AM	0	1	0	0	1	2	6	0	0	8	19	0	0	0	19	28
10:30 AM	0	1	0	0	1	0	4	0	0	4	10	0	0	0	10	15
10:45 AM	1	1	0	0	2	1	6	0	0	7	12	0	0	0	12	21
Hourly Total	2	3	0	0	5	3	22	2	0	27	51	1	0	0	52	84
11:00 AM	0	1	0	1	1	0	5	0	0	5	17	1	0	0	18	24
11:15 AM	4	1	0	0	5	1	9	0	0	10	12	0	0	0	12	27
11:30 AM	0	2	0	0	2	1	5	0	0	6	10	0	0	0	10	18
11:45 AM	0	0	0	1	0	1	7	0	0	8	8	0	0	0	8	16
Hourly Total	4	4	0	2	8	3	26	0	0	29	47	1	0	0	48	85
12:00 PM	0	3	0	0	3	1	8	0	0	9	10	0	0	0	10	22
12:15 PM	0	1	0	2	1	2	13	0	0	15	7	0	0	1	7	23
12:30 PM	1	0	0	0	1	1	11	0	0	12	8	0	0	0	8	21
12:45 PM	1	0	0	0	1	0	10	0	0	10	10	1	0	0	11	22
Hourly Total	2	4	0	2	6	4	42	0	0	46	35	1	0	1	36	88
1:00 PM	1	2	0	0	3	1	13	0	0	14	8	1	0	0	9	26
1:15 PM	0	2	0	0	2	1	13	0	0	14	8	0	0	0	8	24
1:30 PM	0	3	0	1	3	2	8	0	0	10	9	0	0	0	9	22
1:45 PM	0	2	0	0	2	1	10	0	0	11	11	0	0	0	11	24
Hourly Total	1	9	0	1	10	5	44	0	0	49	36	1	0	0	37	96

2:00 PM	2	4	0	1	6	2	14	0	0	16	13	0	0	0	13	35
2:15 PM	3	0	0	0	3	3	12	0	0	15	21	0	0	0	21	39
2:30 PM	1	7	0	0	8	5	8	0	0	13	17	0	0	0	17	38
2:45 PM	1	3	0	0	4	1	11	0	0	12	24	1	0	0	25	41
Hourly Total	7	14	0	1	21	11	45	0	0	56	75	1	0	0	76	153
3:00 PM	3	6	0	0	9	1	16	0	0	17	15	2	0	1	17	43
3:15 PM	0	4	0	0	4	1	29	0	0	30	13	3	0	0	16	50
3:30 PM	2	3	0	3	5	4	17	0	0	21	17	1	0	0	18	44
3:45 PM	0	3	0	1	3	3	21	0	0	24	12	0	0	0	12	39
Hourly Total	5	16	0	4	21	9	83	0	0	92	57	6	0	1	63	176
4:00 PM	2	4	0	0	6	6	31	0	0	37	20	3	0	0	23	66
4:15 PM	5	3	0	0	8	7	22	0	0	29	16	2	0	0	18	55
4:30 PM	2	5	0	0	7	4	18	0	0	22	17	3	0	0	20	49
4:45 PM	3	8	0	0	11	2	18	0	0	20	19	1	0	0	20	51
Hourly Total	12	20	0	0	32	19	89	0	0	108	72	9	0	0	81	221
5:00 PM	4	3	0	0	7	11	34	0	0	45	18	1	0	0	19	71
5:15 PM	3	4	0	0	7	2	32	0	0	34	26	0	0	0	26	67
5:30 PM	1	5	0	0	6	10	27	0	0	37	13	2	0	0	15	58
5:45 PM	0	3	0	0	3	2	30	0	0	32	18	1	0	0	19	54
Hourly Total	8	15	0	0	23	25	123	0	0	148	75	4	0	0	79	250
6:00 PM	1	5	0	0	6	1	25	0	0	26	22	3	0	0	25	57
6:15 PM	2	1	0	0	3	4	27	0	0	31	16	1	0	0	17	51
Grand Total	53	147	0	14	200	105	633	2	0	740	792	40	0	2	832	1772
Approach %	26.5	73.5	0.0	-	-	14.2	85.5	0.3	-	-	95.2	4.8	0.0	-	-	-
Total %	3.0	8.3	0.0	-	11.3	5.9	35.7	0.1	-	41.8	44.7	2.3	0.0	-	47.0	-
Lights	52	142	0	-	194	98	627	2	-	727	787	39	0	-	826	1747
% Lights	98.1	96.6	-	-	97.0	93.3	99.1	100.0	-	98.2	99.4	97.5	-	-	99.3	98.6
Buses	1	5	0	-	6	6	4	0	-	10	3	0	0	-	3	19
% Buses	1.9	3.4	-	-	3.0	5.7	0.6	0.0	-	1.4	0.4	0.0	-	-	0.4	1.1
Trucks	0	0	0	-	0	1	2	0	-	3	2	1	0	-	3	6
% Trucks	0.0	0.0	-	-	0.0	1.0	0.3	0.0	-	0.4	0.3	2.5	-	-	0.4	0.3
Pedestrians	-	-	-	14	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



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Count Name: NM188.02 Desert Sands TIS
Site Code: Pauza & Colobel
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Turning Movement Data Plot



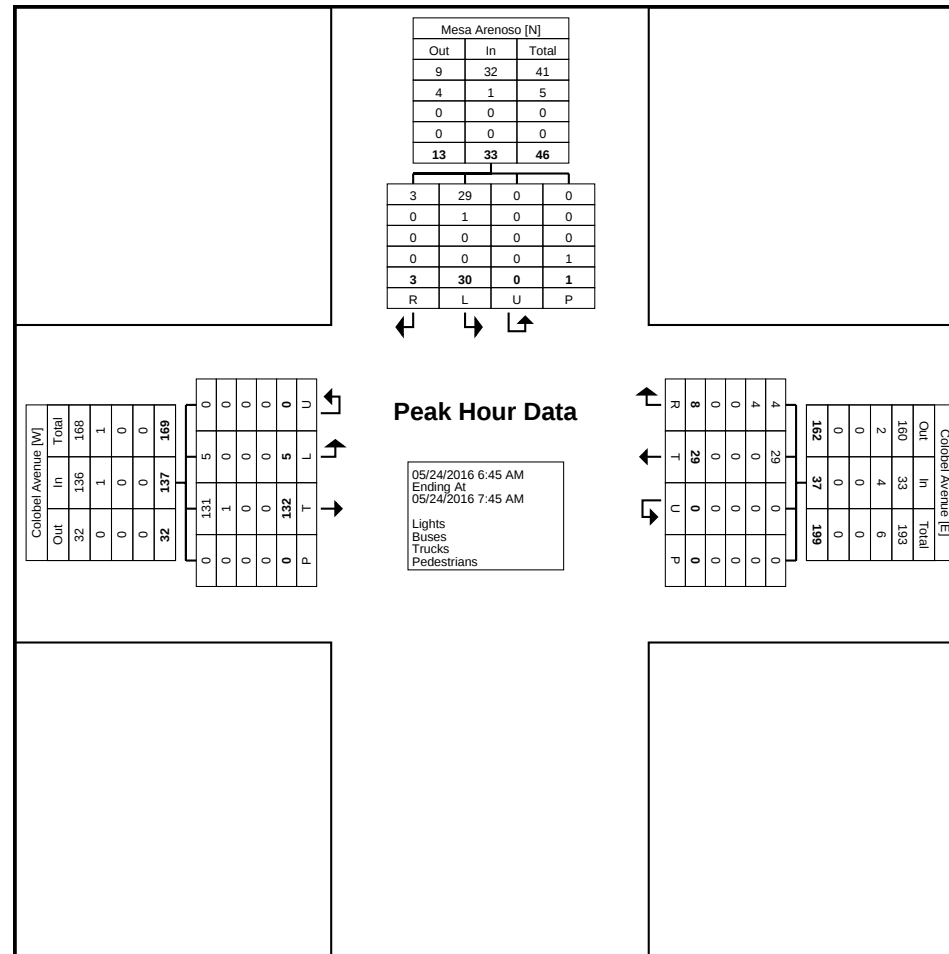
Count Name: NM188.02 Desert Sands TIS
Site Code: Pauza & Colobel
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Turning Movement Peak Hour Data Plot (6:45 AM)



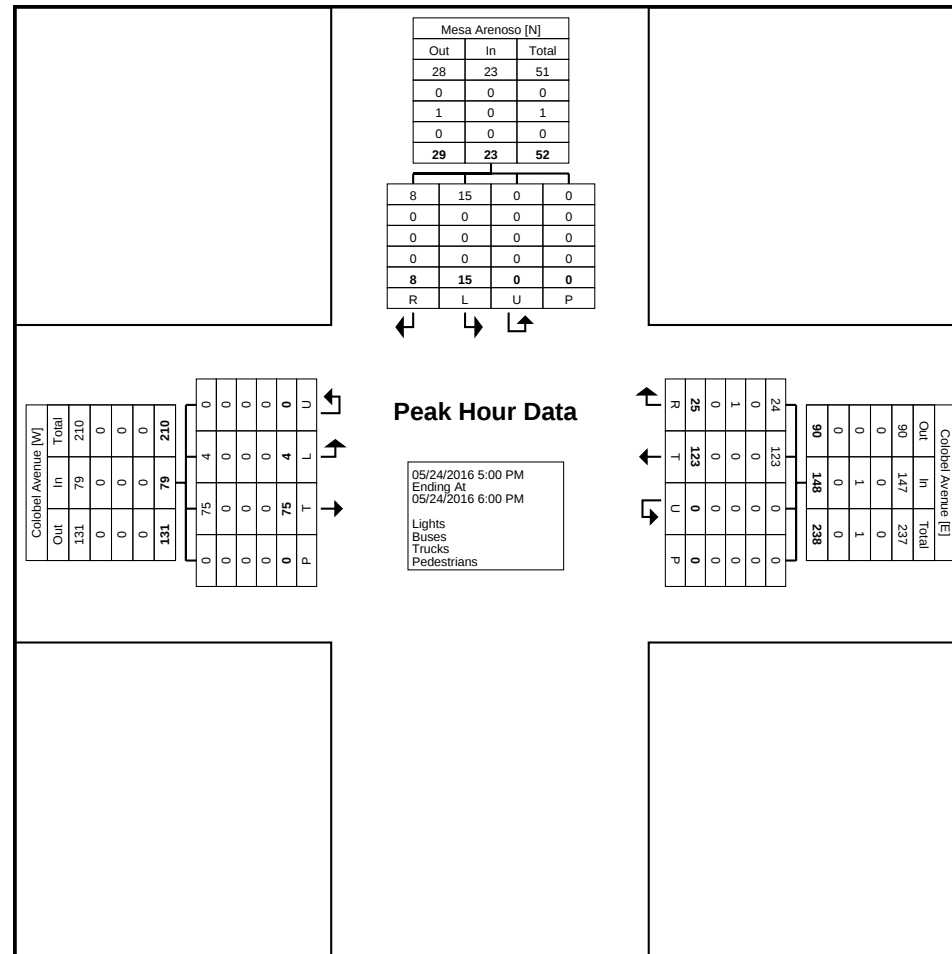
Count Name: NM188.02 Desert Sands TIS
Site Code: Pauza & Colobel
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[illegible]



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Count Name: NM188.02 Desert Sands TIS
Site Code: Pauza & Colobel
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Turning Movement Peak Hour Data Plot (5:00 PM)

98th Street and Dennis Chavez Boulevard



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Count Name: NM190.01-003_Dennis Chavez
Blvd & 98th St
Site Code:
Start Date: 10/01/2015
Page No: 1

Turning Movement Data

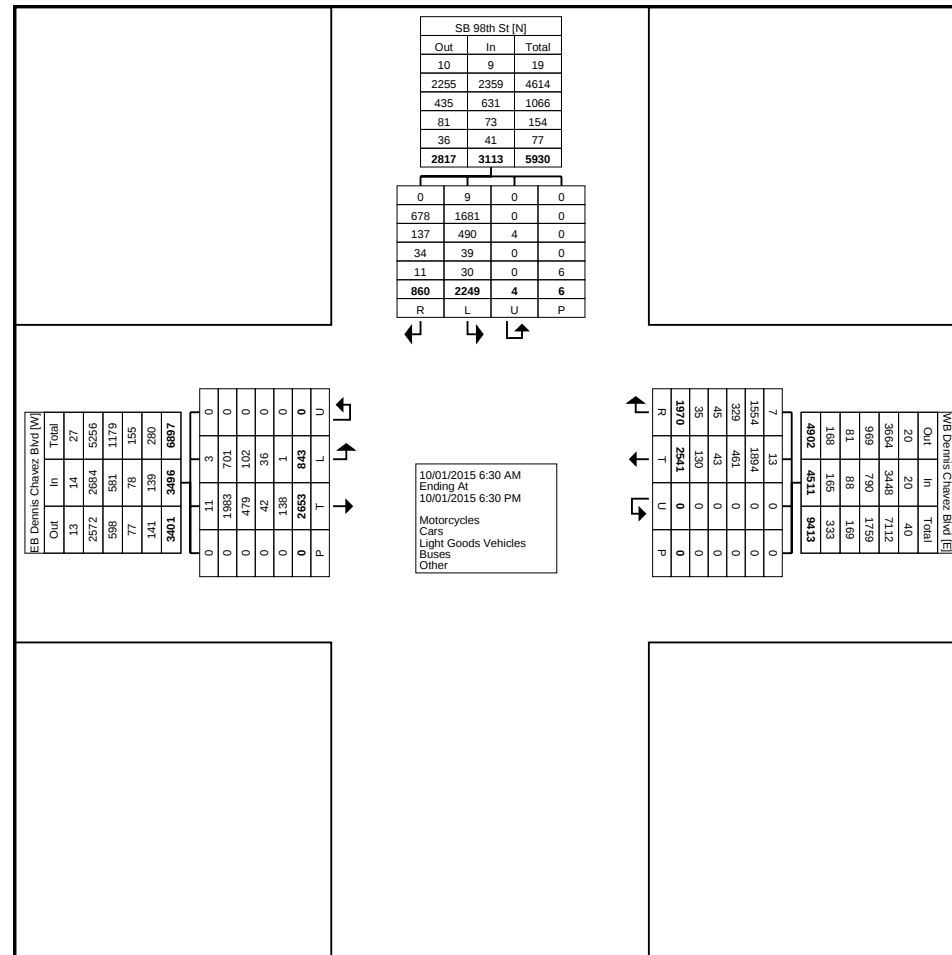
Start Time	SB 98th St Southbound					WB Dennis Chavez Blvd Westbound					EB Dennis Chavez Blvd Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
6:30 AM	35	90	0	0	125	18	68	0	0	86	78	16	0	0	94	305
6:45 AM	90	84	0	0	174	22	127	0	0	149	87	29	0	0	116	439
Hourly Total	125	174	0	0	299	40	195	0	0	235	165	45	0	0	210	744
7:00 AM	83	113	0	0	196	12	140	0	0	152	124	51	0	0	175	523
7:15 AM	40	111	0	0	151	34	66	0	0	100	139	67	0	0	206	457
7:30 AM	21	93	0	0	114	19	36	0	0	55	64	15	0	0	79	248
7:45 AM	16	73	0	0	89	30	37	0	0	67	53	9	0	0	62	218
Hourly Total	160	390	0	0	550	95	279	0	0	374	380	142	0	0	522	1446
8:00 AM	18	51	1	0	70	35	44	0	0	79	52	3	0	0	55	204
8:15 AM	21	59	0	0	80	26	70	0	0	96	54	10	0	0	64	240
8:30 AM	63	45	0	0	108	20	82	0	0	102	80	28	0	0	108	318
8:45 AM	18	35	0	0	53	21	38	0	0	59	78	22	0	0	100	212
Hourly Total	120	190	1	0	311	102	234	0	0	336	264	63	0	0	327	974
9:00 AM	8	29	0	0	37	25	36	0	0	61	51	14	0	0	65	163
9:15 AM	7	38	0	2	45	23	25	0	0	48	32	4	0	0	36	129
9:30 AM	2	20	0	2	22	17	23	0	0	40	27	4	0	0	31	93
9:45 AM	2	35	0	0	37	25	29	0	0	54	22	2	0	0	24	115
Hourly Total	19	122	0	4	141	90	113	0	0	203	132	24	0	0	156	500
10:00 AM	5	47	0	0	52	28	37	0	0	65	16	3	0	0	19	136
10:15 AM	10	45	0	0	55	18	35	0	0	53	24	5	0	0	29	137
10:30 AM	5	35	0	0	40	35	33	0	0	68	32	11	0	0	43	151
10:45 AM	7	33	0	0	40	28	28	0	0	56	44	37	0	0	81	177
Hourly Total	27	160	0	0	187	109	133	0	0	242	116	56	0	0	172	601
11:00 AM	2	28	0	0	30	25	33	0	0	58	24	7	0	0	31	119
11:15 AM	10	30	0	0	40	24	31	0	0	55	22	10	0	0	32	127
11:30 AM	10	34	0	0	44	29	43	0	0	72	35	11	0	0	46	162
11:45 AM	7	31	1	0	39	27	44	0	0	71	35	8	0	0	43	153
Hourly Total	29	123	1	0	153	105	151	0	0	256	116	36	0	0	152	561
12:00 PM	15	36	0	0	51	32	37	0	0	69	36	3	0	0	39	159
12:15 PM	19	22	1	0	42	34	55	0	0	89	48	13	0	0	61	192
12:30 PM	28	28	1	0	57	27	70	0	0	97	43	13	0	0	56	210
12:45 PM	30	33	0	0	63	24	100	0	0	124	79	45	0	0	124	311
Hourly Total	92	119	2	0	213	117	262	0	0	379	206	74	0	0	280	872
1:00 PM	27	30	0	0	57	28	57	0	0	85	132	69	0	0	201	343
1:15 PM	20	25	0	0	45	47	42	0	0	89	67	32	0	0	99	233
1:30 PM	10	28	0	0	38	53	41	0	0	94	58	18	0	0	76	208
1:45 PM	8	33	0	1	41	48	34	0	0	82	51	15	0	0	66	189
Hourly Total	65	116	0	1	181	176	174	0	0	350	308	134	0	0	442	973

2:00 PM 2:15 PM 2:30 PM 2:45 PM	13	37	0	0	50	38	55	0	0	93	41	12	0	0	53	196
	14	43	0	0	57	33	35	0	0	68	25	11	0	0	36	161
	15	52	0	0	67	36	43	0	0	79	56	16	0	0	72	218
	10	37	0	0	47	28	38	0	0	66	60	18	0	0	78	191
Hourly Total	52	169	0	0	221	135	171	0	0	306	182	57	0	0	239	766
3:00 PM 3:15 PM 3:30 PM 3:45 PM	7	46	0	0	53	42	39	0	0	81	55	13	0	0	68	202
	15	42	0	0	57	57	61	0	0	118	50	10	0	0	60	235
	26	43	0	0	69	53	80	0	0	133	56	11	0	0	67	269
	15	28	0	0	43	69	61	0	0	130	99	39	0	0	138	311
Hourly Total	63	159	0	0	222	221	241	0	0	462	260	73	0	0	333	1017
4:00 PM 4:15 PM 4:30 PM 4:45 PM	6	53	0	0	59	61	46	0	0	107	87	26	0	0	113	279
	1	43	0	0	44	71	43	0	0	114	47	9	0	0	56	214
	6	48	0	0	54	67	52	0	0	119	41	7	0	0	48	221
	14	49	0	0	63	82	59	0	0	141	54	19	0	0	73	277
Hourly Total	27	193	0	0	220	281	200	0	0	481	229	61	0	0	290	991
5:00 PM 5:15 PM 5:30 PM 5:45 PM	15	41	0	0	56	72	58	0	0	130	57	12	0	0	69	255
	21	59	0	1	80	98	81	0	0	179	57	14	0	0	71	330
	17	64	0	0	81	84	90	0	0	174	44	15	0	0	59	314
	17	51	0	0	68	88	65	0	0	153	46	13	0	0	59	280
Hourly Total	70	215	0	1	285	342	294	0	0	636	204	54	0	0	258	1179
6:00 PM 6:15 PM	7	61	0	0	68	90	52	0	0	142	40	13	0	0	53	263
	4	58	0	0	62	67	42	0	0	109	51	11	0	0	62	233
Grand Total	860	2249	4	6	3113	1970	2541	0	0	4511	2653	843	0	0	3496	11120
Approach %	27.6	72.2	0.1	-	-	43.7	56.3	0.0	-	-	75.9	24.1	0.0	-	-	-
Total %	7.7	20.2	0.0	-	28.0	17.7	22.9	0.0	-	40.6	23.9	7.6	0.0	-	31.4	-
Motorcycles	0	9	0	-	9	7	13	0	-	20	11	3	0	-	14	43
% Motorcycles	0.0	0.4	0.0	-	0.3	0.4	0.5	-	-	0.4	0.4	0.4	-	-	0.4	0.4
Cars	678	1681	0	-	2359	1554	1894	0	-	3448	1983	701	0	-	2684	8491
% Cars	78.8	74.7	0.0	-	75.8	78.9	74.5	-	-	76.4	74.7	83.2	-	-	76.8	76.4
Light Goods Vehicles	137	490	4	-	631	329	461	0	-	790	479	102	0	-	581	2002
% Light Goods Vehicles	15.9	21.8	100.0	-	20.3	16.7	18.1	-	-	17.5	18.1	12.1	-	-	16.6	18.0
Buses	34	39	0	-	73	45	43	0	-	88	42	36	0	-	78	239
% Buses	4.0	1.7	0.0	-	2.3	2.3	1.7	-	-	2.0	1.6	4.3	-	-	2.2	2.1
Single-Unit Trucks	9	21	0	-	30	29	70	0	-	99	81	1	0	-	82	211
% Single-Unit Trucks	1.0	0.9	0.0	-	1.0	1.5	2.8	-	-	2.2	3.1	0.1	-	-	2.3	1.9
Articulated Trucks	2	9	0	-	11	6	56	0	-	62	56	0	0	-	56	129
% Articulated Trucks	0.2	0.4	0.0	-	0.4	0.3	2.2	-	-	1.4	2.1	0.0	-	-	1.6	1.2
Bicycles on Road	0	0	0	-	0	0	4	0	-	4	1	0	0	-	1	5
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.2	-	-	0.1	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	33.3	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	66.7	-	-	-	-	-	-	-	-	-	-	-	-



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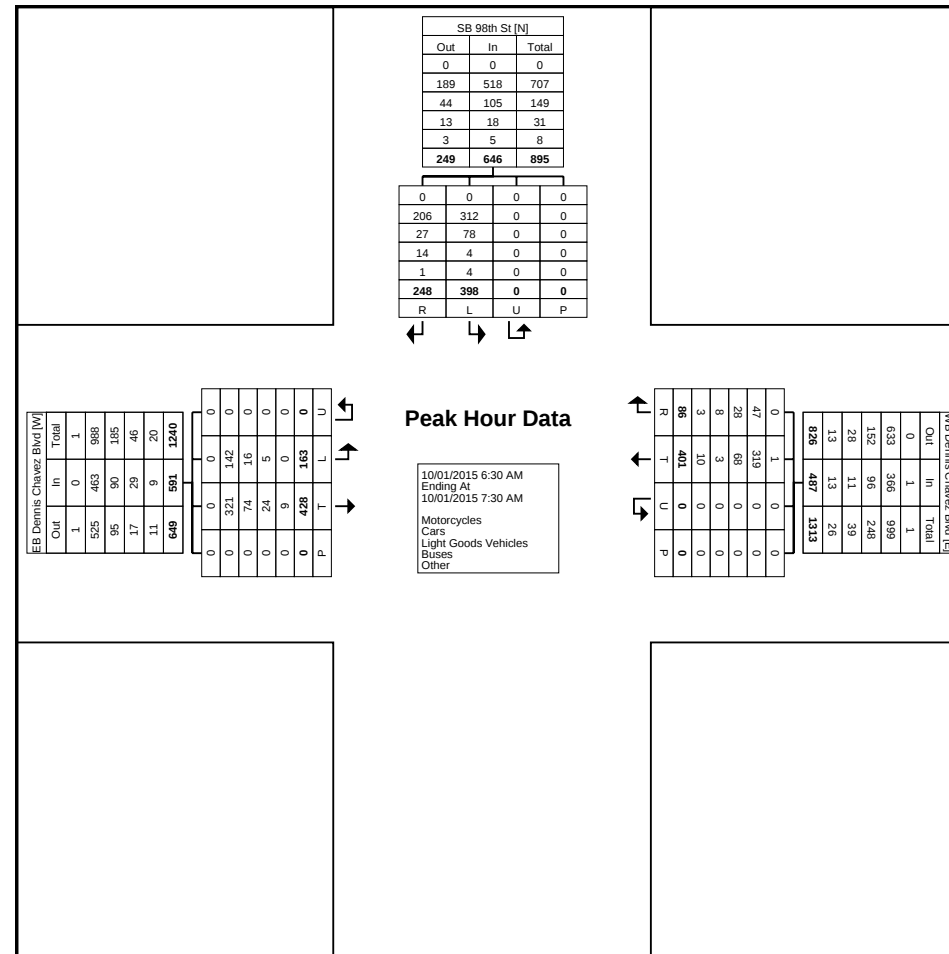
Count Name: NM190.01-003_Dennis Chavez
Blvd & 98th St
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Start Time	SB 98th St Southbound					WB Dennis Chavez Blvd Westbound					EB Dennis Chavez Blvd Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
6:30 AM	35	90	0	0	125	18	68	0	0	86	78	16	0	0	94	305
6:45 AM	90	84	0	0	174	22	127	0	0	149	87	29	0	0	116	439
7:00 AM	83	113	0	0	196	12	140	0	0	152	124	51	0	0	175	523
7:15 AM	40	111	0	0	151	34	66	0	0	100	139	67	0	0	206	457
Total	248	398	0	0	646	86	401	0	0	487	428	163	0	0	591	1724
Approach %	38.4	61.6	0.0	-	-	17.7	82.3	0.0	-	-	72.4	27.6	0.0	-	-	-
Total %	14.4	23.1	0.0	-	37.5	5.0	23.3	0.0	-	28.2	24.8	9.5	0.0	-	34.3	-
PHF	0.689	0.881	0.000	-	0.824	0.632	0.716	0.000	-	0.801	0.770	0.608	0.000	-	0.717	0.824
Motorcycles	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.2	-	-	0.2	0.0	0.0	-	-	0.0	0.1
Cars	206	312	0	-	518	47	319	0	-	366	321	142	0	-	463	1347
% Cars	83.1	78.4	-	-	80.2	54.7	79.6	-	-	75.2	75.0	87.1	-	-	78.3	78.1
Light Goods Vehicles	27	78	0	-	105	28	68	0	-	96	74	16	0	-	90	291
% Light Goods Vehicles	10.9	19.6	-	-	16.3	32.6	17.0	-	-	19.7	17.3	9.8	-	-	15.2	16.9
Buses	14	4	0	-	18	8	3	0	-	11	24	5	0	-	29	58
% Buses	5.6	1.0	-	-	2.8	9.3	0.7	-	-	2.3	5.6	3.1	-	-	4.9	3.4
Single-Unit Trucks	1	2	0	-	3	3	6	0	-	9	6	0	0	-	6	18
% Single-Unit Trucks	0.4	0.5	-	-	0.5	3.5	1.5	-	-	1.8	1.4	0.0	-	-	1.0	1.0
Articulated Trucks	0	2	0	-	2	0	4	0	-	4	3	0	0	-	3	9
% Articulated Trucks	0.0	0.5	-	-	0.3	0.0	1.0	-	-	0.8	0.7	0.0	-	-	0.5	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Turning Movement Peak Hour Data Plot (6:30 AM)



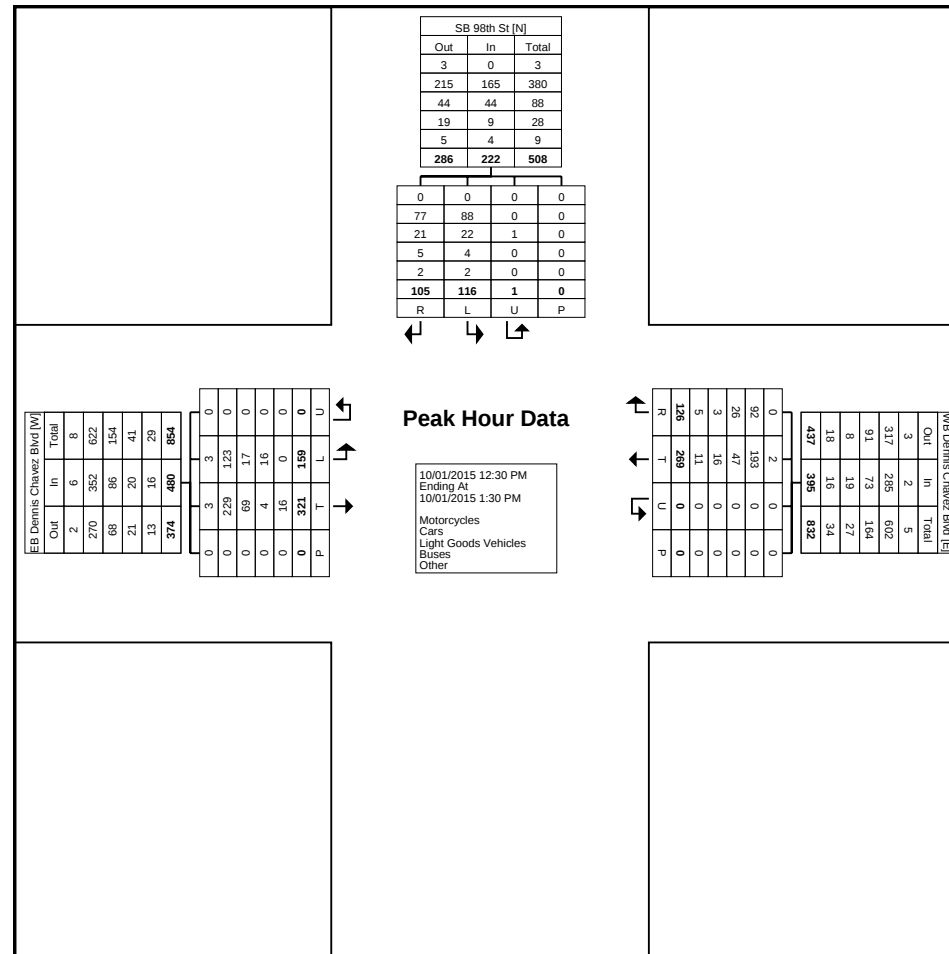
Count Name: NM190.01-003_Dennis Chavez
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Start Time	SB 98th St Southbound					WB Dennis Chavez Blvd Westbound					EB Dennis Chavez Blvd Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
12:30 PM	28	28	1	0	57	27	70	0	0	97	43	13	0	0	56	210
12:45 PM	30	33	0	0	63	24	100	0	0	124	79	45	0	0	124	311
1:00 PM	27	30	0	0	57	28	57	0	0	85	132	69	0	0	201	343
1:15 PM	20	25	0	0	45	47	42	0	0	89	67	32	0	0	99	233
Total	105	116	1	0	222	126	269	0	0	395	321	159	0	0	480	1097
Approach %	47.3	52.3	0.5	-	-	31.9	68.1	0.0	-	-	66.9	33.1	0.0	-	-	-
Total %	9.6	10.6	0.1	-	20.2	11.5	24.5	0.0	-	36.0	29.3	14.5	0.0	-	43.8	-
PHF	0.875	0.879	0.250	-	0.881	0.670	0.673	0.000	-	0.796	0.608	0.576	0.000	-	0.597	0.800
Motorcycles	0	0	0	-	0	0	2	0	-	2	3	3	0	-	6	8
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.7	-	-	0.5	0.9	1.9	-	-	1.3	0.7
Cars	77	88	0	-	165	92	193	0	-	285	229	123	0	-	352	802
% Cars	73.3	75.9	0.0	-	74.3	73.0	71.7	-	-	72.2	71.3	77.4	-	-	73.3	73.1
Light Goods Vehicles	21	22	1	-	44	26	47	0	-	73	69	17	0	-	86	203
% Light Goods Vehicles	20.0	19.0	100.0	-	19.8	20.6	17.5	-	-	18.5	21.5	10.7	-	-	17.9	18.5
Buses	5	4	0	-	9	3	16	0	-	19	4	16	0	-	20	48
% Buses	4.8	3.4	0.0	-	4.1	2.4	5.9	-	-	4.8	1.2	10.1	-	-	4.2	4.4
Single-Unit Trucks	2	2	0	-	4	4	6	0	-	10	10	0	0	-	10	24
% Single-Unit Trucks	1.9	1.7	0.0	-	1.8	3.2	2.2	-	-	2.5	3.1	0.0	-	-	2.1	2.2
Articulated Trucks	0	0	0	-	0	1	5	0	-	6	6	0	0	-	6	12
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.8	1.9	-	-	1.5	1.9	0.0	-	-	1.3	1.1
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Turning Movement Peak Hour Data Plot (12:30 PM)



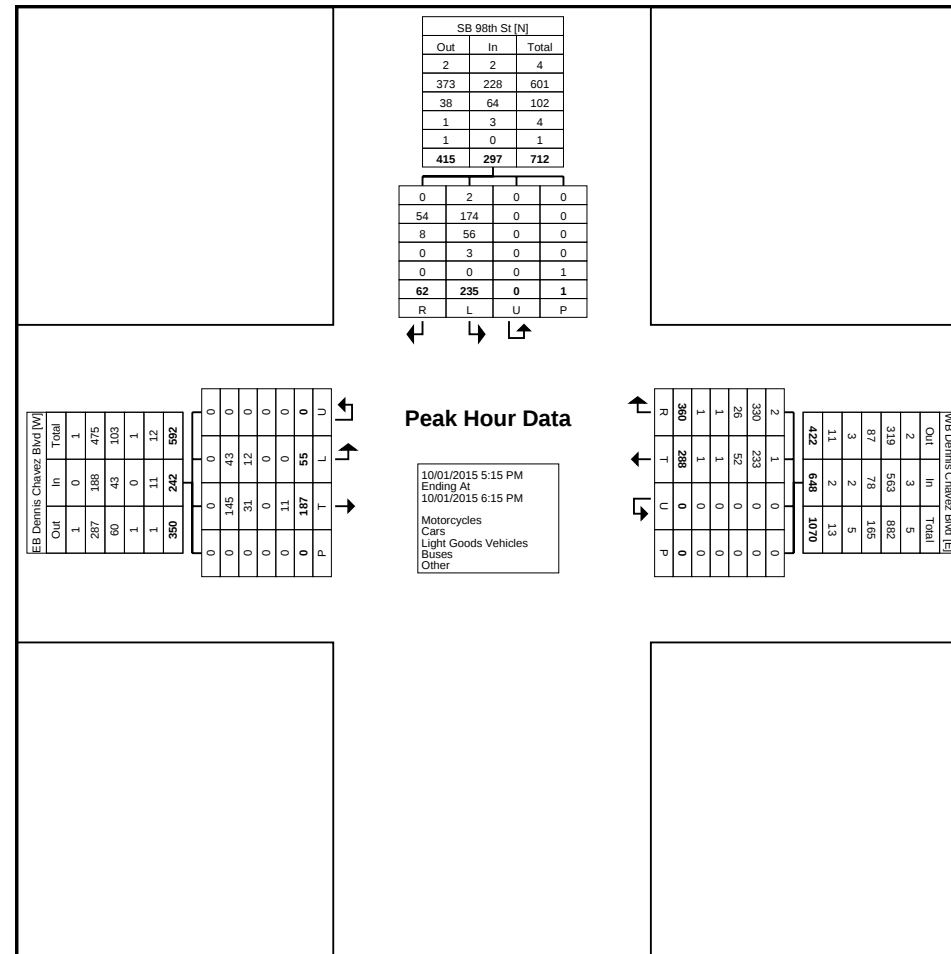
Count Name: NM190.01-003_Dennis Chavez
Blvd & 98th St
Site Code:
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Start Time	SB 98th St Southbound					WB Dennis Chavez Blvd Westbound					EB Dennis Chavez Blvd Eastbound					Int. Total
	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Thru	Left	U-Turn	Peds	App. Total	
5:15 PM	21	59	0	1	80	98	81	0	0	179	57	14	0	0	71	330
5:30 PM	17	64	0	0	81	84	90	0	0	174	44	15	0	0	59	314
5:45 PM	17	51	0	0	68	88	65	0	0	153	46	13	0	0	59	280
6:00 PM	7	61	0	0	68	90	52	0	0	142	40	13	0	0	53	263
Total	62	235	0	1	297	360	288	0	0	648	187	55	0	0	242	1187
Approach %	20.9	79.1	0.0	-	-	55.6	44.4	0.0	-	-	77.3	22.7	0.0	-	-	-
Total %	5.2	19.8	0.0	-	25.0	30.3	24.3	0.0	-	54.6	15.8	4.6	0.0	-	20.4	-
PHF	0.738	0.918	0.000	-	0.917	0.918	0.800	0.000	-	0.905	0.820	0.917	0.000	-	0.852	0.899
Motorcycles	0	2	0	-	2	2	1	0	-	3	0	0	0	-	0	5
% Motorcycles	0.0	0.9	-	-	0.7	0.6	0.3	-	-	0.5	0.0	0.0	-	-	0.0	0.4
Cars	54	174	0	-	228	330	233	0	-	563	145	43	0	-	188	979
% Cars	87.1	74.0	-	-	76.8	91.7	80.9	-	-	86.9	77.5	78.2	-	-	77.7	82.5
Light Goods Vehicles	8	56	0	-	64	26	52	0	-	78	31	12	0	-	43	185
% Light Goods Vehicles	12.9	23.8	-	-	21.5	7.2	18.1	-	-	12.0	16.6	21.8	-	-	17.8	15.6
Buses	0	3	0	-	3	1	1	0	-	2	0	0	0	-	0	5
% Buses	0.0	1.3	-	-	1.0	0.3	0.3	-	-	0.3	0.0	0.0	-	-	0.0	0.4
Single-Unit Trucks	0	0	0	-	0	1	1	0	-	2	6	0	0	-	6	8
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.3	0.3	-	-	0.3	3.2	0.0	-	-	2.5	0.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	5	0	0	-	5	5
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	2.7	0.0	-	-	2.1	0.4
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-



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Turning Movement Peak Hour Data Plot (5:15 PM)

Appendix C

Synchro Capacity & Queueing Output Sheets

Existing

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	66	41	77	281	249	90
Future Vol, veh/h	66	41	77	281	249	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	73	84	95	79	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	56	92	296	315	115
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	704	215	431	0	-	0
Stage 1	373	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	371	790	1125	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	341	790	1125	-	-	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.5	2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1125	-	610	-	-	
HCM Lane V/C Ratio	0.081	-	0.216	-	-	
HCM Control Delay (s)	8.5	-	12.5	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-	

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	75	123	25	15	8
Future Vol, veh/h	4	75	123	25	15	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	50	72	90	57	75	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	104	137	44	20	16

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	181	0	279
Stage 1	-	-	159
Stage 2	-	-	120
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1394	-	711
Stage 1	-	-	870
Stage 2	-	-	905
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1394	-	707
Mov Cap-2 Maneuver	-	-	707
Stage 1	-	-	870
Stage 2	-	-	900

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1394	-	-	-	777
HCM Lane V/C Ratio	0.006	-	-	-	0.046
HCM Control Delay (s)	7.6	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 2010 Signalized Intersection Summary

433: Dennis Chavez Blvd & 98th St

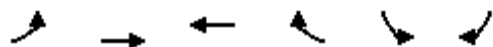
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Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	55	187	288	360	235	62		
Future Volume (veh/h)	55	187	288	360	235	62		
Number	5	2	6	16	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1810	1881	1881	1881	1900		
Adj Flow Rate, veh/h	60	228	360	391	255	84		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.92	0.82	0.80	0.92	0.92	0.74		
Percent Heavy Veh, %	2	5	1	1	1	0		
Cap, veh/h	523	1276	1198	1018	305	1304		
Arrive On Green	0.03	0.71	0.64	0.64	0.17	0.17		
Sat Flow, veh/h	1774	1810	1881	1599	1792	1615		
Grp Volume(v), veh/h	60	228	360	391	255	84		
Grp Sat Flow(s),veh/h/ln	1774	1810	1881	1599	1792	1615		
Q Serve(g_s), s	0.9	3.6	7.3	9.9	11.6	0.9		
Cycle Q Clear(g_c), s	0.9	3.6	7.3	9.9	11.6	0.9		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	523	1276	1198	1018	305	1304		
V/C Ratio(X)	0.11	0.18	0.30	0.38	0.84	0.06		
Avail Cap(c_a), veh/h	812	1276	1198	1018	510	1488		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	4.8	4.2	6.9	7.4	33.9	1.7		
Incr Delay (d2), s/veh	0.0	0.3	0.6	1.1	6.0	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	1.9	3.9	4.7	6.2	1.7		
LnGrp Delay(d),s/veh	4.9	4.5	7.5	8.5	39.8	1.7		
LnGrp LOS	A	A	A	A	D	A		
Approach Vol, veh/h		288	751		339			
Approach Delay, s/veh		4.6	8.0		30.4			
Approach LOS		A	A		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		65.5			5.8	59.7		18.9
Change Period (Y+Rc), s		6.0			3.5	6.0		4.5
Max Green Setting (Gmax), s		59.5			16.0	40.0		24.0
Max Q Clear Time (g_c+I1), s		5.6			2.9	11.9		13.6
Green Ext Time (p_c), s		8.5			0.0	7.6		0.8
Intersection Summary								
HCM 2010 Ctrl Delay			12.8					
HCM 2010 LOS			B					

Queues

433: Dennis Chavez Blvd & 98th St

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	60	228	360	391	255	84
v/c Ratio	0.09	0.18	0.32	0.35	0.72	0.15
Control Delay	5.1	6.2	11.0	2.1	44.7	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	6.2	11.0	2.1	44.7	5.5
Queue Length 50th (ft)	8	40	94	0	132	0
Queue Length 95th (ft)	24	75	154	41	212	18
Internal Link Dist (ft)		3400	2643		2597	
Turn Bay Length (ft)	116			496		
Base Capacity (vph)	799	1233	1134	1119	491	746
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.32	0.35	0.52	0.11
Intersection Summary						

Intersection												
Intersection Delay, s/veh	13.7											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	13	47	29	0	77	70	102	0	97	269	39
Future Vol, veh/h	0	13	47	29	0	77	70	102	0	97	269	39
Peak Hour Factor	0.92	0.65	0.73	0.81	0.92	0.88	0.92	0.98	0.92	0.87	0.89	0.65
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	64	36	0	88	76	104	0	111	302	60
Number of Lanes	0	1	1	0	0	1	1	0	0	1	2	0
Approach	EB				WB				NB			
Opposing Approach	WB				EB				SB			
Opposing Lanes	2				2				3			
Conflicting Approach Left	SB				NB				EB			
Conflicting Lanes Left	3				3				2			
Conflicting Approach Right	NB				SB				WB			
Conflicting Lanes Right	3				3				2			
HCM Control Delay	12.7				13.9				13.8			
HCM LOS	B				B				B			
Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3		
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%		
Vol Thru, %	0%	100%	70%	0%	62%	0%	41%	0%	100%	73%		
Vol Right, %	0%	0%	30%	0%	38%	0%	59%	0%	0%	27%		
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop		
Traffic Vol by Lane	97	179	129	13	76	77	172	56	175	121		
LT Vol	97	0	0	13	0	77	0	56	0	0		
Through Vol	0	179	90	0	47	0	70	0	175	88		
RT Vol	0	0	39	0	29	0	102	0	0	33		
Lane Flow Rate	111	201	161	20	100	88	180	64	199	147		
Geometry Grp	8	8	8	8	8	8	8	8	8	8		
Degree of Util (X)	0.241	0.406	0.315	0.048	0.22	0.2	0.366	0.14	0.409	0.295		
Departure Headway (Hd)	7.771	7.261	7.045	8.698	7.922	8.237	7.315	7.901	7.39	7.195		
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Cap	462	496	510	411	453	436	492	454	486	500		
Service Time	5.519	5.009	4.793	6.462	5.685	5.992	5.07	5.65	5.14	4.944		
HCM Lane V/C Ratio	0.24	0.405	0.316	0.049	0.221	0.202	0.366	0.141	0.409	0.294		
HCM Control Delay	13	14.9	13	11.9	12.9	13.1	14.3	11.9	15.2	12.9		
HCM Lane LOS	B	B	B	B	B	B	B	B	C	B		
HCM 95th-tile Q	0.9	1.9	1.3	0.2	0.8	0.7	1.7	0.5	2	1.2		

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	56	263	33
Future Vol, veh/h	0	56	263	33
Peak Hour Factor	0.92	0.88	0.88	0.69
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	64	299	48
Number of Lanes	0	1	2	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	13.9
HCM LOS	B

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	104	21	273	434	24
Future Vol, veh/h	100	104	21	273	434	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	79	66	62	73	25
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	132	32	440	595	96
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	927	345	691	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	267	651	900	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	739	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	258	651	900	-	-	-
Mov Cap-2 Maneuver	430	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.3	0.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	900	-	529	-	-	
HCM Lane V/C Ratio	0.035	-	0.452	-	-	
HCM Control Delay (s)	9.1	-	17.3	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	2.3	-	-	

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	132	29	8	30	3
Future Vol, veh/h	5	132	29	8	30	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	62	94	72	67	58	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	140	40	12	52	4
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	52	0	-	0	203	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1554	-	-	-	786	1023
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	871	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1554	-	-	-	781	1023
Mov Cap-2 Maneuver	-	-	-	-	781	-
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	866	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		9.9	
HCM LOS					A	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1554	-	-	-	794	
HCM Lane V/C Ratio	0.005	-	-	-	0.07	
HCM Control Delay (s)	7.3	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

HCM 2010 Signalized Intersection Summary

433: Dennis Chavez Blvd & 98th St

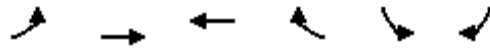
6/7/2016

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	163	428	401	86	398	248		
Future Volume (veh/h)	163	428	401	86	398	248		
Number	5	2	6	16	3	18		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1776	1845	1696	1845	1792		
Adj Flow Rate, veh/h	267	556	557	137	452	359		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.61	0.77	0.72	0.63	0.88	0.69		
Percent Heavy Veh, %	3	7	3	12	3	6		
Cap, veh/h	452	1124	930	727	449	1158		
Arrive On Green	0.09	0.63	0.50	0.50	0.26	0.26		
Sat Flow, veh/h	1757	1776	1845	1442	1757	1524		
Grp Volume(v), veh/h	267	556	557	137	452	359		
Grp Sat Flow(s),veh/h/ln	1757	1776	1845	1442	1757	1524		
Q Serve(g_s), s	6.5	15.7	20.2	4.9	24.0	7.0		
Cycle Q Clear(g_c), s	6.5	15.7	20.2	4.9	24.0	7.0		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	452	1124	930	727	449	1158		
V/C Ratio(X)	0.59	0.49	0.60	0.19	1.01	0.31		
Avail Cap(c_a), veh/h	590	1124	930	727	449	1158		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.2	9.2	16.5	12.8	35.0	3.5		
Incr Delay (d2), s/veh	0.5	1.6	2.8	0.6	44.4	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.1	8.1	10.9	2.1	17.1	9.1		
LnGrp Delay(d),s/veh	12.7	10.8	19.4	13.3	79.5	3.7		
LnGrp LOS	B	B	B	B	F	A		
Approach Vol, veh/h		823	694		811			
Approach Delay, s/veh		11.4	18.2		45.9			
Approach LOS		B	B		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		65.5			12.1	53.4		28.5
Change Period (Y+Rc), s		6.0			3.5	6.0		4.5
Max Green Setting (Gmax), s		59.5			16.0	40.0		24.0
Max Q Clear Time (g_c+I1), s		17.7			8.5	22.2		26.0
Green Ext Time (p_c), s		13.9			0.1	9.4		0.0
Intersection Summary								
HCM 2010 Ctrl Delay			25.4					
HCM 2010 LOS			C					

Queues

433: Dennis Chavez Blvd & 98th St

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	267	556	557	137	452	359
v/c Ratio	0.57	0.49	0.61	0.18	1.01	0.49
Control Delay	11.4	11.1	21.7	3.3	82.0	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.4	11.1	21.7	3.3	82.0	10.8
Queue Length 50th (ft)	57	160	231	0	~275	63
Queue Length 95th (ft)	56	185	262	8	#456	68
Internal Link Dist (ft)		3400	2643		2629	
Turn Bay Length (ft)	116			496		
Base Capacity (vph)	552	1124	906	777	447	825
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.49	0.61	0.18	1.01	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Intersection Delay, s/veh	17.4
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	29	66	83	0	52	18	43	0	24	324	82
Future Vol, veh/h	0	29	66	83	0	52	18	43	0	24	324	82
Peak Hour Factor	0.92	0.81	0.92	0.72	0.92	0.59	0.64	0.77	0.92	0.67	0.74	0.76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	36	72	115	0	88	28	56	0	36	438	108
Number of Lanes	0	1	1	0	0	1	1	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	2
HCM Control Delay	16.5	14	20.1
HCM LOS	C	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	57%	0%	44%	0%	30%	0%	100%	100%
Vol Right, %	0%	0%	43%	0%	56%	0%	70%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	24	216	190	29	149	52	61	39	181	181
LT Vol	24	0	0	29	0	52	0	39	0	0
Through Vol	0	216	108	0	66	0	18	0	181	181
RT Vol	0	0	82	0	83	0	43	0	0	0
Lane Flow Rate	36	292	254	36	187	88	84	60	244	244
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.082	0.627	0.523	0.092	0.432	0.23	0.196	0.14	0.535	0.415
Departure Headway (Hd)	8.355	7.842	7.533	9.222	8.32	9.404	8.395	8.523	8.01	6.231
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	431	464	482	391	436	383	430	423	454	581
Service Time	6.055	5.542	5.233	6.922	6.02	7.114	6.105	6.223	5.71	3.931
HCM Lane V/C Ratio	0.084	0.629	0.527	0.092	0.429	0.23	0.195	0.142	0.537	0.42
HCM Control Delay	11.8	22.8	18.2	12.9	17.2	14.9	13.1	12.6	19.6	13.3
HCM Lane LOS	B	C	C	B	C	B	B	B	C	B
HCM 95th-tile Q	0.3	4.2	3	0.3	2.1	0.9	0.7	0.5	3.1	2

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	39	361	0
Future Vol, veh/h	0	39	361	0
Peak Hour Factor	0.92	0.65	0.74	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	60	488	0
Number of Lanes	0	1	2	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	16
HCM LOS	C

2019 Background

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Traffic Volume (veh/h)	169	443	415	89	412	257			
Future Volume (veh/h)	169	443	415	89	412	257			
Number	5	2	6	16	3	18			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	1.00			1.00	1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1776	1845	1696	1845	1792			
Adj Flow Rate, veh/h	184	482	451	97	448	279			
Adj No. of Lanes	1	1	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	7	3	12	3	6			
Opposing Right Turn Influence	Yes				Yes				
Cap, veh/h	480	1070	917	717	506	1196			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.07	0.60	0.50	0.50	0.29	0.29			
Ln Grp Delay, s/veh	11.4	11.8	18.0	13.5	41.1	2.8			
Ln Grp LOS	B	B	B	B	D	A			
Approach Vol, veh/h		666	548		727				
Approach Delay, s/veh		11.7	17.2		26.4				
Approach LOS		B	B		C				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2	8		5	6		
Case No			4.0	9.0		1.2	7.0		
Phs Duration (G+Y+Rc), s			64.0	32.2		10.2	53.8		
Change Period (Y+Rc), s			6.0	4.5		3.5	6.0		
Max Green (Gmax), s			58.0	41.5		12.6	41.9		
Max Allow Headway (MAH), s			5.8	3.9		2.2	5.8		
Max Q Clear (g_c+I1), s			16.2	25.4		6.6	17.7		
Green Ext Time (g_e), s			10.5	2.3		0.1	8.9		
Prob of Phs Call (p_c)			1.00	1.00		0.99	1.00		
Prob of Max Out (p_x)			0.00	0.03		0.00	0.00		
Left-Turn Movement Data									
Assigned Mvmt				3		5	1		
Mvmt Sat Flow, veh/h				1757		1757	0		
Through Movement Data									
Assigned Mvmt			2	8			6		
Mvmt Sat Flow, veh/h			1776	0			1845		
Right-Turn Movement Data									
Assigned Mvmt			12	18			16		
Mvmt Sat Flow, veh/h			0	1524			1442		
Left Lane Group Data									
Assigned Mvmt		0	0	3	0	5	1	0	0
Lane Assignment						(Pr/Pm)			

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Lanes in Grp	0	0	1	0	1	0	0	0
Grp Vol (v), veh/h	0	0	448	0	184	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1757	0	1757	0	0	0
Q Serve Time (g_s), s	0.0	0.0	23.4	0.0	4.6	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	23.4	0.0	4.6	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1757	0	847	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	49.8	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	32.2	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	4.9	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	47.8	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	506	0	480	0	0	0
V/C Ratio (X)	0.00	0.00	0.88	0.00	0.38	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	758	0	588	0	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	32.7	0.0	11.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	8.4	0.0	0.2	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	41.1	0.0	11.4	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	11.3	0.0	2.2	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	12.5	0.0	2.3	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.12	0.00	0.50	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	8	0	0	6	0	0
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	482	0	0	0	451	0	0
Grp Sat Flow (s), veh/h/ln	0	1776	0	0	0	1845	0	0
Q Serve Time (g_s), s	0.0	14.2	0.0	0.0	0.0	15.7	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	14.2	0.0	0.0	0.0	15.7	0.0	0.0
Lane Grp Cap (c), veh/h	0	1070	0	0	0	917	0	0
V/C Ratio (X)	0.00	0.45	0.00	0.00	0.00	0.49	0.00	0.00
Avail Cap (c_a), veh/h	0	1070	0	0	0	917	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	10.4	0.0	0.0	0.0	16.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	0.0	1.9	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.8	0.0	0.0	0.0	18.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	7.0	0.0	0.0	0.0	7.9	0.0	0.0

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2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	7.4	0.0	0.0	0.0	8.4	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.06	0.00	0.00	0.00	0.08	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	18	0	0	16	0	0
Lane Assignment	R			R				
Lanes in Grp	0	0	1	0	0	1	0	0
Grp Vol (v), veh/h	0	0	279	0	0	97	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1524	0	0	1442	0	0
Q Serve Time (g_s), s	0.0	0.0	4.6	0.0	0.0	3.5	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	4.6	0.0	0.0	3.5	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	1523.6	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	47.8	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	1196	0	0	717	0	0
V/C Ratio (X)	0.00	0.00	0.23	0.00	0.00	0.14	0.00	0.00
Avail Cap (c_a), veh/h	0	0	1414	0	0	717	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	2.7	0.0	0.0	13.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	2.8	0.0	0.0	13.5	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	6.4	0.0	0.0	1.4	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	6.5	0.0	0.0	1.5	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.06	0.00	0.00	0.08	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

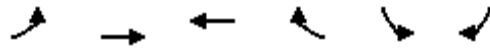
Intersection Summary

HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Queues

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	184	482	451	97	448	279
v/c Ratio	0.37	0.46	0.52	0.13	0.85	0.35
Control Delay	11.8	14.6	23.6	4.9	47.5	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	14.6	23.6	4.9	47.5	4.6
Queue Length 50th (ft)	45	158	192	0	261	17
Queue Length 95th (ft)	101	304	370	34	378	56
Internal Link Dist (ft)		3400	2643		2629	
Turn Bay Length (ft)	116			496		
Base Capacity (vph)	540	1049	864	726	740	847
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.46	0.52	0.13	0.61	0.33
Intersection Summary						

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	30	69	86	0	54	19	45	0	25	335	85
Future Vol, veh/h	0	30	69	86	0	54	19	45	0	25	335	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	33	75	93	0	59	21	49	0	27	364	92
Number of Lanes	0	1	1	0	0	1	1	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	2
HCM Control Delay	13.4	11.9	14.6
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	57%	0%	45%	0%	30%	0%	100%	100%
Vol Right, %	0%	0%	43%	0%	55%	0%	70%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	223	197	30	155	54	64	41	187	187
LT Vol	25	0	0	30	0	54	0	41	0	0
Through Vol	0	223	112	0	69	0	19	0	187	187
RT Vol	0	0	85	0	86	0	45	0	0	0
Lane Flow Rate	27	243	214	33	168	59	70	45	203	203
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.057	0.471	0.396	0.074	0.341	0.137	0.143	0.095	0.403	0.303
Departure Headway (Hd)	7.487	6.978	6.67	8.177	7.282	8.407	7.405	7.641	7.132	5.367
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	479	517	539	438	494	426	483	469	504	669
Service Time	5.23	4.721	4.413	5.927	5.032	6.161	5.159	5.383	4.874	3.109
HCM Lane V/C Ratio	0.056	0.47	0.397	0.075	0.34	0.138	0.145	0.096	0.403	0.303
HCM Control Delay	10.7	15.8	13.7	11.6	13.8	12.5	11.4	11.2	14.6	10.4
HCM Lane LOS	B	C	B	B	B	B	B	B	B	B
HCM 95th-tile Q	0.2	2.5	1.9	0.2	1.5	0.5	0.5	0.3	1.9	1.3

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	41	374	0
Future Vol, veh/h	0	41	374	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	45	407	0
Number of Lanes	0	1	2	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	12.4
HCM LOS	B

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	69	43	80	291	258	94
Future Vol, veh/h	69	43	80	291	258	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	47	87	316	280	102
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	664	191	383	0	-	0
Stage 1	332	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	394	818	1172	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	365	818	1172	-	-	-
Mov Cap-2 Maneuver	539	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.2	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1172	-	620	-	-	
HCM Lane V/C Ratio	0.074	-	0.196	-	-	
HCM Control Delay (s)	8.3	-	12.2	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-	

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	78	128	26	16	9
Future Vol, veh/h	5	78	128	26	16	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	85	139	28	17	10
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	167	0	-	0	249	153
Stage 1	-	-	-	-	153	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1411	-	-	-	739	893
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	928	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1411	-	-	-	736	893
Mov Cap-2 Maneuver	-	-	-	-	736	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	924	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.5		0		9.7	
HCM LOS					A	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1411	-	-	-	786	
HCM Lane V/C Ratio	0.004	-	-	-	0.035	
HCM Control Delay (s)	7.6	0	-	-	9.7	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Traffic Volume (veh/h)	57	194	298	373	243	65			
Future Volume (veh/h)	57	194	298	373	243	65			
Number	5	2	6	16	3	18			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	1.00			1.00	1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1810	1881	1881	1881	1900			
Adj Flow Rate, veh/h	62	211	324	405	264	71			
Adj No. of Lanes	1	1	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	5	1	1	1	0			
Opposing Right Turn Influence	Yes				Yes				
Cap, veh/h	534	1265	1185	1008	317	1303			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.03	0.70	0.63	0.63	0.18	0.18			
Ln Grp Delay, s/veh	5.0	4.6	7.5	8.9	39.3	1.7			
Ln Grp LOS	A	A	A	A	D	A			
Approach Vol, veh/h		273	729		335				
Approach Delay, s/veh		4.7	8.3		31.3				
Approach LOS		A	A		C				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2	8		5	6		
Case No			4.0	9.0		1.2	7.0		
Phs Duration (G+Y+Rc), s			65.0	19.4		5.8	59.2		
Change Period (Y+Rc), s			6.0	4.5		3.5	6.0		
Max Green (Gmax), s			59.0	30.5		11.5	44.0		
Max Allow Headway (MAH), s			5.5	3.9		2.2	5.5		
Max Q Clear (g_c+I1), s			5.4	14.0		3.0	12.6		
Green Ext Time (g_e), s			7.9	0.9		0.0	7.4		
Prob of Phs Call (p_c)			1.00	1.00		0.77	1.00		
Prob of Max Out (p_x)			0.00	0.00		0.00	0.00		
Left-Turn Movement Data									
Assigned Mvmt				3		5	1		
Mvmt Sat Flow, veh/h				1792		1774	0		
Through Movement Data									
Assigned Mvmt			2	8			6		
Mvmt Sat Flow, veh/h			1810	0			1881		
Right-Turn Movement Data									
Assigned Mvmt			12	18			16		
Mvmt Sat Flow, veh/h			0	1615			1599		
Left Lane Group Data									
Assigned Mvmt		0	0	3	0	5	1	0	0
Lane Assignment					(Pr/Pm)				

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Lanes in Grp	0	0	1	0	1	0	0	0
Grp Vol (v), veh/h	0	0	264	0	62	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1792	0	1774	0	0	0
Q Serve Time (g_s), s	0.0	0.0	12.0	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	12.0	0.0	1.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1792	0	723	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	55.2	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	46.7	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	53.2	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	317	0	534	0	0	0
V/C Ratio (X)	0.00	0.00	0.83	0.00	0.12	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	647	0	727	0	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	33.6	0.0	4.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	39.3	0.0	5.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	5.9	0.0	0.5	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	6.4	0.0	0.5	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.06	0.00	0.10	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	8	0	0	6	0	0
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	211	0	0	0	324	0	0
Grp Sat Flow (s), veh/h/ln	0	1810	0	0	0	1881	0	0
Q Serve Time (g_s), s	0.0	3.4	0.0	0.0	0.0	6.5	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	3.4	0.0	0.0	0.0	6.5	0.0	0.0
Lane Grp Cap (c), veh/h	0	1265	0	0	0	1185	0	0
V/C Ratio (X)	0.00	0.17	0.00	0.00	0.00	0.27	0.00	0.00
Avail Cap (c_a), veh/h	0	1265	0	0	0	1185	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	4.3	0.0	0.0	0.0	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.6	0.0	0.0	0.0	7.5	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.6	0.0	0.0	0.0	3.3	0.0	0.0

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2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	1.7	0.0	0.0	0.0	3.5	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	18	0	0	16	0	0
Lane Assignment	R			R				
Lanes in Grp	0	0	1	0	0	1	0	0
Grp Vol (v), veh/h	0	0	71	0	0	405	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1615	0	0	1599	0	0
Q Serve Time (g_s), s	0.0	0.0	0.7	0.0	0.0	10.6	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.7	0.0	0.0	10.6	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	1615.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	53.2	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	1303	0	0	1008	0	0
V/C Ratio (X)	0.00	0.00	0.05	0.00	0.00	0.40	0.00	0.00
Avail Cap (c_a), veh/h	0	0	1601	0	0	1008	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	1.6	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	1.7	0.0	0.0	8.9	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	1.4	0.0	0.0	4.6	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	1.4	0.0	0.0	4.9	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.01	0.00	0.00	0.25	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

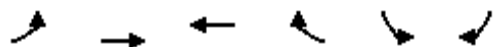
Intersection Summary

HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Queues

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	62	211	324	405	264	71
v/c Ratio	0.09	0.17	0.29	0.36	0.72	0.13
Control Delay	5.3	6.5	11.1	2.2	44.1	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	6.5	11.1	2.2	44.1	5.6
Queue Length 50th (ft)	9	37	84	0	137	0
Queue Length 95th (ft)	26	82	167	44	217	26
Internal Link Dist (ft)		3400	2643		2597	
Turn Bay Length (ft)	116			496		
Base Capacity (vph)	776	1221	1121	1116	623	670
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.17	0.29	0.36	0.42	0.11
Intersection Summary						

Intersection												
Intersection Delay, s/veh	13.5											
Intersection LOS	B											

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	14	49	30	0	80	73	106	0	101	278	41
Future Vol, veh/h	0	14	49	30	0	80	73	106	0	101	278	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	15	53	33	0	87	79	115	0	110	302	45
Number of Lanes	0	1	1	0	0	1	1	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	2
HCM Control Delay	12.3	13.8	13.5
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	69%	0%	62%	0%	41%	0%	100%	72%
Vol Right, %	0%	0%	31%	0%	38%	0%	59%	0%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	101	185	134	14	79	80	179	58	181	126
LT Vol	101	0	0	14	0	80	0	58	0	0
Through Vol	0	185	93	0	49	0	73	0	181	91
RT Vol	0	0	41	0	30	0	106	0	0	35
Lane Flow Rate	110	201	145	15	86	87	195	63	197	137
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.234	0.401	0.28	0.036	0.187	0.195	0.386	0.136	0.399	0.269
Departure Headway (Hd)	7.667	7.158	6.939	8.613	7.839	8.06	7.14	7.79	7.281	7.082
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	469	504	517	415	457	445	504	460	495	507
Service Time	5.412	4.902	4.683	6.371	5.596	5.805	4.885	5.537	5.027	4.828
HCM Lane V/C Ratio	0.235	0.399	0.28	0.036	0.188	0.196	0.387	0.137	0.398	0.27
HCM Control Delay	12.8	14.6	12.4	11.7	12.4	12.8	14.3	11.8	14.8	12.4
HCM Lane LOS	B	B	B	B	B	B	B	B	B	B
HCM 95th-tile Q	0.9	1.9	1.1	0.1	0.7	0.7	1.8	0.5	1.9	1.1

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	58	272	35
Future Vol, veh/h	0	58	272	35
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	63	296	38
Number of Lanes	0	1	2	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	13.5
HCM LOS	B

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	104	108	22	283	449	25
Future Vol, veh/h	104	108	22	283	449	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	117	24	308	488	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	704	258	515	0	-	0
Stage 1	502	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	371	741	1047	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	362	741	1047	-	-	-
Mov Cap-2 Maneuver	516	-	-	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.4	0.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1047	-	610	-	-	
HCM Lane V/C Ratio	0.023	-	0.378	-	-	
HCM Control Delay (s)	8.5	-	14.4	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.8	-	-	

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	137	30	9	32	4
Future Vol, veh/h	6	137	30	9	32	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	149	33	10	35	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	42	0	200
Stage 1	-	-	38
Stage 2	-	-	162
Critical Hdwy	4.12	-	7.12
Critical Hdwy Stg 1	-	-	6.12
Critical Hdwy Stg 2	-	-	6.12
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1567	-	759
Stage 1	-	-	977
Stage 2	-	-	840
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1567	-	756
Mov Cap-2 Maneuver	-	-	756
Stage 1	-	-	972
Stage 2	-	-	836

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1567	-	-	-	779
HCM Lane V/C Ratio	0.004	-	-	-	0.05
HCM Control Delay (s)	7.3	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2019 Buildout

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	30	69	90	0	57	19	45	0	29	387	97
Future Vol, veh/h	0	30	69	90	0	57	19	45	0	29	387	97
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	33	75	98	0	62	21	49	0	32	421	105
Number of Lanes	0	1	1	0	0	1	1	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	2
HCM Control Delay	14.3	12.5	16.7
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	57%	0%	43%	0%	30%	0%	100%	100%
Vol Right, %	0%	0%	43%	0%	57%	0%	70%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	29	258	226	30	159	57	64	41	195	195
LT Vol	29	0	0	30	0	57	0	41	0	0
Through Vol	0	258	129	0	69	0	19	0	195	195
RT Vol	0	0	97	0	90	0	45	0	0	0
Lane Flow Rate	32	280	246	33	173	62	70	45	212	212
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.067	0.556	0.466	0.077	0.364	0.15	0.149	0.098	0.436	0.332
Departure Headway (Hd)	7.644	7.134	6.828	8.49	7.586	8.737	7.734	7.909	7.399	5.631
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	468	505	526	421	474	410	463	453	485	636
Service Time	5.396	4.887	4.581	6.252	5.347	6.506	5.502	5.662	5.152	3.382
HCM Lane V/C Ratio	0.068	0.554	0.468	0.078	0.365	0.151	0.151	0.099	0.437	0.333
HCM Control Delay	10.9	18.5	15.4	12	14.7	13.1	11.9	11.5	15.8	11.2
HCM Lane LOS	B	C	C	B	B	B	B	B	C	B
HCM 95th-tile Q	0.2	3.4	2.4	0.2	1.6	0.5	0.5	0.3	2.2	1.5

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	41	390	0
Future Vol, veh/h	0	41	390	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	45	424	0
Number of Lanes	0	1	2	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	13.3
HCM LOS	B

Intersection						
Int Delay, s/veh	7.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	122	59	148	291	297	134
Future Vol, veh/h	122	59	148	291	297	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	180	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	64	161	316	323	146
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	876	234	468	0	-	0
Stage 1	396	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	288	768	1090	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	245	768	1090	-	-	-
Mov Cap-2 Maneuver	245	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	33.7	3		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1090	-	315	-	-	
HCM Lane V/C Ratio	0.148	-	0.625	-	-	
HCM Control Delay (s)	8.9	-	33.7	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.5	-	3.9	-	-	

HCM 2010 TWSC
4: Colobel Ave & Mesa Arneso Dr

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Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	78	0	108	128	26	0	0	69	16	0	9
Future Vol, veh/h	5	78	0	108	128	26	0	0	69	16	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	85	0	117	139	28	0	0	75	17	0	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	85	0	0	489	498	85	521	484	153
Stage 1	-	-	-	-	-	-	96	96	-	388	388	-
Stage 2	-	-	-	-	-	-	393	402	-	133	96	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	-	1512	-	-	489	474	974	466	483	893
Stage 1	-	-	-	-	-	-	911	815	-	636	609	-
Stage 2	-	-	-	-	-	-	632	600	-	870	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1512	-	-	450	432	974	401	440	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	450	432	-	401	440	-
Stage 1	-	-	-	-	-	-	907	812	-	633	557	-
Stage 2	-	-	-	-	-	-	571	548	-	800	812	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			3.1			9			12.6		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	974	1411	-	-	1512	-	-	500				
HCM Lane V/C Ratio	0.077	0.004	-	-	0.078	-	-	0.054				
HCM Control Delay (s)	9	7.6	0	-	7.6	0	-	12.6				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.3	-	-	0.2				

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	439	301	39
Future Vol, veh/h	0	17	0	439	301	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	0	477	327	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	185	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	826	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	826	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.5	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	826	-	-		
HCM Lane V/C Ratio	-	0.022	-	-		
HCM Control Delay (s)	-	9.5	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

HCM 2010 Signalized Intersection Capacity Analysis

433: Dennis Chavez Blvd & 98th St

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Traffic Volume (veh/h)	62	194	298	436	273	68			
Future Volume (veh/h)	62	194	298	436	273	68			
Number	5	2	6	16	3	18			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	1.00			1.00	1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1810	1881	1881	1881	1900			
Adj Flow Rate, veh/h	67	211	324	474	297	74			
Adj No. of Lanes	1	1	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	5	1	1	1	0			
Opposing Right Turn Influence	Yes				Yes				
Cap, veh/h	496	1233	1149	977	350	1302			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.03	0.68	0.61	0.61	0.20	0.20			
Ln Grp Delay, s/veh	5.6	5.2	8.4	10.9	38.8	1.7			
Ln Grp LOS	A	A	A	B	D	A			
Approach Vol, veh/h		278	798		371				
Approach Delay, s/veh		5.3	9.9		31.4				
Approach LOS		A	A		C				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2	8		5	6		
Case No			4.0	9.0		1.2	7.0		
Phs Duration (G+Y+Rc), s			64.0	21.1		6.0	58.0		
Change Period (Y+Rc), s			6.0	4.5		3.5	6.0		
Max Green (Gmax), s			58.0	31.5		11.5	43.0		
Max Allow Headway (MAH), s			5.4	3.8		2.2	5.4		
Max Q Clear (g_c+I1), s			5.6	15.6		3.1	16.0		
Green Ext Time (g_e), s			8.7	1.0		0.0	7.7		
Prob of Phs Call (p_c)			1.00	1.00		0.79	1.00		
Prob of Max Out (p_x)			0.00	0.00		0.00	0.00		
Left-Turn Movement Data									
Assigned Mvmt				3		5	1		
Mvmt Sat Flow, veh/h				1792		1774	0		
Through Movement Data									
Assigned Mvmt			2	8			6		
Mvmt Sat Flow, veh/h			1810	0			1881		
Right-Turn Movement Data									
Assigned Mvmt			12	18			16		
Mvmt Sat Flow, veh/h			0	1615			1599		
Left Lane Group Data									
Assigned Mvmt		0	0	3	0	5	1	0	0
Lane Assignment					(Pr/Pm)				

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Lanes in Grp	0	0	1	0	1	0	0	0
Grp Vol (v), veh/h	0	0	297	0	67	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1792	0	1774	0	0	0
Q Serve Time (g_s), s	0.0	0.0	13.6	0.0	1.1	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	13.6	0.0	1.1	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1792	0	678	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	54.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	45.1	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	52.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	350	0	496	0	0	0
V/C Ratio (X)	0.00	0.00	0.85	0.00	0.14	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	663	0	684	0	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	33.0	0.0	5.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	38.8	0.0	5.6	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	6.7	0.0	0.5	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	7.2	0.0	0.5	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.10	0.00	0.12	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	8	0	0	6	0	0
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	211	0	0	0	324	0	0
Grp Sat Flow (s), veh/h/ln	0	1810	0	0	0	1881	0	0
Q Serve Time (g_s), s	0.0	3.6	0.0	0.0	0.0	6.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	3.6	0.0	0.0	0.0	6.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	1233	0	0	0	1149	0	0
V/C Ratio (X)	0.00	0.17	0.00	0.00	0.00	0.28	0.00	0.00
Avail Cap (c_a), veh/h	0	1233	0	0	0	1149	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	4.9	0.0	0.0	0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	5.2	0.0	0.0	0.0	8.4	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.8	0.0	0.0	0.0	3.5	0.0	0.0

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2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	1.9	0.0	0.0	0.0	3.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.01	0.00	0.00	0.00	0.04	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	18	0	0	16	0	0
Lane Assignment	R			R				
Lanes in Grp	0	0	1	0	0	1	0	0
Grp Vol (v), veh/h	0	0	74	0	0	474	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1615	0	0	1599	0	0
Q Serve Time (g_s), s	0.0	0.0	0.8	0.0	0.0	14.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.8	0.0	0.0	14.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	1615.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	52.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	1302	0	0	977	0	0
V/C Ratio (X)	0.00	0.00	0.06	0.00	0.00	0.49	0.00	0.00
Avail Cap (c_a), veh/h	0	0	1584	0	0	977	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	1.7	0.0	0.0	9.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	1.7	0.0	0.0	10.9	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	1.5	0.0	0.0	6.1	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	1.5	0.0	0.0	6.5	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.02	0.00	0.00	0.33	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

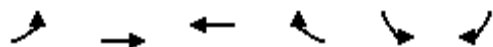
Intersection Summary

HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Queues

433: Dennis Chavez Blvd & 98th St

8/9/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	67	211	324	474	297	74
v/c Ratio	0.10	0.18	0.30	0.42	0.75	0.13
Control Delay	6.0	7.2	12.2	2.5	44.1	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	7.2	12.2	2.5	44.1	5.2
Queue Length 50th (ft)	10	40	89	0	155	0
Queue Length 95th (ft)	30	88	178	49	241	26
Internal Link Dist (ft)		3400	2643		1793	
Turn Bay Length (ft)	116			496		
Base Capacity (vph)	753	1191	1088	1125	638	696
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.18	0.30	0.42	0.47	0.11
Intersection Summary						

Intersection	
Intersection Delay, s/veh	15.2
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	14	49	36	0	97	73	106	0	114	313	46
Future Vol, veh/h	0	14	49	36	0	97	73	106	0	114	313	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	15	53	39	0	105	79	115	0	124	340	50
Number of Lanes	0	1	1	0	0	1	1	0	0	1	2	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	2
HCM Control Delay	13.2	15.1	15.2
HCM LOS	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	69%	0%	58%	0%	41%	0%	100%	76%
Vol Right, %	0%	0%	31%	0%	42%	0%	59%	0%	0%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	114	209	150	14	85	97	179	58	219	144
LT Vol	114	0	0	14	0	97	0	58	0	0
Through Vol	0	209	104	0	49	0	73	0	219	109
RT Vol	0	0	46	0	36	0	106	0	0	35
Lane Flow Rate	124	227	163	15	92	105	195	63	238	157
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.277	0.475	0.332	0.039	0.214	0.25	0.411	0.143	0.505	0.326
Departure Headway (Hd)	8.047	7.536	7.317	9.161	8.353	8.524	7.602	8.158	7.647	7.473
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	446	476	490	390	428	421	473	439	471	480
Service Time	5.812	5.301	5.082	6.946	6.137	6.292	5.37	5.925	5.413	5.24
HCM Lane V/C Ratio	0.278	0.477	0.333	0.038	0.215	0.249	0.412	0.144	0.505	0.327
HCM Control Delay	13.9	17	13.7	12.3	13.4	14.1	15.6	12.3	18	13.8
HCM Lane LOS	B	C	B	B	B	B	C	B	C	B
HCM 95th-tile Q	1.1	2.5	1.4	0.1	0.8	1	2	0.5	2.8	1.4

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	58	328	35
Future Vol, veh/h	0	58	328	35
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	63	357	38
Number of Lanes	0	1	2	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	15.8
HCM LOS	C

Intersection							
Int Delay, s/veh	10.8						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	172	143	42	283	460	37	
Future Vol, veh/h	172	143	42	283	460	37	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	180	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	187	155	46	308	500	40	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	765	270	540	0	-	0	
Stage 1	520	-	-	-	-	-	
Stage 2	245	-	-	-	-	-	
Critical Hdwy	6.84	6.94	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.22	-	-	-	
Pot Cap-1 Maneuver	340	728	1025	-	-	-	
Stage 1	561	-	-	-	-	-	
Stage 2	773	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	325	728	1025	-	-	-	
Mov Cap-2 Maneuver	325	-	-	-	-	-	
Stage 1	561	-	-	-	-	-	
Stage 2	738	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	37.9	1.1		0			
HCM LOS	E						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	1025	-	434	-	-		
HCM Lane V/C Ratio	0.045	-	0.789	-	-		
HCM Control Delay (s)	8.7	-	37.9	-	-		
HCM Lane LOS	A	-	E	-	-		
HCM 95th %tile Q(veh)	0.1	-	7	-	-		

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	0	325	557	11
Future Vol, veh/h	0	35	0	325	557	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	0	353	605	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	309	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	687	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	687	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	687	-	-		
HCM Lane V/C Ratio	-	0.055	-	-		
HCM Control Delay (s)	-	10.5	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.2	-	-		

HCM 2010 TWSC
5: Colobel Ave & Mesa Arenoso Dr

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Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	137	0	32	30	9	0	0	103	32	0	4
Future Vol, veh/h	6	137	0	32	30	9	0	0	103	32	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	149	0	35	33	10	0	0	112	35	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	42	0	0	149	0	0	271	274	149	325	269	38
Stage 1	-	-	-	-	-	-	162	162	-	107	107	-
Stage 2	-	-	-	-	-	-	109	112	-	218	162	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1567	-	-	1432	-	-	682	633	898	628	637	1034
Stage 1	-	-	-	-	-	-	840	764	-	898	807	-
Stage 2	-	-	-	-	-	-	896	803	-	784	764	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1567	-	-	1432	-	-	664	614	898	537	618	1034
Mov Cap-2 Maneuver	-	-	-	-	-	-	664	614	-	537	618	-
Stage 1	-	-	-	-	-	-	836	760	-	894	787	-
Stage 2	-	-	-	-	-	-	870	783	-	683	760	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			3.4			9.6			11.8		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	898	1567	-	-	1432	-	-	567				
HCM Lane V/C Ratio	0.125	0.004	-	-	0.024	-	-	0.069				
HCM Control Delay (s)	9.6	7.3	0	-	7.6	0	-	11.8				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.2				

HCM 2010 Signalized Intersection Capacity Analysis

433: Dennis Chavez Blvd & 98th St

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations									
Traffic Volume (veh/h)	182	443	415	96	456	283			
Future Volume (veh/h)	182	443	415	96	456	283			
Number	5	2	6	16	3	18			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	1.00			1.00	1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1776	1845	1696	1845	1792			
Adj Flow Rate, veh/h	198	482	451	104	496	308			
Adj No. of Lanes	1	1	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	7	3	12	3	6			
Opposing Right Turn Influence	Yes				Yes				
Cap, veh/h	453	1023	855	668	555	1187			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.08	0.58	0.46	0.46	0.32	0.32			
Ln Grp Delay, s/veh	13.2	13.6	20.9	15.6	41.2	3.1			
Ln Grp LOS	B	B	C	B	D	A			
Approach Vol, veh/h		680	555		804				
Approach Delay, s/veh		13.5	19.9		26.6				
Approach LOS		B	B		C				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2	8		5	6		
Case No			4.0	9.0		1.2	7.0		
Phs Duration (G+Y+Rc), s			62.0	35.2		11.0	51.0		
Change Period (Y+Rc), s			6.0	4.5		3.5	6.0		
Max Green (Gmax), s			56.0	43.5		11.5	41.0		
Max Allow Headway (MAH), s			5.8	3.9		2.2	5.8		
Max Q Clear (g_c+I1), s			17.4	28.2		7.4	18.9		
Green Ext Time (g_e), s			10.4	2.6		0.1	8.6		
Prob of Phs Call (p_c)			1.00	1.00		1.00	1.00		
Prob of Max Out (p_x)			0.00	0.04		0.06	0.00		
Left-Turn Movement Data									
Assigned Mvmt				3		5	1		
Mvmt Sat Flow, veh/h				1757		1757	0		
Through Movement Data									
Assigned Mvmt			2	8			6		
Mvmt Sat Flow, veh/h			1776	0			1845		
Right-Turn Movement Data									
Assigned Mvmt			12	18			16		
Mvmt Sat Flow, veh/h			0	1524			1442		
Left Lane Group Data									
Assigned Mvmt		0	0	3	0	5	1	0	0
Lane Assignment					(Pr/Pm)				

HCM 2010 Signalized Intersection Capacity Analysis

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Lanes in Grp	0	0	1	0	1	0	0	0
Grp Vol (v), veh/h	0	0	496	0	198	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1757	0	1757	0	0	0
Q Serve Time (g_s), s	0.0	0.0	26.2	0.0	5.4	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	26.2	0.0	5.4	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1757	0	842	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	47.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	28.2	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	45.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	555	0	453	0	0	0
V/C Ratio (X)	0.00	0.00	0.89	0.00	0.44	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	786	0	526	0	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	31.7	0.0	13.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	9.5	0.0	0.2	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	41.2	0.0	13.2	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	12.7	0.0	2.6	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	14.1	0.0	2.6	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.21	0.00	0.58	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	8	0	0	6	0	0
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	482	0	0	0	451	0	0
Grp Sat Flow (s), veh/h/ln	0	1776	0	0	0	1845	0	0
Q Serve Time (g_s), s	0.0	15.4	0.0	0.0	0.0	16.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	15.4	0.0	0.0	0.0	16.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	1023	0	0	0	855	0	0
V/C Ratio (X)	0.00	0.47	0.00	0.00	0.00	0.53	0.00	0.00
Avail Cap (c_a), veh/h	0	1023	0	0	0	855	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	12.0	0.0	0.0	0.0	18.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	13.6	0.0	0.0	0.0	20.9	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	7.5	0.0	0.0	0.0	8.5	0.0	0.0

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2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	7.9	0.0	0.0	0.0	9.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.06	0.00	0.00	0.00	0.09	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	18	0	0	16	0	0
Lane Assignment	R			R				
Lanes in Grp	0	0	1	0	0	1	0	0
Grp Vol (v), veh/h	0	0	308	0	0	104	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1524	0	0	1442	0	0
Q Serve Time (g_s), s	0.0	0.0	5.4	0.0	0.0	4.1	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	5.4	0.0	0.0	4.1	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	1523.6	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	45.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	1187	0	0	668	0	0
V/C Ratio (X)	0.00	0.00	0.26	0.00	0.00	0.16	0.00	0.00
Avail Cap (c_a), veh/h	0	0	1388	0	0	668	0	0
Upstream Filter (I)	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	3.0	0.0	0.0	15.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	3.1	0.0	0.0	15.6	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	7.1	0.0	0.0	1.6	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	7.1	0.0	0.0	1.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.11	0.00	0.00	0.09	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

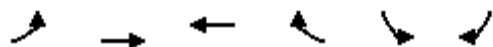
Intersection Summary

HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Queues

433: Dennis Chavez Blvd & 98th St

8/9/2016



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	198	482	451	104	496	308
v/c Ratio	0.42	0.48	0.55	0.15	0.87	0.37
Control Delay	13.7	16.2	26.0	5.0	47.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	16.2	26.0	5.0	47.7	5.6
Queue Length 50th (ft)	54	171	207	0	291	29
Queue Length 95th (ft)	113	318	376	35	419	74
Internal Link Dist (ft)		3400	2643		1721	
Turn Bay Length (ft)	116			496		
Base Capacity (vph)	497	1008	817	696	772	858
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.48	0.55	0.15	0.64	0.36
Intersection Summary						

Intersection

Int Delay, s/veh 4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	172	143	42	283	460	37
Future Vol, veh/h	172	143	42	283	460	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	180	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	187	155	46	308	500	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	765	270	540	0	-	0
Stage 1	520	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	340	728	1025	-	-	-
Stage 1	561	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	325	728	1025	-	-	-
Mov Cap-2 Maneuver	494	-	-	-	-	-
Stage 1	561	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1025	-	494	728	-	-
HCM Lane V/C Ratio	0.045	-	0.378	0.214	-	-
HCM Control Delay (s)	8.7	-	16.7	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.7	0.8	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	0	412	717	11
Future Vol, veh/h	0	35	0	412	717	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	0	448	779	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	396	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	603	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	603	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.4	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	603	-	-		
HCM Lane V/C Ratio	-	0.063	-	-		
HCM Control Delay (s)	-	11.4	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.2	-	-		

HCM 2010 TWSC
5: Colobel Ave & Mesa Arenoso Dr

8/9/2016

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	176	0	32	39	11	0	0	103	40	0	4
Future Vol, veh/h	7	176	0	32	39	11	0	0	103	40	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	191	0	35	42	12	0	0	112	43	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	54	0	0	191	0	0	327	331	191	380	325	48
Stage 1	-	-	-	-	-	-	207	207	-	118	118	-
Stage 2	-	-	-	-	-	-	120	124	-	262	207	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1551	-	-	1383	-	-	626	588	851	578	593	1021
Stage 1	-	-	-	-	-	-	795	731	-	887	798	-
Stage 2	-	-	-	-	-	-	884	793	-	743	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1551	-	-	1383	-	-	608	569	851	490	574	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	608	569	-	490	574	-
Stage 1	-	-	-	-	-	-	790	727	-	882	777	-
Stage 2	-	-	-	-	-	-	857	772	-	641	727	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			3			9.9			12.7		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	851	1551	-	-	1383	-	-	514				
HCM Lane V/C Ratio	0.132	0.005	-	-	0.025	-	-	0.093				
HCM Control Delay (s)	9.9	7.3	0	-	7.7	0	-	12.7				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0.3				

Intersection							
Int Delay, s/veh	3.8						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	122	59	148	291	297	134	
Future Vol, veh/h	122	59	148	291	297	134	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	0	180	-	-	-	
Veh in Median Storage, #	2	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	133	64	161	316	323	146	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	876	234	468	0	-	0	
Stage 1	396	-	-	-	-	-	
Stage 2	480	-	-	-	-	-	
Critical Hdwy	6.84	6.94	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.22	-	-	-	
Pot Cap-1 Maneuver	288	768	1090	-	-	-	
Stage 1	649	-	-	-	-	-	
Stage 2	588	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	245	768	1090	-	-	-	
Mov Cap-2 Maneuver	428	-	-	-	-	-	
Stage 1	649	-	-	-	-	-	
Stage 2	501	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	14.8	3		0			
HCM LOS	B						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR	
Capacity (veh/h)	1090	-	428	768	-	-	
HCM Lane V/C Ratio	0.148	-	0.31	0.084	-	-	
HCM Control Delay (s)	8.9	-	17.1	10.1	-	-	
HCM Lane LOS	A	-	C	B	-	-	
HCM 95th %tile Q(veh)	0.5	-	1.3	0.3	-	-	

HCM 2010 TWSC
4: Colobel Ave & Mesa Arneso Dr

8/9/2016

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	100	0	108	164	34	0	0	69	20	0	11
Future Vol, veh/h	6	100	0	108	164	34	0	0	69	20	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	109	0	117	178	37	0	0	75	22	0	12
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	109	0	0	559	572	109	591	554	197
Stage 1	-	-	-	-	-	-	122	122	-	432	432	-
Stage 2	-	-	-	-	-	-	437	450	-	159	122	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1355	-	-	1481	-	-	440	430	945	419	440	844
Stage 1	-	-	-	-	-	-	882	795	-	602	582	-
Stage 2	-	-	-	-	-	-	598	572	-	843	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1355	-	-	1481	-	-	402	389	945	358	398	844
Mov Cap-2 Maneuver	-	-	-	-	-	-	402	389	-	358	398	-
Stage 1	-	-	-	-	-	-	878	791	-	599	530	-
Stage 2	-	-	-	-	-	-	536	521	-	772	791	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			2.7			9.1			13.6		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	945	1355	-	-	1481	-	-	450				
HCM Lane V/C Ratio	0.079	0.005	-	-	0.079	-	-	0.075				
HCM Control Delay (s)	9.1	7.7	0	-	7.6	0	-	13.6				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.3	0	-	-	0.3	-	-	0.2				

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	412	387	39
Future Vol, veh/h	0	17	0	412	387	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	0	448	421	42
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	232	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	770	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	770	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	770	-	-		
HCM Lane V/C Ratio	-	0.024	-	-		
HCM Control Delay (s)	-	9.8	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

TRAFFIC IMPACT STUDY FOR RESIDENTIAL DEVELOPMENT ON 98TH STREET BETWEEN DENNIS CHAVEZ BOULEVARD AND COLOBEL AVENUE

Final Report August 2016



PREPARED FOR:
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And
Associates, P.A.



PREPARED BY:
Lee Engineering, LLC



Traffic Impact Study for Residential Development on 98th Street between Dennis Chavez Boulevard and Colobel Avenue

Final Report

August 2016

Prepared for:

D. Mark Goodwin & Associates, P.A.

Prepared by:



8/10/2016



Executive Summary

This report contains a Traffic Impact Study (TIS) for a proposed residential development in Albuquerque, NM. This work was completed by Lee Engineering, LLC, for D. Mark Goodwin and Associates, P.A.

Background

A proposed residential subdivision development is to be located on the west side of 98th Street between Dennis Chavez Boulevard and Colobel Avenue on the west side of Albuquerque, NM. The proposed site is within the jurisdiction of the City of Albuquerque. The development site will contain 250 single family housing units. The site plan is presented in **Figure 2** of this report.

The development site is proposed to incorporate two new access streets connecting to Colobel Avenue and 98th Street. The Colobel Avenue access, named Pauza Drive, is proposed to accommodate full right-in/right-out and left-in/left-out movements. The intersection of Colobel Avenue and 98th Street currently accommodates full right-in/right-out and left-in/left-out movements. The 98th Street access, named Sacate Blanco Avenue, is proposed to accommodate only right-in/right-out movements. The two new access streets and development layout are presented in **Figure 1** of this report.

The opening of this development is set to take place in 2019. This assessment was performed for the opening year of 2019 based on forecasted traffic volumes. Forecasted traffic volumes were grown from data collected in May of 2016. Peak hour trips were then added to the forecasted 2019 background volumes to facilitate the analysis of the impact from the proposed development on the surrounding roadway network.

Conclusions and Recommendations

Based on the findings of this report and traffic analysis performed, the conclusions and recommendations are as follows:

- Based on the warrant analyses contained herein, neither the 98th Street/Blake Road nor did the 98th Street /Colobel Avenue intersections satisfy 2009 Manual of Uniform Traffic Devices (MUTCD) warrants (Warrants 1 through 4).
- Aside from the intersection of 98th Street and Colobel Avenue, and Dennis Chavez Boulevard and 98th Street, all study intersections and movements are expected to operate at an acceptable level of service with existing geometry and control.
- All existing auxiliary lane storage lengths are anticipated to accommodate 95th percentile queue demands.
- A 150-foot eastbound left-turn lane is recommended for the intersection of 98th Street and Colobel Avenue and is to be constructed and striped per the latest City of Albuquerque standards.
- As mentioned Colobel Avenue is categorized as a local street and thus standard City of Albuquerque local street cross-section widths and striping would apply.
- Morrissey Street is also categorized as a local street and thus standard City of Albuquerque local street cross-section widths and striping would apply.



- Curb, gutter, sidewalks, and any remaining street width needed to complete Colobel Avenue will be constructed to complete the south side of Colobel Avenue from 98th Street to Morrissey Street.
- Curb ramps at the south-west corner of 98th Street and Colobel Avenue are recommended to be reconstructed to accommodate proposed sidewalks on the south side of Colobel Avenue.



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Introduction

This report summarizes the findings of a Traffic Impact Study (TIS) performed by Lee Engineering. Shown in **Figure 1**, the TIS performed is for a residential development to be located on 98th Street between Dennis Chaves Boulevard and Colobel Avenue. The proposed development site falls under the jurisdiction of the City of Albuquerque. Therefore, City of Albuquerque standards were used.

This report and the analysis contained were completed in agreement with the scoping requirements set forth by Raquel Michel of the City of Albuquerque and Doug Hughes of Goodwin and Associates (See Scoping Meeting Notes in **Appendix A**). The *ITE Trip Generation Manual 9th Edition*, *Highway Capacity Manual 2010 Edition*, *Manual on Uniform Traffic Control Devices 2009 Edition*, and the *New Mexico State Access Management Manual* were used to develop analysis procedures, conclusions, and recommendations for this study.

The proposed development will construct 250 single family housing units in a neighborhood subdivision. The site plan is presented in **Figure 2**. Traffic access for the proposed development site will be on located on both Colobel Avenue and 98th Street. The Colobel Avenue access will accommodate full right-in/right-out and left-in/left-out movements. Colobel Avenue currently accommodates full right-in/right-out and left-in/left-out movements at its intersection with 98th Street. The development site's 98th Street access will be restricted to only right-in/right-out movements. Access points to the site are shown in **Figure 2**. Study intersections affected by the proposed development are shown in **Figure 1**.

Full buildout of the development is planned for 2019. Traffic capacity and queue analyses will be conducted for the following scenarios:

1. Existing year 2016
2. Background Year 2019 without the proposed development
3. Background Year 2019 with the proposed development

Study intersections for this analysis include:

1. 98th Street and Blake Road
2. 98th Street and Colobel Avenue
3. Colobel Avenue and Pauza Drive/Mesa Arenoso
4. 98th Street and Sacate Blanco Avenue
5. 98th Street and Dennis Chavez



Figure 1: Vicinity Map



Area Land use and Streets

As stated, the development site is located on the west side of 98th Street between Dennis Chavez Boulevard and Colobel Avenue. Adjacent area land use consists of the following:

- Undeveloped/Not Improved Desert: The east side of 98th Street near the development site is undeveloped; this includes a large parcel of land between 98th Street and Unser, and from Sacate Blanco Avenue to Blake Road.
- Residential: The majority of land surrounding the development site is residential housing. This residential housing includes several parks throughout the area as well as two schools; Atrisco Heritage Academy High School, located to the South West of the development site on Dennis Chavez Boulevard, and Rudolfo Anaya Elementary School, located to the north west of the development site on Unser Boulevard.
- Light Commercial: There is a small commercial area to the north of the project site. The commercial area is located on 98th Street and Gibson Boulevard and currently only includes a pharmacy store.

Based on the land use, proposed land use, and the existing street network, no pass-by trips are expected for the development site. 98th Street and Colobel Avenue are the two primary streets that will serve the development site.

Current Roadway Network and Facilities

98th Street is a divided four lane primary arterial with pedestrian facilities and a bike lane in each direction. The speed limit is signed as 30 MPH. Per current City of Albuquerque street classifications, Colobel Avenue is a two-lane residential roadway with pedestrian facilities on the north side of the street and no existing bike facilities. Colobel serves subdivisions to the north and the west of the development site, and connects to 98th Street on the northeast corner of the development site. There are no sidewalks present on the south side of Colobel Avenue and the curb ramp on the south-west corner of 98th Street and Colobel Avenue does not accommodate the construction of a side walk on the south side of Colobel Avenue. It should be noted that, upon review of the long range plan within the 2040 Metropolitan Transportation Plan (MTP), Colobel Avenue designation as a local street is not identified to change classification. Morrissey Street that borders the west side of the development site currently has sidewalk facilities on both sides of the street. The Morrissey Street sidewalks do not continue at the intersection of Morrissey Street and Colobel Avenue. Per City of Albuquerque street classification, Morrissey Street is also classified as a local street.

Current Adjacent Projects

At the time of this study, there are no current adjacent projects.

Site Access

As shown in **Figure 2**, two new access points are proposed for the development site; one full access to Colobel Avenue and one partial access to 98th Street. Left turns at the 98th Street will not be allowed. The Colobel Avenue access will align with Mesa Arenoso Drive to make a four-legged intersection. The 98th Street access will be right-in/right-out only. The 98th Street access is proposed to be located approximately 920 feet south of Colobel Avenue and 98th Street. Study Intersections

The study intersections consist of:



1. 98th Street and Blake Street
2. Colobel Avenue and Mesa Arenoso Drive
3. 98th Street and Colobel Avenue
4. 98th Street and Dennis Chavez Boulevard
5. 98th Street and Site Access (Sacate Blanco Avenue)

Existing Traffic and Future Traffic Projections

Existing Traffic in 2016

Turning movement counts were collected on May 24, 2016, for the intersections of 98th Street and Blake Street, Colobel Avenue and Mesa Arenoso, and 98th Street and Colobel Avenue. Turning movement counts were collected on October 1, 2015 for 98th Street and Dennis Chavez Boulevard. Turning movement counts were not collected for the unconstructed intersection of 98th Street and Sacate Blanco Avenue. All turning movement counts were collected from 6:30 AM to 6:30 PM. Review of the 12 hour count data shows a typical highway distribution throughout the day with observable AM and PM peak hour periods. The existing lane geometry and turning movement counts for the existing study intersections are presented in **Figure 3**. Full Turning Movement Counts can be found in **Appendix A**.

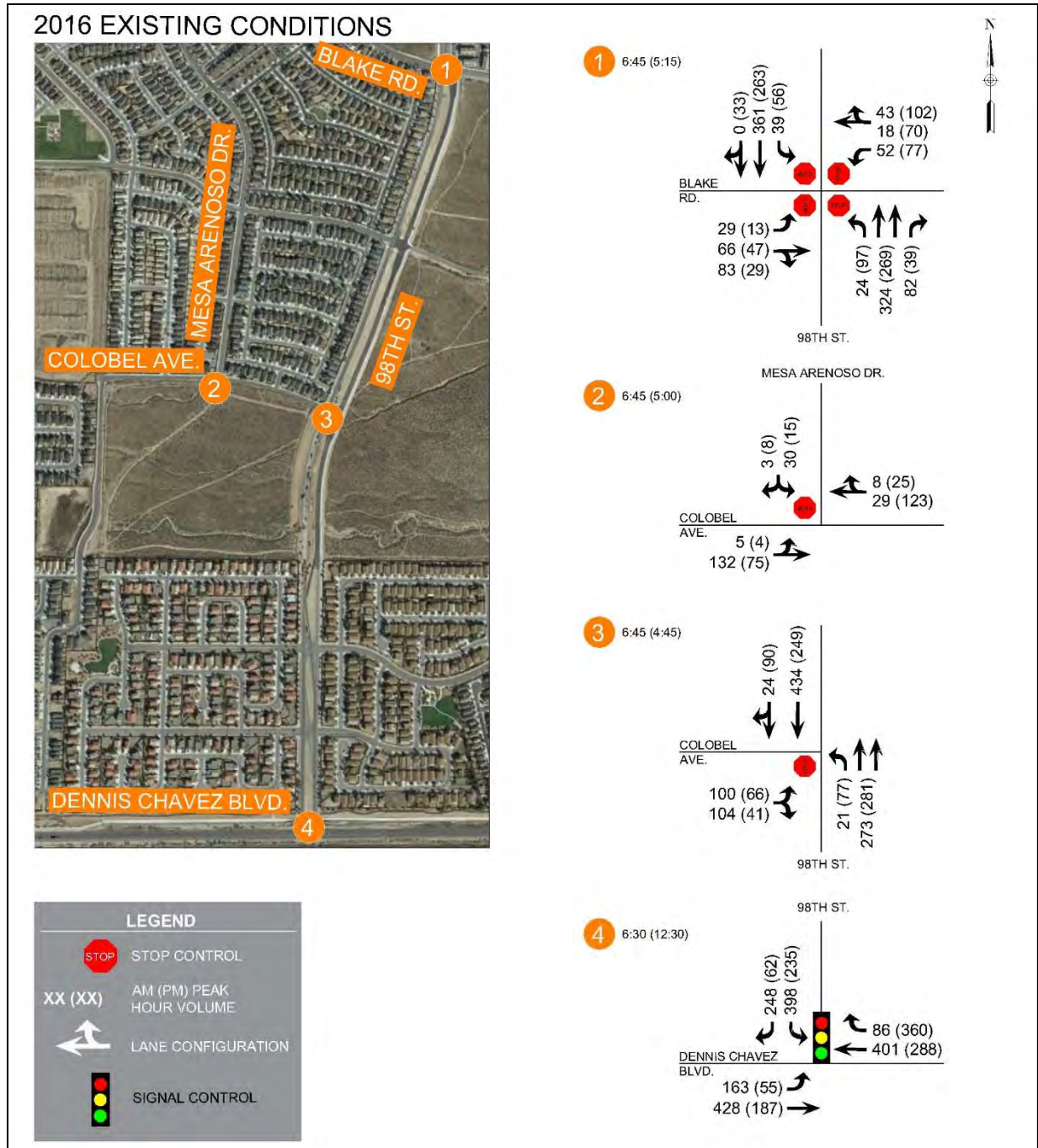


Figure 3: 2016 Existing Conditions

CITY OF ALBUQUERQUE



August 26, 2016

Patrick S. Byrd, P.E.
Lee Engineering
8220 San Pedro Dr. NE Suite 150
Albuquerque, NM 87113

**Re: Desert Sands
SWC 98th and Colobel
Traffic Impact Study**
Engineer's Stamp dated 08-10-16 (N09-D014)

Dear Mr. Byrd,

The subject Traffic Impact Study received on August 11, 2016 has been reviewed and approved by the Transportation Development Section. All comments have been adequately addressed.

The final Traffic Impact Study shall be valid for a period of three years. Should significant modifications to the approved development proposal occur, the approved study shall be revised to incorporate the changes.

If you have any questions, please feel free to contact me at (505) 924-3991.

Sincerely,

Racquel M. Michel, P.E.
Traffic Engineer, Planning Dept.
Development Review Services

Via: email

C: Applicant, File

Traffic Projections for Background Traffic Volumes

Opening of the development is planned for 2019. Therefore, traffic analysis was performed for a build out year of 2019. Traffic planning models were obtained from the Mid Region Council of Governments (MRCOG) to forecast traffic volumes for the year 2019. Growth rates for 98th Street, Blake Street, and Dennis Chavez were determined by comparing the 2012 MRCOG and 2040 MRCOG planning models. The traffic analysis revealed that these three streets showed an annual average growth rate of 1.1% per year. This growth rate was applied to the turning movement counts collected to determine future 2019 traffic volumes. The 2019 traffic volumes are shown in **Figure 4**.

2019 NO BUILD

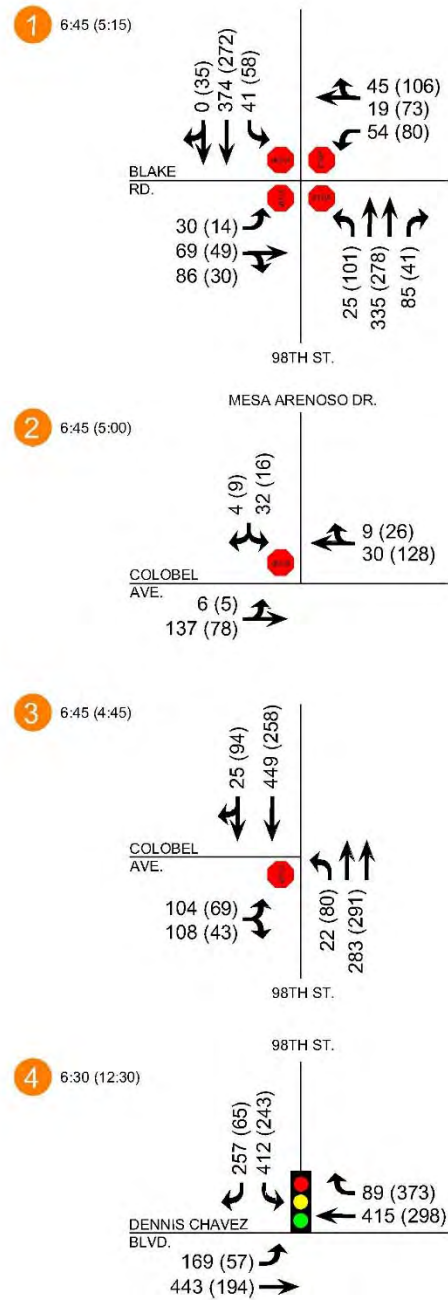
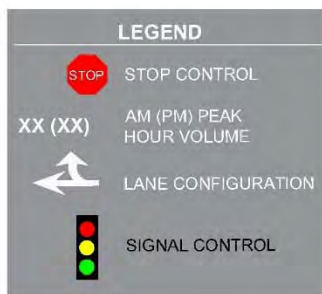


Figure 4: 2019 Forecasted Traffic Volumes

Trip Generation

Trip generation analysis was performed based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*. The land use categories Single Family Detached Housing (210) and Residential Condominium / Townhouse (230) were used to generate trips for the proposed development. Projected trips were calculated using the average rate for the peak hour generator. Due to the nature of residential developments, no pass-by trips were calculated. Trips generated are presented in **Table 1**.

Table 1: Desert Sands Trip Generation

Use	Units	TRIP GENERATION							TRIPS				
		Daily Rate	AM Peak			PM Peak			Daily	AM Peak		PM Peak	
			Rate	Enter	Exit	Rate	Enter	Exit		In	Out	In	Out
Single Family Detached Housing(210)	216 Dwelling Units	9.87	0.75	25%	75%	0.97	63%	37%	2132.94	40	121	132	78
Residential Condominium / Townhouse (230)	31 Dwelling Units	7.49	0.65	17%	83%	0.74	67%	33%	232	3	17	15	8
Total	- -	-	-	-	-	-	-	-	2132.94	43	138	147	86

Notes:

Single Family Detached Housing
Daily Rate: $\ln(T) = 0.92 \ln(X) + 2.72$
AM Rate: $T = 0.70X + 9.74$
PM Rate: $\ln(T) = 0.9 \ln(X) + 0.51$
Residential Condominium/Townhouse
Daily Rate: $\ln(T) = 0.87 \ln(X) + 2.46$
AM Rate: $\ln(T) = 0.8 \ln(X) + 0.26$
PM Rate: $\ln(T) = 0.82 \ln(X) + 0.32$

Trip Distribution and Assignment

Trip distribution of primary trips was determined based on analysis of existing intersection demand characteristics and expected routing for home based employment and commercial trips. Southbound trips were distributed within the site using an approximate 50/50 split of the southbound trips between Colobel Avenue and Sacate Blanco Avenue. Primary Trip Distribution and Assignment values are shown in **Figure 5** and **Figure 6**. Opening day traffic volumes with trips is shown in **Figure 7**.

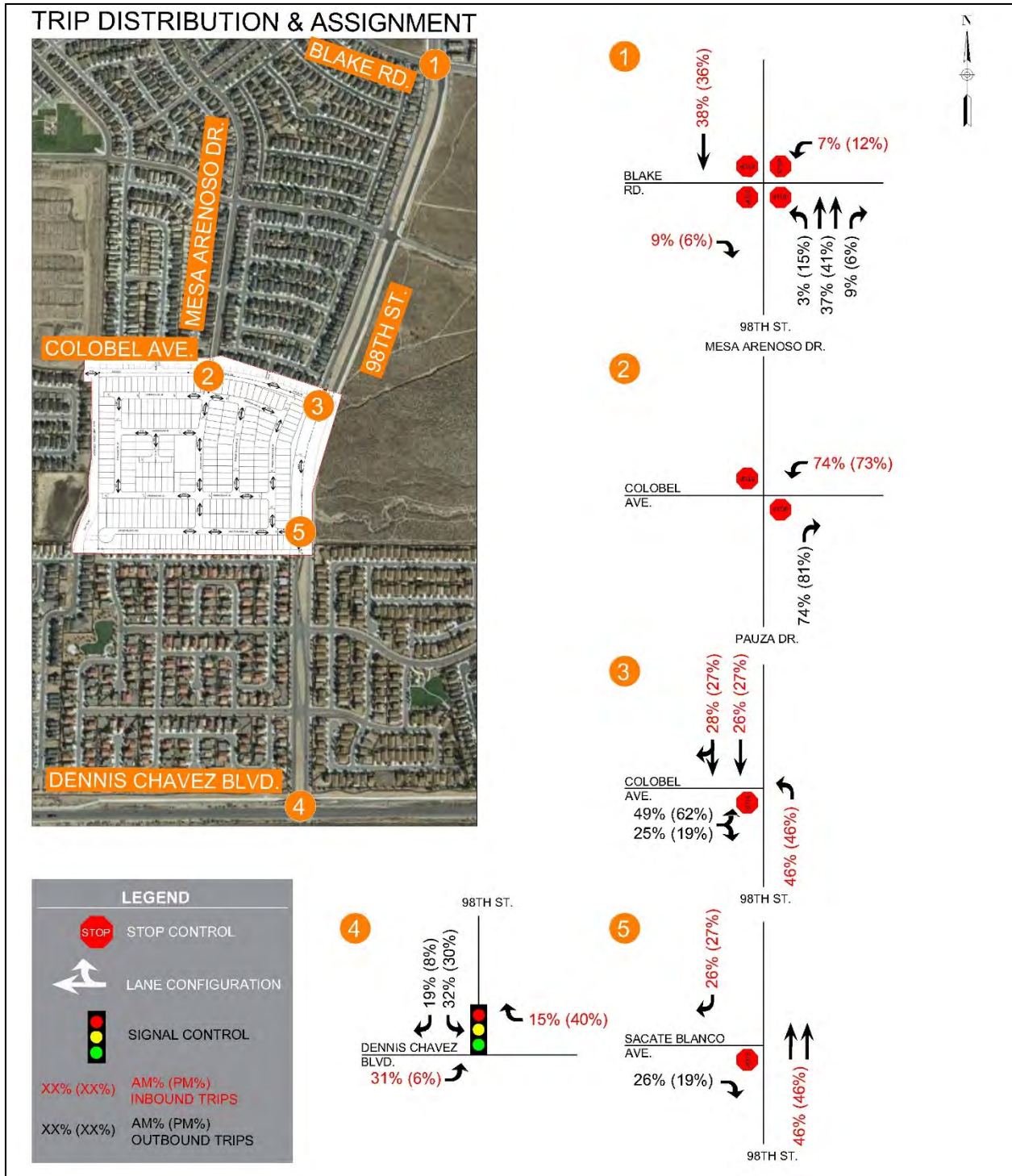


Figure 5: Trip Distribution and Assignment



Figure 6: Trip Generation and Assignment

2019 BUILDOUT

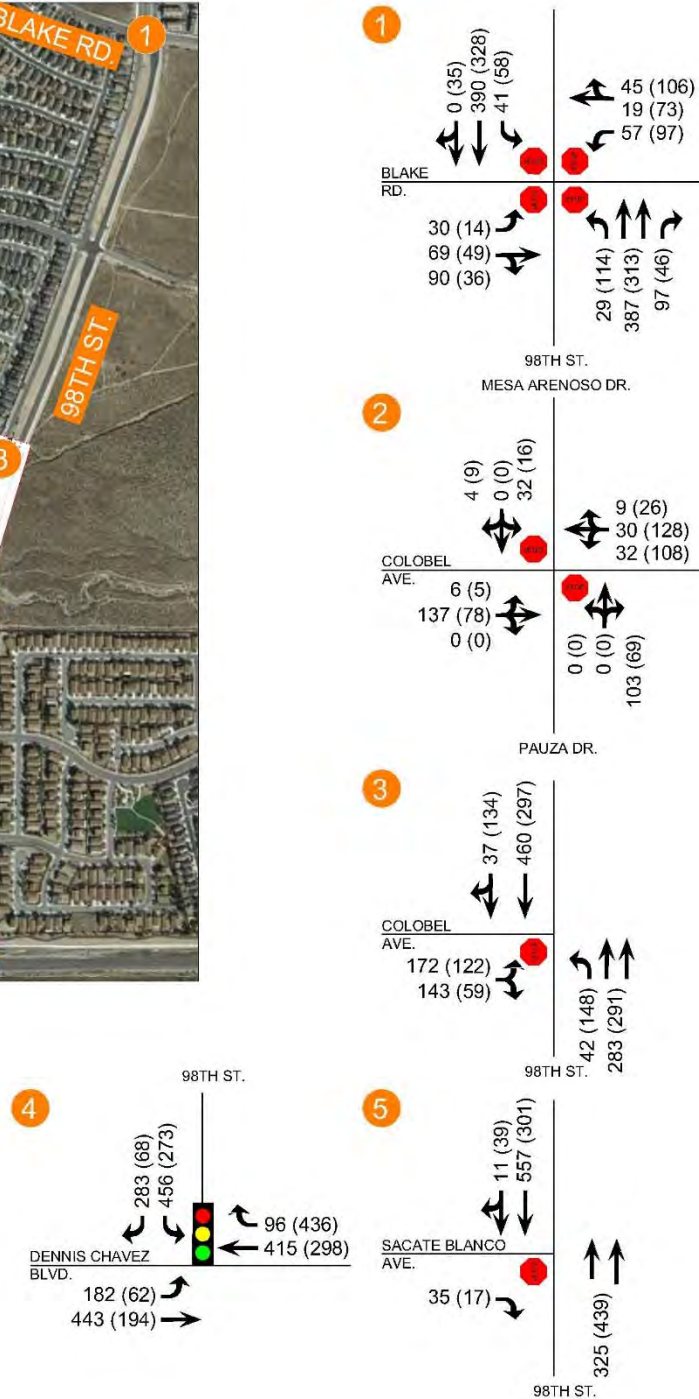


Figure 7: 2019 Forecasted Traffic Volumes with Trips

Signal Warrant Analysis

Signal warrant analyses for 2009 Manual of Uniform Traffic Control Devices (MUTCD) warrant numbers 1 through 4 were performed for the intersections of 98th Street and Blake Street and 98th Street and Colobel Avenue. The summarized results are shown in **Table 2**.

Table 2: Signal Warrant Analysis Summary

98th Street Study Intersection with	2009 MUTCD Warrants Satisfied									
	Warrant 1 (8 Hour)	Warrant 2 (4 Hour)	Warrant 3 (Peak Hour)	Warrant 4 (Pedestrian)	Warrant 5 (School Crossing)	Warrant 6 (Coordinated Signal System)	Warrant 7 (Crash)	Warrant 8 (Roadway Network)	Warrant 9 (Intersection Near a Grade Crossing)	All-Way Stop Control
Blake Street	✗	✗	✗	✗	NA	NA	Not Measured	NA	NA	NA
Colobel Avenue	✗	✗	✗	✗						✗

✗ Not Satisfied

✓ Satisfied

Based on the warrant analysis, neither Blake Street nor Colobel Avenue satisfied any warrant. It is recognized that Colobel Avenue is spaced one half mile from the existing signal at Dennis Chavez Boulevard to the south and a potential signal at Blake Road, which is considered ideal signal spacing from a planning perspective. Therefore, even though traffic signals are not warranted at this time, it is recommended that the city periodically reanalyze the 98th Street/Colobel Avenue for traffic signal warrants as developments continues to fill the surrounding area.

Operational and Safety Analysis

Intersection Capacity and LOS

Intersection capacity and Level of Service (LOS) analysis was performed using procedures and methods outlined in the *2010 Highway Capacity Manual*. Synchro 9.0 software was used to conduct the analysis. Detailed output sheets from the analysis can be found in **Appendix C**. Capacity and LOS are summarized below in **Table 3** for the following scenarios: Existing (2016), Background (2019), and Opening Year with Buildout (2019).

Table 3: Level of Service Summary

Study Intersection	Scenario	Worst Case Movement LOS				Intersection LOS			
		AM		PM		AM		PM	
		Movement	LOS	Movement	LOS	Delay ¹	LOS ²	Delay ¹	LOS ²
98th Street and Blake Street	Existing (2016)	NBR	C	NBR	B	17.4	C	13.7	B
	Background (2019)	NBT	C	SBT	B	13.4	B	13.5	B
	Opening Year (2019) With Proposed Development	NBT	C	SBT	C	14.8	B	15.2	C
Colobel Avenue and Mesa Arenoso Drive/Pauza Drive	Existing (2016)	SBL	A	SBL	B	2.4	A	1.3	A
	Background (2019)	SBL	A	EBL	A	1.8	A	1.1	A
	Opening Year (2019) With Proposed Development	SBL	B	SBL	B	4.8	A	4.1	A
98th Street and Colobel Avenue	Existing (2016)	EBL	C	EBL	B	3.2	A	2.6	A
	Background (2019)	EBL	B	EBL	B	3.3	A	2.4	A
	Opening Year (2019) With Proposed Development	EBL	E	EBL	D	10.8	B	7.1	A
	Opening Year (2019) With Proposed Development Mitigated	EBL	C	EBL	C	4.2	A	3.8	A
98th Street and Sacate Blanco Avenue	Opening Year (2019) With Proposed Development	EBR	B	EBR	A	0.4	A	0.2	A
98th Street and Dennis Chavez Boulevard	Existing (2016)	SBL	F	SBL	D	25.4	C	12.8	B
	Background (2019)	SBL	D	SBL	D	18.8	B	13.3	B
	Opening Year (2019) With Proposed Development	SBL	D	SBL	D	20.4	C	14.5	B

¹Average delay in seconds per vehicle.

²LOS stands for Level of Service.

³ Average Delay and LOS for the highest delay movement is reported for unsignalized intersections

It should be noted that the 2010 *Highway Capacity Manual* does not provide analysis procedures for all-way-stop-control intersections whose approach/approaches have more than three lanes. This includes through lanes as well as turning lanes. Therefore, for the intersection of 98th Street and Blake Street, the northbound right turn lane was combined with the outermost northbound through lane. This allows for analysis according to 2010 *Highway Capacity Manual* procedures and provides a more conservative approach to analyzing the northbound approach.

Base on the summarized results in **Table 3**, the following observations are noted:

- All study intersections and movements, are expected to operate at a LOS C or better during both AM and PM peak hours for traffic demand scenarios, except for 98th Street and Colobel Avenue, and Dennis Chavez Boulevard and 98th Street.
- The eastbound left-turn at 98th Street and Colobel Avenue is expected to operate at a LOS E for the 2019 Build Out scenario during the AM peak hour.
- With the addition of an eastbound left turn lane at 98th Street and Colobel Avenue the AM eastbound left-turn LOS is expected to improve from LOS E to LOS C and the PM eastbound left-turn LOS is expected to improve from a D to a C.
- 98th Street and Dennis Chavez shows a LOS F for the worst case movement in the Existing 2016 scenario using the existing signal timings. Optimizing the signal timings of 98th Street and Dennis Chavez could improve the Existing 2016 LOS. LOS for the southbound left-turn at 98th Street and Dennis Chaves currently operates at an LOS F. However, signal timing optimization can improve the southbound left-turn LOS to an LOS D. The City of Albuquerque is currently in the process of re-timing several corridors including Dennis Chavez Boulevard to reflect the latest traffic demands and patterns.

The study corridor of 98th Street from Dennis Chavez to Blake Street operates adequately under current conditions. Background 2019 and Opening Year 2019 with Proposed Development also operate satisfactorily except for the eastbound left movement at 98th and Colobel Avenue. When an exclusive left-turn lane is added to the eastbound Colobel Avenue approach, the AM eastbound movement LOS is improved to an acceptable level of LOS C. Therefore, an exclusive eastbound left turn and right-turn lane is recommended for the intersection of 98th Street and Colobel Avenue. The Synchro output sheets can be found in Appendix C.

Queue Storage and Auxiliary Lane Analysis

Queuing analysis was performed for the study corridor for all auxiliary turn lanes where the proposed project contributes additional traffic demand. The results are presented in **Table 4**.

Table 4: Queuing Analysis

Intersection	Movement	Existing (2016)		Background (2019)		Opening Year with Development (2019)		Opening Year with Development (2019) Mitigated		Storage Length Present or Proposed
		AM	PM	AM	PM	AM	PM	AM	PM	
		95th Percentile (ft.)	95th Percentile (ft.)	95th Percentile (ft.)	95th Percentile (ft.)	95th Percentile (ft.)	95th Percentile (ft.)	95th Percentile (ft.)	95th Percentile (ft.)	
98th Street and Blake Street	NBL	<25	<25	<25	<25	<25	<25	<25	<25	90
	NBR	60	26	38	<25	48	28	48	28	105
	WBL	<25	<25	<25	<25	<25	<25	<25	<25	200
Colobel Avenue and Mesa Arenoso Drive / Pauza Drive	WBL	-	-	-	-	<25	<25	<25	<25	-
98th Street and Colobel Avenue	NBL	<25	<25	<25	<25	<25	<25	<25	<25	200
	EBL	46	<25	36	<25	140	78	34	26	150
98th Street and Dennis Chavez Boulevard	EBL	56	<25	101	26	113	30	113	30	120
	SBL	456	212	378	217	419	241	419	241	-
	SBR	68	<25	56	26	74	26	74	26	-
	WBR	<25	41	34	44	35	49	35	49	490

Generally, all movements are accommodated by existing storage capacities. The 95th percentile queue under 2019 buildout demands for the eastbound left and right turns at 98th Street and Colobel Avenue is expected to be 140 feet if only on shared lane approach is provided. However, this queue for the eastbound left turn movement at the 98th Street and Colobel intersection is reduced from an expected queue of 140 feet to 34 feet if an exclusive left turn lane is added to the approach.

Therefore, the proposed eastbound left-turn lane at the 98th Street and Colobel Avenue intersection is recommended to be constructed to provide 150 feet of left-turn storage, which is consistent with City of Albuquerque standards for this street classification and will accommodate the worst-case expected 95th percentile queue lengths. The left-turn lane should be constructed in compliance with City of Albuquerque standards including appropriate taper rates and striping.

Recommended Street Improvements

Based on traffic analysis and existing conditions, the following street improvements are recommended:

- A 150-foot eastbound left-turn lane is recommended at the intersection of 98th Street and Colobel Avenue.
- As mentioned Colobel Avenue is categorized as a local street and thus standard City of Albuquerque local street cross-section widths and striping would apply.



- Morrissey Street is also categorized as a local street and thus standard City of Albuquerque local street cross-section widths and striping would apply.
- Sidewalk, curb, and gutter should be constructed on the south side of Colobel Avenue from 98th Street to Morrissey Street.
- Curb ramps on the south-west corner of 98th Street and Colobel Avenue and on the south-east corner of Morrissey Street and Colobel Avenue should be reconstructed to accommodate sidewalk, curb, and gutter on the south side of Colobel Avenue.

Conclusions and recommendations are provided in the Executive Summary.

**TRAFFIC ENGINEERING
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