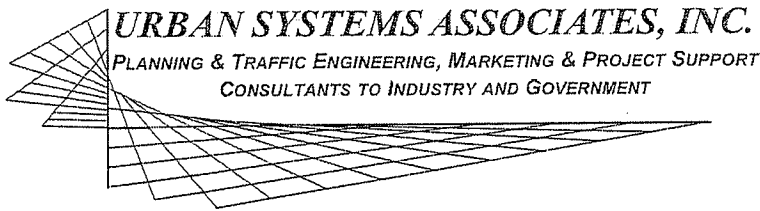


APPENDIX O

CONSTRUCTION TRAFFIC IMPACT ANALYSIS



E-MEMO

ATTN:

Bob Little – Kilroy Realty

E-Mail: ▼

rlittle@kilroyrealty.com

FROM:

Andrew P. Schlaefli & Jacob D. Swim

TOTAL PAGES (Including 5 + (40)

Cover): Attachments

DATE:

March 5, 2012

TIME: 9:22:42 AM **JOB NUMBER:** 002407

SUBJECT: One Paseo - Construction Traffic Analysis

Confidential Communications

This transmittal is intended for the recipient named above. Unless otherwise expressly indicated, this entire communication is confidential and privileged information. If you are not the intended recipient, do not disclose, copy, distribute or use this information. If you received this transmission in error, please notify us immediately by telephone, at our expense and destroy the information.

INTRODUCTION AND METHODOLOGY:

The purpose of this memo is to discuss the impacts of construction traffic as a result of the proposed One Paseo project. A total of five construction phases were evaluated for traffic impacts which included Phase 1, Phase 2, Phase 3, Phase 1&2, and Phase 1-3. Each construction phase is consistent with the project phasing outlined in the Development Summary, see **Attachment 1**. Phase 1&2 indicates these two phases would be constructed together. Phase 1-3 implies all three construction phases would be combined. Two scenarios were evaluated for each phase: Existing with Construction Traffic and Near Term with Construction Traffic. The existing with construction traffic scenario evaluates the baseline condition with construction traffic by phase. And the Near Term with construction traffic evaluated existing with cumulative projects in the area along with construction traffic by phase. These two scenarios were analyzed based on the assumption the proposed project would begin construction of Phase 1 in 2013, Phase 2 would begin in 2014, and Phase 3 would begin in 2015. Existing with construction traffic by phase and Near Term with construction traffic by phase was analyzed on seven (7) street segments, five (5) intersections, and two (2) freeway segments. The study area for the construction analysis was based on the assumed truck routes exporting and importing materials to the site via Del Mar Heights Road and Interstate 5. The construction phasing, duration of construction, workers, deliveries, and import/export by phase was provided by Whiting-Turner, see attached email dated October 20, 2011. **Attachment 2** shows the proposed employee parking, construction trailers, truck routes and load sites. As shown, trucks would turn right into the site at Third Avenue and then exit at the signalized access at First Avenue.

A distribution of construction traffic for employees is shown on **Attachment 3**. The distribution is based on our experience with similar projects and familiarity with the Carmel Valley area. As shown, 60% of employee traffic is assumed to be coming from the west on Del Mar Heights Road. This assumption is based on the close proximity the I-5 freeway is to the project site. 50% (25% north and 25% south) of the construction employees are assumed to use the I-5 freeway to access the project since there are many residential communities both north and south of the Del Mar Heights Road interchange. Just east of First Avenue at Del Mar Heights Road, 40% of construction employees are assumed to enter/exit the site. Of the 40%, 10% come from the east on Del Mar

Heights Road, 5% from the north on El Camino Real, and 25% from the south on El Camino Real. These employees are assumed to be already in the Carmel Valley area or nearby surrounding communities.

Attachment 4 illustrates the distribution of truck (import/export) and delivery traffic on a daily basis. Based on our experience with similar construction projects, the haul routes are designed to access nearby material sources (mines). The project site is located in a primarily residential and commercial area where no mines are located. Based on location of nearby mines in the San Diego area, the I-5 would be the most likely route to the project site. As shown in **Attachment 4**, 100% of the truck & delivery traffic is assumed to use Del Mar Heights Road from the west and then 50% travel north and 50% south on Interstate 5. To accommodate trucks leaving the site, a signal is proposed at First Avenue and Del Mar Heights Road for construction access. Without a signal at Third Avenue, a dedicated right turn lane in the eastbound direction would provide trucks and delivery vehicles a deceleration lane to minimize stops and enhance traffic safety during construction along the Del Mar Heights corridor.

To determine Near Term traffic impacts during construction, a percentage of cumulative projects by phase were assumed as shown in **Attachment 5**. The project's trip generation daily traffic was broken down by phase to determine the amount of cumulative projects built by a particular phase. For example, the project development in Phase 1 generates 9,888 average daily trips (ADT) which is approximately 37% of the projects total 26,961 (Project ADT). Therefore, in Phase 1, an assumed 37% of cumulative projects in the area would be constructed and included in the roadway network. For Phase 2, an assumed 66% of cumulative project would be built. Phase 3 assumes 100% of cumulative projects in the area are built.

If construction traffic causes a roadway facility or intersection that operates acceptably to operate unacceptably, then the project has a significant impact. Two criteria must be met to determine a significant impact and before mitigation is proposed. First, the intersection or street segment must have an unacceptable level of service (LOS), i.e. E or F. Second, the amount of construction traffic must be significant based on the application of criteria discussed below and illustrated in Table 4-2 of the traffic study. For an intersection, if the change in delay is greater than 2 seconds or 1 second and the level of service is "E" or "F" respectively, then the intersection construction impacts would be considered significant. For a street segment, if the change in volume to capacity ratio (V/C ratio) exceeds 0.02 or 0.01, and the level of service is "E" or "F" respectively, then the street segment would be considered significantly impacted.

CONSTRUCTION TRAFFIC (PHASE 1):

Attachment 6 shows the trip generation table for traffic generated by employees, material deliveries, and trucks importing and exporting in phase 1. Construction traffic in this phase would generate 1,775 ADT with 130 AM peak hour trips and 118 PM peak hour trips. The material deliveries and truck imports/exports are converted from trucks to autos using an auto equivalency of 2.5 per Exhibit 21-9 in the Highway Capacity Manual 2000.

Existing With Construction Traffic (Phase 1):

The Existing with construction traffic in phase 1 was evaluated. **Attachment 7** shows the Existing with and without construction street segment comparison in phase 1. As shown, all segments operate at acceptable levels of service, i.e. D or better. **Attachment 8** shows the Existing with and without construction intersection comparison in phase 1. Five (5) intersections were evaluated on Del Mar Heights Road from the I-5 SB ramps to El Camino Real. As shown in the table, all intersections operate at acceptable levels of service and no

significant impacts occur as a result of construction traffic in phase 1. The freeway segments north and south of Del Mar Heights Road on Interstate 5 were evaluated and operate at acceptable levels of service as shown in the freeway level of service summary table, see **Attachment 9**. As shown, no impacts occur as a result of construction traffic in phase 1.

Near Term With Construction Traffic (Phase 1):

The Near Term without construction traffic volumes in phase 1 were developed by assuming 37% of cumulative projects were built. Construction traffic volumes in phase 1 were then added to Near Term volumes to derive the Near Term with construction traffic volumes and evaluate construction traffic impacts. The Near Term street segment comparison table shows no significant impacts, see **Attachment 10**. For intersection impacts, **Attachment 11** shows all intersections are projected to operate at acceptable levels of service with and without construction traffic in phase 1, therefore, no significant impacts. On the I-5 freeway segments analyzed, **Attachment 12** shows no significant impacts as a result of construction traffic in phase 1.

CONSTRUCTION TRAFFIC (PHASE 2):

The construction traffic in phase 2 generates 1,265 ADT with 84 AM peak hour trips and 77 PM peak hour trips, see **Attachment 13**.

Existing With Construction Traffic (Phase 2):

Street segment volumes for construction traffic in phase 2 were added to existing traffic volumes and evaluated. As shown in **Attachment 14**, all segments evaluated operate at level of service "D" or better. Intersections were analyzed and there are no significant impacts as a result of construction traffic in phase 2, see **Attachment 15**. The intersection of Del Mar Heights Road at Third Avenue is analyzed based on construction of Block A being part of phase 2. A freeway level of service summary shows both segments on I-5 operate at acceptable levels of service and there are no significant impacts as shown in **Attachment 16**.

Near Term With Construction Traffic (Phase 2):

The Near Term with construction traffic volumes were developed by adding the Near Term volumes (Existing + 66% of cumulative projects) to the construction traffic volumes in phase 2. The street segment level of service comparison shows no significant street segment impacts, see **Attachment 17**. The intersection comparison table shows all intersections operating at acceptable levels of service and therefore, no significant impacts as shown in **Attachment 18**. The freeway segments on I-5 are operating at acceptable levels of service with no significant impacts, see **Attachment 19**.

CONSTRUCTION TRAFFIC (PHASE 3):

The construction traffic in phase 3 generates 1,369 ADT with 93 AM peak hour trips and 86 PM peak hour trips, see **Attachment 20**.

Existing With Construction Traffic (Phase 3):

The Existing with construction traffic in phase 3 was derived by adding construction traffic volumes in phase 3 to existing volumes. All street segments in **Attachment 21** currently operate at acceptable levels of service with and without construction traffic in phase 3. **Attachment 22** shows all intersections operating at acceptable levels of service and no significant impacts. The two segments on I-5 in phase 3 of construction operate at acceptable levels of service and show no significant impacts in **Attachment 23**.

Near Term With Construction Traffic (Phase 3):

The Near Term without construction traffic volumes in phase 3 assumed 100% of cumulative projects in the area were built. Construction traffic volumes from phase 3 were added to Near Term without construction traffic volumes to get the Near Term with construction traffic volumes. **Attachment 24** shows all street segments operate at level of service "D" or better. As shown on **Attachment 25**, there are no significant impacts at intersections as a result of construction traffic in phase 3. Freeway segments are operating at acceptable levels of service as shown in **Attachment 26**.

CONSTRUCTION TRAFFIC (PHASE 1 & 2):

As previously mentioned, construction traffic in phase 1 & 2 assumes these phases are built together. Phase 1 & 2 includes the construction of Blocks D, E, and A as shown in the Development Summary Table (**Attachment 1**). Since the construction of Block A is adjacent to the First Avenue entrance, it is assumed in this analysis that a signal is installed at First Avenue for construction access under this phasing scenario. **Attachment 27** shows the trip generation table for construction phase 1 & 2. As shown, the construction traffic would generate 1,975 ADT with 138 AM peak hour trips and 126 PM peak hour trips.

Existing With Construction Traffic (Phase 1 & 2):

The existing with and without construction traffic street segment comparison table for phase 1 & 2 shows no unacceptable level of service on any street segments, therefore, no significant segment impacts, see **Attachment 28**. **Attachment 29** shows the intersection comparison table for construction phase 1 & 2. As shown, there are no significant impacts to intersections evaluated. Freeway segments operate at acceptable levels of service, see **Attachment 30**.

Near Term With Construction Traffic (Phase 1 & 2):

The Near Term without construction traffic volumes in phase 1 & 2 were developed by assuming 66% of cumulative projects were built. The Near Term street segment comparison table shows all segments operate at level of service "D" or better, and therefore, no significant impacts, see **Attachment 31**. For intersection impacts, **Attachment 32** shows all intersections are projected to operate at acceptable levels of service, i.e. D or better, with and without construction traffic in phase 1 & 2, therefore, no significant impacts. On the I-5 freeway segments analyzed, **Attachment 33** shows no significant impacts as a result of construction traffic in phase 1 & 2.

CONSTRUCTION TRAFFIC (PHASE 1 - 3):

Construction traffic in phases 1-3 assumes all three phases are built together, not sequentially. This phasing assumes the intersection of First Avenue and Del Mar Heights Road is signalized for construction access. The construction traffic in phases 1-3 generates 2,175 ADT with 146 AM peak hour trips and 134 PM peak hour trips, see **Attachment 34**.

Existing With Construction Traffic (Phase 1 - 3):

Attachment 35 shows no significant impacts in the street segment comparison table. No significant intersection impacts occur in phases 1-3 as a result of construction traffic, see **Attachment 36**. On the I-5 freeway segments, **Attachment 37** shows no significant impacts.

Near Term With Construction Traffic (Phase 1 - 3):

The Near Term analysis for construction traffic in phases 1-3 assumes 100% cumulative projects are built and included in the roadway network. A significant impact occurs on Del Mar Heights Road between I-5 NB ramps and High Bluff Drive in the street segment comparison table as shown in **Attachment 38**. All intersections are projected to operate at acceptable levels of service in **Attachment 39**. **Attachment 40** shows no significant impacts to freeway segments as a result of construction traffic from all three construction phases.

CONCLUSIONS AND RECOMMENDATIONS:

The only construction traffic significant impact is a segment impact on Del Mar Heights Road between the I-5 NB ramps and High Bluff Drive. This significant impact on Del Mar Heights Road occurs under the analyzed construction (Phase 1-3) scenario. A significant impact resulting from project construction traffic only occurs if the additional trips cause the segment to exceed the City's significance thresholds and the segments operates at an unacceptable level of service.

ATTACHMENT 1

ONE PASEO - A Main Street for Carmel Valley DEVELOPMENT SUMMARY

ONE PASEO - A Main Street for Carmel Valley DEVELOPMENT SUMMARY							
Phase/Block	Commercial Retail (Sq. Ft. *)		Commercial Office (Sq. Ft. *)		Hotel (No. of Rooms)	Residential (MF Units)	Total*
	Retail	Cinema **	Corporate Office	Professional Office***			
Phase 1							
Block D	61,190	---	270,000	21,000	---	---	352,190
Block E	39,460	---	245,000	---	---	---	284,460
Phase 1 Total	100,650	---	515,000	21,000	---	---	636,650
Phase 2							
Block A	65,610	---	---	---	---	194	65,610 + 194 MF units
Phase 2 Total	65,610	---	---	---	---	194	65,610 + 194 MF units
Phase 3							
Block B	38,940	---	---	---	150	181	38,940 + 150 hotel rooms + 181 MF units
Block C	14,800	---	---	---	---	233	14,800 + 233 MF units
Block D	---	50,000	---	---	---	---	50,000
Phase 3 Total	53,740	50,000	---	---	---	414	103,740 + 414 MF units
Total*	220,000	50,000	515,000	21,000	150	608	806,000 Sq. Ft. + 150 hotel rooms + 608 MF units

*Gross Leasable Area (excludes parking structures covered in Gross Floor Area calculations). Density transfers permitted in accordance with procedures described in the Precise Plan.

**Cinema consists of up to 10 screens with a maximum total of 1,200 seats.

***Professional Office (located on Main Street).

Jake Swirn

From: Likins, Steven [Steven.Likins@Whiting-Turner.com]
 Sent: Thursday, October 20, 2011 10:17 AM
 To: jake@urbansystems.net
 Subject: Construction Analysis
 Jake -

Per your June 24, 2011 memo, please see our responses below.

- Construction Phases - The project is divided into three phases
- Construction Duration by Phase - Phase I (28 months), Phase II (22 months) & Phase III (31 months). The project would take a total of 81 months to build, if phases are built sequentially. If Phase I and II were combined, it would also take 28 months. If all phases were combined, it would take 40 months to complete.
- Number of Workers by Phase - Whiting-Turner estimated that a project built sequentially would likely have a maximum of 400 employees per day and generally average approximately 300 employees per day. If Phase I and II were combined, they would likely have a maximum of 700 employees per day and generally average approximately 400 employees per day. If all phases were combined, they would likely have a maximum of 800 employees and generally average approximately 500 employees per day.
- Number of Material Deliveries by Phase - On average, the project would result in 25 deliveries per day. The peak would occur during export operation, but during the export operation there won't be many workers on the site.
- Amount of Import & Export by Phase - Phase I-243,670 cu. yds., Phase II - 118,800 cu. yds. and Phase III - 141,500 cu.yds. Each truck trip can accommodate 10 cu. yds. per trip. As an example, Phase 1 export (i.e. trucks on the street) is 110 days (22 weeks x5 days) or roughly 210 round trips per day (24,260 trips / 110 days). Assuming a round trip is about 20 minutes (depends on distance to export site) there would be about 9-10 trucks running round trips for 110 work days (i.e. Mon-Fri). If you combine Phases I and II, that would add another 9-10 trucks for about 60 days. And, if all three phases are combined, Phase 3 export would occur after phase 1 and 2 so we'd still be doing 210 trips per day (420 for 55 of those while doing phase 2) but we'd be adding 55 days of export.
- Construction Hours - Monday-Friday (The Municipal Code allows from 7:00 AM-7:00 PM but these hours may be further restricted by the site development permit) .
- Construction Shifts, if any - None anticipated
- Written Description of construction activities by phase - Each phase is basically the same; shoring, excavation, site utilities, below grade parking garage, vertical steel, concrete or wood structural frame, glass, plaster, metal panel or stone exterior enclosure, HVAC, Plumbing, Electrical, interior drywall and finishes (floor finishes, ceilings, walls, doors) exterior hardscape and landscape

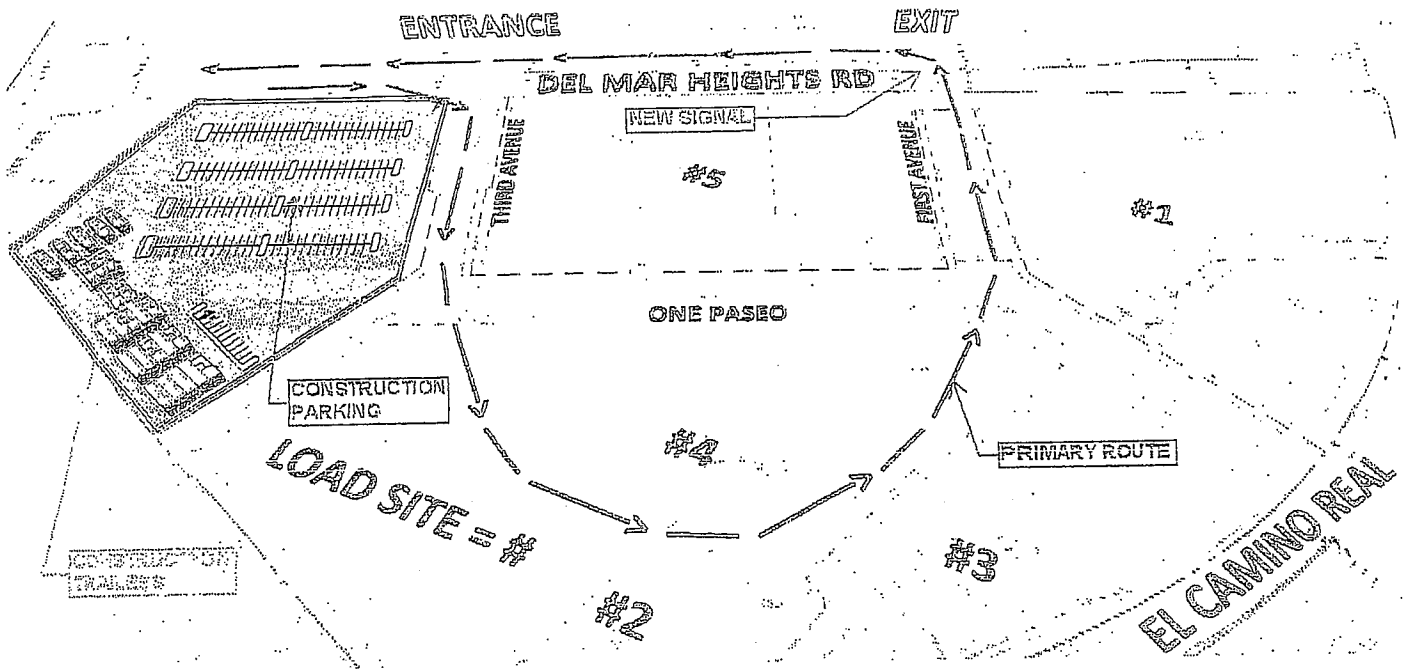
Please advise if you have any questions.

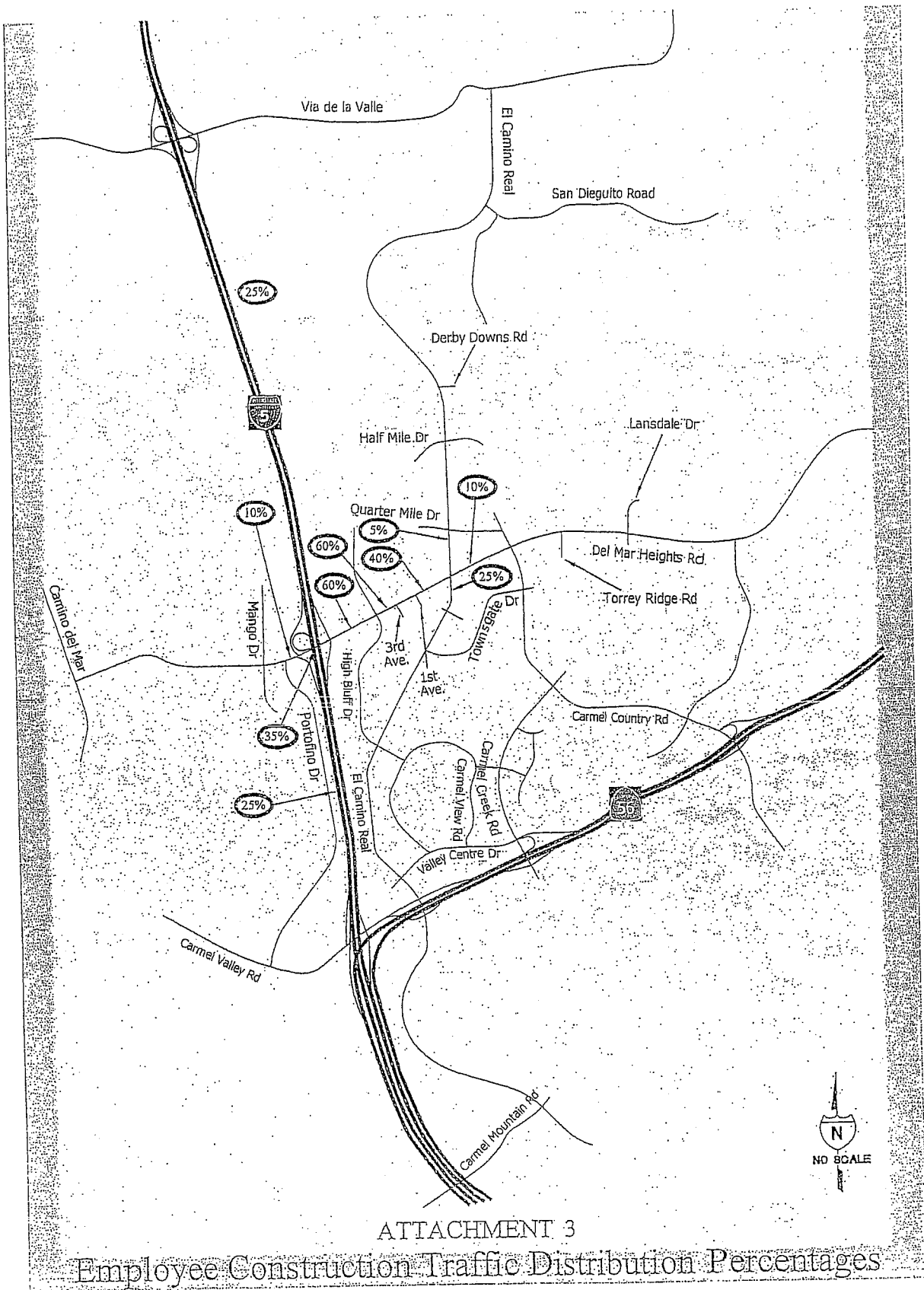
Thanks

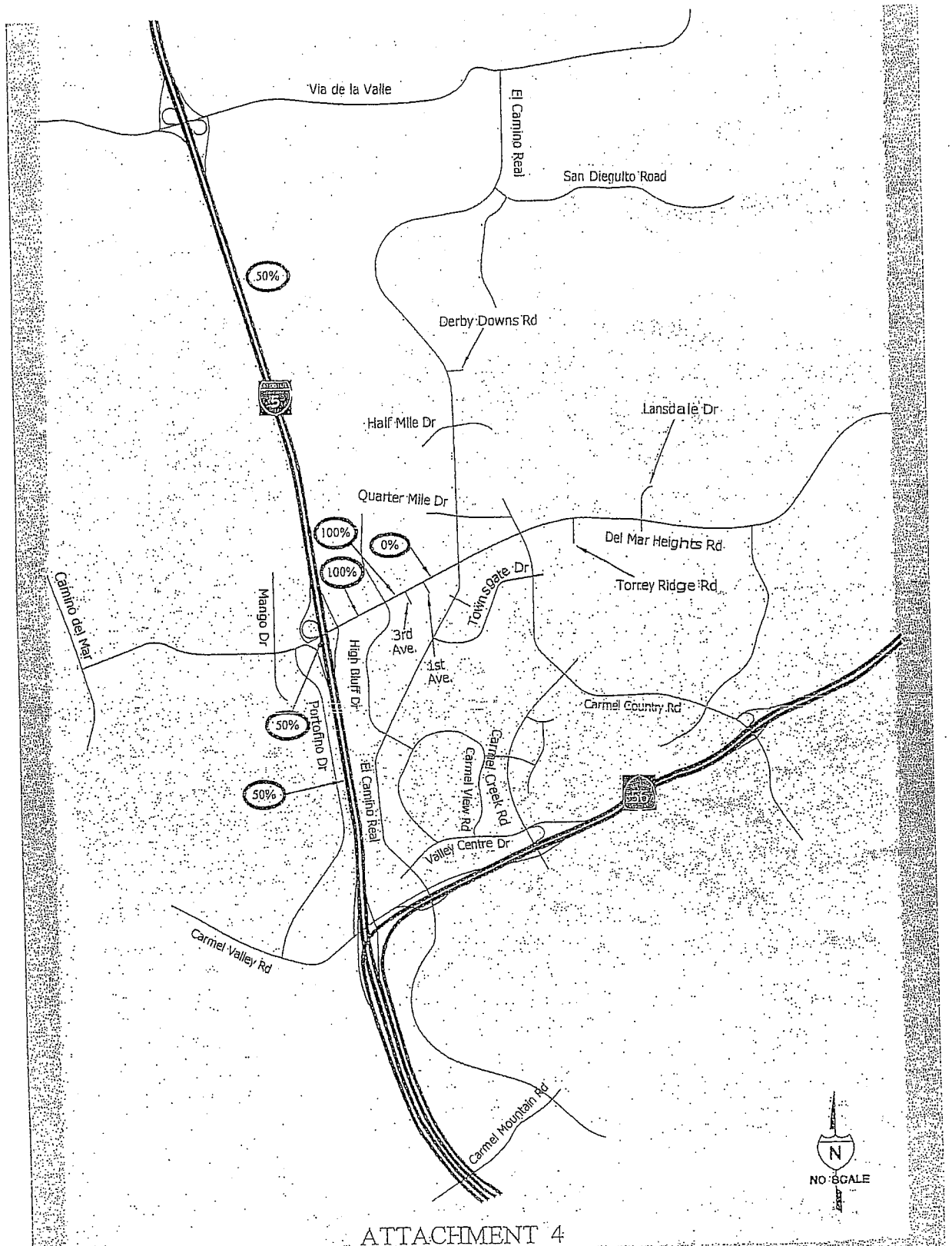
Steve Likins | Vice President
 THE WHITING-TURNER CONTRACTING COMPANY
 San Diego Office | 440 Stevens Avenue Suite 270 Solana Beach CA 92075
 T: (858) 792-0600 | F: (858) 792-9600 | C: (949) 289-7492
www.whiting-turner.com

10/20/2011

ATTACHMENT 2







ATTACHMENT 4

Truck & Delivery Construction Traffic Distribution Percentages

Attachment 5

One Paseo Construction Analysis

Construction Phases	Construction Duration	Project's Trip Generation ADT by phase	Percentage of ADT by phase	Assumed Percentage of Cumulative Projects
Phase 1	28 months	9,888 ADT	37%	37%
Phase 2	22 months	17,812 ADT	66%	66%
Phase 3	31 months	26,961 ADT	100%	100%
Phase 1 & 2	28 months	17,812 ADT	66%	66%
Phase 1-3	40 months	26,961 ADT	100%	100%

Source: Whiting-Turner

ATTACHMENT 6
One Paseo Trip Generation Table
Construction Traffic

PHASE 1

Purpose	Number	Auto Equivalency	Equivalent Autos	Trip	ADT	AM Peak Hour						PM Peak Hour					
						%*	#	In	Out	In	Out	%*	#	In	Out	In	Out
Employees	300 Autos	N/A	300	2 /Auto	600	4%	24	9	1	22	2	4%	24	2	8	5	19
Material Deliveries	25 Trucks	2.5	62.5	2 /Auto	125	9%	11	4	6	5	7	8%	10	5	5	5	5
Truck Imports/Exports	210 Trucks	2.5	525	2 /Auto	1,050	9%	95	4	6	38	57	8%	84	5	5	42	42
TOTAL					1,775		130			64	66		118			52	66

Notes:

Passenger-Car equivalents for Trucks is 2.5 per Exhibit 21-9 in the Highway Capacity Manual 2000
Typical Work Hours 7AM to 3:30PM.

For Employee Peak Hour In/Out Ratios, a 4% AM and PM peak is assumed based on the AM peak counts beginning at 7:30AM and the majority of employee shifts ending at 3:30PM, which is prior to the PM peak counts beginning at 5:00PM.

For Material Deliveries and Truck Imports/Exports, the Truck Terminal land use peak hour splits were used based on the City of San Diego Trip Generation Manual, May 2003.

ATTACHMENT 7

Existing Without & Existing With Construction (Phase 1) Street Segment Comparison

Road	Segment	Class.	Existing			Existing + Construction (Phase 1)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,888	0.818	0.016	NO
	I-5 Northbound Ramps to High Bluff Drive	PA	D	51,625	0.860	D	53,160	0.886	0.026	NO
	High Bluff Drive to First Avenue	PA	C	37,910	0.632	C	39,445	0.657	0.026	NO
	First Avenue to El Camino Real	PA	C	37,910	0.632	C	38,150	0.636	0.004	NO
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,734	0.546	0.001	NO
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,955	0.374	0.001	NO
	Del Mar Heights Road to Townsgate Drive	6-M	A	14,731	0.295	A	14,881	0.298	0.003	NO

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

ATTACHMENT 8

Existing & Existing + Construction Traffic (Phase 1) Intersection Summary

#	Intersection	Existing				Existing + Construction Traffic (Phase 1)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		A	S ?	PM Peak Hour	
		D	LOS	D	LOS	D	LOS			D	LOS
1	Del Mar Heights Road / I-5 SB Ramps	22.5	C	20.3	C	22.7	C	0.2	No	21.0	C
2	Del Mar Heights Road / I-5 NB Ramps	35.1	D	37.5	D	35.2	D	0.1	No	37.8	D
3	Del Mar Heights Road / High Bluff Drive	26.1	C	28.9	C	26.8	C	0.7	No	29.9	C
4	Del Mar Heights Road / First Avenue	DNE	DNE	DNE	DNE	3.4	A	N/A	No	4.7	A
5	Del Mar Heights Road / El Camino Real	27.2	C	26.9	C	28.0	C	0.8	No	27.1	C

Notes:

LOS = Level of Service
 Δ = Change
 S = Significant
 D = Delay

DNE = Does Not Exist
 N/A = Not Applicable

ATTACHMENT 9

Existing With & Without Construction Traffic (Phase 1)

Freeway Level of Service Summary

Segment	Dir.	Existing		Existing + Construction (Phase 1)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6447	C	0.6453	C	0.0006	NO
	SB	0.6655	C	0.6661	C	0.0006	NO
	NB	0.5365	B	0.5370	B	0.0005	NO
	SB	0.5744	B	0.5749	B	0.0005	NO

Legend:

Dir.= Direction
V/C= Volume to Capacity Ratio
LOS= Level of Service
Sig.?= Is this significant?

ATTACHMENT 10

Near Term With & Without Construction (Phase 1) Street Segment Comparison

Road	Segment	Class.	Near Term			Near Term + Construction (Phase 1)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,888	0.818	0.016	<i>NO</i>
	I-5 Northbound Ramps to High Bluff Drive	PA	D	52,217	0.870	D	53,752	0.896	0.026	<i>NO</i>
	High Bluff Drive to First Avenue	PA	C	38,502	0.642	C	40,037	0.667	0.026	<i>NO</i>
	First Avenue to El Camino Real	PA	C	38,502	0.642	C	38,742	0.646	0.004	<i>NO</i>
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,734	0.546	0.001	<i>NO</i>
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,955	0.374	0.001	<i>NO</i>
	Del Mar Heights Road to Townsgate Drive	6-M	A	15,412	0.308	A	15,562	0.311	0.003	<i>NO</i>

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

Near Term With & Without Construction Traffic Intersection Summary

Phase 1

#	Intersection	Near Term				Near Term + Construction Traffic (Phase 1)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		A	S ?	PM Peak Hour	
		D	LOS	D	LOS	D	LOS			D	LOS
1	Del Mar Heights Road / I-5 SB Ramps	21	C	21.7	C	23.2	C	2.2	N	22.0	C
2	Del Mar Heights Road / I-5 NB Ramps	34.6	C	36.7	D	35.5	D	0.9	N	37.6	D
3	Del Mar Heights Road / High Bluff Drive	28.1	C	31.4	C	29	C	0.9	N	31.6	C
4	Del Mar Heights Road / First Avenue	DNE	DNE	DNE	DNE	3.5	A	0.0	N	4.9	A
5	Del Mar Heights Road / El Camino Real	27.7	C	27.9	C	28.2	C	0.5	N	28.5	C

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D= Delay

ATTACHMENT 12

Near Term With & Without Construction Traffic

Freeway Level of Service Summary

Phase 1

Segment	Dir.	Near Term		Near Term + Construction (Phase I)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6460	C	0.6466	C	0.0006	NO
	SB	0.6667	C	0.6674	C	0.0006	NO
	NB	0.5576	B	0.5581	B	0.0005	NO
	SB	0.5755	B	0.5761	B	0.0005	NO

Legend:

Dir. = Direction

V/C= Volume to Capacity Ratio

LOS= Level of Service

Sig.? = Is this significant?

ATTACHMENT 13
One Paseo Trip Generation Table
Construction Traffic

PHASE 2

Purpose	Number	Auto Equivalency	Equivalent Autos	Trip	ADT	AM Peak Hour						PM Peak Hour					
						%*	#	In	Out	In	Out	%*	#	In	Out	In	Out
Employees	300 Autos	N/A	300	2 /Auto	600	4%	24	9	1	22	2	4%	24	2	8	5	19
Material Deliveries	25 Trucks	2.5	62.5	2 /Auto	125	9%	11	4	6	5	7	8%	10	5	5	5	5
Truck Imports/Exports	108 Trucks	2.5	270	2 /Auto	540	9%	49	4	6	19	29	8%	43	5	5	22	22
TOTAL					1,265		84			46	38		77			31	46

Notes:

Passenger-Car equivalents for Trucks is 2.5 per Exhibit 21-9 in the Highway Capacity Manual 2000
Typical Work Hours 7AM to 3:30PM.

For Employee Peak Hour In/Out Ratios, a 4% AM and PM peak is assumed based on the AM peak counts beginning at 7:30AM and the majority of employee shifts ending at 3:30PM, which is prior to the PM peak counts beginning at 5:00PM.

For Material Deliveries and Truck Imports/Exports, the Truck Terminal land use peak hour splits were used based on the City of San Diego Trip Generation Manual, May 2003.

ATTACHMENT 14

Existing Without & Existing With Construction (Phase 2) Street Segment Comparison

Road	Segment	Class.	Existing			Existing + Construction (Phase 2)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,633	0.813	0.011	NO
	I-5 Northbound Ramps to High Bluff Drive	PA	D	51,625	0.860	D	52,650	0.878	0.017	NO
	High Bluff Drive to First Avenue	PA	C	37,910	0.632	C	38,935	0.649	0.017	NO
	First Avenue to El Camino Real	PA	C	37,910	0.632	C	38,150	0.636	0.004	NO
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,734	0.546	0.001	NO
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,955	0.374	0.001	NO
	Del Mar Heights Road to Townsgate Drive	6-M	A	14,731	0.295	A	14,881	0.298	0.003	NO

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

ATTACHMENT 15

Existing & Existing + Construction Traffic (Phase 2) Intersection Summary

#	Intersection	Existing						Existing + Construction Traffic (Phase 2)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		A	S ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	Del Mar Heights Road / I-5 SB Ramps	22.5	C	20.3	C	22.7	C	0.2	No	20.9	C	0.6	No
2	Del Mar Heights Road / I-5 NB Ramps	35.1	D	37.5	D	35.2	D	0.1	No	37.6	D	0.1	No
3	Del Mar Heights Road / High Bluff Drive	26.1	C	28.9	C	26.5	C	0.4	No	29.9	C	1.0	No
4	Del Mar Heights Road / Third Avenue	DNE	DNE	DNE	DNE	3	A	N/A	No	3.9	A	N/A	No
5	Del Mar Heights Road / El Camino Real	27.2	C	26.9	C	27.5	C	0.3	No	27.0	C	0.1	No

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D = Delay

DNE = Does Not Exist

N/A = Not Applicable

ATTACHMENT 16

Existing With & Without Construction Traffic (Phase 2)

Freeway Level of Service Summary

Segment	Dir.	Existing		Existing + Construction (Phase 2)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6447	C	0.6452	C	0.0004	NO
	SB	0.6655	C	0.6660	C	0.0004	NO
	NB	0.5565	B	0.5568	B	0.0004	NO
	SB	0.5744	B	0.5748	B	0.0004	NO

Legend:

Dir.= Direction
V/C= Volume to Capacity Ratio
LOS= Level of Service
Sig.?= Is this significant?

ATTACHMENT 17

Near Term With & Without Construction (Phase 2) Street Segment Comparison

Road	Segment	Class.	Near Term			Near Term + Construction (Phase 2)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,633	0.813	0.011	<i>NO</i>
	I-5 Northbound Ramps to High Bluff Drive	PA	D	52,682	0.878	D	53,707	0.895	0.017	<i>NO</i>
	High Bluff Drive to First Avenue	PA	C	38,967	0.649	C	39,992	0.667	0.017	<i>NO</i>
	First Avenue to El Camino Real	PA	C	38,967	0.649	C	39,207	0.653	0.004	<i>NO</i>
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,734	0.546	0.001	<i>NO</i>
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,955	0.374	0.001	<i>NO</i>
	Del Mar Heights Road to Townsgate Drive	6-M	A	15,946	0.319	A	16,096	0.322	0.003	<i>NO</i>

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

Near Term With & Without Construction Traffic Intersection Summary

Phase 2

#	Intersection	Near Term				Near Term + Construction Traffic (Phase 2)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		S ?	A
		D	LOS	D	LOS	D	LOS	D	LOS		
1	Del Mar Heights Road / I-5 SB Ramps	21.2	C	21.9	C	23.6	C	22.1	C	N	0.2
2	Del Mar Heights Road / I-5 NB Ramps	36.8	D	37.6	D	37.5	D	38.0	D	N	0.4
3	Del Mar Heights Road / High Bluff Drive	28.2	C	31.6	C	28.8	C	31.8	C	N	0.2
4	Del Mar Heights Road / Third Avenue	DNE	DNE	DNE	DNE	3.3	A	4.0	A	N	0.0
5	Del Mar Heights Road / El Camino Real	27.9	C	30.8	C	28.3	C	31.4	C	N	0.6

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D= Delay

DNE = Does not Exist

ATTACHMENT 19

Near Term With & Without Construction Traffic

Freeway Level of Service Summary

Phase 2

Segment	Dir.	Near Term		Near Term + Construction (Phase 2)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6469	C	0.6474	C	0.0004	NO
	SB	0.6677	C	0.6681	C	0.0004	NO
	NB	0.5585	B	0.5589	B	0.0004	NO
	SB	0.5764	B	0.5768	B	0.0004	NO

Legend:

Dir.= Direction

V/C= Volume to Capacity Ratio

LOS= Level of Service

Sig.?= Is this significant?

ATTACHMENT 20
One Paseo Trip Generation Table
Construction Traffic

PHASE 3

Purpose	Number	Auto Equivalency	Equivalent Autos	Trip	ADT	AM Peak Hour						PM Peak Hour					
						%	#	In	Out	In	Out	%	#	In	Out	In	Out
Employees	300 Autos	N/A	300	2 /Auto	600	4%	24	9	1	22	2	4%	24	2	8	5	19
Material Deliveries	25 Trucks	2.5	62.5	2 /Auto	125	9%	11	4	6	5	7	8%	10	5	5	5	5
Truck Imports/Exports	129 Trucks	2.5	322	2 /Auto	644	9%	58	4	6	23	35	8%	52	5	5	26	26
TOTAL					1,369		93			49	44		86			36	50

Notes:

Passenger-Car equivalents for Trucks is 2.5 per Exhibit 21-9 in the Highway Capacity Manual 2000
Typical Work Hours 7AM to 3:30PM.

For Employee Peak Hour In/Out Ratios, a 4% AM and PM peak is assumed based on the AM peak counts beginning at 7:30AM and the majority of employee shifts ending at 3:30PM, which is prior to the PM peak counts beginning at 5:00PM.

For Material Deliveries and Truck Imports/Exports, the Truck Terminal land use peak hour splits were used based on the City of San Diego Trip Generation Manual, May 2003.

ATTACHMENT 21

Existing Without & Existing With Construction (Phase 3) Street Segment Comparison

Road	Segment	Class.	Existing			Existing + Construction (Phase 3)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,684	0.814	0.012	NO
	I-5 Northbound Ramps to High Bluff Drive	PA	D	51,625	0.860	D	52,754	0.879	0.019	NO
	High Bluff Drive to First Avenue	PA	C	37,910	0.632	C	39,039	0.651	0.019	NO
	First Avenue to El Camino Real	PA	C	37,910	0.632	C	38,150	0.636	0.004	NO
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,734	0.546	0.001	NO
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,955	0.374	0.001	NO
	Del Mar Heights Road to Townsgate Drive	6-M	A	14,731	0.295	A	14,881	0.298	0.003	NO

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

ATTACHMENT 22

Existing & Existing + Construction Traffic (Phase 3) Intersection Summary

#	Intersection	Existing						Existing + Construction Traffic (Phase 3)							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Δ	S ?	PM Peak Hour			
		D	LOS	D	LOS	D	LOS	D	LOS						
1	Del Mar Heights Road / I-5 SB Ramps	22.5	C	20.3	C	22.8	C	20.9	C	0.3	No	20.9	C	0.6	No
2	Del Mar Heights Road / I-5 NB Ramps	35.1	D	37.5	D	35.3	D	37.9	D	0.2	No	37.9	D	0.4	No
3	Del Mar Heights Road / High Bluff Drive	26.1	C	28.9	C	26.6	C	29.9	C	0.5	No	29.9	C	1.0	No
4	Del Mar Heights Road / First Avenue	DNE	DNE	DNE	DNE	3.0	A	4.4	A	N/A	No	4.4	A	N/A	No
5	Del Mar Heights Road / El Camino Real	27.2	C	26.9	C	27.8	C	27.0	C	0.6	No	27.0	C	0.1	No

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D = Delay

DNE = Does Not Exist

N/A = Not Applicable

ATTACHMENT 23

Existing With & Without Construction Traffic (Phase 3)

Freeway Level of Service Summary

Segment	Dir.	Existing		Existing + Construction (Phase 3)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6447	C	0.6452	C	0.0005	NO
	SB	0.6655	C	0.6660	C	0.0005	NO
	NB	0.5565	B	0.5569	B	0.0004	NO
	SB	0.5744	B	0.5748	B	0.0004	NO

Legend:

Dir.= Direction
V/C= Volume to Capacity Ratio
LOS= Level of Service
Sig.?= Is this significant?

ATTACHMENT 24

Near Term With & Without Construction (Phase 3) Street Segment Comparison

Road	Segment	Class.	Near Term			Near Term + Construction (Phase 3)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,684	0.814	0.012	<i>NO</i>
	I-5 Northbound Ramps to High Bluff Drive	PA	D	53,226	0.887	D	54,355	0.906	0.019	<i>NO</i>
	High Bluff Drive to First Avenue	PA	C	39,511	0.659	C	40,640	0.677	0.019	<i>NO</i>
	First Avenue to El Camino Real	PA	C	39,511	0.659	C	39,751	0.663	0.004	<i>NO</i>
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,734	0.546	0.001	<i>NO</i>
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,955	0.374	0.001	<i>NO</i>
	Del Mar Heights Road to Townsgate Drive	6-M	A	16,572	0.331	A	16,722	0.334	0.003	<i>NO</i>

Legend:

LOS= Level of Service
V/C= Volume to Capacity Ratio
 $\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial
5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT
4-M=4 lane Major
6-M = 6 lane Major

Near Term With & Without Construction Traffic Intersection Summary

Phase 3

#	Intersection	Near Term				Near Term + Construction Traffic (Phase 3)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		S ?	Δ
		D	LOS	D	LOS	D	LOS	D	LOS		
1	Del Mar Heights Road / I-5 SB Ramps	21.6	C	22.1	C	23.3	C	22.4	C	0.3	N
2	Del Mar Heights Road / I-5 NB Ramps	40.6	D	38.6	D	41.9	D	39.3	D	0.7	N
3	Del Mar Heights Road / High Bluff Drive	28.4	C	32.1	C	29.0	C	32.5	C	0.4	N
4	Del Mar Heights Road / Third Avenue	DNE	DNE	DNE	DNE	3.2	A	4.5	A	0.0	N
5	Del Mar Heights Road / El Camino Real	28.4	C	36.7	D	28.9	C	37.7	D	1.0	N

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D= Delay

DNE = Does not Exist

ATTACHMENT 26

Near Term With & Without Construction Traffic

Freeway Level of Service Summary

Phase 3

Segment	Dir.	Near Term		Near Term + Construction (Phase 3)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6481	C	0.6485	C	0.0005	NO
	SB	0.6688	C	0.6693	C	0.0005	NO
	NB	0.5596	B	0.5599	B	0.0004	NO
	SB	0.5774	B	0.5779	B	0.0004	NO

Legend:

Dir. = Direction

V/C= Volume to Capacity Ratio

LOS= Level of Service

Sig.? = Is this significant?

ATTACHMENT 27
One Paseo Trip Generation Table
Construction Traffic

PHASES 1 & 2 Combined

Purpose	Number	Auto Equivalency	Equivalent Autos	Trip	ADT	AM Peak Hour						PM Peak Hour					
						%	#	In	Out	In	Out	%	#	In	Out	In	Out
Employees	400 Autos	N/A	400	2 /Auto	800	4%	32	9	1	29	3	4%	32	2	8	6	26
Material Deliveries	25 Trucks	2.5	62.5	2 /Auto	125	9%	11	4	6	5	7	8%	10	5	5	5	5
Truck Imports/Exports	210 Trucks	2.5	525	2 /Auto	1,050	9%	95	4	6	38	57	8%	84	5	5	42	42
TOTAL					1,975		138			71	67		126			53	73

Notes:

Passenger-Car equivalents for Trucks is 2.5 per Exhibit 21-9 in the Highway Capacity Manual 2000
Typical Work Hours 7AM to 3:30PM.
For Employee Peak Hour In/Out Ratios, a 4% AM and PM peak is assumed based on the AM peak counts beginning at 7:30AM and the majority of employee shifts ending at 3:30PM, which is prior to the PM peak counts beginning at 5:00PM.
For Material Deliveries and Truck Imports/Exports, the Truck Terminal land use peak hour splits were used based on the City of San Diego Trip Generation Manual, May 2003.

ATTACHMENT 28

Existing Without & Existing With Construction (Phase 1 & 2) Street Segment Comparison

Road	Segment	Class.	Existing			Existing + Construction (Phase 1 & 2)			Δ V/C	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,958	0.819	0.017	NO
	I-5 Northbound Ramps to High Bluff Drive	PA	D	51,625	0.860	D	53,280	0.888	0.028	NO
	High Bluff Drive to First Avenue	PA	C	37,910	0.632	C	39,565	0.659	0.028	NO
	First Avenue to El Camino Real	PA	C	37,910	0.632	C	38,230	0.637	0.005	NO
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,754	0.546	0.001	NO
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,965	0.374	0.001	NO
	Del Mar Heights Road to Townsgate Drive	6-M	A	14,731	0.295	A	14,931	0.299	0.004	NO

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

Δ V/C= Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

ATTACHMENT 29

Existing & Existing + Construction Traffic (Phase 1 & 2) Intersection Summary

#	Intersection	Existing						Existing + Construction Traffic (Phase 1 & 2)						S ?
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Δ	S ?	PM Peak Hour		A
		D	LOS	D	LOS	D	LOS	D	LOS			D	LOS	
1	Del Mar Heights Road / I-5 SB Ramps	22.5	C	20.3	C	23.4	C	21.0	C	0.9	No	21.0	C	0.7
2	Del Mar Heights Road / I-5 NB Ramps	35.1	D	37.5	D	35.9	C	38.2	C	0.8	No	38.2	C	0.7
3	Del Mar Heights Road / High Bluff Drive	26.1	C	28.9	C	26.8	C	30.0	C	0.7	No	30.0	C	1.1
4	Del Mar Heights Road / Third Avenue	DNE	DNE	DNE	DNE	4.4	A	6.1	A	N/A	No	6.1	A	N/A
5	Del Mar Heights Road / El Camino Real	27.2	C	26.9	C	27.9	C	27.0	C	0.7	No	27.0	C	0.1

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D = Delay

DNE = Does Not Exist

N/A = Not Applicable

ATTACHMENT 30

Existing With & Without Construction Traffic (Phase 1 & 2)

Freeway Level of Service Summary

Segment	Dir.	Existing		Existing + Construction (Phase 1 & 2)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6447	C	0.6454	C	0.0007	NO
	SB	0.6655	C	0.6662	C	0.0007	NO
	NB	0.5565	B	0.5570	B	0.0006	NO
	SB	0.5744	B	0.5750	B	0.0006	NO

Legend:

Dir.= Direction

V/C= Volume to Capacity Ratio

LOS= Level of Service

Sig.?= Is this significant?

ATTACHMENT 31

Near Term With & Without Construction (Phase 1 & 2) Street Segment Comparison

Road	Segment	Class.	Near Term			Near Term + Construction (Phase 1 & 2)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	40,958	0.819	0.017	<i>NO</i>
	I-5 Northbound Ramps to High Bluff Drive	PA	D	52,682	0.878	D	54,337	0.906	0.028	<i>NO</i>
	High Bluff Drive to First Avenue	PA	C	38,967	0.649	C	40,622	0.677	0.028	<i>NO</i>
	First Avenue to El Camino Real	PA	C	38,967	0.649	C	39,287	0.655	0.005	<i>NO</i>
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,754	0.546	0.001	<i>NO</i>
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,965	0.374	0.001	<i>NO</i>
	Del Mar Heights Road to Townsgate Drive	6-M	A	15,946	0.319	A	16,146	0.323	0.004	<i>NO</i>

Legend:

LOS= Level of Service
V/C= Volume to Capacity Ratio
 $\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial
5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT
4-M=4 lane Major
6-M = 6 lane Major

Near Term With & Without Construction Traffic Intersection Summary

Phase 1 & 2

#	Intersection	Near Term				Near Term + Constr. Traffic (Phase 1&2)							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		S ?	A	S ?	
		D	LOS	D	LOS	D	LOS	D	LOS				
1	Del Mar Heights Road / I-5 SB Ramps	21.2	C	21.9	C	24.1	C	2.9	N	22.2	C	0.3	N
2	Del Mar Heights Road / I-5 NB Ramps	36.8	D	37.6	D	38.1	D	1.3	N	38.5	D	0.9	N
3	Del Mar Heights Road / High Bluff Drive	28.2	C	31.6	C	29.2	C	1.0	N	32.1	C	0.5	N
4	Del Mar Heights Road / Third Avenue	DNE	DNE	DNE	DNE	4.4	A	0.0	N	5.7	A	0.0	N
5	Del Mar Heights Road / El Camino Real	27.9	C	30.8	C	28.7	C	0.8	N	31.9	C	1.1	N

Notes:

LOS = Level of Service

$$\Delta = \text{Change}$$

S = Significant

D= Delay

DNE = Does not Exist

ATTACHMENT 33

Near Term With & Without Construction Traffic

Freeway Level of Service Summary Phase 1 & 2

Segment	Dir.	Near Term		Near Term + Construction (Phase 1&2)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6469	C	0.6476	C	0.0007	NO
	SB	0.6677	C	0.6684	C	0.0007	NO
	NB	0.5585	B	0.5591	B	0.0006	NO
	SB	0.5764	B	0.5770	B	0.0006	NO

Legend:

Dir.= Direction

V/C= Volume to Capacity Ratio

LOS= Level of Service

Sig.? = Is this significant?

ATTACHMENT 34
One Paseo Trip Generation Table
Construction Traffic

PHASES 1 - 3 Combined

Purpose	Number	Auto Equivalency	Equivalent Autos	Trip	ADT	AM Peak Hour						PM Peak Hour					
						%	#	In	: Out	In	Out	%	#	In	: Out	In	Out
Employees	500 Autos	N/A	500	2 /Auto	1,000	4%	40	9	: 1	36	4	4%	40	2	: 8	8	32
Material Deliveries	25 Trucks	2.5	62.5	2 /Auto	125	9%	11	4	: 6	5	7	8%	10	5	: 5	5	5
Truck Imports/Exports	210 Trucks	2.5	525	2 /Auto	1,050	9%	95	4	: 6	38	57	8%	84	5	: 5	42	42
TOTAL					2,175		146			78	67		134			55	79

Notes:

Passenger-Car equivalents for Trucks is 2.5 per Exhibit 21-9 in the Highway Capacity Manual 2000
Typical Work Hours 7AM to 3:30PM.

For Employee Peak Hour In/Out Ratios, a 4% AM and PM peak is assumed based on the AM peak counts beginning at 7:30AM and the majority of employee shifts ending at 3:30PM, which is prior to the PM peak counts beginning at 5:00PM.

For Material Deliveries and Truck Imports/Exports, the Truck Terminal land use peak hour splits were used based on the City of San Diego Trip Generation Manual, May 2003.

ATTACHMENT 35

Existing Without & Existing With Construction (Phase 1 - 3) Street Segment Comparison

Road	Segment	Class.	Existing			Existing + Construction (Phase 1 - 3)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	41,028	0.821	0.019	NO
	I-5 Northbound Ramps to High Bluff Drive	PA	D	51,625	0.860	D	53,400	0.890	0.030	NO
	High Bluff Drive to First Avenue	PA	C	37,910	0.632	C	39,685	0.661	0.030	NO
	First Avenue to El Camino Real	PA	C	37,910	0.632	C	38,310	0.639	0.007	NO
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,774	0.546	0.002	NO
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,975	0.374	0.001	NO
	Del Mar Heights Road to Townsgate Drive	6-M	A	14,731	0.295	A	14,981	0.300	0.005	NO

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

ATTACHMENT 36

Existing & Existing + Construction Traffic (Phase 1-3) Intersection Summary

#	Intersection	Existing						Existing + Construction Traffic (Phase 1-3)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		S ?	A		S ?
		D	LOS	D	LOS	D	LOS	D	LOS		D	LOS	
1	Del Mar Heights Road / I-5 SB Ramps	22.5	C	20.3	C	22.8	C	21.0	C	No	0.3	C	No
2	Del Mar Heights Road / I-5 NB Ramps	35.1	D	37.5	D	35.8	C	38.2	C	No	0.7	C	No
3	Del Mar Heights Road / High Bluff Drive	26.1	C	28.9	C	26.8	C	30.0	C	No	0.7	C	No
4	Del Mar Heights Road / First Avenue	DNE	DNE	DNE	DNE	3.4	A	4.9	A	No	N/A	A	No
5	Del Mar Heights Road / El Camino Real	27.2	C	26.9	C	28.8	C	28.2	C	No	1.6	C	No

Notes:

LOS = Level of Service
 Δ = Change
 S = Significant
 D = Delay

DNE = Does Not Exist
 N/A = Not Applicable

ATTACHMENT 37

Existing With & Without Construction Traffic (Phase 1 - 3)

Freeway Level of Service Summary

Segment	Dir.	Existing		Existing + Construction (Phase 1 - 3)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6447	C	0.6455	C	0.0007	NO
	SB	0.6655	C	0.6663	C	0.0008	NO
	NB	0.5565	B	0.5571	B	0.0006	NO
	SB	0.5744	B	0.5751	B	0.0006	NO

Legend:

Dir. = Direction

V/C = Volume to Capacity Ratio

LOS = Level of Service

Sig. ? = Is this significant?

ATTACHMENT 38

Near Term With & Without Construction (Phase 1 - 3) Street Segment Comparison

Road	Segment	Class.	Near Term			Near Term + Construction (Phase 1 - 3)			$\Delta V/C$	Is this impact Significant?
			LOS	Volume	V/C	LOS	Volume	V/C		
Del Mar Heights Rd.	I-5 Southbound Ramps and I-5 Northbound Ramps	5-PA	D	40,090	0.802	D	41,028	0.821	0.019	<i>NO</i>
	I-5 Northbound Ramps to High Bluff Drive	PA	D	53,226	0.887	E	55,001	0.917	0.030	<i>YES</i>
	High Bluff Drive to First Avenue	PA	C	39,511	0.659	C	41,286	0.688	0.030	<i>NO</i>
	First Avenue to El Camino Real	PA	C	39,511	0.659	C	39,911	0.665	0.007	<i>NO</i>
	El Camino Real to Carmel Country Road	PA	B	32,674	0.545	B	32,774	0.546	0.002	<i>NO</i>
El Camino Real	Quarter Mile Drive to Del Mar Heights Road	4-M	A	14,925	0.373	A	14,975	0.374	0.001	<i>NO</i>
	Del Mar Heights Road to Townsgate Drive	6-M	A	16,572	0.331	A	16,822	0.336	0.005	<i>NO</i>

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

$\Delta V/C$ = Change in V/C ratio

PA = 6 lane Primary Arterial

5-PA = 5 lane Primary Arterial with LOS E capacity of 50,000 ADT

4-M=4 lane Major

6-M = 6 lane Major

Near Term With & Without Construction Traffic Intersection Summary

Phases 1 - 3

#	Intersection	Near Term			Near Term + Constr. Traffic (Phase 1-3)					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		S ?
		D	LOS	D	LOS	D	LOS	D	LOS	
1	Del Mar Heights Road / I-5 SB Ramps	20.3	C	21.0	C	24.4	C	22.5	C	1.5
2	Del Mar Heights Road / I-5 NB Ramps	32.0	C	34.8	C	42.3	D	39.8	D	5.0
3	Del Mar Heights Road / High Bluff Drive	26.8	C	30.0	C	29.4	C	32.6	C	2.6
4	Del Mar Heights Road / First Avenue	DNE	DNE	DNE	DNE	3.6	A	5.0	A	0.0
5	Del Mar Heights Road / El Camino Real	26.7	C	26.0	C	29.2	C	28.4	C	2.4

Notes:

LOS = Level of Service

Δ = Change

S = Significant

D = Delay

DNE = Does not Exist

ATTACHMENT 40

Near Term With & Without Construction Traffic

Freeway Level of Service Summary Phase 1 - 3

Segment	Dir.	Near Term		Near Term + Construction (Phase 1-3)		Δ	Sig.?
		V/C	LOS	V/C	LOS		
I-5 Via De La Valle/Del Mar Heights Rd. Via De La Valle/Del Mar Heights Rd. Del Mar Heights Rd./ SR-56 Del Mar Heights Rd./ SR-56	NB	0.6481	C	0.6488	C	0.0007	NO
	SB	0.6688	C	0.6696	C	0.0008	NO
	NB	0.5596	B	0.5602	B	0.0006	NO
	SB	0.5774	B	0.5781	B	0.0006	NO

Legend:

Dir.= Direction

V/C= Volume to Capacity Ratio

LOS= Level of Service

Sig.?= Is this significant?

Movement	EBL	EBT	EBL	EBT	WBL	WBT	SBL	SBT
Lane Configurations	←	←	←	←	←	←	←	←
Volume (vph)	0	665	990	0	0	865	326	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	5.6	5.6	5.6	5.6	5.6	5.6
Lane Util. Factor	0.95	0.95	0.97	0.91	0.95	0.99	0.85	0.95
Fit	1.00	1.00	0.99	0.99	0.99	0.99	0.85	0.95
Fit Protected	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3539	3539	3429	3429	3429	3429	1441	3429
Fit Permitted	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3539	3539	3429	3429	3429	3429	1441	3429
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	739	1109	0	961	362	3	51
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	739	1109	0	961	362	3	51
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	2.6	8.2	4	4	4	4	4	4
Permitted Phases	46.8	46.8	27.2	27.2	27.2	27.2	27.2	27.2
Effective Green, G (s)	46.8	46.8	27.2	27.2	27.2	27.2	27.2	27.2
Effective Green, g (s)	0.54	0.54	0.32	0.32	0.32	0.32	0.32	0.32
Actuated g/C Ratio	0.54	0.54	0.32	0.32	0.32	0.32	0.32	0.32
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1928	1928	1086	1086	1086	1086	466	1086
vs Ratio Prot	0.24	0.24	0.29	0.29	0.29	0.29	0.19	0.29
vs Ratio Perm	0.38	0.38	0.58	0.58	0.58	0.58	0.60	0.58
Uniform Delay, d1	11.2	13.0	28.2	24.8	24.8	24.8	24.8	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4	11.7	2.2	2.2	2.2	2.2	2.2
Delay (s)	11.4	13.4	40.0	27.0	27.0	27.0	27.0	27.0
Level of Service	B	B	D	D	D	D	C	D
Approach Delay (s)	11.4	13.4	35.8	35.8	35.8	35.8	35.8	35.8
Approach LOS	B	B	D	D	D	D	D	D
Intersection Summary								
HCM Average Control Delay	22.7							
HCM Volume to Capacity ratio	0.70							
Actuated Cycle Length (s)	85.9							
Sum of lost time (s)	11.9							
Intersection Capacity Utilization	63.1%							
ICU Level of Service	B							
Analysis Period (min)	15							
Critical Lane Group	c							

Movement	EBL	EBT	EBL	EBT	WBL	WBT	SBL	SBT
Lane Configurations	←	←	←	←	←	←	←	←
Volume (vph)	224	1286	0	0	1434	902	373	0
Ideal Flow (vphpl)	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	4.0
Lane Util. Factor	0.97	0.95	0.91	1.00	0.95	0.95	0.91	0.95
Fit	1.00	1.00	1.00	1.00	0.95	0.95	0.91	0.95
Fit Protected	0.95	1.00	1.00	1.00	0.95	0.95	0.91	1.00
Satd. Flow (prot)	3433	3539	5085	5085	1583	1583	1457	1504
Fit Permitted	0.95	1.00	1.00	1.00	0.95	0.95	0.91	1.00
Satd. Flow (perm)	3433	3539	5085	5085	1583	1583	1457	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	249	1429	0	0	1583	1002	414	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	249	1429	0	0	1583	614	373	430
Turn Type	Prot	Prot	Prot	Prot	Prot	Split	Prot	Prot
Protected Phases	5	2	6	6	6	8	8	8
Permitted Phases	14.0	89.3	51.3	51.3	51.3	42.7	42.7	42.7
Effective Green, G (s)	14.0	89.3	51.3	51.3	51.3	42.7	42.7	42.7
Effective Green, g (s)	0.12	0.58	0.43	0.43	0.43	0.36	0.36	0.36
Actuated g/C Ratio	0.12	0.58	0.43	0.43	0.43	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	401	2044	2174	677	677	598	518	535
vs Ratio Prot	0.07	0.40	0.31	0.39	0.39	0.22	0.30	0.23
vs Ratio Perm	0.62	0.70	0.73	0.91	0.91	0.62	0.84	0.80
Uniform Delay, d1	50.5	18.0	28.6	32.1	32.0	35.6	34.9	34.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	2.0	2.2	18.1	2.0	11.9	8.5	8.5
Delay (s)	53.5	20.0	30.9	50.2	34.0	47.5	43.4	43.4
Level of Service	D	B	C	D	C	D	D	D
Approach Delay (s)	53.5	20.0	38.3	38.3	38.3	42.1	42.1	42.1
Approach LOS	D	B	C	D	C	D	D	D
Intersection Summary								
HCM Average Control Delay	35.2							
HCM Volume to Capacity ratio	0.86							
Actuated Cycle Length (s)	120.0							
Sum of lost time (s)	12.0							
Intersection Capacity Utilization	90.5%							
ICU Level of Service	E							
Analysis Period (min)	15							
Critical Lane Group	c							

Movement	EBT	EBL	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Lane Configurations	AAA		A	AAA	AAA				
Volume (vph)	1271	38	26	1951	40	26			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00			
Flt	1.00	0.95	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)	5085	1563	3433	5085	1770	1563			
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00			
Satd. Flow (perm)	5085	1563	3433	5085	1770	1563			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90			
Adj. Flow (vph)	1412	42	29	2168	44	29			
RTOR Reduction (vph)	0	11	0	0	0	0			
Lane Group Flow (vph)	1412	31	29	2168	44	2			
Turn Type	Perm	Prot	Prot	Perm	Prot	Perm			
Protected Phases	4	3	3	8	2	2			
Permitted Phases	4					2			
Actuated Green, G (s)	47.6	47.6	1.8	53.4	4.0	4.0			
Effective Green, g (s)	47.6	47.6	1.8	53.4	4.0	4.0			
Actuated g/C Ratio	0.73	0.73	0.03	0.82	0.06	0.06			
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	3701	1152	94	4152	108	97			
v/s Ratio Prot	0.28	0.01	0.01	0.43	0.02	0.00			
v/s Ratio Perm	0.02								
v/c Ratio	0.38	0.05	0.31	0.52	0.41	0.02			
Uniform Delay, d1	3.4	2.5	31.2	1.9	29.6	28.9			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.1	0.0	1.9	0.1	2.5	0.1			
Delay (s)	3.4	2.5	33.1	2.0	32.1	28.9			
Level of Service	A	A	C	A	C	C			
Approach Delay (s)	3.4		2.4	30.8					
Approach LOS	A		A	C					
Intersection Summary									
HCM Average Control Delay	3.4				HCM Level of Service				A
HCM Volume to Capacity ratio	0.51				Sum of lost time (s)				8.0
Actuated Cycle Length (s)	65.4				ICU Level of Service				A
Intersection Capacity Utilization	47.7%				Analysis Period (min)				15
c Critical Lane Group									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	AAA	AAA	A	AAA	AAA	AAA	BB	BB	BB	BB	BB
Volume (vph)	108	1217	674	92	1829	59	195	10	13	79	303
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	0.85
Flt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.92	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1563	1770	5061	1770	3433	3242	1770	1863	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1563	1770	5061	1770	3433	3242	1770	1863	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	1352	749	102	2032	66	217	11	14	80	337
RTOR Reduction (vph)	0	0	378	0	4	0	12	0	0	0	136
Lane Group Flow (vph)	120	1352	371	102	2094	0	217	13	0	88	63
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	5	8	4	5	2	4	6	9
Permitted Phases											
Actuated Green, G (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	12.9	17.0	17.0	17.0
Effective Green, g (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	12.9	17.0	17.0	17.0
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.46	0.08	0.13	0.15	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	2386	743	135	2306	273	409	259	360	306	306
v/s Ratio Prot	c0.07	0.27	0.23	0.06	c0.41	c0.06	0.00	0.05	0.09	0.09	c0.13
v/s Ratio Perm	0.75	0.57	0.50	0.76	0.91	0.79	0.03	0.34	0.16	0.66	0.66
Uniform Delay, d1	38.1	16.9	16.2	39.8	22.2	39.8	33.7	39.7	29.6	32.7	29.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.2	0.3	0.5	21.1	5.7	14.7	0.0	0.8	0.2	5.0	5.0
Delay (s)	57.3	17.2	16.7	60.9	27.9	54.5	33.8	40.5	34.5	29.9	37.7
Level of Service	E	B	B	E	C	D	C	C	C	C	C
Approach Delay (s)	16.2			29.5		52.3		36.2			
Approach LOS	B			C		D		D			
Intersection Summary											
HCM Average Control Delay	26.8				HCM Level of Service				C		
HCM Volume to Capacity ratio	0.82				Sum of lost time (s)				16.0		
Actuated Cycle Length (s)	86.0				ICU Level of Service				C		
Intersection Capacity Utilization	71.0%				Analysis Period (min)				15		
Critical Lane Group											

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	217	874	211	188	1346	92	222	89	76	159	287	408	1900	1900
Ideal Flow (vphpl)	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt Protected	1.00	0.97	1.00	0.99	1.00	0.99	1.00	1.00	0.85	1.00	0.91	0.91	1.00	0.91
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4937	3433	5037	3433	5037	3433	5037	3433	5037	3433	4638	3433	4638
Satd. Flow (perm)	3433	4537	3433	5037	3433	5037	3433	5037	3433	5037	3433	4638	3433	4638
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	241	971	234	209	1496	102	247	110	84	177	319	453	206	0
RTOR Reduction (vph)	0	52	0	0	10	0	0	0	69	0	206	0	0	0
Lane Group Flow (vph)	241	1153	0	209	1588	0	247	110	15	177	566	0	0	0
Turn Type	Prot	4	3	Prot	5	2	2	2	1	6				
Protected Phases	7													
Permitted Phases														
Actuated Green, G (s)	8.7	24.3	9.3	24.9	7.0	13.3	13.3	13.3	9.5	15.8				
Effective Green, g (s)	8.7	24.3	9.3	24.9	7.0	13.3	13.3	13.3	9.5	15.8				
Actuated g/C Ratio	0.12	0.34	0.13	0.34	0.10	0.18	0.18	0.18	0.13	0.22				
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	413	1657	441	1732	332	934	281	450	1012					
v/s Ratio Prot	0.007	0.23	0.06	0.32	0.07	0.02	0.01	0.05	0.12					
v/s Ratio Perm	0.58	0.70	0.47	0.92	0.74	0.12	0.05	0.39	0.56					
Uniform Delay, d1	30.1	20.8	29.3	22.8	31.8	24.7	24.4	28.8	25.2					
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Incremental Delay, d2	2.1	1.3	0.8	8.1	8.7	0.1	0.1	0.6	0.7					
Delay (s)	32.2	22.1	30.1	30.8	40.5	24.7	24.4	29.4	25.9					
Level of Service	C	C	C	C	D	C	C	C	C					
Approach Delay (s)	23.8		30.7		33.5									
Approach LOS	C		C		C									
Intersection Summary														
HCM Average Control Delay			28.0											
HCM Volume to Capacity ratio			0.85											
Actuated Cycle Length (s)			72.4						8.0					
Intersection Capacity Utilization			66.6%						C					
Analysis Period (min)			15						15					
c Critical Lane Group														

Baseline

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	0	860	1140	0	860	1140	0	860	1140	0	860	1140	0	860
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	978	1257	0	978	1257	0	978	1257	0	978	1257	0	978
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	978	1257	0	978	1257	0	978	1257	0	978	1257	0	978
Turn Type	Prot	4	4	Prot	5	2	2	2	1	6				
Protected Phases	7													
Permitted Phases														
Actuated Green, G (s)	8.7	24.3	9.3	24.9	7.0	13.3	13.3	13.3	9.5	15.8				
Effective Green, g (s)	8.7	24.3	9.3	24.9	7.0	13.3	13.3	13.3	9.5	15.8				
Actuated g/C Ratio	0.12	0.34	0.13	0.34	0.10	0.18	0.18	0.18	0.13	0.22				
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	413	1657	441	1732	332	934	281	450	1012					
v/s Ratio Prot	0.007	0.23	0.06	0.32	0.07	0.02	0.01	0.05	0.12					
v/s Ratio Perm	0.58	0.70	0.47	0.92	0.74	0.12	0.05	0.39	0.56					
Uniform Delay, d1	30.1	20.8	29.3	22.8	31.8	24.7	24.4	28.8	25.2					
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Incremental Delay, d2	2.1	1.3	0.8	8.1	8.7	0.1	0.1	0.6	0.7					
Delay (s)	32.2	22.1	30.1	30.8	40.5	24.7	24.4	29.4	25.9					
Level of Service	C	C	C	C	D	C	C	C	C					
Approach Delay (s)	23.8		30.7		33.5									
Approach LOS	C		C		C									
Intersection Summary														
HCM Average Control Delay			28.0											
HCM Volume to Capacity ratio			0.85											
Actuated Cycle Length (s)			72.4						8.0					
Intersection Capacity Utilization			66.6%						C					
Analysis Period (min)			15						15					
c Critical Lane Group														

Baseline

HCM Signalized Intersection Capacity Analysis Existing + Construction (Phase 1) PM 12/9/2011

2: Del Mar Heights Road & I-15 NB Ramps

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Volume (vph)	235	1481	0	1040	813	615	10	782	0	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	0.91	0.95	0.91	0.95	0.91	0.95	0.91	0.95	0.91
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	5085	5085	5085	5085	5085	5085	5085	5085
Satd. Flow (perm)	3433	3539	5085	5085	5085	5085	5085	5085	5085	5085	5085	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	261	1646	0	1156	903	683	3	847	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	261	1646	0	1156	903	683	3	847	0	0	0	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	6	6	6	8	8	8	8	8	8
Permitted Phases	14.4	60.0	41.6	41.6	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Actuated Green, G (s)	14.4	60.0	41.6	41.6	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Effective Green, g (s)	14.4	60.0	41.6	41.6	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Actuated g/C Ratio	0.12	0.50	0.35	0.35	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	412	1770	1763	549	728	649	652	652	652	652	652	652
v/s Ratio Prot	0.08	0.47	0.23	0.26	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
v/s Ratio Perm	0.63	0.93	0.66	0.74	0.74	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Uniform Delay, d1	50.3	28.0	33.1	34.5	28.4	28.1	28.5	28.5	28.5	28.5	28.5	28.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	10.2	1.9	8.7	4.1	6.1	4.7	4.7	4.7	4.7	4.7	4.7
Delay (s)	53.5	38.2	35.1	43.2	32.5	35.2	33.2	33.2	33.2	33.2	33.2	33.2
Level of Service	D	D	D	D	D	D	C	C	C	C	C	C
Approach Delay (s)	40.3	40.3	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6
Approach LOS	D	D	D	D	D	D	C	C	C	C	C	C
Intersection Summary												
HCM Average Control Delay	37.8											
HCM Volume to Capacity ratio	0.86											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	92.1%											
Analysis Period (min)	15											
c Critical Lane Group												

Baseline

HCM Signalized Intersection Capacity Analysis Existing + Construction (Phase 1) PM 12/9/2011

3: Del Mar Heights Road & High Bluff Drive

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Volume (vph)	242	2015	251	15	1180	28	618	65	134	27	28	80
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.97	0.95	0.97	0.95	1.00	1.00	0.85
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	5085	1770	5085	3433	3181	3433	3181	1770	1663	1663
Satd. Flow (perm)	1770	5085	5085	1770	5085	3433	3181	3433	3181	1770	1663	1663
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	2239	279	17	1311	31	687	72	149	30	32	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	269	2239	279	17	1340	0	687	110	0	30	32	6
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	8	8	8	5	2	1	6	6	6
Permitted Phases	17.4	53.0	53.0	1.7	37.3	22.2	25.1	25.1	25.1	3.9	6.8	6.8
Actuated Green, G (s)	17.4	53.0	53.0	1.7	37.3	22.2	25.1	25.1	25.1	3.9	6.8	6.8
Effective Green, g (s)	17.4	53.0	53.0	1.7	37.3	22.2	25.1	25.1	25.1	3.9	6.8	6.8
Actuated g/C Ratio	0.17	0.53	0.53	0.02	0.37	0.22	0.25	0.25	0.25	0.04	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	309	2703	842	30	1896	784	801	801	801	69	127	108
v/s Ratio Prot	0.15	0.44	0.12	0.01	0.26	0.20	0.03	0.02	0.02	0.02	0.02	0.02
v/s Ratio Perm	0.87	0.83	0.22	0.37	0.73	0.90	0.14	0.43	0.25	0.05	0.05	0.05
Uniform Delay, d1	40.1	19.5	12.4	48.6	26.5	37.7	28.8	46.8	44.0	43.4	43.4	43.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.4	2.2	0.1	22.3	1.2	13.4	0.1	4.3	1.0	0.2	0.2	0.2
Delay (s)	62.5	21.8	12.5	70.9	27.8	51.0	29.0	51.2	45.1	43.7	43.7	43.7
Level of Service	E	C	B	E	C	D	C	D	D	D	D	D
Approach Delay (s)	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8
Approach LOS	C	C	C	C	C	C	C	C	C	C	C	C
Intersection Summary												
HCM Average Control Delay	29.9											
HCM Volume to Capacity ratio	0.80											
Actuated Cycle Length (s)	99.7											
Intersection Capacity Utilization	76.6%											
Analysis Period (min)	15											
c Critical Lane Group												

Baseline

Movement	EBT	EBL	EBR	WBT	WBL	WBR	NBT	NBL	NBR	ISB	ISBR
Lane Configurations	AAA	AAA	A	AAA	AAA	A	AAA	AAA	A	AAA	AAA
Volume (vph)	2145	31	21	1183	40	26	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00	0.97	0.91	1.00	0.97	0.91
PH	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.97	1.00	0.95	1.00
PH Protected	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	6085	1583	3433	5085	1770	1583	3433	5085	1770	1583	3433
PH Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583	3433	5085	1770	1583	3433
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2383	34	23	1321	44	29	2100	2100	2100	2100	2100
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	2383	24	23	1321	44	2	2100	2100	2100	2100	2100
Turn Type	Perm	Perm	Prot	Perm	Prot	Perm	Perm	Perm	Prot	Perm	Perm
Protected Phases	4	3	8	2	2	2	4	3	8	2	2
Permitted Phases	4	3	8	2	2	2	4	3	8	2	2
Actuated Green, G (s)	38.5	38.5	0.6	43.1	4.1	4.1	38.5	38.5	0.6	43.1	4.1
Effective Green, g (s)	38.5	38.5	0.6	43.1	4.1	4.1	38.5	38.5	0.6	43.1	4.1
Actuated g/C Ratio	0.70	0.70	0.01	0.78	0.07	0.07	0.70	0.70	0.01	0.78	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3547	1104	37	3970	131	118	3547	1104	37	3970	131
vs Ratio Prot	0.47	0.01	0.01	0.28	0.02	0.02	0.47	0.01	0.01	0.28	0.02
vs Ratio Perm	0.67	0.02	0.62	0.35	0.34	0.02	0.67	0.02	0.62	0.35	0.02
Uniform Delay, d1	4.8	2.6	27.2	1.8	24.3	23.7	4.8	2.6	27.2	1.8	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	28.2	0.0	1.5	0.1	0.5	0.0	28.2	0.0	1.5
Delay (s)	5.3	2.6	55.4	1.8	25.8	23.7	5.3	2.6	55.4	1.8	25.8
Level of Service	A	A	E	A	C	C	A	A	E	A	C
Approach Delay (s)	5.2	2.8	25.0	2.8	25.0	25.0	5.2	2.8	25.0	2.8	25.0
Approach LOS	A	A	C	A	C	C	A	A	C	A	C
Intersection Summary											
HCM Average Control Delay	4.7										
HCM Volume to Capacity ratio	0.65										
Actuated Cycle Length (s)	55.2										
Intersection Capacity Utilization	51.4%										
Analysis Period (min)	15										
c Critical Lane Group											

Movement	EBT	EBL	EBR	WBT	WBL	WBR	NBT	NBL	NBR	ISB	ISBR
Lane Configurations	AAA	AAA	A	AAA	AAA	A	AAA	AAA	A	AAA	AAA
Volume (vph)	442	1358	361	102	746	176	270	394	238	147	146
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.97	0.91	0.97	0.97	0.91	0.97	0.97	0.91
PH	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.95	1.00
PH Protected	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	4925	3433	3433	4925	3433	3433	4925	3433	4925	3433
PH Permitted	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	4925	3433	3433	4925	3433	3433	4925	3433	4925	3433
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	491	1509	401	113	829	196	300	438	264	163	162
RTOR Reduction (vph)	0	44	0	0	44	0	0	44	0	217	0
Lane Group Flow (vph)	491	1553	401	113	871	0	300	438	264	163	162
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	2	5	2	2	1	6
Permitted Phases	7	4	4	3	8	2	5	2	2	1	6
Actuated Green, G (s)	15.4	33.7	15.4	6.5	24.8	8.2	8.2	13.8	13.8	6.8	12.4
Effective Green, g (s)	15.4	33.7	15.4	6.5	24.8	8.2	8.2	13.8	13.8	6.8	12.4
Actuated g/C Ratio	0.20	0.44	0.20	0.08	0.32	0.11	0.11	0.18	0.18	0.09	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	688	2161	688	291	1595	367	367	914	284	304	751
vs Ratio Prot	0.14	0.38	0.14	0.03	0.20	0.09	0.09	0.03	0.03	0.05	0.04
vs Ratio Perm	0.71	0.86	0.71	0.39	0.62	0.32	0.32	0.48	0.17	0.54	0.26
Uniform Delay, d1	28.5	19.5	28.5	33.3	22.0	33.6	33.6	28.3	26.6	33.5	28.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	3.8	3.5	0.9	0.7	13.2	0.4	0.3	1.8	1.8	0.2
Delay (s)	32.2	23.3	32.2	34.1	22.7	46.7	34.0	28.7	28.4	35.3	28.4
Level of Service	C	C	C	C	C	D	D	C	C	D	C
Approach Delay (s)	25.1	23.8	25.1	23.8	23.8	33.6	33.6	23.8	33.6	30.9	30.9
Approach LOS	C	C	C	C	C	D	D	C	C	D	C
Intersection Summary											
HCM Average Control Delay	27.1										
HCM Volume to Capacity ratio	0.74										
Actuated Cycle Length (s)	76.8										
Intersection Capacity Utilization	65.8%										
Analysis Period (min)	15										
c Critical Lane Group											

HCM Signalized Intersection Capacity Analysis
1: Del Mar Heights Rd. & I-15 SB Ramps

Near Term + Const. (Phase 1) AM
3/5/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBP
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	0	687	1028	0	910	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	5.6	5.6
Lane Util. Factor	0.95	0.95	0.95	0.95	0.97	0.91
Flt	1.00	1.00	1.00	1.00	0.99	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3539	3539	3539	3539	3429	1441
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3539	3539	3539	3539	3429	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	763	1142	0	1011	373
RTOR Reduction (vph)	0	0	0	0	3	41
Lane Group Flow (vph)	0	763	1142	0	1045	295
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		46.2	46.2		29.0	29.0
Effective Green, g (s)		46.2	46.2		29.0	29.0
Actuated g/C Ratio		0.53	0.53		0.33	0.33
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1877	1877		1142	480
v/s Ratio Prot		0.22	c0.32		c0.30	
v/s Ratio Perm		0.41	0.61		0.92	0.62
v/c Ratio		12.2	14.2		27.9	24.4
Uniform Delay, d1		1.00	1.00		1.00	1.00
Progression Factor		0.1	0.6		11.3	2.3
Incremental Delay, d2		12.4	14.7		39.1	26.7
Delay (s)		B	B		D	C
Level of Service		B	B		D	C
Approach Delay (s)		12.4	14.7		36.1	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay						C
HCM Volume to Capacity ratio		23.2			HCM Level of Service	
Actuated Cycle Length (s)		0.73			11.9	
Intersection Capacity Utilization		65.0%			Sum of lost time (s)	
Analysis Period (min)		15			ICU Level of Service	
c Critical Lane Group						

Baseline

Synchro 7 - Report
Page 1

HCM Signalized Intersection Capacity Analysis
2: Del Mar Heights Road & I-15 NB Ramps

Near Term + Const. (Phase 1) AM
3/5/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBP
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	231	1324	0	1482	931	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	1.00	0.95	0.95
Flt	1.00	1.00	1.00	1.00	0.85	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	5085	1583	1681	1504
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	5085	1583	1681	1504
Peak-hour factor, PHF	0.80	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	257	1471	0	1647	1034	943
RTOR Reduction (vph)	0	0	0	0	20	20
Lane Group Flow (vph)	257	1471	0	1647	580	480
Turn Type						Prot
Protected Phases		5	2		6	8
Permitted Phases						8
Actuated Green, G (s)		10.3	68.4		54.1	43.6
Effective Green, g (s)		10.3	68.4		54.1	43.6
Actuated g/C Ratio		0.09	0.57		0.45	0.36
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)		285	2017		714	546
v/s Ratio Prot		c0.07	0.42		c0.37	c0.33
v/s Ratio Perm		0.87	0.73		0.72	0.88
v/c Ratio		54.2	19.0		26.8	35.7
Uniform Delay, d1		1.00	1.00		1.00	1.00
Progression Factor		23.3	2.4		2.0	9.8
Incremental Delay, d2		77.5	21.3		28.7	50.7
Delay (s)		E	C		C	D
Level of Service		E	C		C	D
Approach Delay (s)		29.7			32.5	48.5
Approach LOS		C			C	A
Intersection Summary						
HCM Average Control Delay						D
HCM Volume to Capacity ratio		35.5			HCM Level of Service	
Actuated Cycle Length (s)		120.0			Sum of lost time (s)	
Intersection Capacity Utilization		94.1%			ICU Level of Service	
Analysis Period (min)		15				F
c Critical Lane Group						

Baseline

Synchro 7 - Report
Page 1

HCM Signalized Intersection Capacity Analysis
3: Del Mar Heights Road & High Bluff Drive

Near Term + Const. (Phase 1) AM
3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	111	1322	694	95	1890	61	201	10	13	81	59	312
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.85
Flt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5061	3433	3242	1770	1863	1583	1583	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5061	3433	3242	1770	1863	1583	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	123	1469	771	106	2100	68	223	11	14	90	66	347
RTOR Reduction (vph)	0	0	375	0	4	0	0	12	0	0	0	134
Lane Group Flow (vph)	123	1469	396	106	2164	0	223	13	0	90	66	213
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	2	5	2	1	6	6	6
Permitted Phases												
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	11.2	13.2	17.4	17.4	17.4
Effective Green, g (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	11.2	13.2	17.4	17.4	17.4
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.13	0.15	0.20	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	2376	740	134	2280	272	411	411	264	367	312	312
v/s Ratio Prot	c0.07	0.29	0.25	0.06	c0.43	c0.06	0.00	0.00	0.05	0.04	c0.13	c0.13
v/s Ratio Perm												
v/c Ratio	0.77	0.62	0.54	0.79	0.95	0.82	0.03	0.03	0.34	0.18	0.68	0.68
Uniform Delay, d1	39.3	17.6	16.7	40.2	23.1	40.1	33.8	33.8	33.7	29.6	32.9	32.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.6	0.5	0.7	26.4	9.0	17.3	0.0	0.0	0.8	0.2	6.0	6.0
Delay (s)	58.9	18.1	17.5	66.6	32.1	57.4	33.9	33.9	34.5	29.8	39.0	39.0
Level of Service	E	B	B	E	C	E	C	C	C	C	D	D
Approach Delay (s)	20.0			33.7		55.0						
Approach LOS	C			C		D						
Intersection Summary												
HCM Average Control Delay	29.0											
HCM Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	88.4											
Intersection Capacity Utilization	72.9%											
Analysis Period (min)	15											
c Critical Lane Group												

Baseline

Synchro 7 - Report
Page 1

HCM Signalized Intersection Capacity Analysis
4: Del Mar Heights Road & First Ave.

Near Term + Const. (Phase 1) AM
3/5/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	←	←	←	←	←	←
Volume (vph)	1571	38	26	2039	40	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00
Flt	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)	5085	1583	3433	5085	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1746	42	29	2266	44	29
RTOR Reduction (vph)	0	11	0	0	0	27
Lane Group Flow (vph)	1746	31	29	2266	44	2
Turn Type	Perm	Prot	Prot	Perm	Perm	Perm
Protected Phases	4	4	3	8	2	2
Permitted Phases						
Actuated Green, G (s)	50.6	50.6	1.9	56.5	4.1	4.1
Effective Green, g (s)	50.6	50.6	1.9	56.5	4.1	4.1
Actuated g/C Ratio	0.74	0.74	0.03	0.82	0.06	0.06
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3751	1168	95	4188	166	95
v/s Ratio Prot	0.34		0.01	c0.45		
v/s Ratio Perm						
v/c Ratio	0.47	0.03	0.31	0.54	0.42	0.02
Uniform Delay, d1	3.6	2.4	32.7	1.9	31.1	30.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	1.8	0.1	2.6	0.1
Delay (s)	3.7	2.4	34.5	2.1	33.7	30.4
Level of Service	A	A	C	A	C	C
Approach Delay (s)	3.7		2.5	32.4		
Approach LOS	A		A	C		
Intersection Summary						
HCM Average Control Delay	3.5					
HCM Volume to Capacity ratio	0.53					
Actuated Cycle Length (s)	68.6					
Intersection Capacity Utilization	49.4%					
Analysis Period (min)	15					
c Critical Lane Group						

Baseline

Synchro 7 - Report
Page 1

Movement	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Volume (vph)	223	900	266	198	1386	95	236	103	79	164	302	420	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4901	3433	5036	3433	5036	3433	5036	3433	5036	3433	4642	3433	4642	3433	4642
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	4901	3433	5036	3433	5036	3433	5036	3433	5036	3433	4642	3433	4642	3433	4642
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	248	1000	318	220	1540	106	262	114	88	182	336	467	1900	1900	1900	1900
RTOR Reduction (vph)	0	75	0	10	0	10	0	10	0	10	0	161	0	161	0	161
Lane Group Flow (vph)	248	1243	0	220	1636	0	262	114	17	182	642	0	1900	1900	1900	1900
Turn Type	Prot	4	Prot	8	Prot	8	Prot	5	2	2	1	6	Prot	1	Prot	6
Permitted Phases	7	4	3	8	3	8	3	5	2	2	1	6	3	8	3	5
Actuated Green, G (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	14.1	9.7	16.8	7.0	25.2	8.8	27.0
Effective Green, g (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	14.1	9.7	16.8	7.0	25.2	8.8	27.0
Actuated g/C Ratio	0.09	0.34	0.12	0.37	0.09	0.37	0.09	0.19	0.19	0.19	0.13	0.23	0.09	0.34	0.12	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1674	409	1842	409	1842	326	972	302	451	1057	0	1900	1900	1900	1900
v/s Ratio Prot	c0.07	0.25	0.06	c0.32	0.06	c0.32	c0.08	0.02	0.01	0.05	c0.14	0	1900	1900	1900	1900
v/s Ratio Perm	0.76	0.74	0.54	0.89	0.54	0.89	0.80	0.12	0.06	0.40	0.92dr	0	1900	1900	1900	1900
Uniform Delay, d1	32.6	21.4	30.6	22.0	30.6	22.0	32.7	24.7	24.4	29.4	25.5	0	1900	1900	1900	1900
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.0	1.8	1.4	5.6	1.4	5.6	13.4	0.1	0.1	0.6	1.0	0	1900	1900	1900	1900
Delay (s)	42.6	23.3	32.0	27.6	32.0	27.6	46.1	24.8	24.5	30.0	26.5	0	1900	1900	1900	1900
Level of Service	D	C	C	C	C	C	D	C	C	C	C	C	C	C	C	C
Approach Delay (s)	26.3	26.3	28.1	28.1	26.3	26.3	36.7	36.7	36.7	36.7	27.2	0	1900	1900	1900	1900
Approach LOS	C	C	C	C	C	C	D	D	D	D	C	C	C	C	C	C
Intersection Summary																
HCM Average Control Delay	28.2															
HCM Volume to Capacity ratio	0.73															
Actuated Cycle Length (s)	73.8															
Intersection Capacity Utilization	70.6%															
Analysis Period (min)	15															
dr Defacto Right Lane. Recode with 1 though lane as a right lane.																
c Critical Lane Group																

Movement	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Volume (vph)	0	910	1185	0	910	1185	0	910	1185	0	910	1185	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4901	3433	5036	3433	5036	3433	5036	3433	5036	3433	4642	3433	4642	3433	4642
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	4901	3433	5036	3433	5036	3433	5036	3433	5036	3433	4642	3433	4642	3433	4642
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1011	1317	0	997	1317	0	997	1317	0	997	1317	1900	1900	1900	1900
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1011	1317	0	1027	1317	0	1027	1317	0	1027	1317	1900	1900	1900	1900
Turn Type	Prot	4	Prot	8	Prot	8	Prot	5	2	2	1	6	Prot	1	Prot	6
Permitted Phases	7	4	3	8	3	8	3	5	2	2	1	6	3	8	3	5
Actuated Green, G (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	14.1	9.7	16.8	7.0	25.2	8.8	27.0
Effective Green, g (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	14.1	9.7	16.8	7.0	25.2	8.8	27.0
Actuated g/C Ratio	0.09	0.34	0.12	0.37	0.09	0.37	0.09	0.19	0.19	0.19	0.13	0.23	0.09	0.34	0.12	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1674	409	1842	409	1842	326	972	302	451	1057	0	1900	1900	1900	1900
v/s Ratio Prot	c0.07	0.25	0.06	c0.32	0.06	c0.32	c0.08	0.02	0.01	0.05	c0.14	0	1900	1900	1900	1900
v/s Ratio Perm	0.76	0.74	0.54	0.89	0.54	0.89	0.80	0.12	0.06	0.40	0.92dr	0	1900	1900	1900	1900
Uniform Delay, d1	32.6	21.4	30.6	22.0	30.6	22.0	32.7	24.7	24.4	29.4	25.5	0	1900	1900	1900	1900
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.0	1.8	1.4	5.6	1.4	5.6	13.4	0.1	0.1	0.6	1.0	0	1900	1900	1900	1900
Delay (s)	42.6	23.3	32.0	27.6	32.0	27.6	46.1	24.8	24.5	30.0	26.5	0	1900	1900	1900	1900
Level of Service	D	C	C	C	C	C	D	C	C	C	C	C	C	C	C	C
Approach Delay (s)	26.3	26.3	28.1	28.1	26.3	26.3	36.7	36.7	36.7	36.7	27.2	0	1900	1900	1900	1900
Approach LOS	C	C	C	C	C	C	D	D	D	D	C	C	C	C	C	C
Intersection Summary																
HCM Average Control Delay	28.2															
HCM Volume to Capacity ratio	0.73															
Actuated Cycle Length (s)	73.8															
Intersection Capacity Utilization	70.6%															
Analysis Period (min)	15															
dr Defacto Right Lane. Recode with 1 though lane as a right lane.																
c Critical Lane Group																

HCM Signalized Intersection Capacity Analysis
2: Del Mar Heights Road & I-15 NB Ramps

HCM Signalized Intersection Capacity Analysis
3: Del Mar Heights Road & High Bluff Drive

Near Term + Construction (Phase 1) PM
3/5/2012

Near Term + Construction (Phase 1) PM
3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	242	1527	0	0	1122	863	639	15	796	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	0.91	0.91	0.91	0.91	0.95	0.95	0.91	0.91	0.91
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	5085	5085	5085	1499	1504	1504	1504	1504
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	5085	5085	5085	5085	5085	1499	1504	1504	1504	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	1687	0	0	1247	959	710	17	884	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	269	1687	0	0	1247	436	561	531	507	0	0	0
Turn Type	Prot	Prot	Prot	Split	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2		6	6	6	8	8	8			
Permitted Phases												
Actuated Green, G (s)	11.5	62.6	47.1	47.1	47.1	47.1	49.4	49.4	49.4			
Effective Green, g (s)	11.5	62.6	47.1	47.1	47.1	47.1	49.4	49.4	49.4			
Actuated g/C Ratio	0.10	0.52	0.39	0.39	0.41	0.41	0.41	0.41	0.41			
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	329	1846	1996	621	692	617	619					
v/s Ratio Prot	0.08	c0.48	0.25	0.28	0.33	c0.35	0.34					
v/s Ratio Perm												
vc Ratio	0.82	0.92	0.62	0.70	0.81	0.86	0.82					
Uniform Delay, d1	53.2	26.4	29.3	30.6	31.2	32.2	31.3					
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Incremental Delay, d2	14.5	8.9	1.5	6.5	7.2	11.8	8.3					
Delay (s)	67.7	35.3	30.8	37.1	38.3	44.0	39.7					
Level of Service	E	D	C	D	D	D	D					
Approach Delay (s)		39.7		33.5								
Approach LOS		D		C								
Intersection Summary												
HCM Average Control Delay			37.6									
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			120.0									
Intersection Capacity Utilization			96.5%									
Analysis Period (min)			15									
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	249	2091	259	15	1280	29	637	67	138	28	30	82
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	5085	1770	5085	5085	3433	3181	3433	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	5085	5085	1770	5085	5085	3433	3181	3433	1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	277	2323	288	17	1422	32	708	74	153	31	33	91
RTOR Reduction (vph)	0	0	94	0	2	0	0	115	0	0	0	85
Lane Group Flow (vph)	277	2323	194	17	1452	0	708	112	0	31	33	6
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2					
Permitted Phases												
Actuated Green, G (s)	17.7	53.8	53.8	1.7	37.8	22.2	25.1					
Effective Green, g (s)	17.7	53.8	53.8	1.7	37.8	22.2	25.1					
Actuated g/C Ratio	0.18	0.54	0.54	0.02	0.38	0.22	0.25					
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)	312	2722	847	30	1907	756	794					
v/s Ratio Prot	c0.16	c0.46	0.12	0.01	0.29	c0.21	0.04					
v/s Ratio Perm												
vc Ratio	0.89	0.85	0.23	0.57	0.76	0.93	0.14					
Uniform Delay, d1	40.4	20.0	12.4	49.0	27.4	38.4	29.3					
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Incremental Delay, d2	24.8	2.8	0.1	22.3	1.8	18.4	0.1					
Delay (s)	65.2	22.8	12.5	71.3	29.3	56.9	29.4					
Level of Service	E	C	B	E	C	E	C					
Approach Delay (s)		25.8		29.7								
Approach LOS		C		C								
Intersection Summary												
HCM Average Control Delay			31.6									
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			100.5									
Intersection Capacity Utilization			78.6%									
Analysis Period (min)			15									
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	2272	31	21	1475	40	26	26
Ideal Flow (vphpl)	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	0.91	1.00	0.97	0.91	1.00	1.00	0.85
Fit	1.00	0.85	1.00	1.00	1.00	1.00	0.95
Fit Protected	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583	1583
Fit Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2524	34	23	1639	44	29	27
RTOR Reduction (vph)	0	10	0	0	0	0	27
Lane Group Flow (vph)	2524	24	23	1639	44	2	2
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	3	8	2	2	2	2
Permitted Phases	4	3	8	2	2	2	2
Actuated Green, G (s)	38.9	38.9	0.6	43.5	4.2	4.2	4.2
Effective Green, g (s)	38.9	38.9	0.6	43.5	4.2	4.2	4.2
Actuated g/C Ratio	0.70	0.70	0.01	0.78	0.08	0.08	0.08
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)	3551	1106	37	3971	133	119	119
v/s Ratio Prot	c0.50	0.01	c0.32	c0.02	c0.02	c0.02	c0.02
v/s Ratio Perm	0.71	0.02	0.62	0.41	0.33	0.02	0.00
Uniform Delay, d1	5.0	2.6	27.4	2.0	24.4	23.8	23.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.0	28.2	0.1	1.5	0.1	0.1
Delay (s)	5.7	2.6	55.7	2.0	25.9	23.9	23.9
Level of Service	A	A	E	A	C	C	C
Approach Delay (s)	5.7	2.6	55.7	2.0	25.9	23.9	23.9
Approach LOS	A	A	E	A	C	C	C
Intersection Summary							
HCM Average Control Delay	4.9						
HCM Volume to Capacity ratio	0.68						
Actuated Cycle Length (s)	55.7						
Intersection Capacity Utilization	53.9%						
Analysis Period (min)	15						
c Critical Lane Group							

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	455	1399	388	106	768	181	344
Ideal Flow (vphpl)	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	0.97	0.91	0.97	0.91	0.97	0.91	1.00
Fit	1.00	0.97	1.00	0.97	1.00	0.95	1.00
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	4920	3433	4940	3433	5085	1583
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	4920	3433	4940	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	506	1554	431	118	853	201	382
RTOR Reduction (vph)	0	51	0	0	41	0	0
Lane Group Flow (vph)	506	1934	0	118	1013	0	382
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	2
Permitted Phases	7	4	3	8	5	2	2
Actuated Green, G (s)	16.5	40.4	4.6	28.5	10.1	15.1	15.1
Effective Green, g (s)	16.5	40.4	4.6	28.5	10.1	15.1	15.1
Actuated g/C Ratio	0.20	0.49	0.06	0.34	0.12	0.18	0.18
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)	684	2401	191	1700	419	927	289
v/s Ratio Prot	c0.15	c0.39	0.03	0.21	c0.11	0.09	c0.10
v/s Ratio Perm	0.74	0.81	0.62	0.60	0.91	0.49	0.54
Uniform Delay, d1	31.1	17.9	38.2	22.4	35.9	30.4	30.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	2.1	5.8	0.6	23.8	0.4	2.1
Delay (s)	35.3	19.9	44.1	23.0	59.7	30.8	32.8
Level of Service	D	B	D	C	E	C	C
Approach Delay (s)	35.3	19.9	44.1	23.0	59.7	30.8	32.8
Approach LOS	D	B	D	C	E	C	C
Intersection Summary							
HCM Average Control Delay	28.5						
HCM Volume to Capacity ratio	0.75						
Actuated Cycle Length (s)	82.8						
Intersection Capacity Utilization	69.6%						
Analysis Period (min)	15						
c Critical Lane Group							

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←
Volume (vph)	0	684	995	0	860	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	5.6	5.6
Lane Util. Factor	0.95	0.95	0.95	0.97	0.97	0.91
Flt Protected	1.00	1.00	1.00	0.99	0.99	0.95
Satd. Flow (prot)	1.00	1.00	1.00	0.95	0.95	1.00
Flt Permitted	3539	3539	3539	3429	3429	1441
Satd. Flow (perm)	1.00	1.00	1.00	0.95	0.95	1.00
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	738	1106	0	956	362
RTOR Reduction (vph)	0	0	0	0	3	51
Lane Group Flow (vph)	0	738	1106	0	959	275
Turn Type		2.6	6.2		4	Perm
Protected Phases		4	4		4	4
Permitted Phases		47.2	47.2		27.2	27.2
Actuated Green, G (s)		47.2	47.2		27.2	27.2
Effective Green, g (s)		47.2	47.2		27.2	27.2
Actuated g/C Ratio		0.55	0.55		0.32	0.32
Clearance Time (s)		5.6	5.6		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1936	1936		1081	454
v/s Ratio Prot		0.21	0.31		0.29	0.19
v/s Ratio Perm		0.38	0.57		0.92	0.50
Uniform Delay, d1		11.2	12.9		28.4	25.0
Progression Factor, c		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.4		11.8	2.3
Delay (s)		11.3	13.3		40.2	27.3
Level of Service		B	B		D	C
Approach Delay (s)		11.3	13.3		37.0	D
Approach LOS		B	B		D	D
Intersection Summary						
HCM Average Control Delay		22.7			HCM Level of Service	C
HCM Volume to Capacity ratio		0.70				11.9
Actuated Cycle Length (s)		86.3			Sum of lost time (s)	B
Intersection Capacity Utilization		62.9%			ICU Level of Service	15
Analysis Period (min)		15				
c - Critical Lane Group						

Baseline

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←
Volume (vph)	224	1280	0	0	1424	896
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	0.91
Flt Protected	1.00	1.00	1.00	1.00	0.95	0.85
Satd. Flow (prot)	0.95	1.00	1.00	1.00	0.95	1.00
Flt Permitted	3433	3539	5085	1593	1681	1457
Satd. Flow (perm)	0.95	1.00	1.00	1.00	0.95	1.00
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	249	1422	0	0	1582	996
RTOR Reduction (vph)	0	0	0	0	422	0
Lane Group Flow (vph)	249	1422	0	0	1582	574
Turn Type	Prot	5	2		Prot	Split
Protected Phases		5	2		6	8
Permitted Phases		12.3	65.4		49.1	46.6
Actuated Green, G (s)		12.3	65.4		49.1	46.6
Effective Green, g (s)		0.10	0.55		0.41	0.39
Actuated g/C Ratio		4.0	4.0		4.0	4.0
Clearance Time (s)		3.0	3.0		3.0	3.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		352	1928		2081	648
v/s Ratio Prot		0.07	0.40		0.31	0.22
v/s Ratio Perm		0.71	0.74		0.76	0.57
Uniform Delay, d1		62.1	20.8		30.4	28.8
Progression Factor, c		1.00	1.00		1.00	1.00
Incremental Delay, d2		6.4	2.6		2.7	16.3
Delay (s)		68.5	23.3		33.1	45.1
Level of Service		E	C		C	D
Approach Delay (s)		28.5			39.3	D
Approach LOS		C			D	D
Intersection Summary						
HCM Average Control Delay		35.2			HCM Level of Service	D
HCM Volume to Capacity ratio		0.34				12.0
Actuated Cycle Length (s)		120.0			Sum of lost time (s)	E
Intersection Capacity Utilization		90.1%			ICU Level of Service	15
Analysis Period (min)		15				
c - Critical Lane Group						

Baseline

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	108	1206	674	92	1812	59	195	10	13	79	57	303
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.85
Flt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1770	5085	1583	1770	5085	1770	5085	1583	1770	5085	1583	1770
Satd. Flow (perm)	1770	5085	1583	1770	5085	1770	5085	1583	1770	5085	1583	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	1340	743	102	2075	66	217	11	14	86	63	337
RTOR Reduction (vph)	0	0	378	0	4	0	0	12	0	0	0	136
Lane Group Flow (vph)	120	1340	371	102	2075	66	217	13	0	86	63	201
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	3	5	2	2	6	6	7
Permitted Phases	7	4	4	3	8	3	5	2	2	6	6	7
Actuated Green, G (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.4	12.9	17.0	17.0	17.0	17.0
Effective Green, g (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.4	12.9	17.0	17.0	17.0	17.0
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.46	0.08	0.13	0.16	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	2386	743	135	2306	273	409	259	360	360	360	360
vs Ratio Prot	0.07	0.26	0.23	0.06	0.41	0.06	0.10	0.05	0.03	0.03	0.03	0.13
vs Ratio Perm	0.75	0.56	0.50	0.76	0.90	0.79	0.63	0.34	0.18	0.66	0.66	0.66
g/C Ratio	38.1	16.8	16.2	39.8	22.1	38.8	33.7	33.7	29.6	32.8	32.8	32.8
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	48.2	0.3	0.5	21.1	5.2	14.7	0.0	0.8	0.2	5.0	5.0	5.0
Delay (s)	57.3	17.3	16.7	60.9	27.3	54.5	33.8	34.5	29.9	37.9	37.9	37.9
Level of Service	E	B	B	E	C	D	C	C	C	C	C	D
Approach Delay (s)	19.2	28.9	28.9	28.9	28.9	28.9	52.3	52.3	36.2	36.2	36.2	36.2
Approach LOS	B	B	B	C	C	C	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	26.5											
HCM Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	88.0											
Intersection Capacity Utilization	70.6%											
Analysis Period (min)	15											
c. Critical Lane Group												

Baseline

Synchro 7 - Report
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	1271	27	18	1951	23	15	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00	0.97	0.95	1.00	1.00	1.00	0.85
Flt	1.00	0.85	1.00	1.00	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	5085	1583	1770	5085	1583	1770	5085	1583	1770	5085	1583	1770
Satd. Flow (perm)	5085	1583	1770	5085	1583	1770	5085	1583	1770	5085	1583	1770
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1412	30	20	2168	26	17	1900	1900	1900	1900	1900	1900
RTOR Reduction (vph)	0	10	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	1412	20	20	2168	26	17	1900	1900	1900	1900	1900	1900
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	3	8	2	2	2	4	3	8	2	2	2
Permitted Phases	4	3	8	2	2	2	4	3	8	2	2	2
Actuated Green, G (s)	32.1	32.1	1.0	37.1	2.1	2.1	32.1	32.1	1.0	37.1	2.1	2.1
Effective Green, g (s)	32.1	32.1	1.0	37.1	2.1	2.1	32.1	32.1	1.0	37.1	2.1	2.1
Actuated g/C Ratio	0.68	0.68	0.02	0.79	0.04	0.04	0.68	0.68	0.02	0.79	0.04	0.04
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3458	1077	38	3997	163	70	3458	1077	38	3997	163	70
vs Ratio Prot	0.28	0.01	0.01	0.43	0.01	0.01	0.28	0.01	0.01	0.43	0.01	0.01
vs Ratio Perm	0.41	0.02	0.53	0.54	0.17	0.01	0.41	0.02	0.53	0.54	0.17	0.01
g/C Ratio	3.3	2.4	22.9	1.9	21.7	21.6	3.3	2.4	22.9	1.9	21.7	21.6
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	12.5	0.2	0.5	0.1	0.1	0.1	12.5	0.2	0.5	0.1
Delay (s)	3.4	2.5	35.4	2.0	22.2	21.6	3.4	2.5	35.4	2.0	22.2	21.6
Level of Service	A	A	D	A	C	C	A	A	D	A	C	C
Approach Delay (s)	3.4	2.3	27.0	2.3	27.0	27.0	3.4	2.3	27.0	2.3	27.0	27.0
Approach LOS	A	A	D	A	C	C	A	A	D	A	C	C
Intersection Summary												
HCM Average Control Delay	3.0											
HCM Volume to Capacity ratio	0.52											
Actuated Cycle Length (s)	47.2											
Intersection Capacity Utilization	47.7%											
Analysis Period (min)	15											
c. Critical Lane Group												

Baseline

Synchro 7 - Report
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HCM Signalized Intersection Capacity Analysis Existing + Construction (Phase 2) AM
 5: Del Mar Heights Road & El Camino Real 12/9/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	216	871	205	186	1345	92	217	99	76	159	287
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.91	0.97	0.91	0.91	0.97	0.91	0.91
Flt Protected	1.00	0.97	1.00	0.99	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	4940	3433	5037	3433	5037	3433	5037	3433	4638	4638
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	240	968	228	209	1494	102	241	110	84	177	319
RTOR Reduction (vph)	0	47	0	0	10	0	0	0	69	0	218
Lane Group Flow (vph)	240	1140	0	209	1586	0	241	110	15	177	553
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	1	4	3	8	5	2	2	1	5	6	4
Actuated Green, G (s)	8.7	24.2	9.6	25.1	7.0	13.1	13.1	9.4	15.5	9.4	15.5
Effective Green, g (s)	8.7	24.2	9.6	25.1	7.0	13.1	13.1	9.4	15.5	9.4	15.5
Actuated g/C Ratio	0.12	0.33	0.13	0.35	0.10	0.18	0.18	0.13	0.21	0.13	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	413	1653	456	1749	332	921	287	446	994	446	994
W/S Ratio Prot	0.07	0.23	0.06	0.31	0.07	0.02	0.01	0.05	0.12	0.05	0.12
W/S Ratio Perm	0.58	0.69	0.46	0.91	0.73	0.12	0.05	0.40	0.56	0.40	0.56
Uniform Delay, d1	30.1	20.9	28.9	22.5	31.7	24.8	24.5	28.8	25.3	28.8	25.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	1.3	0.7	7.2	7.7	0.1	0.1	0.6	0.7	0.6	0.7
Delay (s)	32.2	22.1	29.7	29.7	39.4	24.8	24.5	29.4	26.0	29.4	26.0
Level of Service	C	C	C	C	D	C	C	C	C	C	C
Approach Delay (s)	23.8	29.7	29.7	29.7	32.8	24.5	24.5	26.6	26.6	26.6	26.6
Approach LOS	C	C	C	C	C	C	C	C	C	C	C
Intersection Summary											
HCM Average Control Delay	27.5										
HCM Volume to Capacity ratio	0.65										
Actuated Cycle Length (s)	72.3										
Intersection Capacity Utilization	88.4%										
Analysis Period (min)	15										
c. Critical Lane Group											

Baseline

HCM Signalized Intersection Capacity Analysis Existing + Construction (Phase 2) PM
 1: Del Mar Heights Rd. & I-15 SB Ramps 12/9/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	0	878	1138	0	878	1138	0	878	1138	0	878
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0	6.3	6.3	0	6.3	6.3	0	6.3	6.3	0	6.3
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	976	1264	0	976	1264	0	976	1264	0	976
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	976	1264	0	976	1264	0	976	1264	0	976
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	1	2	5	2	5	2	1	4	4	1	4
Actuated Green, G (s)	28.7	45.7	45.7	28.7	45.7	45.7	28.7	28.7	28.7	28.7	28.7
Effective Green, g (s)	28.7	45.7	45.7	28.7	45.7	45.7	28.7	28.7	28.7	28.7	28.7
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874
W/S Ratio Prot	0.28	0.36	0.36	0.28	0.36	0.36	0.28	0.36	0.36	0.28	0.36
W/S Ratio Perm	0.52	0.67	0.67	0.52	0.67	0.67	0.52	0.67	0.67	0.52	0.67
Uniform Delay, d1	13.2	14.9	14.9	13.2	14.9	14.9	13.2	14.9	14.9	13.2	14.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.0	1.0	0.3	1.0	1.0	0.3	1.0	1.0	0.3	1.0
Delay (s)	13.4	15.8	15.8	13.4	15.8	15.8	13.4	15.8	15.8	13.4	15.8
Level of Service	B	B	B	B	B	B	B	B	B	B	B
Approach Delay (s)	15.4	15.8	15.8	15.4	15.8	15.8	15.4	15.8	15.8	15.4	15.8
Approach LOS	B	B	B	B	B	B	B	B	B	B	B
Intersection Summary											
HCM Average Control Delay	20.9										
HCM Volume to Capacity ratio	0.75										
Actuated Cycle Length (s)	86.3										
Intersection Capacity Utilization	66.3%										
Analysis Period (min)	15										
c. Critical Lane Group											

Baseline

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	235	1474	0	0	1033	807	615	10	757	0	0
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	1.00	0.95	0.95	0.91	0.95	0.95	0.95	0.95
Fr1	1.00	1.00	1.00	1.00	0.95	1.00	0.90	0.90	0.85	1.00	1.00
Fr1 Protected	0.95	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	5085	5085	5085	5085	5085	5085	5085
Satd. Flow (perm)	3433	3539	5085	5085	5085	5085	5085	5085	5085	5085	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	261	1638	0	0	1148	897	663	11	841	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	261	1638	0	0	1148	371	533	511	465	0	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	6	6	6	6	6	6	6	6
Permitted Phases	12.5	68.8	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
Actuated Green, G (s)	12.5	68.8	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
Effective Green, g (s)	12.5	68.8	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
Actuated g/C Ratio	0.10	0.49	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	358	1734	1782	658	745	665	667	667	667	667	667
v/s Ratio Prot	0.08	0.46	0.23	0.23	0.32	0.32	0.34	0.32	0.32	0.32	0.32
v/s Ratio Perm	0.73	0.94	0.64	0.57	0.72	0.72	0.71	0.73	0.73	0.73	0.73
Uniform Delay, d1	52.1	28.1	32.5	32.9	27.2	28.2	27.4	27.4	27.4	27.4	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.3	12.0	1.8	6.2	3.3	5.3	4.0	4.0	4.0	4.0	4.0
Delay (s)	59.4	41.0	34.3	39.0	30.5	33.5	31.4	31.4	31.4	31.4	31.4
Level of Service	E	D	C	D	C	C	C	C	C	C	C
Approach Delay (s)	43.5	38.4	38.4	38.4	38.4	38.4	38.4	38.4	38.4	38.4	38.4
Approach LOS	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary											
HCM Average Control Delay	37.6										
HCM Volume to Capacity Ratio	0.86										
Actuated Cycle Length (s)	120.0										
Intersection Capacity Utilization	91.7%										
Analysis Period (min)	15										
c Critical Lane Group											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	242	2003	251	15	1167	28	618	65	134	27	80
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00
Fr1	1.00	1.00	0.85	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Fr1 Protected	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	5085	1770	5067	5067	3433	3181	3433	1770	1653
Satd. Flow (perm)	1770	5085	5085	1770	5067	5067	3433	3181	3433	1770	1653
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	265	2228	279	17	1297	31	687	72	149	30	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	265	2228	183	17	1326	0	687	110	0	30	32
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	4	4	4	5	2	1	6	6
Permitted Phases	17.3	52.9	52.9	1.7	37.3	22.2	22.2	25.1	3.9	6.8	6.8
Actuated Green, G (s)	17.3	52.9	52.9	1.7	37.3	22.2	22.2	25.1	3.9	6.8	6.8
Effective Green, g (s)	17.3	52.9	52.9	1.7	37.3	22.2	22.2	25.1	3.9	6.8	6.8
Actuated g/C Ratio	0.17	0.53	0.53	0.02	0.37	0.22	0.22	0.25	0.04	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	307	2701	841	30	1898	765	802	69	127	108	108
v/s Ratio Prot	0.15	0.44	0.12	0.01	0.26	0.20	0.03	0.02	0.02	0.02	0.02
v/s Ratio Perm	0.88	0.82	0.72	0.57	0.70	0.80	0.14	0.43	0.25	0.06	0.06
Uniform Delay, d1	40.1	19.5	12.4	48.6	28.4	37.6	28.9	46.8	44.0	43.4	43.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	23.2	2.2	0.1	22.3	1.1	13.3	0.1	4.3	1.0	0.2	0.2
Delay (s)	63.3	21.6	12.5	70.8	27.5	50.9	28.9	51.1	45.0	43.6	43.6
Level of Service	E	C	B	E	C	D	C	D	D	D	D
Approach Delay (s)	24.8	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1	26.1
Approach LOS	C	C	C	C	C	C	C	C	C	C	C
Intersection Summary											
HCM Average Control Delay	28.9										
HCM Volume to Capacity Ratio	0.79										
Actuated Cycle Length (s)	99.6										
Intersection Capacity Utilization	76.3%										
Analysis Period (min)	15										
c Critical Lane Group											

Movement	EBL	EBR	WBL	WBR	NBL	NBR
Lane Configurations	AAA	---	AAA	---	---	---
Volume (vph)	2145	19	13	1189	27	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Flt	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)	5085	5583	5085	5583	5085	5583
Satd. Flow (perm)	5085	5583	5085	5583	5085	5583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2383	21	14	1321	30	20
RTOR Reduction (vph)	0	6	0	0	0	19
Lane Group Flow (vph)	2383	15	14	1321	30	1
Turn Type	Perm	Perm	Prot	Perm	Perm	Perm
Protected Phases	4	3	8	2	2	2
Actuated Green, G(s)	38.4	38.4	0.6	43.0	2.2	2.2
Effective Green, g(s)	38.4	38.4	0.6	43.0	2.2	2.2
Actuated g/C Ratio	0.72	0.72	0.01	0.81	0.04	0.04
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3670	1143	20	4110	142	65
Vis Ratio Prot	<0.47	0.01	0.01	0.28	<0.01	0.00
Vis Ratio Perm	0.65	0.01	0.70	0.32	0.21	0.01
Uniform Delay, d1	3.9	2.1	28.2	1.3	24.7	24.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	73.4	0.0	0.7	0.1
Delay(s)	4.3	2.1	99.7	1.4	25.4	24.5
Level of Service	A	A	F	A	C	C
Approach Delay (s)	4.3	2.1	99.7	1.4	25.4	24.5
Approach LOS	A	A	F	A	C	C
Intersection Summary						
HCM Average Control Delay	3.9					
HCM Volume to Capacity ratio	0.63					
Actuated Cycle Length (s)	53.2					
Intersection Capacity Utilization	51.4%					
Analysis Period (min)	15					
c Critical Lane Group						

Baseline

Movement	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	441	1356	355	102	744	176	265	394
Ideal Flow (vphpl)	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	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4927	3433	4927	3433	4927	3433	4927
Satd. Flow (perm)	3433	4927	3433	4927	3433	4927	3433	4927
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	490	1507	394	113	827	186	294	438
RTOR Reduction (vph)	0	41	0	0	43	0	216	0
Lane Group Flow (vph)	490	1880	0	113	960	0	294	438
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	2	2	1	6
Actuated Green, G(s)	16.0	32.9	6.5	23.4	8.2	13.8	13.8	6.8
Effective Green, g(s)	16.0	32.9	6.5	23.4	8.2	13.8	13.8	6.8
Actuated g/C Ratio	0.21	0.43	0.09	0.31	0.11	0.18	0.18	0.06
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	723	2133	294	1521	370	923	287	307
Vis Ratio Prot	<0.11	<0.38	0.03	0.20	<0.09	<0.09	0.03	0.05
Vis Ratio Perm	0.68	0.67	0.38	0.84	0.79	0.47	0.79	0.53
Uniform Delay, d1	27.6	19.6	32.9	22.7	33.1	27.9	26.2	33.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	4.2	0.8	0.9	11.2	0.4	0.3	1.8
Delay(s)	30.2	23.9	33.7	23.7	44.3	28.2	26.5	34.8
Level of Service	C	C	C	C	D	C	C	C
Approach Delay (s)	30.2	23.9	33.7	23.7	44.3	28.2	26.5	34.8
Approach LOS	C	C	C	C	D	C	C	C
Intersection Summary								
HCM Average Control Delay	27.0							
HCM Volume to Capacity ratio	0.74							
Actuated Cycle Length (s)	76.0							
Intersection Capacity Utilization	65.5%							
Analysis Period (min)	15							
c Critical Lane Group								

Baseline

Movement	EBL	EBT	WBT	WBR	SBT	SSR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	0	688	1025	0	920	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	5.6	5.6	5.6	5.6
Lane Util. Factor	0.95	0.95	0.97	0.97	0.91	0.91
Flt	1.00	1.00	1.00	1.00	0.99	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3539	3539	3429	3429	1441	1441
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3539	3539	3429	3429	1441	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	764	1139	0	1022	373
RTOR Reduction (vph)	0	0	0	0	3	41
Lane Group Flow (vph)	0	764	1139	0	1056	295
Turn Type		2.6	6.2		4	Perm
Protected Phases						4
Permitted Phases						
Actuated Green, G (s)		46.2	46.2		29.1	29.1
Effective Green, g (s)		46.2	46.2		29.1	29.1
Actuated g/C Ratio		0.53	0.53		0.33	0.33
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1875	1875		1144	481
v/s Ratio Prot		0.22	c0.32		c0.31	0.20
v/s Ratio Perm						
v/c Ratio		0.41	0.61		0.92	0.61
Uniform Delay, d1		12.3	14.2		28.0	24.3
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.6		12.2	2.3
Delay (s)		12.4	14.8		40.2	26.7
Level of Service		B	B		D	C
Approach Delay (s)		12.4	14.8		36.9	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay						C
HCM Volume to Capacity ratio		23.6				HCM Level of Service
Actuated Cycle Length (s)		0.73				11.9
Intersection Capacity Utilization		87.2				Sum of lost time (s)
Analysis Period (min)		65.4%				ICU Level of Service
c Critical Lane Group		15				

Movement	EBL	EBT	WBT	WBR	SBT	SSR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	231	1318	0	1476	927	881
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	1.00	0.95	0.91
Flt	1.00	1.00	1.00	1.00	0.85	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	5085	1583	1681	1504
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	5085	1583	1681	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	257	1464	0	1640	1030	427
RTOR Reduction (vph)	0	0	0	0	430	0
Lane Group Flow (vph)	257	1464	0	1640	600	384
Turn Type	Prot	5	2	6	6	8
Protected Phases						8
Permitted Phases						
Actuated Green, G (s)		10.3	67.7		53.4	44.3
Effective Green, g (s)		10.3	67.7		53.4	44.3
Actuated g/C Ratio		0.09	0.56		0.44	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)		295	1997		2263	704
v/s Ratio Prot		c0.07	0.41		0.32	c0.38
v/s Ratio Perm						
v/c Ratio		0.87	0.73		0.72	0.85
Uniform Delay, d1		64.2	19.4		27.3	29.8
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		23.3	2.4		2.1	12.5
Delay (s)		77.5	21.9		29.3	42.3
Level of Service		E	C		C	D
Approach Delay (s)			30.2		34.3	52.2
Approach LOS			C		D	A
Intersection Summary						
HCM Average Control Delay						D
HCM Volume to Capacity ratio						
Actuated Cycle Length (s)						12.0
Intersection Capacity Utilization						F
Analysis Period (min)						15
c Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	111	1365	694	95	1880	61	201	10	13	81	59	312
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.85
Flt	1.00	1.00	0.85	1.00	1.00	1.00	0.92	1.00	0.92	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.85	1.00	1.00	1.00	0.92	1.00	0.92	1.00	1.00	0.85
Satd. Flow (prot)	1770	5085	1583	1770	5085	1770	5085	1583	1770	5085	1583	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1770	5085	1583	1770	5085	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	123	1517	771	106	2089	68	223	11	14	90	66	347
RTOR Reduction (vph)	0	0	375	0	4	0	0	12	0	0	0	134
Lane Group Flow (vph)	123	1517	396	106	2153	0	223	13	0	90	66	213
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	3	5	2	1	6	6	6
Permitted Phases												
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	11.2	13.2	17.4	17.4	17.4
Effective Green, g (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	11.2	13.2	17.4	17.4	17.4
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.13	0.15	0.20	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	2378	740	134	2290	272	411	411	264	367	312	312
v/s Ratio Prot	c0.07	0.30	0.25	0.06	c0.43	c0.06	0.00	0.00	0.05	0.04	c0.13	c0.13
v/s Ratio Perm												
v/c Ratio	0.77	0.64	0.54	0.79	0.94	0.82	0.03	0.03	0.34	0.18	0.68	0.68
Uniform Delay, d1	39.3	17.9	16.7	40.2	23.1	40.1	33.8	33.8	33.7	29.6	32.9	32.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.6	0.6	0.7	26.4	8.5	17.3	0.0	0.0	0.8	0.2	6.0	6.0
Delay (s)	58.9	18.5	17.5	66.6	31.6	57.4	33.9	33.9	34.5	29.8	39.0	39.0
Level of Service	E	B	B	E	C	E	C	C	C	C	D	D
Approach Delay (s)	20.2			33.2		55.0				37.0		
Approach LOS	C			C		D				D		
Intersection Summary												
HCM Average Control Delay												
HCM Volume to Capacity ratio												
Actuated Cycle Length (s)												
Intersection Capacity Utilization												
Analysis Period (min)												
c Critical Lane Group												

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	222	897	334	202	1385	95	237	103	79	164	306	419
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt Protected	1.00	0.96	1.00	0.99	1.00	0.99	1.00	0.98	1.00	0.98	1.00	0.91
Satd. Flow (prot)	3433	4878	3433	5036	3433	5036	3433	5085	3433	4644	3433	4644
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	4878	3433	5036	3433	5036	3433	5085	3433	4644	3433	4644
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	247	997	371	224	1539	106	263	114	88	182	340	466
RTOR Reduction (vph)	0	88	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	247	1280	0	224	1635	0	263	114	17	182	645	0
Turn Type	Prot	7	4	Prot	3	8	Prot	5	2	2	1	6
Protected Phases												
Permitted Phases												
Actuated Green, G (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	9.7	16.8	16.8
Effective Green, g (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	9.7	16.8	16.8
Actuated g/C Ratio	0.09	0.34	0.12	0.37	0.12	0.37	0.09	0.19	0.19	0.13	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1666	409	1842	326	1666	326	972	302	451	1057	1057
v/s Ratio Prot	0.07	0.26	0.07	0.32	0.07	0.32	0.08	0.02	0.01	0.05	0.14	0.14
v/s Ratio Perm												
Uniform Delay, d1	0.76	0.77	0.55	0.89	0.55	0.89	0.81	0.12	0.06	0.40	0.92d1	0.92d1
Progression Factor	32.6	21.7	30.6	22.0	30.6	22.0	32.7	24.7	24.4	29.4	25.6	25.6
Incremental Delay, d2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay (s)	9.7	2.2	1.5	5.6	9.7	2.2	13.6	0.1	0.1	0.6	1.1	1.1
Level of Service	D	C	C	C	C	C	D	C	C	C	C	C
Approach Delay (s)	26.7	26.7	28.1	28.1	26.7	26.7	36.9	36.9	36.9	27.2	27.2	27.2
Approach LOS	C	C	C	C	C	C	D	D	D	C	C	C
Intersection Summary												
HCM Average Control Delay	26.3	26.3	28.3	28.3	26.3	26.3	36.9	36.9	36.9	27.2	27.2	27.2
HCM Volume to Capacity ratio	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Actuated Cycle Length (s)	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8
Intersection Capacity Utilization	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%
Analysis Period (min)	15	15	15	15	15	15	15	15	15	15	15	15
dr Defacto Right Lane. Recode with 1 thought lane as a right lane.												
c Critical Lane Group												

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	0	910	1192	0	900	0	900	0	900	0	900	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.91
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85
Satd. Flow (prot)	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	1441
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Satd. Flow (perm)	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1011	1324	0	1000	0	1000	0	1000	0	1000	332
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	1011	1324	0	1030	0	1030	0	1030	0	1030	278
Turn Type	Prot	7	4	Prot	3	8	Prot	5	2	2	1	6
Protected Phases												
Permitted Phases												
Actuated Green, G (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	9.7	16.8	16.8
Effective Green, g (s)	7.0	25.2	8.8	27.0	8.8	27.0	7.0	14.1	14.1	9.7	16.8	16.8
Actuated g/C Ratio	0.09	0.34	0.12	0.37	0.12	0.37	0.09	0.19	0.19	0.13	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1666	409	1842	326	1666	326	972	302	451	1057	1057
v/s Ratio Prot	0.07	0.26	0.07	0.32	0.07	0.32	0.08	0.02	0.01	0.05	0.14	0.14
v/s Ratio Perm												
Uniform Delay, d1	0.76	0.77	0.55	0.89	0.55	0.89	0.81	0.12	0.06	0.40	0.92d1	0.92d1
Progression Factor	32.6	21.7	30.6	22.0	30.6	22.0	32.7	24.7	24.4	29.4	25.6	25.6
Incremental Delay, d2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay (s)	9.7	2.2	1.5	5.6	9.7	2.2	13.6	0.1	0.1	0.6	1.1	1.1
Level of Service	D	C	C	C	C	C	D	C	C	C	C	C
Approach Delay (s)	26.7	26.7	28.1	28.1	26.7	26.7	36.9	36.9	36.9	27.2	27.2	27.2
Approach LOS	C	C	C	C	C	C	D	D	D	C	C	C
Intersection Summary												
HCM Average Control Delay	26.3	26.3	28.3	28.3	26.3	26.3	36.9	36.9	36.9	27.2	27.2	27.2
HCM Volume to Capacity ratio	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Actuated Cycle Length (s)	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8	73.8
Intersection Capacity Utilization	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%	70.6%
Analysis Period (min)	15	15	15	15	15	15	15	15	15	15	15	15
dr Defacto Right Lane. Recode with 1 thought lane as a right lane.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 2: Del Mar Heights Road & I-15 NB Ramps

Near Term + Construction (Phase 2) PM
3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSB
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSB
Volume (vph)	242	1523	0	0	1156	877	644	20	800	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	1.00	0.95	0.91	0.95	0.95	0.95	0.95	0.95	0.95
Fit	1.00	1.00	1.00	1.00	0.85	1.00	0.90	0.85	0.85	0.85	0.85	0.85
Fit Protected	0.95	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539
Fit Permitted	0.95	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	1692	0	0	1284	974	716	22	889	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	514	0	6	6	0	0	0
Lane Group Flow (vph)	269	1692	0	0	1284	460	566	530	519	0	0	0
Turn Type	Prot	2	2	6	6	6	8	8	8	8	8	8
Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Actuated Green, G (s)	11.4	62.6	47.2	47.2	49.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4
Effective Green, g (s)	11.4	62.6	47.2	47.2	49.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4
Actuated g/C Ratio	0.10	0.52	0.39	0.39	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1846	2000	623	692	618	619	619	619	619	619	619
v/s Ratio Prot	0.08	c0.48	0.25	0.29	0.34	c0.35	0.35	0.35	0.35	0.35	0.35	0.35
v/s Ratio Perm	0.83	0.92	0.64	0.74	0.82	0.86	0.84	0.84	0.84	0.84	0.84	0.84
Uniform Delay, d1	53.3	26.3	29.5	31.1	31.3	32.1	31.7	31.7	31.7	31.7	31.7	31.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.5	8.7	1.6	7.6	7.5	11.3	9.7	9.7	9.7	9.7	9.7	9.7
Delay (s)	68.8	35.0	31.1	38.7	38.8	43.4	41.4	41.4	41.4	41.4	41.4	41.4
Level of Service	E	D	C	D	D	D	D	D	D	D	D	D
Approach Delay (s)	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6	39.6
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary
HCM Average Control Delay	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0
HCM Volume to Capacity ratio	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Actuated Cycle Length (s)	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
Intersection Capacity Utilization	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%	97.7%
Analysis Period (min)	15	15	15	15	15	15	15	15	15	15	15	15
c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group

Baseline

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HCM Signalized Intersection Capacity Analysis 3: Del Mar Heights Road & High Bluff Drive

Near Term + Construction (Phase 2) PM
3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSB
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSB
Volume (vph)	249	2092	259	15	1319	29	637	67	138	28	30	82
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Fit	1.00	1.00	1.00	1.00	0.85	1.00	1.00	0.90	1.00	1.00	0.85	1.00
Fit Protected	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	3181	1770	1863	1583	1583
Fit Permitted	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	3181	1770	1863	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	277	2324	288	17	1466	32	708	74	153	31	33	91
RTOR Reduction (vph)	0	0	94	0	2	0	0	115	0	0	0	85
Lane Group Flow (vph)	277	2324	194	17	1496	0	708	112	0	31	33	6
Turn Type	Prot	4	4	4	3	8	5	2	1	6	6	6
Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases	Protected Phases
Actuated Green, G (s)	17.7	54.0	54.0	1.7	38.0	22.2	25.1	25.1	3.9	6.8	6.8	6.8
Effective Green, g (s)	17.7	54.0	54.0	1.7	38.0	22.2	25.1	25.1	3.9	6.8	6.8	6.8
Actuated g/C Ratio	0.18	0.54	0.54	0.02	0.38	0.22	0.25	0.25	0.04	0.07	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	311	2727	849	30	1913	757	793	793	69	126	107	107
v/s Ratio Prot	c0.16	c0.46	0.12	0.01	0.30	c0.21	0.04	0.04	0.02	c0.02	0.00	0.00
v/s Ratio Perm	0.89	0.85	0.23	0.57	0.78	0.94	0.14	0.14	0.45	0.26	0.06	0.06
Uniform Delay, d1	40.6	19.9	12.3	49.1	27.7	38.5	29.4	29.4	47.3	44.5	44.0	44.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.6	2.8	0.1	22.3	2.2	18.6	0.1	0.1	4.6	1.1	0.2	0.2
Delay (s)	66.1	22.7	12.5	71.4	29.8	57.2	29.5	29.5	51.9	45.7	44.2	44.2
Level of Service	E	C	B	E	C	E	C	C	D	D	D	D
Approach Delay (s)	25.9	25.9	25.9	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3
Approach LOS	C	C	C	C	C	C	C	C	D	D	D	D
Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary	Intersection Summary
HCM Average Control Delay	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
HCM Volume to Capacity ratio	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Actuated Cycle Length (s)	100.7	100.7	100.7	100.7	100.7	100.7	100.7	100.7	100.7	100.7	100.7	100.7
Intersection Capacity Utilization	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%
Analysis Period (min)	15	15	15	15	15	15	15	15	15	15	15	15
c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group	c Critical Lane Group

Baseline

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Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	←←←	←←←	→	←←←	←←←	←←←	→
Volume (vph)	2285	19	13	1527	27	18	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.91	1.00	1.00	0.91	0.97	1.00	4.0
Lane Util. Factor	1.00	0.85	1.00	1.00	1.00	0.85	1.00
Flt	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt Protected							
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583	
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	2539	21	14	1697	30	20	
RTOR Reduction (vph)	0	6	0	0	0	0	19
Lane Group Flow (vph)	2539	15	14	1697	30	1	
Turn Type	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	4	3	8	2			
Permitted Phases	4						2
Actuated Green, G (s)	38.9	38.9	0.6	43.5	2.3	2.3	
Effective Green, g (s)	38.9	38.9	0.6	43.5	2.3	2.3	
Actuated g/C Ratio	0.72	0.72	0.01	0.81	0.04	0.04	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	3677	1145	20	4111	147	68	
v/s Ratio Prot	c0.50	0.01	c0.33	c0.01			
v/s Ratio Perm		0.01				0.00	
v/c Ratio	0.69	0.01	0.70	0.41	0.20	0.01	
Uniform Delay, d1	4.1	2.1	26.5	1.5	24.9	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.0	73.4	0.1	0.7	0.1	
Delay (s)	4.7	2.1	100.0	1.5	25.6	24.7	
Level of Service	A	A	F	A	C	C	
Approach Delay (s)	4.7		2.4	25.2			
Approach LOS	A		A	C			
Intersection Summary							
HCM Average Control Delay		4.0			HCM Level of Service		A
HCM Volume to Capacity ratio		0.67					
Actuated Cycle Length (s)		53.8			Sum of lost time (s)		12.0
Intersection Capacity Utilization		54.1%			ICU Level of Service		A
Analysis Period (min)		15					
c Critical Lane Group							

Movement	EBL	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	←←←	←←←	→	←←←	←←←	←←←	→
Volume (vph)	454	1397	395	107	766	181	391
Ideal Flow (vphpl)	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	0.97	0.91	0.97	0.97	0.91	0.97	0.91
Flt	1.00	0.97	1.00	0.97	1.00	0.85	1.00
Flt Protected							
Satd. Flow (prot)	3433	4917	3433	4940	3433	5085	3433
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	4917	3433	4940	3433	5085	3433
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	504	1552	439	119	851	201	434
RTOR Reduction (vph)	0	52	0	0	41	0	0
Lane Group Flow (vph)	504	1939	0	119	1011	0	434
Turn Type	Prot	4	3	8	2	2	1
Protected Phases	7						6
Permitted Phases							
Actuated Green, G (s)	16.5	40.4	4.6	28.5	10.1	15.2	15.2
Effective Green, g (s)	16.5	40.4	4.6	28.5	10.1	15.2	15.2
Actuated g/C Ratio	0.20	0.49	0.06	0.34	0.12	0.18	0.18
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)	683	2396	190	1698	418	932	290
v/s Ratio Prot	c0.15	c0.39	0.03	0.20	c0.13	0.09	c0.10
v/s Ratio Perm							
v/c Ratio	0.74	0.81	0.53	0.60	1.04	0.50	0.55
Uniform Delay, d1	31.2	18.0	38.3	22.4	36.4	30.4	30.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	2.1	6.3	0.6	54.3	0.4	2.3
Delay (s)	35.3	20.1	44.6	23.0	90.7	30.8	33.0
Level of Service	D	C	D	C	F	C	C
Approach Delay (s)		23.2		25.2		53.4	
Approach LOS		C		C		D	
Intersection Summary							
HCM Average Control Delay		31.4			HCM Level of Service		C
HCM Volume to Capacity ratio		0.76					
Actuated Cycle Length (s)		82.9			Sum of lost time (s)		12.0
Intersection Capacity Utilization		71.1%			ICU Level of Service		C
Analysis Period (min)		15					
c Critical Lane Group							

Movement	EBL	EBT	WBL	WBT	SEB	SER
Lane Configurations	AA	AA	AA	AA	YY	YY
Volume (vph)	0	864	905	0	861	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	5.6	5.6	5.6	5.6
Lane Util. Factor	0.95	0.95	0.99	0.91	0.97	0.91
Flt	1.00	1.00	1.00	0.99	0.85	0.85
Flt Protected	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3539	3539	3429	3429	1441	1441
Flt Permitted	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3539	3539	3429	3429	1441	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	738	1106	0	957	362
RTOR Reduction (vph)	0	0	0	0	3	51
Lane Group Flow (vph)	0	738	1106	0	960	275
Turn Type		2.6	6.2		4	Perm
Protected Phases					4	
Permitted Phases					4	
Actuated Green, G (s)	47.2	47.2	27.2	27.2	27.2	27.2
Effective Green, g (s)	47.2	47.2	27.2	27.2	27.2	27.2
Actuated g/C Ratio	0.55	0.55	0.32	0.32	0.32	0.32
Clearance Time (s)			5.6	5.6		
Vehicle Extension (s)			3.0	3.0		
Lane Grp Cap (vph)	1936	1936	1081	1081	454	454
Vis Ratio Prot	0.21	60.31		60.29		
Vis Ratio Perm			0.19	0.19		
g/C Ratio	0.38	0.57	0.92	0.60		
Uniform Delay, d1	11.2	12.9	28.5	25.0		
Progression Factor	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.1	0.4	11.8	2.3		
Delay (s)	11.3	13.3	40.3	27.3		
Level of Service	B	B	D	D	C	
Approach Delay (s)	11.3	13.3	37.1			
Approach LOS	B	B	D			
Intersection Summary						
HCM Average Control Delay		22.8			HCM Level of Service	C
HCM Volume to Capacity ratio		0.70				
Actuated Cycle Length (s)		86.3			Sum of lost time (s)	11.9
Intersection Capacity Utilization		62.9%			ICU Level of Service	B
Analysis Period (min)		15				
g Critical Lane Group						

Movement	EBL	EBT	EBLR	EBLW	EBLT	WBL	WBT	WBLR	WBLT	NBL	NBR	ESBL	SBTL	SSBL
Lane Configurations	TT	TT		TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	224	1281	0	0	1426	897	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	1.00	0.95	0.91	0.95			
Flt	1.00	1.00			1.00	0.85	1.00	0.85	1.00	0.85	0.85			
Flt Protected	0.95	1.00			1.00	1.00	1.00	0.95	1.00	0.95	1.00			
Satd. Flow (prot)	3433	3539			5085	1583	1681	1457	1504					
Flt Permitted	0.95	1.00			1.00	1.00	1.00	0.95	1.00	1.00	1.00			
Satd. Flow (perm)	3433	3539			5085	1583	1681	1457	1504					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	249	1423	0	0	1584	997	414	0	861	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	422	0	10	10	0	0	0	0	0
Lane Group Flow (vph)	249	1423	0	0	1584	575	373	444	438	0	0	0	0	0
Turn Type	Prot	5	2		Prot	6	6	8		Prot	8			
Protected Phases														
Permitted Phases														
Actuated Green, G (s)	12.3	55.4			49.1	49.1	46.6	46.6		46.6	46.6			
Effective Green, g (s)	12.3	55.4			49.1	49.1	46.6	46.6		46.6	46.6			
Actuated g/C Ratio	0.10	0.55			0.41	0.41	0.39	0.39		0.39	0.39			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	392	1929			2081	648	563	566		584				
Vis Ratio Prot	0.07	60.40			0.31	60.36	0.22	60.30		0.29				
Vis Ratio Perm														
g/C Ratio	0.71	0.14			0.76	0.88	0.57	0.78		0.76				
Uniform Delay, d1	52.1	20.8			30.4	32.9	28.8	32.3		31.7				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00				
Incremental Delay, d2	6.4	2.6			2.7	16.5	1.2	7.0		5.2				
Delay (s)	58.5	23.3			33.1	49.4	30.1	39.3		36.9				
Level of Service	E	C			C	D	C	D		D				
Approach Delay (s)		28.6			39.4			35.7						0.0
Approach LOS		C			D			D						A
Intersection Summary														
HCM Average Control Delay					35.3									D
HCM Volume to Capacity ratio					0.84									
Actuated Cycle Length (s)					120.0									12.0
Intersection Capacity Utilization					90.2%									E
Analysis Period (min)					15									
g Critical Lane Group														

HCM Signalized Intersection Capacity Analysis Existing + Construction (Phase 3) AM 12/9/2011

HCM Signalized Intersection Capacity Analysis Existing + Construction (Phase 3) AM 12/9/2011

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Volume (vph)	108	1208	674	92	1815	58	195	10	13	79	57	303	79	57
Ideal Flow (vphpl)	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.92	1.00	0.95	1.00	1.00	1.00	1.00
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	3242	3433	3242	1770	1583	1583	1583
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	3242	3433	3242	1770	1583	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	1343	749	102	2017	66	217	11	14	88	63	337	88	63
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	120	1343	371	102	2079	0	217	13	0	88	63	201	88	63
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	2	2	1	6	5	1	6
Permitted Phases														
Actuated Green, G (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	11.1	11.1	12.9	17.0	17.0	12.9	17.0
Effective Green, g (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	11.1	11.1	12.9	17.0	17.0	12.9	17.0
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.46	0.08	0.43	0.43	0.43	0.15	0.19	0.19	0.15	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	2386	743	135	2306	273	409	409	409	259	380	306	259	380
v/s Ratio Prot	0.07	0.28	0.23	0.06	0.41	0.05	0.00	0.00	0.00	0.05	0.03	0.13	0.05	0.13
v/s Ratio Perm														
v/c Ratio	0.75	0.56	0.50	0.76	0.90	0.79	0.03	0.03	0.03	0.34	0.18	0.56	0.34	0.18
Uniform Delay, d1	39.1	16.8	16.2	38.8	22.1	39.8	33.7	33.7	33.7	33.7	29.8	32.8	33.7	29.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.2	0.3	0.5	21.1	5.4	14.7	0.0	0.0	0.0	0.8	0.2	5.0	0.8	0.2
Delay (s)	57.3	17.1	16.7	59.9	27.5	54.5	33.8	33.8	33.8	34.5	29.9	37.8	34.5	29.9
Level of Service	E	B	B	E	C	D	C	C	C	C	C	D	C	D
Approach Delay (s)	19.2	19.2	19.2	29.1	29.1	29.1	52.3	52.3	52.3	36.2	36.2	36.2	36.2	36.2
Approach LOS	B	B	B	C	C	C	D	D	D	C	C	D	C	D
Intersection Summary														
HCM Average Control Delay	26.6													
HCM Volume to Capacity ratio	0.82													
Actuated Cycle Length (s)	88.0													
Intersection Capacity Utilization	70.7%													
Analysis Period (min)	15													
c Critical Lane Group														

Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Volume (vph)	1271	30	20	1951	30	20	1951	30	20	1951	30	20	1951	30
Ideal Flow (vphpl)	1900	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Permitted	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Satd. Flow (perm)	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1412	33	22	2168	29	20	2168	29	20	2168	29	20	2168	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	1412	24	22	2168	29	20	2168	29	20	2168	29	20	2168	29
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4	4	3	4	3	3	4	3	3	4	3	3	4	3
Permitted Phases														
Actuated Green, G (s)	47.4	47.4	1.8	53.2	3.6	3.6	47.4	47.4	1.8	53.2	3.6	3.6	47.4	47.4
Effective Green, g (s)	47.4	47.4	1.8	53.2	3.6	3.6	47.4	47.4	1.8	53.2	3.6	3.6	47.4	47.4
Actuated g/C Ratio	0.73	0.73	0.03	0.82	0.06	0.06	0.73	0.73	0.03	0.82	0.06	0.06	0.73	0.73
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3720	1168	95	4175	98	88	4175	1168	95	4175	98	88	4175	1168
v/s Ratio Prot	0.28	0.02	0.01	0.43	0.02	0.02	0.28	0.02	0.01	0.43	0.02	0.02	0.28	0.02
v/s Ratio Perm														
v/c Ratio	0.38	0.02	0.29	0.52	0.30	0.04	0.38	0.02	0.29	0.52	0.30	0.04	0.38	0.02
Uniform Delay, d1	3.2	2.4	30.8	1.8	29.4	28.9	3.2	2.4	30.8	1.8	29.4	28.9	3.2	2.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	1.3	0.1	1.7	0.1	0.1	0.0	1.3	0.1	1.7	0.1	0.1	0.0
Delay (s)	3.3	2.4	32.1	1.9	31.1	29.0	3.3	2.4	32.1	1.9	31.1	29.0	3.3	2.4
Level of Service	A	A	C	A	C	C	A	A	C	A	C	C	A	A
Approach Delay (s)	6.3	6.3	2.2	30.2	30.2	30.2	6.3	6.3	2.2	30.2	30.2	30.2	6.3	6.3
Approach LOS	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Intersection Summary														
HCM Average Control Delay	3.0													
HCM Volume to Capacity ratio	0.51													
Actuated Cycle Length (s)	64.8													
Intersection Capacity Utilization	47.7%													
Analysis Period (min)	15													
c Critical Lane Group														

Movement	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	216	871	206	188	1345	92	216	99	76	159	287	407				
Ideal Flow (vphpl)	1900	1900	1800	1900	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Fr1	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97
Fr1 Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4939	3433	4939	3433	5037	3433	5037	3433	5037	3433	4636	3433	4636	3433	4636
Fr1 Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	4939	3433	4939	3433	5037	3433	5037	3433	5037	3433	4636	3433	4636	3433	4636
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	240	968	229	209	1494	102	242	110	84	177	319	452				
RTOR Reduction (vph)	0	50	0	0	10	0	0	0	0	67	0	183	0			
Lane Group Flow (vph)	240	1147	0	209	1595	0	242	110	177	177	586	0				
Turn Type	Prot	4	3	3	8	3	Prot	5	2	2	1	5	Prot	4	3	3
Protected Phases	7															
Permitted Phases																
Actuated Green, G (s)	7.0	23.4	9.4	25.8	8.7	14.8	14.8	14.8	14.8	14.8	9.6	15.7				
Effective Green, g (s)	7.0	23.4	9.4	25.8	8.7	14.8	14.8	14.8	14.8	14.8	9.6	15.7				
Actuated g/C Ratio	0.10	0.32	0.13	0.35	0.12	0.20	0.20	0.20	0.20	0.20	0.13	0.21				
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	328	1579	441	1775	408	1028	320	450	895							
vs Ratio Prot	0.07	0.23	0.06	0.31	0.07	0.02	0.01	0.05	0.15							
vs Ratio Perm																
Uniform Delay, d1	32.2	22.1	29.6	22.4	30.6	23.8	23.5	29.1	25.9							
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
Incremental Delay, d2	8.2	1.7	0.8	6.2	2.3	0.0	0.1	0.6	0.9							
Delay (s)	40.3	23.8	30.4	28.6	32.9	23.9	23.6	29.7	26.8							
Level of Service	D	C	C	C	C	C	C	C	C							
Approach Delay (s)	26.5		26.8		26.8		26.8		27.3							
Approach LOS	C		C		C		C		C							
Intersection Summary																
HCM Average Control Delay																
HCM Volume to Capacity ratio																
Actuated Cycle Length (s)																
Intersection Capacity Utilization																
Analysis Period (min)																
dr. Delacato Right Lane, Record with 1 through lane as a right lane.																
c Critical Lane Group																

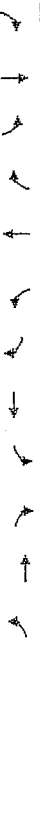
Baseline

Movement	EBL	EBT	EBL	EBT	WBL	WBT	WBL	WBT	NBL	NBT	NBL	NBT	SBL	SBT	SBL	SBT
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	0	879	1138	0	858	290										
Ideal Flow (vphpl)	1800	1900	1800	1900	1900	1900										
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3										
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95										
Fr1	1.00	1.00	1.00	1.00	1.00	1.00										
Fr1 Protected	1.00	1.00	1.00	1.00	1.00	1.00										
Satd. Flow (prot)	3539	3539	3430	4441												
Fr1 Permitted	1.00	1.00	1.00	1.00	1.00	1.00										
Satd. Flow (perm)	3539	3539	3430	4441												
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90										
Adj. Flow (vph)	0	977	1264	0	963	322										
RTOR Reduction (vph)	0	0	0	0	0	3										
Lane Group Flow (vph)	0	977	1264	0	962	265										
Turn Type		2.6	6.2		4											
Protected Phases																
Permitted Phases																
Actuated Green, G (s)		45.7	45.7		28.7	28.7										
Effective Green, g (s)		45.7	45.7		28.7	28.7										
Actuated g/C Ratio		0.53	0.53		0.33	0.33										
Clearance Time (s)		5.6	5.6		5.6	5.6										
Vehicle Extension (s)		3.0	3.0		3.0	3.0										
Lane Grp Cap (vph)		1874	1874		1141	479										
vs Ratio Prot		0.28	0.36		0.29	0.18										
vs Ratio Perm																
Uniform Delay, d1		13.2	14.9		26.9	23.5										
Progression Factor		1.00	1.00		1.00	1.00										
Incremental Delay, d2		0.3	1.0		6.8	1.4										
Delay (s)		13.5	15.9		33.8	24.9										
Level of Service		B	B		C	C										
Approach Delay (s)		13.5	15.8		31.8											
Approach LOS		B	B		C											
Intersection Summary																
HCM Average Control Delay																
HCM Volume to Capacity ratio																
Actuated Cycle Length (s)																
Intersection Capacity Utilization																
Analysis Period (min)																
c Critical Lane Group																

Baseline

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	235	1475	0	0	1034	888	615	10	758	0	0
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.92	1.00	0.91	1.00	0.95	0.92	0.95	0.95	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3427	5085	5085	5085	5085	5085	5085	5085	5085	5085
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3427	5085	5085	5085	5085	5085	5085	5085	5085	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	261	1639	0	0	1149	888	683	11	842	0	0
RTOR Reduction (vph)	0	0	0	0	0	479	0	13	13	0	0
Lane Group Flow (vph)	261	1639	0	0	1149	419	533	302	475	0	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	5	2	6	6	6	6	6	6	6	6	6
Actuated Green, G (s)	8.3	68.3	56.0	56.0	43.7	43.7	43.7	43.7	43.7	43.7	43.7
Effective Green, g (s)	8.3	68.3	55.0	55.0	43.7	43.7	43.7	43.7	43.7	43.7	43.7
Actuated g/C Ratio	0.07	0.57	0.47	0.47	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	237	1951	2373	739	612	552	548				
v/s Ratio Prot	60.08	60.48	0.23	0.25	0.32	0.33	0.32				
v/s Ratio Perm	1.10	0.84	0.48	0.57	0.87	0.91	0.97				
Uniform Delay, d1	55.8	21.3	22.0	23.2	35.5	35.3	35.5				
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	86.2	4.6	0.7	3.1	12.9	18.9	13.5				
Delay (s)	144.1	25.9	22.8	26.3	48.4	55.2	49.0				
Level of Service	F	C	C	C	D	D	D				
Approach Delay (s)	42.1	24.3	24.3	50.9							
Approach LOS	D	C	C	D							
Intersection Summary											
HCM Average Control Delay	37.9										
HCM Volume to Capacity ratio	0.88										
Actuated Cycle Length (s)	120.0										
Intersection Capacity Utilization	91.8%										
Analysis Period (min)	15										
c Critical Lane Group											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	242	2005	251	15	1170	28	618	65	134	27	28
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	0.91	0.97	0.95	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	5085	1770	5085	5085	3433	3181	3433	1770	1663
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	5085	1770	5085	5085	3433	3181	3433	1770	1663
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	2228	279	17	1300	31	687	72	149	30	32
RTOR Reduction (vph)	0	0	96	0	2	0	0	111	0	0	83
Lane Group Flow (vph)	269	2228	183	17	1329	0	687	110	0	30	32
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Permitted Phases	7	4	4	3	8	2	5	2	1	6	6
Actuated Green, G (s)	17.3	52.9	52.9	1.7	37.3	22.2	25.1	25.1	3.9	6.8	6.8
Effective Green, g (s)	17.3	52.9	52.9	1.7	37.3	22.2	25.1	25.1	3.9	6.8	6.8
Actuated g/C Ratio	0.17	0.53	0.53	0.02	0.37	0.22	0.25	0.25	0.04	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	307	2701	841	30	1898	765	802	69	127	108	108
v/s Ratio Prot	60.15	60.44	0.12	0.01	0.26	0.20	0.03		0.02	0.02	0.02
v/s Ratio Perm	0.98	0.82	0.22	0.57	0.70	0.90	0.14		0.49	0.25	0.06
Uniform Delay, d1	40.1	19.5	12.4	48.6	26.4	37.6	28.9		46.8	44.0	43.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.2	2.2	0.1	22.3	1.2	13.3	0.1		4.3	1.0	0.2
Delay (s)	63.3	21.7	12.5	70.8	27.6	50.9	28.9		51.1	45.0	43.6
Level of Service	E	C	B	E	C	D	C		D	D	D
Approach Delay (s)	24.8	24.8	28.1	28.1	45.5				45.4		
Approach LOS	C	C	C	C	D				D		
Intersection Summary											
HCM Average Control Delay	28.9										
HCM Volume to Capacity ratio	0.79										
Actuated Cycle Length (s)	99.6										
Intersection Capacity Utilization	76.4%										
Analysis Period (min)	15										
c Critical Lane Group											



Movement	EBL	EBR	MBL	MBR	NBL	NBR	SSBL	SSBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	2145	21	14	1185	30	20	146	193
Ideal Flow (vphpl)	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	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00	0.97	0.91
Frt	1.00	0.85	1.00	1.00	1.00	0.85	1.00	0.91
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	5085	5583	3433	5085	3433	5085	3433	5583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (perm)	5085	5583	3433	5085	3433	5085	3433	5583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2393	23	16	1321	33	22	163	214
RTOR Reduction (vph)	0	7	0	0	0	0	216	0
Lane Group Flow (vph)	2393	16	16	1321	33	22	163	214
Turn Type	Perm	Perm	Prot	Perm	Prot	Perm	Prot	Prot
Protected Phases	4	3	8	2	3	1	2	6
Permitted Phases	4	3	8	2	3	1	2	6
Actuated Green, G (s)	38.4	38.4	0.6	43.0	3.9	3.9	6.7	12.2
Effective Green, g (s)	38.4	38.4	0.6	43.0	3.9	3.9	6.7	12.2
Actuated g/C Ratio	0.70	0.70	0.01	0.78	0.07	0.07	0.18	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3557	1107	38	3983	128	112	308	761
v/s Ratio Prot	0.47	0.00	0.00	0.26	0.02	0.00	0.03	0.04
v/s Ratio Perm	0.67	0.01	0.42	0.33	0.26	0.01	0.17	0.26
Uniform Delay, d1	4.7	2.5	27.0	1.7	24.1	23.7	32.4	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	7.4	0.0	1.1	0.1	0.3	0.2
Delay (s)	5.2	2.5	34.3	1.8	25.2	23.8	32.7	27.5
Level of Service	A	A	C	A	C	C	C	C
Approach Delay (s)	6.1	2.2	24.7	2.2	24.7	23.8	32.4	27.5
Approach LOS	A	A	A	A	C	C	C	C
Intersection Summary								
HCM Average Control Delay	4.4							
HCM Volume to Capacity ratio	0.64							
Actuated Cycle Length (s)	120							
Intersection Capacity Utilization	51.4%							
Analysis Period (min)	15							
c: Critical Lane Group								

Baseline

Movement	EBL	EBR	MBL	MBR	NBL	NBR	SSBL	SSBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	441	1356	356	102	745	176	256	394
Ideal Flow (vphpl)	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	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Frt	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4927	3433	4927	3433	4927	3433	4927
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3433	4927	3433	4927	3433	4927	3433	4927
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	480	1507	396	113	828	196	296	438
RTOR Reduction (vph)	0	45	0	0	41	0	0	216
Lane Group Flow (vph)	480	1507	396	113	828	196	296	438
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	2	1
Permitted Phases	7	4	3	8	5	2	2	1
Actuated Green, G (s)	15.9	31.8	6.4	22.3	8.2	13.7	13.7	6.7
Effective Green, g (s)	15.9	31.8	6.4	22.3	8.2	13.7	13.7	6.7
Actuated g/C Ratio	0.21	0.43	0.09	0.30	0.11	0.18	0.18	0.09
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	732	2100	295	1476	377	934	291	308
v/s Ratio Prot	0.34	0.36	0.03	0.20	0.09	0.03	0.05	0.04
v/s Ratio Perm	0.67	0.88	0.38	0.67	0.79	0.47	0.17	0.53
Uniform Delay, d1	26.9	19.7	32.2	22.9	32.3	27.2	25.6	32.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	4.9	0.8	1.1	10.3	0.4	0.3	1.6
Delay (s)	29.3	24.6	33.1	24.0	42.6	27.6	25.9	34.1
Level of Service	C	C	C	C	D	C	C	C
Approach Delay (s)	26.5	24.9	31.6	24.9	31.6	25.9	28.4	32.4
Approach LOS	C	C	C	C	C	C	C	C
Intersection Summary								
HCM Average Control Delay	27.0							
HCM Volume to Capacity ratio	0.74							
Actuated Cycle Length (s)	74.6							
Intersection Capacity Utilization	85.6%							
Analysis Period (min)	15							
c: Critical Lane Group								

Baseline

HCM Signalized Intersection Capacity Analysis
 1: Del Mar Heights Rd. & I-15 SB Ramps

HCM Signalized Intersection Capacity Analysis
 2: Del Mar Heights Road & I-15 NB Ramps

Near Term + Construction (Phase 3) AM
 3/5/2012

Near Term + Construction (Phase 3) AM
 3/5/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBP
Lane Configurations	←	←	←	←	←	←
Volume (vph)	0	600	1025	0	939	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	5.6	5.6	5.6	5.6
Lane Util. Factor	0.95	0.95	0.97	0.91	0.97	0.91
Flt	1.00	1.00	0.99	0.85	0.99	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	3539	3430	1441	3430	1441
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	3539	3430	1441	3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	767	1139	0	1043	373
RTOR Reduction (vph)	0	0	0	0	3	37
Lane Group Flow (vph)	0	767	1139	0	1077	299
Turn Type	Prot	2.6	6.2	4	Perm	4
Protected Phases						
Permitted Phases						
Actuated Green, G (s)		45.4	45.4	30.1	30.1	30.1
Effective Green, g (s)		45.4	45.4	30.1	30.1	30.1
Actuated g/C Ratio		0.52	0.52	0.34	0.34	0.34
Clearance Time (s)		5.6	5.6	5.6	5.6	5.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1838	1838	1181	496	1181	496
v/s Ratio Prot	0.22	c0.32	c0.31	0.21	c0.31	0.21
v/s Ratio Perm						
v/c Ratio	0.42	0.62	0.91	0.60	0.91	0.60
Uniform Delay, d1	12.9	14.9	27.4	23.7	27.4	23.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	10.7	2.1	10.7	2.1
Delay (s)	13.0	15.5	38.1	25.8	38.1	25.8
Level of Service	B	B	D	C	D	C
Approach Delay (s)	13.0	15.5	35.1	35.1	35.1	35.1
Approach LOS	B	B	D	D	D	D
Intersection Summary						
HCM Average Control Delay		23.3				
HCM Volume to Capacity ratio		0.74				
Actuated Cycle Length (s)		87.4				
Intersection Capacity Utilization		66.0%				
Analysis Period (min)		15				
c Critical Lane Group						

Movement	EBL	EBT	WBT	WBR	SBL	SBP
Lane Configurations	←	←	←	←	←	←
Volume (vph)	231	1319	0	1483	930	384
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.91	0.95	0.91
Flt	1.00	1.00	1.00	0.88	0.95	0.88
Flt Protected	1.00	1.00	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	3539	5085	1583	1681	1484
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	3539	5085	1583	1681	1484
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	257	1466	0	1648	1035	427
RTOR Reduction (vph)	0	0	0	0	395	0
Lane Group Flow (vph)	257	1466	0	1648	638	384
Turn Type	Prot	5	2	6	Split	8
Protected Phases						
Permitted Phases						
Actuated Green, G (s)		10.2	67.6	53.4	53.4	44.4
Effective Green, g (s)		10.2	67.6	53.4	53.4	44.4
Actuated g/C Ratio		0.08	0.56	0.44	0.44	0.37
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)	292	1994	2263	704	622	549
v/s Ratio Prot	c0.07	0.41	0.32	c0.40	0.23	c0.37
v/s Ratio Perm						
v/c Ratio	0.88	0.74	0.73	0.31	0.62	1.01
Uniform Delay, d1	54.3	19.5	27.3	31.0	30.9	37.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.0	2.5	2.1	17.5	1.8	39.7
Delay (s)	79.3	22.0	29.4	48.5	32.7	77.1
Level of Service	E	C	C	D	C	E
Approach Delay (s)		30.5	36.8		63.7	0.0
Approach LOS		C	D		E	A
Intersection Summary						
HCM Average Control Delay		41.9				
HCM Volume to Capacity ratio		0.94				
Actuated Cycle Length (s)		120.0				
Intersection Capacity Utilization		95.6%				
Analysis Period (min)		15				
c Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	GBR
Lane Configurations	111	1431	694	95	1890	61	201	10	13	81	59	312
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	1.00	1.00	0.92	1.00	0.92	1.00	1.00	0.85
Flt	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95
Flt Protected	1770	5085	1583	1770	5061	3433	3242	1770	1863	1583	1583	1583
Satd. Flow (prot)	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95
Flt Permitted	1770	5085	1583	1770	5061	3433	3242	1770	1863	1583	1583	1583
Satd. Flow (perm)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Peak-hour factor, PHF	123	1590	771	106	2100	68	223	11	14	90	66	347
Adj. Flow (vph)	0	0	375	0	4	0	0	12	0	0	0	134
RTOR Reduction (vph)	123	1590	396	106	2164	0	223	13	0	90	66	213
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	7	4	4	3	8	5	2	1	6	1	6	6
Protected Phases	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4	17.4	17.4	17.4
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4	17.4	17.4	17.4
Effective Green, g (s)	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.15	0.20	0.20	0.20	0.20
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	160	2376	740	134	2290	272	411	264	367	312	60.13	60.13
Lane Grp Cap (vph)	0.07	0.31	0.25	0.06	0.43	0.06	0.00	0.05	0.04	0.04	0.18	0.68
v/s Ratio Prot	0.77	0.67	0.54	0.79	0.95	0.82	0.03	0.34	0.34	0.34	0.18	0.68
v/s Ratio Perm	39.3	18.3	18.7	40.2	23.1	40.1	33.8	33.7	29.6	32.9	29.6	32.9
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	19.6	0.7	0.7	26.4	9.0	17.3	0.0	0.8	0.2	6.0	0.2	6.0
Incremental Delay, d2	58.9	19.0	17.5	66.6	32.1	57.4	33.9	34.5	29.8	39.0	29.8	39.0
Delay (s)	E	B	B	E	C	E	C	C	C	C	C	D
Level of Service	C	C	C	C	C	C	C	C	C	C	C	D
Approach Delay (s)	20.5	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7
Approach LOS	C	C	C	C	C	C	C	C	C	C	C	D
Intersection Summary												
HCM Average Control Delay	29.0											
HCM Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	88.4											
Intersection Capacity Utilization	72.9%											
Analysis Period (min)	15											
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Lane Configurations	111	1431	694	95	1890	61	201	10	13
Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	1.00	1.00	0.92	1.00	0.92
Flt	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	1770	5085	1583	1770	5061	3433	3242	1770	1863
Satd. Flow (prot)	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Permitted	1770	5085	1583	1770	5061	3433	3242	1770	1863
Satd. Flow (perm)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Peak-hour factor, PHF	123	1590	771	106	2100	68	223	11	14
Adj. Flow (vph)	0	0	375	0	4	0	0	12	0
RTOR Reduction (vph)	123	1590	396	106	2164	0	223	13	0
Lane Group Flow (vph)	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Turn Type	7	4	4	3	8	5	2	1	6
Protected Phases	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4
Effective Green, g (s)	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.15	0.20
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	160	2376	740	134	2290	272	411	264	367
Lane Grp Cap (vph)	0.07	0.31	0.25	0.06	0.43	0.06	0.00	0.05	0.04
v/s Ratio Prot	0.77	0.67	0.54	0.79	0.95	0.82	0.03	0.34	0.34
v/s Ratio Perm	39.3	18.3	18.7	40.2	23.1	40.1	33.8	33.7	29.6
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	19.6	0.7	0.7	26.4	9.0	17.3	0.0	0.8	0.2
Incremental Delay, d2	58.9	19.0	17.5	66.6	32.1	57.4	33.9	34.5	29.8
Delay (s)	E	B	B	E	C	E	C	C	C
Level of Service	C	C	C	C	C	C	C	C	D
Approach Delay (s)	20.5	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7
Approach LOS	C	C	C	C	C	C	C	C	D
Intersection Summary									
HCM Average Control Delay	29.0								
HCM Volume to Capacity ratio	0.85								
Actuated Cycle Length (s)	88.4								
Intersection Capacity Utilization	72.9%								
Analysis Period (min)	15								
c Critical Lane Group									

HCM Signalized Intersection Capacity Analysis Near Term + Construction (Phase 3) AM
5: Del Mar Heights Road & El Camino Real 3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↔↔↔	↔	↔↔	↔↔↔	↔	↔↔	↔↔↔	↔	↔↔	↔↔	↔
Volume (vph)	222	897	399	206	1385	95	245	104	79	164	312	419
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.97	0.91	0.97	0.97	0.91	1.00	0.97	0.91	0.91
Flt	1.00	0.95	1.00	1.00	0.99	1.00	1.00	1.00	0.85	1.00	0.91	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	4851	3433	3433	5036	3433	3433	5085	1583	3433	4648	466
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	4851	3433	3433	5036	3433	3433	5085	1583	3433	4648	466
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	247	997	443	229	1539	106	272	116	88	182	347	466
RTOR Reduction (vph)	0	105	0	0	10	0	0	0	71	0	160	0
Lane Group Flow (vph)	247	1335	0	229	1635	0	272	116	17	182	653	0
Turn Type	Prot	4	Prot	3	8	Prot	5	2	2	1	6	
Protected Phases												
Permitted Phases												
Actuated Green, G (s)	7.0	25.2	8.9	27.1	7.0	14.2	7.0	14.2	14.2	9.7	16.9	
Effective Green, g (s)	7.0	25.2	8.9	27.1	7.0	14.2	7.0	14.2	14.2	9.7	16.9	
Actuated g/C Ratio	0.09	0.34	0.12	0.37	0.09	0.19	0.09	0.19	0.19	0.13	0.23	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	325	1652	413	1844	325	976	325	976	304	450	1062	
v/s Ratio Prot	c0.07	0.28	0.07	c0.32	c0.08	0.02	c0.08	0.02	0.01	0.05	c0.14	
v/s Ratio Perm												
v/c Ratio	0.76	0.81	0.55	0.89	0.84	0.12	0.84	0.12	0.06	0.40	0.92dr	
Uniform Delay, d1	32.7	22.2	30.7	22.0	32.9	24.7	32.9	24.7	24.4	29.5	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.0	3.0	1.6	5.6	16.8	0.1	16.8	0.1	0.1	0.6	1.1	
Delay (s)	42.7	25.2	32.3	27.6	49.8	24.8	49.8	24.8	24.5	30.1	26.7	
Level of Service	D	C	C	C	D	C	D	C	C	C	C	C
Approach Delay (s)	27.8	27.8	28.1	28.1	39.0		39.0			27.3		
Approach LOS	C	C	C	C	D		D			C		
Intersection Summary												
HCM Average Control Delay	28.9											
HCM Volume to Capacity ratio	0.74											
Actuated Cycle Length (s)	74.0											
Intersection Capacity Utilization	71.0%											
Analysis Period (min)	15											
dr Deracdo Right Lane. Recode with 1 though lane as a right lane.												
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Near Term + Construction (Phase 3) PM
1: Del Mar Heights Rd. & I-15 SB Ramps 3/5/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↔↔	↔↔	↔↔	↔↔	↔↔
Volume (vph)	0	914	1203	0	910	299
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	5.6	5.6	5.6
Lane Util. Factor	0.95	0.95	0.95	0.97	0.91	0.85
Flt	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3539	3539	3539	3430	1441	
Flt Permitted	1.00	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3539	3539		3430	1441	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1016	1337	0	1011	332
RTOR Reduction (vph)	0	0	0	0	3	20
Lane Group Flow (vph)	0	1016	1337	0	1041	279
Turn Type						Perm
Protected Phases	2.6	6.2		4		
Permitted Phases						4
Actuated Green, G (s)	45.7	45.7		30.0	30.0	
Effective Green, g (s)	45.7	45.7		30.0	30.0	
Actuated g/C Ratio	0.52	0.52		0.34	0.34	
Clearance Time (s)				5.6	5.6	
Vehicle Extension (s)				3.0	3.0	
Lane Grp Cap (vph)	1846	1846		1175	493	
v/s Ratio Prot	0.29	c0.38		c0.30		
v/s Ratio Perm						0.19
v/c Ratio	0.55	0.72		0.89	0.57	
Uniform Delay, d1	14.1	16.1		27.2	23.5	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.4		8.3	1.5	
Delay (s)	14.4	17.5		35.5	25.0	
Level of Service	B	B		D	C	
Approach Delay (s)	14.4	17.5		33.1		
Approach LOS	B	B		C		
Intersection Summary						
HCM Average Control Delay	22.4					
HCM Volume to Capacity ratio	0.79					
Actuated Cycle Length (s)	87.6					
Intersection Capacity Utilization	70.9%					
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
2: Del Mar Heights Road & I-15 NB Ramps

HCM Signalized Intersection Capacity Analysis
3: Del Mar Heights Road & High Bluff Drive

Near Term + Construction (Phase 3) PM
3/5/2012

Near Term + Construction (Phase 3) PM
3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	242	1526	0	0	1205	902	649	24	811	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	0.91	0.91	0.95	0.91	0.95	0.95	0.95	0.95	0.95
Flt	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.90	0.85	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.99	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	5085	1583	1681	1503	1504	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	5085	5085	5085	1583	1681	1503	1504	1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	1696	0	0	1339	1002	721	27	901	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	509	0	6	6	0	0	0
Lane Group Flow (vph)	269	1696	0	0	1339	493	570	541	526	0	0	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	2	6	6	6	8	8	8	8	8	8
Permitted Phases	11.3	62.2	46.9	46.9	46.9	49.8	49.8	49.8	49.8	49.8	49.8	49.8
Actuated Green, G (s)	11.3	62.2	46.9	46.9	46.9	49.8	49.8	49.8	49.8	49.8	49.8	49.8
Effective Green, g (s)	0.09	0.52	0.39	0.39	0.39	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	323	1834	1987	619	698	624	624	624	624	624	624	624
Lane Grp Cap (vph)	0.08	c0.48	0.26	0.31	0.34	c0.36	0.35	0.35	0.35	0.35	0.35	0.35
vis Ratio Prot	0.83	0.92	0.67	0.80	0.82	0.87	0.84	0.84	0.84	0.84	0.84	0.84
vis Ratio Perm	53.4	26.7	30.2	32.3	31.1	32.1	31.6	31.6	31.6	31.6	31.6	31.6
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	16.6	9.4	1.8	10.2	7.3	12.2	10.1	10.1	10.1	10.1	10.1	10.1
Incremental Delay, d2	70.0	36.2	32.1	42.5	38.4	44.2	41.7	41.7	41.7	41.7	41.7	41.7
Delay (s)	E	D	C	D	D	D	D	D	D	D	D	D
Level of Service	E	D	C	D	D	D	D	D	D	D	D	D
Approach Delay (s)	40.8	40.8	36.6	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	38.3											
HCM Volume to Capacity ratio	0.90											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	99.6%											
Analysis Period (min)	15											
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT	TT
Volume (vph)	249	2110	259	15	1383	29	637	67	138	28	30	82
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5070	3433	3181	3181	1770	1863	1583	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5070	3433	3181	3181	1770	1863	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	277	2344	288	17	1537	32	708	74	153	31	33	91
RTOR Reduction (vph)	0	0	93	0	2	0	0	115	0	0	0	85
Lane Group Flow (vph)	277	2344	195	17	1567	0	708	112	0	31	33	6
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	2	1	6	6	6
Permitted Phases	17.7	54.6	54.6	1.7	38.6	22.1	25.1	25.1	3.9	6.9	6.9	6.9
Actuated Green, G (s)	17.7	54.6	54.6	1.7	38.6	22.1	25.1	25.1	3.9	6.9	6.9	6.9
Effective Green, g (s)	0.17	0.54	0.54	0.02	0.38	0.22	0.25	0.25	0.04	0.07	0.07	0.07
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	309	2741	853	30	1932	749	788	788	68	127	108	108
Lane Grp Cap (vph)	c0.16	c0.46	0.12	0.01	0.31	c0.21	0.04	0.04	0.02	c0.02	0.00	0.00
vis Ratio Prot	0.90	0.86	0.23	0.57	0.81	0.95	0.14	0.14	0.46	0.26	0.06	0.06
vis Ratio Perm	40.9	20.0	12.3	49.4	28.1	39.0	29.7	29.7	47.7	44.8	44.2	44.2
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	26.5	2.8	0.1	22.3	2.7	20.5	0.1	0.1	4.8	1.1	0.2	0.2
Incremental Delay, d2	67.4	22.8	12.4	71.7	30.8	59.5	29.8	29.8	52.4	45.9	44.4	44.4
Delay (s)	E	C	B	E	C	E	C	C	D	D	D	D
Level of Service	E	C	B	E	C	E	C	C	D	D	D	D
Approach Delay (s)	26.0	26.0	31.2	31.2	31.2	52.3	52.3	52.3	46.3	46.3	46.3	46.3
Approach LOS	C	C	C	C	C	D	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	32.5											
HCM Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	101.3											
Intersection Capacity Utilization	78.9%											
Analysis Period (min)	15											
c Critical Lane Group												

Movement	EBT	EBL	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EBT	EBL	EBR	WBL	WBT	NBL	NBR
Volume (vph)	2301	21	14	1588	30	20	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	0.91	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00	0.85
Flt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1770	1583	1583
Flt Permitted	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1770	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2557	23	16	1764	33	22	1
RTOR Reduction (vph)	0	7	0	0	0	0	20
Lane Group Flow (vph)	2557	16	16	1764	33	2	2
Turn Type	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	4	3	8	2			
Permitted Phases	4	3	8	2			
Actuated Green, G (s)	39.4	39.4	0.7	44.1	3.9	3.9	2
Effective Green, g (s)	39.4	39.4	0.7	44.1	3.9	3.9	2
Actuated g/C Ratio	0.70	0.70	0.01	0.79	0.07	0.07	0.07
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)	3578	1114	43	4004	123	110	
v/s Ratio Prot	c0.50	0.00	c0.35	c0.02			
v/s Ratio Perm	0.71	0.01	0.37	0.44	0.27	0.01	0.00
v/c Ratio	4.9	2.5	27.4	1.9	24.7	24.3	
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.0	5.4	0.1	1.2	0.1	
Delay (s)	5.6	2.5	32.8	2.0	25.9	24.3	
Level of Service	A	A	C	A	C	C	
Approach Delay (s)	5.6		2.3	25.2			
Approach LOS	A		A	C			
Intersection Summary							
HCM Average Control Delay	4.5						
HCM Volume to Capacity ratio	0.69						
Actuated Cycle Length (s)	56.0						
Intersection Capacity Utilization	54.5%						
Analysis Period (min)	15						
c Critical Lane Group							

Movement	EBT	EBL	EBR	WBL	WBT	NBL	NBR
Lane Configurations	EBT	EBL	EBR	WBL	WBT	NBL	NBR
Volume (vph)	454	1397	411	108	767	181	453
Ideal Flow (vphpl)	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	0.97	0.91	0.97	0.91	0.97	0.91	1.00
Flt	1.00	0.97	1.00	0.97	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	4912	3433	4940	3433	5085	1583
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	4912	3433	4940	3433	5085	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	504	1552	457	120	852	201	503
RTOR Reduction (vph)	0	54	0	0	41	0	0
Lane Group Flow (vph)	504	1555	0	120	1012	0	503
Turn Type	Prot	4	3	8	5	2	2
Protected Phases	7						
Permitted Phases	7						
Actuated Green, G (s)	16.5	40.4	4.6	28.5	10.1	15.4	15.4
Effective Green, g (s)	16.5	40.4	4.6	28.5	10.1	15.4	15.4
Actuated g/C Ratio	0.20	0.49	0.06	0.34	0.12	0.19	0.19
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)	682	2388	190	1694	417	942	293
v/s Ratio Prot	c0.15	c0.40	0.03	0.20	c0.15	0.09	c0.10
v/s Ratio Perm	0.74	0.82	0.63	0.80	1.21	0.50	0.56
v/c Ratio	31.3	18.2	38.4	22.6	36.5	30.4	30.8
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	2.3	6.7	0.6	113.5	0.4	2.5
Delay (s)	35.5	20.5	45.1	23.1	150.0	30.8	33.3
Level of Service	D	C	D	C	F	C	C
Approach Delay (s)	23.5		25.4		79.0		34.6
Approach LOS	C		C		E		C
Intersection Summary							
HCM Average Control Delay	37.7						
HCM Volume to Capacity ratio	0.84						
Actuated Cycle Length (s)	83.1						
Intersection Capacity Utilization	73.2%						
Analysis Period (min)	15						
c Critical Lane Group							

Movement	EBL	EBD	WBL	WBR	SEB	SER
Lane Configurations	TT	TT	TT	TT	TT	TT
Volume (vph)	0	866	998	0	957	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	6.3	6.3	5.6	5.6	5.6
Lane Util. Factor	0.95	0.95	0.95	0.95	0.97	0.91
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3639	3639	3639	3639	3429	1441
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3639	3639	3639	3639	3429	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	740	1109	0	953	362
RTOR Reduction (vph)	0	0	0	0	3	54
Lane Group Flow (vph)	0	740	1109	0	956	272
Turn Type	Prot	2.6	6.2	Prot	4	Perm
Protected Phases						
Permitted Phases		47.3	47.3		26.8	26.8
Actuated Green, G (s)		47.3	47.3		26.8	26.8
Effective Green, g (s)		0.55	0.55		0.31	0.31
Actuated g/C Ratio		0.55	0.55		0.31	0.31
Clearance Time (s)		5.6	5.6		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1946	1946		1069	449
v/s Ratio Prot		0.21	0.21		0.28	0.19
v/s Ratio Perm		0.38	0.57		0.93	0.60
Uniform Delay, d1		11.0	12.7		28.7	25.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.4		14.0	2.3
Delay (s)		11.1	13.1		42.8	27.4
Level of Service		B	B		D	C
Approach Delay (s)		11.1	13.1		39.0	
Approach LOS		B	B		D	
Intersection Summary						
HCM Average Control Delay		23.4			HCM Level of Service	C
HCM Volume to Capacity Ratio		0.70				
Actuated Cycle Length (s)		86.0			Sum of lost time (s)	11.9
Intersection Capacity Utilization		63.1%			ICU Level of Service	B
Analysis Period (min)		15				
c. Critical Lane Group						

Movement	EBL	EBD	WBL	WBR	SEB	SER
Lane Configurations	TT	TT	TT	TT	TT	TT
Volume (vph)	224	1289	0	1434	903	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	1.00	0.95	0.91
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3539	3085	5085	1583	1457
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	3085	5085	1583	1457
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	249	1432	0	4593	1003	414
RTOR Reduction (vph)	0	0	0	0	449	0
Lane Group Flow (vph)	249	1432	0	4593	554	373
Turn Type	Prot	5	2	Prot	Spill	Prot
Protected Phases						
Permitted Phases		7.1	74.1		63.0	37.9
Actuated Green, G (s)		7.1	74.1		63.0	37.9
Effective Green, g (s)		0.06	0.62		0.52	0.32
Actuated g/C Ratio		4.0	4.0		4.0	4.0
Clearance Time (s)		3.0	3.0		3.0	3.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		203	2185		2870	831
v/s Ratio Prot		0.07	0.40		0.31	0.22
v/s Ratio Perm		1.23	0.66		0.60	0.70
Uniform Delay, d1		66.4	14.7		18.7	20.8
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		137.6	1.6		1.0	4.2
Delay (s)		194.0	16.3		20.7	24.8
Level of Service		F	B		C	D
Approach Delay (s)		42.6			22.4	
Approach LOS		D			D	
Intersection Summary						
HCM Average Control Delay		35.9			HCM Level of Service	D
HCM Volume to Capacity Ratio		0.77				
Actuated Cycle Length (s)		120.0			Sum of lost time (s)	8.0
Intersection Capacity Utilization		30.6%			ICU Level of Service	E
Analysis Period (min)		15				
c. Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	SBL	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volumes (vph)	108	1222	674	92	1829	59	185	10	13	79	57	303	303
Ideal Flow (vphpl)	1900	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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.97	0.95	1.00	0.92	1.00	1.00	1.00	0.85
Fit	1.00	1.00	0.85	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.85
Satd. Flow (prot)	1770	5085	1583	1770	5085	3433	3242	1770	5085	1770	1663	1583	1583
Fit Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.85
Satd. Flow (perm)	1770	5085	1583	1770	5085	3433	3242	1770	5085	1770	1663	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	1358	749	102	2032	66	217	11	14	88	63	337	337
RTOR Reduction (vph)	0	0	378	0	4	0	0	12	0	0	0	0	136
Lane Group Flow (vph)	120	1358	371	102	2034	0	217	13	0	88	63	201	201
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	1	6	6	6	6	6
Permitted Phases													
Actuated Green, G (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	12.9	17.0	17.0	17.0	17.0	17.0
Effective Green, g (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	12.9	17.0	17.0	17.0	17.0	17.0
Actuated g/C Ratio	0.08	0.47	0.47	0.08	0.46	0.08	0.43	0.15	0.19	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	2396	743	135	2306	273	409	259	360	306	306	306	306
vs Ratio/Prot	0.097	0.27	0.23	0.08	0.41	0.09	0.00	0.05	0.05	0.05	0.05	0.05	0.05
vs Ratio Perm													
W/C Ratio	0.75	0.57	0.50	0.76	0.91	0.79	0.03	0.34	0.10	0.06	0.06	0.06	0.06
Uniform Delay, d1	39.1	16.9	16.2	39.8	22.2	38.8	33.7	33.7	29.6	32.8	32.8	32.8	32.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.2	0.3	0.5	21.1	5.7	14.7	0.0	0.8	0.2	5.0	5.0	5.0	5.0
Delay (s)	57.3	17.2	16.7	60.9	27.9	53.5	33.8	34.5	29.8	37.8	37.8	37.8	37.8
Level of Service	E	B	B	E	C	D	C	C	C	C	C	C	D
Approach Delay (s)	19.2			29.5		52.3				35.2			
Approach LOS	B			C		D				D			
Intersection Summary													
HCM Average Control Delay	26.8												C
HCM Volume to Capacity ratio	0.82												16.0
Actuated Cycle Length (s)	88.0												C
Intersection Capacity Utilization	71.0%												C
Analysis Period (min)	15												
c Critical Lane Group													

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	SBL	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volumes (vph)	1271	43	28	1951	40	27	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	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	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00
Fit	1.00	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00
Fit Protected	0.95	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00
Satd. Flow (prot)	5085	1583	1583	1770	5085	3433	3433	1770	5085	1770	1663	1583	1583
Fit Permitted	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	1583	1770	5085	3433	3433	1770	5085	1770	1663	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1412	48	31	2168	44	30	1900	1900	1900	1900	1900	1900	1900
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	0	0	28
Lane Group Flow (vph)	1412	32	31	2168	44	2	1900	1900	1900	1900	1900	1900	1900
Turn Type	Perm	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Prot	Perm	Prot	Perm	Perm
Protected Phases	4	4	4	4	4	4	4	4	4	4	4	4	4
Permitted Phases													
Actuated Green, G (s)	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
Effective Green, g (s)	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1	32.1
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3366	1048	35	3090	241	111	3366	1048	35	3090	241	111	111
vs Ratio/Prot	0.28	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
vs Ratio Perm													
W/C Ratio	0.42	0.03	0.86	0.56	0.18	0.02	0.42	0.03	0.86	0.56	0.18	0.02	0.02
Uniform Delay, d1	3.8	2.8	23.7	2.3	21.2	21.0	3.8	2.8	23.7	2.3	21.2	21.0	21.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	95.3	0.2	0.4	0.1	0.1	0.0	95.3	0.2	0.4	0.1	0.1
Delay (s)	3.9	2.8	119.0	2.5	21.6	21.1	3.9	2.8	119.0	2.5	21.6	21.1	21.1
Level of Service	A	A	F	A	C	C	A	A	F	A	C	C	C
Approach Delay (s)	3.5			4.2	21.4		3.5			4.2	21.4		
Approach LOS	A			A	C		A			A	C		
Intersection Summary													
HCM Average Control Delay	4.4												A
HCM Volume to Capacity ratio	0.53												8.0
Actuated Cycle Length (s)	48.5												A
Intersection Capacity Utilization	47.7%												A
Analysis Period (min)	15												
c Critical Lane Group													

Movement	EBL	EBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations	EBL	EBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Volume (vph)	217	874	212	188	1347	92	224	98	76	159
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Flt	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97	1.00	0.97
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3433	4936	3433	4936	3433	5037	3433	5037	3433	4936
Satd. Flow (perm)	3433	4936	3433	5037	3433	5037	3433	5037	3433	4936
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	241	971	236	209	1497	102	249	110	84	177
RTOR Reduction (vph)	0	49	0	0	10	0	0	69	0	217
Lane Group Flow (vph)	241	1158	0	209	1509	0	249	110	15	177
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	3	8	5	2	2	1
Permitted Phases	8,7	24,1	9,7	25,1	7,0	13,2	13,2	9,5	15,7	15,7
Actuated Green, G (s)	8.7	24.1	9.7	25.1	7.0	13.2	13.2	9.5	15.7	15.7
Effective Green, g (s)	8.7	24.1	9.7	25.1	7.0	13.2	13.2	9.5	15.7	15.7
Actuated g/C Ratio	0.12	0.33	0.13	0.35	0.10	0.18	0.18	0.13	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	412	1641	459	1744	331	926	288	450	1004	1004
Vis Ratio Prot	c0.07	c0.23	0.66	c0.32	c0.07	0.02	0.07	0.05	c0.12	0.12
Vis Ratio Perm	0.68	0.71	0.46	0.91	0.75	0.12	0.05	0.39	0.55	0.55
Uniform Delay, d1	30.2	21.1	29.0	22.6	31.9	24.8	24.5	28.9	25.3	25.3
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	2.1	1.4	0.7	7.6	9.3	0.1	0.1	0.6	0.7	0.7
Delay (s)	32.3	22.5	29.7	30.3	41.2	24.9	24.6	29.4	26.0	26.0
Level of Service	C	C	C	C	D	C	C	C	C	C
Approach Delay (s)	24.1	24.1	30.2	30.2	34.0	34.0	34.0	26.6	26.6	26.6
Approach LOS	C	C	C	C	C	C	C	C	C	C
Intersection Summary										
HCM Average Control Delay	27.9									
HCM Volume to Capacity ratio	0.65									
Actuated Cycle Length (s)	72.5									
Intersection Capacity Utilization	68.7%									
Analysis Period (min)	15									
c Critical Lane Group										

Baseline

Movement	EBL	EBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Lane Configurations	EBL	EBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Volume (vph)	0	880	1140	0	862	280	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	3539	3539	3539	3430	1441	3539	3539	3430	1441
Satd. Flow (perm)	3539	3539	3539	3539	3430	1441	3539	3539	3430	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	978	1267	0	958	322	322	322	322	322
RTOR Reduction (vph)	0	0	0	0	0	3	25	25	25	25
Lane Group Flow (vph)	0	978	1267	0	987	265	322	322	322	322
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	2,6	6,2	4	4	4	4	4	4	4	4
Permitted Phases	45,7	45,7	45,7	45,7	45,7	45,7	45,7	45,7	45,7	45,7
Actuated Green, G (s)	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7
Effective Green, g (s)	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7	45.7
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
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)	1872	1872	1872	1872	1143	480	1872	1872	1143	480
Vis Ratio Prot	0.28	c0.36	0.28	c0.36	0.28	c0.36	0.28	c0.36	0.28	c0.36
Vis Ratio Perm	0.52	0.68	0.52	0.68	0.52	0.68	0.52	0.68	0.52	0.68
Uniform Delay, d1	13.2	14.9	13.2	14.9	27.0	23.5	27.0	23.5	27.0	23.5
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	1.0	0.3	1.0	7.0	1.4	7.0	1.4	7.0	1.4
Delay (s)	13.5	15.9	13.5	15.9	33.9	24.9	33.9	24.9	33.9	24.9
Level of Service	B	B	B	B	C	C	C	C	C	C
Approach Delay (s)	13.5	15.9	13.5	15.9	31.9	31.9	31.9	31.9	31.9	31.9
Approach LOS	B	B	B	B	C	C	C	C	C	C
Intersection Summary										
HCM Average Control Delay	21.0									
HCM Volume to Capacity ratio	0.75									
Actuated Cycle Length (s)	86.4									
Intersection Capacity Utilization	68.5%									
Analysis Period (min)	15									
c Critical Lane Group										

Baseline

Movement	EBL	EBT	EBBL	EBBR	WBL	WBR	NBL	NBT	NBBL	NBBR	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Volume (vph)	242	2016	251	15	134	28	618	65	134	27	29	80
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.97	0.95	1.00	0.95	1.00	0.95	1.00
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00	0.99	1.00	0.95	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	1553	1770	5085	3433	3181	1770	1770	1683	1553	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1553	1770	5085	3433	3181	1770	1770	1683	1553	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	2240	279	17	1316	31	687	72	149	30	32	89
RTOR Reduction (vph)	0	0	98	0	2	0	0	111	0	0	83	0
Lane Group Flow (vph)	269	2240	103	17	1345	0	667	110	0	30	32	86
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	5	6	5	6	6
Permitted Phases												
Actuated Green, G (s)	17.4	53.0	53.0	1.7	37.3	22.2	25.1	3.9	6.8	6.8	6.8	6.8
Effective Green, g (s)	17.4	53.0	53.0	1.7	37.3	22.2	25.1	3.9	6.8	6.8	6.8	6.8
Actuated g/C Ratio	0.17	0.53	0.53	0.02	0.97	0.22	0.25	0.04	0.07	0.07	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Cap Cap (vph)	309	2703	842	30	1868	784	801	69	127	108	127	108
v/s Ratio Prot	50.15	50.44	0.12	0.01	0.27	0.20	0.03	0.02	0.02	0.02	0.02	0.02
v/s Ratio Perm												
Uniform Delay, d1	0.87	0.83	0.22	0.57	0.71	0.90	0.14	0.43	0.25	0.06	0.25	0.06
Progression Factor	40.1	19.5	12.4	48.6	26.6	37.7	28.9	46.8	44.0	43.0	44.0	43.0
Incremental Delay, d2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Level of Service	22.4	2.2	0.1	22.3	1.2	13.4	0.1	4.3	1.0	0.5	1.0	0.5
Approach Delay (s)	62.5	21.8	12.5	70.9	27.8	57.0	29.0	51.2	46.1	45.1	46.1	45.1
Approach LOS	E	C	B	E	C	D	C	D	D	D	D	D
Intersection (Summary)												
HCM Average Control Delay			30.0									
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			99.7									
Intersection Capacity Utilization			76.6%									
Analysis Period (min)			15									
Critical Lane Group			6									

Movement	EBL	EBT	EBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Volume (vph)	235	1482	0	0	1042	814	615	0
Ideal Flow (vphpl)	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	4.0
Lane Util. Factor	0.97	0.95	0.91	0.91	0.95	0.91	0.95	0.95
Flt	1.00	1.00	1.00	0.85	1.00	0.90	0.85	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	0.99	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5583	1681	1497	1504	1504
Flt Permitted	0.95	1.00	1.00	1.00	0.95	0.99	1.00	1.00
Satd. Flow (perm)	3433	3539	5085	5583	1681	1497	1504	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	261	1647	0	0	1158	904	683	11
RTOR Reduction (vph)	0	0	0	0	0	564	0	2
Lane Group Flow (vph)	261	1647	0	0	1158	340	540	489
Turn Type	Prot	5	2	6	6	8	8	8
Protected Phases								
Permitted Phases	13.8	56.5	40.7	53.5	53.5	53.5	53.5	53.5
Actuated Green, G (s)	13.8	56.5	40.7	53.5	53.5	53.5	53.5	53.5
Effective Green, g (s)	0.12	0.49	0.34	0.34	0.45	0.45	0.45	0.45
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	395	1725	1725	537	749	667	671	671
Lane Grp Cap (vph)	0.08	0.47	0.23	0.21	0.32	0.34	0.32	0.32
v/s Ratio Prot	0.66	0.95	0.67	0.63	0.72	0.76	0.73	0.73
v/s Ratio Perm	50.9	29.5	33.9	33.4	27.2	27.9	27.3	27.3
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	4.1	13.3	2.1	5.6	3.4	5.1	4.0	4.0
Incremental Delay, d2	55.0	42.8	36.0	39.0	30.6	33.0	31.2	31.2
Delay (s)	D	D	D	D	C	C	C	C
Level of Service	D	D	D	D	C	C	C	C
Approach Delay (s)	44.5	37.3	37.3	37.3	31.6	31.6	31.6	31.6
Approach LOS	D	D	D	D	C	C	C	C
Intersection Summary								
HCM Average Control Delay								
HCM Volume to Capacity ratio								
Actuated Cycle Length (s)								
Intersection Capacity Utilization								
Analysis Period (min)								
Critical Lane Group								

Movement	EB	EB	EB	WB	WB	NB	NB
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	2145	32	21	1189	44	29	1900
Ideal Flow (vphpl)	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	0.91	1.00	1.00	0.91	0.97	1.00	0.85
Flt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	5085	583	1770	5085	3433	1583	5085
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	5085	583	1770	5085	3433	1583	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2383	36	23	1321	49	32	1900
RTOR Reduction (vph)	0	11	0	0	0	0	30
Lane Group Flow (vph)	2383	25	23	1321	49	2	1900
Turn Type	Perm	Perm	Prot	Perm	Perm	Perm	Perm
Protected Phases	4	3	8	2	2	2	2
Permitted Phases	4	3	8	2	2	2	2
Actuated Green, G (s)	38.4	38.4	0.6	43.0	3.6	3.6	3.6
Effective Green, g (s)	38.4	38.4	0.6	43.0	3.6	3.6	3.6
Actuated g/C Ratio	0.70	0.70	0.01	0.79	0.07	0.07	0.07
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)	3576	1113	19	4005	226	104	1900
vs Ratio Prot	c0.47	c0.01	0.26	c0.01	0.00	0.00	0.00
vs Ratio Perm	0.87	0.02	0.21	0.33	0.22	0.02	0.02
Uniform Delay, d1	4.5	2.1	27.0	1.7	24.2	23.9	23.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	279.4	0.0	0.5	0.1	0.1
Delay (s)	5.0	2.1	306.4	1.7	24.6	23.9	23.9
Level of Service	A	A	F	A	C	C	C
Approach Delay (s)	5.0	2.1	306.4	1.7	24.6	23.9	23.9
Approach LOS	A	A	F	A	C	C	C
Intersection Summary							
HCM Average Control Delay	6.1						
HCM Volume to Capacity ratio	0.61						
Actuated Cycle Length (s)	94.6						
Intersection Capacity Utilization	51.4%						
Analysis Period (min)	15						
c Critical Lane Group							

Movement	EB	EB	EB	WB	WB	NB	NB
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	443	1358	362	102	746	176	270
Ideal Flow (vphpl)	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	0.97	0.91	0.97	0.91	0.97	0.91	0.97
Flt	1.00	0.97	1.00	0.97	1.00	0.97	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	4925	3433	4939	3433	5085	3433
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	4925	3433	4939	3433	5085	3433
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	492	1509	402	113	829	196	300
RTOR Reduction (vph)	0	45	0	0	42	0	216
Lane Group Flow (vph)	492	1866	0	113	963	0	300
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	2
Permitted Phases	7	4	3	8	5	2	2
Actuated Green, G (s)	15.5	32.5	6.5	23.5	9.2	13.8	13.8
Effective Green, g (s)	15.5	32.5	6.5	23.5	9.2	13.8	13.8
Actuated g/C Ratio	0.20	0.43	0.09	0.31	0.12	0.18	0.18
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)	702	2112	294	1531	417	926	288
vs Ratio Prot	c0.14	c0.38	0.03	0.20	c0.09	0.03	0.05
vs Ratio Perm	0.70	0.88	0.38	0.64	0.72	0.47	0.37
Uniform Delay, d1	28.0	19.9	32.8	22.5	32.1	27.7	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	4.8	0.8	0.9	5.9	0.4	0.3
Delay (s)	31.2	24.7	33.6	23.5	37.9	28.1	26.4
Level of Service	C	C	C	C	D	C	C
Approach Delay (s)	31.2	24.7	33.6	23.5	37.9	28.1	26.4
Approach LOS	C	C	C	C	D	C	C
Intersection Summary							
HCM Average Control Delay	27.0						
HCM Volume to Capacity ratio	0.74						
Actuated Cycle Length (s)	75.8						
Intersection Capacity Utilization	65.9%						
Analysis Period (min)	15						
c Critical Lane Group							

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	←	←	←	←	←	←	
Volume (vph)	0	690	1028	0	927	336	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.3	6.3		5.6	5.6	
Lane Util. Factor		0.95	0.95		0.97	0.91	
Flt		1.00	1.00		0.99	0.85	
Flt Protected		1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3539	3539		3429	1441	
Flt Permitted		1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3539	3539		3429	1441	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	767	1142	0	1030	373	
RTOR Reduction (vph)	0	0	0	0	3	41	
Lane Group Flow (vph)	0	767	1142	0	1064	295	
Turn Type						Perm	
Protected Phases		2.6	6.2		4		
Permitted Phases						4	
Actuated Green, G (s)		46.5	46.5		29.2	29.2	
Effective Green, g (s)		46.5	46.5		29.2	29.2	
Actuated g/C Ratio		0.53	0.53		0.33	0.33	
Clearance Time (s)					5.6	5.6	
Vehicle Extension (s)					3.0	3.0	
Lane Grp Cap (vph)	1879	1879		1143		480	
v/s Ratio Prot	0.22	e0.32		e0.31		0.20	
v/c Ratio	0.41	0.61		0.93		0.62	
Uniform Delay, d1	12.3	14.2		28.2		24.5	
Progression Factor	1.00	1.00		1.00		1.00	
Incremental Delay, d2	0.1	0.6		13.3		2.3	
Delay (s)	12.5	14.8		41.5		26.8	
Level of Service	B	B		D		C	
Approach Delay (s)	12.5	14.8		38.0			
Approach LOS	B	B		D			
Intersection Summary							
HCM Average Control Delay					24.1	HCM Level of Service	C
HCM Volume to Capacity ratio					0.73		
Actuated Cycle Length (s)					87.6	Sum of lost time (s)	11.9
Intersection Capacity Utilization					85.6%	ICU Level of Service	C
Analysis Period (min)					15		
c Critical Lane Group							

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	←	←	←	←	←	←	
Volume (vph)	231	1327	0	1486	934	384	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.0		4.0		4.0	
Lane Util. Factor		0.97		0.91		0.95	
Flt		1.00		1.00		0.85	
Flt Protected		0.95		1.00		1.00	
Satd. Flow (prot)		3433		5085		1681	
Flt Permitted		0.95		1.00		0.95	
Satd. Flow (perm)		3433		5085		1681	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	257	1474	0	1651	1038	427	
RTOR Reduction (vph)	0	0	0	0	431	0	
Lane Group Flow (vph)	257	1474	0	1651	607	384	
Turn Type						Prot	
Protected Phases		5	2	6	6	8	
Permitted Phases						8	
Actuated Green, G (s)		10.3	67.5		53.2	44.5	
Effective Green, g (s)		10.3	67.5		53.2	44.5	
Actuated g/C Ratio		0.09	0.56		0.44	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)	295	1891		2254	702	547	
v/s Ratio Prot	e0.07	0.42		0.32	e0.36	e0.35	
v/c Ratio	0.87	0.74		0.73	0.86	0.95	
Uniform Delay, d1	54.2	19.7		27.5	30.2	36.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	23.3	2.5		2.1	13.4	1.8	
Delay (s)	77.5	22.2		29.7	43.6	32.6	
Level of Service	E	C		C	D	E	
Approach Delay (s)		30.4		35.1		52.8	
Approach LOS		C		D		D	
Intersection Summary							
HCM Average Control Delay							D
HCM Volume to Capacity ratio					38.1	HCM Level of Service	
Actuated Cycle Length (s)					0.90	Sum of lost time (s)	12.0
Intersection Capacity Utilization					120.0	ICU Level of Service	F
Analysis Period (min)					95.1%		
c Critical Lane Group							

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	111	1381	684	95	1897	61	201	10	13	81	59
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	1.00	1.00	0.92	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1770	5085	1583	1770	5061	3433	3242	1770	1863	1583	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (perm)	1770	5085	1583	1770	5061	3433	3242	1770	1863	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	123	1534	771	106	2108	68	223	11	14	90	66
RTOR Reduction (vph)	0	0	375	0	4	0	0	12	0	0	134
Lane Group Flow (vph)	123	1534	396	106	2172	0	223	13	0	90	66
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	1	6	6	6
Permitted Phases	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4	17.4	17.4
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4	17.4	17.4
Effective Green, g (s)	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.15	0.20	0.20	0.20
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	2376	740	134	2290	272	411	284	367	312	312
v/s Ratio Prot	c0.07	0.30	0.25	0.06	c0.43	c0.06	0.00	0.05	0.04	c0.13	c0.13
v/s Ratio Perm	0.77	0.65	0.64	0.79	0.95	0.82	0.03	0.34	0.18	0.68	0.68
v/c Ratio	39.3	18.0	16.7	40.2	23.2	40.1	33.8	33.7	29.6	32.9	32.9
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	19.6	0.6	0.7	26.4	9.3	17.3	0.0	0.8	0.2	6.0	6.0
Incremental Delay, d2	68.9	18.6	17.5	66.6	32.5	57.4	33.9	34.5	29.8	39.0	39.0
Delay (s)	E	B	B	E	C	E	C	C	C	C	D
Level of Service	E	B	B	E	C	E	C	C	C	C	D
Approach Delay (s)	20.3			34.1		55.0			37.0		
Approach LOS	C			C		D			D		
Intersection Summary											
HCM Average Control Delay	29.2										
HCM Volume to Capacity ratio	0.85										
Actuated Cycle Length (s)	88.4										
Intersection Capacity Utilization	73.1%										
Analysis Period (min)	15										
c Critical Lane Group											

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	←←←	↑	↑	←←←	↑↑	↑
Volume (vph)	1625	43	28	2045	40	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Flt	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)	5085	1583	1770	5085	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1806	48	31	2272	44	30
RTOR Reduction (vph)	0	16	0	0	0	28
Lane Group Flow (vph)	1806	32	31	2272	44	30
Turn Type	Perm Prot			Perm		
Protected Phases	4			3		
Permitted Phases	4			8		
Actuated Green, G (s)	32.7			32.7		
Effective Green, g (s)	32.7			32.7		
Actuated g/C Ratio	0.66			0.66		
Clearance Time (s)	4.0			4.0		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	3373			3899		
v/s Ratio Prot	0.36			0.02		
v/s Ratio Perm	0.02			0.02		
v/c Ratio	0.54			0.79		
Uniform Delay, d1	4.3			2.9		
Progression Factor	1.00			1.00		
Incremental Delay, d2	0.2			0.0		
Delay (s)	4.5			2.9		
Level of Service	A			F		
Approach Delay (s)	4.5			3.9		
Approach LOS	A			A		
Intersection Summary						
HCM Average Control Delay	4.4			HCM Level of Service		
HCM Volume to Capacity ratio	0.55			A		
Actuated Cycle Length (s)	49.3			Sum of lost time (s)		
Intersection Capacity Utilization	49.5%			8.0		
Analysis Period (min)	15			A		
c : Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (vph)	223	900	341	202	1387	95	244	103	79	164	306
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	0.91
Flt	1.00	0.96	1.00	0.99	1.00	0.99	1.00	1.00	0.85	1.00	0.91
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	4876	3433	5036	3433	5036	3433	5085	1583	3433	4643
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	4876	3433	5036	3433	5036	3433	5085	1583	3433	4643
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	248	1000	379	224	1541	106	271	114	88	182	340
RTOR Reduction (vph)	0	89	0	0	10	0	0	0	71	0	160
Lane Group Flow (vph)	248	1290	0	224	1637	0	271	114	17	182	648
Turn Type	Prot	4	3	8	5	2	2	1	6		
Protected Phases	7										
Permitted Phases											
Actuated Green, G (s)	7.0	25.2	8.8	27.0	7.0	14.2	14.2	9.7	16.9		
Effective Green, g (s)	7.0	25.2	8.8	27.0	7.0	14.2	14.2	9.7	16.9		
Actuated g/C Ratio	0.09	0.34	0.12	0.37	0.09	0.19	0.19	0.13	0.23		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	325	1663	409	1840	325	977	304	451	1062		
v/s Ratio Prot	c0.07	0.26	0.07	c0.33	c0.08	0.02	0.01	0.05	c0.14		
v/s Ratio Perm											
v/c Ratio	0.76	0.78	0.55	0.89	0.83	0.12	0.06	0.40	0.824		
Uniform Delay, d1	32.6	21.8	30.7	22.0	32.9	24.7	24.4	29.4	25.5		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	10.2	2.3	1.5	5.7	16.6	0.1	0.1	0.6	1.0		
Delay (s)	42.8	24.2	32.2	27.8	49.4	24.7	24.5	30.0	26.6		
Level of Service	D	C	C	C	D	C	C	C	C		
Approach Delay (s)	27.0			28.3			38.8		27.2		
Approach LOS	C			C			D		C		
Intersection Summary											
HCM Average Control Delay	28.7										
HCM Volume to Capacity ratio	0.74										
Actuated Cycle Length (s)	73.9								12.0		
Intersection Capacity Utilization	71.0%										
Analysis Period (min)	15										
dr Defacto Right Lane. Recode with 1 though lane as a right lane.											
c Critical Lane Group											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Volume (vph)	0	912	1194	0	905	299					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Total Lost time (s)	6.3	6.3	6.3	6.3	6.3	6.3					
Lane Util. Factor	0.95	0.95	0.95	0.95	0.97	0.91					
Flt	1.00	1.00	1.00	1.00	1.00	0.85					
Flt Protected	1.00	1.00	1.00	1.00	1.00	0.95					
Satd. Flow (prot)	3539	3539	3539	3430	1441						
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00					
Satd. Flow (perm)	3539	3539	3539	3430	1441						
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90					
Adj. Flow (vph)	0	1013	1327	0	1006	332					
RTOR Reduction (vph)	0	0	0	0	0	3					
Lane Group Flow (vph)	0	1013	1327	0	1036	278					
Turn Type		2.6	6.2		4						
Protected Phases											
Permitted Phases											
Actuated Green, G (s)		45.7	45.7		29.9	29.9					
Effective Green, g (s)		45.7	45.7		29.9	29.9					
Actuated g/C Ratio		0.52	0.52		0.34	0.34					
Clearance Time (s)		5.6	5.6		3.0	3.0					
Vehicle Extension (s)		3.0	3.0		3.0	3.0					
Lane Grp Cap (vph)		1848	1848		1172	492					
v/s Ratio Prot		0.29	c0.37		c0.30						
v/s Ratio Perm											
v/c Ratio		0.55	0.72		0.88	0.56					
Uniform Delay, d1		14.0	16.0		27.2	23.5					
Progression Factor		1.00	1.00		1.00	1.00					
Incremental Delay, d2		0.3	1.4		8.2	1.5					
Delay (s)		14.3	17.3		35.4	25.0					
Level of Service		B	B		D	C					
Approach Delay (s)		14.3	17.3		33.0						
Approach LOS		B	B		C						
Intersection Summary											
HCM Average Control Delay		22.2									
HCM Volume to Capacity ratio		0.78									
Actuated Cycle Length (s)		87.5									
Intersection Capacity Utilization		70.7%									
Analysis Period (min)		15									
c Critical Lane Group											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT
Volume (vph)	242	1531	0	0	1165	884	644	20	805	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.91	1.00	0.95	0.91	0.95	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	1583	1583	1501	1504	1504	1504	1504	1504
Flt Permitted	0.95	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	5085	5085	1583	1583	1501	1504	1504	1504	1504	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	1701	0	0	1294	982	716	22	894	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	515	0	6	6	0	0	0
Lane Group Flow (vph)	269	1701	0	0	1294	467	566	533	521	0	0	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	6	6	6	8	8	8	8	8	8
Permitted Phases	11.4	62.5	47.1	47.1	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
Effective Green, G (s)	11.4	62.5	47.1	47.1	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
Actuated g/C Ratio	0.10	0.52	0.39	0.39	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	326	1843	1996	621	693	619	620	620	620	620	620	620
v/s Ratio Prot	0.08	c0.48	0.25	0.29	0.34	c0.36	0.35	0.35	0.35	0.35	0.35	0.35
v/s Ratio Perm	0.83	0.92	0.65	0.75	0.82	0.86	0.84	0.84	0.84	0.84	0.84	0.84
Uniform Delay, d1	53.3	26.5	29.7	31.4	31.2	32.1	31.7	31.7	31.7	31.7	31.7	31.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.5	9.2	1.6	8.2	7.4	11.8	10.0	10.0	10.0	10.0	10.0	10.0
Delay (s)	68.8	35.8	31.3	39.6	38.6	43.9	41.7	41.7	41.7	41.7	41.7	41.7
Level of Service	E	D	C	D	D	D	D	D	D	D	D	D
Approach Delay (s)	40.3	40.3	34.9	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4
Approach LOS	D	D	C	C	C	C	C	C	C	C	C	C
Intersection Summary												
HCM Average Control Delay	38.5											
HCM Volume to Capacity ratio	0.90											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	98.2%											
Analysis Period (min)	15											
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT
Volume (vph)	249	2105	259	15	1336	29	637	67	138	28	30	82
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1770	3433	3181	3433	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	1770	3433	3181	3433	1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	277	2339	288	17	1484	32	708	74	153	31	33	91
RTOR Reduction (vph)	0	0	94	0	2	0	115	0	0	0	0	85
Lane Group Flow (vph)	277	2339	194	17	1514	0	708	112	0	31	33	6
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	2	1	6	6	6
Permitted Phases	17.7	54.1	54.1	1.7	38.1	22.1	25.1	25.1	3.9	6.9	6.9	6.9
Effective Green, G (s)	17.7	54.1	54.1	1.7	38.1	22.1	25.1	25.1	3.9	6.9	6.9	6.9
Actuated g/C Ratio	0.18	0.54	0.54	0.02	0.38	0.22	0.25	0.25	0.04	0.07	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	311	2729	850	30	1916	753	792	792	68	128	108	108
v/s Ratio Prot	c0.16	c0.46	0.12	0.01	0.30	c0.21	0.04	0.04	0.02	c0.02	0.00	0.00
v/s Ratio Perm	0.89	0.86	0.23	0.57	0.79	0.94	0.14	0.14	0.46	0.26	0.06	0.06
Uniform Delay, d1	40.6	20.0	12.3	49.2	27.8	38.7	29.5	29.5	47.4	44.5	43.9	43.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.6	2.9	0.1	22.3	2.3	19.6	0.1	0.1	52.2	45.6	44.1	44.1
Delay (s)	66.2	22.9	12.5	71.4	30.1	58.3	29.5	29.5	52.2	45.6	44.1	44.1
Level of Service	E	C	B	E	C	C	E	E	C	D	D	D
Approach Delay (s)	26.0	26.0	26.0	30.6	30.6	30.6	51.4	51.4	46.1	46.1	46.1	46.1
Approach LOS	C	C	C	C	C	C	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	32.1											
HCM Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	100.8											
Intersection Capacity Utilization	78.8%											
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis Near Term + Construction (Phase 1&2) PM
 4: Del Mar Heights Road & Third Ave. 3/5/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4	4	4	4	4	4	
Volume (vph)	2265	32	21	1527	44	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00	
Flt	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)	5085	1583	1770	5085	3433	1583	
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	2539	36	23	1697	49	32	
RTOR Reduction (vph)	0	11	0	0	0	30	
Lane Group Flow (vph)	2539	25	23	1697	49	2	
Turn Type	Perm	Perm	Prot	Perm	Perm	Perm	
Protected Phases	4	4	3	8	2	2	
Permitted Phases	38.8	38.8	0.7	43.5	3.7	3.7	
Actuated Green, G (s)	38.8	38.8	0.7	43.5	3.7	3.7	
Effective Green, g (s)	0.70	0.70	0.01	0.79	0.07	0.07	
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3574	1113	22	4007	230	106	
Lane Grp Cap (vph)	40.50	0.01	40.33	40.01	40.01	40.01	
v/s Ratio Prot	0.71	0.02	1.05	0.42	0.21	0.02	
v/s Ratio Perm	4.9	2.5	27.3	1.9	24.4	24.1	
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	
Progression Factor	0.7	0.0	206.7	0.1	0.5	0.1	
Incremental Delay, d2	5.5	2.5	233.9	1.9	24.8	24.1	
Delay (s)	A	A	F	A	C	C	
Level of Service	A	A	F	A	C	C	
Approach Delay (s)	5.5	5.5	5.0	5.0	24.6	24.6	
Approach LOS	A	A	A	A	C	C	
Intersection Summary							
HCM Average Control Delay	5.7						HCM Level of Service
HCM Volume to Capacity ratio	0.68						A
Actuated Cycle Length (s)	55.2						Sum of lost time (s)
Intersection Capacity Utilization	54.1%						12.0
Analysis Period (min)	15						A
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis Near Term + Construction (Phase 1&2) PM
 5: Del Mar Heights Road & El Camino Real 3/5/2012

Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4	4	4	4	4	4	
Volume (vph)	456	1399	402	107	768	181	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.91	1.00	0.97	1.00	0.85	
Flt	1.00	0.97	1.00	1.00	0.97	1.00	
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	3433	4915	3433	4940	3433	5085	
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	3433	4915	3433	4940	3433	5085	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	507	1554	447	119	853	201	
RTOR Reduction (vph)	0	53	0	0	41	0	
Lane Group Flow (vph)	507	1948	0	119	1013	0	
Turn Type	Prot	4	3	8	2	1	
Protected Phases	7	4	3	8	2	1	
Permitted Phases	16.5	40.4	4.6	28.5	10.1	15.2	
Actuated Green, G (s)	16.5	40.4	4.6	28.5	10.1	15.2	
Effective Green, g (s)	0.20	0.49	0.06	0.34	0.12	0.18	
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	683	2395	190	1698	418	932	
Lane Grp Cap (vph)	40.15	40.40	40.03	40.21	40.13	40.10	
v/s Ratio Prot	0.74	0.81	0.63	0.60	1.05	0.55	
v/s Ratio Perm	31.2	18.0	38.3	22.5	36.4	30.4	
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	
Progression Factor	4.4	2.2	6.3	0.6	58.5	0.4	
Incremental Delay, d2	35.6	20.3	44.6	23.0	94.9	30.8	
Delay (s)	D	C	D	C	F	C	
Level of Service	D	C	D	C	F	C	
Approach Delay (s)	23.4	23.4	25.2	25.2	55.2	34.7	
Approach LOS	C	C	C	C	E	C	
Intersection Summary							
HCM Average Control Delay	31.9						HCM Level of Service
HCM Volume to Capacity ratio	0.77						C
Actuated Cycle Length (s)	82.9						Sum of lost time (s)
Intersection Capacity Utilization	71.4%						12.0
Analysis Period (min)	15						C
c Critical Lane Group							

Movement	EB	EB	WB	WB	SB	SB
Lane Configurations	44	44	44	44	44	44
Volume (vph)	666	998	0	867	328	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	5.6	5.6	5.6	5.6	5.6
Lane Util. Factor	0.35	0.95	0.97	0.97	0.91	0.91
Flt Protected	1.00	1.00	0.99	0.99	0.95	0.95
Satd. Flow (prot)	3539	3539	3429	3429	1441	1441
Flt Permitted	1.00	1.00	0.95	0.95	1.00	1.00
Satd. Flow (perm)	3539	3539	3429	3429	1441	1441
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	740	1109	0	963	362
RTOR Reduction (vph)	0	0	0	0	3	51
Lane Group Flow (vph)	0	740	1109	0	966	276
Turn Type	2.6	6.2	4	4	4	4
Protected Phases	2.6	6.2	4	4	4	4
Permitted Phases	2.6	6.2	4	4	4	4
Actuated Green, G (s)	46.8	46.8	27.2	27.2	27.2	27.2
Effective Green, g (s)	46.8	46.8	27.2	27.2	27.2	27.2
Actuated g/C Ratio	0.14	0.54	0.32	0.32	0.32	0.32
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1928	1928	1086	1086	456	456
vs Ratio Prot	0.21	0.34	0.29	0.29	0.19	0.19
vs Ratio Perm	0.38	0.58	0.92	0.92	0.60	0.60
Uniform Delay, d1	11.3	13.0	28.3	28.3	24.8	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.4	11.9	11.9	2.2	2.2
Delay (s)	11.4	13.4	40.2	40.2	27.0	27.0
Level of Service	B	B	D	D	C	C
Approach Delay (s)	11.4	13.4	37.0	37.0	27.0	27.0
Approach LOS	B	B	D	D	C	C
Intersection Summary						
HCM Average Control Delay	22.8					
HCM Volume to Capacity ratio	0.70					
Actuated Cycle Length (s)	85.9					
Intersection Capacity Utilization	63.1%					
Analysis Period (min)	15					
c - Critical Lane Group						

Movement	EB	EB	WB	WB	SB	SB
Lane Configurations	44	44	44	44	44	44
Volume (vph)	224	1289	0	1434	903	781
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	0.95	0.91	0.95
Flt Protected	1.00	1.00	1.00	0.95	1.00	0.95
Satd. Flow (prot)	3433	3539	5085	1583	1601	1457
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3539	5085	1583	1601	1457
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	249	1432	0	1583	1003	414
RTOR Reduction (vph)	0	0	0	0	422	0
Lane Group Flow (vph)	249	1432	0	1583	381	414
Turn Type	5	2	6	6	8	8
Protected Phases	5	2	6	6	8	8
Permitted Phases	5	2	6	6	8	8
Actuated Green, G (s)	12.2	65.1	48.9	48.9	46.9	46.9
Effective Green, g (s)	12.2	65.1	48.9	48.9	46.9	46.9
Actuated g/C Ratio	0.10	0.54	0.41	0.41	0.39	0.39
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	349	1920	2072	645	567	588
vs Ratio Prot	0.07	0.40	0.81	0.37	0.22	0.31
vs Ratio Perm	0.71	0.75	0.77	0.90	0.57	0.75
Uniform Delay, d1	52.2	21.1	30.7	33.3	32.2	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	2.7	2.8	18.0	1.1	7.1
Delay (s)	59.0	23.8	33.5	51.2	33.2	38.7
Level of Service	E	C	C	D	C	D
Approach Delay (s)	59.0	23.8	33.5	51.2	33.2	38.7
Approach LOS	E	C	C	D	C	D
Intersection Summary						
HCM Average Control Delay	35.8					
HCM Volume to Capacity ratio	0.84					
Actuated Cycle Length (s)	120.0					
Intersection Capacity Utilization	90.6%					
Analysis Period (min)	15					
c - Critical Lane Group						

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	106	1222	674	92	1829	59	195	10	13	79	57	303
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	3433	3242	1770	1653	1583	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.85
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	3433	3242	1770	1653	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	120	1358	749	102	2032	66	217	11	14	88	63	337
RTOR Reduction (vph)	0	0	378	0	4	0	0	12	0	0	0	136
Lane Group Flow (vph)	120	1358	371	102	2094	0	217	13	0	88	63	201
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	2	1	6	6	6
Permitted Phases												
Actuated Green, G (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	11.1	12.9	17.0	17.0	17.0
Effective Green, g (s)	7.9	41.3	41.3	6.7	40.1	7.0	11.1	11.1	12.9	17.0	17.0	17.0
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.46	0.08	0.13	0.13	0.15	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	159	2386	743	135	2308	273	409		259	360	306	
vs Ratio Prot	0.07	0.27	0.23	0.06	0.41	0.06	0.00		0.05	0.03	0.13	
vs Ratio Perm												
Uniform Delay, d1	39.1	16.9	16.2	39.8	22.2	36.8	33.7		33.7	29.6	32.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	18.2	0.3	0.5	21.1	5.7	14.7	0.0		0.8	0.2	5.0	
Delay (s)	57.3	17.2	16.7	60.9	27.9	51.5	33.8		34.5	29.8	37.9	
Level of Service	E	B	B	E	C	D	C		C	C	D	
Approach Delay (s)												
Approach LOS												
Intersection Summary												
HCM Average Control Delay												
HCM Volume to Capacity ratio												
Actuated Cycle Length (s)												
Intersection Capacity Utilization												
Analysis Period (min)												
c - Critical Lane Group												

Baseline

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	1271	43	28	1951	40	27	1900	1900	1900	1900	1900	1900
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85
Flt Protected	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1412	48	31	2168	44	30	2168	44	30	2168	44	30
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	0	0	0	28
Lane Group Flow (vph)	1412	35	31	2168	44	2						
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	4			4			3	8	2			2
Permitted Phases												
Actuated Green, G (s)	47.6	47.6	1.8	53.4	4.0	4.0	1.8	53.4	4.0	4.0	1.8	53.4
Effective Green, g (s)	47.6	47.6	1.8	53.4	4.0	4.0	1.8	53.4	4.0	4.0	1.8	53.4
Actuated g/C Ratio	0.73	0.73	0.03	0.82	0.05	0.06	0.03	0.82	0.05	0.06	0.03	0.82
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3701	1152	94	4152	108	97	3701	1152	94	4152	108	97
vs Ratio Prot	0.28	0.02	0.01	0.43	0.02	0.00	0.28	0.02	0.01	0.43	0.02	0.00
vs Ratio Perm												
Uniform Delay, d1	3.4	2.5	31.2	1.9	28.6	28.9	3.4	2.5	31.2	1.9	28.6	28.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	2.1	0.1	2.5	0.1	0.1	0.0	2.1	0.1	2.5	0.1
Delay (s)	3.4	2.5	33.3	2.0	32.1	28.9	3.4	2.5	33.3	2.0	32.1	28.9
Level of Service	A	A	C	A	C	C	A	A	C	A	C	C
Approach Delay (s)												
Approach LOS												
Intersection Summary												
HCM Average Control Delay												
HCM Volume to Capacity ratio												
Actuated Cycle Length (s)												
Intersection Capacity Utilization												
Analysis Period (min)												
c - Critical Lane Group												

Baseline

Movement	EBL	EBT	EBR	WBL	WBt	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔	↔↔↔		↔↔↔	↔↔↔		↔↔	↔↔↔	↔	↔↔	↔↔	
Volume (vph)	217	874	212	188	1347	92	224	99	76	159	287	409
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	1.00	0.97	0.91	0.91
FRT	3.00	0.97	1.00	0.99	1.00	0.99	1.00	0.95	1.00	0.95	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	4938	3433	5037	3433	5037	3433	5065	1593	3433	4637	4637
FI Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	4938	3433	5037	3433	5037	3433	5065	1593	3433	4637	4637
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Acf. Flow (vph)	241	971	236	209	1497	102	249	110	84	177	319	454
RTOR Reduction (vph)	0	48	0	0	0	0	0	0	69	0	262	0
Lane Group Flow (vph)	244	1159	0	209	1589	0	249	110	35	177	511	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4		3		8	5	2	2	1	6	
Permitted Phases												
Actuated Green, G (s)	9.7	24.0		9.6	23.9		7.0	12.5	12.5	9.3	14.6	
Effective Green, g (s)	9.7	24.0		9.6	23.9		7.0	12.5	12.5	9.3	14.6	
Actuated g/C Ratio	0.14	0.34		0.13	0.33		0.10	0.18	0.18	0.13	0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0*		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	466	1659		462	1696		337	890	277	447	961	
v/s Ratio Prot	<0.07	0.23		0.06	<0.32		<0.07	0.02	<0.01	0.06	<0.11	
v/s Ratio Perm	0.92	0.70		0.45	0.94		0.74	0.12	0.05	0.40	0.53	
v/s Ratio	28.7	20.6		28.5	23.1		31.3	24.8	24.5	28.5	25.2	
Uniform Factor, d1	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Progression Factor, d2	1.0	1.3		0.7	1.1		8.2	0.1	0.1	0.6	0.6	
Incremental Delay, d2	29.6	21.9		29.2	34.2		39.5	24.9	24.5	29.1	25.8	
Delay (s)	C	C		C	C		D	C	C	C	C	
Level of Service	C	C		C	C		D	C	C	C	C	
Approach Delay (s)	23.2			33.6				33.1			26.4	
Approach LOS	C			C				C			C	
Intersection Summary												
HCM Average Control Delay	28.8											
HCM Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	71.4											
Sum of lost time (s)	12.0											
Intersection Capacity Utilization	68.7%											
Analysis Period (min)	15											
Critical Lane Group												

Movement	EBL	EBT	WBT	WBR	SBL	SBP
Lane Configurations	AA	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	890	140	0	862	290
Ideal Flow (vehpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.3	6.3		5.6	5.6
Lane Util. Factor		0.95	0.95		0.97	0.91
FRT		1.00	1.00		1.00	0.85
FRT Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3539		3430	1441
FRT Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3539		3430	1441
Peak-hour factor, PHF		0.90	0.90		0.90	0.90
Adj. Flow (vph)		0	978	1267	0	958
RTOR Reduction (vph)		0	0	0	3	25
Lane Group Flow (vph)		0	978	1267	0	987
Turn Type						Perm
Protected Phases		2.6	6.2		4	
Permitted Phases						4
Actuated Green, G (s)		45.7	45.7		28.8	28.8
Effective Green, g (s)		45.7	45.7		28.8	28.8
Actuated p/C Ratio		0.53	0.53		0.33	0.33
Clearance Time (s)					5.6	5.6
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)		1872	1872		1143	480
v/s Ratio Prot		0.28	0.36		cd.28	
v/s Ratio Perm					0.18	
w/c Ratio		0.52	0.68		0.86	0.55
Uniform Delay d1		13.2	14.9		27.0	23.5
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay d2		0.3	1.0		7.0	1.4
Delay (s)		13.5	15.9		33.9	24.9
Level of Service		B	B		C	C
Approach Delay (s)		13.5	15.9		31.9	
Approach LOS		B	B		C	
Intersection Summary						
HCM Average Control Delay			21.0		HCM Level of Service	C
HCM Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			86.4		Sum of lost time (s)	11.9
Intersection Capacity Utilization			68.5%		ICI Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	235	1482	0	0	1042	814	615	10	762	0	0
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	0.91	0.95	0.91	0.95	0.91	0.95	0.91	0.95
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	5085	5085	5085	5085	5085	5085	5085
Satd. Flow (perm)	3433	3539	5085	5085	5085	5085	5085	5085	5085	5085	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	261	1647	0	0	1158	904	683	11	847	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	261	1647	0	0	1158	904	683	11	847	0	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	5	5	5	5	5	5	5	5	5
Permitted Phases	12.4	58.5	42.1	42.1	53.5	53.5	53.5	53.5	53.5	53.5	53.5
Effective Green, G (s)	12.4	58.5	42.1	42.1	53.5	53.5	53.5	53.5	53.5	53.5	53.5
Effective Green, g (s)	0.10	0.19	0.35	0.35	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	355	1725	1784	565	749	667	671	0.32	60.34	0.32	0.32
Lane Grp Cap (vph)	308	2703	842	30	1886	784	801	69	127	108	108
W/Ratio Prot	0.08	0.047	0.23	0.24	0.32	0.32	0.32	0.02	0.02	0.02	0.02
W/Ratio Perm	0.74	0.95	0.95	0.68	0.72	0.78	0.73	0.90	0.14	0.43	0.25
Uniform Delay, d1	52.2	29.5	32.7	33.2	27.2	27.9	27.3	37.7	28.9	46.8	44.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.7	13.3	1.8	6.5	3.4	5.1	4.0	13.4	0.1	4.3	1.0
Delay (s)	59.9	42.8	34.8	39.7	30.6	33.0	31.2	51.0	29.0	51.2	45.1
Level of Service	E	D	C	D	C	C	C	D	C	D	D
Approach Delay (s)	45.1	36.8	31.6	31.6	31.6	31.6	31.6	45.7	36.8	45.5	45.5
Approach LOS	D	D	D	D	C	C	C	D	C	D	D
Intersection Summary											
HCM Average Control Delay	38.2										
HCM Volume to Capacity ratio	0.86										
Actuated Cycle Length (s)	120.0										
Intersection Capacity Utilization	92.2%										
Analysis Period (min)	15										
c - Critical Lane Group											

Baseline

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	242	2016	251	15	1184	28	618	65	134	27	29
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.97	0.95	1.00	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	3433	3181	1770	1863	1583	1583
Satd. Flow (perm)	1770	5085	1583	1770	5085	3433	3181	1770	1863	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	2240	278	17	1316	31	687	72	149	30	32
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	269	2240	183	17	1345	0	687	110	0	30	32
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	1	6	5	5
Permitted Phases	17.4	55.0	53.0	1.7	37.3	22.2	25.1	3.9	6.8	6.8	6.8
Effective Green, G (s)	17.4	53.0	53.0	1.7	37.3	22.2	25.1	3.9	6.8	6.8	6.8
Effective Green, g (s)	0.17	0.53	0.53	0.02	0.37	0.22	0.25	0.04	0.07	0.07	0.07
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	309	2703	842	30	1886	784	801	69	127	108	108
Lane Grp Cap (vph)	309	2703	842	30	1886	784	801	69	127	108	108
W/Ratio Prot	0.015	0.044	0.12	0.01	0.27	0.20	0.03	0.02	0.02	0.02	0.02
W/Ratio Perm	0.87	0.83	0.22	0.57	0.71	0.90	0.14	0.43	0.25	0.06	0.06
Uniform Delay, d1	40.1	19.5	12.4	48.6	26.5	37.7	28.9	46.8	44.0	43.4	43.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.4	2.2	0.1	22.3	1.2	13.4	0.1	4.3	1.0	0.2	0.2
Delay (s)	62.5	21.8	12.5	70.9	27.8	51.0	29.0	51.2	45.1	43.7	43.7
Level of Service	E	C	B	E	C	D	C	D	D	D	D
Approach Delay (s)	24.8	28.4	28.4	28.4	28.4	45.7	36.8	45.5	45.5	45.5	45.5
Approach LOS	C	C	C	C	C	D	C	D	D	D	D
Intersection Summary											
HCM Average Control Delay	30.0										
HCM Volume to Capacity ratio	0.80										
Actuated Cycle Length (s)	99.7										
Intersection Capacity Utilization	76.6%										
Analysis Period (min)	15										
c - Critical Lane Group											

Baseline

Movement	EBT	EBE	EBL	WBT	WBL	WBR	NBT	NBL	NBR
Lane Configurations	AAA	A	AAA	AAA	A	A	A	A	A
Volume (vph)	2145	32	21	1189	44	29			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0			
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00			
Fit	1.00	0.95	1.00	1.00	1.00	0.95			
Flt Protected	1.00	1.00	0.95	1.00	1.00	0.95			
Satd. Flow (prot)	5085	5085	5085	5085	5085	5085			
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00			
Satd. Flow (perm)	5085	5085	5085	5085	5085	5085			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90			
Adj. Flow (vph)	2383	36	23	1321	49	32			
RTOR Reduction (vph)	0	11	0	0	0	30			
Lane Group Flow (vph)	2383	25	23	1321	49	2			
Turn Type	Perm	Perm	Prot	Perm	Prot	Perm			
Protected Phases	4	3	8	2	2	2			
Permitted Phases	4	4	2	2	2	2			
Actuated Green, G (s)	38.5	38.5	0.6	43.1	4.3	4.3			
Effective Green, g (s)	38.5	38.5	0.6	43.1	4.3	4.3			
Actuated g/C Ratio	0.69	0.69	0.07	0.78	0.08	0.08			
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	3534	1100	37	3956	137	123			
vs Ratio Prot	0.47	0.01	0.026	0.03	0.03	0.03			
vs Ratio Perm	0.02	0.02	0.62	0.33	0.36	0.02			
Uniform Delay, d1	4.9	2.6	27.3	1.8	24.2	23.6			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.5	0.0	28.2	0.1	1.6	0.1			
Delay (s)	5.4	2.6	55.5	1.9	25.8	23.7			
Level of Service	A	A	E	A	C	C			
Approach Delay (s)	5.3	2.8	25.0	2.8	25.0	25.0			
Approach LOS	A	A	C	A	C	C			
Intersection Summary									
HCM Average Control Delay	4.9					HCM Level of Service			
HCM Volume to Capacity ratio	0.65					A			
Actuated Cycle Length (s)	55.4					Sum of lost time (s)			
Intersection Capacity Utilization	51.4%					A			
Analysis Period (min)	15					12.0			
Critical Lane Group	6					A			

Baseline

Movement	EBT	EBL	EBR	WBT	WBL	WBR	NBT	NBL	NBR	SBL	SBR
Lane Configurations	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
Volume (vph)	443	1356	362	102	746	176	270	394	238	147	164
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91
Fit	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.95	1.00	0.95	1.00
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.91
Satd. Flow (prot)	3433	4925	3433	4939	3433	4939	3433	5085	3433	4939	3433
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00	0.95
Satd. Flow (perm)	3433	4925	3433	4939	3433	4939	3433	5085	3433	4939	3433
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	492	1509	402	113	829	196	300	438	264	163	162
RTOR Reduction (vph)	0	44	0	0	43	0	0	216	0	178	0
Lane Group Flow (vph)	492	1867	0	113	982	0	300	438	48	163	200
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	5	2	2	2	1	6	
Permitted Phases											
Actuated Green, G (s)	16.0	35.5	6.5	24.0	7.2	13.8	13.8	6.8	13.4		
Effective Green, g (s)	16.0	35.5	6.5	24.0	7.2	13.8	13.8	6.8	13.4		
Actuated g/C Ratio	0.21	0.44	0.08	0.31	0.09	0.18	0.18	0.09	0.17		
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	717	2164	291	1547	323	916	285	305	813		
vs Ratio Prot	0.14	0.14	0.03	0.20	0.09	0.09	0.09	0.05	0.04		
vs Ratio Perm											
vc Ratio	0.69	0.87	0.89	0.63	0.33	0.48	0.17	0.55	0.25		
Uniform Delay, d1	28.0	19.5	33.2	22.5	34.4	28.2	26.5	33.4	27.2		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	2.7	4.0	0.9	0.9	31.8	0.4	0.3	1.8	0.2		
Delay (s)	30.7	23.5	34.0	23.4	66.3	28.6	26.8	35.2	27.4		
Level of Service	C	C	C	C	E	C	C	D	C		
Approach Delay (s)	25.0	25.0	24.5	24.5	39.4			26.7			
Approach LOS	C	C	C	C	D						
Intersection Summary											
HCM Average Control Delay	28.2					HCM Level of Service					
HCM Volume to Capacity ratio	0.74					C					
Actuated Cycle Length (s)	76.6					Sum of lost time (s)					
Intersection Capacity Utilization	65.9%					C					
Analysis Period (min)	15					12.0					
c Critical Lane Group											

Baseline

[illegible][illegible]

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Volume (vph)	111	1448	684	95	1904	61	201	10	13	81	59	312
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.97	0.95	1.00	0.92	1.00	1.00	0.85
Flt	1.00	1.00	0.85	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	3433	3242	1770	1863	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	3433	3242	1770	1863	1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	123	1609	771	106	2116	68	223	11	14	90	66	347
RTOR Reduction (vph)	0	0	375	0	4	0	0	12	0	0	0	134
Lane Group Flow (vph)	123	1609	396	106	2180	0	223	13	0	90	66	213
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	1	6	6	6	6
Permitted Phases												
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4	17.4	17.4	17.4
Effective Green, g (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4	17.4	17.4	17.4
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.15	0.20	0.20	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	2376	740	134	2290	272	411	264	387	312	312	312
v/s Ratio Prot	c0.07	0.32	0.25	0.06	c0.43	c0.06	0.00	0.05	0.04	c0.13		
v/s Ratio Perm												
v/c Ratio	0.77	0.68	0.54	0.79	0.95	0.82	0.03	0.34	0.18	0.68		
Uniform Delay, d1	39.3	18.4	16.7	40.2	23.3	40.1	33.8	33.7	29.6	32.9		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	19.6	0.8	0.7	26.4	9.9	17.3	0.0	0.8	0.2	6.0		
Delay (s)	58.9	19.1	17.5	66.6	33.1	57.4	33.9	34.5	29.8	39.0		
Level of Service	E	B	B	E	C	E	C	C	C	D		
Approach Delay (s)	20.6			34.7		55.0				37.0		
Approach LOS	C			C		D				D		

Intersection Summary		C
HCM Average Control Delay	29.4	HCM Level of Service
HCM Volume to Capacity ratio	0.85	C
Actuated Cycle Length (s)	88.4	Sum of lost time (s)
Intersection Capacity Utilization	73.2%	16.0
Analysis Period (min)	15	D
c Critical Lane Group		

Baseline

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Lane Configurations	←	←	←	←	←	←	←	←	←
Volume (vph)	111	1448	684	95	1904	61	201	10	13
Ideal Flow (vphpl)	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	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.97	0.95	1.00	0.92
Flt	1.00	1.00	0.85	1.00	1.00	1.00	0.95	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	3433	3242	1770	1863
Flt Permitted	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5085	3433	3242	1770	1863
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	123	1609	771	106	2116	68	223	11	14
RTOR Reduction (vph)	0	0	375	0	4	0	0	12	0
Lane Group Flow (vph)	123	1609	396	106	2180	0	223	13	0
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	1	6
Permitted Phases									
Actuated Green, G (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4
Effective Green, g (s)	8.0	41.3	41.3	6.7	40.0	7.0	11.2	13.2	17.4
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.45	0.08	0.13	0.15	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	160	2376	740	134	2290	272	411	264	387
v/s Ratio Prot	c0.07	0.32	0.25	0.06	c0.43	c0.06	0.00	0.05	0.04
v/s Ratio Perm									
v/c Ratio	0.77	0.68	0.54	0.79	0.95	0.82	0.03	0.34	0.18
Uniform Delay, d1	39.3	18.4	16.7	40.2	23.3	40.1	33.8	33.7	29.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.6	0.8	0.7	26.4	9.9	17.3	0.0	0.8	0.2
Delay (s)	58.9	19.1	17.5	66.6	33.1	57.4	33.9	34.5	29.8
Level of Service	E	B	B	E	C	E	C	C	D
Approach Delay (s)	20.6			34.7		55.0			37.0
Approach LOS	C			C		D			D

Intersection Summary			A
HCM Average Control Delay	3.6	HCM Level of Service	
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Baseline

HCM Signalized Intersection Capacity Analysis
5: Del Mar Heights Road & El Camino Real

HCM Signalized Intersection Capacity Analysis
1: Del Mar Heights Road & I-15 SB Ramps

Near Term + Construction (Phase 1-3) AM
3/5/2012

Near Term + Construction (Phase 1-3) PM
3/5/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗
Volume (vph)	223	900	405	206	1388	95	253	104	79	164	312
Ideal Flow (vphpl)	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	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	0.97	0.91	0.97	0.91	0.97	0.91	1.00	0.97	0.91
Fit	1.00	0.95	1.00	0.99	1.00	0.99	1.00	1.00	0.85	1.00	0.91
Fit Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	4849	3433	5036	3433	5036	3433	5085	1583	3433	4647
Fit Permitted	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	4849	3433	5036	3433	5036	3433	5085	1583	3433	4647
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	248	1000	450	229	1542	106	281	116	88	182	347
RTOR Reduction (vph)	0	106	0	0	10	0	0	0	0	71	0
Lane Group Flow (vph)	248	1344	0	229	1638	0	281	116	17	182	655
Turn Type	Prot	4	Prot	3	8	Prot	5	2	2	1	6
Protected Phases	7.0	25.2	8.9	27.1	7.0	14.2	14.2	14.2	9.7	16.9	
Permitted Phases	7.0	25.2	8.9	27.1	7.0	14.2	14.2	14.2	9.7	16.9	
Actuated Green, G (s)	7.0	25.2	8.9	27.1	7.0	14.2	14.2	14.2	9.7	16.9	
Effective Green, g (s)	0.09	0.34	0.12	0.37	0.09	0.19	0.19	0.19	0.13	0.23	
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	325	1651	413	1844	325	976	304	450	1061		
Lane Grp Cap (vph)	c0.07	0.28	0.07	c0.33	c0.08	0.02	0.01	0.05	c0.14		
v/s Ratio Prot	0.76	0.81	0.55	0.89	0.86	0.12	0.06	0.40	0.92dr		
v/c Ratio Perm	32.7	22.3	30.7	22.0	33.0	24.7	24.4	29.5	25.6		
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Progression Factor	10.2	3.2	1.6	5.6	20.5	0.1	0.1	0.6	1.1		
Incremental Delay, d2	42.9	25.5	32.3	27.7	53.6	24.8	24.5	30.1	26.7		
Delay (s)	D	C	C	C	D	C	C	C	C	C	
Level of Service	D	C	C	C	D	C	C	C	C	C	
Approach Delay (s)	28.0		28.2		41.4				27.3		
Approach LOS	C		C		D				C		
Intersection Summary											
HCM Average Control Delay	29.2										
HCM Volume to Capacity ratio	0.74										
Actuated Cycle Length (s)	74.0										
Intersection Capacity Utilization	71.3%										
Analysis Period (min)	15										
dr Defacto Right Lane. Recode with 1 though lane as a right lane.											
c Critical Lane Group											

Baseline

Synchro 7 - Report
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Movement	EBL	EBT	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑	↑↑
Volume (vph)	0	916	1206	0	915	299					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Total Lost time (s)		6.3	6.3		5.6	5.6					
Lane Util. Factor		0.95	0.95		0.97	0.91					
Fit		1.00	1.00		1.00	0.85					
Fit Protected		1.00	1.00		0.95	1.00					
Satd. Flow (prot)		3539	3539		3431	1441					
Fit Permitted		1.00	1.00		0.95	1.00					
Satd. Flow (perm)		3539	3539		3431	1441					
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90					
Adj. Flow (vph)	0	1018	1340	0	1017	332					
RTOR Reduction (vph)	0	0	0	0	3	20					
Lane Group Flow (vph)	0	1018	1340	0	1047	279					
Turn Type							Perm				
Protected Phases		2.6	6.2		4						
Permitted Phases							4				
Actuated Green, G (s)		45.7	45.7		30.1	30.1					
Effective Green, g (s)		45.7	45.7		30.1	30.1					
Actuated g/C Ratio		0.52	0.52		0.34	0.34					
Clearance Time (s)					5.6	5.6					
Vehicle Extension (s)					3.0	3.0					
Lane Grp Cap (vph)		1844	1844		1178	495					
v/s Ratio Prot		0.29	c0.38		c0.31						
v/s Ratio Perm						0.19					
v/c Ratio		0.55	0.73		0.89	0.56					
Uniform Delay, d1		14.1	16.2		27.2	23.4					
Progression Factor		1.00	1.00		1.00	1.00					
Incremental Delay, d2		0.4	1.5		8.5	1.5					
Delay (s)		14.5	17.6		35.7	24.9					
Level of Service		B	B		D	C					
Approach Delay (s)		14.5	17.6		33.3						
Approach LOS		B	B		C						
Intersection Summary											
HCM Average Control Delay	22.5										
HCM Volume to Capacity ratio	0.79										
Actuated Cycle Length (s)	87.7										
Intersection Capacity Utilization	71.1%										
Analysis Period (min)	15										
Critical Lane Group	C										

Baseline

Synchro 7 - Report
Page 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSR
Volume (vph)	242	1533	0	0	1216	910	649	24	816	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	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	0.91	0.91	0.95	0.95	0.91	0.95	0.95	0.95	0.95	0.95
Flt	1.00	1.00	1.00	1.00	0.85	1.00	0.90	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	3539	5085	5085	1583	1681	1500	1504	1504	1504	1504	1504
Flt Permitted	0.95	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	3433	3539	5085	5085	1583	1681	1500	1504	1504	1504	1504	1504
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	269	1703	0	0	1351	1011	721	27	907	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	509	0	6	6	0	0	0
Lane Group Flow (vph)	269	1703	0	0	1351	502	577	546	520	0	0	0
Turn Type	Prot	Prot	Prot	Prot	Split	Split	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	5	2	6	6	8	8	8	8	8	8	8	8
Permitted Phases	11.2	62.1	46.9	46.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9
Actuated Green, G (s)	11.2	62.1	46.9	46.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9
Effective Green, g (s)	0.09	0.52	0.39	0.39	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	320	1831	1987	619	699	624	625	625	625	625	625	625
Lane Grp Cap (vph)	0.08	c0.48	0.27	0.32	0.34	c0.36	0.35	0.35	0.35	0.35	0.35	0.35
v/s Ratio Prot	0.84	0.93	0.68	0.81	0.83	0.88	0.83	0.83	0.83	0.83	0.83	0.83
v/s Ratio Perm	53.5	26.9	30.3	32.6	31.2	32.2	31.3	31.3	31.3	31.3	31.3	31.3
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	17.7	9.9	1.9	11.0	7.9	13.0	9.3	9.3	9.3	9.3	9.3	9.3
Incremental Delay, d2	71.2	36.9	32.2	43.6	39.1	45.2	40.6	40.6	40.6	40.6	40.6	40.6
Delay (s)	E	D	C	D	D	D	D	D	D	D	D	D
Level of Service	E	D	C	D	D	D	D	D	D	D	D	D
Approach Delay (s)	41.6	41.6	37.1	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6	41.6
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D
Intersection Summary												
HCM Average Control Delay	39.8											
HCM Volume to Capacity ratio	0.91											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	100.2%											
Analysis Period (min)	15											
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSR
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SSR
Volume (vph)	249	2122	259	15	1400	29	637	67	138	28	30	82
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	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.97	0.95	1.00	1.00	1.00	1.00
Flt	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5070	5070	3433	3181	1770	1663	1583	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	5070	5070	3433	3181	1770	1663	1583	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	277	2358	288	17	1556	32	708	74	153	31	33	91
RTOR Reduction (vph)	0	0	92	0	0	0	0	115	0	0	0	85
Lane Group Flow (vph)	277	2358	196	17	1586	0	708	112	0	31	33	6
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	4	3	8	5	2	2	1	6	6	6
Permitted Phases	17.7	54.8	54.8	1.7	38.8	22.1	25.1	25.1	3.9	6.9	6.9	6.9
Actuated Green, G (s)	17.7	54.8	54.8	1.7	38.8	22.1	25.1	25.1	3.9	6.9	6.9	6.9
Effective Green, g (s)	0.17	0.54	0.54	0.02	0.38	0.22	0.25	0.25	0.04	0.07	0.07	0.07
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	309	2745	855	30	1938	747	787	787	68	127	108	108
Lane Grp Cap (vph)	c0.16	c0.46	0.12	0.01	0.31	c0.21	0.04	0.04	0.02	c0.02	0.00	0.00
v/s Ratio Prot	0.90	0.86	0.23	0.57	0.82	0.95	0.14	0.14	0.46	0.26	0.06	0.06
v/s Ratio Perm	41.0	20.0	12.3	49.5	28.2	39.1	29.8	29.8	47.8	44.9	44.3	44.3
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	26.5	2.9	0.1	22.3	2.8	20.9	0.1	0.1	4.8	1.1	0.2	0.2
Incremental Delay, d2	87.5	22.9	12.4	71.8	31.0	60.1	29.9	29.9	52.5	46.0	44.5	44.5
Delay (s)	E	C	B	E	C	E	C	C	D	D	D	D
Level of Service	E	C	B	E	C	E	C	C	D	D	D	D
Approach Delay (s)	26.1	26.1	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4
Approach LOS	C	C	C	C	C	C	C	C	C	C	C	C
Intersection Summary												
HCM Average Control Delay	32.6											
HCM Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	101.5											
Intersection Capacity Utilization	79.2%											
Analysis Period (min)	15											
c Critical Lane Group												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SSR
Lane Configurations	←←←	←←←	←	←←←	←←←	←	←	←	←	←
Volume (vph)	2301	33	22	1588	47	32	1900	1900	1900	1900
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	0.97	0.91	1.00	1.00	0.85	1.00	0.85	1.00
Flt	1.00	0.85	1.00	1.00	1.00	1.00	0.85	1.00	0.85	1.00
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2557	37	24	1764	52	36	1900	1900	1900	1900
RTOR Reduction (vph)	0	11	0	0	0	0	33	0	33	0
Lane Group Flow (vph)	2557	26	24	1764	52	36	1900	1900	1900	1900
Turn Type	Perm	Perm	Prot	Perm	Prot	Perm	Perm	Perm	Perm	Perm
Protected Phases	4	4	3	8	2	2	2	2	2	2
Permitted Phases	39.6	39.6	0.6	44.2	4.3	4.3	4.3	4.3	4.3	4.3
Actuated Green, G (s)	39.6	39.6	0.6	44.2	4.3	4.3	4.3	4.3	4.3	4.3
Effective Green, g (s)	0.70	0.70	0.01	0.78	0.08	0.08	0.08	0.08	0.08	0.08
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	3564	1110	36	3978	135	120	120	120	120	120
Lane Grp Cap (vph)	c0.50	0.02	0.01	c0.35	0.03	0.03	0.03	0.03	0.03	0.03
v/s Ratio Prot	0.72	0.02	0.67	0.44	0.39	0.02	0.02	0.02	0.02	0.02
v/s Ratio Perm	5.1	2.6	27.9	2.0	24.8	24.2	24.2	24.2	24.2	24.2
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	0.7	0.0	38.0	0.1	1.8	0.1	0.1	0.1	0.1	0.1
Incremental Delay, d2	5.8	2.6	65.8	2.1	26.7	24.2	24.2	24.2	24.2	24.2
Delay (s)	A	A	E	A	A	C	C	C	C	C
Level of Service	A	A	E	A	A	C	C	C	C	C
Approach Delay (s)	5.7	2.6	65.8	2.1	26.7	24.2	24.2	24.2	24.2	24.2
Approach LOS	A	A	E	A	A	C	C	C	C	C
Intersection Summary										
HCM Average Control Delay	5.0									
HCM Volume to Capacity ratio	0.70									
Actuated Cycle Length (s)	12.0									
Intersection Capacity Utilization	54.5%									
Analysis Period (min)	15									
c Critical Lane Group										

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SSR
Lane Configurations	←←←	←←←	←	←←←	←←←	←	←	←	←	←
Volume (vph)	456	1400	419	108	769	181	1900	1900	1900	1900
Ideal Flow (vphpl)	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	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.85	1.00	0.85	1.00
Flt	1.00	0.97	1.00	1.00	0.97	1.00	0.85	1.00	0.85	1.00
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	3433	4909	3433	3433	4909	3433	5085	1583	3433	4654
Flt Permitted	0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	4909	3433	3433	4909	3433	5085	1583	3433	4654
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	507	1556	466	120	854	201	509	468	286	171
RTOR Reduction (vph)	0	55	0	0	41	0	0	0	121	0
Lane Group Flow (vph)	507	1967	0	120	1014	0	509	468	185	203
Turn Type	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	7	4	3	8	2	2	2	2	2	2
Permitted Phases	16.5	40.4	4.6	28.5	10.1	15.4	15.4	15.4	6.7	12.0
Actuated Green, G (s)	16.5	40.4	4.6	28.5	10.1	15.4	15.4	15.4	6.7	12.0
Effective Green, g (s)	0.20	0.49	0.06	0.34	0.12	0.19	0.19	0.19	0.08	0.14
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	682	2387	190	1694	417	942	293	277	672	672
Lane Grp Cap (vph)	c0.15	c0.40	0.03	0.21	c0.15	0.09	c0.10	0.05	0.04	0.04
v/s Ratio Prot	0.74	0.82	0.63	0.60	1.22	0.50	0.56	0.61	0.30	0.30
v/s Ratio Perm	31.3	18.3	38.4	22.6	36.5	30.4	30.8	36.9	31.8	31.8
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Progression Factor	4.4	2.4	6.7	0.6	119.2	0.4	2.5	3.7	0.3	0.3
Incremental Delay, d2	35.7	20.7	45.1	23.1	155.7	30.8	33.3	40.7	32.1	32.1
Delay (s)	D	C	D	C	F	C	C	D	C	C
Level of Service	D	C	D	C	F	C	C	D	C	C
Approach Delay (s)	23.7	23.7	25.4	25.4	81.7	34.6	34.6	34.6	34.6	34.6
Approach LOS	C	C	C	C	F	C	C	D	C	C
Intersection Summary										
HCM Average Control Delay	38.4									
HCM Volume to Capacity ratio	0.84									
Actuated Cycle Length (s)	83.1									
Intersection Capacity Utilization	73.6%									
Analysis Period (min)	15									
c Critical Lane Group										