

APPENDIX S-B

VV3 SUPPLEMENTAL TIA

Victorville Station Location Option 3

The proposed station in Victorville would be located along the west side of I-15 near the Dale Evans Parkway interchange. Access to this station would be via the Dale Evans Parkway ramps.

EXISTING RAMP JUNCTION ANALYSIS

Ramp junction analysis is performed for the PM peak hour only as done for the intersection analysis. The following ramp junctions were evaluated.

1. I-15 NB Off-ramp to Dale Evans Parkway (Diverge analysis)
2. I-15 SB Off-ramp to Dale Evans Parkway (Diverge analysis)
3. I-15 NB On-ramp from Dale Evans Parkway (Merge analysis)
4. I-15 SB On-ramp from Dale Evans Parkway (Merge analysis)

For the above ramp junctions, volumes for existing (year 2009) conditions were obtained by interpolating between year 2006 and year 2035 volumes provided by the San Bernardino Association of Government's (SANBAG) travel demand model. These volumes were used to perform the analysis. Table 1 presents the results of the ramp junction analysis. HCS calculation sheets are provided in the Appendix.

Table 1
Ramp Junction Level of Service – Existing Conditions

Location	LOS	D _R
1 I-15 NB Off-ramp to Dale Evans Parkway	B	16.0
2 I-15 SB Off-ramp to Dale Evans Parkway	C	26.6
3 I-15 NB On-ramp from Dale Evans Parkway	B	16.1
4 I-15 SB On-ramp from Dale Evans Parkway	C	26.3

SOURCE: AECOM, 2010.

Notes:

- a) NB = Northbound; SB = Southbound
- b) LOS = Level of Service
- c) Density of ramp (D_R) reported in pc/mi/ln

As indicated in Table 1, all the ramp junctions operate at acceptable conditions under existing conditions.

RAMP JUNCTION IMPACT ANALYSIS

2013 Baseline Conditions

The future year 2013 baseline volumes were obtained by interpolating between the existing year and future year 2035 travel demand volumes from SANBAG. For analysis purposes, existing geometry was assumed for the future year 2013 conditions. Table 2 presents the results of the ramp junction analysis for 2013 baseline conditions. HCS calculation sheets are provided in the Appendix.

Table 2
Ramp Junction Level of Service – 2013 Baseline Conditions

Location		LOS	D _R
1	I-15 NB Off-ramp to Dale Evans Parkway	B	18.8
2	I-15 SB Off-ramp to Dale Evans Parkway	D	28.8
3	I-15 NB On-ramp from Dale Evans Parkway	B	18.8
4	I-15 SB On-ramp from Dale Evans Parkway	D	29.6

SOURCE: AECOM, 2010.

Notes:

- a) NB = Northbound; SB = Southbound
- b) LOS = Level of Service
- c) Density of ramp (D_R) reported in pc/mi/ln

As indicated in Table 2, all the ramp junctions operate at acceptable conditions under 2013 baseline conditions.

2013 Baseline plus DMU Alternative Conditions

The DMU project alternative volumes were added to the 2013 baseline volumes to obtain the 2013 baseline plus DMU alternative condition volumes. These volumes were used to perform the analysis. Table 3 presents the results of the ramp junction analysis for 2013 baseline plus DMU conditions. HCS calculation sheets are provided in the Appendix.

Table 3
Ramp Junction Level of Service – 2013 Baseline plus DMU Alternative Conditions

Location		LOS	D _R
1	I-15 NB Off-ramp to Dale Evans Parkway	C	23.4
2	I-15 SB Off-ramp to Dale Evans Parkway	D	29.0
3	I-15 NB On-ramp from Dale Evans Parkway	C	22.2
4	I-15 SB On-ramp from Dale Evans Parkway	D	30.2

SOURCE: AECOM, 2010.

Notes:

- a) NB = Northbound; SB = Southbound
- b) LOS = Level of Service
- c) Density of ramp (D_R) reported in pc/mi/ln

As indicated in Table 3, all the ramp junctions continue to operate at acceptable conditions under 2013 baseline plus DMU project alternative conditions.

2013 Baseline plus EMU Alternative Conditions

The EMU project alternative volumes were added to the 2013 baseline volumes to obtain the 2013 baseline plus EMU alternative condition volumes. These volumes were used to perform the analysis. Table 4 presents the results of the ramp junction analysis for 2013 baseline plus EMU conditions. HCS calculation sheets are provided in the Appendix.

**Table 4
Ramp Junction Level of Service – 2013 Baseline plus EMU Alternative Conditions**

Location		LOS	D _R
1	I-15 NB Off-ramp to Dale Evans Parkway	C	25.3
2	I-15 SB Off-ramp to Dale Evans Parkway	D	29.1
3	I-15 NB On-ramp from Dale Evans Parkway	C	23.6
4	I-15 SB On-ramp from Dale Evans Parkway	D	34.8

SOURCE: AECOM, 2010.

Notes:

- a) NB = Northbound; SB = Southbound
- b) LOS = Level of Service
- c) Density of ramp (D_R) reported in pc/mi/ln

As indicated in Table 4, all the ramp junctions continue to operate at acceptable conditions under 2013 baseline plus EMU project alternative conditions.

2030 Baseline Conditions

The future year 2030 baseline volumes were obtained by interpolating between the existing year and future year 2035 travel demand volumes from SANBAG. For analysis purposes, existing geometry was assumed for the on- and off-ramps and three lanes were assumed for the freeway mainline. Table 5 presents the results of the ramp junction analysis for 2030 baseline conditions. HCS calculation sheets are provided in the Appendix.

**Table 5
Ramp Junction Level of Service – 2030 Baseline Conditions**

Location		LOS	D _R
1	I-15 NB Off-ramp to Dale Evans Parkway	D	28.2
2	I-15 SB Off-ramp to Dale Evans Parkway	E	35.5
3	I-15 NB On-ramp from Dale Evans Parkway	D	29.1
4	I-15 SB On-ramp from Dale Evans Parkway	F	41.6

Bold indicates unacceptable conditions

SOURCE: AECOM, 2009.

Notes:

- a) NB = Northbound; SB = Southbound
- b) LOS = Level of Service
- c) Density of ramp (D_R) reported in pc/mi/ln

As indicated in Table 5, northbound on and off-ramp junctions operate at acceptable conditions (LOS D), while southbound on and off-ramp junctions operate at unacceptable conditions (LOS E or F).

2030 Baseline plus DMU Alternative Conditions

The DMU project alternative volumes were added to the 2030 baseline volumes to obtain the 2030 baseline plus DMU alternative condition volumes. These volumes were used to perform the analysis. Table 6 presents the results of the ramp junction analysis for 2030 baseline plus DMU conditions. HCS calculation sheets are provided in the Appendix.

Table 6
Ramp Junction Level of Service – 2030 Baseline plus DMU Alternative Conditions

Location	LOS	D_R
1 I-15 NB Off-ramp to Dale Evans Parkway	D	32.0
2 I-15 SB Off-ramp to Dale Evans Parkway	E	35.6
3 I-15 NB On-ramp from Dale Evans Parkway	D	32.4
4 I-15 SB On-ramp from Dale Evans Parkway	F	42.2

Bold indicates unacceptable conditions

SOURCE: AECOM, 2009.

Notes:

a) NB = Northbound; SB = Southbound

b) LOS = Level of Service

c) Density of ramp (D_R) reported in pc/mi/ln

Comparing results from tables 5 and 6, it can be noted that the southbound on and off-ramp junctions continue to operate at unacceptable conditions under this scenario. The densities at the ramp influence area only increase with the addition of the DMU project volumes.

2030 Baseline plus EMU Alternative Conditions

The EMU project alternative volumes were added to the 2030 baseline volumes to obtain the 2030 baseline plus EMU alternative condition volumes. These volumes were used to perform the analysis. Table 7 presents the results of the ramp junction analysis for 2030 baseline plus EMU conditions. HCS calculation sheets are provided in the Appendix.

Comparing results from tables 5 and 7, it can be noted that the southbound on and off-ramp junctions continue to operate at unacceptable conditions under this scenario. The densities at the ramp influence area only increase with the addition of the EMU project volumes.

Table 7
Ramp Junction Level of Service – 2030 Baseline plus EMU Alternative Conditions

Location		LOS	D _R
1	I-15 NB Off-ramp to Dale Evans Parkway	D	33.5
2	I-15 SB Off-ramp to Dale Evans Parkway	E	35.7
3	I-15 NB On-ramp from Dale Evans Parkway	D	33.7
4	I-15 SB On-ramp from Dale Evans Parkway	F	46.5

Bold indicates unacceptable conditions

SOURCE: AECOM, 2009.

Notes:

a) NB = Northbound; SB = Southbound

b) LOS = Level of Service

c) Density of ramp (D_R) reported in pc/mi/ln

EXISTING ROADWAY NETWORK AROUND THE STATION LOCATION

The Dale Evans Parkway interchanges with I-15 will provide the most direct regional access to the proposed Victorville train station location option 3. Currently this roadway has a single travel lane in each direction; because of the relatively low traffic volume, intersections in the area are stop controlled. The existing lane geometry at the Victorville study intersections is shown in Figure 1.

EXISTING INTERSECTION OPERATIONS

Based on the station location, the following existing intersections in the station vicinity have been identified for analysis:

- Dale Evans Parkway and I-15 NB Ramps
- Dale Evans Parkway and I-15 SB Ramps

The evening peak hour turning movement counts were obtained at these study intersections on Thursday, May 28 2009. These volumes are presented in Figure 2.

Intersection LOS for the weekday PM peak period (4:00 PM to 6:00 PM) was calculated for the study intersections. The results of the analysis are presented in Table 8. SYNCHRO analysis worksheets are provided in the Appendix.

As indicated in Table 8, both the study intersections operate at acceptable conditions under existing conditions.

Figure 1 Existing Intersection Lane Geometry - Victorville Station Location Alternative 3

Figure 2 Existing Intersection Traffic Volumes - Victorville Station Location Alternative 3

**Table 8
Victorville Option 3 - Existing Conditions LOS**

Intersection	Traffic Control	Existing Conditions	
		LOS	Delay ¹
1 I-15 Northbound Ramps / Dale Evans Parkway	Unsignalized ²	A (NB)	9.3
2 I-15 Southbound Ramps / Dale Evans Parkway	Unsignalized ²	A (SB)	9.8

Notes:

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. SB=Southbound, WB=Westbound

Source: AECOM, 2009.

In Victorville, LOS A through D are considered satisfactory levels and LOS E and F conditions are considered unsatisfactory service levels. Unsignalized intersections are considered to operate at unsatisfactory conditions if one approach operates at LOS E or F and Caltrans peak hour volume signal warrants are met.

Impact Analysis

This section presents the assessment of transportation impacts due to the proposed project. The transportation conditions were assessed for the following scenarios:

- Existing plus Project Conditions;
- 2013 Opening Year Conditions;
- 2013 Opening Year plus Project Conditions;
- 2030 Cumulative Baseline Conditions; and,
- 2030 Cumulative Baseline plus Project Conditions.

SIGNIFICANCE CRITERIA

The following are the significance criteria used by the City of Victorville and San Bernardino County CMP guidelines for the determination of impacts associated with a proposed project:

- If the proposed site adds 5% or more to the peak hour traffic of an intersection.
- Level of service C will be the design objective for capacity and under no circumstances will less than level of service D be accepted.

PROJECT TRAVEL DEMAND

The Victor Valley Area Transportation Study (VVATS) travel demand forecasting model was used to develop the base “no-project” travel forecasts for future year 2013 and 2030 traffic analysis. The City of Victorville provided future year 2035 travel forecasts from the model to AECOM. AECOM has applied a straight line method to interpolate the intermediate year volumes for project purpose. The project-related trips were then added to the future year base volumes to determine the “with project conditions”.

TRIP DISTRIBUTION

The overall trip distribution for the station is shown in Figure 3. This station is served primarily by I-15 and Dale Evans Parkway. Due to its proximity to the northern I-15 / Dale Evans Parkway interchange, it is assumed that all vehicles generated by the proposed station would use this interchange.

There are a total of 5 station accesses leading to 7 parking areas within the station boundary. Project trip distribution within the station boundary is based on the proportion of parking spaces served by each access. It is assumed that all non self-drive passengers will use Parking Area 6 and self-drive passengers will use all 7 parking areas. As a result, trips by self-drive passengers will be accounted for at all 5 accesses whereas non self-drive passenger trips will only be accounted for at Intersection 3 (Station Access #1 / Dale Evans Parkway) that provides direct access to parking area 6. Half of area 6 is assumed to be assigned for uses other than self-drive passengers. Table 9 presents the number of parking spaces in each area and the corresponding portion used for distributing self-drive trips. The proposed parking layout and allocation plan is presented in Figure 4. It can be seen that each parking access is shared between two parking areas.

Table 9
Self-Drive Trip Distribution

Parking Area	Total # spaces	Self-drive # spaces	Self Drive Proportion ²
6 ¹	6021	3011	0.22
5	1872	1872	0.14
4	1134	1134	0.08
3	2272	2272	0.17
2	2442	2442	0.18
1	2117	2117	0.16
7	670	670	0.05
Total	16528	13518	1

Notes:

1. Remaining 3010 parking spaces are assumed to be used by non self-drive passengers.
2. Self-drive proportion determined by parking spaces allocation to be used for trip assignment at study intersections.

EXISTING PLUS PROJECT CONDITIONS

Existing plus Diesel Electric Multiple Unit (DMU) Alternative Conditions

Based on the trip distribution presented in Figure 3 and the parking distribution, project trips accessing the station were assigned at the study intersections. The project trips for DMU alternative conditions are presented in the Appendix. These project trips were added to the existing volumes to generate the Existing plus DMU volumes.

Figure 3 Trip Distribution – Victorville Station Location Alternative 3

Figure 4 Station Parking Layout and Allocation

Based on the Existing plus DMU volumes and the existing geometry, intersection level of service analysis was performed. Table 10 presents the results of the analysis. SYNCHRO analysis worksheets are provided in the Appendix.

As indicated in Table 10, both ramp intersections operate at unacceptable level of service (LOS F) under this scenario. All the other intersections operate at acceptable conditions.

Table 10
Victorville Option 3 – Existing plus DMU Conditions LOS

Intersection	Traffic Control	Existing Conditions		Existing plus DMU Conditions		
		LOS	Delay ¹	LOS	Delay ¹	
1	I-15 Northbound Ramps / Dale Evans Parkway	Unsignalized ²	A (NB)	9.3	F (NB)	163.4
2	I-15 Southbound Ramps / Dale Evans Parkway	Unsignalized ²	A (SB)	9.8	F (SB)	115.3
3	Station Access #1 / Dale Evans Parkway	Unsignalized ²	-	-	B (NB)	12.6
4	Station Access #2 / Dale Evans Parkway	Unsignalized ²	-	-	A (NB)	9.6
5	Future Street / Dale Evans Parkway	Unsignalized ²	-	-	A (NB)	9.1
6	Future Street / Station Access #3	Unsignalized ²	-	-	A (WB)	9.3
7	Future Street / Station Access #4	Unsignalized ²	-	-	A (WB)	9.0
8	Future Street / Station Access #5	Unsignalized ²	-	-	A (WB)	8.7

Notes:

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. NB=Northbound, SB=Southbound, WB=Westbound
4. Intersections 3, 4, 5, 6, 7 and 8 exist with Project conditions only

Source: AECOM, 2009.

Comparing the results of the Existing plus DMU conditions to the Existing conditions level of service, it can be noted that due to the addition of project volumes, intersections approaches at Dale Evans Parkway at I-15 northbound and southbound ramps deteriorate from acceptable (LOS A) to unacceptable (LOS F) conditions. As the project trips add more than 5% of the existing volumes at these intersections, project impacts at these intersections are considered to be significant.

Existing plus Electric Multiple Unit (EMU) Alternative Conditions

Based on the trip distribution presented in Figure 3 and the parking distribution, project trips accessing the station were assigned to the analysis intersections. The project trips for EMU alternative conditions are presented in the Appendix.

These project trips were added to the existing volumes to generate the Existing plus EMU volumes.

Based on the Existing plus EMU volumes and the existing geometry, intersection level of service analysis was performed. Table 11 presents the results of the analysis. SYNCHRO analysis worksheets are provided in the Appendix.

As indicated in Table 11, both ramp intersections operate at unacceptable level of service (LOS F) under this scenario. All the other intersections operate at acceptable conditions.

Table 11
Victorville Option 3 – Existing plus EMU Conditions LOS

Intersection		Traffic Control	Existing Conditions		Existing plus EMU Conditions	
			LOS	Delay ¹	LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Unsignalized ²	A (NB)	9.3	F (NB)	529.5
2	I-15 Southbound Ramps / Dale Evans Parkway	Unsignalized ²	A (SB)	9.8	F (SB)	567.8
3	Station Access #1 / Dale Evans Parkway	Unsignalized ²	-	-	C (NB)	19.4
4	Station Access #2 / Dale Evans Parkway	Unsignalized ²	-	-	B (NB)	10.4
5	Future Street / Dale Evans Parkway	Unsignalized ²	-	-	A (NB)	9.5
6	Future Street / Station Access #3	Unsignalized ²	-	-	A (WB)	9.8
7	Future Street / Station Access #4	Unsignalized ²	-	-	A (WB)	9.4
8	Future Street / Station Access #5	Unsignalized ²	-	-	A (WB)	8.8

Notes:

Source: AECOM, 2009.

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. NB=Northbound, SB=Southbound, WB=Westbound
4. Intersections 3, 4, 5, 6, 7 and 8 exist with Project conditions only

Comparing the results of the Existing plus EMU conditions to the Existing conditions level of service, it can be noted that due to the addition of project volumes, intersections approaches at Dale Evans Parkway at I-15 northbound and southbound ramps deteriorate from acceptable (LOS A) to unacceptable (LOS F) conditions. As the project trips add more than 5% of the existing volumes at these intersections, project impacts at these intersections are considered to be significant.

2013 Opening Year Conditions

2013 BASELINE CONDITIONS (NO PROJECT)

Future year 2013 base volumes were calculated by linear interpolation between the existing year (traffic counts) and future year volumes (horizon year of SANBAG travel demand model). These volumes are presented in the Appendix. For analysis purposes, the existing intersection geometry was assumed for future year 2013 conditions at the ramp locations and future intersections were assumed to be stop controlled as presented in Figure 5. Based on the future base volumes and the geometry presented in Figure 5, intersection level of service analysis was performed.

It should be noted that, intersections 3, 4 and 8 do not exist without Project and, intersections 6 and 7 are T-intersections without the fourth leg leading into the Project site under 2013 Baseline Conditions.

Table 12 presents the results of intersection operating conditions for future year 2013 baseline conditions. SYNCHRO analysis worksheets are presented in the Appendix.

Table 12
Victorville Option 3 – 2013 Baseline Conditions LOS

Intersection		Traffic Control	2013 Baseline Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Unsignalized ²	B (NB)	12.0
2	I-15 Southbound Ramps / Dale Evans Parkway	Unsignalized ²	C (SB)	15.5
5	Future Street / Dale Evans Parkway	Unsignalized ²	C (SB)	16.0
6	Future Street / Station Access #3	Unsignalized ²	B (EB)	11.9
7	Future Street / Station Access #4	Unsignalized ²	B (EB)	13.2

Notes:

Source: AECOM, 2009.

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Intersections 6 and 7 are T-intersections under 2013 Baseline conditions

As indicated in Table 12, all the study intersections continue to operate at acceptable conditions under 2013 Baseline conditions.

2013 BASELINE PLUS DMU CONDITIONS

Based on the trip distribution presented in Figure 3 and the parking distribution, project trips accessing the station were assigned to the analysis intersections. The project trips for DMU alternative conditions for year 2013 are presented in the Appendix. These project trips were added to the 2013 base conditions volumes to generate the 2013 baseline plus DMU volumes.

Figure 5 2013 Intersection Geometry

Based on the 2013 Baseline plus DMU volumes and the geometry presented in Figure 5, intersection level of service analysis was performed. Table 13 presents the results of the analysis. SYNCHRO analysis worksheets are presented in the Appendix.

As indicated in Table 13, the intersections of Dale Evans Parkway at I-15 northbound ramps, I-15 southbound ramps and Future Street operate at unacceptable conditions (LOS F) while all other intersections operate at acceptable conditions (LOS D or better).

Table 13
Victorville Option 3 – 2013 Baseline plus DMU Conditions LOS

Intersection		Traffic Control	2013 Baseline Conditions		2013 Baseline plus DMU Conditions	
			LOS	Delay ¹	LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Unsignalized ²	B (NB)	12.0	F (NB)	586.3
2	I-15 Southbound Ramps / Dale Evans Parkway	Unsignalized ²	C (SB)	15.5	F (SB)	666.9
3	Station Access #1 / Dale Evans Parkway	Unsignalized ²	-	-	C (NB)	19.3
4	Station Access #2 / Dale Evans Parkway	Unsignalized ²	-	-	B (NB)	11.7
5	Future Street / Dale Evans Parkway	Unsignalized ²	C (SB)	16.0	F (NB)	-
6	Future Street / Station Access #3	Unsignalized ²	B (EB)	11.9	C (EB)	21.7
7	Future Street / Station Access #4	Unsignalized ²	B (EB)	13.2	D (EB)	27.6
8	Future Street / Station Access #5	Unsignalized ²	-	-	B (WB)	11.5

Notes:

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Intersections 6 and 7 are T-intersections under 2013 Baseline conditions
5. Intersection 3, 4 and 8 exist with Project conditions only

Source: AECOM, 2009.

Comparing the results of 2013 Baseline plus DMU conditions to the 2013 Baseline conditions level of service, it can be noted that due to the addition of project volumes, approaches at the intersections of Dale Evans Parkway at I-15 northbound ramps, I-15 southbound ramps and the future street deteriorate from acceptable (LOS C or better) to unacceptable (LOS F) conditions. As the project trips add more than 5% of the 2013 baseline volumes at the intersections, the project impacts at these intersections are considered to be significant.

2013 BASELINE PLUS EMU CONDITIONS

Based on the trip distribution presented in Figure 3 and the parking distribution, project trips accessing the station were assigned to the analysis intersections. The project trips for EMU alternative conditions for year 2013 are presented in the Appendix. These project trips were added to the 2013 base conditions volumes to generate the 2013 baseline plus EMU volumes.

Based on the 2013 Baseline plus EMU volumes and the geometry presented in Figure 5, intersection level of service analysis was performed. Table 14 presents the results of the analysis. SYNCHRO analysis worksheets are presented in the Appendix.

As indicated in Table 14, all the intersections operate at unacceptable levels of services (LOS E or F) except intersections 4, 6 and 8.

Comparing the results of 2013 Baseline plus EMU conditions to the 2013 Baseline conditions level of service, it can be noted that due to the addition of project volumes, approaches at the above mentioned intersections deteriorate from acceptable (LOS C or better) to unacceptable (LOS E or F) conditions. As the project trips add more than 5% of the 2013 Baseline volumes at the intersections, the project impacts at these intersections are considered to be significant.

Table 14
Victorville Option 3 – 2013 Baseline plus EMU Conditions LOS

Intersection		Traffic Control	2013 Baseline Conditions		2013 Baseline plus EMU Conditions	
			LOS	Delay ¹	LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Unsignalized ²	B (NB)	12.0	F (NB)	-
2	I-15 Southbound Ramps / Dale Evans Parkway	Unsignalized ²	C (SB)	15.5	F (SB)	-
3	Station Access #1 / Dale Evans Parkway	Unsignalized ²	-	-	F (NB)	65.1
4	Station Access #2 / Dale Evans Parkway	Unsignalized ²	-	-	B (NB)	13.0
5	Future Street / Dale Evans Parkway	Unsignalized ²	C (SB)	16.0	F (NB)	-
6	Future Street / Station Access #3	Unsignalized ²	B (EB)	11.9	D (EB)	29.9
7	Future Street / Station Access #4	Unsignalized ²	B (EB)	13.2	E (EB)	40.7
8	Future Street / Station Access #5	Unsignalized ²	-	-	B (WB)	12.0

Notes:

Source: AECOM, 2009.

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. NB=Northbound, SB=Southbound, EB=Eastbound, WB=Westbound
4. Intersections 6 and 7 are T-intersections under 2013 Baseline conditions
5. Intersection 3, 4 and 8 exist with Project conditions only
6. Operating conditions at intersections 1, 2 and 5 breakdown under 2013 baseline + EMU project conditions, hence no delay reported.

2030 Cumulative Conditions

Under this scenario, the proposed improvements include signalization at all study intersections. Future year 2030 roadway geometry and signal control are presented in Figure 6.

Future year 2030 base volumes were calculated by linear interpolation between the existing year (traffic counts) and future year volumes (SANBAG travel demand model). These volumes are presented in the Appendix.

It should be noted that, intersections 3, 4 and 8 do not exist without Project while intersections 6 and 7 are T-intersections without the fourth leg leading into the Project site under 2030 Baseline Conditions.

Using the future base volumes and the proposed geometry presented in Figure 6, intersection level of service analysis was performed. Table 15 presents the results of intersection operating conditions for future year 2030 baseline conditions. SYNCHRO analysis worksheets are presented in the Appendix.

As indicated in Table 15, all the study intersections operate at acceptable conditions (LOS D or better) under this scenario.

Table 15
Victorville Option 3 - 2030 Baseline Conditions LOS

Intersection		Traffic Control	2030 Baseline Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	30.8
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	C	24.3
5	Future Street / Dale Evans Parkway	Signalized	D	49.3
6	Future Street / Station Access #3	Signalized	A	7.4
7	Future Street / Station Access #4	Signalized	B	12.4

Notes:

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. Intersections 6 and 7 are T-intersections under 2030 Baseline conditions

Source: AECOM, 2009.

2030 BASELINE PLUS DMU CONDITIONS

Based on the trip distribution presented in Figure 3 and the parking distribution, project trips accessing the station were assigned to the analysis intersections. The project trips for DMU alternative conditions for year 2030 are presented in the Appendix. These project trips were added to the 2030 base conditions volumes to generate the 2030 baseline plus DMU volumes.

Based on the 2030 Baseline plus DMU volumes and the geometry presented in Figure 6, intersection level of service analysis was performed. Table 16 presents the results of the analysis. SYNCHRO analysis worksheets are presented in the Appendix.

Figure 6 **Future Year 2030 Geometry**

As indicated in Table 16, the intersections of Dale Evans Parkway at I-15 northbound ramps, southbound ramps and at Future Street operate at unacceptable conditions (LOS E or F) while all other intersections operate at acceptable conditions (LOS B or better).

Table 16
Victorville Option 3 - 2030 Baseline plus DMU Conditions LOS

Intersection		Traffic Control	2030 Baseline Conditions		2030 Baseline plus DMU Conditions	
			LOS	Delay ¹	LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	30.8	F	89.9
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	C	24.3	F	83.0
3	Station Access #1 / Dale Evans Parkway	Signalized	-	-	B	18.5
4	Station Access #2 / Dale Evans Parkway	Signalized	-	-	B	13.4
5	Future Street / Dale Evans Parkway	Signalized	D	49.3	E	56.6
6	Future Street / Station Access #3	Signalized	A	7.4	A	9.1
7	Future Street / Station Access #4	Signalized	B	12.4	B	15.5
8	Future Street / Station Access #5	Signalized	-	-	A	6.5

Notes:

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. Intersections 6 and 7 are T-intersections under 2030 Baseline conditions
4. Intersection 3, 4 and 8 exist with Project conditions only

Source: AECOM, 2009.

Comparing the results of 2030 Baseline plus DMU conditions to the 2030 Baseline conditions level of service, it can be noted that due to the addition of project volumes, the above mentioned intersections deteriorate from acceptable (LOS C or better) to unacceptable (LOS E or F) conditions. As the project trips add more than 5% of the 2030 Baseline volumes at the intersections, the project impacts at these intersections are considered to be significant.

2030 BASELINE PLUS EMU CONDITIONS

Based on the trip distribution presented in Figure 3 and the parking distribution, project trips accessing the station were assigned to the analysis intersections. The project trips for EMU alternative conditions for year 2030 are presented in the Appendix. These project trips were added to the 2030 base conditions volumes to generate the 2030 baseline plus EMU volumes.

Based on the 2030 Baseline volumes and the proposed geometry presented in Figure 6, intersection level of service analysis was performed. Table 17 presents the results of the analysis. SYNCHRO analysis worksheets are presented in the Appendix.

As indicated in Table 17, the intersections of Dale Evans Parkway at I-15 northbound ramps, I-15 southbound ramps and at Future Street operate at unacceptable conditions (LOS E or F) while all other intersections operate at acceptable conditions (LOS C or better).

Table 17
Victorville Option 3 - 2030 Baseline plus EMU Conditions LOS

Intersection		Traffic Control	2030 Baseline Conditions		2030 Baseline plus EMU Conditions	
			LOS	Delay ¹	LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	30.8	F	162.3
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	C	24.3	F	150.6
3	Station Access #1 / Dale Evans Parkway	Signalized	-	-	C	31.4
4	Station Access #2 / Dale Evans Parkway	Signalized	-	-	B	13.6
5	Future Street / Dale Evans Parkway	Signalized	D	49.3	E	58.7
6	Future Street / Station Access #3	Signalized	A	7.4	A	9.5
7	Future Street / Station Access #4	Signalized	B	12.4	B	15.8
8	Future Street / Station Access #5	Signalized	-	-	A	8.2

Notes:

Source: AECOM, 2009.

1. Delay reported in seconds per vehicle
2. LOS and Delay reported for worst approach
3. Intersections 6 and 7 are T-intersections under 2030 Baseline conditions
4. Intersection 3, 4 and 8 exist with Project conditions only

Comparing the results of 2030 Baseline plus EMU conditions to the 2030 Baseline conditions level of service, it can be noted that due to the addition of project volumes, the above mentioned intersections deteriorate from acceptable (LOS D or better) to unacceptable (LOS E or F) conditions. As the project trips add more than 5% of the 2030 Baseline volumes at the intersections, the project impacts at these intersections are considered to be significant.

Mitigation Measures

EXISTING PLUS DMU CONDITIONS

As indicated in Table 10, two existing intersections at the ramp locations are significantly impacted by the proposed project. To mitigate the impacts at these intersections, the following mitigation measures are proposed:

- # 1: Signalize the intersection of Dale Evans Parkway at I-15 northbound ramps.
- # 2: Signalize the intersection of Dale Evans Parkway at I-15 southbound ramps.

A traffic signal warrant analysis was performed at these intersections to study if a signal can be considered as mitigation measure. The traffic signal warrant analysis at intersections 1 and 2 indicates that the warrant for peak hour (Warrants 3A and 3B) is met. The signal warrant analysis worksheets are provided in the Appendix.

As indicated in Table 18, both intersections would operate at acceptable conditions (LOS B) with mitigation measures. SYNCHRO analysis worksheets are presented in the Appendix.

Table 18
Victorville Option 3 - Existing plus DMU Mitigation Conditions LOS

Intersection		Traffic Control	Existing plus DMU Mitigation Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	B	14.1
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	B	11.5

Notes:

1. Delay reported in seconds per vehicle

Source: AECOM, 2009

EXISTING PLUS EMU CONDITIONS

As indicated in Table 11, two existing intersections at the ramp locations are significantly impacted by the proposed project. To mitigate these intersections, the following mitigation measures are proposed:

- # 1: Signalize intersection of Dale Evans Parkway at I-15 northbound ramps.
- # 2: Signalize intersection of Dale Evans Parkway at I-15 southbound ramps.

A traffic signal warrant analysis was performed at these intersections to study if a signal can be considered as mitigation measure. The traffic signal warrant analysis at intersections 1 and 2 indicates that the warrant for peak hour (Warrants 3A and 3B) is met. The signal warrant analysis worksheets are provided in the Appendix.

As indicated in Table 19, both intersections operate at acceptable conditions (LOS C or better) with mitigation measures. SYNCHRO analysis worksheets are presented in the Appendix.

Table 19
Victorville Option 3 - Existing plus EMU Mitigation Conditions LOS

Intersection		Traffic Control	Existing plus EMU Mitigation Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	20.3
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	B	17.0

Notes:

1. Delay reported in seconds per vehicle

Source: AECOM, 2009

2013 BASELINE PLUS DMU CONDITIONS

As indicated in Table 13, three study intersections operate at unacceptable conditions in the 2013 baseline plus DMU conditions. To mitigate this intersection, the following mitigation measures are proposed:

- # 1: Signalize intersection of Dale Evans Parkway at I-15 northbound ramps and add one northbound left turn lane.
- # 2: Signalize intersection of Dale Evans Parkway at I-15 southbound ramps and add an eastbound right turn lane and a westbound left turn lane.
- #5: Signalize intersection of Dale Evans Parkway at Future Street.

A traffic signal warrant analysis was performed at these intersections to study if a signal can be considered as mitigation measure. The traffic signal warrant analysis at intersections 1, 2 and 5 indicates that the warrant for peak hour (Warrants 3A and 3B) is met. The signal warrant analysis worksheets are provided in the Appendix.

Table 20
Victorville Option 3 - 2013 Baseline plus DMU Mitigation Conditions LOS

Intersection		Traffic Control	2013 Baseline plus DMU Mitigation Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	22.6
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	C	30.9
5	Future Street / Dale Evans Parkway	Signalized	D	50.3

Notes:

1. Delay reported in seconds per vehicle

Source: AECOM, 2009

As indicated in Table 20, all the impacted intersections operate at acceptable conditions (LOS D or better) with the mitigation measures.

2013 BASELINE PLUS EMU CONDITIONS

As indicated in Table 14, five study intersections operate at unacceptable conditions in the 2013 baseline plus EMU conditions. To mitigate these intersections, the following mitigation measures are proposed:

- # 1: Signalize intersection of Dale Evans Parkway at I-15 northbound ramps and add two northbound left turn lanes.
- # 2: Signalize intersection of Dale Evans Parkway at I-15 southbound ramps and add an eastbound right turn lane, second westbound through lane and a westbound left turn lane.
- #3: Signalize intersection of Dale Evans Parkway at Station Access #1 and add second westbound left turn lane.
- #5: Signalize intersection of Dale Evans Parkway at Future Street and add second westbound left turn lane.
- #7: Signalize intersection of Future Street at Station Access #4.

A traffic signal warrant analysis was performed at these intersections to study if a signal can be considered as mitigation measure. The traffic signal warrant analysis at intersections 1, 2, 3 and 5 indicates that the warrant for peak hour (Warrants 3A and 3B) is met, but intersection 7 does not meet peak hour warrant. However, given the estimated high future volumes, it is proposed that the intersection be signalized to enhance safety. The signal warrant analysis worksheets are provided in the Appendix.

Table 21
Victorville Option 3 - 2013 Baseline plus EMU Mitigation Conditions LOS

Intersection		Traffic Control	2013 Baseline plus EMU Mitigation Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	21.5
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	C	33.8
3	Station Access #1 / Dale Evans Parkway	Signalized	C	26.9
5	Future Street / Dale Evans Parkway	Signalized	D	39.6
7	Future Street / Station Access #4	Signalized	B	16.7

Notes:

1. Delay reported in seconds per vehicle

Source: AECOM, 2009

As indicated in Table 21, all the impacted intersections operate at acceptable conditions (LOS D or better) with the mitigation measures.

2030 BASELINE PLUS DMU CONDITIONS

As indicated in Table 16, three study intersections operate at unacceptable conditions in the 2030 baseline plus DMU conditions. To mitigate these intersections, the following mitigation measures are proposed:

- # 1: At the intersection of Dale Evans Parkway at I-15 northbound ramps add second northbound left turn lane.
- # 2: At the intersection of Dale Evans Parkway at I-15 southbound ramps optimize the intersection timing.
- # 5: At the intersection of Dale Evans Parkway at Future Street optimize the intersection timing

After applying above mitigation to the 2030 roadway network, the intersection level of service was calculated. Table 22 presents the results of 2030 baseline plus DMU mitigation conditions analysis. SYNCHRO analysis worksheets are presented in the Appendix.

Table 22
Victorville Option 3 - 2030 Baseline plus DMU Mitigation Conditions LOS

Intersection		Traffic Control	2030 Baseline plus DMU Mitigation Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	C	22.8
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	D	54.8
5	Future Street / Dale Evans Parkway	Signalized	D	54.2

Notes:

1. Delay reported in seconds per vehicle

Source: AECOM, 2009

As indicated in Table 22, all the impacted intersections operate at acceptable conditions (LOS D or better) with the mitigation measures.

2030 BASELINE PLUS EMU CONDITIONS

As indicated in Table 17, three study intersections operate at unacceptable conditions in the 2030 baseline plus EMU conditions. To mitigate these intersections, the following mitigation measures are proposed:

- # 1: At the intersection of Dale Evans Parkway at I-15 northbound ramps add second northbound left turn lane.
- # 2: At the intersection of Dale Evans Parkway at I-15 southbound ramps add second eastbound right turn lane.
- # 5: At the intersection of Dale Evans Parkway at Future Street add third westbound left turn lane

After applying above mitigation to the 2030 roadway network, the intersection level of service was calculated. Table 23 presents the results of 2030 baseline plus EMU mitigation conditions analysis. SYNCHRO analysis worksheets are presented in the Appendix.

Table 23
Victorville Option 3 - 2030 Baseline plus EMU Mitigation Conditions LOS

Intersection		Traffic Control	2030 Baseline plus EMU Mitigation Conditions	
			LOS	Delay ¹
1	I-15 Northbound Ramps / Dale Evans Parkway	Signalized	D	40.7
2	I-15 Southbound Ramps / Dale Evans Parkway	Signalized	C	30.6
5	Future Street / Dale Evans Parkway	Signalized	D	53.0

Notes:

1. Delay reported in seconds per vehicle

Source: AECOM, 2009

As indicated in Table 23, all the impacted intersections operate at acceptable conditions (LOS D or better) with the mitigation measures.

Queuing Analysis

Queuing analysis was performed to identify the required length of turn pockets under the future year 2030 cumulative conditions at the ramp locations. Table 24 presents the results of queuing analysis for 2030 baseline and project conditions with and without mitigation measures. The queuing analysis worksheets are included in the Appendix.

It can be noted from Table 24 that the queue lengths under the mitigated conditions are considerably shorter than the baseline conditions.

**Table 24
Victorville Option 3 – Queuing Analysis**

Intersection	Movement	95 th % queue length (ft)			
		2030	2030 + DMU	2030 + EMU	
Baseline Conditions					
1	I-15 Northbound Ramps / Dale Evans Parkway	EBL	261	254	251
		NBL	124	697	944
2	I-15 Southbound Ramps / Dale Evans Parkway	EBR	86	528	715
		WBL	286	133	116
		SBL	203	203	203
5	Future Street / Dale Evans Parkway	WBL	316	634	763
		NBL	360	319	322
		NBR	173	253	559
		SBL	324	324	324
With Mitigations					
1	I-15 Northbound Ramps / Dale Evans Parkway	EBL	NA	236	342
		NBL	NA	264	547
2	I-15 Southbound Ramps / Dale Evans Parkway	EBR	NA	381	261
		WBL	NA	326	374
		SBL	NA	244	349
5	Future Street / Dale Evans Parkway	WBL	NA	562	414
		NBL	NA	443	414
		NBR	NA	304	244
		SBL	NA	407	390
Source: AECOM, 2009.					

Summary and Conclusions

In the areas around the proposed rail station, the DesertXpress project would result in higher traffic volumes through some nearby intersections. In general, these higher volumes can be mitigated by adding signalization and/or travel lanes to the intersection approaches. Tables 25 and 26 summarize the mitigation measures recommended for the DMU and EMU alternatives respectively.

Table 25
Project Mitigations – DMU Alternatives

Station Location Alternative	Existing	2013	2030
Victorville Option 3	#1 Dale Evans Parkway & I-15 NB Ramps - Signalize #2 Dale Evans Parkway & I-15 SB Ramps - Signalize	#1 Dale Evans Parkway & I-15 NB Ramps - Add northbound left turn lane #2 Dale Evans Parkway & I-15 SB Ramps - Add eastbound right turn lane - Add westbound left turn lane #5 Dale Evans Parkway & Future Street - Signalize	#1 Dale Evans Parkway & I-15 NB Ramps - Add second northbound left turn lane #2 Dale Evans Parkway & I-15 SB Ramps - Optimize signal timing #5 Dale Evans Parkway & Future Street - Optimize signal timing

Table 26
Project Mitigations – EMU Alternatives

Station Location Alternative	Existing	2013	2030
Victorville Option 3	#1 Dale Evans Parkway & I-15 NB Ramps - Signalize #2 Dale Evans Parkway & I-15 SB Ramps - Signalize	#1 Dale Evans Parkway & I-15 NB Ramps - Add two northbound left turn lanes #2 Dale Evans Parkway & I-15 SB Ramps - Add eastbound right turn lane - Add second westbound through lane - Add westbound left turn lane #3 Dale Evans Parkway & Station Access #1 - Signalize - Add second westbound left turn lane #5 Dale Evans Parkway & Future Street - Signalize - Add second westbound left turn lane #7 Future Street & Station Access #4 - Signalize	#1 Dale Evans Parkway & I-15 NB Ramps - Add second northbound left turn lane #2 Dale Evans Parkway & I-15 SB Ramps - Add second eastbound right turn lane #5 Dale Evans Parkway & Future Street - Add third westbound left turn lane

HCS Analysis Worksheets

Ramp Analysis

Ramp Analysis
Existing Conditions
NB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: Existing 2009
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	2194	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	157	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	165	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2194	157	165	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	609	44	46	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.685 Using Equation 5
v_{12R} = v_R + (v_F - v_R) P_{FD} = 1892 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{Fi} = v _F	2682	7200	No
v ₁₂	1892	4400	No
v _{F0} = v _F - v _R	2506	7200	No
v _R	176	2000	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 \frac{v}{12} - 0.009 L_D = 16.0$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D = 0.444
Space mean speed in ramp influence area, S_R = 58 mph
Space mean speed in outer lanes, S₀ = 76.8 mph
Space mean speed for all vehicles, S = 62.2 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: Existing 2009
Description: DesertXpress

Freeway Data

Type of analysis 64.0
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 2194 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 165 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp 157 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2194	165	157	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	609	46	44	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 1586$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	2867	7200	No
v _{R12}	1771	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 16.1$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, $M_S = 0.309$
Space mean speed in ramp influence area, $S_R = 61.4$ mph
Space mean speed in outer lanes, $S_O = 67.9$ mph
Space mean speed for all vehicles, $S = 63.7$ mph

Ramp Analysis
Existing Conditions
SB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy SB(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: Existing 2009
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3954	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	194	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	201	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3954	194	201	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1098	54	56	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.629 Using Equation 5
 $v_{12R} = v_R + (v_F - v_R) P_{FD} = 3122$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	4833	7200	No
v_{12}	3122	4400	No
$v_{F0} = v_F - v_R$	4615	7200	No
v_R	218	2000	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 26.6$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, $D = 0.448$
Space mean speed in ramp influence area, $S_R = 57$ mph
Space mean speed in outer lanes, $S_0 = 74.0$ mph
Space mean speed for all vehicles, $S = 62.4$ mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: Existing 2009
Description: DesertXpress

Freeway Data

Type of analysis: 62.9
Number of lanes in freeway: 3
Free-flow speed on freeway: 70.0 mph
Volume on freeway: 3954 vph

On Ramp Data

Side of freeway: Right
Number of lanes in ramp: 1
Free-flow speed on ramp: 35.0 mph
Volume on ramp: 201 vph
Length of first accel/decel lane: 500 ft
Length of second accel/decel lane: ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?: Yes
Volume on adjacent Ramp: 194 vph
Position of adjacent Ramp: Upstream
Type of adjacent Ramp: Off
Distance to adjacent Ramp: 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3954	201	194	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1098	56	54	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 2859$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	5059	7200	No
v _{R12}	3085	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 26.3$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, $M_S = 0.371$
Space mean speed in ramp influence area, $S_R = 59.6$ mph
Space mean speed in outer lanes, $S_O = 64.7$ mph
Space mean speed for all vehicles, $S = 61.5$ mph

Ramp Analysis

2013 Base and Project Conditions

Ramp Analysis
2013 Base
NB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 No Build
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	2602	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	258	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	222	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2602	258	222	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	723	72	62	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	%
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.667 Using Equation 5
v_{12R} = v_R + (v_F - v_R) P_{FD} = 2218 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{Fi} = v _F	3180	7200	No
v ₁₂	2218	4400	No
v _{F0} = v _F - v _R	2890	7200	No
v _R	290	2000	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 \frac{v}{v_{12}} - 0.009 \frac{L_D}{L_D} = 18.8$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, D = 0.454
Space mean speed in ramp influence area, S_R = 57 mph
Space mean speed in outer lanes, S₀ = 76.8 mph
Space mean speed for all vehicles, S = 62.1 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 No Build
Description: DesertXpress

Freeway Data

Type of analysis 63.7
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 2602 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 222 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp 258 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2602	222	258	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	723	62	72	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 1881$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	3429	7200	No
v _{R12}	2130	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 18.8$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, M = 0.319
Space mean speed in ramp influence area, S_R = 61.1 mph
Space mean speed in outer lanes, S_O = 67.1 mph
Space mean speed for all vehicles, S = 63.2 mph

Ramp Analysis

2013 + EMU

NB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 EMU
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3396	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	1052	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	259	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3396	1052	259	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	943	292	72	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	%
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.602 Using Equation 5
v₁₂ = v_R + (v_F - v_R) P_{FD} = 2969 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{Fi} = v _F	4151	7200	No
v ₁₂	2969	4400	No
v _{F0} = v _F - v _R	2970	7200	No
v _R	1181	2000	No

Level of Service Determination (if not F)

Density, D = 4.252 + 0.0086 v₁₂ - 0.009 L_D = 25.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D = 0.534
Space mean speed in ramp influence area, S_R = 55 mph
Space mean speed in outer lanes, S₀ = 76.1 mph
Space mean speed for all vehicles, S = 59.7 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 EMU
Description: DesertXpress

Freeway Data

Type of analysis 63.1
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 3396 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 259 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp 1052 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3396	259	1052	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	943	72	292	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 2455$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	4442	7200	No
v _{R12}	2746	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 23.6$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M = 0.347
Space mean speed in ramp influence area, S_R = 60.3 mph
Space mean speed in outer lanes, S_O = 65.7 mph
Space mean speed for all vehicles, S = 62.2 mph

Ramp Analysis
2013 + DEMU
NB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 DEMU
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	3165	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	821	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	248	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3165	821	248	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	879	228	69	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	%
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.621 Using Equation 5
 $v_{12R} = v_R + (v_F - v_R) P_{FD} = 2751$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3868	7200	No
v_{12}	2751	4400	No
$v_{F0} = v_F - v_R$	2947	7200	No
v_R	921	2000	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 23.4$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, $D_S = 0.511$
Space mean speed in ramp influence area, $S_R = 56$ mph
Space mean speed in outer lanes, $S_0 = 76.3$ mph
Space mean speed for all vehicles, $S = 60.4$ mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 DEMU
Description: DesertXpress

Freeway Data

Type of analysis 63.3
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 3165 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 248 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp 821 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3165	248	821	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	879	69	228	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 2288$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	4146	7200	No
v _{R12}	2566	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 22.2$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, $M_S = 0.337$
Space mean speed in ramp influence area, $S_R = 60.6$ mph
Space mean speed in outer lanes, $S_O = 66.1$ mph
Space mean speed for all vehicles, $S = 62.6$ mph

Ramp Analysis

2013 Base

SB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy (Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 No Build
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4337	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	290	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	344	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4337	290	344	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1205	81	96	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.613 Using Equation 5
v_{12R} = v_R + (v_F - v_R) P_{FD} = 3373 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{Fi} = v _F	5301	7200	No
v ₁₂	3373	4400	No
v _{F0} = v _F - v _R	4976	7200	No
v _R	325	2000	No

Level of Service Determination (if not F)

Density, D = 4.252 + 0.0086 v₁₂ - 0.009 L_D = 28.8 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D = 0.457
Space mean speed in ramp influence area, S_R = 57 mph
Space mean speed in outer lanes, S₀ = 73.2 mph
Space mean speed for all vehicles, S = 62.1 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 No Build
Description: DesertXpress

Freeway Data

Type of analysis 62.4
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 4337 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 344 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp 290 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4337	344	290	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1205	96	81	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 3136$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	5687	7200	No
v _{R12}	3522	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 29.6$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M_S = 0.418$
Space mean speed in ramp influence area, $S_R = 58.3$ mph
Space mean speed in outer lanes, $S_O = 64.0$ mph
Space mean speed for all vehicles, $S = 60.3$ mph

Ramp Analysis
2013 + EMU
SB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy SB(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 EMU
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4387	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	340	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	935	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4387	340	935	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1219	94	260	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.608 Using Equation 5
 $v_{12R} = v_R + (v_F - v_R) P_{FD} = 3412$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5362	7200	No
v_{12}	3412	4400	No
$v_{F0} = v_F - v_R$	4980	7200	No
v_R	382	2000	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 29.1$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $D = 0.462$
Space mean speed in ramp influence area, $S_R = 57$ mph
Space mean speed in outer lanes, $S_0 = 73.1$ mph
Space mean speed for all vehicles, $S = 62.0$ mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 EMU
Description: DesertXpress

Freeway Data

Type of analysis: 61.2
Number of lanes in freeway: 3
Free-flow speed on freeway: 70.0 mph
Volume on freeway: 4387 vph

On Ramp Data

Side of freeway: Right
Number of lanes in ramp: 1
Free-flow speed on ramp: 35.0 mph
Volume on ramp: 935 vph
Length of first accel/decel lane: 500 ft
Length of second accel/decel lane: ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp: 340 vph
Position of adjacent Ramp: Upstream
Type of adjacent Ramp: Off
Distance to adjacent Ramp: 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4387	935	340	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1219	260	94	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 3172$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	6411	7200	No
v _{R12}	4221	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 34.8$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M_S = 0.552$
Space mean speed in ramp influence area, $S_R = 54.6$ mph
Space mean speed in outer lanes, $S_O = 63.9$ mph
Space mean speed for all vehicles, $S = 57.4$ mph

Ramp Analysis
2013 + DEMU
SB

Phone: Fax:
E-mail:

Di verge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy SB(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 DEMU
Description: DesertXpress

Freeway Data

Type of analysis	Di verge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	4372	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	325	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	394	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1000	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4372	325	394	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1214	90	109	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	%
Grade	0.00	0.00	0.00	%
Length	0.00	0.00	0.00	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Diverge Areas

L_{EQ} = 0.00 (Equation 25-8 or 25-9)
P_{FD} = 0.610 Using Equation 5
 $v_{12R} = v_R + (v_F - v_R) P_{FD}$ = 3400 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	5344	7200	No
v_{12}	3400	4400	No
$v_{F0} = v_F - v_R$	4979	7200	No
v_R	365	2000	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D$ = 29.0 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $D = 0.461$
Space mean speed in ramp influence area, $S_R = 57$ mph
Space mean speed in outer lanes, $S_0 = 73.1$ mph
Space mean speed for all vehicles, $S = 62.0$ mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 03/31/2010
Analysis time period: PM Peak Hour
Freeway/direction/travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2013 DEMU
Description: DesertXpress

Freeway Data

Type of analysis 62.3
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 4372 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 394 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp 325 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4372	394	325	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1214	109	90	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, FHV	0.909	0.990	0.990	
Driver population factor, FP	1.00	1.00	1.00	

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v_{12} = v_F (P_{FM}) = 3161$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v _{FO}	5786	7200	No
v _{R12}	3603	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 30.2$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M_S = 0.429$
Space mean speed in ramp influence area, $S_R = 58.0$ mph
Space mean speed in outer lanes, $S_O = 63.9$ mph
Space mean speed for all vehicles, $S = 60.1$ mph

Ramp Analysis

2030 Base and Project Conditions

Ramp Analysis

2030 Base

NB

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 No Build
Description: DesertXpress

Freeway Data

Type of analysis Diverge
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 4336 vph

Off Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-Flow speed on ramp 35.0 mph
Volume on ramp 689 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent ramp 466 vph
Position of adjacent ramp Downstream
Type of adjacent ramp On
Distance to adjacent ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
Volume, V (vph)	4336	689	466	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1141	181	123	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5021	733	495	pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)
EQ
P = 0.601 Using Equation 5
FD
 $v = v + (v - v) P = 3309$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	5021	7200	No
$F_i F$			
v	3309	4400	No
12			
$v = v - v$	4288	7200	No
$F O F R$			
v	733	2000	No

R

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v - 0.009 L = 28.2$ pc/mi/ln
R 12 D

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $D = 0.494$
S

Space mean speed in ramp influence area, $S = 56$ mph
R

Space mean speed in outer lanes, $S = 74.0$ mph
0

Space mean speed for all vehicles, $S = 61.2$ mph

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 No Build
Description: DesertXpress

Freeway Data

Type of analysis 62.3
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 4336 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 466 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent Ramp 689 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
Volume, V (vph)	4336	466	689	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1141	123	181	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5021	495	733	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v = v(P) = 2970$ pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	5516	7200	No
FO			
v	3465	4600	No
R12			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 29.1 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.411$

Space mean speed in ramp influence area, $S_S = 58.5 \text{ mph}$

Space mean speed in outer lanes, $S_R = 64.4 \text{ mph}$

Space mean speed for all vehicles, $S_0 = 60.6 \text{ mph}$

Ramp Analysis

2030 + EMU

NB

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 EMU
Description: DesertXpress

Freeway Data

Type of analysis Diverge
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 5130 vph

Off Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-Flow speed on ramp 35.0 mph
Volume on ramp 1483 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent ramp 503 vph
Position of adjacent ramp Downstream
Type of adjacent ramp On
Distance to adjacent ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
		Ramp		
Volume, V (vph)	5130	1483	503	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1350	390	132	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5940	1577	535	pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)
EQ
P = 0.539 Using Equation 5
FD
 $v = v + (v - v) P = 3928$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	5940	7200	No
$F_i F$			
v	3928	4400	No
$v = v - v$	4363	7200	No
$FO F R$			
v	1577	2000	No

R

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v - 0.009 L = 33.5$ pc/mi/ln
R 12 D

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $S = 54$ mph
S D = 0.570

Space mean speed in ramp influence area, $S = 54$ mph
R

Space mean speed in outer lanes, $S = 72.8$ mph
0

Space mean speed for all vehicles, $S = 59.2$ mph

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 EMU
Description: DesertXpress

Freeway Data

Type of analysis 61.8
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 5130 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 503 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent Ramp 1483 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
Volume, V (vph)	5130	503	1483	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1350	132	390	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5940	535	1577	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v = v(P) = 3514$ pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	6475	7200	No
FO			
v	4049	4600	No
R12			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 33.7 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.510$

Space mean speed in ramp influence area, $S_S = 55.7 \text{ mph}$

Space mean speed in outer lanes, $S_R = 62.7 \text{ mph}$

Space mean speed for all vehicles, $S_0 = 58.2 \text{ mph}$

Ramp Analysis
2030 + DEMU
NB

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 NB
Junction: Dale Evans Pkwy(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 DEMU
Description: DesertXpress

Freeway Data

Type of analysis Diverge
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 4899 vph

Off Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-Flow speed on ramp 35.0 mph
Volume on ramp 1252 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent ramp 492 vph
Position of adjacent ramp Downstream
Type of adjacent ramp On
Distance to adjacent ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
Volume, V (vph)	4899	1252	492	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1289	329	129	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5673	1331	523	pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)
EQ
P = 0.557 Using Equation 5
FD
 $v = v + (v - v) P = 3749$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	5673	7200	No
$F_i F$			
v	3749	4400	No
$v = v - v$	4342	7200	No
$F O F R$			
v	1331	2000	No

R

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v - 0.009 L = 32.0$ pc/mi/ln
R 12 D

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $D = 0.548$
S

Space mean speed in ramp influence area, $S = 55$ mph
R

Space mean speed in outer lanes, $S = 73.2$ mph
0

Space mean speed for all vehicles, $S = 59.8$ mph

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 NB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 DEMU
Description: DesertXpress

Freeway Data

Type of analysis 62.0
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 4899 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 492 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent Ramp 1252 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
Volume, V (vph)	4899	492	1252	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1289	129	329	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	5673	523	1331	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v = v(P) = 3356$ pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	6196	7200	No
FO			
v	3879	4600	No
R12			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 32.4 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.475$

Space mean speed in ramp influence area, $S_S = 56.7 \text{ mph}$

Space mean speed in outer lanes, $S_R = 63.4 \text{ mph}$

Space mean speed for all vehicles, $S_0 = 59.0 \text{ mph}$

Ramp Analysis

2030 Base

SB

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 SB
Junction: Dale Evans Pkwy SB(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 No Build
Description: DesertXpress

Freeway Data

Type of analysis Diverge
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 5963 vph

Off Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-Flow speed on ramp 35.0 mph
Volume on ramp 698 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent ramp 950 vph
Position of adjacent ramp Downstream
Type of adjacent ramp On
Distance to adjacent ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
		Ramp		
Volume, V (vph)	5963	698	950	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1569	184	250	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6905	742	1010	pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)
EQ
P = 0.553 Using Equation 5
FD
 $v = v + (v - v) P = 4152$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6905	7200	No
$F_i F$			
v	4152	4400	No
12			
$v = v - v$	6163	7200	No
$FO F R$			
v	742	2000	No

R

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v - 0.009 L = 35.5$ pc/mi/ln
R 12 D

Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable, $D = 0.495$
S

Space mean speed in ramp influence area, $S = 56$ mph
R

Space mean speed in outer lanes, $S = 70.0$ mph
0

Space mean speed for all vehicles, $S = 60.9$ mph

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 No Build
Description: DesertXpress

Freeway Data

Type of analysis 60.5
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 5963 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 950 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent Ramp 698 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
Volume, V (vph)	5963	950	698	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1569	250	184	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6905	1010	742	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
 $v = v(P) = 4084$ pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	7915	7200	Yes
FO			
v	5094	4600	Yes
R12			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 41.6 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable, $M = 0.922$

Space mean speed in ramp influence area, $S_S = 44.2 \text{ mph}$

Space mean speed in outer lanes, $S_R = 60.3 \text{ mph}$

Space mean speed for all vehicles, $S_0 = 48.8 \text{ mph}$

Ramp Analysis

2030 + EMU

SB

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 SB
Junction: Dale Evans Pkwy SB(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 EMU
Description: DesertXpress

Freeway Data

Type of analysis Diverge
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 6013 vph

Off Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-Flow speed on ramp 35.0 mph
Volume on ramp 748 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent ramp 1541 vph
Position of adjacent ramp Downstream
Type of adjacent ramp On
Distance to adjacent ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
		Ramp		
Volume, V (vph)	6013	748	1541	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1582	197	406	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6962	795	1638	pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)
EQ
P = 0.549 Using Equation 5
FD
 $v = v + (v - v) P = 4183$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6962	7200	No
$F_i F$			
v	4183	4400	No
12			
$v = v - v$	6167	7200	No
FO F R			
v	795	2000	No

R

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v - 0.009 L = 35.7$ pc/mi/ln
R 12 D

Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable, $D = 0.500$
S

Space mean speed in ramp influence area, $S = 56$ mph

Space mean speed in outer lanes, $S = 69.9$ mph
R

Space mean speed for all vehicles, $S = 60.8$ mph
0

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 EMU
Description: DesertXpress

Freeway Data

Type of analysis 59.4
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 6013 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 1541 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent Ramp 748 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
		Ramp		
Volume, V (vph)	6013	1541	748	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1582	406	197	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6962	1638	795	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
v = v (P) = 4118 pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	8600	7200	Yes
FO			
v	5756	4600	Yes
R12			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 46.5 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable, $M = 1.519$

Space mean speed in ramp influence area, $S_S = 27.5 \text{ mph}$

Space mean speed in outer lanes, $S_R = 60.2 \text{ mph}$

Space mean speed for all vehicles, $S_0 = 33.5 \text{ mph}$

Ramp Analysis
2030 + DEMU
SB

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 SB
Junction: Dale Evans Pkwy SB(Off-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 DEMU
Description: DesertXpress

Freeway Data

Type of analysis Diverge
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 5998 vph

Off Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-Flow speed on ramp 35.0 mph
Volume on ramp 733 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent ramp 1000 vph
Position of adjacent ramp Downstream
Type of adjacent ramp On
Distance to adjacent ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
		Ramp		
Volume, V (vph)	5998	733	1000	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1578	193	263	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6945	779	1063	pcph

Estimation of V12 Diverge Areas

L = 0.00 (Equation 25-8 or 25-9)
EQ
P = 0.551 Using Equation 5
FD
 $v = v + (v - v) P = 4174$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$v = v$	6945	7200	No
$F_i F$			
v	4174	4400	No
12			
$v = v - v$	6166	7200	No
$FO F R$			
v	779	2000	No

R

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v - 0.009 L = 35.6$ pc/mi/ln
R 12 D

Level of service for ramp-freeway junction areas of influence E

Speed Estimation

Intermediate speed variable, $D = 0.498$
S

Space mean speed in ramp influence area, $S = 56$ mph
R

Space mean speed in outer lanes, $S = 69.9$ mph
0

Space mean speed for all vehicles, $S = 60.9$ mph

HCS2000: Ramps and Ramp Junctions Release 4.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: HD
Agency/Co.: AECOM
Date performed: 06/04/2009
Analysis time period: PM Peak Hour
Freeway/dir or travel: I-15 SB
Junction: Dale Evans Pkwy (on-ramp)
Jurisdiction: Caltrans
Analysis Year: 2030 DEMU
Description: DesertXpress

Freeway Data

Type of analysis 60.4
Number of lanes in freeway 3
Free-flow speed on freeway 70.0 mph
Volume on freeway 5998 vph

On Ramp Data

Side of freeway Right
Number of lanes in ramp 1
Free-flow speed on ramp 35.0 mph
Volume on ramp 1000 vph
Length of first accel/decel lane 500 ft
Length of second accel/decel lane ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes

Volume on adjacent Ramp 733 vph
Position of adjacent Ramp Upstream
Type of adjacent Ramp Off
Distance to adjacent Ramp 1000 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent	
		Ramp		
Volume, V (vph)	5998	1000	733	vph
Peak-hour factor, PHF	0.95	0.95	0.95	
Peak 15-min volume, v15	1578	263	193	v
Trucks and buses	20	2	2	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.909	0.990	0.990	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	6945	1063	779	pcph

Estimation of V12 Merge Areas

L = (Equation 25-2 or 25-3)
EQ
P = 0.591 Using Equation 1
FM
v = v (P) = 4108 pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
v	8008	7200	Yes
FO			
v	5171	4600	Yes
R12			

Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 42.2 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence F

Speed Estimation

Intermediate speed variable, $M = 0.973$

Space mean speed in ramp influence area, $S_S = 42.8 \text{ mph}$

Space mean speed in outer lanes, $S_R = 60.2 \text{ mph}$

Space mean speed for all vehicles, $S_0 = 47.7 \text{ mph}$

Victorville Option 3
Intersection Volumes

PROPOSED VICTORVILLE STATION ALTERNATIVE #3

Existing	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	1	0	17	0	0	0	0	143	0	0	33	49
#2	0	0	0	143	0	3	0	0	4	32	2	0

2013 Base	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	39	0	95	0	0	0	44	222	0	0	101	73
#2	0	0	0	176	0	78	0	89	110	87	52	0
#3	0	0	0	0	0	0	0	195	0	0	126	0
#4	0	0	0	0	0	0	0	195	0	0	126	0
#5	98	138	76	92	185	4	3	27	69	80	17	29
#6	14	303	0	0	322	12	9	0	19	0	0	0
#7	46	289	0	0	299	41	28	0	57	0	0	0
#8	0	334	0	0	356	0	0	0	0	0	0	0

2030 Base	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	199	0	427	0	0	0	229	557	0	0	389	176
#2	0	0	0	318	0	396	0	468	558	321	267	0
#3	0	0	0	0	0	0	0	1026	0	0	662	0
#4	0	0	0	0	0	0	0	1026	0	0	662	0
#5	515	722	401	485	969	20	17	141	363	420	89	153
#6	71	1590	0	0	1688	65	48	0	99	0	0	0
#7	239	1515	0	0	1570	216	145	0	297	0	0	0
#8	0	1754	0	0	1867	0	0	0	0	0	0	0

Existing + DEMU	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	564	0	17	0	0	0	26	222	0	0	139	49
#2	0	0	0	143	0	38	0	105	423	32	670	0
#3	0	0	283	0	0	0	0	240	0	355	348	0
#4	0	0	56	0	0	0	0	185	0	81	267	0
#5	0	0	185	0	0	0	0	0	0	267	0	0
#6	0	146	0	56	211	0	0	0	0	0	0	39
#7	0	92	0	78	133	0	0	0	0	0	0	54
#8	0	0	0	133	0	0	0	0	0	0	0	92

Existing + DEMU	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	795	0	17	0	0	0	37	254	0	0	182	49
#2	0	0	0	143	0	53	0	148	595	32	945	0
#3	0	0	400	0	0	0	0	339	0	501	492	0
#4	0	0	79	0	0	0	0	261	0	115	378	0
#5	0	0	261	0	0	0	0	0	0	378	0	0
#6	0	206	0	80	298	0	0	0	0	0	0	55
#7	0	129	0	110	188	0	0	0	0	0	0	76
#8	0	0	0	188	0	0	0	0	0	0	0	129

2013 + DEMU	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	602	0	95	0	0	0	70	301	0	0	207	73
#2	0	0	0	176	0	113	0	194	529	87	720	0
#3	0	0	283	0	0	0	0	435	0	355	474	0
#4	0	0	56	0	0	0	0	380	0	81	393	0
#5	98	138	261	92	185	4	3	27	69	347	17	29
#6	14	449	0	56	533	12	9	0	19	0	0	39
#7	46	381	0	78	432	41	28	0	57	0	0	54
#8	0	334	0	133	356	0	0	0	0	0	0	92

2013 + EMU	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	833	0	95	0	0	0	81	333	0	0	250	73
#2	0	0	0	176	0	128	0	237	701	87	995	0
#3	0	0	400	0	0	0	0	534	0	501	618	0
#4	0	0	79	0	0	0	0	456	0	115	504	0
#5	98	138	337	92	185	4	3	27	69	458	17	29
#6	14	509	0	80	620	12	9	0	19	0	0	55
#7	46	418	0	110	487	41	28	0	57	0	0	76
#8	0	334	0	188	356	0	0	0	0	0	0	129

2030 + DEMU	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	762	0	427	0	0	0	255	636	0	0	495	176
#2	0	0	0	318	0	431	0	573	977	321	935	0
#3	0	0	283	0	0	0	0	1266	0	355	1010	0
#4	0	0	56	0	0	0	0	1211	0	81	929	0
#5	515	722	586	485	969	20	17	141	363	687	89	153
#6	71	1736	0	56	1899	65	48	0	99	0	0	39
#7	239	1607	0	78	1703	216	145	0	297	0	0	54
#8	0	1754	0	133	1867	0	0	0	0	0	0	92

2030 + EMU	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
#1	993	0	427	0	0	0	266	668	0	0	538	176
#2	0	0	0	318	0	446	0	616	1149	321	1210	0
#3	0	0	400	0	0	0	0	1365	0	501	1154	0
#4	0	0	79	0	0	0	0	1287	0	115	1040	0
#5	515	722	662	485	969	20	17	141	363	798	89	153
#6	71	1796	0	80	1986	65	48	0	99	0	0	55
#7	239	1644	0	110	1758	216	145	0	297	0	0	76
#8	0	1754	0	188	1867	0	0	0	0	0	0	129

Victorville Option 3
SYNCHRO Analysis Worksheet

Existing Conditions
(Base and Project Conditions)

Existing Conditions Base

HCM Unsignalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (veh/h)	0	143	0	0	33	49	1	2	17	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	155	0	0	36	53	1	2	18	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	89			155			218	245	155	238	218	62
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	89			155			218	245	155	238	218	62
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	100	100	100
cM capacity (veh/h)	1506			1425			738	657	890	700	680	1002

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	155	89	22
Volume Left	0	0	1
Volume Right	0	53	18
cSH	1506	1700	851
Volume to Capacity	0.00	0.05	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary		
Average Delay		0.8
Intersection Capacity Utilization	17.5%	ICU Level of Service
Analysis Period (min)	15	A

HCM Unsignalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔	
Volume (veh/h)	0	0	4	32	2	0	0	0	0	143	1	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	4	35	2	0	0	0	0	155	1	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2			4			78	74	2	74	76	2
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2			4			78	74	2	74	76	2
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	83	100	100
cM capacity (veh/h)	1620			1617			893	799	1082	901	797	1082

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	4	37	160
Volume Left	0	35	155
Volume Right	4	0	3
cSH	1700	1617	904
Volume to Capacity	0.00	0.02	0.18
Queue Length 95th (ft)	0	2	16
Control Delay (s)	0.0	6.9	9.8
Lane LOS		A	A
Approach Delay (s)	0.0	6.9	9.8
Approach LOS			A

Intersection Summary		
Average Delay		9.1
Intersection Capacity Utilization	23.4%	ICU Level of Service
Analysis Period (min)		15
		A

Existing Conditions

Base + EMU

HCM Unsignalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶			↷			↕				
Volume (veh/h)	37	254	0	0	182	49	795	2	17	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	276	0	0	198	53	864	2	18	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	251			276			581	608	276	601	581	224
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	251			276			581	608	276	601	581	224
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			0	99	98	100	100	100
cM capacity (veh/h)	1314			1287			415	398	763	391	412	815

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	316	251	885
Volume Left	40	0	864
Volume Right	0	53	18
cSH	1314	1700	419
Volume to Capacity	0.03	0.15	2.11
Queue Length 95th (ft)	2	0	1586
Control Delay (s)	1.2	0.0	529.5
Lane LOS	A		F
Approach Delay (s)	1.2	0.0	529.5
Approach LOS			F

Intersection Summary		
Average Delay		322.9
Intersection Capacity Utilization	83.2%	ICU Level of Service E
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖						↕	
Volume (veh/h)	0	148	595	32	945	0	0	0	0	143	1	53
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	161	647	35	1027	0	0	0	0	155	1	58
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1027			808			1639	1581	484	1581	1904	1027
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1027			808			1639	1581	484	1581	1904	1027
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			100	100	100	0	98	80
cM capacity (veh/h)	676			818			61	104	583	85	66	285

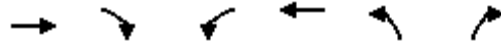
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	808	1062	214
Volume Left	0	35	155
Volume Right	647	0	58
cSH	1700	818	105
Volume to Capacity	0.48	0.04	2.04
Queue Length 95th (ft)	0	3	452
Control Delay (s)	0.0	1.3	567.8
Lane LOS		A	F
Approach Delay (s)	0.0	1.3	567.8
Approach LOS			F

Intersection Summary		
Average Delay		59.0
Intersection Capacity Utilization	93.5%	ICU Level of Service F
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



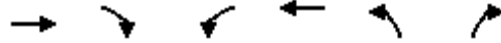
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	
Volume (veh/h)	339	0	501	492	0	400
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	368	0	545	535	0	435
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			368		1992	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			368		1992	368
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			54		100	36
cM capacity (veh/h)			1190		36	677

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	368	545	535	435
Volume Left	0	545	0	0
Volume Right	0	0	0	435
cSH	1700	1190	1700	677
Volume to Capacity	0.22	0.46	0.31	0.64
Queue Length 95th (ft)	0	61	0	117
Control Delay (s)	0.0	10.6	0.0	19.4
Lane LOS		B		C
Approach Delay (s)	0.0	5.3		19.4
Approach LOS				C

Intersection Summary			
Average Delay		7.5	
Intersection Capacity Utilization		80.4%	ICU Level of Service D
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 4: Dale Evans Parkway & Station Access #2

5/26/2010



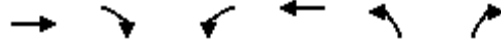
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	
Volume (veh/h)	261	0	115	378	0	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	284	0	125	411	0	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			284		945	284
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			284		945	284
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		100	89
cM capacity (veh/h)			1279		262	755

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	284	125	411	86
Volume Left	0	125	0	0
Volume Right	0	0	0	86
cSH	1700	1279	1700	755
Volume to Capacity	0.17	0.10	0.24	0.11
Queue Length 95th (ft)	0	8	0	10
Control Delay (s)	0.0	8.1	0.0	10.4
Lane LOS		A		B
Approach Delay (s)	0.0	1.9		10.4
Approach LOS				B

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		35.0%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Volume (veh/h)	0	0	378	0	0	261
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	411	0	0	284
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		822	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		822	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			75		100	74
cM capacity (veh/h)			1623		257	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	411	284
Volume Left	0	411	0
Volume Right	0	0	284
cSH	1700	1623	1085
Volume to Capacity	0.00	0.25	0.26
Queue Length 95th (ft)	0	25	26
Control Delay (s)	0.0	8.0	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	8.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay		8.6	
Intersection Capacity Utilization		43.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 6: Station Access #3 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	55	206	0	80	298
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	60	224	0	87	324
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	722	224			224	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	722	224			224	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			94	
cM capacity (veh/h)	368	816			1345	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	60	224	87	324
Volume Left	0	0	87	0
Volume Right	60	0	0	0
cSH	816	1700	1345	1700
Volume to Capacity	0.07	0.13	0.06	0.19
Queue Length 95th (ft)	6	0	5	0
Control Delay (s)	9.8	0.0	7.9	0.0
Lane LOS	A		A	
Approach Delay (s)	9.8	0.0	1.7	
Approach LOS	A			

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		28.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	76	129	0	110	188
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	83	140	0	120	204
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	584	140			140	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	584	140			140	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	91			92	
cM capacity (veh/h)	435	908			1443	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	83	140	324
Volume Left	0	0	120
Volume Right	83	0	0
cSH	908	1700	1443
Volume to Capacity	0.09	0.08	0.08
Queue Length 95th (ft)	7	0	7
Control Delay (s)	9.4	0.0	3.3
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	3.3
Approach LOS	A		

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		37.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	129	0	0	188	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	140	0	0	204	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	409	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	87			87	
cM capacity (veh/h)	523	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	140	0	204	0
Volume Left	0	0	204	0
Volume Right	140	0	0	0
cSH	1085	1700	1623	1700
Volume to Capacity	0.13	0.00	0.13	0.00
Queue Length 95th (ft)	11	0	11	0
Control Delay (s)	8.8	0.0	7.5	0.0
Lane LOS	A		A	
Approach Delay (s)	8.8	0.0	7.5	
Approach LOS	A			

Intersection Summary			
Average Delay		8.1	
Intersection Capacity Utilization		25.1%	ICU Level of Service A
Analysis Period (min)		15	

Existing Conditions
Base + EMU Mitigations

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010

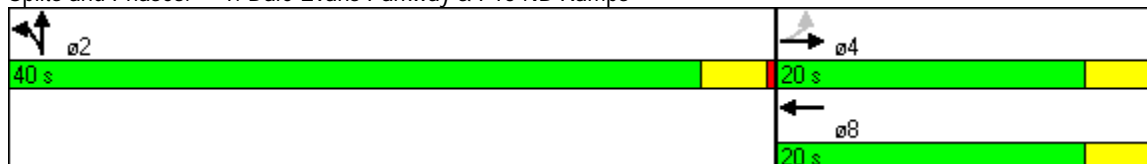


Lane Group	EBL	EBT	WBT	NBT
Lane Configurations		↕	↕	↕
Volume (vph)	37	254	182	2
Turn Type	Perm			
Protected Phases		4	8	2
Permitted Phases	4			
Detector Phase	4	4	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	40.0
Total Split (%)	33.3%	33.3%	33.3%	66.7%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effect Green (s)		16.0	16.0	36.0
Actuated g/C Ratio		0.27	0.27	0.60
v/c Ratio		0.68	0.50	0.83
Control Delay		29.0	21.1	18.9
Queue Delay		0.0	0.0	0.0
Total Delay		29.0	21.1	18.9
LOS		C	C	B
Approach Delay		29.0	21.1	18.9
Approach LOS		C	C	B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 21.4
 Intersection LOS: C
 Intersection Capacity Utilization 83.2%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBT
Protected Phases		4	8	2
Permitted Phases	4			
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	40.0
Total Split (%)	33.3%	33.3%	33.3%	66.7%
Maximum Green (s)	16.0	16.0	16.0	36.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0
90th %ile Green (s)	16.0	16.0	16.0	36.0
90th %ile Term Code	MaxR	MaxR	MaxR	Coord
70th %ile Green (s)	16.0	16.0	16.0	36.0
70th %ile Term Code	MaxR	MaxR	MaxR	Coord
50th %ile Green (s)	16.0	16.0	16.0	36.0
50th %ile Term Code	MaxR	MaxR	MaxR	Coord
30th %ile Green (s)	16.0	16.0	16.0	36.0
30th %ile Term Code	MaxR	MaxR	MaxR	Coord
10th %ile Green (s)	16.0	16.0	16.0	36.0
10th %ile Term Code	MaxR	MaxR	MaxR	Coord

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

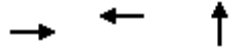
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:, Start of Green

Control Type: Pretimed

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	316	251	884
v/c Ratio	0.68	0.50	0.83
Control Delay	29.0	21.1	18.9
Queue Delay	0.0	0.0	0.0
Total Delay	29.0	21.1	18.9
Queue Length 50th (ft)	102	69	220
Queue Length 95th (ft)	#200	131	#473
Internal Link Dist (ft)	820	380	310
Turn Bay Length (ft)			
Base Capacity (vph)	463	499	1063
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.68	0.50	0.83

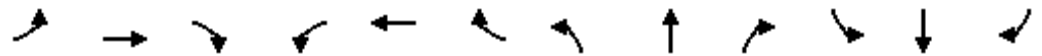
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (vph)	37	254	0	0	182	49	795	2	17	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		1.00			0.97			1.00				
Flt Protected		0.99			1.00			0.95				
Satd. Flow (prot)		1851			1810			1771				
Flt Permitted		0.93			1.00			0.95				
Satd. Flow (perm)		1738			1810			1771				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	276	0	0	198	53	864	2	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	316	0	0	235	0	0	883	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		16.0			16.0			36.0				
Effective Green, g (s)		16.0			16.0			36.0				
Actuated g/C Ratio		0.27			0.27			0.60				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		463			483			1063				
v/s Ratio Prot					0.13			c0.50				
v/s Ratio Perm		c0.18										
v/c Ratio		0.68			0.49			0.83				
Uniform Delay, d1		19.7			18.5			9.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		7.9			3.5			7.5				
Delay (s)		27.6			22.0			17.1				
Level of Service		C			C			B				
Approach Delay (s)		27.6			22.0			17.1			0.0	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010

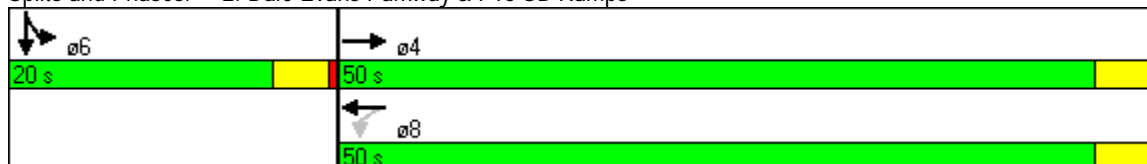


Lane Group	EBT	WBL	WBT	SBT
Lane Configurations	↶		↷	↘
Volume (vph)	148	32	945	1
Turn Type	Perm			
Protected Phases	4		8	6
Permitted Phases		8		
Detector Phase	4	8	8	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	50.0	50.0	50.0	20.0
Total Split (%)	71.4%	71.4%	71.4%	28.6%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effect Green (s)	46.0		46.0	16.0
Actuated g/C Ratio	0.66		0.66	0.23
v/c Ratio	0.62		0.90	0.52
Control Delay	3.9		23.1	25.9
Queue Delay	0.0		0.0	0.0
Total Delay	3.9		23.1	25.9
LOS	A		C	C
Approach Delay	3.9		23.1	25.9
Approach LOS	A		C	C

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Pretimed
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 16.0
 Intersection LOS: B
 Intersection Capacity Utilization 93.5%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	WBL	WBT	SBT
Protected Phases	4		8	6
Permitted Phases		8		
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	50.0	50.0	50.0	20.0
Total Split (%)	71.4%	71.4%	71.4%	28.6%
Maximum Green (s)	46.0	46.0	46.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0
90th %ile Green (s)	46.0	46.0	46.0	16.0
90th %ile Term Code	MaxR	MaxR	MaxR	Coord
70th %ile Green (s)	46.0	46.0	46.0	16.0
70th %ile Term Code	MaxR	MaxR	MaxR	Coord
50th %ile Green (s)	46.0	46.0	46.0	16.0
50th %ile Term Code	MaxR	MaxR	MaxR	Coord
30th %ile Green (s)	46.0	46.0	46.0	16.0
30th %ile Term Code	MaxR	MaxR	MaxR	Coord
10th %ile Green (s)	46.0	46.0	46.0	16.0
10th %ile Term Code	MaxR	MaxR	MaxR	Coord

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

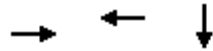
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green

Control Type: Pretimed

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	808	1062	214
v/c Ratio	0.62	0.90	0.52
Control Delay	3.9	23.1	25.9
Queue Delay	0.0	0.0	0.0
Total Delay	3.9	23.1	25.9
Queue Length 50th (ft)	29	326	71
Queue Length 95th (ft)	75	#653	134
Internal Link Dist (ft)	920	820	245
Turn Bay Length (ft)			
Base Capacity (vph)	1299	1179	415
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.90	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔	
Volume (vph)	0	148	595	32	945	0	0	0	0	143	1	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.89			1.00						0.96	
Flt Protected		1.00			1.00						0.97	
Satd. Flow (prot)		1661			1860						1732	
Flt Permitted		1.00			0.96						0.97	
Satd. Flow (perm)		1661			1793						1732	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	161	647	35	1027	0	0	0	0	155	1	58
RTOR Reduction (vph)	0	207	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	601	0	0	1062	0	0	0	0	0	195	0
Turn Type				Perm							Split	
Protected Phases		4			8						6	6
Permitted Phases				8								
Actuated Green, G (s)		46.0			46.0						16.0	
Effective Green, g (s)		46.0			46.0						16.0	
Actuated g/C Ratio		0.66			0.66						0.23	
Clearance Time (s)		4.0			4.0						4.0	
Lane Grp Cap (vph)		1092			1178						396	
v/s Ratio Prot		0.36									c0.11	
v/s Ratio Perm					c0.59							
v/c Ratio		0.55			0.90						0.49	
Uniform Delay, d1		6.4			10.1						23.5	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		2.0			11.2						4.3	
Delay (s)		8.4			21.3						27.8	
Level of Service		A			C						C	
Approach Delay (s)		8.4			21.3			0.0			27.8	
Approach LOS		A			C			A			C	

Intersection Summary

HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

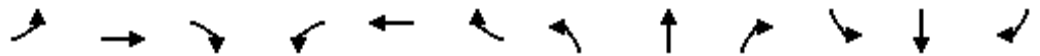
c Critical Lane Group

Existing Conditions
Base + DEMU

HCM Unsignalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (veh/h)	26	222	0	0	139	49	564	2	17	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	241	0	0	151	53	613	2	18	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	204			241			476	502	241	495	476	178
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	204			241			476	502	241	495	476	178
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			0	100	98	100	100	100
cM capacity (veh/h)	1367			1325			492	462	798	464	478	865

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	270	204	634
Volume Left	28	0	613
Volume Right	0	53	18
cSH	1367	1700	497
Volume to Capacity	0.02	0.12	1.27
Queue Length 95th (ft)	2	0	654
Control Delay (s)	1.0	0.0	163.4
Lane LOS	A		F
Approach Delay (s)	1.0	0.0	163.4
Approach LOS			F

Intersection Summary		
Average Delay		93.7
Intersection Capacity Utilization	65.8%	ICU Level of Service C
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔	
Volume (veh/h)	0	105	423	32	670	0	0	0	0	143	1	38
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	114	460	35	728	0	0	0	0	155	1	41
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	728			574			1184	1142	344	1142	1372	728
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	728			574			1184	1142	344	1142	1372	728
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	100	100	10	99	90
cM capacity (veh/h)	875			999			145	193	699	173	141	423

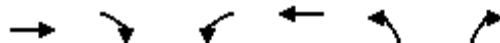
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	574	763	198
Volume Left	0	35	155
Volume Right	460	0	41
cSH	1700	999	197
Volume to Capacity	0.34	0.03	1.00
Queue Length 95th (ft)	0	3	217
Control Delay (s)	0.0	0.9	115.3
Lane LOS		A	F
Approach Delay (s)	0.0	0.9	115.3
Approach LOS			F

Intersection Summary		
Average Delay		15.3
Intersection Capacity Utilization	78.3%	ICU Level of Service
Analysis Period (min)		15
		D

HCM Unsignalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→		↙	↕	↘	
Volume (veh/h)	240	0	355	348	0	283
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	261	0	386	378	0	308
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			261		1411	261
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			261		1411	261
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			70		100	60
cM capacity (veh/h)			1304		107	778

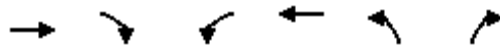
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	261	386	378	308
Volume Left	0	386	0	0
Volume Right	0	0	0	308
cSH	1700	1304	1700	778
Volume to Capacity	0.15	0.30	0.22	0.40
Queue Length 95th (ft)	0	31	0	48
Control Delay (s)	0.0	8.9	0.0	12.6
Lane LOS		A		B
Approach Delay (s)	0.0	4.5		12.6
Approach LOS				B

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization		59.8%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	
Volume (veh/h)	185	0	81	267	0	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	201	0	88	290	0	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			201		667	201
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			201		667	201
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	93
cM capacity (veh/h)			1371		396	840

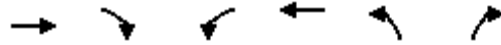
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	201	88	290	61
Volume Left	0	88	0	0
Volume Right	0	0	0	61
cSH	1700	1371	1700	840
Volume to Capacity	0.12	0.06	0.17	0.07
Queue Length 95th (ft)	0	5	0	6
Control Delay (s)	0.0	7.8	0.0	9.6
Lane LOS		A		A
Approach Delay (s)	0.0	1.8		9.6
Approach LOS				A

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization		27.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Volume (veh/h)	0	0	267	0	0	185
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	290	0	0	201
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			0		580	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		580	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			82		100	81
cM capacity (veh/h)			1623		391	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	290	201
Volume Left	0	290	0
Volume Right	0	0	201
cSH	1700	1623	1085
Volume to Capacity	0.00	0.18	0.19
Queue Length 95th (ft)	0	16	17
Control Delay (s)	0.0	7.7	9.1
Lane LOS		A	A
Approach Delay (s)	0.0	7.7	9.1
Approach LOS			A

Intersection Summary			
Average Delay		8.3	
Intersection Capacity Utilization	32.9%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

6: Station Access #3 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	39	146	0	56	211
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	42	159	0	61	229
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	510	159			159	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	159			159	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			96	
cM capacity (veh/h)	501	887			1421	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	42	159	61	229
Volume Left	0	0	61	0
Volume Right	42	0	0	0
cSH	887	1700	1421	1700
Volume to Capacity	0.05	0.09	0.04	0.13
Queue Length 95th (ft)	4	0	3	0
Control Delay (s)	9.3	0.0	7.6	0.0
Lane LOS	A		A	
Approach Delay (s)	9.3	0.0	1.6	
Approach LOS	A			

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization		24.4%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	54	92	0	78	133
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	59	100	0	85	145
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	414	100			100	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	100			100	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	94			94	
cM capacity (veh/h)	561	956			1493	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	59	100	229
Volume Left	0	0	85
Volume Right	59	0	0
cSH	956	1700	1493
Volume to Capacity	0.06	0.06	0.06
Queue Length 95th (ft)	5	0	5
Control Delay (s)	9.0	0.0	3.1
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	3.1
Approach LOS	A		

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		28.0%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	92	0	0	133	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	100	0	0	145	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	289	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	289	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	91			91	
cM capacity (veh/h)	639	1085			1623	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	100	0	145	0
Volume Left	0	0	145	0
Volume Right	100	0	0	0
cSH	1085	1700	1623	1700
Volume to Capacity	0.09	0.00	0.09	0.00
Queue Length 95th (ft)	8	0	7	0
Control Delay (s)	8.7	0.0	7.4	0.0
Lane LOS	A		A	
Approach Delay (s)	8.7	0.0	7.4	
Approach LOS	A			

Intersection Summary			
Average Delay		7.9	
Intersection Capacity Utilization		19.7%	ICU Level of Service A
Analysis Period (min)		15	

Existing Conditions
Base + DEMU Mitigations

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010

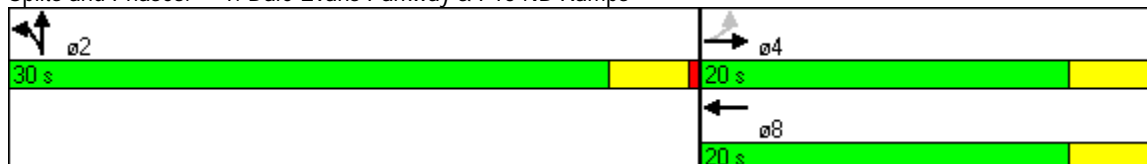


Lane Group	EBL	EBT	WBT	NBT
Lane Configurations		↕	↕	↕
Volume (vph)	26	222	139	2
Turn Type	Perm			
Protected Phases		4	8	2
Permitted Phases	4			
Detector Phase	4	4	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	30.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effect Green (s)		16.0	16.0	26.0
Actuated g/C Ratio		0.32	0.32	0.52
v/c Ratio		0.47	0.34	0.69
Control Delay		17.0	12.5	13.7
Queue Delay		0.0	0.0	0.0
Total Delay		17.0	12.5	13.7
LOS		B	B	B
Approach Delay		17.0	12.5	13.7
Approach LOS		B	B	B

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 14.3
 Intersection LOS: B
 Intersection Capacity Utilization 65.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBT
Protected Phases		4	8	2
Permitted Phases	4			
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	30.0
Total Split (%)	40.0%	40.0%	40.0%	60.0%
Maximum Green (s)	16.0	16.0	16.0	26.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0
90th %ile Green (s)	16.0	16.0	16.0	26.0
90th %ile Term Code	MaxR	MaxR	MaxR	Coord
70th %ile Green (s)	16.0	16.0	16.0	26.0
70th %ile Term Code	MaxR	MaxR	MaxR	Coord
50th %ile Green (s)	16.0	16.0	16.0	26.0
50th %ile Term Code	MaxR	MaxR	MaxR	Coord
30th %ile Green (s)	16.0	16.0	16.0	26.0
30th %ile Term Code	MaxR	MaxR	MaxR	Coord
10th %ile Green (s)	16.0	16.0	16.0	26.0
10th %ile Term Code	MaxR	MaxR	MaxR	Coord

Intersection Summary

Cycle Length: 50

Actuated Cycle Length: 50

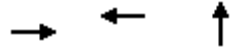
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:, Start of Green

Control Type: Pretimed

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBT	WBT	NBT
Lane Group Flow (vph)	269	204	633
v/c Ratio	0.47	0.34	0.69
Control Delay	17.0	12.5	13.7
Queue Delay	0.0	0.0	0.0
Total Delay	17.0	12.5	13.7
Queue Length 50th (ft)	62	36	122
Queue Length 95th (ft)	117	78	221
Internal Link Dist (ft)	820	380	310
Turn Bay Length (ft)			
Base Capacity (vph)	571	601	922
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.34	0.69

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (vph)	26	222	0	0	139	49	564	2	17	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		1.00			0.96			1.00				
Flt Protected		0.99			1.00			0.95				
Satd. Flow (prot)		1853			1797			1770				
Flt Permitted		0.96			1.00			0.95				
Satd. Flow (perm)		1783			1797			1770				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	241	0	0	151	53	613	2	18	0	0	0
RTOR Reduction (vph)	0	0	0	0	25	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	269	0	0	179	0	0	631	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		16.0			16.0			26.0				
Effective Green, g (s)		16.0			16.0			26.0				
Actuated g/C Ratio		0.32			0.32			0.52				
Clearance Time (s)		4.0			4.0			4.0				
Lane Grp Cap (vph)		571			575			920				
v/s Ratio Prot					0.10			c0.36				
v/s Ratio Perm		c0.15										
v/c Ratio		0.47			0.31			0.69				
Uniform Delay, d1		13.6			12.8			9.0				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		2.8			1.4			4.2				
Delay (s)		16.4			14.2			13.1				
Level of Service		B			B			B				
Approach Delay (s)		16.4			14.2			13.1			0.0	
Approach LOS		B			B			B			A	

Intersection Summary

HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010

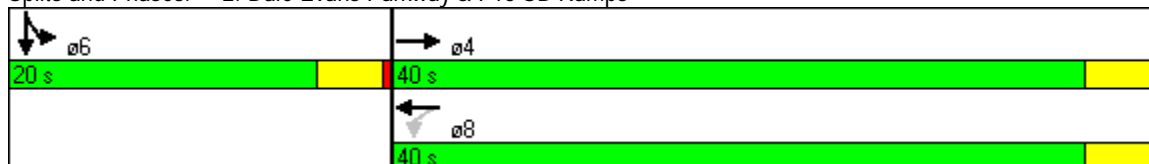


Lane Group	EBT	WBL	WBT	SBT
Lane Configurations	↗		↖	↕
Volume (vph)	105	32	670	1
Turn Type	Perm			
Protected Phases	4		8	6
Permitted Phases		8		
Detector Phase	4	8	8	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	40.0	40.0	40.0	20.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	Max
Act Effect Green (s)	36.0		36.0	16.0
Actuated g/C Ratio	0.60		0.60	0.27
v/c Ratio	0.49		0.71	0.41
Control Delay	2.9		13.0	19.1
Queue Delay	0.0		0.0	0.0
Total Delay	2.9		13.0	19.1
LOS	A		B	B
Approach Delay	2.9		13.0	19.1
Approach LOS	A		B	B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 10.0
 Intersection LOS: A
 Intersection Capacity Utilization 78.3%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	WBL	WBT	SBT
Protected Phases	4		8	6
Permitted Phases		8		
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	40.0	40.0	40.0	20.0
Total Split (%)	66.7%	66.7%	66.7%	33.3%
Maximum Green (s)	36.0	36.0	36.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	Max	Max	Max	Max
Walk Time (s)	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0
90th %ile Green (s)	36.0	36.0	36.0	16.0
90th %ile Term Code	MaxR	MaxR	MaxR	Coord
70th %ile Green (s)	36.0	36.0	36.0	16.0
70th %ile Term Code	MaxR	MaxR	MaxR	Coord
50th %ile Green (s)	36.0	36.0	36.0	16.0
50th %ile Term Code	MaxR	MaxR	MaxR	Coord
30th %ile Green (s)	36.0	36.0	36.0	16.0
30th %ile Term Code	MaxR	MaxR	MaxR	Coord
10th %ile Green (s)	36.0	36.0	36.0	16.0
10th %ile Term Code	MaxR	MaxR	MaxR	Coord

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

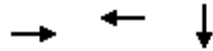
Offset: 0 (0%), Referenced to phase 6:SBTL, Start of Green

Control Type: Pretimed

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	574	763	197
v/c Ratio	0.49	0.71	0.41
Control Delay	2.9	13.0	19.1
Queue Delay	0.0	0.0	0.0
Total Delay	2.9	13.0	19.1
Queue Length 50th (ft)	15	166	51
Queue Length 95th (ft)	52	285	103
Internal Link Dist (ft)	920	820	245
Turn Bay Length (ft)			
Base Capacity (vph)	1181	1078	481
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.71	0.41

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↕	
Volume (vph)	0	105	423	32	670	0	0	0	0	143	1	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.89			1.00						0.97	
Flt Protected		1.00			1.00						0.96	
Satd. Flow (prot)		1661			1858						1742	
Flt Permitted		1.00			0.96						0.96	
Satd. Flow (perm)		1661			1796						1742	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	114	460	35	728	0	0	0	0	155	1	41
RTOR Reduction (vph)	0	184	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	390	0	0	763	0	0	0	0	0	181	0
Turn Type					Perm						Split	
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		36.0			36.0						16.0	
Effective Green, g (s)		36.0			36.0						16.0	
Actuated g/C Ratio		0.60			0.60						0.27	
Clearance Time (s)		4.0			4.0						4.0	
Lane Grp Cap (vph)		997			1078						465	
v/s Ratio Prot		0.23									c0.10	
v/s Ratio Perm					c0.42							
v/c Ratio		0.39			0.71						0.39	
Uniform Delay, d1		6.3			8.3						18.0	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		1.2			3.9						2.4	
Delay (s)		7.4			12.3						20.4	
Level of Service		A			B						C	
Approach Delay (s)		7.4			12.3			0.0			20.4	
Approach LOS		A			B			A			C	

Intersection Summary

HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

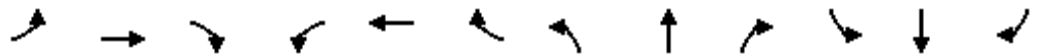
2013 Conditions
(Base and Project Conditions)

2013 Conditions Base

HCM Unsignalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (veh/h)	44	222	0	0	101	73	39	2	95	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	241	0	0	110	79	42	2	103	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	189			241			486	526	241	591	486	149
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	189			241			486	526	241	591	486	149
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			91	100	87	100	100	100
cM capacity (veh/h)	1385			1325			478	441	798	354	465	897

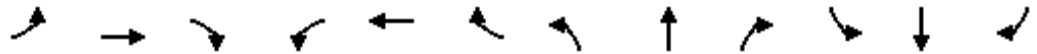
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	289	189	148
Volume Left	48	0	42
Volume Right	0	79	103
cSH	1385	1700	663
Volume to Capacity	0.03	0.11	0.22
Queue Length 95th (ft)	3	0	21
Control Delay (s)	1.5	0.0	12.0
Lane LOS	A		B
Approach Delay (s)	1.5	0.0	12.0
Approach LOS			B

Intersection Summary		
Average Delay		3.5
Intersection Capacity Utilization	42.0%	ICU Level of Service
Analysis Period (min)	15	A

HCM Unsignalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↕	
Volume (veh/h)	0	89	110	87	52	0	0	0	0	176	1	78
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	97	120	95	57	0	0	0	0	191	1	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	57			216			488	402	157	402	462	57
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	57			216			488	402	157	402	462	57
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			100	100	100	64	100	92
cM capacity (veh/h)	1548			1353			425	499	889	529	462	1010

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	216	151	277
Volume Left	0	95	191
Volume Right	120	0	85
cSH	1700	1353	619
Volume to Capacity	0.13	0.07	0.45
Queue Length 95th (ft)	0	6	58
Control Delay (s)	0.0	5.1	15.5
Lane LOS		A	C
Approach Delay (s)	0.0	5.1	15.5
Approach LOS			C

Intersection Summary		
Average Delay		7.9
Intersection Capacity Utilization	43.5%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙	↘		↙	↘		↙	↘	
Volume (veh/h)	3	27	69	80	17	29	98	138	76	92	185	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	29	75	87	18	32	107	150	83	100	201	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	50			104			371	297	67	439	319	34
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	50			104			371	297	67	439	319	34
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			74	74	92	73	64	100
cM capacity (veh/h)	1557			1487			403	577	997	370	561	1039

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	108	87	50	107	233	100	205
Volume Left	3	87	0	107	0	100	0
Volume Right	75	0	32	0	83	0	4
cSH	1557	1487	1700	403	679	370	567
Volume to Capacity	0.00	0.06	0.03	0.26	0.34	0.27	0.36
Queue Length 95th (ft)	0	5	0	26	38	27	41
Control Delay (s)	0.2	7.6	0.0	17.1	13.0	18.3	14.9
Lane LOS	A	A		C	B	C	B
Approach Delay (s)	0.2	4.8		14.3		16.0	
Approach LOS				B		C	

Intersection Summary		
Average Delay		11.7
Intersection Capacity Utilization	38.1%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis

6: Future Road 2 & Future Road

5/26/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	19	14	303	322	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	21	15	329	350	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	716	357	363			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	716	357	363			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	99			
cM capacity (veh/h)	392	688	1196			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	30	15	329	363		
Volume Left	10	15	0	0		
Volume Right	21	0	0	13		
cSH	553	1196	1700	1700		
Volume to Capacity	0.06	0.01	0.19	0.21		
Queue Length 95th (ft)	4	1	0	0		
Control Delay (s)	11.9	8.1	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	11.9	0.4		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			27.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Future Road 3 & Future Road

5/26/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	28	57	46	289	299	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	62	50	314	325	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	761	347	370			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	761	347	370			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	91	96			
cM capacity (veh/h)	357	696	1189			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	92	50	314	370
Volume Left	30	50	0	0
Volume Right	62	0	0	45
cSH	530	1189	1700	1700
Volume to Capacity	0.17	0.04	0.18	0.22
Queue Length 95th (ft)	16	3	0	0
Control Delay (s)	13.2	8.2	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.2	1.1		0.0
Approach LOS	B			

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization		36.6%	ICU Level of Service A
Analysis Period (min)		15	

2013 Conditions
Base + EMU

HCM Unsignalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (veh/h)	81	333	0	0	250	73	833	2	95	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	362	0	0	272	79	905	2	103	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	351			362			849	889	362	954	849	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	351			362			849	889	362	954	849	311
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			0	99	85	100	100	100
cM capacity (veh/h)	1208			1197			265	262	683	190	276	729

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	450	351	1011
Volume Left	88	0	905
Volume Right	0	79	103
cSH	1208	1700	283
Volume to Capacity	0.07	0.21	3.58
Queue Length 95th (ft)	6	0	Err
Control Delay (s)	2.2	0.0	Err
Lane LOS	A		F
Approach Delay (s)	2.2	0.0	Err
Approach LOS			F

Intersection Summary		
Average Delay		5578.9
Intersection Capacity Utilization	101.6%	ICU Level of Service
Analysis Period (min)		15
		G

HCM Unsignalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010

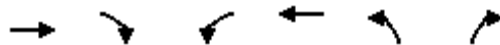


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻						↻	
Volume (veh/h)	0	237	701	87	995	0	0	0	0	176	1	128
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	258	762	95	1082	0	0	0	0	191	1	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1082			1020			2049	1909	639	1909	2290	1082
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1082			1020			2049	1909	639	1909	2290	1082
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			100	100	100	0	97	47
cM capacity (veh/h)	645			681			17	59	476	46	34	265
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	1020	1176	332									
Volume Left	0	95	191									
Volume Right	762	0	139									
cSH	1700	681	71									
Volume to Capacity	0.60	0.14	4.70									
Queue Length 95th (ft)	0	12	Err									
Control Delay (s)	0.0	4.8	Err									
Lane LOS		A	F									
Approach Delay (s)	0.0	4.8	Err									
Approach LOS			F									
Intersection Summary												
Average Delay			1313.9									
Intersection Capacity Utilization			140.4%		ICU Level of Service					H		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↻	↻	
Volume (veh/h)	534	2	501	618	2	400
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	580	2	545	672	2	435
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			583		2342	582
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			583		2342	582
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			45		88	15
cM capacity (veh/h)			992		18	513

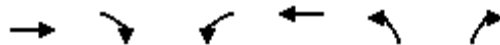
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	583	545	672	437
Volume Left	0	545	0	2
Volume Right	2	0	0	435
cSH	1700	992	1700	451
Volume to Capacity	0.34	0.55	0.40	0.97
Queue Length 95th (ft)	0	86	0	298
Control Delay (s)	0.0	13.0	0.0	65.1
Lane LOS		B		F
Approach Delay (s)	0.0	5.8		65.1
Approach LOS				F

Intersection Summary			
Average Delay		15.9	
Intersection Capacity Utilization		90.9%	ICU Level of Service E
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	
Volume (veh/h)	456	2	115	504	2	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	496	2	125	548	2	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			498		1295	497
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			498		1295	497
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			88		99	85
cM capacity (veh/h)			1066		158	573

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	498	125	548	88
Volume Left	0	125	0	2
Volume Right	2	0	0	86
cSH	1700	1066	1700	538
Volume to Capacity	0.29	0.12	0.32	0.16
Queue Length 95th (ft)	0	10	0	15
Control Delay (s)	0.0	8.8	0.0	13.0
Lane LOS		A		B
Approach Delay (s)	0.0	1.6		13.0
Approach LOS				B

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		45.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Volume (veh/h)	3	27	69	458	17	29	98	138	337	92	185	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	29	75	498	18	32	107	150	366	100	201	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	50			104			1192	1119	67	1545	1141	34
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	50			104			1192	1119	67	1545	1141	34
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			67			0	0	63	0	0	100
cM capacity (veh/h)	1557			1487			0	137	997	0	133	1039

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	108	498	50	107	516	100	205
Volume Left	3	498	0	107	0	100	0
Volume Right	75	0	32	0	366	0	4
cSH	1557	1487	1700	0	354	0	136
Volume to Capacity	0.00	0.33	0.03	Err	1.46	Err	1.51
Queue Length 95th (ft)	0	37	0	Err	685	Err	354
Control Delay (s)	0.2	8.6	0.0	Err	250.7	Err	324.3
Lane LOS	A	A		F	F	F	F
Approach Delay (s)	0.2	7.8		Err		Err	
Approach LOS				F		F	

Intersection Summary	
Average Delay	Err
Intersection Capacity Utilization	75.1% ICU Level of Service D
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Station Access #3 & Future Road

5/26/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	2	19	2	2	55	14	509	2	80	620	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	21	2	2	60	15	553	2	87	674	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1499	1440	680	1454	1446	554	687			555		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1499	1440	680	1454	1446	554	687			555		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	88	98	95	98	98	89	98			91		
cM capacity (veh/h)	81	119	451	94	118	532	907			1015		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	33	64	15	555	87	687						
Volume Left	10	2	15	0	87	0						
Volume Right	21	60	0	2	0	13						
cSH	177	417	907	1700	1015	1700						
Volume to Capacity	0.18	0.15	0.02	0.33	0.09	0.40						
Queue Length 95th (ft)	16	13	1	0	7	0						
Control Delay (s)	29.9	15.2	9.0	0.0	8.9	0.0						
Lane LOS	D	C	A		A							
Approach Delay (s)	29.9	15.2	0.2		1.0							
Approach LOS	D	C										
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			52.8%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (veh/h)	28	2	57	2	2	76	46	418	2	110	487	41
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	2	62	2	2	83	50	454	2	120	529	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1429	1347	552	1387	1368	455	574			457		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1429	1347	552	1387	1368	455	574			457		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	98	88	98	98	86	95			89		
cM capacity (veh/h)	85	128	534	93	124	605	999			1104		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	95	87	50	457	120	574
Volume Left	30	2	50	0	120	0
Volume Right	62	83	0	2	0	45
cSH	192	490	999	1700	1104	1700
Volume to Capacity	0.49	0.18	0.05	0.27	0.11	0.34
Queue Length 95th (ft)	61	16	4	0	9	0
Control Delay (s)	40.7	13.9	8.8	0.0	8.7	0.0
Lane LOS	E	B	A		A	
Approach Delay (s)	40.7	13.9	0.9		1.5	
Approach LOS	E	B				

Intersection Summary

Average Delay		4.7				
Intersection Capacity Utilization		53.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	129	334	2	188	356
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	140	363	2	204	387
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1160	364			365	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1160	364			365	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	79			83	
cM capacity (veh/h)	179	681			1193	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	142	365	204	387
Volume Left	2	0	204	0
Volume Right	140	2	0	0
cSH	653	1700	1193	1700
Volume to Capacity	0.22	0.21	0.17	0.23
Queue Length 95th (ft)	21	0	15	0
Control Delay (s)	12.0	0.0	8.6	0.0
Lane LOS	B		A	
Approach Delay (s)	12.0	0.0	3.0	
Approach LOS	B			

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		46.2%	ICU Level of Service A
Analysis Period (min)		15	

2013 Conditions
Base + EMU Mitigations

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations		↕	↕	↕↕	↕
Volume (vph)	81	333	250	833	2
Turn Type	Perm			Split	
Protected Phases		4	8	2	2
Permitted Phases	4				
Detector Phase	4	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0
Total Split (s)	50.0	50.0	50.0	40.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	44.4%	44.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effect Green (s)		49.9	49.9	30.1	30.1
Actuated g/C Ratio		0.55	0.55	0.33	0.33
v/c Ratio		0.51	0.35	0.79	0.17
Control Delay		11.8	12.3	32.2	4.8
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		11.8	12.3	32.2	4.8
LOS		B	B	C	A
Approach Delay		11.8	12.3		29.3
Approach LOS		B	B		C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 21.7

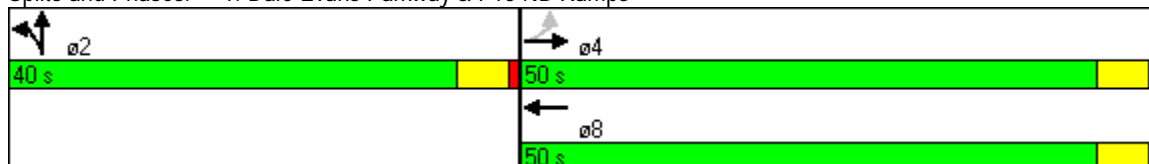
Intersection LOS: C

Intersection Capacity Utilization 75.9%

ICU Level of Service D

Analysis Period (min) 15

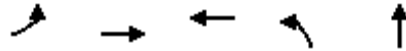
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases		4	8	2	2
Permitted Phases	4				
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0
Total Split (s)	50.0	50.0	50.0	40.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	44.4%	44.4%
Maximum Green (s)	45.0	45.0	45.0	35.0	35.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Walk Time (s)	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	5	5	5	5	5
90th %ile Green (s)	45.0	45.0	45.0	35.0	35.0
90th %ile Term Code	Coord	Coord	Coord	Max	Max
70th %ile Green (s)	46.6	46.6	46.6	33.4	33.4
70th %ile Term Code	Coord	Coord	Coord	Gap	Gap
50th %ile Green (s)	49.5	49.5	49.5	30.5	30.5
50th %ile Term Code	Coord	Coord	Coord	Gap	Gap
30th %ile Green (s)	51.9	51.9	51.9	28.1	28.1
30th %ile Term Code	Coord	Coord	Coord	Gap	Gap
10th %ile Green (s)	56.3	56.3	56.3	23.7	23.7
10th %ile Term Code	Coord	Coord	Coord	Gap	Gap

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

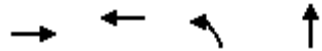
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



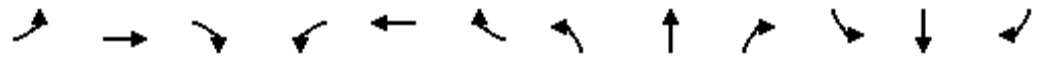
Lane Group	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	450	351	905	105
v/c Ratio	0.51	0.35	0.79	0.17
Control Delay	11.8	12.3	32.2	4.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.8	12.3	32.2	4.8
Queue Length 50th (ft)	125	97	235	1
Queue Length 95th (ft)	190	173	282	32
Internal Link Dist (ft)	820	380		2691
Turn Bay Length (ft)				
Base Capacity (vph)	890	1011	1335	681
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.35	0.68	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2		2	2				
Volume (vph)	81	333	0	0	250	73	833	2	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		1.00			1.00		0.97	1.00				
Frt		1.00			0.97		1.00	0.85				
Flt Protected		0.99			1.00		0.95	1.00				
Satd. Flow (prot)		1845			1806		3433	1589				
Flt Permitted		0.86			1.00		0.95	1.00				
Satd. Flow (perm)		1606			1806		3433	1589				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	362	0	0	272	79	905	2	103	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	69	0	0	0	0
Lane Group Flow (vph)	0	450	0	0	341	0	905	36	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		49.9			49.9		30.1	30.1				
Effective Green, g (s)		49.9			49.9		30.1	30.1				
Actuated g/C Ratio		0.55			0.55		0.33	0.33				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Vehicle Extension (s)		3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)		890			1001		1148	531				
v/s Ratio Prot					0.19		0.26	0.02				
v/s Ratio Perm		0.28										
v/c Ratio		0.51			0.34		0.79	0.07				
Uniform Delay, d1		12.4			11.0		27.1	20.4				
Progression Factor		0.71			1.00		1.00	1.00				
Incremental Delay, d2		1.9			0.9		3.7	0.1				
Delay (s)		10.7			11.9		30.7	20.5				
Level of Service		B			B		C	C				
Approach Delay (s)		10.7			11.9			29.7			0.0	
Approach LOS		B			B			C			A	

Intersection Summary

HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations	↑	↗	↖	↑↑	↕
Volume (vph)	237	701	87	995	1
Turn Type		Perm	Prot		
Protected Phases	4		3	8	6
Permitted Phases		4			
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0
Total Split (s)	46.0	46.0	14.0	60.0	30.0
Total Split (%)	51.1%	51.1%	15.6%	66.7%	33.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	C-Max	C-Max	None	C-Max	Min
Act Effect Green (s)	48.4	48.4	8.8	59.9	20.1
Actuated g/C Ratio	0.54	0.54	0.10	0.67	0.22
v/c Ratio	0.26	0.63	0.55	0.46	0.80
Control Delay	13.5	10.0	51.4	3.9	43.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	10.0	51.4	3.9	43.7
LOS	B	B	D	A	D
Approach Delay	10.9			7.7	43.7
Approach LOS	B			A	D

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 13.7

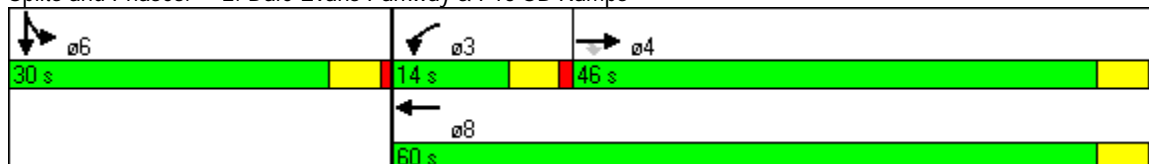
Intersection LOS: B

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBT
Protected Phases	4		3	8	6
Permitted Phases		4			
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0
Total Split (s)	46.0	46.0	14.0	60.0	30.0
Total Split (%)	51.1%	51.1%	15.6%	66.7%	33.3%
Maximum Green (s)	41.0	41.0	9.0	55.0	25.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Min
Walk Time (s)	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	5	5		5	5
90th %ile Green (s)	41.0	41.0	9.0	55.0	25.0
90th %ile Term Code	Coord	Coord	Max	Coord	Max
70th %ile Green (s)	41.0	41.0	10.1	56.1	23.9
70th %ile Term Code	Coord	Coord	Max	Coord	Gap
50th %ile Green (s)	44.1	44.1	10.1	59.2	20.8
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap
30th %ile Green (s)	48.7	48.7	8.6	62.3	17.7
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap
10th %ile Green (s)	67.0	67.0	0.0	67.0	13.0
10th %ile Term Code	Coord	Coord	Skip	Coord	Gap

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	258	762	95	1082	331
v/c Ratio	0.26	0.63	0.55	0.46	0.80
Control Delay	13.5	10.0	51.4	3.9	43.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	10.0	51.4	3.9	43.7
Queue Length 50th (ft)	130	222	37	22	157
Queue Length 95th (ft)	m118	329	m72	135	239
Internal Link Dist (ft)	920			820	1037
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	1001	1203	186	2356	503
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.63	0.51	0.46	0.66

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑↑						↕	
Volume (vph)	0	237	701	87	995	0	0	0	0	176	1	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0						5.0	
Lane Util. Factor		1.00	1.00	1.00	0.95						1.00	
Frt		1.00	0.85	1.00	1.00						0.94	
Flt Protected		1.00	1.00	0.95	1.00						0.97	
Satd. Flow (prot)		1863	1583	1770	3539						1708	
Flt Permitted		1.00	1.00	0.95	1.00						0.97	
Satd. Flow (perm)		1863	1583	1770	3539						1708	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	258	762	95	1082	0	0	0	0	191	1	139
RTOR Reduction (vph)	0	0	362	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	258	400	95	1082	0	0	0	0	0	300	0
Turn Type			Perm	Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases			4									
Actuated Green, G (s)		47.3	47.3	7.6	59.9						20.1	
Effective Green, g (s)		47.3	47.3	7.6	59.9						20.1	
Actuated g/C Ratio		0.53	0.53	0.08	0.67						0.22	
Clearance Time (s)		5.0	5.0	5.0	5.0						5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	
Lane Grp Cap (vph)		979	832	149	2355						381	
v/s Ratio Prot		0.14		c0.05	c0.31						c0.18	
v/s Ratio Perm			0.25									
v/c Ratio		0.26	0.48	0.64	0.46						0.79	
Uniform Delay, d1		11.8	13.6	39.9	7.3						32.9	
Progression Factor		0.95	5.66	1.07	0.42						1.00	
Incremental Delay, d2		0.5	1.4	7.0	0.5						10.3	
Delay (s)		11.7	78.2	49.8	3.6						43.2	
Level of Service		B	E	D	A						D	
Approach Delay (s)		61.4			7.3			0.0			43.2	
Approach LOS		E			A			A			D	

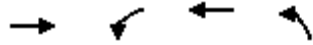
Intersection Summary

HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

3: Dale Evans Parkway & Station Access #1

5/26/2010

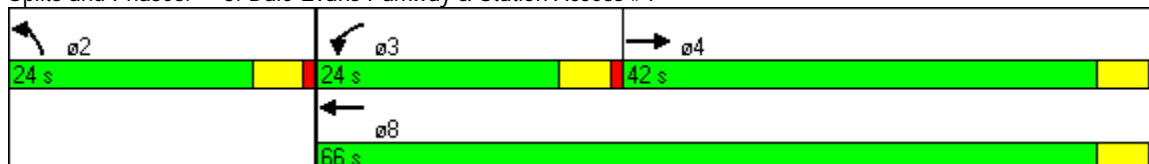


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↻	↻↻	↑	↻
Volume (vph)	534	501	618	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	9.0	21.0	21.0
Total Split (s)	42.0	24.0	66.0	24.0
Total Split (%)	46.7%	26.7%	73.3%	26.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Min
Act Effect Green (s)	32.5	18.5	56.0	24.0
Actuated g/C Ratio	0.36	0.21	0.62	0.27
v/c Ratio	0.87	0.77	0.58	0.58
Control Delay	48.2	25.6	13.5	6.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.2	25.6	13.5	6.9
LOS	D	C	B	A
Approach Delay	48.2		18.9	6.9
Approach LOS	D		B	A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 24.2
 Intersection LOS: C
 Intersection Capacity Utilization 79.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Dale Evans Parkway & Station Access #1



Phasings

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	9.0	21.0	21.0
Total Split (s)	42.0	24.0	66.0	24.0
Total Split (%)	46.7%	26.7%	73.3%	26.7%
Maximum Green (s)	37.0	19.0	61.0	19.0
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Min
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	5		5	5
90th %ile Green (s)	37.0	19.1	61.1	18.9
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	37.1	22.0	64.1	15.9
70th %ile Term Code	Gap	Gap	Hold	Coord
50th %ile Green (s)	33.6	19.3	57.9	22.1
50th %ile Term Code	Gap	Gap	Hold	Coord
30th %ile Green (s)	30.1	17.4	52.5	27.5
30th %ile Term Code	Gap	Gap	Hold	Coord
10th %ile Green (s)	24.6	14.6	44.2	35.8
10th %ile Term Code	Gap	Gap	Hold	Coord

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

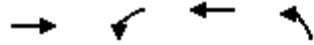
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	582	545	672	437
v/c Ratio	0.87	0.77	0.58	0.58
Control Delay	48.2	25.6	13.5	6.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.2	25.6	13.5	6.9
Queue Length 50th (ft)	343	94	351	1
Queue Length 95th (ft)	m312	217	457	81
Internal Link Dist (ft)	920		920	951
Turn Bay Length (ft)		150		
Base Capacity (vph)	766	751	1276	758
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.73	0.53	0.58

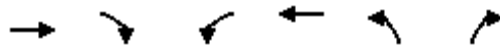
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↔	↑	↔	
Volume (vph)	534	2	501	618	2	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	
Lane Util. Factor	1.00		0.97	1.00	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1862		3433	1863	1612	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1862		3433	1863	1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	580	2	545	672	2	435
RTOR Reduction (vph)	0	0	0	0	319	0
Lane Group Flow (vph)	582	0	545	672	118	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	32.5		18.5	56.0	24.0	
Effective Green, g (s)	32.5		18.5	56.0	24.0	
Actuated g/C Ratio	0.36		0.21	0.62	0.27	
Clearance Time (s)	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	672		706	1159	430	
v/s Ratio Prot	c0.31		c0.16	0.36	c0.07	
v/s Ratio Perm						
v/c Ratio	0.87		0.77	0.58	0.27	
Uniform Delay, d1	26.7		33.8	10.0	26.1	
Progression Factor	1.40		0.54	1.20	1.00	
Incremental Delay, d2	8.9		4.7	0.6	1.6	
Delay (s)	46.4		23.0	12.7	27.7	
Level of Service	D		C	B	C	
Approach Delay (s)	46.4			17.3	27.7	
Approach LOS	D			B	C	

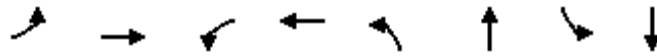
Intersection Summary

HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010

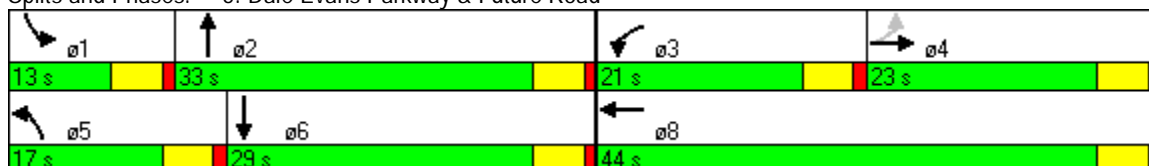


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↗	↖	↖	↗	↖	↗
Volume (vph)	3	27	458	17	98	138	92	185
Turn Type	Perm		Prot		Prot		Prot	
Protected Phases		4	3	8	5	2	1	6
Permitted Phases	4							
Detector Phase	4	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	9.0	21.0	9.0	21.0
Total Split (s)	23.0	23.0	21.0	44.0	17.0	33.0	13.0	29.0
Total Split (%)	25.6%	25.6%	23.3%	48.9%	18.9%	36.7%	14.4%	32.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	None	Min	None	Min
Act Effect Green (s)		23.7	15.7	44.4	10.1	25.2	7.7	22.8
Actuated g/C Ratio		0.26	0.17	0.49	0.11	0.28	0.09	0.25
v/c Ratio		0.22	0.83	0.06	0.54	0.91	0.66	0.43
Control Delay		13.2	41.6	1.0	43.6	41.2	61.2	30.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		13.2	41.6	1.0	43.6	41.2	61.2	30.8
LOS		B	D	A	D	D	E	C
Approach Delay		13.2		37.9		41.6		40.8
Approach LOS		B		D		D		D

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 38.2
 Intersection LOS: D
 Intersection Capacity Utilization 65.3%
 ICU Level of Service C
 Analysis Period (min) 15

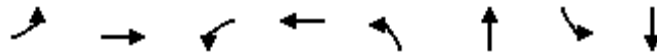
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4	3	8	5	2	1	6
Permitted Phases	4							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	9.0	21.0	9.0	21.0
Total Split (s)	23.0	23.0	21.0	44.0	17.0	33.0	13.0	29.0
Total Split (%)	25.6%	25.6%	23.3%	48.9%	18.9%	36.7%	14.4%	32.2%
Maximum Green (s)	18.0	18.0	16.0	39.0	12.0	28.0	8.0	24.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	Min	None	Min
Walk Time (s)	5.0	5.0		5.0		5.0		5.0
Flash Dont Walk (s)	11.0	11.0		11.0		11.0		11.0
Pedestrian Calls (#/hr)	5	5		0		5		5
90th %ile Green (s)	18.0	18.0	16.0	39.0	12.0	28.0	8.0	24.0
90th %ile Term Code	Coord	Coord	Max	Coord	Max	Max	Max	Hold
70th %ile Green (s)	18.0	18.0	16.0	39.0	12.0	28.0	8.0	24.0
70th %ile Term Code	Coord	Coord	Max	Coord	Max	Max	Max	Hold
50th %ile Green (s)	18.0	18.0	16.0	39.0	10.7	28.0	8.0	25.3
50th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max	Max	Hold
30th %ile Green (s)	21.4	21.4	16.6	43.0	9.0	24.0	8.0	23.0
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap	Max	Hold
10th %ile Green (s)	43.2	43.2	14.0	62.2	0.0	17.8	0.0	17.8
10th %ile Term Code	Coord	Coord	Gap	Coord	Skip	Gap	Skip	Hold

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	107	498	50	107	516	100	205
v/c Ratio	0.22	0.83	0.06	0.54	0.91	0.66	0.43
Control Delay	13.2	41.6	1.0	43.6	41.2	61.2	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	41.6	1.0	43.6	41.2	61.2	30.8
Queue Length 50th (ft)	15	95	6	58	225	56	93
Queue Length 95th (ft)	59	#206	m1	88	#383	#126	160
Internal Link Dist (ft)	464		920		920		859
Turn Bay Length (ft)		100		100		100	
Base Capacity (vph)	497	615	848	236	616	157	501
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.81	0.06	0.45	0.84	0.64	0.41

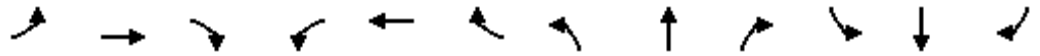
Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Volume (vph)	3	27	69	458	17	29	98	138	337	92	185	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		0.97	1.00		1.00	1.00		1.00	1.00	
Frt		0.91		1.00	0.90		1.00	0.89		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1684		3433	1684		1770	1665		1770	1857	
Flt Permitted		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1679		3433	1684		1770	1665		1770	1857	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	75	498	18	32	107	150	366	100	201	4
RTOR Reduction (vph)	0	56	0	0	17	0	0	102	0	0	1	0
Lane Group Flow (vph)	0	51	0	498	33	0	107	414	0	100	204	0
Turn Type	Perm			Prot			Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		22.7		15.7	43.4		8.7	25.2		6.4	22.9	
Effective Green, g (s)		22.7		15.7	43.4		8.7	25.2		6.4	22.9	
Actuated g/C Ratio		0.25		0.17	0.48		0.10	0.28		0.07	0.25	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		423		599	812		171	466		126	473	
v/s Ratio Prot				c0.15	0.02		c0.06	c0.25		0.06	0.11	
v/s Ratio Perm	c0.03											
v/c Ratio		0.12		0.83	0.04		0.63	0.89		0.79	0.43	
Uniform Delay, d1		26.0		35.9	12.3		39.1	31.0		41.1	28.1	
Progression Factor		1.00		0.83	0.11		0.90	0.90		1.00	1.00	
Incremental Delay, d2		0.6		8.4	0.1		6.7	17.7		28.1	0.6	
Delay (s)		26.5		38.1	1.5		41.9	45.5		69.2	28.7	
Level of Service		C		D	A		D	D		E	C	
Approach Delay (s)		26.5			34.8			44.9			42.0	
Approach LOS		C			C			D			D	

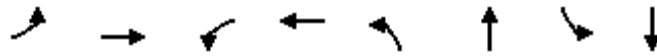
Intersection Summary

HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

7: Station Access #4 & Future Road

5/26/2010

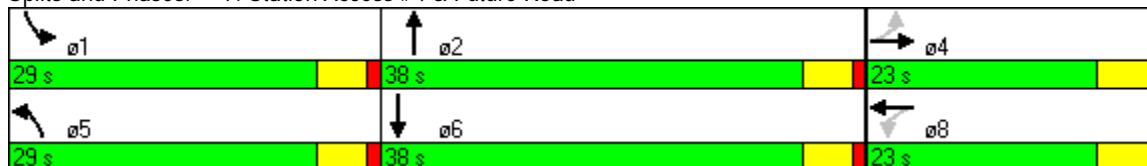


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↗	↖	↗	↖
Volume (vph)	28	2	2	2	46	418	110	487
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	9.0	21.0	9.0	21.0
Total Split (s)	23.0	23.0	23.0	23.0	29.0	38.0	29.0	38.0
Total Split (%)	25.6%	25.6%	25.6%	25.6%	32.2%	42.2%	32.2%	42.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)		8.0		8.0	8.0	57.7	11.4	66.6
Actuated g/C Ratio		0.09		0.09	0.09	0.64	0.13	0.74
v/c Ratio		0.51		0.40	0.32	0.38	0.53	0.42
Control Delay		26.2		15.2	43.0	10.7	43.7	9.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		26.2		15.2	43.0	10.7	43.7	9.9
LOS		C		B	D	B	D	A
Approach Delay		26.2		15.2		13.9		15.7
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 15.7
 Intersection LOS: B
 Intersection Capacity Utilization 55.8%
 ICU Level of Service B
 Analysis Period (min) 15

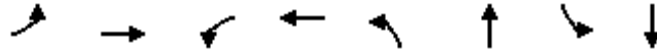
Splits and Phases: 7: Station Access #4 & Future Road



Phasings

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	9.0	21.0	9.0	21.0
Total Split (s)	23.0	23.0	23.0	23.0	29.0	38.0	29.0	38.0
Total Split (%)	25.6%	25.6%	25.6%	25.6%	32.2%	42.2%	32.2%	42.2%
Maximum Green (s)	18.0	18.0	18.0	18.0	24.0	33.0	24.0	33.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
Walk Time (s)	5.0	5.0	5.0	5.0		5.0		5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0		0
90th %ile Green (s)	12.2	12.2	12.2	12.2	10.8	46.9	15.9	52.0
90th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Gap	Coord
70th %ile Green (s)	9.3	9.3	9.3	9.3	9.1	52.5	13.2	56.6
70th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Gap	Coord
50th %ile Green (s)	7.4	7.4	7.4	7.4	7.9	56.2	11.4	59.7
50th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Gap	Coord
30th %ile Green (s)	5.5	5.5	5.5	5.5	0.0	59.9	9.6	74.5
30th %ile Term Code	Gap	Gap	Gap	Gap	Skip	Coord	Gap	Coord
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0	73.0	7.0	85.0
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip	Coord	Gap	Coord

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	87	50	456	120	574
v/c Ratio	0.51	0.40	0.32	0.38	0.53	0.42
Control Delay	26.2	15.2	43.0	10.7	43.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	15.2	43.0	10.7	43.7	9.9
Queue Length 50th (ft)	17	2	27	117	74	144
Queue Length 95th (ft)	62	44	61	234	m106	m81
Internal Link Dist (ft)	560	751		420		420
Turn Bay Length (ft)			100		100	
Base Capacity (vph)	338	388	472	1193	472	1362
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	0.28	0.22	0.11	0.38	0.25	0.42

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Volume (vph)	28	2	57	2	2	76	46	418	2	110	487	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.87		1.00	1.00		1.00	0.99	
Flt Protected		0.98			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1670			1621		1770	1862		1770	1841	
Flt Permitted		0.85			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1444			1610		1770	1862		1770	1841	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	2	62	2	2	83	50	454	2	120	529	45
RTOR Reduction (vph)	0	57	0	0	77	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	37	0	0	10	0	50	456	0	120	572	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		6.9			6.9		5.6	56.7		11.4	62.5	
Effective Green, g (s)		6.9			6.9		5.6	56.7		11.4	62.5	
Actuated g/C Ratio		0.08			0.08		0.06	0.63		0.13	0.69	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		111			123		110	1173		224	1278	
v/s Ratio Prot							0.03	0.24		c0.07	c0.31	
v/s Ratio Perm		c0.03			0.01							
v/c Ratio		0.33			0.08		0.45	0.39		0.54	0.45	
Uniform Delay, d1		39.4			38.6		40.7	8.2		36.8	6.1	
Progression Factor		1.00			1.00		1.00	1.00		1.02	1.20	
Incremental Delay, d2		1.8			0.3		3.0	1.0		1.9	0.9	
Delay (s)		41.1			38.9		43.7	9.1		39.5	8.2	
Level of Service		D			D		D	A		D	A	
Approach Delay (s)		41.1			38.9			12.5			13.6	
Approach LOS		D			D			B			B	

Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

2013 Conditions
Base + DEMU

HCM Unsignalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖			↗			↕				
Volume (veh/h)	70	301	0	0	207	73	602	2	95	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	327	0	0	225	79	654	2	103	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	304			327			744	784	327	848	744	265
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			327			744	784	327	848	744	265
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			0	99	86	100	100	100
cM capacity (veh/h)	1256			1232			315	305	714	228	322	774

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	403	304	760
Volume Left	76	0	654
Volume Right	0	79	103
cSH	1256	1700	341
Volume to Capacity	0.06	0.18	2.23
Queue Length 95th (ft)	5	0	1433
Control Delay (s)	2.0	0.0	586.3
Lane LOS	A		F
Approach Delay (s)	2.0	0.0	586.3
Approach LOS			F

Intersection Summary		
Average Delay		304.1
Intersection Capacity Utilization	84.3%	ICU Level of Service E
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔						↔	
Volume (veh/h)	0	194	529	87	720	0	0	0	0	176	1	113
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	211	575	95	783	0	0	0	0	191	1	123
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	783			786			1593	1470	498	1470	1758	783
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	783			786			1593	1470	498	1470	1758	783
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			100	100	100	0	99	69
cM capacity (veh/h)	835			833			54	113	572	96	75	394

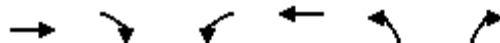
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	786	877	315
Volume Left	0	95	191
Volume Right	575	0	123
cSH	1700	833	136
Volume to Capacity	0.46	0.11	2.32
Queue Length 95th (ft)	0	10	670
Control Delay (s)	0.0	2.9	666.9
Lane LOS		A	F
Approach Delay (s)	0.0	2.9	666.9
Approach LOS			F

Intersection Summary		
Average Delay		107.6
Intersection Capacity Utilization	112.2%	ICU Level of Service
Analysis Period (min)		15
		H

HCM Unsignalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→		↵	↑	↵	
Volume (veh/h)	435	2	355	474	2	283
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	473	2	386	515	2	308
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			475		1761	474
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			475		1761	474
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			65		96	48
cM capacity (veh/h)			1087		60	590

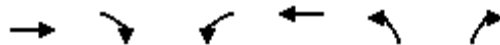
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	475	386	515	310
Volume Left	0	386	0	2
Volume Right	2	0	0	308
cSH	1700	1087	1700	556
Volume to Capacity	0.28	0.35	0.30	0.56
Queue Length 95th (ft)	0	41	0	85
Control Delay (s)	0.0	10.1	0.0	19.3
Lane LOS		B		C
Approach Delay (s)	0.0	4.3		19.3
Approach LOS				C

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		70.3%	ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	
Volume (veh/h)	380	2	81	393	2	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	413	2	88	427	2	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			415		1017	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			415		1017	414
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		99	90
cM capacity (veh/h)			1144		243	638

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	415	88	427	63
Volume Left	0	88	0	2
Volume Right	2	0	0	61
cSH	1700	1144	1700	604
Volume to Capacity	0.24	0.08	0.25	0.10
Queue Length 95th (ft)	0	6	0	9
Control Delay (s)	0.0	8.4	0.0	11.7
Lane LOS		A		B
Approach Delay (s)	0.0	1.4		11.7
Approach LOS				B

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		38.2%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Volume (veh/h)	3	27	69	347	17	29	98	138	261	92	185	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	29	75	377	18	32	107	150	284	100	201	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	50			104			951	878	67	1221	899	34
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	50			104			951	878	67	1221	899	34
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			0	30	72	0	3	100
cM capacity (veh/h)	1557			1487			23	214	997	40	207	1039

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	108	377	50	107	434	100	205
Volume Left	3	377	0	107	0	100	0
Volume Right	75	0	32	0	284	0	4
cSH	1557	1487	1700	23	439	40	211
Volume to Capacity	0.00	0.25	0.03	4.58	0.99	2.49	0.97
Queue Length 95th (ft)	0	25	0	Err	310	273	211
Control Delay (s)	0.2	8.2	0.0	Err	70.7	893.1	102.9
Lane LOS	A	A		F	F	F	F
Approach Delay (s)	0.2	7.3		2028.4		361.6	
Approach LOS				F		F	

Intersection Summary			
Average Delay		876.1	
Intersection Capacity Utilization	64.3%		ICU Level of Service C
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Station Access #3 & Future Road

5/26/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	2	19	2	2	39	14	449	2	56	533	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	2	21	2	2	42	15	488	2	61	579	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1270	1228	586	1242	1234	489	592			490		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1270	1228	586	1242	1234	489	592			490		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	99	96	98	99	93	98			94		
cM capacity (veh/h)	126	165	510	136	164	579	983			1073		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	33	47	15	490	61	592						
Volume Left	10	2	15	0	61	0						
Volume Right	21	42	0	2	0	13						
cSH	248	456	983	1700	1073	1700						
Volume to Capacity	0.13	0.10	0.02	0.29	0.06	0.35						
Queue Length 95th (ft)	11	9	1	0	5	0						
Control Delay (s)	21.7	13.8	8.7	0.0	8.6	0.0						
Lane LOS	C	B	A		A							
Approach Delay (s)	21.7	13.8	0.3		0.8							
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			47.6%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↘		↗	↘	
Volume (veh/h)	28	5	57	2	2	54	46	381	2	78	432	41
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	5	62	2	2	59	50	414	2	85	470	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1235	1178	492	1219	1199	415	514			416		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1235	1178	492	1219	1199	415	514			416		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	97	89	98	99	91	95			93		
cM capacity (veh/h)	125	168	577	124	163	637	1051			1143		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	98	63	50	416	85	514
Volume Left	30	2	50	0	85	0
Volume Right	62	59	0	2	0	45
cSH	256	513	1051	1700	1143	1700
Volume to Capacity	0.38	0.12	0.05	0.24	0.07	0.30
Queue Length 95th (ft)	43	10	4	0	6	0
Control Delay (s)	27.6	13.0	8.6	0.0	8.4	0.0
Lane LOS	D	B	A		A	
Approach Delay (s)	27.6	13.0	0.9		1.2	
Approach LOS	D	B				

Intersection Summary		
Average Delay		3.8
Intersection Capacity Utilization	50.5%	ICU Level of Service
Analysis Period (min)		15
		A

HCM Unsignalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	92	334	2	133	356
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	100	363	2	145	387
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1040	364			365	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1040	364			365	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	85			88	
cM capacity (veh/h)	224	681			1193	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	102	365	145	387
Volume Left	2	0	145	0
Volume Right	100	2	0	0
cSH	653	1700	1193	1700
Volume to Capacity	0.16	0.21	0.12	0.23
Queue Length 95th (ft)	14	0	10	0
Control Delay (s)	11.5	0.0	8.4	0.0
Lane LOS	B		A	
Approach Delay (s)	11.5	0.0	2.3	
Approach LOS	B			

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization	40.9%		ICU Level of Service A
Analysis Period (min)	15		

2013 Conditions
Base + DEMU Mitigations

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations		↕	↕	↕	↕
Volume (vph)	70	301	207	602	2
Turn Type	Perm			Split	
Protected Phases		4	8	2	2
Permitted Phases	4				
Detector Phase	4	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0
Total Split (s)	40.0	40.0	40.0	50.0	50.0
Total Split (%)	44.4%	44.4%	44.4%	55.6%	55.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Act Effect Green (s)		40.9	40.9	39.1	39.1
Actuated g/C Ratio		0.45	0.45	0.43	0.43
v/c Ratio		0.54	0.37	0.85	0.14
Control Delay		15.1	17.8	33.8	3.2
Queue Delay		0.0	0.0	0.0	0.0
Total Delay		15.1	17.8	33.8	3.2
LOS		B	B	C	A
Approach Delay		15.1	17.8		29.6
Approach LOS		B	B		C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 23.2

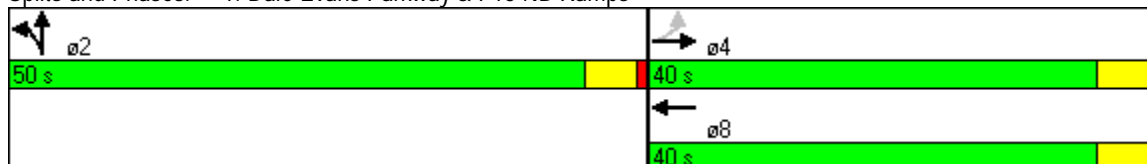
Intersection LOS: C

Intersection Capacity Utilization 80.9%

ICU Level of Service D

Analysis Period (min) 15

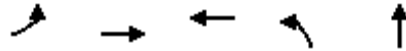
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases		4	8	2	2
Permitted Phases	4				
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	21.0	21.0	21.0
Total Split (s)	40.0	40.0	40.0	50.0	50.0
Total Split (%)	44.4%	44.4%	44.4%	55.6%	55.6%
Maximum Green (s)	35.0	35.0	35.0	45.0	45.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag					
Lead-Lag Optimize?					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	C-Max	Min	Min
Walk Time (s)	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	5	5	5	5	5
90th %ile Green (s)	35.0	35.0	35.0	45.0	45.0
90th %ile Term Code	Coord	Coord	Coord	Max	Max
70th %ile Green (s)	36.0	36.0	36.0	44.0	44.0
70th %ile Term Code	Coord	Coord	Coord	Gap	Gap
50th %ile Green (s)	39.4	39.4	39.4	40.6	40.6
50th %ile Term Code	Coord	Coord	Coord	Gap	Gap
30th %ile Green (s)	43.5	43.5	43.5	36.5	36.5
30th %ile Term Code	Coord	Coord	Coord	Gap	Gap
10th %ile Green (s)	50.6	50.6	50.6	29.4	29.4
10th %ile Term Code	Coord	Coord	Coord	Gap	Gap

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

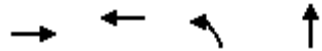
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	403	304	654	105
v/c Ratio	0.54	0.37	0.85	0.14
Control Delay	15.1	17.8	33.8	3.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.1	17.8	33.8	3.2
Queue Length 50th (ft)	140	104	313	1
Queue Length 95th (ft)	195	185	422	25
Internal Link Dist (ft)	820	380		310
Turn Bay Length (ft)				
Base Capacity (vph)	743	830	885	846
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.37	0.74	0.12
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			2		2	2				
Volume (vph)	70	301	0	0	207	73	602	2	95	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0				
Lane Util. Factor		1.00			1.00		1.00	1.00				
Frt		1.00			0.96		1.00	0.85				
Flt Protected		0.99			1.00		0.95	1.00				
Satd. Flow (prot)		1845			1797		1770	1589				
Flt Permitted		0.88			1.00		0.95	1.00				
Satd. Flow (perm)		1636			1797		1770	1589				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	327	0	0	225	79	654	2	103	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	58	0	0	0	0
Lane Group Flow (vph)	0	403	0	0	291	0	654	47	0	0	0	0
Turn Type	Perm						Split					
Protected Phases		4			8		2	2				
Permitted Phases	4											
Actuated Green, G (s)		40.9			40.9		39.1	39.1				
Effective Green, g (s)		40.9			40.9		39.1	39.1				
Actuated g/C Ratio		0.45			0.45		0.43	0.43				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Vehicle Extension (s)		3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)		743			817		769	690				
v/s Ratio Prot					0.16		0.37	0.03				
v/s Ratio Perm		0.25										
v/c Ratio		0.54			0.36		0.85	0.07				
Uniform Delay, d1		17.8			16.0		22.8	14.8				
Progression Factor		0.62			1.00		1.00	1.00				
Incremental Delay, d2		2.6			1.2		8.9	0.0				
Delay (s)		13.7			17.2		31.8	14.9				
Level of Service		B			B		C	B				
Approach Delay (s)		13.7			17.2			29.4			0.0	
Approach LOS		B			B			C			A	

Intersection Summary

HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Configurations	↑	↗	↖	↑	↕
Volume (vph)	194	529	87	720	1
Turn Type		Perm	Prot		
Protected Phases	4		3	8	6
Permitted Phases		4			
Detector Phase	4	4	3	8	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0
Total Split (s)	47.0	47.0	14.0	61.0	29.0
Total Split (%)	52.2%	52.2%	15.6%	67.8%	32.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Recall Mode	C-Max	C-Max	None	C-Max	Min
Act Effect Green (s)	49.1	49.1	8.8	60.6	19.4
Actuated g/C Ratio	0.55	0.55	0.10	0.67	0.22
v/c Ratio	0.21	0.51	0.55	0.62	0.80
Control Delay	17.3	8.3	46.1	10.6	44.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	8.3	46.1	10.6	44.2
LOS	B	A	D	B	D
Approach Delay	10.7			14.4	44.2
Approach LOS	B			B	D

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 17.7

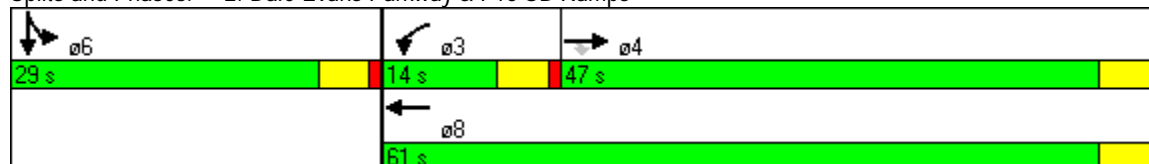
Intersection LOS: B

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBT
Protected Phases	4		3	8	6
Permitted Phases		4			
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0
Total Split (s)	47.0	47.0	14.0	61.0	29.0
Total Split (%)	52.2%	52.2%	15.6%	67.8%	32.2%
Maximum Green (s)	42.0	42.0	9.0	56.0	24.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Min
Walk Time (s)	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	5	5		5	5
90th %ile Green (s)	42.0	42.0	9.0	56.0	24.0
90th %ile Term Code	Coord	Coord	Max	Coord	Max
70th %ile Green (s)	42.0	42.0	9.9	56.9	23.1
70th %ile Term Code	Coord	Coord	Max	Coord	Gap
50th %ile Green (s)	44.8	44.8	10.1	59.9	20.1
50th %ile Term Code	Coord	Coord	Gap	Coord	Gap
30th %ile Green (s)	49.3	49.3	8.6	62.9	17.1
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap
10th %ile Green (s)	67.4	67.4	0.0	67.4	12.6
10th %ile Term Code	Coord	Coord	Skip	Coord	Gap

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBT
Lane Group Flow (vph)	211	575	95	783	315
v/c Ratio	0.21	0.51	0.55	0.62	0.80
Control Delay	17.3	8.3	46.1	10.6	44.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	8.3	46.1	10.6	44.2
Queue Length 50th (ft)	93	98	42	357	151
Queue Length 95th (ft)	m138	m169	m75	477	233
Internal Link Dist (ft)	920			820	245
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	1016	1125	185	1255	482
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.21	0.51	0.51	0.62	0.65

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑						↕	
Volume (vph)	0	194	529	87	720	0	0	0	0	176	1	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0						5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	
Frt		1.00	0.85	1.00	1.00						0.95	
Flt Protected		1.00	1.00	0.95	1.00						0.97	
Satd. Flow (prot)		1863	1583	1770	1863						1713	
Flt Permitted		1.00	1.00	0.95	1.00						0.97	
Satd. Flow (perm)		1863	1583	1770	1863						1713	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	211	575	95	783	0	0	0	0	191	1	123
RTOR Reduction (vph)	0	0	268	0	0	0	0	0	0	0	27	0
Lane Group Flow (vph)	0	211	307	95	783	0	0	0	0	0	288	0
Turn Type			Perm	Prot							Split	
Protected Phases		4		3	8						6	6
Permitted Phases			4									
Actuated Green, G (s)		48.1	48.1	7.5	60.6						19.4	
Effective Green, g (s)		48.1	48.1	7.5	60.6						19.4	
Actuated g/C Ratio		0.53	0.53	0.08	0.67						0.22	
Clearance Time (s)		5.0	5.0	5.0	5.0						5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	
Lane Grp Cap (vph)		996	846	148	1254						369	
v/s Ratio Prot		0.11		0.05	c0.42						c0.17	
v/s Ratio Perm			0.19									
v/c Ratio		0.21	0.36	0.64	0.62						0.78	
Uniform Delay, d1		11.0	12.1	39.9	8.3						33.3	
Progression Factor		1.31	4.61	0.94	0.91						1.00	
Incremental Delay, d2		0.5	1.1	7.1	1.8						10.0	
Delay (s)		14.9	56.9	44.8	9.4						43.3	
Level of Service		B	E	D	A						D	
Approach Delay (s)		45.6			13.2			0.0			43.3	
Approach LOS		D			B			A			D	

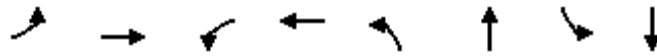
Intersection Summary

HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔	↙	↘	↙	↘	↙	↘
Volume (vph)	3	27	347	17	98	138	92	185
Turn Type	Perm		Prot		Prot		Prot	
Protected Phases		4	3	8	5	2	1	6
Permitted Phases	4							
Detector Phase	4	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	1.0	1.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	9.0	21.0	9.0	21.0
Total Split (s)	21.0	21.0	28.0	49.0	16.0	28.0	13.0	25.0
Total Split (%)	23.3%	23.3%	31.1%	54.4%	17.8%	31.1%	14.4%	27.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	None	Min	None	Min
Act Effect Green (s)		21.4	21.7	48.2	9.7	21.4	7.7	19.5
Actuated g/C Ratio		0.24	0.24	0.54	0.11	0.24	0.09	0.22
v/c Ratio		0.23	0.88	0.05	0.56	0.91	0.66	0.51
Control Delay		14.1	64.0	11.0	49.7	49.9	61.2	35.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		14.1	64.0	11.0	49.7	49.9	61.2	35.7
LOS		B	E	B	D	D	E	D
Approach Delay		14.1		57.8		49.9		44.1
Approach LOS		B		E		D		D

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 53 (59%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 48.3

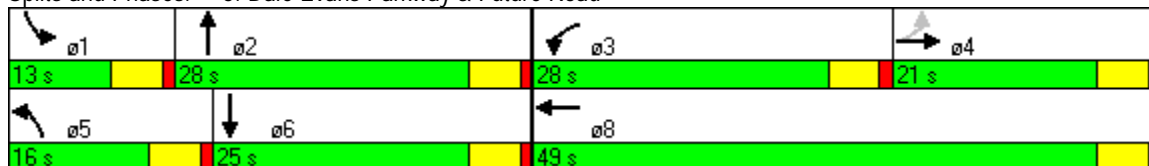
Intersection LOS: D

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

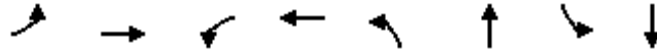
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4	3	8	5	2	1	6
Permitted Phases	4							
Minimum Initial (s)	1.0	1.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	9.0	21.0	9.0	21.0
Total Split (s)	21.0	21.0	28.0	49.0	16.0	28.0	13.0	25.0
Total Split (%)	23.3%	23.3%	31.1%	54.4%	17.8%	31.1%	14.4%	27.8%
Maximum Green (s)	16.0	16.0	23.0	44.0	11.0	23.0	8.0	20.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	None	Min	None	Min
Walk Time (s)	5.0	5.0		5.0		5.0		5.0
Flash Dont Walk (s)	11.0	11.0		11.0		11.0		11.0
Pedestrian Calls (#/hr)	5	5		5		5		5
90th %ile Green (s)	16.0	16.0	23.0	44.0	11.0	23.0	8.0	20.0
90th %ile Term Code	Coord	Coord	Max	Coord	Max	Max	Max	Max
70th %ile Green (s)	16.0	16.0	23.0	44.0	11.0	23.0	8.0	20.0
70th %ile Term Code	Coord	Coord	Max	Coord	Max	Max	Max	Hold
50th %ile Green (s)	16.0	16.0	23.0	44.0	10.7	23.0	8.0	20.3
50th %ile Term Code	Coord	Coord	Max	Coord	Gap	Max	Max	Hold
30th %ile Green (s)	18.1	18.1	22.1	45.2	9.0	21.8	8.0	20.8
30th %ile Term Code	Coord	Coord	Gap	Coord	Gap	Gap	Max	Hold
10th %ile Green (s)	41.0	41.0	17.6	63.6	0.0	16.4	0.0	16.4
10th %ile Term Code	Coord	Coord	Gap	Coord	Skip	Gap	Skip	Hold

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 53 (59%), Referenced to phase 4:EBTL and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	107	377	50	107	434	100	205
v/c Ratio	0.23	0.88	0.05	0.56	0.91	0.66	0.51
Control Delay	14.1	64.0	11.0	49.7	49.9	61.2	35.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	64.0	11.0	49.7	49.9	61.2	35.7
Queue Length 50th (ft)	15	231	3	58	184	56	102
Queue Length 95th (ft)	61	#360	m20	111	#353	#126	171
Internal Link Dist (ft)	1539		920		920		986
Turn Bay Length (ft)		100		100		100	
Base Capacity (vph)	456	452	916	216	505	157	418
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.83	0.05	0.50	0.86	0.64	0.49

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕		↕	↕	
Volume (vph)	3	27	69	347	17	29	98	138	261	92	185	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.91		1.00	0.90		1.00	0.90		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1684		1770	1684		1770	1680		1770	1857	
Flt Permitted		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1678		1770	1684		1770	1680		1770	1857	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	29	75	377	18	32	107	150	284	100	201	4
RTOR Reduction (vph)	0	58	0	0	15	0	0	78	0	0	1	0
Lane Group Flow (vph)	0	49	0	377	35	0	107	356	0	100	204	0
Turn Type	Perm			Prot			Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4											
Actuated Green, G (s)		20.5		21.7	47.2		8.3	21.4		6.4	19.5	
Effective Green, g (s)		20.5		21.7	47.2		8.3	21.4		6.4	19.5	
Actuated g/C Ratio		0.23		0.24	0.52		0.09	0.24		0.07	0.22	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		382		427	883		163	399		126	402	
v/s Ratio Prot				c0.21	0.02		c0.06	c0.21		0.06	0.11	
v/s Ratio Perm		c0.03										
v/c Ratio		0.13		0.88	0.04		0.66	0.89		0.79	0.51	
Uniform Delay, d1		27.6		32.9	10.4		39.5	33.2		41.1	31.0	
Progression Factor		1.00		1.38	1.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.7		15.5	0.1		9.2	21.4		28.1	1.0	
Delay (s)		28.3		61.1	17.9		48.6	54.6		69.2	32.0	
Level of Service		C		E	B		D	D		E	C	
Approach Delay (s)		28.3			56.0			53.4			44.2	
Approach LOS		C			E			D			D	

Intersection Summary

HCM Average Control Delay	50.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

2030 Conditions
(Base and Project Conditions)

2030 Conditions Base

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↶	↕↕	↕↔	↶	↔
Volume (vph)	229	557	389	199	2
Turn Type	Prot			Split	
Protected Phases	7	4	8	2	2
Permitted Phases					
Detector Phase	7	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	14.0	42.0	28.0	28.0	28.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	9.0	37.0	23.0	23.0	23.0
Actuated g/C Ratio	0.13	0.53	0.33	0.33	0.33
v/c Ratio	1.09	0.32	0.52	0.37	0.68
Control Delay	119.7	14.3	17.2	20.3	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	119.7	14.3	17.2	20.3	15.1
LOS	F	B	B	C	B
Approach Delay		45.0	17.2		16.7
Approach LOS		D	B		B

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 28.1

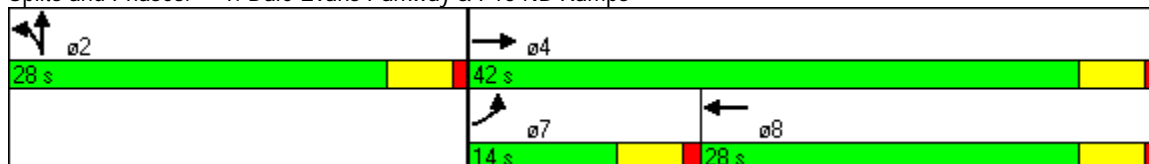
Intersection LOS: C

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

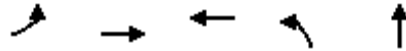
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases	7	4	8	2	2
Permitted Phases					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	14.0	42.0	28.0	28.0	28.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Maximum Green (s)	9.0	37.0	23.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	C-Max	Max	Max
Walk Time (s)		5.0	5.0	5.0	5.0
Flash Dont Walk (s)		18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)		5	5	5	5
90th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
90th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
70th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
70th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
50th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
50th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
30th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
30th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
10th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
10th %ile Term Code	Max	Coord	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

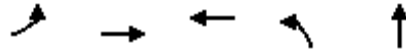
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	249	605	614	216	466
v/c Ratio	1.09	0.32	0.52	0.37	0.68
Control Delay	119.7	14.3	17.2	20.3	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	119.7	14.3	17.2	20.3	15.1
Queue Length 50th (ft)	~123	68	89	70	74
Queue Length 95th (ft)	#261	101	135	124	177
Internal Link Dist (ft)		820	380		2022
Turn Bay Length (ft)	225			150	
Base Capacity (vph)	228	1871	1183	582	686
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.09	0.32	0.52	0.37	0.68

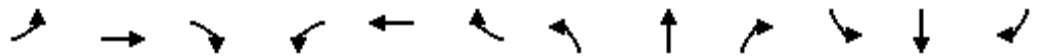
Intersection Summary

- ~ 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.

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖	↗				
Volume (vph)	229	557	0	0	389	176	199	2	427	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00				
Frt	1.00	1.00			0.95		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	3539			3374		1770	1585				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	1770	3539			3374		1770	1585				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	249	605	0	0	423	191	216	2	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	75	0	0	165	0	0	0	0
Lane Group Flow (vph)	249	605	0	0	539	0	216	301	0	0	0	0
Turn Type	Prot						Split					
Protected Phases	7	4			8		2	2				
Permitted Phases												
Actuated Green, G (s)	9.0	37.0			23.0		23.0	23.0				
Effective Green, g (s)	9.0	37.0			23.0		23.0	23.0				
Actuated g/C Ratio	0.13	0.53			0.33		0.33	0.33				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	228	1871			1109		582	521				
v/s Ratio Prot	c0.14	0.17			c0.16		0.12	c0.19				
v/s Ratio Perm												
v/c Ratio	1.09	0.32			0.49		0.37	0.58				
Uniform Delay, d1	30.5	9.4			18.8		18.0	19.5				
Progression Factor	1.30	1.47			1.00		1.00	1.00				
Incremental Delay, d2	79.8	0.4			1.5		1.8	4.6				
Delay (s)	119.3	14.1			20.3		19.8	24.1				
Level of Service	F	B			C		B	C				
Approach Delay (s)		44.8			20.3			22.7			0.0	
Approach LOS		D			C			C			A	

Intersection Summary

HCM Average Control Delay	30.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↙	↑↑	↙	↑
Volume (vph)	468	558	321	267	318	1
Turn Type		Perm	Prot		Split	
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	21.0	21.0	21.0	42.0	28.0	28.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effect Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
Actuated g/C Ratio	0.23	0.23	0.23	0.53	0.33	0.33
v/c Ratio	0.63	0.73	0.86	0.15	0.59	0.53
Control Delay	28.4	8.4	43.4	8.3	24.7	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	8.4	43.4	8.3	24.7	4.8
LOS	C	A	D	A	C	A
Approach Delay	17.5			27.5		13.7
Approach LOS	B			C		B

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 18.8

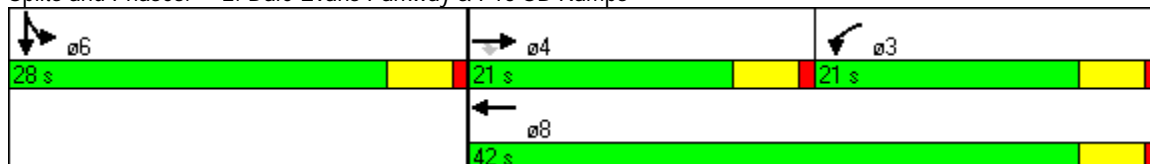
Intersection LOS: B

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	21.0	21.0	21.0	42.0	28.0	28.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Maximum Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5	5
90th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
90th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
70th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
70th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
50th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
50th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
30th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
30th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
10th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
10th %ile Term Code	Coord	Coord	Hold	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	509	607	349	290	346	431
v/c Ratio	0.63	0.73	0.86	0.15	0.59	0.53
Control Delay	28.4	8.4	43.4	8.3	24.7	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.4	8.4	43.4	8.3	24.7	4.8
Queue Length 50th (ft)	104	0	118	30	123	0
Queue Length 95th (ft)	152	86	#286	46	203	57
Internal Link Dist (ft)	920			820		1339
Turn Bay Length (ft)			300		300	
Base Capacity (vph)	809	830	405	1871	582	809
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	0.63	0.73	0.86	0.15	0.59	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	
Volume (vph)	0	468	558	321	267	0	0	0	0	318	1	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1584	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1584	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	509	607	349	290	0	0	0	0	346	1	430
RTOR Reduction (vph)	0	0	468	0	0	0	0	0	0	0	289	0
Lane Group Flow (vph)	0	509	139	349	290	0	0	0	0	346	142	0
Turn Type			Perm	Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases			4									
Actuated Green, G (s)		16.0	16.0	16.0	37.0					23.0	23.0	
Effective Green, g (s)		16.0	16.0	16.0	37.0					23.0	23.0	
Actuated g/C Ratio		0.23	0.23	0.23	0.53					0.33	0.33	
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		809	362	405	1871					582	520	
v/s Ratio Prot		c0.14		c0.20	0.08					c0.20	0.09	
v/s Ratio Perm			0.09									
v/c Ratio		0.63	0.38	0.86	0.15					0.59	0.27	
Uniform Delay, d1		24.3	22.8	25.9	8.5					19.6	17.3	
Progression Factor		1.00	1.00	0.83	0.95					1.00	1.00	
Incremental Delay, d2		3.7	3.1	15.5	0.2					4.4	1.3	
Delay (s)		28.0	25.9	36.9	8.2					24.0	18.6	
Level of Service		C	C	D	A					C	B	
Approach Delay (s)		26.9			23.9			0.0			21.0	
Approach LOS		C			C			A			C	

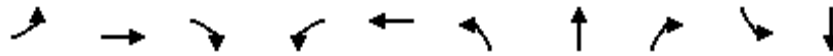
Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010



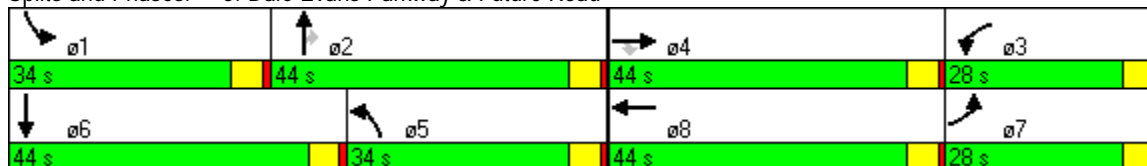
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↙	↑↑	↗	↙↗	↑↓	↙↗	↑↑↑	↗	↙↗	↑↑↑
Volume (vph)	17	141	363	420	89	515	722	401	485	969
Turn Type	Prot		Perm	Prot		Prot		Perm	Prot	
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	28.0	44.0	44.0	28.0	44.0	34.0	44.0	44.0	34.0	44.0
Total Split (%)	18.7%	29.3%	29.3%	18.7%	29.3%	22.7%	29.3%	29.3%	22.7%	29.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	18.8	17.0	17.0	24.0	26.6	29.0	61.9	61.9	27.1	59.9
Actuated g/C Ratio	0.13	0.11	0.11	0.16	0.18	0.19	0.41	0.41	0.18	0.40
v/c Ratio	0.08	0.38	0.77	0.83	0.37	0.84	0.37	0.51	0.85	0.53
Control Delay	53.8	62.0	17.3	74.4	22.0	66.1	30.1	12.1	73.1	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	62.0	17.3	74.4	22.0	66.1	30.1	12.1	73.1	37.4
LOS	D	E	B	E	C	E	C	B	E	D
Approach Delay		30.5			55.2		37.0			49.2
Approach LOS		C			E		D			D

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 43.2
 Intersection Capacity Utilization 66.4%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service C

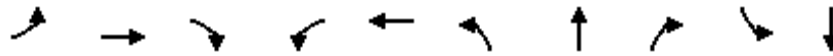
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	28.0	44.0	44.0	28.0	44.0	34.0	44.0	44.0	34.0	44.0
Total Split (%)	18.7%	29.3%	29.3%	18.7%	29.3%	22.7%	29.3%	29.3%	22.7%	29.3%
Maximum Green (s)	23.0	39.0	39.0	23.0	39.0	29.0	39.0	39.0	29.0	39.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0
Flash Dont Walk (s)		34.0	34.0		34.0		34.0	34.0		34.0
Pedestrian Calls (#/hr)		5	5		5		5	5		5
90th %ile Green (s)	23.0	39.0	39.0	23.0	39.0	29.0	39.0	39.0	29.0	39.0
90th %ile Term Code	Hold	Ped	Ped	Max	Ped	Max	Coord	Coord	Max	Coord
70th %ile Green (s)	30.9	15.2	15.2	27.9	12.2	29.0	56.3	56.3	30.6	57.9
70th %ile Term Code	Hold	Gap	Gap	Gap	Gap	Max	Coord	Coord	Gap	Coord
50th %ile Green (s)	28.5	11.9	11.9	25.7	9.1	29.0	64.3	64.3	28.1	63.4
50th %ile Term Code	Hold	Gap	Gap	Gap	Gap	Max	Coord	Coord	Gap	Coord
30th %ile Green (s)	0.0	10.5	10.5	23.4	38.9	29.0	70.4	70.4	25.7	67.1
30th %ile Term Code	Skip	Gap	Gap	Gap	Hold	Hold	Coord	Coord	Gap	Coord
10th %ile Green (s)	0.0	8.6	8.6	20.1	33.7	29.0	79.3	79.3	22.0	72.3
10th %ile Term Code	Skip	Gap	Gap	Gap	Hold	Hold	Coord	Coord	Gap	Coord

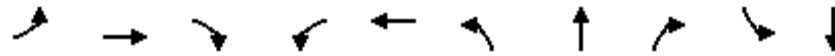
Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Control Type: Actuated-Coordinated

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	153	395	457	263	560	785	436	527	1075
v/c Ratio	0.08	0.38	0.77	0.83	0.37	0.84	0.37	0.51	0.85	0.53
Control Delay	53.8	62.0	17.3	74.4	22.0	66.1	30.1	12.1	73.1	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	62.0	17.3	74.4	22.0	66.1	30.1	12.1	73.1	37.4
Queue Length 50th (ft)	15	77	20	223	49	278	172	79	258	279
Queue Length 95th (ft)	41	93	112	#316	77	#360	245	173	324	421
Internal Link Dist (ft)		1660			920		920			1521
Turn Bay Length (ft)						100		150	100	
Base Capacity (vph)	303	920	688	563	956	664	2097	855	671	2027
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.17	0.57	0.81	0.28	0.84	0.37	0.51	0.79	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	17	141	363	420	89	153	515	722	401	485	969	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	153	395	457	97	166	560	785	436	527	1053	22
RTOR Reduction (vph)	0	0	332	0	137	0	0	0	207	0	1	0
Lane Group Flow (vph)	18	153	63	457	126	0	560	785	229	527	1074	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	16.5	17.0	17.0	26.1	26.6		29.1	59.8	59.8	27.1	57.8	
Effective Green, g (s)	16.5	17.0	17.0	26.1	26.6		29.1	59.8	59.8	27.1	57.8	
Actuated g/C Ratio	0.11	0.11	0.11	0.17	0.18		0.19	0.40	0.40	0.18	0.39	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	195	401	179	597	568		666	2027	631	620	1954	
v/s Ratio Prot	0.01	c0.04		c0.13	0.04		c0.16	0.15		c0.15	c0.21	
v/s Ratio Perm			0.04						0.14			
v/c Ratio	0.09	0.38	0.35	0.77	0.22		0.84	0.39	0.36	0.85	0.55	
Uniform Delay, d1	60.0	61.6	61.4	59.0	52.8		58.2	32.1	31.7	59.5	35.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.92	0.89	1.13	1.00	1.00	
Incremental Delay, d2	0.2	0.6	1.2	5.8	0.2		9.1	0.5	1.6	10.8	1.1	
Delay (s)	60.2	62.2	62.6	64.9	53.0		62.8	29.1	37.5	70.3	37.1	
Level of Service	E	E	E	E	D		E	C	D	E	D	
Approach Delay (s)		62.5			60.5			41.7			48.0	
Approach LOS		E			E			D			D	

Intersection Summary

HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

6: Future Road 2 & Future Road

5/26/2010



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	48	99	71	1590	1688
Turn Type		Perm	Prot		
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0
Total Split (s)	23.0	23.0	14.0	52.0	38.0
Total Split (%)	30.7%	30.7%	18.7%	69.3%	50.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max
Act Effect Green (s)	8.8	8.8	9.1	60.9	49.7
Actuated g/C Ratio	0.12	0.12	0.12	0.81	0.66
v/c Ratio	0.25	0.38	0.36	0.33	0.45
Control Delay	31.2	10.3	31.6	2.2	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	10.3	31.6	2.2	10.8
LOS	C	B	C	A	B
Approach Delay	17.1			3.4	10.8
Approach LOS	B			A	B

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 7.6

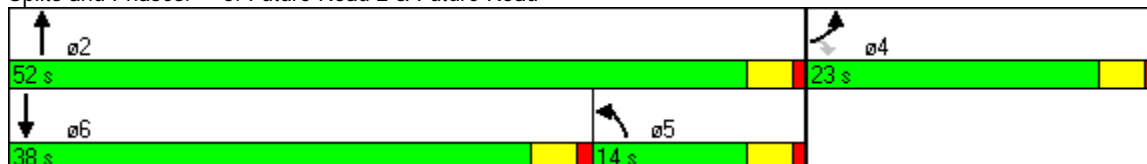
Intersection LOS: A

Intersection Capacity Utilization 42.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Future Road 2 & Future Road



Phasings

6: Future Road 2 & Future Road

5/26/2010



Lane Group	EBL	EBR	NBL	NBT	SBT
Protected Phases	4		5	2	6
Permitted Phases		4			
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0
Total Split (s)	23.0	23.0	14.0	52.0	38.0
Total Split (%)	30.7%	30.7%	18.7%	69.3%	50.7%
Maximum Green (s)	19.0	19.0	10.0	48.0	34.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0			11.0
Pedestrian Calls (#/hr)	5	5			5
90th %ile Green (s)	16.0	16.0	10.0	51.0	37.0
90th %ile Term Code	Ped	Ped	Max	Coord	Coord
70th %ile Green (s)	8.6	8.6	10.0	58.4	44.4
70th %ile Term Code	Gap	Gap	Hold	Coord	Coord
50th %ile Green (s)	7.6	7.6	10.0	59.4	45.4
50th %ile Term Code	Gap	Gap	Hold	Coord	Coord
30th %ile Green (s)	6.5	6.5	10.0	60.5	46.5
30th %ile Term Code	Gap	Gap	Hold	Coord	Coord
10th %ile Green (s)	0.0	0.0	0.0	71.0	71.0
10th %ile Term Code	Skip	Skip	Skip	Coord	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

6: Future Road 2 & Future Road

5/26/2010



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	52	108	77	1728	1906
v/c Ratio	0.25	0.38	0.36	0.33	0.45
Control Delay	31.2	10.3	31.6	2.2	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	10.3	31.6	2.2	10.8
Queue Length 50th (ft)	23	0	33	40	390
Queue Length 95th (ft)	48	37	73	62	179
Internal Link Dist (ft)	813			420	920
Turn Bay Length (ft)			100		
Base Capacity (vph)	448	482	236	5200	4222
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.22	0.33	0.33	0.45

Intersection Summary

HCM Signalized Intersection Capacity Analysis

6: Future Road 2 & Future Road

5/26/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	48	99	71	1590	1688	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.86	0.86	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	6408	6372	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	6408	6372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	108	77	1728	1835	71
RTOR Reduction (vph)	0	97	0	0	5	0
Lane Group Flow (vph)	52	11	77	1728	1901	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	7.7	7.7	8.0	59.3	47.3	
Effective Green, g (s)	7.7	7.7	8.0	59.3	47.3	
Actuated g/C Ratio	0.10	0.10	0.11	0.79	0.63	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	182	163	189	5067	4019	
v/s Ratio Prot	c0.03		0.04	c0.27	c0.30	
v/s Ratio Perm		0.01				
v/c Ratio	0.29	0.07	0.41	0.34	0.47	
Uniform Delay, d1	31.1	30.4	31.3	2.2	7.3	
Progression Factor	1.00	1.00	0.90	0.73	1.27	
Incremental Delay, d2	0.9	0.2	1.4	0.2	0.3	
Delay (s)	32.0	30.6	29.7	1.8	9.6	
Level of Service	C	C	C	A	A	
Approach Delay (s)	31.0			3.0	9.6	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

7: Future Road 3 & Future Road

5/26/2010

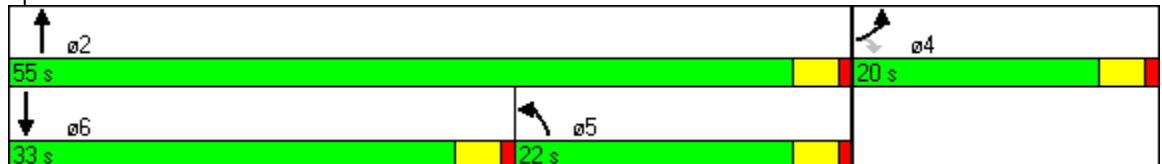


Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	145	297	239	1515	1570
Turn Type		Perm	Prot		
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	22.0	55.0	33.0
Total Split (%)	26.7%	26.7%	29.3%	73.3%	44.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max
Act Effect Green (s)	11.8	11.8	18.0	55.2	33.2
Actuated g/C Ratio	0.16	0.16	0.24	0.74	0.44
v/c Ratio	0.57	0.62	0.61	0.35	0.69
Control Delay	36.7	9.1	32.6	4.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	9.1	32.6	4.0	13.4
LOS	D	A	C	A	B
Approach Delay	18.2			7.9	13.4
Approach LOS	B			A	B

Intersection Summary

Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 11.5
 Intersection LOS: B
 Intersection Capacity Utilization 57.6%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 7: Future Road 3 & Future Road



Phasings

7: Future Road 3 & Future Road

5/26/2010



Lane Group	EBL	EBR	NBL	NBT	SBT
Protected Phases	4		5	2	6
Permitted Phases		4			
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	22.0	55.0	33.0
Total Split (%)	26.7%	26.7%	29.3%	73.3%	44.0%
Maximum Green (s)	16.0	16.0	18.0	51.0	29.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag			Lag		Lead
Lead-Lag Optimize?			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0
Flash Dont Walk (s)	11.0	11.0			11.0
Pedestrian Calls (#/hr)	5	5			5
90th %ile Green (s)	16.0	16.0	18.0	51.0	29.0
90th %ile Term Code	Max	Max	Max	Coord	Coord
70th %ile Green (s)	13.8	13.8	18.0	53.2	31.2
70th %ile Term Code	Gap	Gap	Max	Coord	Coord
50th %ile Green (s)	11.9	11.9	18.0	55.1	33.1
50th %ile Term Code	Gap	Gap	Hold	Coord	Coord
30th %ile Green (s)	10.0	10.0	18.0	57.0	35.0
30th %ile Term Code	Gap	Gap	Hold	Coord	Coord
10th %ile Green (s)	7.3	7.3	18.0	59.7	37.7
10th %ile Term Code	Gap	Gap	Hold	Coord	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

7: Future Road 3 & Future Road

5/26/2010



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	158	323	260	1647	1942
v/c Ratio	0.57	0.62	0.61	0.35	0.69
Control Delay	36.7	9.1	32.6	4.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	9.1	32.6	4.0	13.4
Queue Length 50th (ft)	69	0	108	62	80
Queue Length 95th (ft)	118	62	183	98	200
Internal Link Dist (ft)	873			420	420
Turn Bay Length (ft)			200		
Base Capacity (vph)	378	592	425	4716	2816
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.55	0.61	0.35	0.69

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Future Road 3 & Future Road

5/26/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	145	297	239	1515	1570	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.86	0.86	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	6408	6292	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	6408	6292	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	323	260	1647	1707	235
RTOR Reduction (vph)	0	272	0	0	30	0
Lane Group Flow (vph)	158	51	260	1647	1912	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	11.8	11.8	18.0	55.2	33.2	
Effective Green, g (s)	11.8	11.8	18.0	55.2	33.2	
Actuated g/C Ratio	0.16	0.16	0.24	0.74	0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	278	249	425	4716	2785	
v/s Ratio Prot	c0.09		c0.15	0.26	c0.30	
v/s Ratio Perm		0.03				
v/c Ratio	0.57	0.20	0.61	0.35	0.69	
Uniform Delay, d1	29.2	27.5	25.4	3.5	16.7	
Progression Factor	1.00	1.00	1.00	1.00	0.72	
Incremental Delay, d2	2.7	0.4	2.6	0.2	1.3	
Delay (s)	31.9	27.9	28.0	3.7	13.4	
Level of Service	C	C	C	A	B	
Approach Delay (s)	29.2			7.0	13.4	
Approach LOS	C			A	B	

Intersection Summary

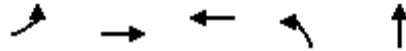
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

2030 Conditions
Base + EMU

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↶	↕↕	↕↶	↶	↕
Volume (vph)	266	668	538	993	2
Turn Type	Prot			Split	
Protected Phases	7	4	8	2	2
Permitted Phases					
Detector Phase	7	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	14.0	42.0	28.0	28.0	28.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	9.0	37.0	23.0	23.0	23.0
Actuated g/C Ratio	0.13	0.53	0.33	0.33	0.33
v/c Ratio	1.27	0.39	0.67	1.85	0.73
Control Delay	175.5	17.2	21.7	412.6	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	175.5	17.2	21.7	412.6	20.3
LOS	F	B	C	F	C
Approach Delay		62.3	21.7		294.3
Approach LOS		E	C		F

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.85

Intersection Signal Delay: 160.3

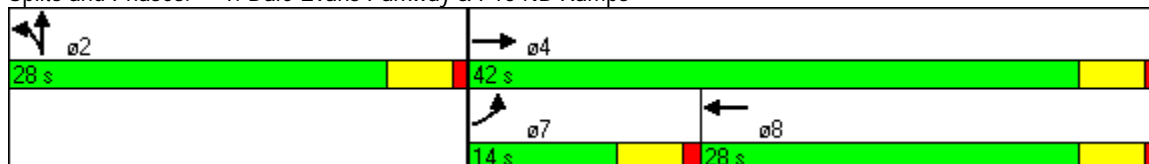
Intersection LOS: F

Intersection Capacity Utilization 129.1%

ICU Level of Service H

Analysis Period (min) 15

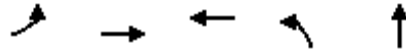
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases	7	4	8	2	2
Permitted Phases					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	14.0	42.0	28.0	28.0	28.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Maximum Green (s)	9.0	37.0	23.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	C-Max	Max	Max
Walk Time (s)		5.0	5.0	5.0	5.0
Flash Dont Walk (s)		18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)		5	5	5	5
90th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
90th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
70th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
70th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
50th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
50th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
30th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
30th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
10th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
10th %ile Term Code	Max	Coord	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	289	726	776	1079	466
v/c Ratio	1.27	0.39	0.67	1.85	0.73
Control Delay	175.5	17.2	21.7	412.6	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	175.5	17.2	21.7	412.6	20.3
Queue Length 50th (ft)	~162	99	135	~723	105
Queue Length 95th (ft)	m#251	m127	194	#944	#220
Internal Link Dist (ft)		820	380		2022
Turn Bay Length (ft)	225			150	
Base Capacity (vph)	228	1871	1165	582	642
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.27	0.39	0.67	1.85	0.73

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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖	↗				
Volume (vph)	266	668	0	0	538	176	993	2	427	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00				
Frt	1.00	1.00			0.96		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	3539			3409		1770	1585				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	1770	3539			3409		1770	1585				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	289	726	0	0	585	191	1079	2	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	45	0	0	121	0	0	0	0
Lane Group Flow (vph)	289	726	0	0	731	0	1079	345	0	0	0	0
Turn Type	Prot						Split					
Protected Phases	7	4			8		2	2				
Permitted Phases												
Actuated Green, G (s)	9.0	37.0			23.0		23.0	23.0				
Effective Green, g (s)	9.0	37.0			23.0		23.0	23.0				
Actuated g/C Ratio	0.13	0.53			0.33		0.33	0.33				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	228	1871			1120		582	521				
v/s Ratio Prot	c0.16	0.21			c0.21		c0.61	0.22				
v/s Ratio Perm												
v/c Ratio	1.27	0.39			0.65		1.85	0.66				
Uniform Delay, d1	30.5	9.8			20.1		23.5	20.2				
Progression Factor	1.24	1.69			1.00		1.00	1.00				
Incremental Delay, d2	140.9	0.4			3.0		390.9	6.5				
Delay (s)	178.7	16.9			23.1		414.4	26.7				
Level of Service	F	B			C		F	C				
Approach Delay (s)		63.0			23.1		297.4				0.0	
Approach LOS		E			C		F				A	

Intersection Summary

HCM Average Control Delay	162.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↵	↑↑	↵	↵
Volume (vph)	616	1149	321	1210	318	1
Turn Type		Perm	Prot		Split	
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	21.0	21.0	21.0	42.0	28.0	28.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effect Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
Actuated g/C Ratio	0.23	0.23	0.23	0.53	0.33	0.33
v/c Ratio	0.83	1.38	0.86	0.70	0.59	0.89
Control Delay	36.4	194.5	32.4	14.7	24.7	42.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	194.5	32.4	14.7	24.7	42.2
LOS	D	F	C	B	C	D
Approach Delay	139.3			18.4		34.9
Approach LOS	F			B		C

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.38

Intersection Signal Delay: 74.1

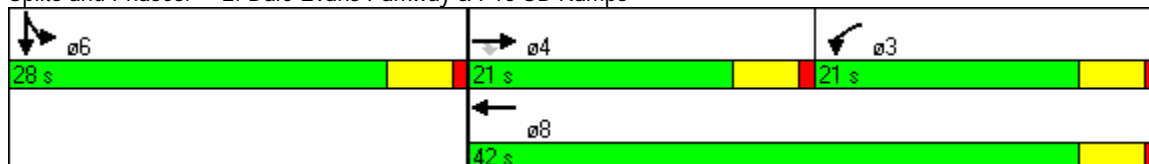
Intersection LOS: E

Intersection Capacity Utilization 129.1%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	21.0	21.0	21.0	42.0	28.0	28.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Maximum Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5	5
90th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
90th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
70th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
70th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
50th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
50th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
30th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
30th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
10th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
10th %ile Term Code	Coord	Coord	Hold	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	670	1249	349	1315	346	486
v/c Ratio	0.83	1.38	0.86	0.70	0.59	0.89
Control Delay	36.4	194.5	32.4	14.7	24.7	42.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	194.5	32.4	14.7	24.7	42.2
Queue Length 50th (ft)	145	-478	142	234	123	182
Queue Length 95th (ft)	#228	#715	m116	m186	203	#356
Internal Link Dist (ft)	920			820		1339
Turn Bay Length (ft)			300		300	
Base Capacity (vph)	809	903	405	1871	582	546
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	0.83	1.38	0.86	0.70	0.59	0.89

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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	
Volume (vph)	0	616	1149	321	1210	0	0	0	0	318	1	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1584	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1584	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	670	1249	349	1315	0	0	0	0	346	1	485
RTOR Reduction (vph)	0	0	541	0	0	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	670	708	349	1315	0	0	0	0	346	460	0
Turn Type			Perm	Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases			4									
Actuated Green, G (s)		16.0	16.0	16.0	37.0					23.0	23.0	
Effective Green, g (s)		16.0	16.0	16.0	37.0					23.0	23.0	
Actuated g/C Ratio		0.23	0.23	0.23	0.53					0.33	0.33	
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		809	362	405	1871					582	520	
v/s Ratio Prot		0.19		c0.20	0.37					0.20	c0.29	
v/s Ratio Perm			c0.45									
v/c Ratio		0.83	1.96	0.86	0.70					0.59	0.89	
Uniform Delay, d1		25.7	27.0	25.9	12.4					19.6	22.3	
Progression Factor		1.00	1.00	1.06	1.14					1.00	1.00	
Incremental Delay, d2		9.5	440.3	1.9	0.2					4.4	19.4	
Delay (s)		35.2	467.3	29.4	14.3					24.0	41.7	
Level of Service		D	F	C	B					C	D	
Approach Delay (s)		316.5			17.5			0.0			34.4	
Approach LOS		F			B			A			C	

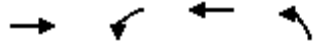
Intersection Summary

HCM Average Control Delay	150.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

3: Dale Evans Parkway & Station Access #1

5/26/2010

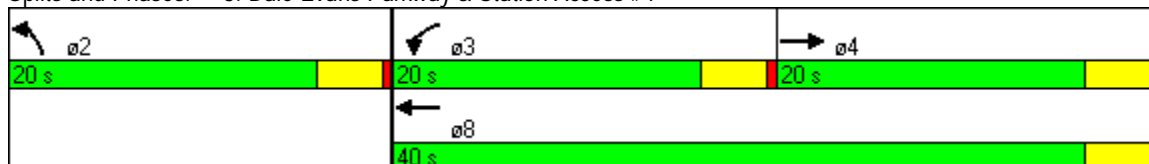


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑↑	↘
Volume (vph)	1365	501	1154	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	40.0	20.0
Total Split (%)	33.3%	33.3%	66.7%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	16.0	16.0	36.0	16.0
Actuated g/C Ratio	0.27	0.27	0.60	0.27
v/c Ratio	0.87	1.15	0.41	0.58
Control Delay	28.2	116.7	6.9	5.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	116.7	6.9	5.9
LOS	C	F	A	A
Approach Delay	28.2		40.1	5.9
Approach LOS	C		D	A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.15
 Intersection Signal Delay: 31.4
 Intersection LOS: C
 Intersection Capacity Utilization 82.4%
 ICU Level of Service E
 Analysis Period (min) 15

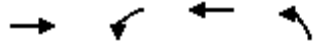
Splits and Phases: 3: Dale Evans Parkway & Station Access #1



Phasings

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	40.0	20.0
Total Split (%)	33.3%	33.3%	66.7%	33.3%
Maximum Green (s)	16.0	16.0	36.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	16.0	16.0	36.0	16.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	16.0	16.0	36.0	16.0
70th %ile Term Code	Max	Max	Hold	Coord
50th %ile Green (s)	16.0	16.0	36.0	16.0
50th %ile Term Code	Max	Max	Hold	Coord
30th %ile Green (s)	16.0	16.0	36.0	16.0
30th %ile Term Code	Max	Max	Hold	Coord
10th %ile Green (s)	16.0	16.0	36.0	16.0
10th %ile Term Code	Max	Max	Hold	Coord

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

3: Dale Evans Parkway & Station Access #1

5/26/2010



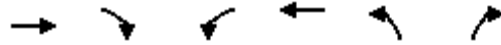
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1486	545	1254	437
v/c Ratio	0.87	1.15	0.41	0.58
Control Delay	28.2	116.7	6.9	5.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	116.7	6.9	5.9
Queue Length 50th (ft)	148	-241	76	1
Queue Length 95th (ft)	#209	#406	101	60
Internal Link Dist (ft)	920		920	1731
Turn Bay Length (ft)		200		
Base Capacity (vph)	1709	472	3051	749
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	1.15	0.41	0.58

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.

HCM Signalized Intersection Capacity Analysis
 3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↵	↑↑↑↑	↵	
Volume (vph)	1365	2	501	1154	2	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.91	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6407		1770	5085	1612	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6407		1770	5085	1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1484	2	545	1254	2	435
RTOR Reduction (vph)	0	0	0	0	319	0
Lane Group Flow (vph)	1486	0	545	1254	118	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	16.0		16.0	36.0	16.0	
Effective Green, g (s)	16.0		16.0	36.0	16.0	
Actuated g/C Ratio	0.27		0.27	0.60	0.27	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1709		472	3051	430	
v/s Ratio Prot	c0.23		c0.31	0.25	c0.07	
v/s Ratio Perm						
v/c Ratio	0.87		1.15	0.41	0.27	
Uniform Delay, d1	21.0		22.0	6.4	17.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	5.0		91.3	0.1	1.6	
Delay (s)	26.0		113.3	6.5	19.0	
Level of Service	C		F	A	B	
Approach Delay (s)	26.0			38.8	19.0	
Approach LOS	C			D	B	

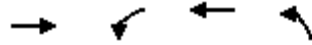
Intersection Summary

HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Dale Evans Parkway & Station Access #2

5/26/2010

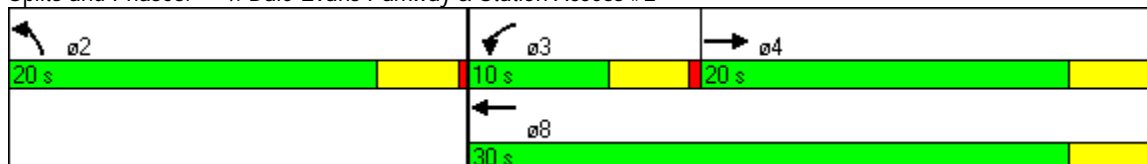


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑↑	↘
Volume (vph)	1287	115	1040	2
Turn Type	Prot			
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	30.0	20.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	15.7	6.0	23.7	18.3
Actuated g/C Ratio	0.31	0.12	0.47	0.37
v/c Ratio	0.70	0.59	0.37	0.14
Control Delay	17.2	35.2	8.5	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.2	35.2	8.5	4.5
LOS	B	D	A	A
Approach Delay	17.2		11.1	4.5
Approach LOS	B		B	A

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 14.0
 Intersection LOS: B
 Intersection Capacity Utilization 40.1%
 ICU Level of Service A
 Analysis Period (min) 15

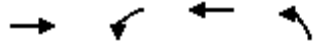
Splits and Phases: 4: Dale Evans Parkway & Station Access #2



Phasings

4: Dale Evans Parkway & Station Access #2

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	30.0	20.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%
Maximum Green (s)	16.0	6.0	26.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	16.0	6.0	26.0	16.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	16.0	6.0	26.0	16.0
70th %ile Term Code	Max	Max	Hold	Coord
50th %ile Green (s)	16.0	6.0	26.0	16.0
50th %ile Term Code	Max	Max	Hold	Coord
30th %ile Green (s)	16.0	6.0	26.0	16.0
30th %ile Term Code	Max	Max	Hold	Coord
10th %ile Green (s)	14.5	0.0	14.5	27.5
10th %ile Term Code	Gap	Skip	Hold	Coord

Intersection Summary

Cycle Length: 50

Actuated Cycle Length: 50

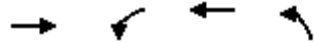
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

4: Dale Evans Parkway & Station Access #2

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1401	125	1130	88
v/c Ratio	0.70	0.59	0.37	0.14
Control Delay	17.2	35.2	8.5	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.2	35.2	8.5	4.5
Queue Length 50th (ft)	101	36	49	0
Queue Length 95th (ft)	134	#94	67	23
Internal Link Dist (ft)	920		920	736
Turn Bay Length (ft)		200		
Base Capacity (vph)	2051	212	3332	645
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.59	0.34	0.14

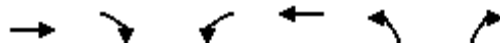
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↵	↑↑↑↑	↵	
Volume (vph)	1287	2	115	1040	2	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.86	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6406		1770	6408	1615	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6406		1770	6408	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1399	2	125	1130	2	86
RTOR Reduction (vph)	1	0	0	0	56	0
Lane Group Flow (vph)	1400	0	125	1130	32	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	15.7		4.8	24.5	17.5	
Effective Green, g (s)	15.7		4.8	24.5	17.5	
Actuated g/C Ratio	0.31		0.10	0.49	0.35	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2011		170	3140	565	
v/s Ratio Prot	c0.22		c0.07	0.18	c0.02	
v/s Ratio Perm						
v/c Ratio	0.70		0.74	0.36	0.06	
Uniform Delay, d1	15.1		22.0	7.9	10.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		15.2	0.1	0.2	
Delay (s)	16.1		37.2	8.0	11.0	
Level of Service	B		D	A	B	
Approach Delay (s)	16.1			10.9	11.0	
Approach LOS	B			B	B	

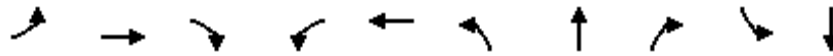
Intersection Summary

HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010



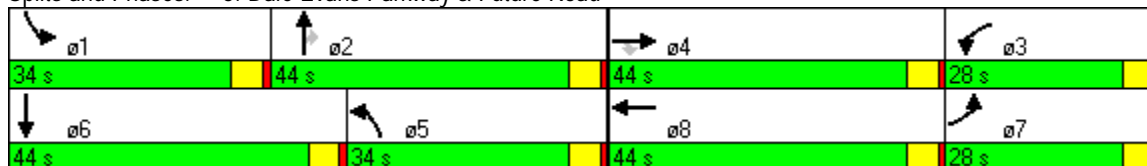
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘↗	↑↑	↘↗	↑↑↑	↗	↘↗	↑↑↑
Volume (vph)	17	141	363	798	89	515	722	662	485	969
Turn Type	Prot		Perm	Prot		Prot		Perm	Prot	
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	28.0	44.0	44.0	28.0	44.0	34.0	44.0	44.0	34.0	44.0
Total Split (%)	18.7%	29.3%	29.3%	18.7%	29.3%	22.7%	29.3%	29.3%	22.7%	29.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	27.6	17.2	17.2	44.8	38.7	29.0	41.2	41.2	26.8	39.0
Actuated g/C Ratio	0.18	0.11	0.11	0.30	0.26	0.19	0.27	0.27	0.18	0.26
v/c Ratio	0.06	0.38	0.78	0.85	0.28	0.84	0.56	0.90	0.86	0.81
Control Delay	45.9	61.8	18.1	56.9	20.5	58.7	38.2	32.3	74.4	57.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	61.8	18.1	56.9	20.5	58.7	38.2	32.3	74.4	57.9
LOS	D	E	B	E	C	E	D	C	E	E
Approach Delay		30.8			48.4		41.7			63.3
Approach LOS		C			D		D			E

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 48.4
 Intersection Capacity Utilization 77.2%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service D

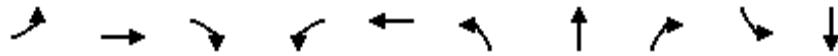
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	28.0	44.0	44.0	28.0	44.0	34.0	44.0	44.0	34.0	44.0
Total Split (%)	18.7%	29.3%	29.3%	18.7%	29.3%	22.7%	29.3%	29.3%	22.7%	29.3%
Maximum Green (s)	23.0	39.0	39.0	23.0	39.0	29.0	39.0	39.0	29.0	39.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0
Flash Dont Walk (s)		34.0	34.0		34.0		34.0	34.0		34.0
Pedestrian Calls (#/hr)		5	5		5		5	5		5
90th %ile Green (s)	23.0	39.0	39.0	23.0	39.0	29.0	39.0	39.0	29.0	39.0
90th %ile Term Code	Hold	Ped	Ped	Max	Ped	Max	Coord	Coord	Max	Coord
70th %ile Green (s)	49.8	15.8	15.8	46.2	12.2	29.0	39.0	39.0	29.0	39.0
70th %ile Term Code	Hold	Gap	Gap	Max	Gap	Max	Coord	Coord	Max	Coord
50th %ile Green (s)	53.7	11.9	11.9	50.1	8.3	29.0	39.9	39.9	28.1	39.0
50th %ile Term Code	Hold	Gap	Gap	Max	Gap	Max	Coord	Coord	Gap	Coord
30th %ile Green (s)	0.0	10.5	10.5	51.5	67.0	29.0	42.3	42.3	25.7	39.0
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Gap	Coord
10th %ile Green (s)	0.0	8.6	8.6	53.4	67.0	29.0	46.0	46.0	22.0	39.0
10th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Gap	Coord

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

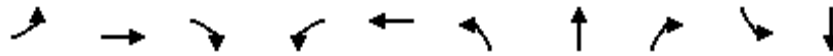
Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	153	395	867	263	560	785	720	527	1075
v/c Ratio	0.06	0.38	0.78	0.85	0.28	0.84	0.56	0.90	0.86	0.81
Control Delay	45.9	61.8	18.1	56.9	20.5	58.7	38.2	32.3	74.4	57.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	61.8	18.1	56.9	20.5	58.7	38.2	32.3	74.4	57.9
Queue Length 50th (ft)	11	77	24	390	49	267	190	412	258	363
Queue Length 95th (ft)	41	93	118	#763	77	#322	252	#559	324	421
Internal Link Dist (ft)		1660			920		920			1521
Turn Bay Length (ft)						100		150	100	
Base Capacity (vph)	407	920	685	1026	1183	664	1398	801	664	1320
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.17	0.58	0.85	0.22	0.84	0.56	0.90	0.79	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	17	141	363	798	89	153	515	722	662	485	969	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	153	395	867	97	166	560	785	720	527	1053	22
RTOR Reduction (vph)	0	0	327	0	123	0	0	0	372	0	2	0
Lane Group Flow (vph)	18	153	68	867	140	0	560	785	348	527	1073	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	25.3	17.2	17.2	46.8	38.7		29.0	39.2	39.2	26.8	37.0	
Effective Green, g (s)	25.3	17.2	17.2	46.8	38.7		29.0	39.2	39.2	26.8	37.0	
Actuated g/C Ratio	0.17	0.11	0.11	0.31	0.26		0.19	0.26	0.26	0.18	0.25	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	299	406	182	1071	827		664	1329	414	613	1251	
v/s Ratio Prot	0.01	c0.04		c0.25	0.04		0.16	0.15		0.15	c0.21	
v/s Ratio Perm			0.04						c0.22			
v/c Ratio	0.06	0.38	0.38	0.81	0.17		0.84	0.59	0.84	0.86	0.86	
Uniform Delay, d1	52.4	61.4	61.4	47.5	43.2		58.3	48.4	52.4	59.8	54.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.78	1.18	1.00	1.00	
Incremental Delay, d2	0.1	0.6	1.3	4.6	0.1		8.8	1.8	16.9	11.6	7.8	
Delay (s)	52.5	62.0	62.7	52.1	43.3		55.7	39.4	78.7	71.3	61.8	
Level of Service	D	E	E	D	D		E	D	E	E	E	
Approach Delay (s)		62.2			50.1			57.5			64.9	
Approach LOS		E			D			E			E	

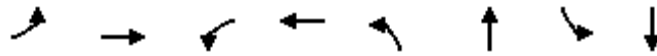
Intersection Summary

HCM Average Control Delay	58.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	48	2	2	2	71	1796	80	1986
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0	12.0	44.0	10.0	42.0
Total Split (%)	28.0%	28.0%	28.0%	28.0%	16.0%	58.7%	13.3%	56.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	9.1	9.1		9.1	7.5	50.5	8.1	51.0
Actuated g/C Ratio	0.12	0.12		0.12	0.10	0.67	0.11	0.68
v/c Ratio	0.28	0.38		0.26	0.44	0.45	0.45	0.51
Control Delay	31.9	10.4		11.5	29.5	5.3	35.6	11.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	10.4		11.5	29.5	5.3	35.6	11.2
LOS	C	B		B	C	A	D	B
Approach Delay		17.3		11.5		6.2		12.1
Approach LOS		B		B		A		B

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 9.7

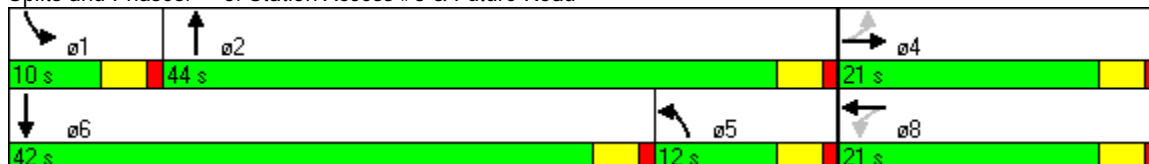
Intersection LOS: A

Intersection Capacity Utilization 53.1%

ICU Level of Service A

Analysis Period (min) 15

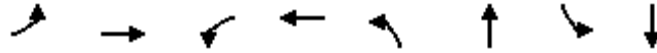
Splits and Phases: 6: Station Access #3 & Future Road



Phasings

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0	12.0	44.0	10.0	42.0
Total Split (%)	28.0%	28.0%	28.0%	28.0%	16.0%	58.7%	13.3%	56.0%
Maximum Green (s)	17.0	17.0	17.0	17.0	8.0	40.0	6.0	38.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	16.0	16.0	16.0	16.0	8.0	40.0	7.0	39.0
90th %ile Term Code	Ped	Ped	Hold	Hold	Max	Coord	Max	Coord
70th %ile Green (s)	9.2	9.2	9.2	9.2	8.0	43.2	10.6	45.8
70th %ile Term Code	Gap	Gap	Hold	Hold	Max	Coord	Gap	Coord
50th %ile Green (s)	8.0	8.0	8.0	8.0	8.0	45.7	9.3	47.0
50th %ile Term Code	Gap	Gap	Hold	Hold	Max	Coord	Gap	Coord
30th %ile Green (s)	6.7	6.7	6.7	6.7	8.0	48.4	7.9	48.3
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0	71.0	0.0	71.0
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip	Coord	Skip	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	110	64	77	1952	87	2230
v/c Ratio	0.28	0.38	0.26	0.44	0.45	0.45	0.51
Control Delay	31.9	10.4	11.5	29.5	5.3	35.6	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	10.4	11.5	29.5	5.3	35.6	11.2
Queue Length 50th (ft)	23	1	2	35	60	51	268
Queue Length 95th (ft)	48	39	31	m58	109	m77	302
Internal Link Dist (ft)		813	777		420		920
Turn Bay Length (ft)				100		100	
Base Capacity (vph)	352	444	411	189	4311	192	4341
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.25	0.16	0.41	0.45	0.45	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: Station Access #3 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↑↑↑		↖	↑↑↑	
Volume (vph)	48	2	99	2	2	55	71	1796	0	80	1986	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.87		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1588			1624		1770	6408		1770	6377	
Flt Permitted	0.83	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1553	1588			1610		1770	6408		1770	6377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	2	108	2	2	60	77	1952	0	87	2159	71
RTOR Reduction (vph)	0	96	0	0	54	0	0	0	0	0	4	0
Lane Group Flow (vph)	52	14	0	0	10	0	77	1952	0	87	2226	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	8.0	8.0			8.0		6.5	48.0		7.0	48.5	
Effective Green, g (s)	8.0	8.0			8.0		6.5	48.0		7.0	48.5	
Actuated g/C Ratio	0.11	0.11			0.11		0.09	0.64		0.09	0.65	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	169			172		153	4101		165	4124	
v/s Ratio Prot		0.01					0.04	c0.30		0.05	c0.35	
v/s Ratio Perm	c0.03				0.01							
v/c Ratio	0.31	0.08			0.06		0.50	0.48		0.53	0.54	
Uniform Delay, d1	31.0	30.2			30.1		32.7	7.0		32.4	7.2	
Progression Factor	1.00	1.00			1.00		0.71	0.62		0.99	1.36	
Incremental Delay, d2	1.1	0.2			0.1		2.3	0.4		1.8	0.3	
Delay (s)	32.0	30.4			30.3		25.5	4.7		33.8	10.1	
Level of Service	C	C			C		C	A		C	B	
Approach Delay (s)		30.9			30.3			5.5			11.0	
Approach LOS		C			C			A			B	

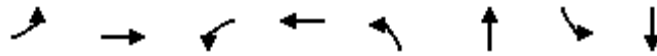
Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

7: Station Access #4 & Future Road

5/26/2010

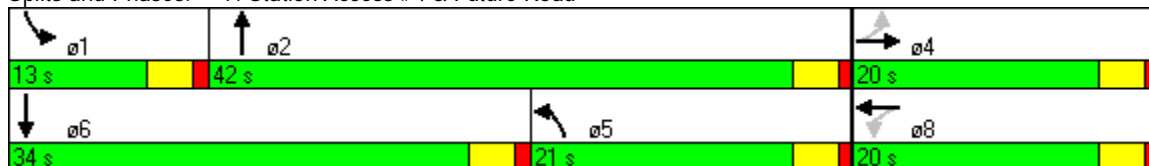


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	→		↔	↖	↗	↘	↙
Volume (vph)	145	2	2	2	239	1644	110	1758
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	21.0	42.0	13.0	34.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	28.0%	56.0%	17.3%	45.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	13.0	13.0		13.0	17.0	43.3	8.7	33.0
Actuated g/C Ratio	0.17	0.17		0.17	0.23	0.58	0.12	0.44
v/c Ratio	0.67	0.60		0.29	0.65	0.48	0.58	0.77
Control Delay	42.8	8.5		9.7	23.0	3.9	55.9	19.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	8.5		9.7	23.0	3.9	55.9	19.1
LOS	D	A		A	C	A	E	B
Approach Delay		19.8		9.7		6.3		21.0
Approach LOS		B		A		A		C

Intersection Summary

Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 14.5
 Intersection LOS: B
 Intersection Capacity Utilization 70.8%
 ICU Level of Service C
 Analysis Period (min) 15

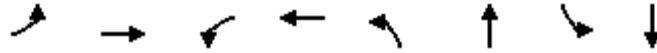
Splits and Phases: 7: Station Access #4 & Future Road



Phasings

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	21.0	42.0	13.0	34.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	28.0%	56.0%	17.3%	45.3%
Maximum Green (s)	16.0	16.0	16.0	16.0	17.0	38.0	9.0	30.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	16.0	16.0	16.0	16.0	17.0	38.0	9.0	30.0
90th %ile Term Code	Max	Max	Hold	Hold	Max	Coord	Max	Coord
70th %ile Green (s)	16.0	16.0	16.0	16.0	17.0	38.0	9.0	30.0
70th %ile Term Code	Max	Max	Hold	Hold	Max	Coord	Max	Coord
50th %ile Green (s)	13.8	13.8	13.8	13.8	17.0	38.8	10.4	32.2
50th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
30th %ile Green (s)	11.4	11.4	11.4	11.4	17.0	42.8	8.8	34.6
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
10th %ile Green (s)	7.9	7.9	7.9	7.9	17.0	59.1	0.0	38.1
10th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Skip	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

7: Station Access #4 & Future Road

5/26/2010



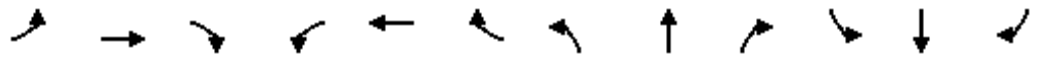
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	325	87	260	1789	120	2146
v/c Ratio	0.67	0.60	0.29	0.65	0.48	0.58	0.77
Control Delay	42.8	8.5	9.7	23.0	3.9	55.9	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	8.5	9.7	23.0	3.9	55.9	19.1
Queue Length 50th (ft)	69	1	2	110	33	82	330
Queue Length 95th (ft)	125	63	36	140	43	121	247
Internal Link Dist (ft)		873	973		420		420
Turn Bay Length (ft)				200		100	
Base Capacity (vph)	289	592	354	401	3703	219	2800
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.55	0.25	0.65	0.48	0.55	0.77

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↑↑↑		↖	↑↑↑	
Volume (vph)	145	2	297	2	2	76	239	1644	2	110	1758	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.87		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1585			1621		1770	6407		1770	6303	
Flt Permitted	0.73	1.00			0.83		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1356	1585			1353		1770	6407		1770	6303	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	2	323	2	2	83	260	1787	2	120	1911	235
RTOR Reduction (vph)	0	267	0	0	69	0	0	0	0	0	27	0
Lane Group Flow (vph)	158	58	0	0	18	0	260	1789	0	120	2119	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	13.0	13.0			13.0		17.7	42.6		7.4	32.3	
Effective Green, g (s)	13.0	13.0			13.0		17.7	42.6		7.4	32.3	
Actuated g/C Ratio	0.17	0.17			0.17		0.24	0.57		0.10	0.43	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	235	275			235		418	3639		175	2714	
v/s Ratio Prot		0.04					c0.15	0.28		0.07	c0.34	
v/s Ratio Perm	c0.12				0.01							
v/c Ratio	0.67	0.21			0.08		0.62	0.49		0.69	0.78	
Uniform Delay, d1	29.0	26.6			26.0		25.7	9.7		32.7	18.3	
Progression Factor	1.00	1.00			1.00		0.59	0.33		1.45	0.97	
Incremental Delay, d2	7.4	0.4			0.1		2.5	0.4		9.4	2.0	
Delay (s)	36.4	27.0			26.1		17.7	3.6		56.8	19.8	
Level of Service	D	C			C		B	A		E	B	
Approach Delay (s)		30.1			26.1			5.4			21.7	
Approach LOS		C			C			A			C	

Intersection Summary

HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

8: Station Access #5 & Future Road

5/26/2010

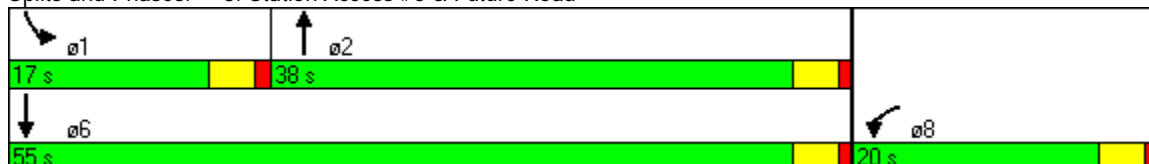


Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	2	1754	188	1867
Turn Type			Prot	
Protected Phases	8	2	1	6
Permitted Phases				
Detector Phase	8	2	1	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	20.0	38.0	17.0	55.0
Total Split (%)	26.7%	50.7%	22.7%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	
Recall Mode	None	C-Max	None	C-Max
Act Effect Green (s)	8.0	42.2	12.7	59.0
Actuated g/C Ratio	0.11	0.56	0.17	0.79
v/c Ratio	0.48	0.53	0.68	0.40
Control Delay	11.3	11.8	49.6	0.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.3	11.8	49.6	0.5
LOS	B	B	D	A
Approach Delay	11.3	11.8		4.9
Approach LOS	B	B		A

Intersection Summary

Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay: 8.2
 Intersection LOS: A
 Intersection Capacity Utilization 54.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 8: Station Access #5 & Future Road



Phasings

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Protected Phases	8	2	1	6
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	20.0	38.0	17.0	55.0
Total Split (%)	26.7%	50.7%	22.7%	73.3%
Maximum Green (s)	16.0	34.0	13.0	51.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag		Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0		11.0
Pedestrian Calls (#/hr)	5	5		5
90th %ile Green (s)	16.0	34.0	13.0	51.0
90th %ile Term Code	Ped	Coord	Max	Coord
70th %ile Green (s)	7.7	39.3	16.0	59.3
70th %ile Term Code	Gap	Coord	Gap	Coord
50th %ile Green (s)	5.5	43.5	14.0	61.5
50th %ile Term Code	Gap	Coord	Gap	Coord
30th %ile Green (s)	5.5	45.6	11.9	61.5
30th %ile Term Code	Gap	Coord	Gap	Coord
10th %ile Green (s)	5.5	48.7	8.8	61.5
10th %ile Term Code	Gap	Coord	Gap	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	1909	204	2029
v/c Ratio	0.48	0.53	0.68	0.40
Control Delay	11.3	11.8	49.6	0.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.3	11.8	49.6	0.5
Queue Length 50th (ft)	1	140	109	5
Queue Length 95th (ft)	43	231	m137	9
Internal Link Dist (ft)	1061	848		420
Turn Bay Length (ft)			100	
Base Capacity (vph)	454	3607	326	5038
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.53	0.63	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	2	129	1754	2	188	1867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.86		1.00	0.86
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1614		6407		1770	6408
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1614		6407		1770	6408
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	140	1907	2	204	2029
RTOR Reduction (vph)	125	0	0	0	0	0
Lane Group Flow (vph)	17	0	1909	0	204	2029
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	8.0		42.3		12.7	59.0
Effective Green, g (s)	8.0		42.3		12.7	59.0
Actuated g/C Ratio	0.11		0.56		0.17	0.79
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	172		3614		300	5041
v/s Ratio Prot	c0.01		c0.30		c0.12	0.32
v/s Ratio Perm						
v/c Ratio	0.10		0.53		0.68	0.40
Uniform Delay, d1	30.2		10.2		29.2	2.5
Progression Factor	1.00		1.00		1.43	0.10
Incremental Delay, d2	0.3		0.6		4.2	0.2
Delay (s)	30.5		10.7		46.1	0.4
Level of Service	C		B		D	A
Approach Delay (s)	30.5		10.7			4.6
Approach LOS	C		B			A

Intersection Summary

HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2030 Conditions
Base + EMU Mitigations

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010

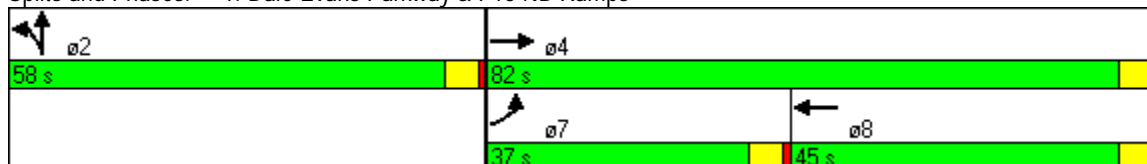


Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↖	↑↑	↑↑	↖↖	↑
Volume (vph)	266	668	538	993	2
Turn Type	Prot			Split	
Protected Phases	7	4	8	2	2
Permitted Phases					
Detector Phase	7	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	37.0	82.0	45.0	58.0	58.0
Total Split (%)	26.4%	58.6%	32.1%	41.4%	41.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	27.0	77.0	45.0	53.0	53.0
Actuated g/C Ratio	0.19	0.55	0.32	0.38	0.38
v/c Ratio	0.85	0.37	0.70	0.83	0.65
Control Delay	50.5	28.1	44.5	46.1	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	28.1	44.5	46.1	24.8
LOS	D	C	D	D	C
Approach Delay		34.5	44.5		39.7
Approach LOS		C	D		D

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 17 (12%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 39.2
 Intersection LOS: D
 Intersection Capacity Utilization 98.1%
 ICU Level of Service F
 Analysis Period (min) 15

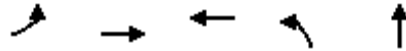
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases	7	4	8	2	2
Permitted Phases					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	37.0	82.0	45.0	58.0	58.0
Total Split (%)	26.4%	58.6%	32.1%	41.4%	41.4%
Maximum Green (s)	32.0	77.0	40.0	53.0	53.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	C-Max	Max	Max
Walk Time (s)		5.0	5.0	5.0	5.0
Flash Dont Walk (s)		18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)		5	5	5	5
90th %ile Green (s)	32.0	77.0	40.0	53.0	53.0
90th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
70th %ile Green (s)	31.3	77.0	40.7	53.0	53.0
70th %ile Term Code	Gap	Coord	Coord	MaxR	MaxR
50th %ile Green (s)	28.0	77.0	44.0	53.0	53.0
50th %ile Term Code	Gap	Coord	Coord	MaxR	MaxR
30th %ile Green (s)	24.5	77.0	47.5	53.0	53.0
30th %ile Term Code	Gap	Coord	Coord	MaxR	MaxR
10th %ile Green (s)	19.4	77.0	52.6	53.0	53.0
10th %ile Term Code	Gap	Coord	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

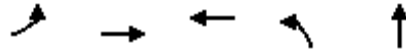
Offset: 17 (12%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	289	726	776	1079	466
v/c Ratio	0.85	0.37	0.70	0.83	0.65
Control Delay	50.5	28.1	44.5	46.1	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	28.1	44.5	46.1	24.8
Queue Length 50th (ft)	250	334	315	456	205
Queue Length 95th (ft)	342	382	408	547	331
Internal Link Dist (ft)		820	380		2022
Turn Bay Length (ft)	225			150	
Base Capacity (vph)	405	1946	1116	1300	721
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.37	0.70	0.83	0.65

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖↖	↗				
Volume (vph)	266	668	0	0	538	176	993	2	427	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	0.95			0.95		0.97	1.00				
Frt	1.00	1.00			0.96		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	3539			3409		3433	1585				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	1770	3539			3409		3433	1585				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	289	726	0	0	585	191	1079	2	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	22	0	0	121	0	0	0	0
Lane Group Flow (vph)	289	726	0	0	754	0	1079	345	0	0	0	0
Turn Type	Prot						Split					
Protected Phases	7	4			8		2	2				
Permitted Phases												
Actuated Green, G (s)	27.0	77.0			45.0		53.0	53.0				
Effective Green, g (s)	27.0	77.0			45.0		53.0	53.0				
Actuated g/C Ratio	0.19	0.55			0.32		0.38	0.38				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	341	1946			1096		1300	600				
v/s Ratio Prot	c0.16	0.21			c0.22		c0.31	0.22				
v/s Ratio Perm												
v/c Ratio	0.85	0.37			0.69		0.83	0.58				
Uniform Delay, d1	54.5	17.8			41.4		39.4	34.6				
Progression Factor	0.60	1.54			1.00		1.00	1.00				
Incremental Delay, d2	14.5	0.4			3.5		6.2	4.0				
Delay (s)	47.0	27.8			44.9		45.7	38.6				
Level of Service	D	C			D		D	D				
Approach Delay (s)		33.3			44.9		43.5				0.0	
Approach LOS		C			D		D				A	

Intersection Summary

HCM Average Control Delay	40.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010

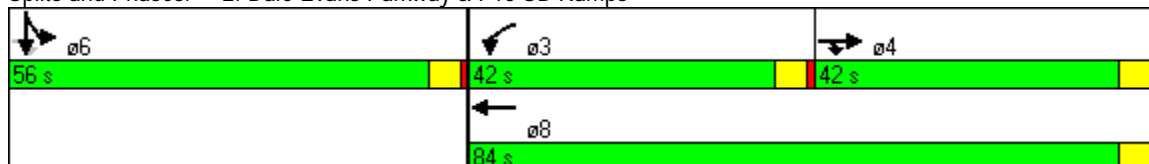


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑↑	↑	↑↑	↑	↑
Volume (vph)	616	1149	321	1210	318	1
Turn Type		custom	Prot		Split	
Protected Phases	4	4	3	8	6	6
Permitted Phases		6				
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	42.0	42.0	42.0	84.0	56.0	56.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effect Green (s)	42.3	98.3	31.7	79.0	51.0	51.0
Actuated g/C Ratio	0.30	0.70	0.23	0.56	0.36	0.36
v/c Ratio	0.63	0.64	0.87	0.66	0.54	0.80
Control Delay	33.6	9.6	74.8	28.4	38.9	47.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	9.6	74.8	28.4	38.9	47.2
LOS	C	A	E	C	D	D
Approach Delay	18.0			38.2		43.8
Approach LOS	B			D		D

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 58 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 30.4
 Intersection LOS: C
 Intersection Capacity Utilization 98.1%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Protected Phases	4	4	3	8	6	6
Permitted Phases	6					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	42.0	42.0	42.0	84.0	56.0	56.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Maximum Green (s)	37.0	37.0	37.0	79.0	51.0	51.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5	5
90th %ile Green (s)	37.0	37.0	37.0	79.0	51.0	51.0
90th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
70th %ile Green (s)	37.6	37.6	36.4	79.0	51.0	51.0
70th %ile Term Code	Coord	Coord	Gap	Coord	MaxR	MaxR
50th %ile Green (s)	41.2	41.2	32.8	79.0	51.0	51.0
50th %ile Term Code	Coord	Coord	Gap	Coord	MaxR	MaxR
30th %ile Green (s)	45.0	45.0	29.0	79.0	51.0	51.0
30th %ile Term Code	Coord	Coord	Gap	Coord	MaxR	MaxR
10th %ile Green (s)	50.6	50.6	23.4	79.0	51.0	51.0
10th %ile Term Code	Coord	Coord	Gap	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 58 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	670	1249	349	1315	346	486
v/c Ratio	0.63	0.64	0.87	0.66	0.54	0.80
Control Delay	33.6	9.6	74.8	28.4	38.9	47.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	9.6	74.8	28.4	38.9	47.2
Queue Length 50th (ft)	126	426	282	336	248	361
Queue Length 95th (ft)	234	261	m374	392	349	514
Internal Link Dist (ft)	920			820		1339
Turn Bay Length (ft)		200	300		300	
Base Capacity (vph)	1069	1956	468	1997	645	607
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	0.63	0.64	0.75	0.66	0.54	0.80

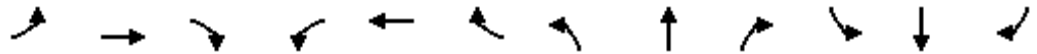
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↑	↑↑					↑	↑	
Volume (vph)	0	616	1149	321	1210	0	0	0	0	318	1	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Lane Util. Factor		0.95	0.88	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	2787	1770	3539					1770	1584	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	2787	1770	3539					1770	1584	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	670	1249	349	1315	0	0	0	0	346	1	485
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	670	1249	349	1315	0	0	0	0	346	455	0
Turn Type		custom		Prot						Split		
Protected Phases		4	4	3	8					6	6	
Permitted Phases		6										
Actuated Green, G (s)		42.3	93.3	31.7	79.0					51.0	51.0	
Effective Green, g (s)		42.3	93.3	31.7	79.0					51.0	51.0	
Actuated g/C Ratio		0.30	0.67	0.23	0.56					0.36	0.36	
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1069	1957	401	1997					645	577	
v/s Ratio Prot		0.19	0.19	c0.20	c0.37					0.20	c0.29	
v/s Ratio Perm			0.26									
v/c Ratio		0.63	0.64	0.87	0.66					0.54	0.79	
Uniform Delay, d1		42.1	13.6	52.2	21.1					35.2	39.7	
Progression Factor		0.73	0.69	1.17	1.28					1.00	1.00	
Incremental Delay, d2		1.8	1.1	11.8	1.0					3.2	10.5	
Delay (s)		32.6	10.5	72.8	28.1					38.3	50.2	
Level of Service		C	B	E	C					D	D	
Approach Delay (s)		18.2			37.5			0.0			45.3	
Approach LOS		B			D			A			D	

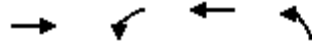
Intersection Summary

HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Timings

3: Dale Evans Parkway & Station Access #1

5/26/2010

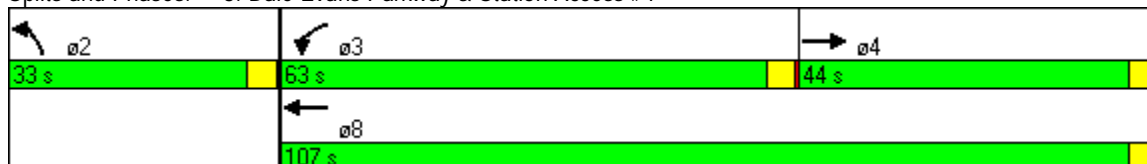


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑	↶	↑↑↑	↷
Volume (vph)	1365	501	1154	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	44.0	63.0	107.0	33.0
Total Split (%)	31.4%	45.0%	76.4%	23.6%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	40.1	49.3	93.4	38.6
Actuated g/C Ratio	0.29	0.35	0.67	0.28
v/c Ratio	0.81	0.87	0.37	0.57
Control Delay	28.2	67.6	5.8	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	67.6	5.8	7.6
LOS	C	E	A	A
Approach Delay	28.2		24.5	7.6
Approach LOS	C		C	A

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 97 (69%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 24.0
 Intersection LOS: C
 Intersection Capacity Utilization 82.4%
 ICU Level of Service E
 Analysis Period (min) 15

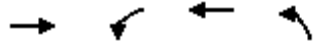
Splits and Phases: 3: Dale Evans Parkway & Station Access #1



Phasings

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	44.0	63.0	107.0	33.0
Total Split (%)	31.4%	45.0%	76.4%	23.6%
Maximum Green (s)	40.0	59.0	103.0	29.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	40.0	59.0	103.0	29.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	44.2	54.7	102.9	29.1
70th %ile Term Code	Gap	Gap	Hold	Coord
50th %ile Green (s)	41.7	49.9	95.6	36.4
50th %ile Term Code	Gap	Gap	Hold	Coord
30th %ile Green (s)	39.0	45.1	88.1	43.9
30th %ile Term Code	Gap	Gap	Hold	Coord
10th %ile Green (s)	35.4	37.8	77.2	54.8
10th %ile Term Code	Gap	Gap	Hold	Coord

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

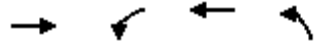
Offset: 97 (69%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

3: Dale Evans Parkway & Station Access #1

5/26/2010



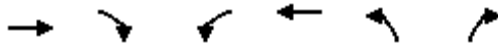
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1486	545	1254	437
v/c Ratio	0.81	0.87	0.37	0.57
Control Delay	28.2	67.6	5.8	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	67.6	5.8	7.6
Queue Length 50th (ft)	191	512	101	1
Queue Length 95th (ft)	188	551	98	100
Internal Link Dist (ft)	920		920	1731
Turn Bay Length (ft)		200		
Base Capacity (vph)	1885	746	3741	760
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.73	0.34	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↵	↑↑↑↑	↵	
Volume (vph)	1365	2	501	1154	2	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.91	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6407		1770	5085	1612	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6407		1770	5085	1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1484	2	545	1254	2	435
RTOR Reduction (vph)	0	0	0	0	315	0
Lane Group Flow (vph)	1486	0	545	1254	122	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	40.1		49.3	93.4	38.6	
Effective Green, g (s)	40.1		49.3	93.4	38.6	
Actuated g/C Ratio	0.29		0.35	0.67	0.28	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1835		623	3392	444	
v/s Ratio Prot	c0.23		c0.31	0.25	c0.08	
v/s Ratio Perm						
v/c Ratio	0.81		0.87	0.37	0.27	
Uniform Delay, d1	46.4		42.5	10.3	39.7	
Progression Factor	0.53		1.34	0.55	1.00	
Incremental Delay, d2	2.3		9.6	0.0	1.5	
Delay (s)	27.1		66.3	5.7	41.3	
Level of Service	C		E	A	D	
Approach Delay (s)	27.1			24.1	41.3	
Approach LOS	C			C	D	

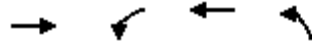
Intersection Summary

HCM Average Control Delay	27.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Dale Evans Parkway & Station Access #2

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑↑	↘
Volume (vph)	1287	115	1040	2
Turn Type	Prot			
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	30.0	17.0	47.0	23.0
Total Split (%)	42.9%	24.3%	67.1%	32.9%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	23.5	10.0	35.5	26.5
Actuated g/C Ratio	0.34	0.14	0.51	0.38
v/c Ratio	0.65	0.50	0.35	0.13
Control Delay	19.4	24.4	13.9	6.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.4	24.4	13.9	6.0
LOS	B	C	B	A
Approach Delay	19.4		14.9	6.0
Approach LOS	B		B	A

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 3 (4%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 16.9
 Intersection LOS: B
 Intersection Capacity Utilization 40.1%
 ICU Level of Service A
 Analysis Period (min) 15

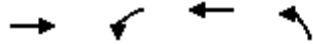
Splits and Phases: 4: Dale Evans Parkway & Station Access #2



Phasings

4: Dale Evans Parkway & Station Access #2

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	30.0	17.0	47.0	23.0
Total Split (%)	42.9%	24.3%	67.1%	32.9%
Maximum Green (s)	26.0	13.0	43.0	19.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	26.0	13.0	43.0	19.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	26.1	11.8	41.9	20.1
70th %ile Term Code	Gap	Gap	Hold	Coord
50th %ile Green (s)	24.2	10.2	38.4	23.6
50th %ile Term Code	Gap	Gap	Hold	Coord
30th %ile Green (s)	22.1	8.6	34.7	27.3
30th %ile Term Code	Gap	Gap	Hold	Coord
10th %ile Green (s)	19.3	0.0	19.3	42.7
10th %ile Term Code	Gap	Skip	Hold	Coord

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

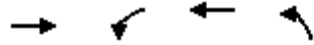
Offset: 3 (4%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

4: Dale Evans Parkway & Station Access #2

5/26/2010



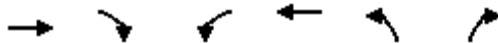
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1401	125	1130	88
v/c Ratio	0.65	0.50	0.35	0.13
Control Delay	19.4	24.4	13.9	6.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.4	24.4	13.9	6.0
Queue Length 50th (ft)	184	66	159	1
Queue Length 95th (ft)	226	101	136	31
Internal Link Dist (ft)	920		920	736
Turn Bay Length (ft)		200		
Base Capacity (vph)	2382	329	3936	666
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.38	0.29	0.13

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↙	↑↑↑↑	↘	
Volume (vph)	1287	2	115	1040	2	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.86	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6406		1770	6408	1615	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6406		1770	6408	1615	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1399	2	125	1130	2	86
RTOR Reduction (vph)	0	0	0	0	54	0
Lane Group Flow (vph)	1401	0	125	1130	34	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	23.5		8.7	36.2	25.8	
Effective Green, g (s)	23.5		8.7	36.2	25.8	
Actuated g/C Ratio	0.34		0.12	0.52	0.37	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2151		220	3314	595	
v/s Ratio Prot	c0.22		c0.07	0.18	c0.02	
v/s Ratio Perm						
v/c Ratio	0.65		0.57	0.34	0.06	
Uniform Delay, d1	19.8		28.9	9.9	14.3	
Progression Factor	0.94		0.66	1.33	1.00	
Incremental Delay, d2	0.5		3.2	0.1	0.2	
Delay (s)	19.1		22.2	13.3	14.4	
Level of Service	B		C	B	B	
Approach Delay (s)	19.1			14.2	14.4	
Approach LOS	B			B	B	

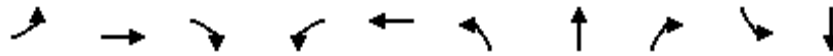
Intersection Summary

HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010

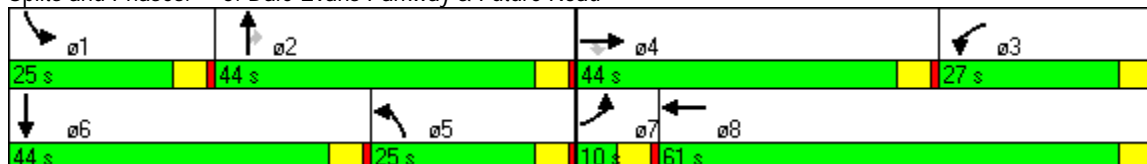


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘↘↘	↑↑	↘↘	↑↑↑	↗	↘↘	↑↑↑
Volume (vph)	17	141	363	798	89	515	722	662	485	969
Turn Type	Prot		Perm	Prot		Prot		Perm	Prot	
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	10.0	44.0	44.0	27.0	61.0	25.0	44.0	44.0	25.0	44.0
Total Split (%)	7.1%	31.4%	31.4%	19.3%	43.6%	17.9%	31.4%	31.4%	17.9%	31.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	5.0	19.7	19.7	32.9	53.6	20.0	40.1	40.1	27.3	47.4
Actuated g/C Ratio	0.04	0.14	0.14	0.24	0.38	0.14	0.29	0.29	0.20	0.34
v/c Ratio	0.29	0.31	0.84	0.74	0.20	1.14	0.54	0.85	0.79	0.63
Control Delay	77.4	52.9	30.5	38.7	10.0	127.5	30.4	18.5	63.2	41.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.4	52.9	30.5	38.7	10.0	127.5	30.4	18.5	63.2	41.7
LOS	E	D	C	D	A	F	C	B	E	D
Approach Delay		38.1			32.0		52.6			48.8
Approach LOS		D			C		D			D

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 30 (21%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 45.6
 Intersection LOS: D
 Intersection Capacity Utilization 71.2%
 ICU Level of Service C
 Analysis Period (min) 15

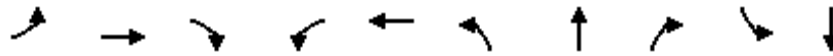
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	10.0	44.0	44.0	27.0	61.0	25.0	44.0	44.0	25.0	44.0
Total Split (%)	7.1%	31.4%	31.4%	19.3%	43.6%	17.9%	31.4%	31.4%	17.9%	31.4%
Maximum Green (s)	5.0	39.0	39.0	22.0	56.0	20.0	39.0	39.0	20.0	39.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0
Flash Dont Walk (s)		34.0	34.0		34.0		34.0	34.0		34.0
Pedestrian Calls (#/hr)		5	5		5		5	5		5
90th %ile Green (s)	5.0	39.0	39.0	22.0	56.0	20.0	39.0	39.0	20.0	39.0
90th %ile Term Code	Max	Ped	Ped	Max	Hold	Max	Coord	Coord	Max	Coord
70th %ile Green (s)	5.0	23.4	23.4	34.2	52.6	20.0	39.0	39.0	23.4	42.4
70th %ile Term Code	Max	Gap	Gap	Gap	Hold	Max	Coord	Coord	Max	Coord
50th %ile Green (s)	0.0	16.8	16.8	34.4	56.2	20.0	39.0	39.0	29.8	48.8
50th %ile Term Code	Skip	Gap	Gap	Gap	Hold	Max	Coord	Coord	Max	Coord
30th %ile Green (s)	0.0	11.0	11.0	34.8	50.8	20.0	43.9	43.9	30.3	54.2
30th %ile Term Code	Skip	Gap	Gap	Gap	Hold	Max	Coord	Coord	Gap	Coord
10th %ile Green (s)	0.0	8.3	8.3	39.1	52.4	20.0	39.8	39.8	32.8	52.6
10th %ile Term Code	Skip	Gap	Gap	Gap	Hold	Max	Coord	Coord	Gap	Coord

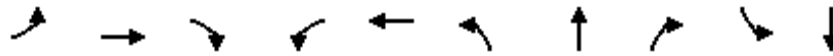
Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 30 (21%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Control Type: Actuated-Coordinated

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	153	395	867	263	560	785	720	527	1075
v/c Ratio	0.29	0.31	0.84	0.74	0.20	1.14	0.54	0.85	0.79	0.63
Control Delay	77.4	52.9	30.5	38.7	10.0	127.5	30.4	18.5	63.2	41.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.4	52.9	30.5	38.7	10.0	127.5	30.4	18.5	63.2	41.7
Queue Length 50th (ft)	16	68	98	159	43	~308	195	328	231	294
Queue Length 95th (ft)	44	85	191	#414	56	#414	140	#244	#390	384
Internal Link Dist (ft)		1660			920		920			1521
Turn Bay Length (ft)						100		150	100	
Base Capacity (vph)	63	986	650	1173	1382	490	1458	852	668	1718
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.16	0.61	0.74	0.19	1.14	0.54	0.85	0.79	0.63

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.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖↗↘	↖↗		↖↗	↖↗↘	↘	↖↗	↖↗↘	
Volume (vph)	17	141	363	798	89	153	515	722	662	485	969	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.94	0.95		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	4990	3204		3433	5085	1583	3433	5070	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	4990	3204		3433	5085	1583	3433	5070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	153	395	867	97	166	560	785	720	527	1053	22
RTOR Reduction (vph)	0	0	249	0	102	0	0	0	411	0	1	0
Lane Group Flow (vph)	18	153	146	867	161	0	560	785	309	527	1074	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	2.0	19.7	19.7	35.9	53.6		20.0	37.1	37.1	27.3	44.4	
Effective Green, g (s)	2.0	19.7	19.7	35.9	53.6		20.0	37.1	37.1	27.3	44.4	
Actuated g/C Ratio	0.01	0.14	0.14	0.26	0.38		0.14	0.26	0.26	0.20	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	25	498	223	1280	1227		490	1348	419	669	1608	
v/s Ratio Prot	0.01	0.04		c0.17	0.05		c0.16	0.15		c0.15	0.21	
v/s Ratio Perm			c0.09						c0.20			
v/c Ratio	0.72	0.31	0.65	0.68	0.13		1.14	0.58	0.74	0.79	0.67	
Uniform Delay, d1	68.7	54.0	56.9	46.8	28.1		60.0	44.7	47.0	53.6	41.4	
Progression Factor	1.00	1.00	1.00	0.67	0.94		0.78	0.68	0.84	1.00	1.00	
Incremental Delay, d2	68.2	0.4	6.7	1.4	0.0		85.0	1.7	10.4	6.1	2.2	
Delay (s)	136.9	54.4	63.6	32.7	26.4		131.7	32.3	49.7	59.7	43.6	
Level of Service	F	D	E	C	C		F	C	D	E	D	
Approach Delay (s)		63.5			31.2			65.3			48.9	
Approach LOS		E			C			E			D	

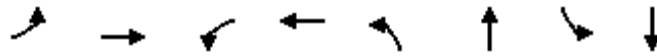
Intersection Summary

HCM Average Control Delay	53.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	48	2	2	2	71	1796	80	1986
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	27.0	27.0	27.0	27.0	22.0	90.0	23.0	91.0
Total Split (%)	19.3%	19.3%	19.3%	19.3%	15.7%	64.3%	16.4%	65.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	11.2	11.2		11.2	11.4	104.4	12.4	105.4
Actuated g/C Ratio	0.08	0.08		0.08	0.08	0.75	0.09	0.75
v/c Ratio	0.60	0.49		0.35	0.53	0.41	0.55	0.46
Control Delay	89.5	18.0		20.4	75.8	1.7	82.2	3.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	89.5	18.0		20.4	75.8	1.7	82.2	3.3
LOS	F	B		C	E	A	F	A
Approach Delay		41.0		20.4		4.5		6.2
Approach LOS		D		C		A		A

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 3 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 6.9
 Intersection Capacity Utilization 53.1%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

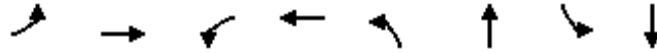
Splits and Phases: 6: Station Access #3 & Future Road

ø2	ø1	ø4
90 s	23 s	27 s
ø6	ø5	ø8
91 s	22 s	27 s

Phasings

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	27.0	27.0	27.0	27.0	22.0	90.0	23.0	91.0
Total Split (%)	19.3%	19.3%	19.3%	19.3%	15.7%	64.3%	16.4%	65.0%
Maximum Green (s)	23.0	23.0	23.0	23.0	18.0	86.0	19.0	87.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	16.3	16.3	16.3	16.3	15.9	94.8	16.9	95.8
90th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
70th %ile Green (s)	13.2	13.2	13.2	13.2	13.2	100.6	14.2	101.6
70th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Hold	Coord
50th %ile Green (s)	11.2	11.2	11.2	11.2	11.4	104.4	12.4	105.4
50th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Hold	Coord
30th %ile Green (s)	9.1	9.1	9.1	9.1	9.6	108.3	10.6	109.3
30th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Hold	Coord
10th %ile Green (s)	6.0	6.0	6.0	6.0	7.0	114.0	8.0	115.0
10th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Hold	Coord

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 3 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Control Type: Actuated-Coordinated

Queues

6: Station Access #3 & Future Road

5/26/2010























Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	110	64	77	1952	87	2230
v/c Ratio	0.60	0.49	0.35	0.53	0.41	0.55	0.46
Control Delay	89.5	18.0	20.4	75.8	1.7	82.2	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.5	18.0	20.4	75.8	1.7	82.2	3.3
Queue Length 50th (ft)	47	2	3	75	31	81	177
Queue Length 95th (ft)	91	59	49	m131	48	m121	69
Internal Link Dist (ft)		813	777		420		920
Turn Bay Length (ft)				100		100	
Base Capacity (vph)	176	351	315	228	4780	240	4803
Starvation Cap Reductn	0	0	0	0	356	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.31	0.20	0.34	0.44	0.36	0.46

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
6: Station Access #3 & Future Road

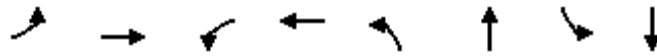
5/26/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	2	99	2	2	55	71	1796	0	80	1986	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.87		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1588			1624		1770	6408		1770	6377	
Flt Permitted	0.57	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1071	1588			1613		1770	6408		1770	6377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	2	108	2	2	60	77	1952	0	87	2159	71
RTOR Reduction (vph)	0	99	0	0	55	0	0	0	0	0	2	0
Lane Group Flow (vph)	52	11	0	0	9	0	77	1952	0	87	2228	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	11.2	11.2			11.2		11.4	104.4		12.4	105.4	
Effective Green, g (s)	11.2	11.2			11.2		11.4	104.4		12.4	105.4	
Actuated g/C Ratio	0.08	0.08			0.08		0.08	0.75		0.09	0.75	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	86	127			129		144	4779		157	4801	
v/s Ratio Prot		0.01					0.04	0.30		c0.05	c0.35	
v/s Ratio Perm	c0.05				0.01							
v/c Ratio	0.60	0.08			0.07		0.53	0.41		0.55	0.46	
Uniform Delay, d1	62.3	59.6			59.6		61.8	6.5		61.2	6.6	
Progression Factor	1.00	1.00			1.00		1.04	0.21		1.20	0.42	
Incremental Delay, d2	11.4	0.3			0.2		3.5	0.2		3.1	0.2	
Delay (s)	73.7	59.9			59.8		67.8	1.6		76.2	3.0	
Level of Service	E	E			E		E	A		E	A	
Approach Delay (s)		64.3			59.8			4.1			5.7	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM Average Control Delay			7.8				HCM Level of Service			A		
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			53.1%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

7: Station Access #4 & Future Road

5/26/2010



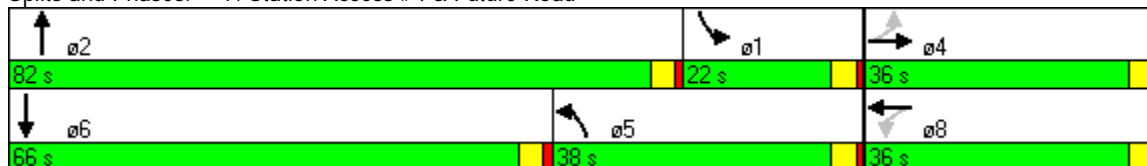
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗		↕	↖	↑↑↑	↖	↑↑↑
Volume (vph)	145	2	2	2	239	1644	110	1758
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	36.0	36.0	36.0	36.0	38.0	82.0	22.0	66.0
Total Split (%)	25.7%	25.7%	25.7%	25.7%	27.1%	58.6%	15.7%	47.1%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	23.4	23.4		23.4	30.3	90.2	14.3	74.2
Actuated g/C Ratio	0.17	0.17		0.17	0.22	0.64	0.10	0.53
v/c Ratio	0.84	0.61		0.32	0.68	0.43	0.66	0.64
Control Delay	90.7	10.0		13.3	60.0	5.0	75.7	7.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.1
Total Delay	90.7	10.0		13.3	60.0	5.0	75.7	7.5
LOS	F	A		B	E	A	E	A
Approach Delay		36.4		13.3		12.0		11.1
Approach LOS		D		B		B		B

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 14.0
 Intersection Capacity Utilization 70.8%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

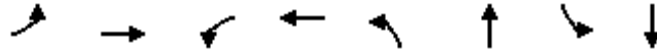
Splits and Phases: 7: Station Access #4 & Future Road



Phasings

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	36.0	36.0	36.0	36.0	38.0	82.0	22.0	66.0
Total Split (%)	25.7%	25.7%	25.7%	25.7%	27.1%	58.6%	15.7%	47.1%
Maximum Green (s)	32.0	32.0	32.0	32.0	34.0	78.0	18.0	62.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	32.0	32.0	32.0	32.0	34.0	78.0	18.0	62.0
90th %ile Term Code	Max	Max	Hold	Hold	Hold	Coord	Max	Coord
70th %ile Green (s)	27.4	27.4	27.4	27.4	33.0	83.6	17.0	67.6
70th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
50th %ile Green (s)	23.7	23.7	23.7	23.7	30.8	89.5	14.8	73.5
50th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
30th %ile Green (s)	19.9	19.9	19.9	19.9	28.5	95.6	12.5	79.6
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
10th %ile Green (s)	14.2	14.2	14.2	14.2	25.3	104.5	9.3	88.5
10th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Control Type: Actuated-Coordinated

Queues

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	325	87	260	1789	120	2146
v/c Ratio	0.84	0.61	0.32	0.68	0.43	0.66	0.64
Control Delay	90.7	10.0	13.3	60.0	5.0	75.7	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	90.7	10.0	13.3	60.0	5.0	75.7	7.5
Queue Length 50th (ft)	141	2	3	243	205	115	51
Queue Length 95th (ft)	213	84	49	336	47	183	137
Internal Link Dist (ft)		873	973		420		420
Turn Bay Length (ft)				200		100	
Base Capacity (vph)	255	611	339	430	4130	228	3357
Starvation Cap Reductn	0	0	0	0	495	0	162
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.53	0.26	0.60	0.49	0.53	0.67

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↑↑↑		↖	↑↑↑	
Volume (vph)	145	2	297	2	2	76	239	1644	2	110	1758	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.87		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1585			1621		1770	6407		1770	6303	
Flt Permitted	0.60	1.00			0.74		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1116	1585			1204		1770	6407		1770	6303	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	2	323	2	2	83	260	1787	2	120	1911	235
RTOR Reduction (vph)	0	269	0	0	69	0	0	0	0	0	13	0
Lane Group Flow (vph)	158	56	0	0	18	0	260	1789	0	120	2133	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	23.4	23.4			23.4		30.3	90.3		14.3	74.3	
Effective Green, g (s)	23.4	23.4			23.4		30.3	90.3		14.3	74.3	
Actuated g/C Ratio	0.17	0.17			0.17		0.22	0.64		0.10	0.53	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	187	265			201		383	4133		181	3345	
v/s Ratio Prot		0.04					c0.15	0.28		0.07	c0.34	
v/s Ratio Perm	c0.14				0.01							
v/c Ratio	0.84	0.21			0.09		0.68	0.43		0.66	0.64	
Uniform Delay, d1	56.5	50.3			49.3		50.4	12.2		60.5	23.3	
Progression Factor	1.00	1.00			1.00		1.02	0.35		0.99	0.27	
Incremental Delay, d2	27.9	0.4			0.2		4.4	0.3		8.0	0.9	
Delay (s)	84.4	50.7			49.5		55.8	4.6		68.2	7.1	
Level of Service	F	D			D		E	A		E	A	
Approach Delay (s)		61.8			49.5			11.1			10.3	
Approach LOS		E			D			B			B	

Intersection Summary

HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

8: Station Access #5 & Future Road

5/26/2010

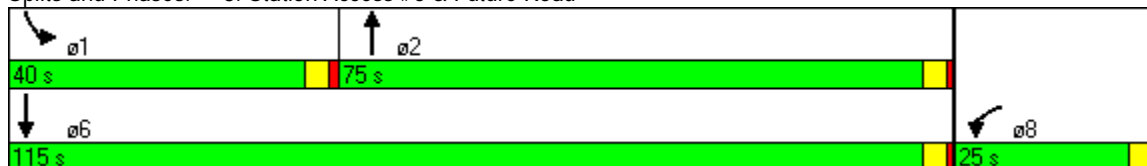


Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	2	1754	188	1867
Turn Type			Prot	
Protected Phases	8	2	1	6
Permitted Phases				
Detector Phase	8	2	1	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	25.0	75.0	40.0	115.0
Total Split (%)	17.9%	53.6%	28.6%	82.1%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	
Recall Mode	None	C-Max	None	C-Max
Act Effect Green (s)	8.2	98.3	21.5	123.8
Actuated g/C Ratio	0.06	0.70	0.15	0.88
v/c Ratio	0.63	0.42	0.75	0.36
Control Delay	22.1	10.1	78.3	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.1	10.1	78.3	0.4
LOS	C	B	E	A
Approach Delay	22.1	10.1		7.5
Approach LOS	C	B		A

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 6 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 9.2
 Intersection LOS: A
 Intersection Capacity Utilization 54.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 8: Station Access #5 & Future Road



Phasings

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Protected Phases	8	2	1	6
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	25.0	75.0	40.0	115.0
Total Split (%)	17.9%	53.6%	28.6%	82.1%
Maximum Green (s)	21.0	71.0	36.0	111.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag		Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0		11.0
Pedestrian Calls (#/hr)	5	5		5
90th %ile Green (s)	16.0	83.2	28.8	116.0
90th %ile Term Code	Ped	Coord	Gap	Coord
70th %ile Green (s)	8.6	94.9	24.5	123.4
70th %ile Term Code	Gap	Coord	Gap	Coord
50th %ile Green (s)	5.6	100.9	21.5	126.4
50th %ile Term Code	Gap	Coord	Gap	Coord
30th %ile Green (s)	5.5	104.0	18.5	126.5
30th %ile Term Code	Gap	Coord	Gap	Coord
10th %ile Green (s)	5.5	108.4	14.1	126.5
10th %ile Term Code	Gap	Coord	Gap	Coord

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 6 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Control Type: Actuated-Coordinated

Queues

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	1909	204	2029
v/c Ratio	0.63	0.42	0.75	0.36
Control Delay	22.1	10.1	78.3	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.1	10.1	78.3	0.4
Queue Length 50th (ft)	2	181	195	6
Queue Length 95th (ft)	66	308	271	12
Internal Link Dist (ft)	1061	848		420
Turn Bay Length (ft)			100	
Base Capacity (vph)	361	4498	455	5665
Starvation Cap Reductn	0	0	0	1174
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.42	0.45	0.45
Intersection Summary				

HCM Signalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	2	129	1754	2	188	1867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.86		1.00	0.86
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1614		6407		1770	6408
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1614		6407		1770	6408
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	140	1907	2	204	2029
RTOR Reduction (vph)	132	0	0	0	0	0
Lane Group Flow (vph)	10	0	1909	0	204	2029
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	8.2		98.3		21.5	123.8
Effective Green, g (s)	8.2		98.3		21.5	123.8
Actuated g/C Ratio	0.06		0.70		0.15	0.88
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	95		4499		272	5667
v/s Ratio Prot	c0.01		c0.30		c0.12	0.32
v/s Ratio Perm						
v/c Ratio	0.11		0.42		0.75	0.36
Uniform Delay, d1	62.4		8.8		56.7	1.4
Progression Factor	1.00		1.00		1.15	0.12
Incremental Delay, d2	0.5		0.3		8.8	0.1
Delay (s)	62.9		9.1		74.0	0.3
Level of Service	E		A		E	A
Approach Delay (s)	62.9		9.1			7.0
Approach LOS	E		A			A

Intersection Summary

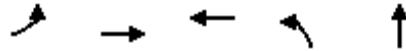
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2030 Conditions
Base + DEMU

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↶	↕↕	↕↔	↶	↔
Volume (vph)	255	636	495	762	2
Turn Type	Prot			Split	
Protected Phases	7	4	8	2	2
Permitted Phases					
Detector Phase	7	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	14.0	42.0	28.0	28.0	28.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	9.0	37.0	23.0	23.0	23.0
Actuated g/C Ratio	0.13	0.53	0.33	0.33	0.33
v/c Ratio	1.21	0.37	0.62	1.42	0.71
Control Delay	157.3	16.5	20.5	224.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	157.3	16.5	20.5	224.3	18.8
LOS	F	B	C	F	B
Approach Delay		56.8	20.5		150.3
Approach LOS		E	C		F

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 88.4

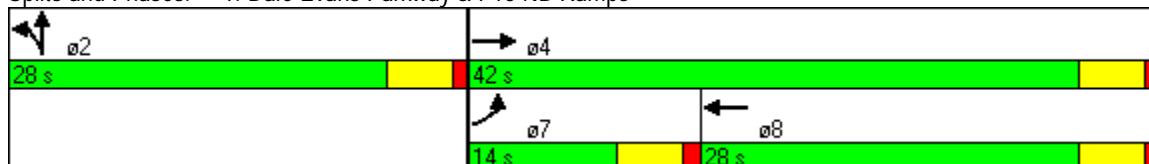
Intersection LOS: F

Intersection Capacity Utilization 117.5%

ICU Level of Service H

Analysis Period (min) 15

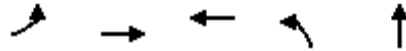
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases	7	4	8	2	2
Permitted Phases					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	14.0	42.0	28.0	28.0	28.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%
Maximum Green (s)	9.0	37.0	23.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	C-Max	Max	Max
Walk Time (s)		5.0	5.0	5.0	5.0
Flash Dont Walk (s)		18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)		5	5	5	5
90th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
90th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
70th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
70th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
50th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
50th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
30th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
30th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
10th %ile Green (s)	9.0	37.0	23.0	23.0	23.0
10th %ile Term Code	Max	Coord	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

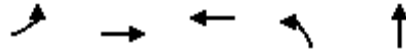
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	277	691	729	828	466
v/c Ratio	1.21	0.37	0.62	1.42	0.71
Control Delay	157.3	16.5	20.5	224.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	157.3	16.5	20.5	224.3	18.8
Queue Length 50th (ft)	~150	90	122	~493	97
Queue Length 95th (ft)	m#254	m124	177	#697	204
Internal Link Dist (ft)		820	380		2022
Turn Bay Length (ft)	225			150	
Base Capacity (vph)	228	1871	1169	582	653
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.21	0.37	0.62	1.42	0.71

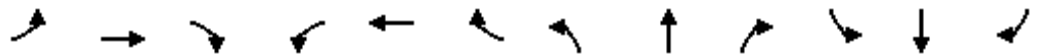
Intersection Summary

- ~ 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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖	↗				
Volume (vph)	255	636	0	0	495	176	762	2	427	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	0.95			0.95		1.00	1.00				
Frt	1.00	1.00			0.96		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	3539			3400		1770	1585				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	1770	3539			3400		1770	1585				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	277	691	0	0	538	191	828	2	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	51	0	0	132	0	0	0	0
Lane Group Flow (vph)	277	691	0	0	678	0	828	334	0	0	0	0
Turn Type	Prot						Split					
Protected Phases	7	4			8		2	2				
Permitted Phases												
Actuated Green, G (s)	9.0	37.0			23.0		23.0	23.0				
Effective Green, g (s)	9.0	37.0			23.0		23.0	23.0				
Actuated g/C Ratio	0.13	0.53			0.33		0.33	0.33				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	228	1871			1117		582	521				
v/s Ratio Prot	c0.16	0.20			c0.20		c0.47	0.21				
v/s Ratio Perm												
v/c Ratio	1.21	0.37			0.61		1.42	0.64				
Uniform Delay, d1	30.5	9.7			19.7		23.5	20.0				
Progression Factor	1.25	1.63			1.00		1.00	1.00				
Incremental Delay, d2	121.4	0.4			2.5		200.1	5.9				
Delay (s)	159.6	16.2			22.2		223.6	25.9				
Level of Service	F	B			C		F	C				
Approach Delay (s)		57.2			22.2			152.4			0.0	
Approach LOS		E			C			F			A	

Intersection Summary

HCM Average Control Delay	89.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↵	↑↑	↵	↑
Volume (vph)	573	977	321	935	318	1
Turn Type		Perm	Prot		Split	
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	21.0	21.0	21.0	42.0	28.0	28.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effect Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
Actuated g/C Ratio	0.23	0.23	0.23	0.53	0.33	0.33
v/c Ratio	0.77	1.18	0.86	0.54	0.59	0.81
Control Delay	33.0	103.6	31.2	12.2	24.7	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	103.6	31.2	12.2	24.7	31.1
LOS	C	F	C	B	C	C
Approach Delay	77.5			17.1		28.4
Approach LOS	E			B		C

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.18

Intersection Signal Delay: 45.8

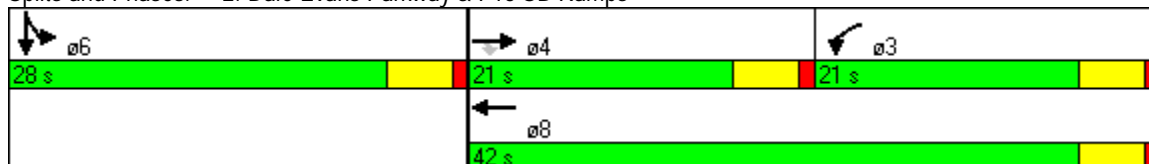
Intersection LOS: D

Intersection Capacity Utilization 117.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	21.0	21.0	21.0	42.0	28.0	28.0
Total Split (%)	30.0%	30.0%	30.0%	60.0%	40.0%	40.0%
Maximum Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5	5
90th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
90th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
70th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
70th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
50th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
50th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
30th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
30th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
10th %ile Green (s)	16.0	16.0	16.0	37.0	23.0	23.0
10th %ile Term Code	Coord	Coord	Hold	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	623	1062	349	1016	346	469
v/c Ratio	0.77	1.18	0.86	0.54	0.59	0.81
Control Delay	33.0	103.6	31.2	12.2	24.7	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	103.6	31.2	12.2	24.7	31.1
Queue Length 50th (ft)	132	~302	140	172	123	151
Queue Length 95th (ft)	#193	#528	m133	m158	203	#308
Internal Link Dist (ft)	920			820		1339
Turn Bay Length (ft)			300		300	
Base Capacity (vph)	809	903	405	1871	582	577
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	0.77	1.18	0.86	0.54	0.59	0.81

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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	
Volume (vph)	0	573	977	321	935	0	0	0	0	318	1	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1584	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1584	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	623	1062	349	1016	0	0	0	0	346	1	468
RTOR Reduction (vph)	0	0	541	0	0	0	0	0	0	0	57	0
Lane Group Flow (vph)	0	623	521	349	1016	0	0	0	0	346	412	0
Turn Type			Perm	Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases			4									
Actuated Green, G (s)		16.0	16.0	16.0	37.0					23.0	23.0	
Effective Green, g (s)		16.0	16.0	16.0	37.0					23.0	23.0	
Actuated g/C Ratio		0.23	0.23	0.23	0.53					0.33	0.33	
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		809	362	405	1871					582	520	
v/s Ratio Prot		0.18		c0.20	0.29					0.20	c0.26	
v/s Ratio Perm			c0.33									
v/c Ratio		0.77	1.44	0.86	0.54					0.59	0.79	
Uniform Delay, d1		25.3	27.0	25.9	10.9					19.6	21.3	
Progression Factor		1.00	1.00	1.01	1.09					1.00	1.00	
Incremental Delay, d2		7.0	213.1	1.9	0.1					4.4	11.7	
Delay (s)		32.3	240.1	28.2	12.0					24.0	33.1	
Level of Service		C	F	C	B					C	C	
Approach Delay (s)		163.2			16.1			0.0			29.2	
Approach LOS		F			B			A			C	

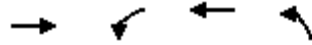
Intersection Summary

HCM Average Control Delay	83.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

3: Dale Evans Parkway & Station Access #1

5/26/2010

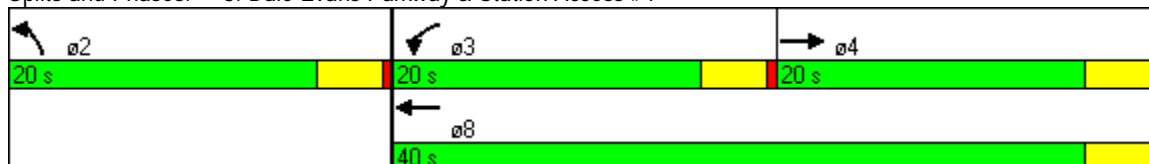


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑	↘
Volume (vph)	1266	355	1010	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	40.0	20.0
Total Split (%)	33.3%	33.3%	66.7%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	16.0	15.4	35.4	16.6
Actuated g/C Ratio	0.27	0.26	0.59	0.28
v/c Ratio	0.80	0.85	0.37	0.46
Control Delay	25.0	41.3	6.8	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.0	41.3	6.8	5.3
LOS	C	D	A	A
Approach Delay	25.0		15.7	5.3
Approach LOS	C		B	A

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 18.8
 Intersection LOS: B
 Intersection Capacity Utilization 65.7%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dale Evans Parkway & Station Access #1



Phasings

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	40.0	20.0
Total Split (%)	33.3%	33.3%	66.7%	33.3%
Maximum Green (s)	16.0	16.0	36.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	16.0	16.0	36.0	16.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	16.0	16.0	36.0	16.0
70th %ile Term Code	Max	Max	Hold	Coord
50th %ile Green (s)	16.0	16.0	36.0	16.0
50th %ile Term Code	Max	Max	Hold	Coord
30th %ile Green (s)	16.0	16.0	36.0	16.0
30th %ile Term Code	Max	Max	Hold	Coord
10th %ile Green (s)	16.2	12.8	33.0	19.0
10th %ile Term Code	Gap	Gap	Hold	Coord

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

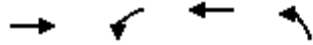
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1378	386	1098	310
v/c Ratio	0.80	0.85	0.37	0.46
Control Delay	25.0	41.3	6.8	5.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.0	41.3	6.8	5.3
Queue Length 50th (ft)	134	130	64	1
Queue Length 95th (ft)	172	#262	85	51
Internal Link Dist (ft)	920		920	1731
Turn Bay Length (ft)		200		
Base Capacity (vph)	1713	472	3051	669
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	0.82	0.36	0.46

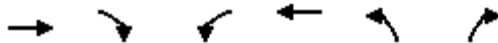
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↙	↑↑↑	↘	
Volume (vph)	1266	2	355	1010	2	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.91	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6406		1770	5085	1612	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6406		1770	5085	1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1376	2	386	1098	2	308
RTOR Reduction (vph)	0	0	0	0	223	0
Lane Group Flow (vph)	1378	0	386	1098	87	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	16.0		15.4	35.4	16.6	
Effective Green, g (s)	16.0		15.4	35.4	16.6	
Actuated g/C Ratio	0.27		0.26	0.59	0.28	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1708		454	3000	446	
v/s Ratio Prot	c0.22		c0.22	0.22	c0.05	
v/s Ratio Perm						
v/c Ratio	0.81		0.85	0.37	0.20	
Uniform Delay, d1	20.6		21.2	6.4	16.6	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.9		14.1	0.1	1.0	
Delay (s)	23.5		35.3	6.5	17.6	
Level of Service	C		D	A	B	
Approach Delay (s)	23.5			14.0	17.6	
Approach LOS	C			B	B	

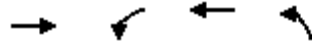
Intersection Summary

HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Dale Evans Parkway & Station Access #2

5/26/2010

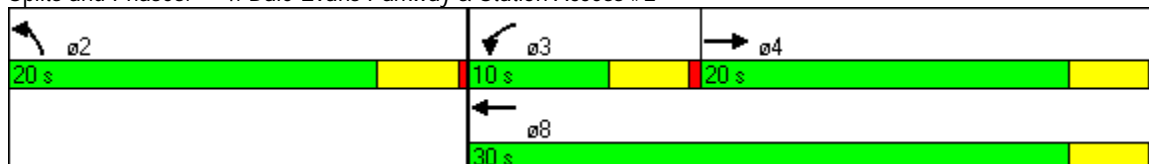


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑↑	↘
Volume (vph)	1211	81	929	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	30.0	20.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	15.7	5.9	21.7	20.3
Actuated g/C Ratio	0.31	0.12	0.43	0.41
v/c Ratio	0.66	0.42	0.36	0.09
Control Delay	16.6	27.1	9.4	4.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.6	27.1	9.4	4.8
LOS	B	C	A	A
Approach Delay	16.6		10.8	4.8
Approach LOS	B		B	A

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 13.7
 Intersection LOS: B
 Intersection Capacity Utilization 35.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Dale Evans Parkway & Station Access #2



Phasings

4: Dale Evans Parkway & Station Access #2

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	30.0	20.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%
Maximum Green (s)	16.0	6.0	26.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	16.0	6.0	26.0	16.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	16.0	6.0	26.0	16.0
70th %ile Term Code	Max	Max	Hold	Coord
50th %ile Green (s)	16.0	6.0	26.0	16.0
50th %ile Term Code	Max	Max	Hold	Coord
30th %ile Green (s)	16.4	0.0	16.4	25.6
30th %ile Term Code	Gap	Skip	Hold	Coord
10th %ile Green (s)	14.0	0.0	14.0	28.0
10th %ile Term Code	Gap	Skip	Hold	Coord

Intersection Summary

Cycle Length: 50

Actuated Cycle Length: 50

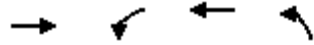
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

4: Dale Evans Parkway & Station Access #2

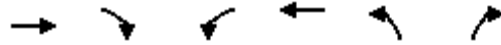
5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1318	88	1010	63
v/c Ratio	0.66	0.42	0.36	0.09
Control Delay	16.6	27.1	9.4	4.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.6	27.1	9.4	4.8
Queue Length 50th (ft)	93	25	43	0
Queue Length 95th (ft)	124	59	59	20
Internal Link Dist (ft)	920		920	736
Turn Bay Length (ft)		200		
Base Capacity (vph)	2061	212	3332	692
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.42	0.30	0.09
Intersection Summary				

HCM Signalized Intersection Capacity Analysis
 4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↶	↑↑↑↑	↷	
Volume (vph)	1211	2	81	929	2	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.86	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6406		1770	6408	1617	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6406		1770	6408	1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1316	2	88	1010	2	61
RTOR Reduction (vph)	1	0	0	0	38	0
Lane Group Flow (vph)	1317	0	88	1010	25	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	15.7		3.6	23.3	18.7	
Effective Green, g (s)	15.7		3.6	23.3	18.7	
Actuated g/C Ratio	0.31		0.07	0.47	0.37	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2011		127	2986	605	
v/s Ratio Prot	c0.21		c0.05	0.16	c0.02	
v/s Ratio Perm						
v/c Ratio	0.66		0.69	0.34	0.04	
Uniform Delay, d1	14.8		22.7	8.5	9.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.8		15.1	0.1	0.1	
Delay (s)	15.6		37.8	8.5	10.1	
Level of Service	B		D	A	B	
Approach Delay (s)	15.6			10.9	10.1	
Approach LOS	B			B	B	

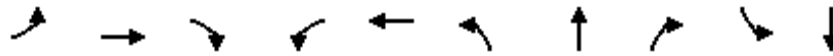
Intersection Summary

HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010

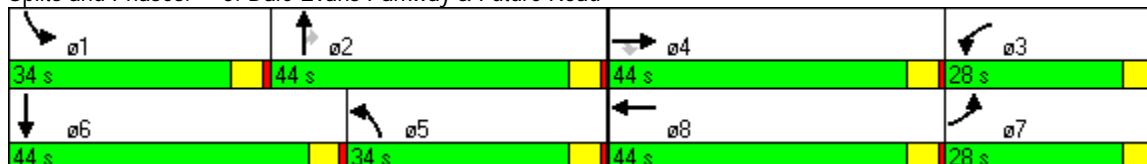


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘↗	↑↑	↘↗	↑↑↑	↗	↘↗	↑↑↑
Volume (vph)	17	141	363	687	89	515	722	586	485	969
Turn Type	Prot		Perm	Prot		Prot		Perm	Prot	
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	28.0	44.0	44.0	28.0	44.0	34.0	44.0	44.0	34.0	44.0
Total Split (%)	18.7%	29.3%	29.3%	18.7%	29.3%	22.7%	29.3%	29.3%	22.7%	29.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effect Green (s)	26.7	17.1	17.1	44.0	38.7	29.0	41.8	41.8	27.1	39.9
Actuated g/C Ratio	0.18	0.11	0.11	0.29	0.26	0.19	0.28	0.28	0.18	0.27
v/c Ratio	0.06	0.38	0.78	0.74	0.28	0.84	0.55	0.79	0.85	0.80
Control Delay	46.6	61.9	17.9	52.8	20.5	60.6	39.1	21.6	73.1	56.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	61.9	17.9	52.8	20.5	60.6	39.1	21.6	73.1	56.4
LOS	D	E	B	D	C	E	D	C	E	E
Approach Delay		30.7			44.4		39.5			61.9
Approach LOS		C			D		D			E

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 46.5
 Intersection LOS: D
 Intersection Capacity Utilization 74.0%
 ICU Level of Service D
 Analysis Period (min) 15

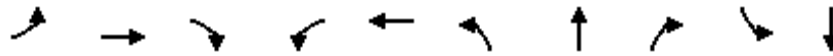
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	28.0	44.0	44.0	28.0	44.0	34.0	44.0	44.0	34.0	44.0
Total Split (%)	18.7%	29.3%	29.3%	18.7%	29.3%	22.7%	29.3%	29.3%	22.7%	29.3%
Maximum Green (s)	23.0	39.0	39.0	23.0	39.0	29.0	39.0	39.0	29.0	39.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0
Flash Dont Walk (s)		34.0	34.0		34.0		34.0	34.0		34.0
Pedestrian Calls (#/hr)		5	5		5		5	5		5
90th %ile Green (s)	23.0	39.0	39.0	23.0	39.0	29.0	39.0	39.0	29.0	39.0
90th %ile Term Code	Hold	Ped	Ped	Max	Ped	Max	Coord	Coord	Max	Coord
70th %ile Green (s)	48.2	15.7	15.7	44.7	12.2	29.0	39.0	39.0	30.6	40.6
70th %ile Term Code	Hold	Gap	Gap	Gap	Gap	Max	Coord	Coord	Max	Coord
50th %ile Green (s)	50.9	11.9	11.9	47.3	8.3	29.0	42.7	42.7	28.1	41.8
50th %ile Term Code	Hold	Gap	Gap	Gap	Gap	Max	Coord	Coord	Gap	Coord
30th %ile Green (s)	0.0	10.5	10.5	51.5	67.0	29.0	42.3	42.3	25.7	39.0
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Gap	Coord
10th %ile Green (s)	0.0	8.6	8.6	53.4	67.0	29.0	46.0	46.0	22.0	39.0
10th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Gap	Coord

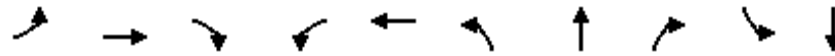
Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 96 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Control Type: Actuated-Coordinated

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	153	395	747	263	560	785	637	527	1075
v/c Ratio	0.06	0.38	0.78	0.74	0.28	0.84	0.55	0.79	0.85	0.80
Control Delay	46.6	61.9	17.9	52.8	20.5	60.6	39.1	21.6	73.1	56.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	61.9	17.9	52.8	20.5	60.6	39.1	21.6	73.1	56.4
Queue Length 50th (ft)	12	77	23	330	49	278	189	166	258	353
Queue Length 95th (ft)	41	93	116	#634	77	#319	252	253	324	421
Internal Link Dist (ft)		1660			920		920			1521
Turn Bay Length (ft)						100		150	100	
Base Capacity (vph)	397	920	685	1007	1183	664	1417	803	671	1350
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.17	0.58	0.74	0.22	0.84	0.55	0.79	0.79	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘↗	↑↑		↘↗	↑↑↑	↗	↘↗	↑↑↑	
Volume (vph)	17	141	363	687	89	153	515	722	586	485	969	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	153	395	747	97	166	560	785	637	527	1053	22
RTOR Reduction (vph)	0	0	328	0	123	0	0	0	369	0	1	0
Lane Group Flow (vph)	18	153	67	747	140	0	560	785	268	527	1074	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	24.4	17.1	17.1	46.0	38.7		29.0	39.8	39.8	27.1	37.9	
Effective Green, g (s)	24.4	17.1	17.1	46.0	38.7		29.0	39.8	39.8	27.1	37.9	
Actuated g/C Ratio	0.16	0.11	0.11	0.31	0.26		0.19	0.27	0.27	0.18	0.25	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	288	403	180	1053	827		664	1349	420	620	1281	
v/s Ratio Prot	0.01	c0.04		c0.22	0.04		c0.16	0.15		0.15	c0.21	
v/s Ratio Perm			0.04						0.17			
v/c Ratio	0.06	0.38	0.37	0.71	0.17		0.84	0.58	0.64	0.85	0.84	
Uniform Delay, d1	53.1	61.5	61.5	46.1	43.2		58.3	47.9	48.7	59.5	53.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.83	0.80	1.29	1.00	1.00	
Incremental Delay, d2	0.1	0.6	1.3	2.2	0.1		9.0	1.7	6.8	10.8	6.7	
Delay (s)	53.2	62.1	62.8	48.3	43.3		57.6	40.2	69.8	70.3	59.8	
Level of Service	D	E	E	D	D		E	D	E	E	E	
Approach Delay (s)		62.3			47.0			54.6			63.2	
Approach LOS		E			D			D			E	

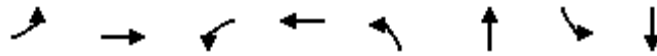
Intersection Summary

HCM Average Control Delay	56.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

6: Station Access #3 & Future Road

5/26/2010

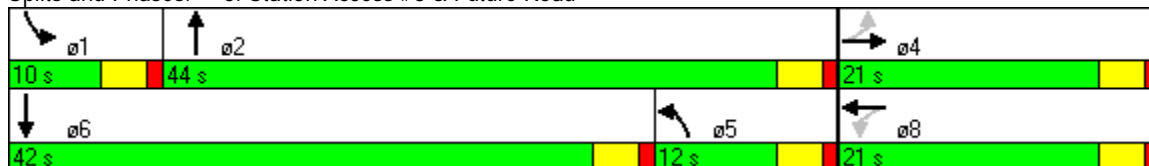


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	48	2	2	2	71	1736	56	1899
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0	12.0	44.0	10.0	42.0
Total Split (%)	28.0%	28.0%	28.0%	28.0%	16.0%	58.7%	13.3%	56.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	9.2	9.2		9.2	7.5	53.3	7.3	50.9
Actuated g/C Ratio	0.12	0.12		0.12	0.10	0.71	0.10	0.68
v/c Ratio	0.24	0.38		0.20	0.44	0.41	0.36	0.49
Control Delay	30.6	10.3		12.1	30.4	4.8	33.1	10.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	10.3		12.1	30.4	4.8	33.1	10.7
LOS	C	B		B	C	A	C	B
Approach Delay		16.8		12.1		5.8		11.3
Approach LOS		B		B		A		B

Intersection Summary

Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 9.0
 Intersection LOS: A
 Intersection Capacity Utilization 51.9%
 ICU Level of Service A
 Analysis Period (min) 15

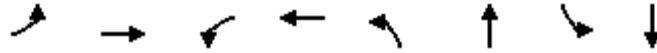
Splits and Phases: 6: Station Access #3 & Future Road



Phasings

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	21.0	21.0	21.0	21.0	12.0	44.0	10.0	42.0
Total Split (%)	28.0%	28.0%	28.0%	28.0%	16.0%	58.7%	13.3%	56.0%
Maximum Green (s)	17.0	17.0	17.0	17.0	8.0	40.0	6.0	38.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	16.0	16.0	16.0	16.0	8.0	40.0	7.0	39.0
90th %ile Term Code	Ped	Ped	Hold	Hold	Max	Coord	Max	Coord
70th %ile Green (s)	9.6	9.6	9.6	9.6	8.0	44.3	9.1	45.4
70th %ile Term Code	Gap	Gap	Hold	Hold	Max	Coord	Gap	Coord
50th %ile Green (s)	8.2	8.2	8.2	8.2	8.0	46.9	7.9	46.8
50th %ile Term Code	Gap	Gap	Hold	Hold	Max	Coord	Gap	Coord
30th %ile Green (s)	6.8	6.8	6.8	6.8	8.0	60.2	0.0	48.2
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Skip	Coord
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0	71.0	0.0	71.0
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip	Coord	Skip	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	110	46	77	1889	61	2135
v/c Ratio	0.24	0.38	0.20	0.44	0.41	0.36	0.49
Control Delay	30.6	10.3	12.1	30.4	4.8	33.1	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	10.3	12.1	30.4	4.8	33.1	10.7
Queue Length 50th (ft)	23	1	2	35	58	37	236
Queue Length 95th (ft)	48	39	27	m58	106	m58	221
Internal Link Dist (ft)		813	777		420		920
Turn Bay Length (ft)				100		100	
Base Capacity (vph)	400	444	398	189	4552	174	4330
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.25	0.12	0.41	0.41	0.35	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: Station Access #3 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	2	99	2	2	39	71	1736	2	56	1899	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1588			1630		1770	6407		1770	6376	
Flt Permitted	0.95	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1765	1588			1610		1770	6407		1770	6376	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	2	108	2	2	42	77	1887	2	61	2064	71
RTOR Reduction (vph)	0	96	0	0	37	0	0	0	0	0	5	0
Lane Group Flow (vph)	52	14	0	0	9	0	77	1889	0	61	2130	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	8.1	8.1			8.1		7.2	50.1		4.8	47.7	
Effective Green, g (s)	8.1	8.1			8.1		7.2	50.1		4.8	47.7	
Actuated g/C Ratio	0.11	0.11			0.11		0.10	0.67		0.06	0.64	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	191	172			174		170	4280		113	4055	
v/s Ratio Prot		0.01					0.04	c0.29		0.03	c0.33	
v/s Ratio Perm	c0.03				0.01							
v/c Ratio	0.27	0.08			0.05		0.45	0.44		0.54	0.53	
Uniform Delay, d1	30.7	30.1			30.0		32.0	5.9		34.0	7.5	
Progression Factor	1.00	1.00			1.00		0.74	0.65		0.93	1.31	
Incremental Delay, d2	0.8	0.2			0.1		1.7	0.3		3.2	0.3	
Delay (s)	31.5	30.3			30.1		25.3	4.1		34.8	10.1	
Level of Service	C	C			C		C	A		C	B	
Approach Delay (s)		30.7			30.1			5.0			10.8	
Approach LOS		C			C			A			B	

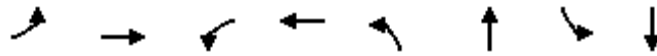
Intersection Summary

HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

7: Station Access #4 & Future Road

5/26/2010

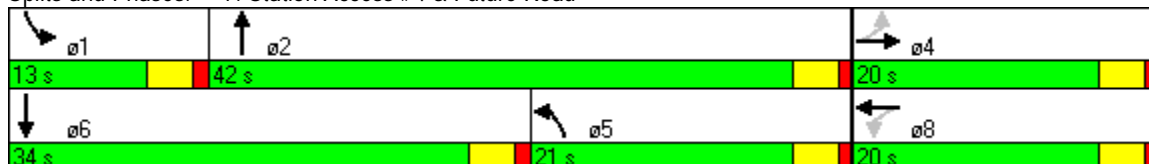


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↙	↗		↕	↙	↑↑↑	↙	↑↑↑
Volume (vph)	145	2	2	2	239	1607	78	1703
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	21.0	42.0	13.0	34.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	28.0%	56.0%	17.3%	45.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	12.6	12.6		12.6	17.0	44.2	8.2	33.4
Actuated g/C Ratio	0.17	0.17		0.17	0.23	0.59	0.11	0.45
v/c Ratio	0.62	0.61		0.24	0.65	0.46	0.44	0.74
Control Delay	39.4	8.8		10.6	24.2	3.6	51.2	19.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	8.8		10.6	24.2	3.6	51.2	19.5
LOS	D	A		B	C	A	D	B
Approach Delay		18.8		10.6		6.3		20.8
Approach LOS		B		B		A		C

Intersection Summary

Cycle Length: 75
 Actuated Cycle Length: 75
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 14.3
 Intersection LOS: B
 Intersection Capacity Utilization 70.0%
 ICU Level of Service C
 Analysis Period (min) 15

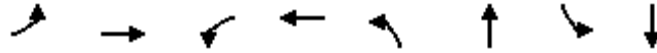
Splits and Phases: 7: Station Access #4 & Future Road



Phasings

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	21.0	42.0	13.0	34.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	28.0%	56.0%	17.3%	45.3%
Maximum Green (s)	16.0	16.0	16.0	16.0	17.0	38.0	9.0	30.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	16.0	16.0	16.0	16.0	17.0	38.0	9.0	30.0
90th %ile Term Code	Max	Max	Hold	Hold	Max	Coord	Max	Coord
70th %ile Green (s)	15.2	15.2	15.2	15.2	17.0	38.0	9.8	30.8
70th %ile Term Code	Gap	Gap	Hold	Hold	Max	Coord	Max	Coord
50th %ile Green (s)	13.1	13.1	13.1	13.1	17.0	41.0	8.9	32.9
50th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
30th %ile Green (s)	10.8	10.8	10.8	10.8	17.0	44.7	7.5	35.2
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
10th %ile Green (s)	7.7	7.7	7.7	7.7	17.0	59.3	0.0	38.3
10th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Skip	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	325	63	260	1749	85	2086
v/c Ratio	0.62	0.61	0.24	0.65	0.46	0.44	0.74
Control Delay	39.4	8.8	10.6	24.2	3.6	51.2	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	8.8	10.6	24.2	3.6	51.2	19.5
Queue Length 50th (ft)	68	1	2	110	30	64	338
Queue Length 95th (ft)	122	63	31	138	39	95	244
Internal Link Dist (ft)		873	973		420		420
Turn Bay Length (ft)				200		100	
Base Capacity (vph)	324	592	321	401	3777	216	2837
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.55	0.20	0.65	0.46	0.39	0.74

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	145	2	297	2	2	54	239	1607	2	78	1703	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.87		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1585			1625		1770	6407		1770	6300	
Flt Permitted	0.82	1.00			0.79		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1521	1585			1289		1770	6407		1770	6300	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	2	323	2	2	59	260	1747	2	85	1851	235
RTOR Reduction (vph)	0	269	0	0	49	0	0	0	0	0	29	0
Lane Group Flow (vph)	158	56	0	0	14	0	260	1749	0	85	2057	0
Turn Type	Perm		Perm			Prot			Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	12.6	12.6			12.6		17.8	43.4		7.0	32.6	
Effective Green, g (s)	12.6	12.6			12.6		17.8	43.4		7.0	32.6	
Actuated g/C Ratio	0.17	0.17			0.17		0.24	0.58		0.09	0.43	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	256	266			217		420	3708		165	2738	
v/s Ratio Prot		0.04					c0.15	0.27		0.05	c0.33	
v/s Ratio Perm	c0.10				0.01							
v/c Ratio	0.62	0.21			0.06		0.62	0.47		0.52	0.75	
Uniform Delay, d1	29.0	26.9			26.2		25.6	9.2		32.4	17.8	
Progression Factor	1.00	1.00			1.00		0.63	0.33		1.44	1.05	
Incremental Delay, d2	4.4	0.4			0.1		2.4	0.4		2.4	1.7	
Delay (s)	33.3	27.3			26.4		18.6	3.4		49.1	20.4	
Level of Service	C	C			C		B	A		D	C	
Approach Delay (s)		29.3			26.4			5.3			21.5	
Approach LOS		C			C			A			C	

Intersection Summary

HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	2	1754	133	1867
Turn Type			Prot	
Protected Phases	8	2	1	6
Permitted Phases				
Detector Phase	8	2	1	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	20.0	38.0	17.0	55.0
Total Split (%)	26.7%	50.7%	22.7%	73.3%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	
Recall Mode	None	C-Max	None	C-Max
Act Effect Green (s)	8.0	46.1	10.8	61.7
Actuated g/C Ratio	0.11	0.61	0.14	0.82
v/c Ratio	0.39	0.48	0.57	0.38
Control Delay	11.4	10.0	46.4	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.4	10.0	46.4	0.4
LOS	B	A	D	A
Approach Delay	11.4	10.0		3.5
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 6.6

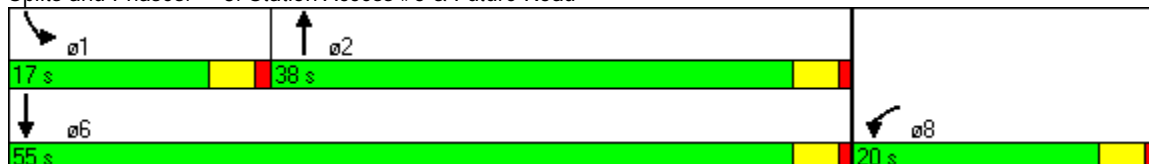
Intersection LOS: A

Intersection Capacity Utilization 48.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Station Access #5 & Future Road



Phasings

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Protected Phases	8	2	1	6
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	20.0	38.0	17.0	55.0
Total Split (%)	26.7%	50.7%	22.7%	73.3%
Maximum Green (s)	16.0	34.0	13.0	51.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag		Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0		11.0
Pedestrian Calls (#/hr)	5	5		5
90th %ile Green (s)	16.0	34.0	13.0	51.0
90th %ile Term Code	Ped	Coord	Max	Coord
70th %ile Green (s)	7.3	42.6	13.1	59.7
70th %ile Term Code	Gap	Coord	Gap	Coord
50th %ile Green (s)	5.5	46.1	11.4	61.5
50th %ile Term Code	Gap	Coord	Gap	Coord
30th %ile Green (s)	5.5	47.9	9.6	61.5
30th %ile Term Code	Gap	Coord	Gap	Coord
10th %ile Green (s)	0.0	60.0	7.0	71.0
10th %ile Term Code	Skip	Coord	Gap	Coord

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	1909	145	2029
v/c Ratio	0.39	0.48	0.57	0.38
Control Delay	11.4	10.0	46.4	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.4	10.0	46.4	0.4
Queue Length 50th (ft)	1	125	82	5
Queue Length 95th (ft)	37	231	m103	9
Internal Link Dist (ft)	1061	848		420
Turn Bay Length (ft)			100	
Base Capacity (vph)	423	3941	307	5275
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.48	0.47	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	2	92	1754	2	133	1867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.86		1.00	0.86
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1615		6407		1770	6408
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1615		6407		1770	6408
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	100	1907	2	145	2029
RTOR Reduction (vph)	91	0	0	0	0	0
Lane Group Flow (vph)	11	0	1909	0	145	2029
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	6.9		45.3		10.8	60.1
Effective Green, g (s)	6.9		45.3		10.8	60.1
Actuated g/C Ratio	0.09		0.60		0.14	0.80
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	149		3870		255	5135
v/s Ratio Prot	c0.01		c0.30		c0.08	0.32
v/s Ratio Perm						
v/c Ratio	0.08		0.49		0.57	0.40
Uniform Delay, d1	31.1		8.4		29.9	2.2
Progression Factor	1.00		1.00		1.36	0.10
Incremental Delay, d2	0.2		0.5		2.0	0.2
Delay (s)	31.3		8.8		42.8	0.4
Level of Service	C		A		D	A
Approach Delay (s)	31.3		8.8			3.2
Approach LOS	C		A			A

Intersection Summary

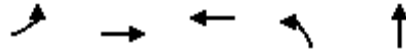
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

2030 Conditions
Base + DEMU Mitigations

Timings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Configurations	↶	↕	↕↶	↶↶	↶
Volume (vph)	255	636	495	762	2
Turn Type	Prot			Split	
Protected Phases	7	4	8	2	2
Permitted Phases					
Detector Phase	7	4	8	2	2
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	22.0	51.0	29.0	29.0	29.0
Total Split (%)	27.5%	63.8%	36.3%	36.3%	36.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	Max
Act Effect Green (s)	17.0	46.0	24.0	24.0	24.0
Actuated g/C Ratio	0.21	0.58	0.30	0.30	0.30
v/c Ratio	0.74	0.34	0.68	0.80	0.74
Control Delay	26.1	1.1	26.3	33.1	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	1.1	26.3	33.1	20.7
LOS	C	A	C	C	C
Approach Delay		8.3	26.3		28.6
Approach LOS		A	C		C

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 69 (86%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 21.5

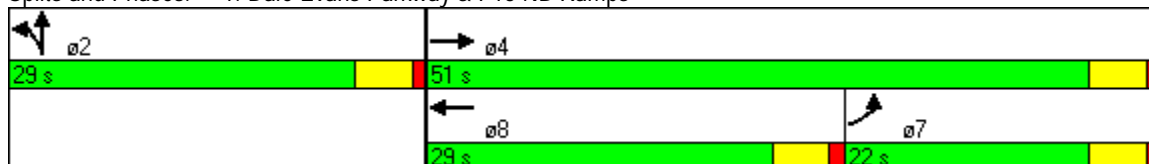
Intersection LOS: C

Intersection Capacity Utilization 117.5%

ICU Level of Service H

Analysis Period (min) 15

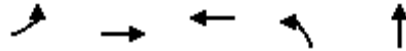
Splits and Phases: 1: Dale Evans Parkway & I-15 NB Ramps



Phasings

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Protected Phases	7	4	8	2	2
Permitted Phases					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0
Total Split (s)	22.0	51.0	29.0	29.0	29.0
Total Split (%)	27.5%	63.8%	36.3%	36.3%	36.3%
Maximum Green (s)	17.0	46.0	24.0	24.0	24.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	C-Max	Max	Max
Walk Time (s)		5.0	5.0	5.0	5.0
Flash Dont Walk (s)		18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)		5	5	5	5
90th %ile Green (s)	17.0	46.0	24.0	24.0	24.0
90th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
70th %ile Green (s)	17.0	46.0	24.0	24.0	24.0
70th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
50th %ile Green (s)	17.0	46.0	24.0	24.0	24.0
50th %ile Term Code	Max	Coord	Coord	MaxR	MaxR
30th %ile Green (s)	17.0	46.0	24.0	24.0	24.0
30th %ile Term Code	Hold	Coord	Coord	MaxR	MaxR
10th %ile Green (s)	17.0	46.0	24.0	24.0	24.0
10th %ile Term Code	Hold	Coord	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

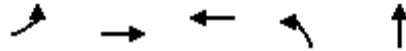
Offset: 69 (86%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	277	691	729	828	466
v/c Ratio	0.74	0.34	0.68	0.80	0.74
Control Delay	26.1	1.1	26.3	33.1	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	1.1	26.3	33.1	20.7
Queue Length 50th (ft)	101	1	153	195	104
Queue Length 95th (ft)	m#236	1	214	#264	220
Internal Link Dist (ft)		820	380		2022
Turn Bay Length (ft)	225			150	
Base Capacity (vph)	376	2035	1065	1030	634
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.34	0.68	0.80	0.74

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: Dale Evans Parkway & I-15 NB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗			↖↖		↖↖	↗				
Volume (vph)	255	636	0	0	495	176	762	2	427	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	0.95			0.95		0.97	1.00				
Frt	1.00	1.00			0.96		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1770	3539			3400		3433	1585				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	1770	3539			3400		3433	1585				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	277	691	0	0	538	191	828	2	464	0	0	0
RTOR Reduction (vph)	0	0	0	0	45	0	0	159	0	0	0	0
Lane Group Flow (vph)	277	691	0	0	684	0	828	307	0	0	0	0
Turn Type	Prot						Split					
Protected Phases	7	4			8		2	2				
Permitted Phases												
Actuated Green, G (s)	17.0	46.0			24.0		24.0	24.0				
Effective Green, g (s)	17.0	46.0			24.0		24.0	24.0				
Actuated g/C Ratio	0.21	0.57			0.30		0.30	0.30				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	376	2035			1020		1030	476				
v/s Ratio Prot	c0.16	0.20			c0.20		c0.24	0.19				
v/s Ratio Perm												
v/c Ratio	0.74	0.34			0.67		0.80	0.65				
Uniform Delay, d1	29.4	9.0			24.5		25.8	24.3				
Progression Factor	0.49	0.08			1.00		1.00	1.00				
Incremental Delay, d2	6.1	0.4			3.5		6.7	6.6				
Delay (s)	20.4	1.1			28.1		32.5	30.9				
Level of Service	C	A			C		C	C				
Approach Delay (s)		6.6			28.1			31.9			0.0	
Approach LOS		A			C			C			A	

Intersection Summary

HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Configurations	↑↑	↑	↵	↑↑	↵	↑
Volume (vph)	573	977	321	935	318	1
Turn Type		Perm	Prot		Split	
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Detector Phase	4	4	3	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	32.0	32.0	20.0	52.0	28.0	28.0
Total Split (%)	40.0%	40.0%	25.0%	65.0%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effect Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
Actuated g/C Ratio	0.34	0.34	0.19	0.59	0.29	0.29
v/c Ratio	0.52	1.07	1.05	0.49	0.68	0.88
Control Delay	6.7	63.6	85.7	5.6	33.1	40.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	63.6	85.7	5.6	33.1	40.7
LOS	A	E	F	A	C	D
Approach Delay	42.6			26.1		37.5
Approach LOS	D			C		D

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 71 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 35.7

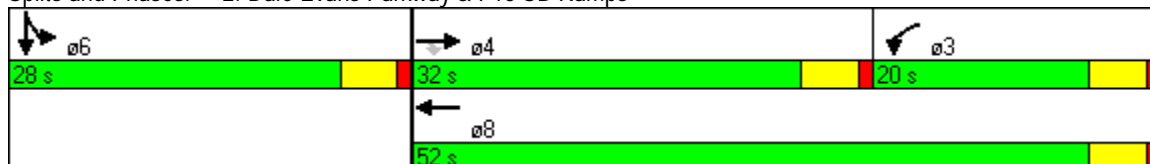
Intersection LOS: D

Intersection Capacity Utilization 117.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 2: Dale Evans Parkway & I-15 SB Ramps



Phasings

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Protected Phases	4		3	8	6	6
Permitted Phases		4				
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	28.0	28.0
Total Split (s)	32.0	32.0	20.0	52.0	28.0	28.0
Total Split (%)	40.0%	40.0%	25.0%	65.0%	35.0%	35.0%
Maximum Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	18.0	18.0
Pedestrian Calls (#/hr)	5	5		5	5	5
90th %ile Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
90th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
70th %ile Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
70th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
50th %ile Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
50th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
30th %ile Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
30th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR
10th %ile Green (s)	27.0	27.0	15.0	47.0	23.0	23.0
10th %ile Term Code	Coord	Coord	Max	Coord	MaxR	MaxR

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 71 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Queues

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	623	1062	349	1016	346	469
v/c Ratio	0.52	1.07	1.05	0.49	0.68	0.88
Control Delay	6.7	63.6	85.7	5.6	33.1	40.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	63.6	85.7	5.6	33.1	40.7
Queue Length 50th (ft)	26	~575	~203	170	152	174
Queue Length 95th (ft)	32	#381	m#326	154	244	#350
Internal Link Dist (ft)	920			820		1339
Turn Bay Length (ft)			300		300	
Base Capacity (vph)	1194	994	332	2079	509	534
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	0.52	1.07	1.05	0.49	0.68	0.88

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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Dale Evans Parkway & I-15 SB Ramps

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑	↑	
Volume (vph)	0	573	977	321	935	0	0	0	0	318	1	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3539	1583	1770	3539					1770	1584	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	1.00	
Satd. Flow (perm)		3539	1583	1770	3539					1770	1584	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	623	1062	349	1016	0	0	0	0	346	1	468
RTOR Reduction (vph)	0	0	460	0	0	0	0	0	0	0	79	0
Lane Group Flow (vph)	0	623	602	349	1016	0	0	0	0	346	390	0
Turn Type			Perm	Prot						Split		
Protected Phases		4		3	8					6	6	
Permitted Phases			4									
Actuated Green, G (s)		27.0	27.0	15.0	47.0					23.0	23.0	
Effective Green, g (s)		27.0	27.0	15.0	47.0					23.0	23.0	
Actuated g/C Ratio		0.34	0.34	0.19	0.59					0.29	0.29	
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1194	534	332	2079					509	455	
v/s Ratio Prot		0.18		c0.20	0.29					0.20	c0.25	
v/s Ratio Perm			c0.38									
v/c Ratio		0.52	1.13	1.05	0.49					0.68	0.86	
Uniform Delay, d1		21.3	26.5	32.5	9.5					25.2	26.9	
Progression Factor		0.26	2.18	0.91	0.52					1.00	1.00	
Incremental Delay, d2		1.2	74.4	53.4	0.5					7.2	18.4	
Delay (s)		6.7	132.2	83.0	5.5					32.4	45.4	
Level of Service		A	F	F	A					C	D	
Approach Delay (s)		85.8			25.3			0.0			39.9	
Approach LOS		F			C			A			D	

Intersection Summary

HCM Average Control Delay	54.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	117.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

3: Dale Evans Parkway & Station Access #1

5/26/2010

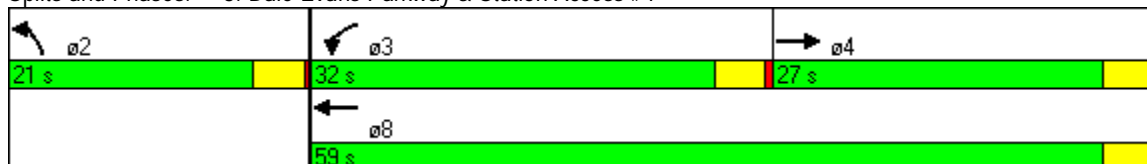


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑	↘
Volume (vph)	1266	355	1010	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	27.0	32.0	59.0	21.0
Total Split (%)	33.8%	40.0%	73.8%	26.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	23.7	22.2	49.9	22.1
Actuated g/C Ratio	0.30	0.28	0.62	0.28
v/c Ratio	0.73	0.78	0.35	0.46
Control Delay	15.1	28.9	6.6	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.1	28.9	6.6	6.2
LOS	B	C	A	A
Approach Delay	15.1		12.4	6.2
Approach LOS	B		B	A

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 76 (95%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 13.0
 Intersection LOS: B
 Intersection Capacity Utilization 65.7%
 ICU Level of Service C
 Analysis Period (min) 15

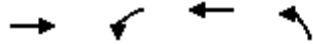
Splits and Phases: 3: Dale Evans Parkway & Station Access #1



Phasings

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	27.0	32.0	59.0	21.0
Total Split (%)	33.8%	40.0%	73.8%	26.3%
Maximum Green (s)	23.0	28.0	55.0	17.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	23.0	28.0	55.0	17.0
90th %ile Term Code	Max	Max	Hold	Coord
70th %ile Green (s)	25.4	25.6	55.0	17.0
70th %ile Term Code	Max	Gap	Hold	Coord
50th %ile Green (s)	25.7	22.7	52.4	19.6
50th %ile Term Code	Gap	Gap	Hold	Coord
30th %ile Green (s)	23.6	19.7	47.3	24.7
30th %ile Term Code	Gap	Gap	Hold	Coord
10th %ile Green (s)	20.8	15.1	39.9	32.1
10th %ile Term Code	Gap	Gap	Hold	Coord

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

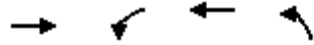
Offset: 76 (95%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

3: Dale Evans Parkway & Station Access #1

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1378	386	1098	310
v/c Ratio	0.73	0.78	0.35	0.46
Control Delay	15.1	28.9	6.6	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.1	28.9	6.6	6.2
Queue Length 50th (ft)	28	160	64	1
Queue Length 95th (ft)	44	m214	m69	64
Internal Link Dist (ft)	920		920	1731
Turn Bay Length (ft)		200		
Base Capacity (vph)	1934	620	3496	668
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.62	0.31	0.46

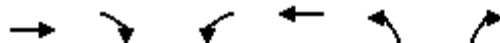
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Dale Evans Parkway & Station Access #1

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↙	↑↑↑	↘	
Volume (vph)	1266	2	355	1010	2	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.91	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6406		1770	5085	1612	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6406		1770	5085	1612	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1376	2	386	1098	2	308
RTOR Reduction (vph)	0	0	0	0	223	0
Lane Group Flow (vph)	1378	0	386	1098	87	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	23.7		22.2	49.9	22.1	
Effective Green, g (s)	23.7		22.2	49.9	22.1	
Actuated g/C Ratio	0.30		0.28	0.62	0.28	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1898		491	3172	445	
v/s Ratio Prot	c0.22		c0.22	0.22	c0.05	
v/s Ratio Perm						
v/c Ratio	0.73		0.79	0.35	0.20	
Uniform Delay, d1	25.2		26.7	7.2	22.2	
Progression Factor	0.51		0.74	0.92	1.00	
Incremental Delay, d2	1.3		6.5	0.1	1.0	
Delay (s)	14.1		26.2	6.7	23.1	
Level of Service	B		C	A	C	
Approach Delay (s)	14.1			11.8	23.1	
Approach LOS	B			B	C	

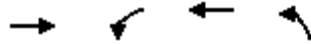
Intersection Summary

HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Dale Evans Parkway & Station Access #2

5/26/2010

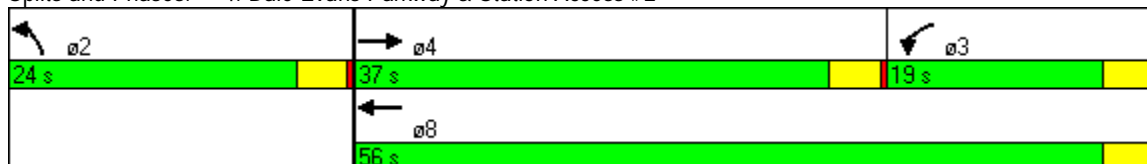


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑↑↑	↙	↑↑↑↑	↘
Volume (vph)	1211	81	929	2
Turn Type		Prot		
Protected Phases	4	3	8	2
Permitted Phases				
Detector Phase	4	3	8	2
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	37.0	19.0	56.0	24.0
Total Split (%)	46.3%	23.8%	70.0%	30.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	C-Max
Act Effect Green (s)	25.3	9.3	36.7	35.3
Actuated g/C Ratio	0.32	0.12	0.46	0.44
v/c Ratio	0.65	0.43	0.34	0.08
Control Delay	24.8	24.6	4.7	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.8	24.6	4.7	6.2
LOS	C	C	A	A
Approach Delay	24.8		6.3	6.2
Approach LOS	C		A	A

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 6 (8%), Referenced to phase 2:NBL and 6:, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 16.1
 Intersection LOS: B
 Intersection Capacity Utilization 35.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Dale Evans Parkway & Station Access #2



Phasings

4: Dale Evans Parkway & Station Access #2

5/26/2010



Lane Group	EBT	WBL	WBT	NBL
Protected Phases	4	3	8	2
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	37.0	19.0	56.0	24.0
Total Split (%)	46.3%	23.8%	70.0%	30.0%
Maximum Green (s)	33.0	15.0	52.0	20.0
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lead/Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0
Flash Dont Walk (s)	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0		0	0
90th %ile Green (s)	30.6	12.8	47.4	24.6
90th %ile Term Code	Gap	Gap	Hold	Coord
70th %ile Green (s)	27.9	10.7	42.6	29.4
70th %ile Term Code	Gap	Gap	Hold	Coord
50th %ile Green (s)	25.0	9.3	38.3	33.7
50th %ile Term Code	Gap	Gap	Hold	Coord
30th %ile Green (s)	23.5	7.9	35.4	36.6
30th %ile Term Code	Gap	Gap	Hold	Coord
10th %ile Green (s)	19.7	0.0	19.7	52.3
10th %ile Term Code	Gap	Skip	Hold	Coord

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

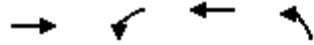
Offset: 6 (8%), Referenced to phase 2:NBL and 6:, Start of Green

Control Type: Actuated-Coordinated

Queues

4: Dale Evans Parkway & Station Access #2

5/26/2010



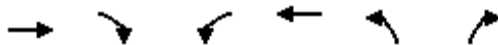
Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1318	88	1010	63
v/c Ratio	0.65	0.43	0.34	0.08
Control Delay	24.8	24.6	4.7	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.8	24.6	4.7	6.2
Queue Length 50th (ft)	164	39	18	1
Queue Length 95th (ft)	178	83	17	27
Internal Link Dist (ft)	920		920	736
Turn Bay Length (ft)		200		
Base Capacity (vph)	2643	332	4165	747
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.27	0.24	0.08

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Dale Evans Parkway & Station Access #2

5/26/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↑		↙	↑↑↑↑	↘	
Volume (vph)	1211	2	81	929	2	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	0.86		1.00	0.86	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	6406		1770	6408	1617	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	6406		1770	6408	1617	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1316	2	88	1010	2	61
RTOR Reduction (vph)	0	0	0	0	35	0
Lane Group Flow (vph)	1318	0	88	1010	28	0
Turn Type			Prot			
Protected Phases	4		3	8	2	
Permitted Phases						
Actuated Green, G (s)	25.3		8.1	37.4	34.6	
Effective Green, g (s)	25.3		8.1	37.4	34.6	
Actuated g/C Ratio	0.32		0.10	0.47	0.43	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	2026		179	2996	699	
v/s Ratio Prot	c0.21		c0.05	0.16	c0.02	
v/s Ratio Perm						
v/c Ratio	0.65		0.49	0.34	0.04	
Uniform Delay, d1	23.5		34.0	13.5	13.1	
Progression Factor	1.00		0.57	0.33	1.00	
Incremental Delay, d2	0.8		2.0	0.1	0.1	
Delay (s)	24.3		21.6	4.5	13.2	
Level of Service	C		C	A	B	
Approach Delay (s)	24.3			5.9	13.2	
Approach LOS	C			A	B	

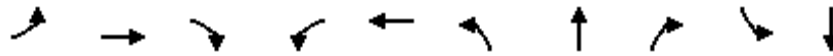
Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Dale Evans Parkway & Future Road

5/26/2010

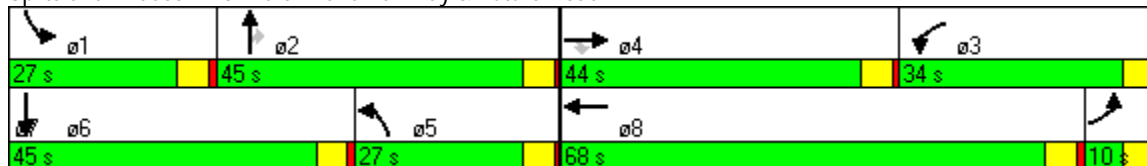


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↘	↑↑	↗	↘↗	↑↑	↘↗	↑↑↑	↗	↘↗	↑↑↑
Volume (vph)	17	141	363	687	89	515	722	586	485	969
Turn Type	Prot		Perm	Prot		Prot		Perm	Prot	
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	10.0	44.0	44.0	34.0	68.0	27.0	45.0	45.0	27.0	45.0
Total Split (%)	6.7%	29.3%	29.3%	22.7%	45.3%	18.0%	30.0%	30.0%	18.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max
Act Effect Green (s)	15.8	17.6	17.6	29.2	37.4	22.2	40.3	40.3	22.2	40.3
Actuated g/C Ratio	0.12	0.14	0.14	0.23	0.29	0.17	0.31	0.31	0.17	0.31
v/c Ratio	0.08	0.32	0.83	0.96	0.25	0.95	0.50	0.76	0.90	0.68
Control Delay	47.7	50.6	28.8	74.6	16.3	80.4	38.9	15.7	72.0	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	50.6	28.8	74.6	16.3	80.4	38.9	15.7	72.0	42.8
LOS	D	D	C	E	B	F	D	B	E	D
Approach Delay		35.3			59.4		43.2			52.4
Approach LOS		D			E		D			D

Intersection Summary

Cycle Length: 150	
Actuated Cycle Length: 129.4	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 48.3	Intersection LOS: D
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

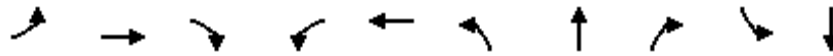
Splits and Phases: 5: Dale Evans Parkway & Future Road



Phasings

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Protected Phases	7	4		3	8	5	2		1	6
Permitted Phases			4					2		
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	44.0	44.0	9.0	44.0	9.0	44.0	44.0	9.0	44.0
Total Split (s)	10.0	44.0	44.0	34.0	68.0	27.0	45.0	45.0	27.0	45.0
Total Split (%)	6.7%	29.3%	29.3%	22.7%	45.3%	18.0%	30.0%	30.0%	18.0%	30.0%
Maximum Green (s)	5.0	39.0	39.0	29.0	63.0	22.0	40.0	40.0	22.0	40.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max
Walk Time (s)		5.0	5.0		5.0		5.0	5.0		5.0
Flash Dont Walk (s)		34.0	34.0		34.0		34.0	34.0		34.0
Pedestrian Calls (#/hr)		5	5		5		5	5		5
90th %ile Green (s)	29.0	39.0	39.0	29.0	39.0	22.0	40.0	40.0	22.0	40.0
90th %ile Term Code	Hold	Ped	Ped	Max	Ped	Max	MaxR	MaxR	Max	MaxR
70th %ile Green (s)	38.6	21.0	21.0	29.0	11.4	22.0	40.0	40.0	22.0	40.0
70th %ile Term Code	Hold	Gap	Gap	Max	Gap	Max	MaxR	MaxR	Max	MaxR
50th %ile Green (s)	0.0	14.5	14.5	29.0	48.5	22.0	40.0	40.0	22.0	40.0
50th %ile Term Code	Skip	Gap	Gap	Max	Hold	Max	MaxR	MaxR	Max	MaxR
30th %ile Green (s)	0.0	9.5	9.5	29.0	43.5	22.0	40.0	40.0	22.0	40.0
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Max	MaxR	MaxR	Max	MaxR
10th %ile Green (s)	0.0	7.9	7.9	29.0	41.9	22.0	40.0	40.0	22.0	40.0
10th %ile Term Code	Skip	Gap	Gap	Max	Hold	Max	MaxR	MaxR	Max	MaxR

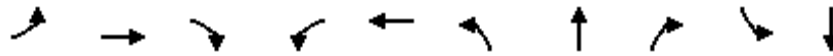
Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 129.4
 Control Type: Semi Act-Uncoord
 90th %ile Actuated Cycle: 150
 70th %ile Actuated Cycle: 132
 50th %ile Actuated Cycle: 125.5
 30th %ile Actuated Cycle: 120.5
 10th %ile Actuated Cycle: 118.9

Queues

5: Dale Evans Parkway & Future Road

5/26/2010



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	153	395	747	263	560	785	637	527	1075
v/c Ratio	0.08	0.32	0.83	0.96	0.25	0.95	0.50	0.76	0.90	0.68
Control Delay	47.7	50.6	28.8	74.6	16.3	80.4	38.9	15.7	72.0	42.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	50.6	28.8	74.6	16.3	80.4	38.9	15.7	72.0	42.8
Queue Length 50th (ft)	15	61	76	309	25	233	187	85	217	275
Queue Length 95th (ft)	39	93	195	#562	77	#443	293	304	#407	417
Internal Link Dist (ft)		1660			920		920			1521
Turn Bay Length (ft)						100		150	100	
Base Capacity (vph)	216	1074	690	775	1655	588	1583	842	588	1580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.14	0.57	0.96	0.16	0.95	0.50	0.76	0.90	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

5: Dale Evans Parkway & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗	↘	↖	↗	↘
Volume (vph)	17	141	363	687	89	153	515	722	586	485	969	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95		0.97	0.91	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	3433	3204		3433	5085	1583	3433	5070	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	153	395	747	97	166	560	785	637	527	1053	22
RTOR Reduction (vph)	0	0	260	0	119	0	0	0	353	0	1	0
Lane Group Flow (vph)	18	153	135	747	144	0	560	785	284	527	1074	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	12.6	17.6	17.6	32.4	37.4		22.2	40.3	40.3	22.2	40.3	
Effective Green, g (s)	12.6	17.6	17.6	32.4	37.4		22.2	40.3	40.3	22.2	40.3	
Actuated g/C Ratio	0.10	0.13	0.13	0.24	0.28		0.17	0.30	0.30	0.17	0.30	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	168	470	210	839	904		575	1547	481	575	1542	
v/s Ratio Prot	0.01	0.04		c0.22	0.04		c0.16	0.15		c0.15	c0.21	
v/s Ratio Perm			c0.09						0.18			
v/c Ratio	0.11	0.33	0.64	0.89	0.16		0.97	0.51	0.59	0.92	0.70	
Uniform Delay, d1	54.8	52.1	54.5	48.3	35.7		54.9	37.9	39.1	54.2	40.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.4	6.6	11.6	0.1		30.7	1.2	5.3	19.4	2.6	
Delay (s)	55.1	52.5	61.0	60.0	35.8		85.6	39.1	44.4	73.6	43.3	
Level of Service	E	D	E	E	D		F	D	D	E	D	
Approach Delay (s)		58.5			53.7			53.9			53.3	
Approach LOS		E			D			D			D	

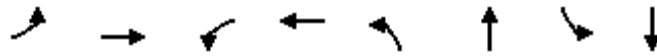
Intersection Summary

HCM Average Control Delay	54.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

6: Station Access #3 & Future Road

5/26/2010



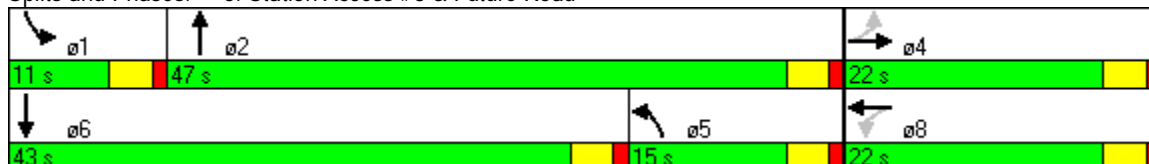
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	→		↔	↖	↗↗↗	↘	↘↘↘
Volume (vph)	48	2	2	2	71	1736	56	1899
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0	47.0	11.0	43.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	18.8%	58.8%	13.8%	53.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	9.4	9.4		9.4	9.9	57.7	7.8	53.3
Actuated g/C Ratio	0.12	0.12		0.12	0.12	0.72	0.10	0.67
v/c Ratio	0.26	0.39		0.20	0.35	0.41	0.35	0.50
Control Delay	33.6	11.0		13.0	25.0	1.4	39.2	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	11.0		13.0	25.0	1.4	39.2	9.7
LOS	C	B		B	C	A	D	A
Approach Delay		18.2		13.0		2.3		10.5
Approach LOS		B		B		A		B

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 10 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.50
 Intersection Signal Delay: 7.2
 Intersection Capacity Utilization 51.9%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

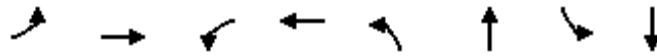
Splits and Phases: 6: Station Access #3 & Future Road



Phasings

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	20.0	20.0	9.0	21.0	8.0	21.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0	47.0	11.0	43.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	18.8%	58.8%	13.8%	53.8%
Maximum Green (s)	18.0	18.0	18.0	18.0	11.0	43.0	7.0	39.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	16.0	16.0	16.0	16.0	11.0	43.0	9.0	41.0
90th %ile Term Code	Ped	Ped	Hold	Hold	Max	Coord	Max	Coord
70th %ile Green (s)	9.9	9.9	9.9	9.9	11.0	48.8	9.3	47.1
70th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
50th %ile Green (s)	8.4	8.4	8.4	8.4	11.0	51.5	8.1	48.6
50th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
30th %ile Green (s)	7.0	7.0	7.0	7.0	11.0	65.0	0.0	50.0
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Skip	Coord
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0	76.0	0.0	76.0
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip	Coord	Skip	Coord

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 10 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

6: Station Access #3 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	110	46	77	1889	61	2135
v/c Ratio	0.26	0.39	0.20	0.35	0.41	0.35	0.50
Control Delay	33.6	11.0	13.0	25.0	1.4	39.2	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	11.0	13.0	25.0	1.4	39.2	9.7
Queue Length 50th (ft)	24	1	2	36	23	29	163
Queue Length 95th (ft)	52	41	28	m77	41	64	252
Internal Link Dist (ft)		813	777		420		920
Turn Bay Length (ft)				100		100	
Base Capacity (vph)	386	441	395	243	4619	179	4255
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.25	0.12	0.32	0.41	0.34	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

6: Station Access #3 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	2	99	2	2	39	71	1736	2	56	1899	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1588			1630		1770	6407		1770	6376	
Flt Permitted	0.92	1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1718	1588			1611		1770	6407		1770	6376	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	2	108	2	2	42	77	1887	2	61	2064	71
RTOR Reduction (vph)	0	97	0	0	38	0	0	0	0	0	4	0
Lane Group Flow (vph)	52	13	0	0	8	0	77	1889	0	61	2131	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	8.3	8.3			8.3		9.7	54.4		5.3	50.0	
Effective Green, g (s)	8.3	8.3			8.3		9.7	54.4		5.3	50.0	
Actuated g/C Ratio	0.10	0.10			0.10		0.12	0.68		0.07	0.62	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	178	165			167		215	4357		117	3985	
v/s Ratio Prot		0.01					0.04	c0.29		0.03	c0.33	
v/s Ratio Perm	c0.03				0.01							
v/c Ratio	0.29	0.08			0.05		0.36	0.43		0.52	0.53	
Uniform Delay, d1	33.1	32.4			32.3		32.3	5.8		36.1	8.4	
Progression Factor	1.00	1.00			1.00		0.66	0.17		1.00	1.00	
Incremental Delay, d2	0.9	0.2			0.1		0.9	0.3		4.1	0.5	
Delay (s)	34.1	32.6			32.4		22.2	1.3		40.3	9.0	
Level of Service	C	C			C		C	A		D	A	
Approach Delay (s)		33.1			32.4			2.1			9.8	
Approach LOS		C			C			A			A	

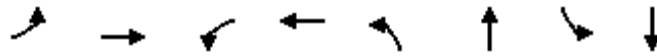
Intersection Summary

HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	145	2	2	2	239	1607	78	1703
Turn Type	Perm		Perm		Prot		Prot	
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	21.0	21.0	21.0	21.0	23.0	46.0	13.0	36.0
Total Split (%)	26.3%	26.3%	26.3%	26.3%	28.8%	57.5%	16.3%	45.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effect Green (s)	13.3	13.3		13.3	17.1	48.6	8.1	37.6
Actuated g/C Ratio	0.17	0.17		0.17	0.21	0.61	0.10	0.47
v/c Ratio	0.64	0.61		0.24	0.69	0.45	0.47	0.70
Control Delay	42.8	9.0		11.1	38.3	1.4	37.7	10.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	9.0		11.1	38.3	1.4	37.7	10.1
LOS	D	A		B	D	A	D	B
Approach Delay		20.0		11.1		6.2		11.2
Approach LOS		C		B		A		B

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 2 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 10.0

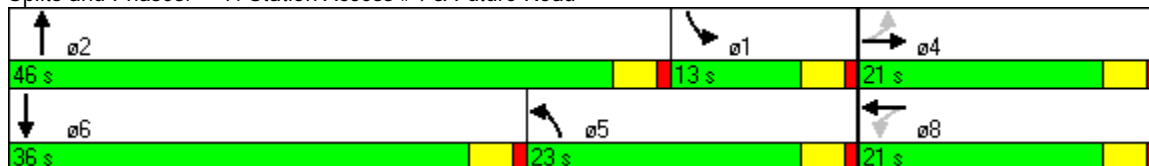
Intersection LOS: A

Intersection Capacity Utilization 70.0%

ICU Level of Service C

Analysis Period (min) 15

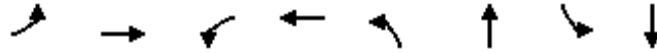
Splits and Phases: 7: Station Access #4 & Future Road



Phasings

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	21.0	21.0	21.0	21.0	23.0	46.0	13.0	36.0
Total Split (%)	26.3%	26.3%	26.3%	26.3%	28.8%	57.5%	16.3%	45.0%
Maximum Green (s)	17.0	17.0	17.0	17.0	19.0	42.0	9.0	32.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag					Lag	Lead	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0	5.0	5.0				5.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0				11.0
Pedestrian Calls (#/hr)	5	5	0	0				5
90th %ile Green (s)	17.0	17.0	17.0	17.0	19.0	42.0	9.0	32.0
90th %ile Term Code	Max	Max	Hold	Hold	Max	Coord	Max	Coord
70th %ile Green (s)	16.0	16.0	16.0	16.0	19.0	43.0	9.0	33.0
70th %ile Term Code	Gap	Gap	Hold	Hold	Max	Coord	Max	Coord
50th %ile Green (s)	13.8	13.8	13.8	13.8	19.0	45.2	9.0	35.2
50th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Max	Coord
30th %ile Green (s)	11.4	11.4	11.4	11.4	17.8	48.8	7.8	38.8
30th %ile Term Code	Gap	Gap	Hold	Hold	Hold	Coord	Gap	Coord
10th %ile Green (s)	8.1	8.1	8.1	8.1	10.8	63.9	0.0	49.1
10th %ile Term Code	Gap	Gap	Hold	Hold	Gap	Coord	Skip	Coord

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 2 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

7: Station Access #4 & Future Road

5/26/2010



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	325	63	260	1749	85	2086
v/c Ratio	0.64	0.61	0.24	0.69	0.45	0.47	0.70
Control Delay	42.8	9.0	11.1	38.3	1.4	37.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	9.0	11.1	38.3	1.4	37.7	10.1
Queue Length 50th (ft)	74	1	2	143	5	45	67
Queue Length 95th (ft)	129	65	33	218	10	93	79
Internal Link Dist (ft)		873	973		420		420
Turn Bay Length (ft)				200		100	
Base Capacity (vph)	316	591	315	420	3891	199	2988
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.55	0.20	0.62	0.45	0.43	0.70

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Station Access #4 & Future Road

5/26/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	145	2	297	2	2	54	239	1607	2	78	1703	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	0.86		1.00	0.86	
Frt	1.00	0.85			0.87		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1585			1625		1770	6407		1770	6300	
Flt Permitted	0.80	1.00			0.78		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1485	1585			1261		1770	6407		1770	6300	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	2	323	2	2	59	260	1747	2	85	1851	235
RTOR Reduction (vph)	0	269	0	0	49	0	0	0	0	0	26	0
Lane Group Flow (vph)	158	56	0	0	14	0	260	1749	0	85	2060	0
Turn Type	Perm		Perm				Prot		Prot			
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	13.3	13.3			13.3		18.0	47.7		7.0	36.7	
Effective Green, g (s)	13.3	13.3			13.3		18.0	47.7		7.0	36.7	
Actuated g/C Ratio	0.17	0.17			0.17		0.22	0.60		0.09	0.46	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	247	264			210		398	3820		155	2890	
v/s Ratio Prot		0.04					c0.15	0.27		0.05	c0.33	
v/s Ratio Perm	c0.11				0.01							
v/c Ratio	0.64	0.21			0.07		0.65	0.46		0.55	0.71	
Uniform Delay, d1	31.1	28.8			28.1		28.2	9.0		35.0	17.4	
Progression Factor	1.00	1.00			1.00		1.03	0.11		0.88	0.50	
Incremental Delay, d2	5.4	0.4			0.1		3.4	0.4		3.5	1.4	
Delay (s)	36.5	29.2			28.2		32.3	1.3		34.3	10.1	
Level of Service	D	C			C		C	A		C	B	
Approach Delay (s)		31.6			28.2			5.3			11.1	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

8: Station Access #5 & Future Road

5/26/2010

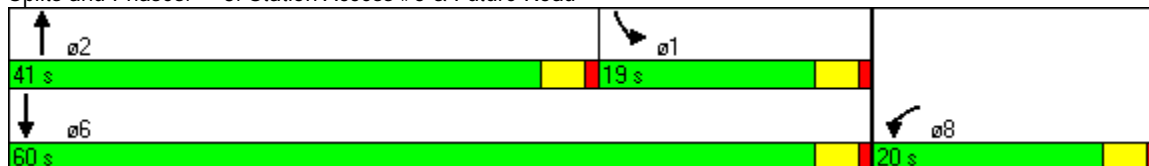


Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	2	1754	133	1867
Turn Type			Prot	
Protected Phases	8	2	1	6
Permitted Phases				
Detector Phase	8	2	1	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	20.0	41.0	19.0	60.0
Total Split (%)	25.0%	51.3%	23.8%	75.0%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?		Yes	Yes	
Recall Mode	None	C-Max	None	C-Max
Act Effect Green (s)	8.0	46.9	15.0	66.7
Actuated g/C Ratio	0.10	0.59	0.19	0.83
v/c Ratio	0.41	0.51	0.44	0.38
Control Delay	12.2	11.4	20.5	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.2	11.4	20.5	0.4
LOS	B	B	C	A
Approach Delay	12.2	11.4		1.7
Approach LOS	B	B		A

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 75 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 6.4
 Intersection LOS: A
 Intersection Capacity Utilization 48.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 8: Station Access #5 & Future Road



Phasings

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Protected Phases	8	2	1	6
Permitted Phases				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0
Total Split (s)	20.0	41.0	19.0	60.0
Total Split (%)	25.0%	51.3%	23.8%	75.0%
Maximum Green (s)	16.0	37.0	15.0	56.0
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0
Lead/Lag		Lead	Lag	
Lead-Lag Optimize?		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0
Recall Mode	None	C-Max	None	C-Max
Walk Time (s)	5.0	5.0		5.0
Flash Dont Walk (s)	11.0	11.0		11.0
Pedestrian Calls (#/hr)	5	5		5
90th %ile Green (s)	16.0	37.0	15.0	56.0
90th %ile Term Code	Ped	Coord	Max	Coord
70th %ile Green (s)	7.4	45.6	15.0	64.6
70th %ile Term Code	Gap	Coord	Hold	Coord
50th %ile Green (s)	5.6	47.4	15.0	66.4
50th %ile Term Code	Gap	Coord	Hold	Coord
30th %ile Green (s)	5.5	47.5	15.0	66.5
30th %ile Term Code	Gap	Coord	Hold	Coord
10th %ile Green (s)	0.0	57.0	15.0	76.0
10th %ile Term Code	Skip	Coord	Hold	Coord

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 75 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Control Type: Actuated-Coordinated

Queues

8: Station Access #5 & Future Road

5/26/2010



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	1909	145	2029
v/c Ratio	0.41	0.51	0.44	0.38
Control Delay	12.2	11.4	20.5	0.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.2	11.4	20.5	0.4
Queue Length 50th (ft)	1	146	70	5
Queue Length 95th (ft)	39	242	m93	10
Internal Link Dist (ft)	1061	848		420
Turn Bay Length (ft)			100	
Base Capacity (vph)	403	3757	332	5343
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.51	0.44	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

8: Station Access #5 & Future Road

5/26/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	2	92	1754	2	133	1867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.86		1.00	0.86
Frt	0.87		1.00		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1615		6407		1770	6408
Flt Permitted	1.00		1.00		0.95	1.00
Satd. Flow (perm)	1615		6407		1770	6408
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	100	1907	2	145	2029
RTOR Reduction (vph)	91	0	0	0	0	0
Lane Group Flow (vph)	11	0	1909	0	145	2029
Turn Type					Prot	
Protected Phases	8		2		1	6
Permitted Phases						
Actuated Green, G (s)	6.9		46.1		15.0	65.1
Effective Green, g (s)	6.9		46.1		15.0	65.1
Actuated g/C Ratio	0.09		0.58		0.19	0.81
Clearance Time (s)	4.0		4.0		4.0	4.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	139		3692		332	5215
v/s Ratio Prot	c0.01		c0.30		0.08	c0.32
v/s Ratio Perm						
v/c Ratio	0.08		0.52		0.44	0.39
Uniform Delay, d1	33.6		10.2		28.8	2.0
Progression Factor	1.00		1.00		0.59	0.10
Incremental Delay, d2	0.2		0.5		0.7	0.2
Delay (s)	33.9		10.8		17.7	0.4
Level of Service	C		B		B	A
Approach Delay (s)	33.9		10.8			1.5
Approach LOS	C		B			A

Intersection Summary

HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Victorville Option 3
Signal Warrant Analysis Worksheets

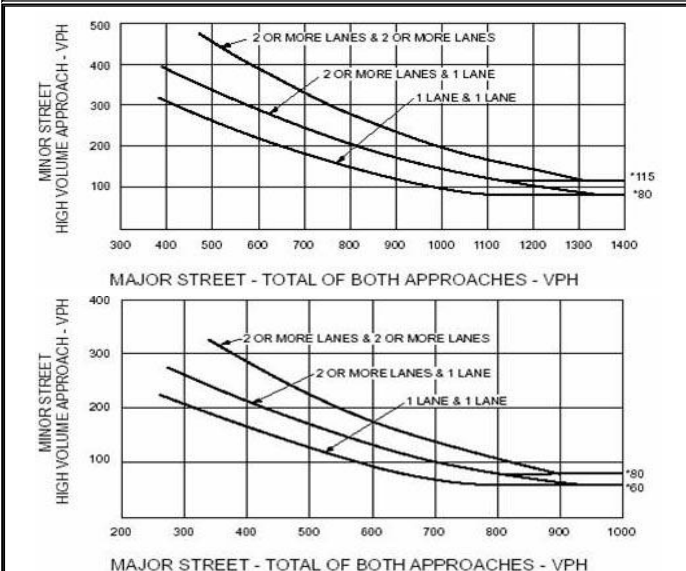
Warrants Volume

Information		
Analyst Agency/Co Date Performed Project ID East/West Street File Name	AB AECOM 06/15/09 DesertXpress Dale Evans Parkway Vic3-Int 1 Ex+DMU.xhy	Intersection Jurisdiction Units Time Period Analyzed North/South Street Major Street
		I-15 NB Ramps/DaleEvansPkwy Caltrans U.S. Customary PM I-15 NB Ramps East-West
Project Description <i>DesertXpress</i>		

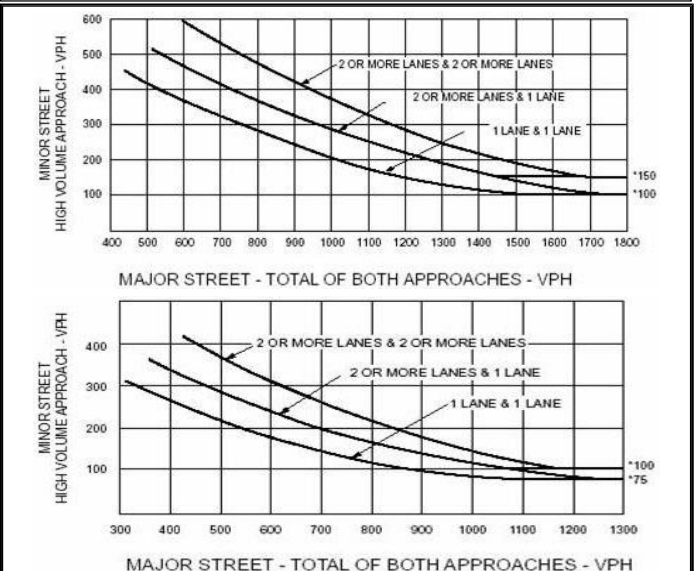
Warrant 1

Condition A - Minimum Vehicular Volume						Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)			Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)		
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c	Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c
1.....	1.....	500	400	350	150	120	105	1.....	1.....	750	600	525	75	60	53
2 or more...	1.....	600	480	420	150	120	105	2 or more...	1.....	900	720	630	75	60	53
2 or more...	2 or more...	600	480	420	200	160	140	2 or more...	2 or more...	900	720	630	100	80	70
1.....	2 or more...	500	400	350	200	160	140	1.....	2 or more...	750	600	525	100	80	70

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 1				Minor Street Lanes 1			Speed		Population		
							30		10000+		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	436	583	1019	No	Yes	No	No	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	436	583	1019	0	1	0	0	1	1	1	

Warrants Volume

Information

Analyst: AB Agency/Co: AECOM Date Performed: 06/15/09 Project ID: DesertXpress East/West Street: Dale Evans Parkway File Name: Vic3-Int 2 Ex+DMU.xhy	Intersection: I-15 SB Ramps/DaleEvansPkwy Jurisdiction: Caltrans Units: U.S. Customary Time Period Analyzed: PM North/South Street: I-15 SB Ramps Major Street: East-West
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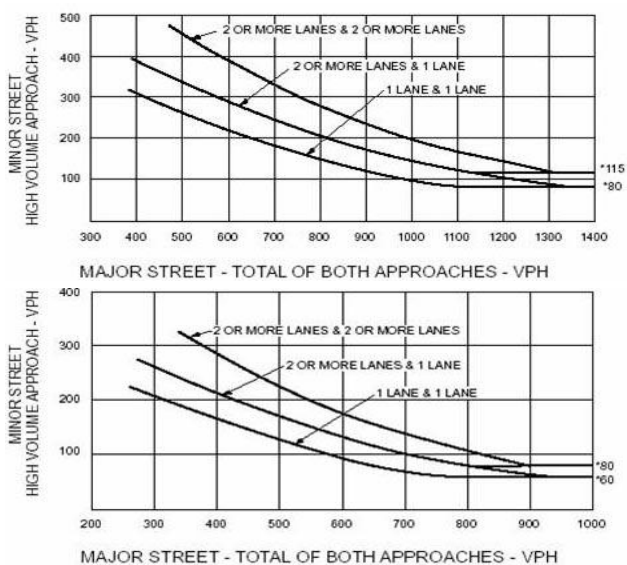
Project Description *DesertXpress*

Warrant 1

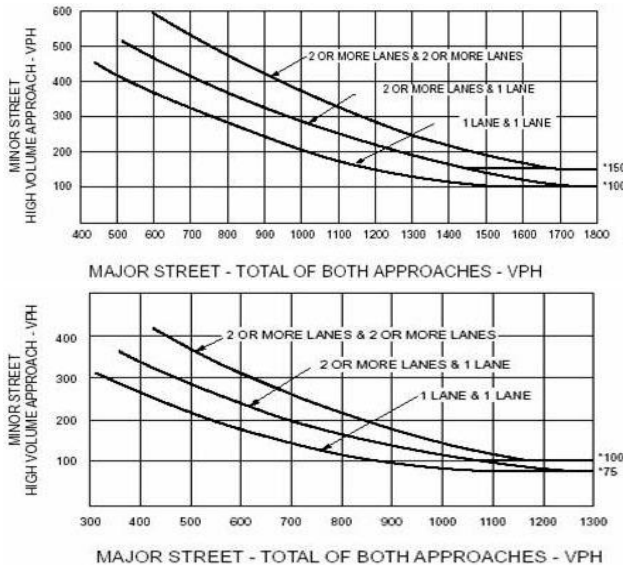
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100%*	80%*	70%*	100%*	80%* 70%*
1.....	1.....	500	400	350	150	120 105
2 or more...	1.....	600	480	420	150	120 105
2 or more...	2 or more...	600	480	420	200	160 140
1.....	2 or more...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100%*	80%*	70%*	100%*	80%* 70%*
1.....	1.....	750	600	525	75	60 53
2 or more...	1.....	900	720	630	75	60 53
2 or more...	2 or more...	900	720	630	100	80 70
1.....	2 or more...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	30	2 (100%)	3A (100%)	3B (100%)
07-08	0	0	0	No	No	No	No	No	No	No	No
08-09	0	0	0	No	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No	No
16-17	1230	182	1412	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17-18	0	0	0	No	No	No	No	No	No	No	No
18-19	0	0	0	No	No	No	No	No	No	No	No
Totals	1230	182	1412	1	1	1	1	1	1	1	1

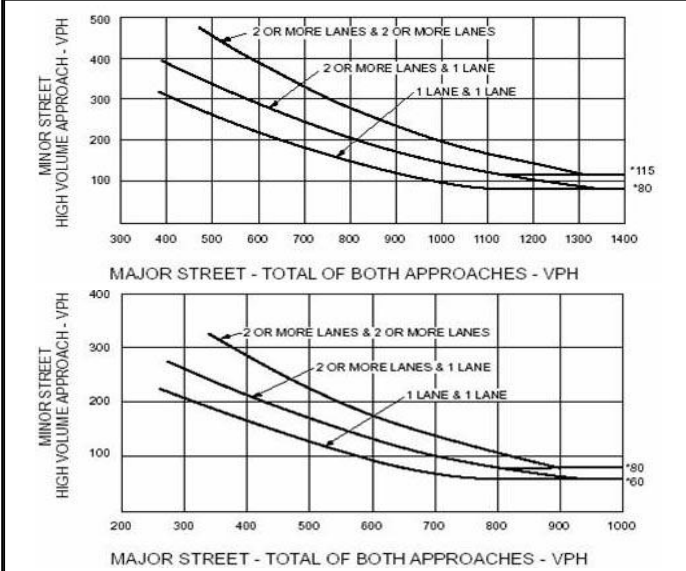
Warrants Volume

Information		
Analyst	AB	Intersection
Agency/Co	AECOM	Jurisdiction
Date Performed	06/15/09	Units
Project ID	DesertXpress	Time Period Analyzed
East/West Street	Dale Evans Parkway	North/South Street
File Name	Vic3-Int 1 Ex+EMU.xhy	Major Street
		I-15 NB Ramps/DaleEvansPkwy
		Caltrans
		U.S. Customary
		PM
		I-15 NB Ramps
		East-West
Project Description <i>DesertXpress</i>		

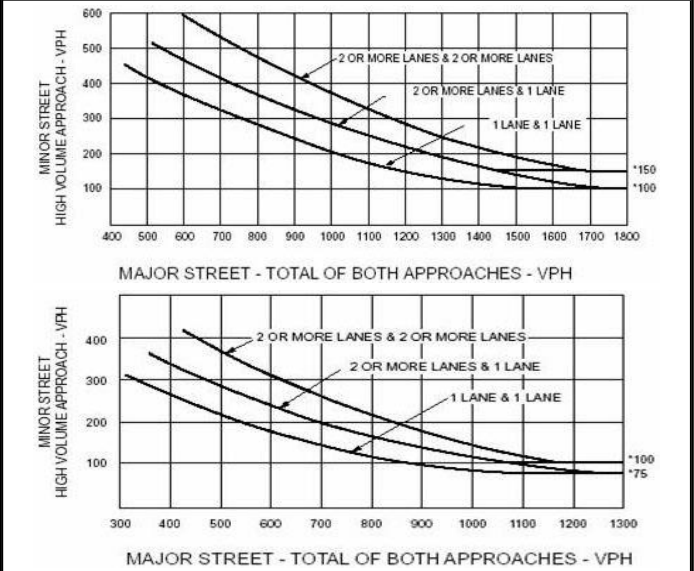
Warrant 1

Condition A - Minimum Vehicular Volume						Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)			Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)		
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c	Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c
1.....	1.....	500	400	350	150	120	105	1.....	1.....	750	600	525	75	60	53
2 or more...	1.....	600	480	420	150	120	105	2 or more...	1.....	900	720	630	75	60	53
2 or more...	2 or more...	600	480	420	200	160	140	2 or more...	2 or more...	900	720	630	100	80	70
1.....	2 or more...	500	400	350	200	160	140	1.....	2 or more...	750	600	525	100	80	70

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 1				Minor Street Lanes 1			Speed		Population		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	30	2	3A (100%)	3B (100%)
07-08	0	0	0	No	No	No	No		No	No	No
08-09	0	0	0	No	No	No	No		No	No	No
09-10	0	0	0	No	No	No	No		No	No	No
10-11	0	0	0	No	No	No	No		No	No	No
11-12	0	0	0	No	No	No	No		No	No	No
12-13	0	0	0	No	No	No	No		No	No	No
13-14	0	0	0	No	No	No	No		No	No	No
14-15	0	0	0	No	No	No	No		No	No	No
15-16	0	0	0	No	No	No	No		No	No	No
16-17	522	814	1336	Yes	Yes	No	No		Yes	Yes	Yes
17-18	0	0	0	No	No	No	No		No	No	No
18-19	0	0	0	No	No	No	No		No	No	No
Totals	522	814	1336	1	1	0	0		1	1	1

Warrants Volume

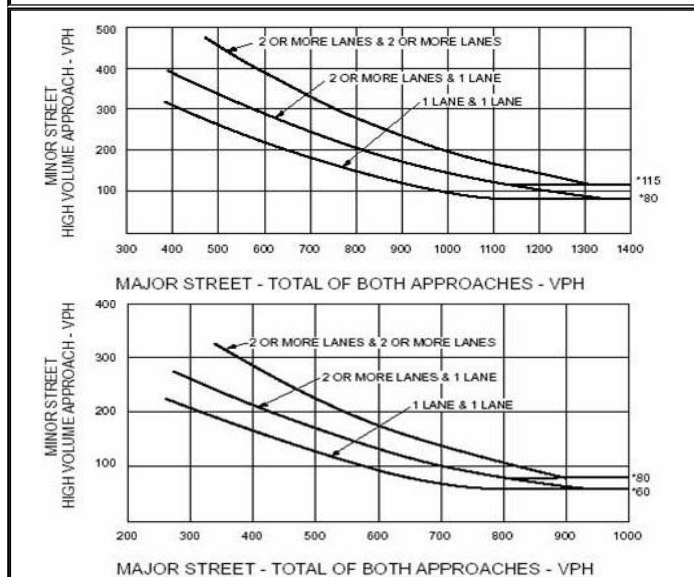
Information		
Analyst	AB	Intersection
Agency/Co	AECOM	Jurisdiction
Date Performed	06/15/09	Units
Project ID	DesertXpress	Time Period Analyzed
East/West Street	Dale Evans Parkway	North/South Street
File Name	Vic3-Int 2 Ex+EMU.xhy	Major Street
		I-15 SB Ramps/DaleEvansPkwy
		Caltrans
		U.S. Customary
		PM
		I-15 SB Ramps
		East-West

Project Description *DesertXpress*

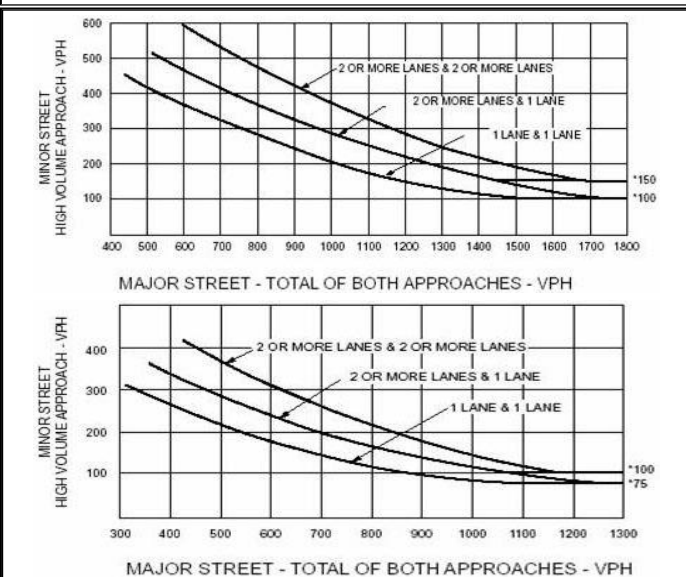
Warrant 1

Condition A - Minimum Vehicular Volume						Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)			Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)		
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c	Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c
1.....	1.....	500	400	350	150	120	105	1.....	1.....	750	600	525	75	60	53
2 or more...	1.....	600	480	420	150	120	105	2 or more...	1.....	900	720	630	75	60	53
2 or more...	2 or more...	600	480	420	200	160	140	2 or more...	2 or more...	900	720	630	100	80	70
1.....	2 or more...	500	400	350	200	160	140	1.....	2 or more...	750	600	525	100	80	70

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 1				Minor Street Lanes 1				Speed		Population		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	30	2	3A (100%)	3B (100%)	10000+
07-08	0	0	0	No	No	No	No		No	No	No	
08-09	0	0	0	No	No	No	No		No	No	No	
09-10	0	0	0	No	No	No	No		No	No	No	
10-11	0	0	0	No	No	No	No		No	No	No	
11-12	0	0	0	No	No	No	No		No	No	No	
12-13	0	0	0	No	No	No	No		No	No	No	
13-14	0	0	0	No	No	No	No		No	No	No	
14-15	0	0	0	No	No	No	No		No	No	No	
15-16	0	0	0	No	No	No	No		No	No	No	
16-17	1720	197	1917	Yes	Yes	Yes	Yes		Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No		No	No	No	
18-19	0	0	0	No	No	No	No		No	No	No	
Totals	1720	197	1917	1	1	1	1		1	1	1	

Warrants Volume

Information

Analyst	AB	Intersection	I-15 NB Ramps/DaleEvansPkwy
Agency/Co	AECOM	Jurisdiction	Caltrans
Date Performed	06/15/09	Units	U.S. Customary
Project ID	DesertXpress	Time Period Analyzed	PM
East/West Street	Dale Evans Parkway	North/South Street	I-15 NB Ramps
File Name	Vic3-Int 1 2013+DMU.xhy	Major Street	East-West

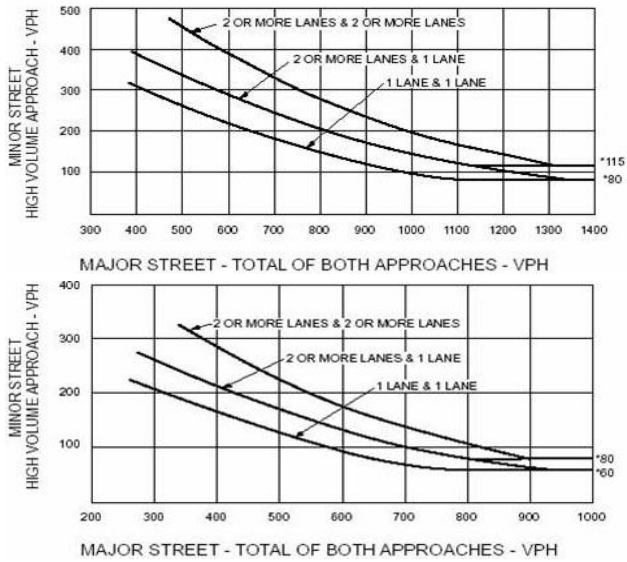
Project Description *DesertXpress*

Warrant 1

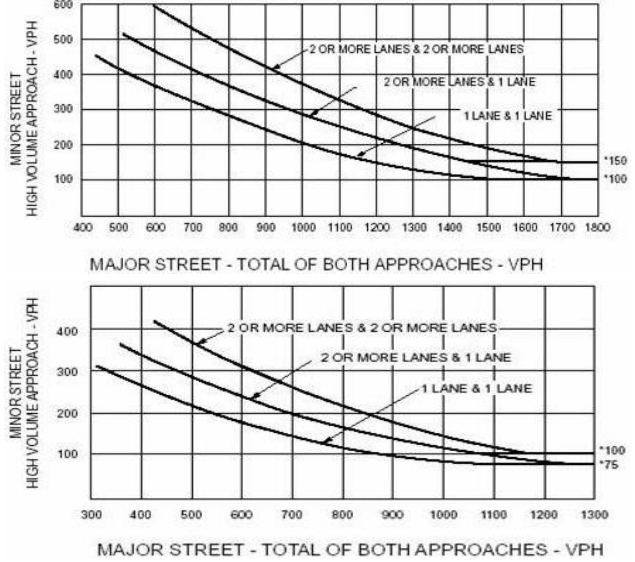
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	500	400	350	150	120 105
2 or more ...	1.....	600	480	420	150	120 105
2 or more ...	2 or more ...	600	480	420	200	160 140
1.....	2 or more ...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	750	600	525	75	60 53
2 or more ...	1.....	900	720	630	75	60 53
2 or more ...	2 or more ...	900	720	630	100	80 70
1.....	2 or more ...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	651	699	1350	Yes	Yes	No	Yes	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	651	699	1350	1	1	0	1	1	1	1	

Warrants Volume

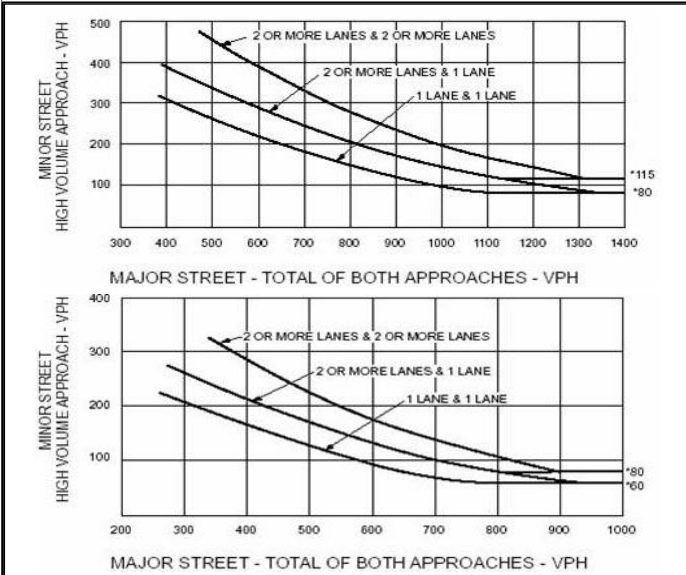
Information		
Analyst	AB	Intersection
Agency/Co	AECOM	Jurisdiction
Date Performed	06/15/09	Units
Project ID	DesertXpress	Time Period Analyzed
East/West Street	Dale Evans Parkway	North/South Street
File Name	Vic3-Int 2 2013+DMU.xhy	Major Street
		I-15 SB Ramps/DaleEvansPkwy
		Caltrans
		U.S. Customary
		PM
		I-15 SB Ramps
		East-West

Project Description *DesertXpress*

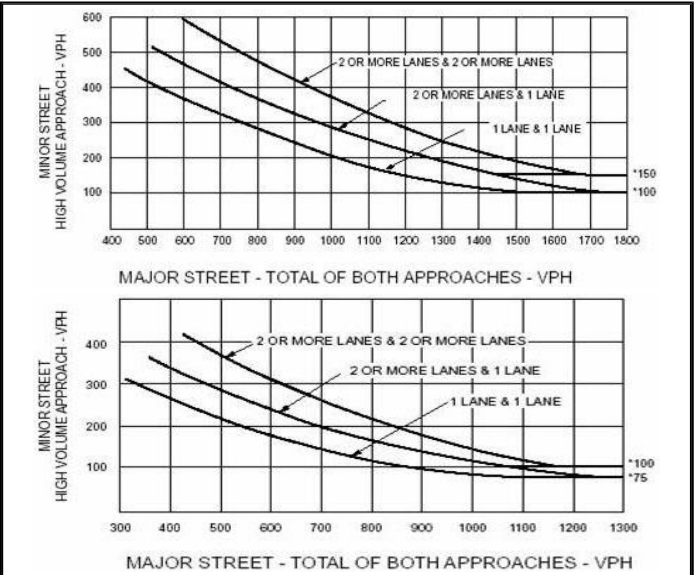
Warrant 1

Condition A - Minimum Vehicular Volume						Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)			Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)		
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c	Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c
1.....	1.....	500	400	350	150	120	105	1.....	1.....	750	600	525	75	60	53
2 or more ...	1.....	600	480	420	150	120	105	2 or more ...	1.....	900	720	630	75	60	53
2 or more ...	2 or more ...	600	480	420	200	160	140	2 or more ...	2 or more ...	900	720	630	100	80	70
1.....	2 or more ...	500	400	350	200	160	140	1.....	2 or more ...	750	600	525	100	80	70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	1530	290	1820	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	1530	290	1820	1	1	1	1	1	1	1	

Warrants Volume

Information

Analyst Agency/Co Date Performed Project ID East/West Street File Name	AB AECOM 06/15/09 DesertXpress Dale Evans Parkway Vic3-Int 5 2013+DMU.xhy	Intersection Jurisdiction Units Time Period Analyzed North/South Street Major Street	Future Street/DaleEvansPkwy Caltrans U.S. Customary PM Future Street East-West
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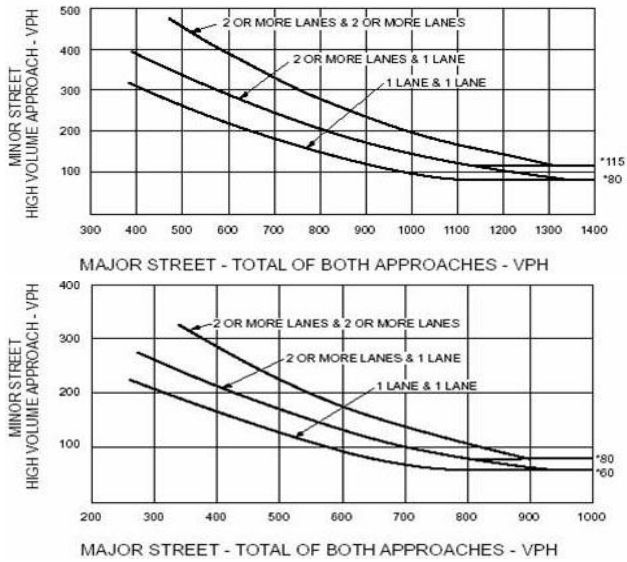
Project Description *DesertXpress*

Warrant 1

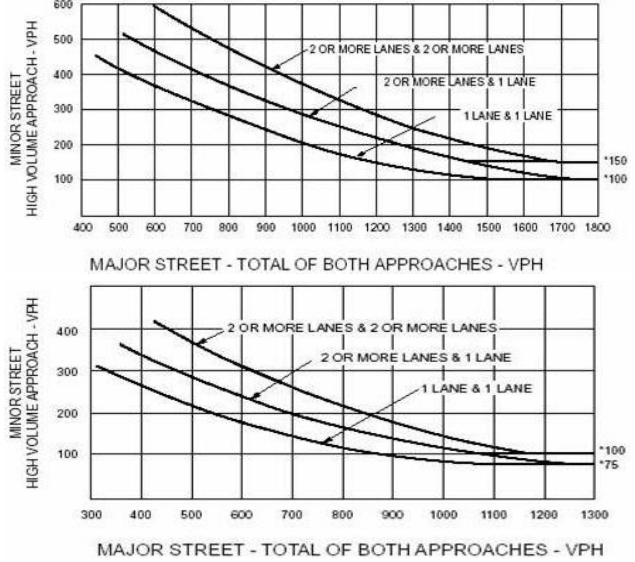
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	500	400	350	150	120 105
2 or more ...	1.....	600	480	420	150	120 105
2 or more ...	2 or more ...	600	480	420	200	160 140
1.....	2 or more ...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	750	600	525	75	60 53
2 or more ...	1.....	900	720	630	75	60 53
2 or more ...	2 or more ...	900	720	630	100	80 70
1.....	2 or more ...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	492	497	1270	No	Yes	No	No	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	492	497	1270	0	1	0	0	1	1	1	

Warrants Volume

Information

Analyst	AB	Intersection	I-15 NB Ramps/DaleEvansPkwy
Agency/Co	AECOM	Jurisdiction	Caltrans
Date Performed	06/15/09	Units	U.S. Customary
Project ID	DesertXpress	Time Period Analyzed	PM
East/West Street	Dale Evans Parkway	North/South Street	I-15 NB Ramps
File Name	Vic3-Int 1 2013+EMU.xhy	Major Street	East-West

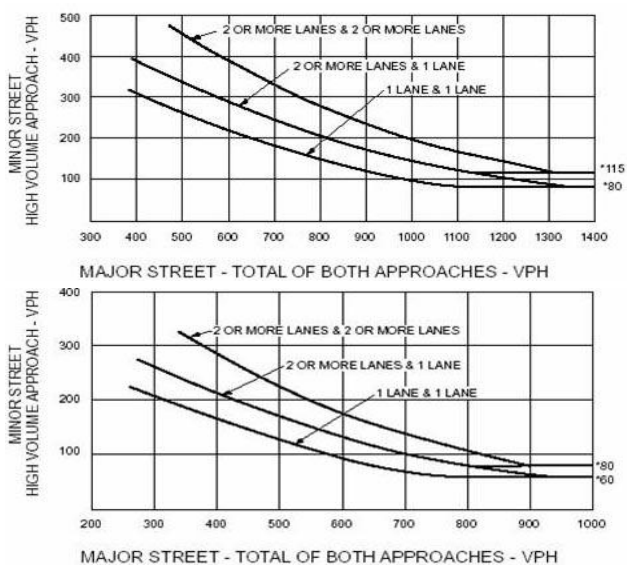
Project Description *DesertXpress*

Warrant 1

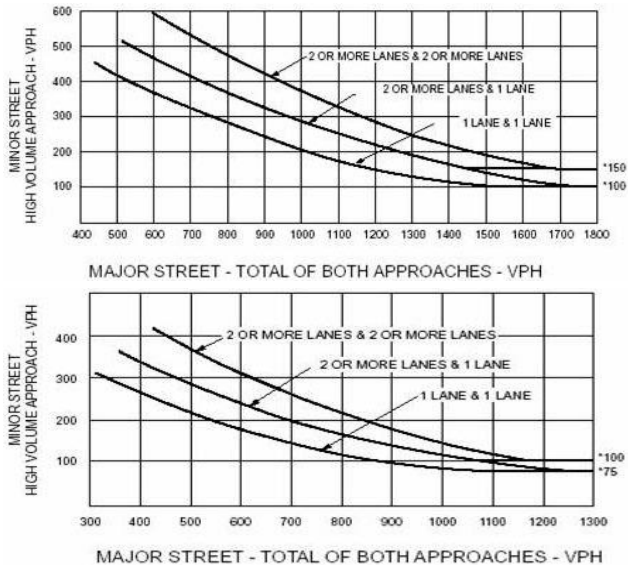
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	500	400	350	150	120 105
2 or more ...	1.....	600	480	420	150	120 105
2 or more ...	2 or more ...	600	480	420	200	160 140
1.....	2 or more ...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	750	600	525	75	60 53
2 or more ...	1.....	900	720	630	75	60 53
2 or more ...	2 or more ...	900	720	630	100	80 70
1.....	2 or more ...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	737	930	1667	Yes	Yes	No	Yes	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	737	930	1667	1	1	0	1	1	1	1	

Warrants Volume

Information

Analyst	AB	Intersection	I-15 SB Ramps/DaleEvansPkwy
Agency/Co	AECOM	Jurisdiction	Caltrans
Date Performed	06/15/09	Units	U.S. Customary
Project ID	DesertXpress	Time Period Analyzed	PM
East/West Street	Dale Evans Parkway	North/South Street	I-15 SB Ramps
File Name	Vic3-Int 2 2013+EMU.xhy	Major Street	East-West

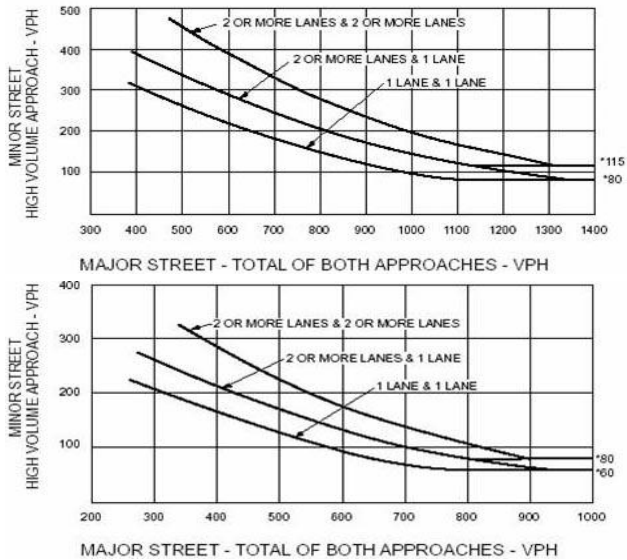
Project Description *DesertXpress*

Warrant 1

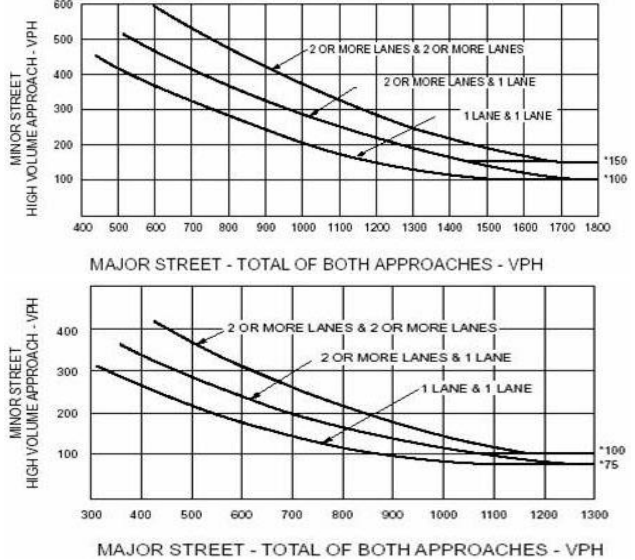
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	500	400	350	150	120 105
2 or more ...	1.....	600	480	420	150	120 105
2 or more ...	2 or more ...	600	480	420	200	160 140
1.....	2 or more ...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	750	600	525	75	60 53
2 or more ...	1.....	900	720	630	75	60 53
2 or more ...	2 or more ...	900	720	630	100	80 70
1.....	2 or more ...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	2020	305	2325	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	2020	305	2325	1	1	1	1	1	1	1	

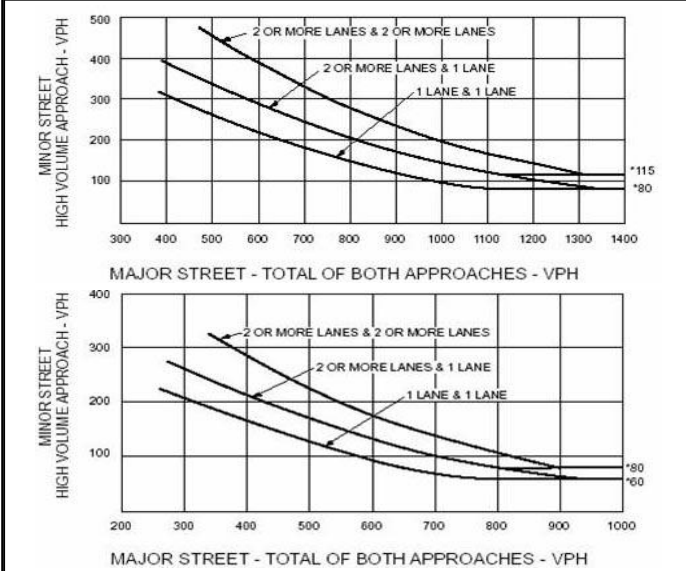
Warrants Volume

Information		
Analyst Agency/Co Date Performed Project ID East/West Street File Name	AB AECOM 06/15/09 DesertXpress Dale Evans Parkway Vic3-Int 3 2013+EMU.xhy	Intersection Jurisdiction Units Time Period Analyzed North/South Street Major Street
		Station Access 1/DaleEvansPkwy Caltrans U.S. Customary PM Station Access #1 East-West
Project Description <i>DesertXpress</i>		

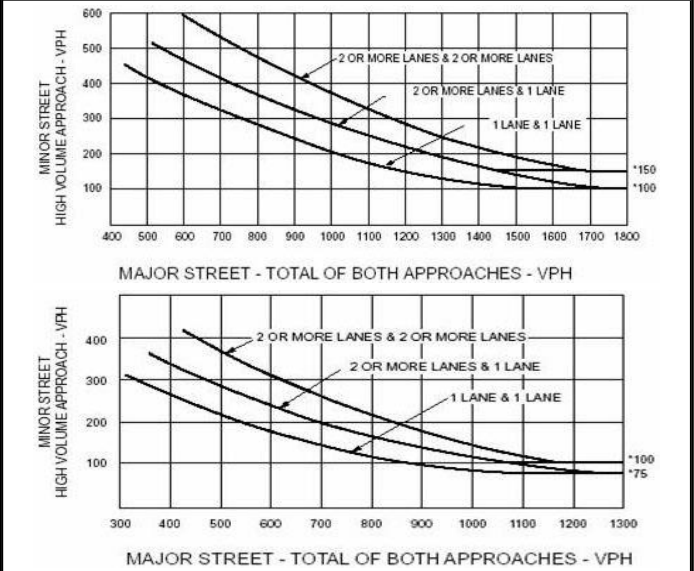
Warrant 1

Condition A - Minimum Vehicular Volume						Condition B - Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)			Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)		
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c	Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b	70% ^c
1.....	1.....	500	400	350	150	120	105	1.....	1.....	750	600	525	75	60	53
2 or more ...	1.....	600	480	420	150	120	105	2 or more ...	1.....	900	720	630	75	60	53
2 or more ...	2 or more ...	600	480	420	200	160	140	2 or more ...	2 or more ...	900	720	630	100	80	70
1.....	2 or more ...	500	400	350	200	160	140	1.....	2 or more ...	750	600	525	100	80	70

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 1				Minor Street Lanes 1			Speed	Population		
							15	10000+		
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)
07-08	0	0	0	No	No	No	No	No	No	No
08-09	0	0	0	No	No	No	No	No	No	No
09-10	0	0	0	No	No	No	No	No	No	No
10-11	0	0	0	No	No	No	No	No	No	No
11-12	0	0	0	No	No	No	No	No	No	No
12-13	0	0	0	No	No	No	No	No	No	No
13-14	0	0	0	No	No	No	No	No	No	No
14-15	0	0	0	No	No	No	No	No	No	No
15-16	0	0	0	No	No	No	No	No	No	No
16-17	1655	402	2057	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17-18	0	0	0	No	No	No	No	No	No	No
18-19	0	0	0	No	No	No	No	No	No	No
Totals	1655	402	2057	1	1	1	1	1	1	1

Warrants Volume

Information

Analyst Agency/Co Date Performed Project ID East/West Street File Name	AB AECOM 06/15/09 DesertXpress Dale Evans Parkway Vic3-Int 5 2013+EMU.xhy	Intersection Jurisdiction Units Time Period Analyzed North/South Street Major Street	Future Street/DaleEvansPkwy Caltrans U.S. Customary PM Future Street East-West
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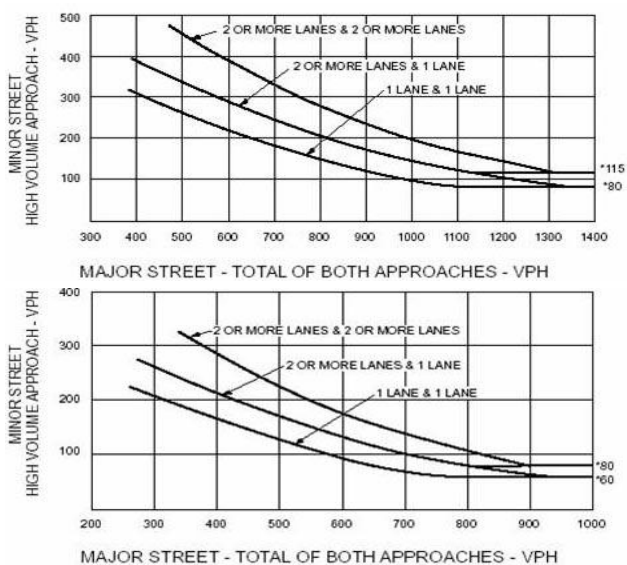
Project Description *DesertXpress*

Warrant 1

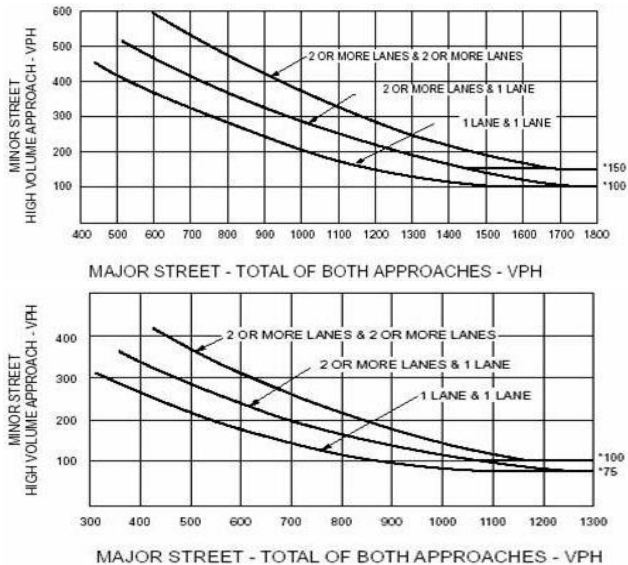
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	500	400	350	150	120 105
2 or more ...	1.....	600	480	420	150	120 105
2 or more ...	2 or more ...	600	480	420	200	160 140
1.....	2 or more ...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	750	600	525	75	60 53
2 or more ...	1.....	900	720	630	75	60 53
2 or more ...	2 or more ...	900	720	630	100	80 70
1.....	2 or more ...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed		Population		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	603	573	1457	Yes	Yes	No	Yes	Yes	Yes	Yes	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	603	573	1457	1	1	0	1	1	1	1	

Warrants Volume

Information

Analyst	AB	Intersection	Station Access4/Future Street
Agency/Co	AECOM	Jurisdiction	Caltrans
Date Performed	06/15/09	Units	U.S. Customary
Project ID	DesertXpress	Time Period Analyzed	PM
East/West Street	Station Access #4	North/South Street	Future Street
File Name	Vic3-Int 7 2013+EMU.xhy	Major Street	North-South

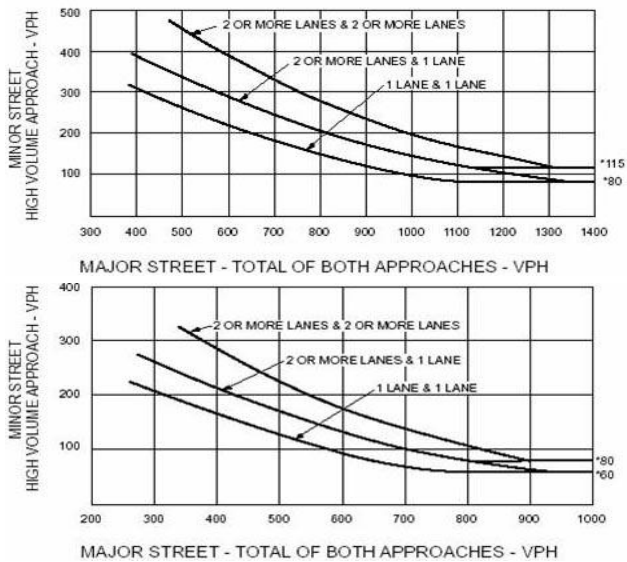
Project Description *DesertXpress*

Warrant 1

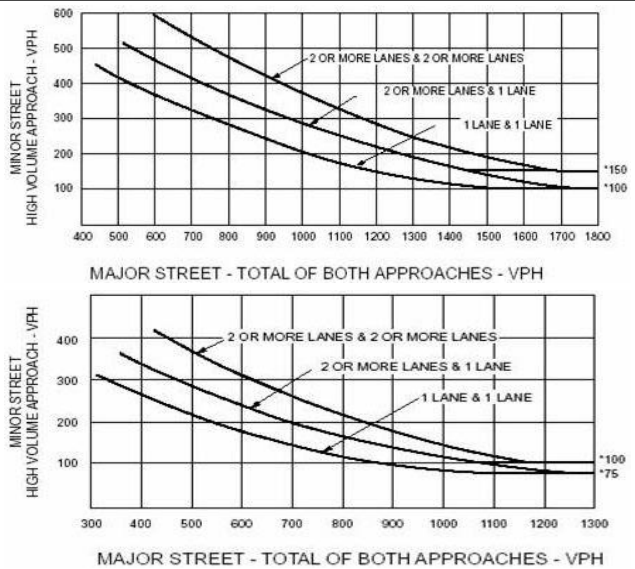
Condition A - Minimum Vehicular Volume						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	500	400	350	150	120 105
2 or more ...	1.....	600	480	420	150	120 105
2 or more ...	2 or more ...	600	480	420	200	160 140
1.....	2 or more ...	500	400	350	200	160 140

Condition B - Interruption of Continuous Traffic						
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)			Vehicles per hour on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	100% ^a	80% ^b 70% ^c
1.....	1.....	750	600	525	75	60 53
2 or more ...	1.....	900	720	630	75	60 53
2 or more ...	2 or more ...	900	720	630	100	80 70
1.....	2 or more ...	750	600	525	100	80 70

Warrant 2



Warrant 3



Volume Summary

Hours	Major Street Lanes 1			Minor Street Lanes 1			Speed 30		Population 10000+		
	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	0	0	0	No	No	No	No	No	No	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	1104	87	1271	No	No	Yes	Yes	Yes	No	No	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	1104	87	1271	0	0	1	1	1	0	0	