

November 17, 2015

Ms. Tracy Zinn
T&B Planning
17542 East 17th Street
Tustin, CA 92780

SUBJECT: MORENO VALLEY LOGISTICS CENTER CONSTRUCTION TRAFFIC EVALUATION

Dear Ms. Tracy Zinn:

Urban Crossroads, Inc. is pleased to submit this letter report to document the Construction Traffic Evaluation performed for the proposed Moreno Valley Logistics Center development (referred to as "Project"). The proposed Project is located on the southwest corner of Indian Street and Krameria Avenue in the City of Moreno Valley.

BACKGROUND

The purpose of this traffic assessment is to identify potential impacts to traffic and circulation at the study area intersections during the construction phase of the proposed Project (see Exhibit 1). Specifically, this analysis will be utilized to determine if construction of the Project would result in improvement needs at the study area intersections in order to maintain acceptable peak hour intersection operations.

Based on the schedule of construction activities, the most conservative mix of vehicles has been evaluated based on the various construction activities that are anticipated to occur and accounts for traffic associated with employees, vendors, and heavy trucks. Based on the scenario with the most conservative construction activities, trip generation for the construction period has been estimated to generate approximately 4,128 passenger car equivalent (PCE) trip ends per day with 182 PCE AM peak hour trips and 494 PCE PM peak hour trips.

Peak hour intersection operations analysis has been performed for Existing plus Project (E+P) with construction traffic conditions and compared to Existing traffic conditions previously reported in the Moreno Valley Logistics Center Traffic Impact Analysis (referred to as Traffic Study) to determine potential impacts.

POTENTIAL CONSTRUCTION IMPACTS

Based on the findings of this traffic assessment and shown on Table 3, the following study area intersections are anticipated to operate at an unacceptable level of service (LOS) (i.e. LOS E or worse) for E+P (Construction Traffic) conditions:

ID	Intersection Location
12	Heacock Street / Gentian Avenue – LOS F PM peak hour only
13	Heacock Street / Iris Avenue – LOS F PM peak hour only
16	Heacock Street / San Michele Road – LOS E PM peak hour only

However, the intersections of Heacock Street at Gentian Avenue and Heacock Street at Iris Avenue are currently operating at unacceptable LOS under Existing conditions.

CONSTRUCTION MITIGATION MEASURES

Mitigation Measure 1.1 – Heacock Street / Gentian Avenue (#12) – The following improvement is necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s cumulative impact to less-than-significant:

- Payment of the Project’s DIF fees to be applied towards the installation of a traffic signal to improve the existing deficiency.

Mitigation Measure 2.1 – Heacock Street / Iris Avenue (#13) – The following improvement is necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s cumulative impact to less-than-significant:

- Payment of the Project’s DIF fees to be applied towards the installation of a traffic signal to improve the existing deficiency.

Mitigation Measure 3.1 – Heacock Street / San Michele Road (#18) – The following improvement is necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s impact to less-than-significant:

- Modify the existing traffic signal to implement overlap phasing on the westbound right turn lane.

STUDY AREA

The study area intersections are consistent with the locations evaluated in the traffic study with the exception of the Project driveways. As the Project driveways would not exist for the construction period, they have been excluded from the E+P (Construction Traffic) analysis. However, it is anticipated that the staging area for the construction activity would be located near the intersection of Cosmos Street and Krameria Avenue. As such, the intersection of Cosmos Street and Krameria Avenue have been evaluated in conjunction with the off-site intersections from the Traffic Study.

ANALYSIS METHODOLOGY

The analysis methodologies discussed in the Traffic Study have also been utilized to evaluate the intersections, roadway segments, free-way off-ramp queues, freeway mainline segments, and freeway merge/diverge ramp junctions for E+P (Construction Traffic) conditions.

PROJECT TRIP GENERATION

In order to estimate the traffic characteristics associated with the construction period of the proposed Project, trip generation has been estimated based on the schedule of construction activities. Per the City of Moreno Valley's Municipal Code, Section 11.80.030 (D) (7) and Section 8.21.050, general construction is permitted between the hours of 7:00 AM and 8:00 PM on any day, and grading activities are limited to 7:00 AM to 6:00 PM Monday through Friday and between 8:00 AM and 4:00 PM on weekends and holidays or as approved by the City Engineer. As such, the majority of employees are anticipated to arrive to the site prior to the morning peak period (before 7:00 AM), but are anticipated to depart around 4 PM during the evening peak period. It is anticipated that trucks would come and go during all hours throughout the construction period.

During the 13-month construction period, Table 1 shows the most conservative scenario based on the anticipated schedule of construction activities, which is anticipated to occur approximately in early 2017. In other words, the construction activities that are anticipated to occur concurrently around January 2017 are likely to generate the most conservative number of total vehicle (PCE) trips during the construction period. As such in an effort to conduct a conservative analysis and overstate, as opposed to understate potential construction-related traffic impacts, the highest trip generation has been evaluated based on the worst-case combination of construction activities.

Based on the scenario with the most conservative construction activities, trip generation for the construction period has been estimated to generate approximately 2,427 trip ends per day with 110 AM peak hour trips and 422 PM peak hour trips (see Table 2). However, consistent with analysis conducted in the Traffic Study, the passenger car equivalent (PCE) trip generation has been utilized for the purposes of this analysis. As shown on Table 3, the Project is anticipated to generate approximately 4,239 PCE trip ends per day with 182 PCE AM peak hour trips and 494 PCE PM peak hour trips.

TABLE 1: CONSTRUCTION ACTIVITIES, JANUARY 2017

Construction Activity	Employee (2-Way) Trips	Medium-Heavy Duty Vendor Truck (2-Way) Trips	Heavy-Heavy Duty Vendor Truck (2-Way) Trips
Roof/Overhead Work Building 1	125	416	0
Architectural Coatings Building 1	213	0	0
Paving Building 1	10	0	46
Miscellaneous Finishes Building 2	40	416	0
Architectural Coatings Building 3	213	0	0
Miscellaneous Finishes Building 3	40	416	0
Paving Building 3	8	0	28
Roof/Overhead Work Building 4	40	416	0
Totals	689	1,664	74

Source: Table 3-4, Schedule of Construction Activities from Moreno Valley Logistics Center Air Quality

Note: Heavy-heavy duty vendor truck trips are associated with night-time pours and are not anticipated to occur during the peak hours.

PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute.

The Project trip distribution was developed based on anticipated travel patterns to and from the Project site for both passenger cars and truck traffic. The trip distribution patterns for passenger cars (employees) are anticipated to be coming from either the Los Angeles or Inland Empire basin. As such, it is anticipated they would utilize the I-215 Freeway via Cactus Avenue or Harley Knox Avenue or Perris Boulevard via the SR-60 Freeway to access the site. Similarly, the truck traffic trip distribution patterns have also been based on the anticipated subcontractor base within the region. The Project trip distribution patterns for both passenger cars and trucks were developed based on an understanding of existing travel patterns in the area, the geographical location of the site, and the site’s proximity to the regional arterial and state highway system.

Exhibit 2 shows the employee trip distribution patterns and Exhibit 3 illustrates the truck trip distribution patterns.

PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified construction traffic generation and trip distribution patterns, Project (Construction) peak hour intersection volumes and estimated daily link traffic volumes are indicated on Exhibit 4.

E+P CONDITIONS

The E+P conditions analysis determines the traffic impacts based on a comparison of the E+P (Construction Traffic) conditions to Existing (2015) conditions. E+P traffic forecasts include existing traffic plus construction project traffic. E+P (Construction Traffic) peak hour intersection volumes and daily link traffic are illustrated on Exhibit 5.

INTERSECTION OPERATIONS ANALYSIS

As shown on Table 4, the addition of construction traffic for E+P conditions is anticipated to result in the following intersection deficiencies (i.e., LOS E or worse):

ID	Intersection Location
12	Heacock Street / Gentian Avenue – LOS F PM peak hour only
13	Heacock Street / Iris Avenue – LOS F PM peak hour only
16	Heacock Street / San Michele Road – LOS E PM peak hour only

It should be noted that the intersections of Heacock Street at Gentian Avenue and Heacock Street at Iris Avenue are currently operating at deficient LOS during the peak hours. A summary of the peak hour intersection LOS for E+P (Construction Traffic) conditions are shown on Exhibit 6.

E+P intersection operations analysis worksheets are provided in Attachment A.

ROADWAY SEGMENT CAPACITY ANALYSIS

The City of Moreno Valley, and where applicable the City of Perris, stated roadway segment capacities are approximate figures only, and are used at the General Plan level to assist in determining the roadway functional classification (number of through lanes) needed to meet future traffic demand.

Table 5 provides a summary of the E+P (Construction Traffic) conditions roadway segment capacity analysis based on the City of Moreno Valley and City of Perris General Plan Circulation Element Roadway Segment Capacity/(LOS) Thresholds identified on Table 2-3 of the Traffic Study. As shown on Table 5, the following additional roadway segments are anticipated to operate at an unacceptable LOS under E+P (Construction Traffic) conditions:

ID	Street	Segment
34	Heacock Street	South of Gentian Avenue – LOS F
35		North of Iris Avenue – LOS E

The segment of Heacock Street, south of Gentian Avenue currently operates at LOS F under Existing traffic conditions.

OFF-RAMP QUEUING ANALYSIS

A queuing analysis was performed for the off-ramps at the I-215 Freeway and Cactus Avenue and Harley Knox Boulevard interchanges to assess vehicle queues for the off ramps that may potentially result in deficient peak hour operations at the ramp-to-arterial intersections and may potentially “spill back” onto the I-215 Freeway mainline. Queuing analysis findings are presented in Table 6 for E+P (Construction Traffic) conditions. It is important to note that off-ramp lengths are consistent with the measured distance between the intersection and the freeway mainline.

As shown on Table 6, consistent with Existing traffic conditions, there are no movements that are anticipated to experience queuing issues during the weekday AM or weekday PM peak 95th percentile traffic flows for E+P (Construction Traffic) conditions. Worksheets for E+P (Construction Traffic) conditions off-ramp queuing analysis are provided in Attachment B.

TRAFFIC SIGNAL WARRANT ANALYSIS

The following study area intersections were found to currently meet peak hour volume based traffic signal warrants under Existing traffic conditions, as presented in the Traffic Study:

ID	Intersection Location
7	Western Way / Harley Knox Boulevard
10	Heacock Street / Gentian Avenue
11	Indian Street / Iris Avenue

There are no additional study area intersections are anticipated to warrant traffic signals under E+P (Construction Traffic), in addition to those previously warranted under Existing traffic conditions (see Attachment C).

BASIC FREEWAY SEGMENT ANALYSIS

E+P (Construction Traffic) mainline directional volumes for the weekday AM and PM peak hours are provided on Exhibit 7. As shown on Table 7, the basic freeway segments analyzed for this study are anticipated to operate at an acceptable LOS (i.e., LOS C or better) during the peak hours, with the addition of construction traffic. E+P (Construction Traffic) basic freeway segment analysis worksheets are provided in Attachment D.

FREEWAY MERGE DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for E+P (Construction Traffic) conditions and the results of this analysis are presented in Table 8. As shown in Table 8, the freeway ramp merge and diverge areas are anticipated to operate at acceptable LOS (i.e., LOS D or better). E+P (Construction Traffic) freeway ramp junction operations analysis worksheets are provided in Attachment E.

CONSTRUCTION IMPACTS & MITIGATION MEASURES

RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES AT INTERSECTIONS

Improvements necessary to reduce project-related traffic impacts to less-than-significant are also discussed below. The effectiveness of the proposed recommended mitigation measures are presented in Table 9 for E+P (Construction Traffic) conditions. As shown on Table 9, the recommended improvements for each of the impacted intersections are the same for Existing traffic conditions from the Traffic Study, with the exception of the intersection of Heacock Street and San Michele Road. With the implementation of the intersection mitigation measures discussed below, there are no project-related impacts anticipated to the study area intersections.

Potential Impact 1.1 – Heacock Street / Gentian Avenue (#12) – Although this intersection was found to operate at an unacceptable LOS (LOS F) during the PM peak hour under Existing traffic conditions, the intersection is anticipated to continue to operate at unacceptable levels during one or more of the peak hours with the addition of construction traffic. As such, the impact is considered cumulatively significant (Impact 1.1).

Mitigation Measure 1.1 – Heacock Street / Gentian Avenue (#12) – The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less-than-significant:

- Payment of the Project's DIF fees to be applied towards the installation of a traffic signal to improve the existing deficiency.

Potential Impact 2.1 – Heacock Street / Iris Avenue (#13) – Although this intersection was found to operate at an unacceptable LOS (LOS E) during the PM peak hour under Existing traffic conditions, the intersection is anticipated to continue to operate at unacceptable levels during one or more of the peak hours with the addition of construction traffic. As such, the impact is considered cumulatively significant (Impact 2.1).

Mitigation Measure 2.1 – Heacock Street / Iris Avenue (#13) – The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's cumulative impact to less-than-significant:

- Payment of the Project's DIF fees to be applied towards the installation of a traffic signal to improve the existing deficiency.

Potential Impact 3.1 – Heacock Street / San Michele Road (#18) – This intersection was found to operate at acceptable LOS (LOS D or better) during the peak hours under Existing traffic conditions, however, the addition of construction traffic is anticipated to result in deficient peak hour operations during the PM peak hour only. As such, the impact is considered significant (Impact 3.1).

Mitigation Measure 3.1 – Heacock Street / San Michele Road (#18) – The following improvement is necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's impact to less-than-significant:

- Modify the existing traffic signal to implement overlap phasing on the westbound right turn lane.

Worksheets for E+P (Construction Traffic) conditions, with improvements, HCM calculation worksheets are provided in Attachment F.

RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON ROADWAY SEGMENTS

As shown on Table 9, the E+P (Construction Traffic) peak hour analysis indicates that the adjacent study area intersections on either side of the deficient roadway segments are anticipated to operate at acceptable LOS with the recommended intersection improvements shown. As such, roadway segment widening does not appear necessary to address the deficiencies at the identified roadway segments.

RECOMMENDED IMPROVEMENTS TO ADDRESS OFF-RAMP QUEUES

As shown previously on Table 6, there are no peak hour queuing issues at the I-215 Freeway at Cactus Avenue or Harley Knox Boulevard interchanges for E+P (Construction Traffic) conditions. As such, no improvements have been recommended.

RECOMMENDED IMPROVEMENTS TO ADDRESS DEFICIENCIES ON FREEWAY FACILITIES

As shown previously on Tables 7 and 8, there are no deficient freeway mainline segments or merge/diverge ramp junctions anticipated for E+P (Construction Traffic) conditions. As such, no improvements have been recommended.

Ms. Tracy Zinn
T&B Planning
November 17, 2015
Page 9 of 9

If you have any questions, please contact me directly at (949) 336-5978.

Respectfully submitted,

URBAN CROSSROADS, INC.



Aric Evatt, PTP
President



Charlene So, PE
Senior Transportation Engineer

Table 2

Project Construction Trip Generation Summary (without PCE)²

Construction Activity	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Roof/Overhead 1							
Employee Trips:	6	1	6	6	57	63	125
Vendor Truck Trips (3-Axle):	10	10	19	10	10	19	416
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Architectural Coatings 1							
Employee Trips:	10	1	11	11	96	107	213
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Paving 1							
Employee Trips:	0	0	1	1	5	5	10
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	46
Miscellaneous Finishes 2							
Employee Trips:	2	0	2	2	18	20	40
Vendor Truck Trips (3-Axle):	10	10	19	10	10	19	416
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Architectural Coatings 3							
Employee Trips:	10	1	11	11	96	107	213
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Miscellaneous Finishes 3							
Employee Trips:	2	0	2	2	18	20	40
Vendor Truck Trips (3-Axle):	10	10	19	10	10	19	416
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Paving 3							
Employee Trips:	0	0	0	0	4	4	8
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	28
Roof/Overhead 4							
Employee Trips:	2	0	2	2	18	20	40
Vendor Truck Trips (3-Axle):	10	10	19	10	10	19	416
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
TOTAL (without PCE)	69	41	110	73	350	422	2,427

¹ Heavy heavy duty (4+-Axle) vendor truck trips are related to night-time pours and are anticipated to occur after 6 PM.

² The trip generation in this table has been provided for informational purposes only.

The trip generation shown in Table 2 has been utilized for the purposes of this analysis.

Table 3

Project Construction Trip Generation Summary (in PCE)

Construction Activity ²	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Roof/Overhead 1							
Employee Trips:	6	1	6	6	57	63	125
Vendor Truck Trips (3-Axle):	19	19	38	19	19	38	832
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Architectural Coatings 1							
Employee Trips:	10	1	11	11	96	107	213
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Paving 1							
Employee Trips:	0	0	1	1	5	5	10
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	138
Miscellaneous Finishes 2							
Employee Trips:	2	0	2	2	18	20	40
Vendor Truck Trips (3-Axle):	19	19	38	19	19	38	832
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Architectural Coatings 3							
Employee Trips:	10	1	11	11	96	107	213
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Miscellaneous Finishes 3							
Employee Trips:	2	0	2	2	18	20	40
Vendor Truck Trips (3-Axle):	19	19	38	19	19	38	832
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
Paving 3							
Employee Trips:	0	0	0	0	4	4	8
Vendor Truck Trips (3-Axle):	0	0	0	0	0	0	0
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	84
Roof/Overhead 4							
Employee Trips:	2	0	2	2	18	20	40
Vendor Truck Trips (3-Axle):	19	19	38	19	19	38	832
Vendor Truck Trips (4+-Axle): ¹	0	0	0	0	0	0	0
TOTAL (in PCE)	107	79	186	111	388	498	4,239

¹ Heavy heavy duty (4+-Axle) vendor truck trips are related to night-time pours and are anticipated to occur after 6 PM.

² PCE factors of 2.0 utilized for 3-Axle and 3.0 utilized for 4+-Axle heavy trucks.

Table 4

Intersection Analysis for E+P (Construction Traffic) Conditions

#	Intersection	Traffic Control ³	Existing (2015) ¹				E+P (Construction Traffic)			
			Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
			AM	PM	AM	PM	AM	PM	AM	PM
1	I-215 SB Ramps / Cactus Av	TS	14.4	39.0	B	D	14.6	51.7	B	D
2	I-215 SB Ramps / Harley Knox Bl	TS	33.8	31.2	C	C	33.9	37.8	C	D
3	I-215 NB Ramps / Cactus Av	TS	19.1	13.7	B	B	19.4	14.9	B	B
4	I-215 NB Ramps / Harley Knox Bl	TS	13.6	17.0	B	B	14.1	18.0	B	B
5	Elsworth St / Cactus Av	TS	38.9	30.2	D	C	38.9	30.2	D	C
6	Frederick St / Cactus Av	TS	24.9	21.9	C	C	25.2	22.9	C	C
7	Western Wy / Harley Knox Bl	CSS	12.0	12.1	B	B	12.3	14.1	B	B
8	Graham St / Cactus Av	TS	21.3	24.5	C	C	22.6	25.2	C	C
9	Patterson Av / Harley Knox Bl	TS	27.6	26.3	C	C	35.8	51.1	D	D
10	Heacock St / Cactus Av	TS	34.3	18.6	C	B	38.0	32.1	D	C
11	Heacock St / John F. Kennedy Dr	TS	23.3	21.8	C	C	25.5	23.3	C	C
12	Heacock St / Gentian Av	CSS	22.8	58.0	C	F	25.4	78.6	D	F
13	Heacock St / Iris Av	AWS	15.2	37.5	C	E	16.7	53.4	C	F
14	Heacock St / Krameria Av (North)	TS	11.1	9.0	B	A	14.7	20.2	B	C
15	Heacock St / Cardinal Av	CSS	9.0	13.4	A	B	9.2	18.0	A	C
16	Heacock St / San Michele Rd	TS	25.6	39.5	C	D	28.2	65.7	C	E
17	Heacock St / Nandina Av	CSS	8.4	8.6	A	A	8.4	8.6	A	A
18	Webster Av / Harley Knox Bl	CSS	10.0	10.1	B	B	10.4	10.3	B	B
19	Cosmos St / Krameria Av (North)	CSS	9.8	9.3	A	A	9.8	12.7	A	B
20	Cosmos St / Krameria Av	AWS	Future Intersection				8.1	11.5	A	B
21	Indian St / Krameria Av	AWS	10.7	9.2	B	A	10.8	9.8	B	A
22	Indian St / San Michele Rd	TS	29.3	35.8	C	D	31.3	36.4	C	D
23	Indian St / Nandina Av	TS	18.4	19.9	B	B	20.2	20.1	C	C
24	Indian St / Harley Knox Bl	TS	17.0	24.2	B	C	19.1	51.5	B	D
25	Perris Bl / Cactus Av	TS	24.8	32.4	C	C	24.8	32.6	C	C
26	Perris Bl / Krameria Av	TS	31.2	22.9	C	C	31.2	30.6	C	C

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ Delay and LOS results are from the Moreno Valley Logistics Traffic Impact Analysis

² Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross-street Stop; TS = Traffic Signal; AWS= All-way stop

Table 5
Page 1 of 2

Roadway Volume/Capacity Analysis for E+P (Construction Traffic) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity ¹	Existing 2015 ⁴	V/C ²	LOS ³	E+P (Construction Traffic)	V/C ²	LOS ³	Acceptable LOS
1	Cactus Avenue	I-215 SB Ramps to I-215 NB Ramps	4D	37,500	25,080	0.67	B	25,903	0.69	B	D
2		East of I-215 NB Ramps	4D	37,500	31,154	0.83	D	32,801	0.87	D	D
3		West of Elsworth Street	6D	56,300	34,154	0.61	B	35,801	0.64	B	D
4		East of Elsworth Street	6D	56,300	31,029	0.55	A	32,676	0.58	A	D
5		West of Frederick Street	5D	46,900	32,583	0.69	B	34,230	0.73	C	D
6		East of Frederick Street	5D	46,900	35,981	0.77	C	37,628	0.80	C	D
7		West of Graham Street	5D	46,900	36,044	0.77	C	37,691	0.80	C	D
8		East of Graham Street	5D	46,900	31,120	0.66	B	32,767	0.70	B	D
9		West of Heacock Street	5D	46,900	35,778	0.76	C	37,425	0.80	C	D
10		East of Heacock Street	4D	37,500	19,360	0.52	A	19,360	0.52	A	C
11		West of Perris Boulevard	4D	37,500	15,973	0.43	A	15,973	0.43	A	C
12	Krameria Avenue	Heacock Street to Cosmos Street	2U	12,500	1,076	0.09	A	5,177	0.41	A	D
13		Cosmos Street to Indian Street	2U	12,500	620	0.05	A	2,719	0.22	A	D
17		East of Indian Street	2D	18,750	3,716	0.20	A	3,854	0.21	A	D
18		West of Perris Boulevard	2U	12,500	3,040	0.24	A	3,178	0.25	A	D
19	San Michele Road	East of Heacock Street	2U	12,500	46	0.00	A	46	0.00	A	C
20		East of Heacock Street	2D	18,750	4,269	0.23	A	6,368	0.34	A	D
21		West of Indian Street	2D	18,750	10,411	0.56	A	12,510	0.67	B	D
22	Harley Knox Boulevard	I-215 SB Ramps to I-215 NB Ramps	4D	35,900	11,390	0.32	A	12,440	0.35	A	D
23		I-215 NB Ramps to Western Way	4D	35,900	17,815	0.50	A	19,915	0.55	A	D
24		East of Western Way	4U	25,900	13,901	0.54	A	16,000	0.62	B	D
25		West of Patterson Avenue	4U	25,900	11,444	0.44	A	13,543	0.52	A	D
26		East of Patterson Avenue	2D	18,000	10,492	0.58	A	12,591	0.70	B	D
27	East of Webster Avenue	West of Webster Avenue	2D	18,000	9,144	0.51	A	11,243	0.62	B	D
28		East of Webster Avenue	2D	18,000	9,156	0.51	A	11,255	0.63	B	D
29		West of Indian Street	3D	26,925	11,624	0.43	A	13,723	0.51	A	D

Table 5
Page 2 of 2

Roadway Volume/Capacity Analysis for E+P (Construction Traffic) Conditions

#	Roadway	Segment Limits	Roadway Section	LOS Capacity ¹	Existing 2015 ⁴	V/C ²	LOS ³	E+P (Construction Traffic)	V/C ²	LOS ³	Acceptable LOS
30		South of Cactus Avenue	4D	37,500	24,824	0.66	B	26,827	0.72	C	D
31		North of John F. Kennedy Drive	4D	37,500	22,764	0.61	B	24,766	0.66	B	D
32		South of John F. Kennedy Drive	4D	37,500	21,272	0.57	A	23,274	0.62	B	D
33		North of Gentian Avenue	3D	28,150	19,047	0.68	B	21,049	0.75	C	D
34		South of Gentian Avenue	2U	12,500	17,054	1.36	F	19,056	1.52	F	D
35		North of Iris Avenue	2D	18,750	16,730	0.89	D	18,732	1.00	E	D
36	Heacock Street	Iris Avenue to Krameria Avenue (N)	2U	12,500	9,113	0.73	C	11,115	0.89	D	D
37		Krameria Avenue (N) to Cardinal Avenue	3D	28,150	8,516	0.30	A	10,615	0.38	A	D
40		Cardinal Avenue to San Michele Road	3D	28,150	7,400	0.26	A	9,499	0.34	A	D
41		San Michele Road to Nandina Avenue	2D	18,750	3,427	0.18	A	3,427	0.18	A	D
42		South of Nandina Avenue	2U	12,500	228	0.02	A	228	0.02	A	D
43		North of Harley Knox Boulevard	2U	13,000	0	0.00	A	0	0.00	A	D
44	Cosmos Street	Krameria Avenue (N) to Krameria Avenue	2U	12,500	620	0.05	A	4,721	0.38	A	D
45		San Michele Road to Nandina Avenue	4D	37,500	10,793	0.29	A	12,892	0.34	A	D
46	Indian Street	South of Nandina Avenue	2D	18,750	12,523	0.67	B	14,622	0.78	C	D
47		North of Harley Knox Boulevard	4D	35,900	13,201	0.37	A	15,300	0.43	A	D

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ These maximum roadway capacities have been obtained from the City of Moreno Valley's Transportation Division's Traffic Impact Analysis Preparation Guidelines (August 2007), Table CE-9 of the City of Perris General Plan Circulation Element, or Figure C-2 of the County of Riverside General Plan Circulation Element.

² V/C = Volume to Capacity Ratio

³ LOS = Level of Service

⁴ V/C and LOS results are from the Moreno Valley Logistics Traffic Impact Analysis.

Table 6

Peak Hour Off-Ramp Queuing Analysis for E+P (Construction Traffic) Conditions

Intersection	Movement	Stacking Distance (Feet)	95 th Percentile Stacking Distance Required (Feet)		Acceptable? ¹	
			AM Peak Hour	PM Peak Hour	AM	PM
I-215 SB Ramps / Cactus Av.	NBR	1,850	69	325	Yes	Yes
	SBR	1,115	87	0	Yes	Yes
I-215 SB Ramps / Harley Knox Bl.	SBL/T	1,330	396	351	Yes	Yes
	SBR	270	43	58	Yes	Yes
I-215 NB Ramps / Cactus Av.	NBL	145	321 ²	26	Yes ³	Yes
	NBT	1,650	164	26	Yes	Yes
I-215 NB Ramps / Harley Knox Bl.	NBL/T	1,120	13	22	Yes	Yes
	NBR	265	54	56	Yes	Yes

¹ Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

² 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

³ Adjacent through lane has sufficient storage to accommodate any spillover from the northbound left turn lane without spilling back and affecting the I-215 Freeway mainline.

Table 7

Basic Freeway Segment Analysis for E+P Conditions

Freeway	Direction	Mainline Segment	Lanes ¹	Existing (2015)				E+P (Construction Traffic)			
				Density ²		LOS		Density ²		LOS	
				AM	PM	AM	PM	AM	PM	AM	PM
I-215 Freeway	SB	North of Cactus Avenue	4	19.9	22.5	C	C	20.1	22.7	C	C
		South of Cactus Avenue	4	18.6	21.5	C	C	18.7	21.6	C	C
		North of Harley Knox Boulevard	3	13.4	20.5	B	C	13.5	20.7	B	C
		South of Harley Knox Boulevard	3	11.4	18.1	B	C	11.5	18.5	B	C
	NB	North of Cactus Avenue	4	10.9	10.0	A	A	11.1	10.6	B	A
		South of Cactus Avenue	4	14.6	10.6	B	A	14.7	10.8	B	A
		North of Harley Knox Boulevard	3	22.0	17.1	C	B	22.1	17.4	C	B
		South of Harley Knox Boulevard	3	19.6	14.6	C	B	19.9	14.7	C	B

* **BOLD** = Unacceptable Level of Service

¹Number of lanes are in the specified direction and is based on existing conditions.

²Density is measured by passenger cars per mile per lane (pc/mi/ln).

Table 8

Freeway Ramp Junction Merge/Diverge Analysis for E+P (Construction Traffic) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway ¹	Existing (2015)				E+P (Construction Traffic)				
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
				Density ²	LOS	Density ²	LOS	Density ²	LOS	Density ²	LOS	
I-215 Freeway	SB	Loop Off-Ramp at Cactus Avenue - Upstream	4	C	26.9	C	30.2	D	27.3	C	30.7	D
		Loop Off-Ramp at Cactus Avenue - Downstream	4	C	26.9	C	30.2	D	27.3	C	30.7	D
		Off-Ramp at Harley Knox Boulevard	3	C	20.2	C	27.5	C	20.3	C	27.7	C
		On-Ramp at Harley Knox Boulevard	3	B	15.1	B	21.6	C	15.3	B	22.1	C
I-215 Freeway	NB	On-Ramp at Cactus Avenue	3	C	20.2	C	19.8	B	20.4	C	20.7	C
		On-Ramp at Harley Knox Boulevard	3	C	25.8	C	21.9	C	25.9	C	22.2	C
		Off-Ramp at Harley Knox Boulevard	3	C	25.1	C	20.0	B	25.3	C	20.1	C

* **BOLD** = Unacceptable Level of Service

¹ Number of lanes are in the specified direction and is based on existing conditions.

² Density is measured by passenger cars per mile per lane (pc/mi/ln).

Table 9

Intersection Analysis for E+P (Construction Traffic) Conditions With Improvements

#	Intersection	Traffic Control	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R				
12	Heacock St / Gentian Av - Existing (2015) With Improvements	CSS	0	1	1	1	1	0	0	0	0	1	d	22.8	58.0	C	F	
		<u>TS</u>	0	1	1	1	1	0	0	0	0	1	d	12.4	14.7	B	B	
	- E+P (Construction Traffic) With Improvements	CSS	0	1	1	1	1	0	0	0	0	1	d	25.4	78.6	D	F	
		<u>TS</u>	0	1	1	1	1	0	0	0	0	1	d	19.9	15.8	B	B	
13	Heacock St / Iris Av - Existing (2015) With Improvements	AWS	0	1	0	1	1	0	0	0	0	1	0	d	15.2	37.5	C	E
		<u>TS</u>	0	1	0	1	1	0	0	0	1	0	d	26.7	38.5	C	D	
	- E+P (Construction Traffic) With Improvements	AWS	0	1	0	1	1	0	0	0	1	0	d	16.7	53.4	C	F	
		<u>TS</u>	0	1	0	1	1	0	0	0	1	0	d	32.4	47.2	C	D	
16	Heacock St / San Michele Rd - Existing (2015) With Improvements	TS	1	1	1	1	1	1	1	1	1	1	1	25.6	39.5	C	D	
		Improvements Not Necessary																
	- E+P (Construction Traffic) With Improvements	TS	1	1	1	1	1	1	1	1	1	1	1	28.2	65.7	C	E	
TS		1	1	1	1	1	1	1	1	1	1	<u>1</u> >	16.9	20.7	B	C		

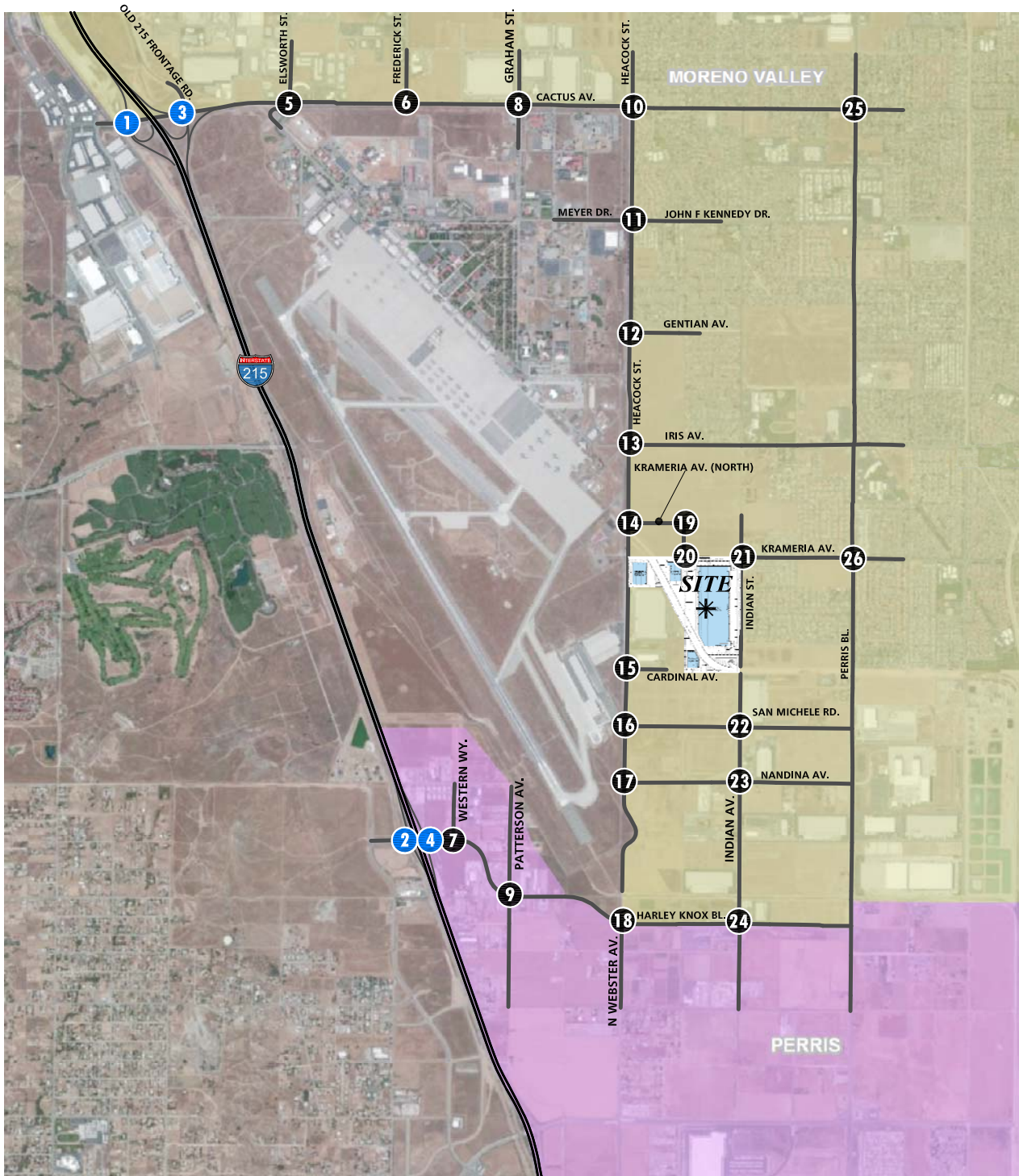
¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; >> = Free-Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

² Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (movements sharing a single lane) are shown.

³ CSS = Cross-street Stop; AWS = All-Way Stop; TS = Traffic Signal

EXHIBIT 1: LOCATION MAP



LEGEND:



-  = EXISTING INTERSECTION ANALYSIS LOCATION
-  = RIVERSIDE COUNTY CMP INTERSECTION ANALYSIS LOCATION



EXHIBIT 2 : EMPLOYEE TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT



EXHIBIT 3 : TRUCK TRIP DISTRIBUTION



LEGEND:

10 ■ PERCENT TO/FROM PROJECT



EXHIBIT 4 (1 OF 2): PROJECT (CONSTRUCTION TRAFFIC) TRAFFIC VOLUMES (IN PCE)

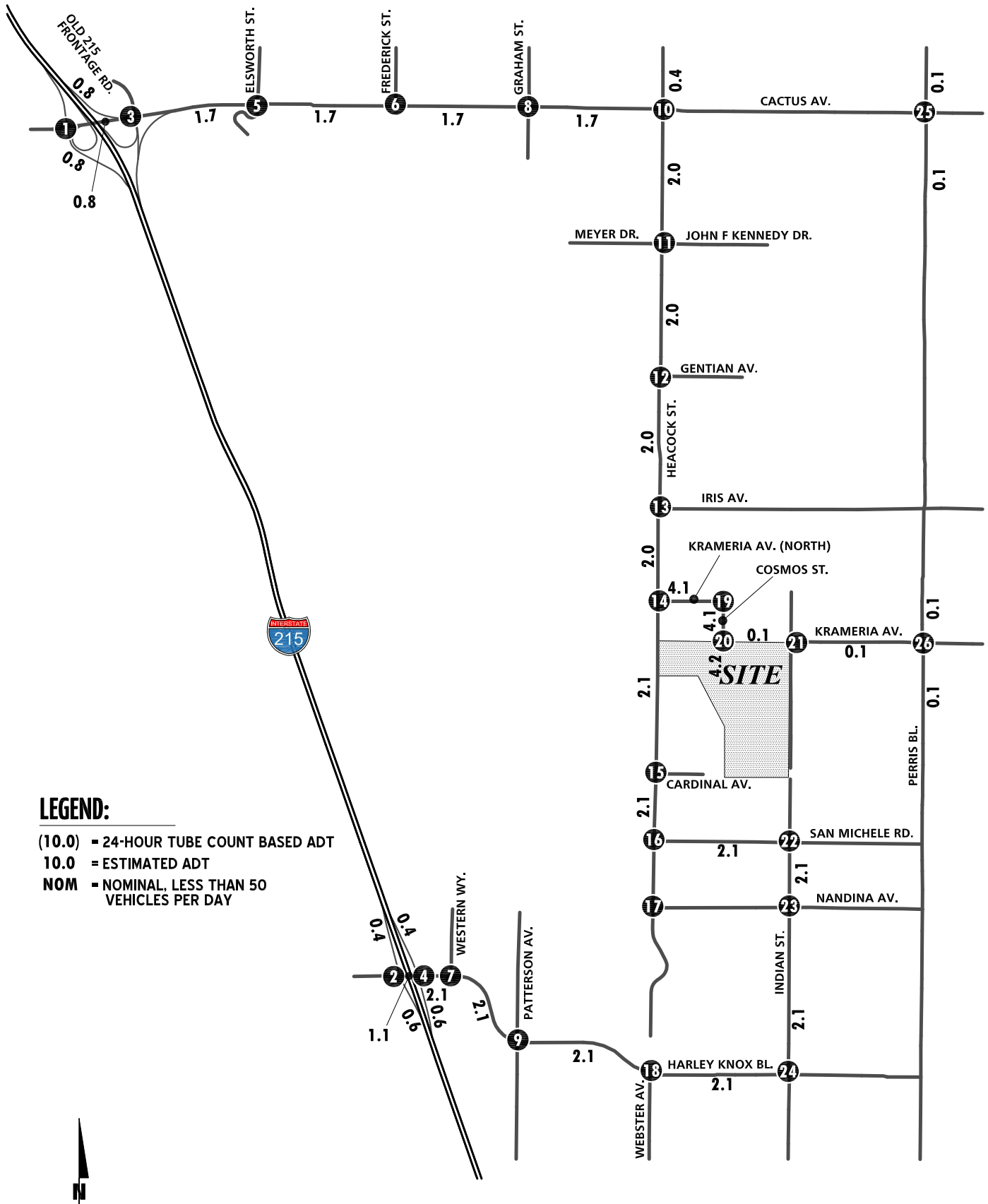


EXHIBIT 4 (2 OF 2): PROJECT (CONSTRUCTION TRAFFIC) TRAFFIC VOLUMES (IN PCE)

<p>1 I-215 SB Ramps & Cactus Av.</p>	<p>2 I-215 SB Ramps & Harley Knox Bl.</p>	<p>3 I-215 NB Ramps & Cactus Av.</p>	<p>4 I-215 NB Ramps & Harley Knox Bl.</p>	<p>5 Elsworth St. & Cactus Av.</p>	<p>6 Frederick St. & Cactus Av.</p>
<p>7 Western Wy. & Harley Knox Bl.</p>	<p>8 Graham St./Riverside Dr. & Cactus Av.</p>	<p>9 Patterson Av. & Harley Knox Bl.</p>	<p>10 Heacock St. & Cactus Av.</p>	<p>11 Heacock St. & Meyer Dr./John F. Kennedy Dr.</p>	<p>12 Heacock St. & Gentian Av.</p>
<p>13 Heacock St. & Iris Av.</p>	<p>14 Heacock St. & Krameria Av.</p>	<p>15 Heacock St. & Cardinal Av.</p>	<p>16 Heacock St. & San Michele Rd.</p>	<p>17 Heacock St. & Nandina Av.</p>	<p>18 Webster Av. & Harley Knox Bl.</p>
<p>19 Cosmos St. & Krameria Av. (North)</p>	<p>20 Cosmos St. & Krameria Av.</p>	<p>21 Indian St. & Krameria Av.</p>	<p>22 Indian St. & San Michele Rd.</p>	<p>23 Indian St. & Nandina Av.</p>	<p>24 Indian St. & Harley Knox Bl.</p>
<p>25 Perris Bl. & Cactus Av.</p>	<p>26 Perris Bl. & Krameria Av.</p>				

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

EXHIBIT 5 (1 OF 2): E+P (CONSTRUCTION TRAFFIC) TRAFFIC VOLUMES (IN PCE)

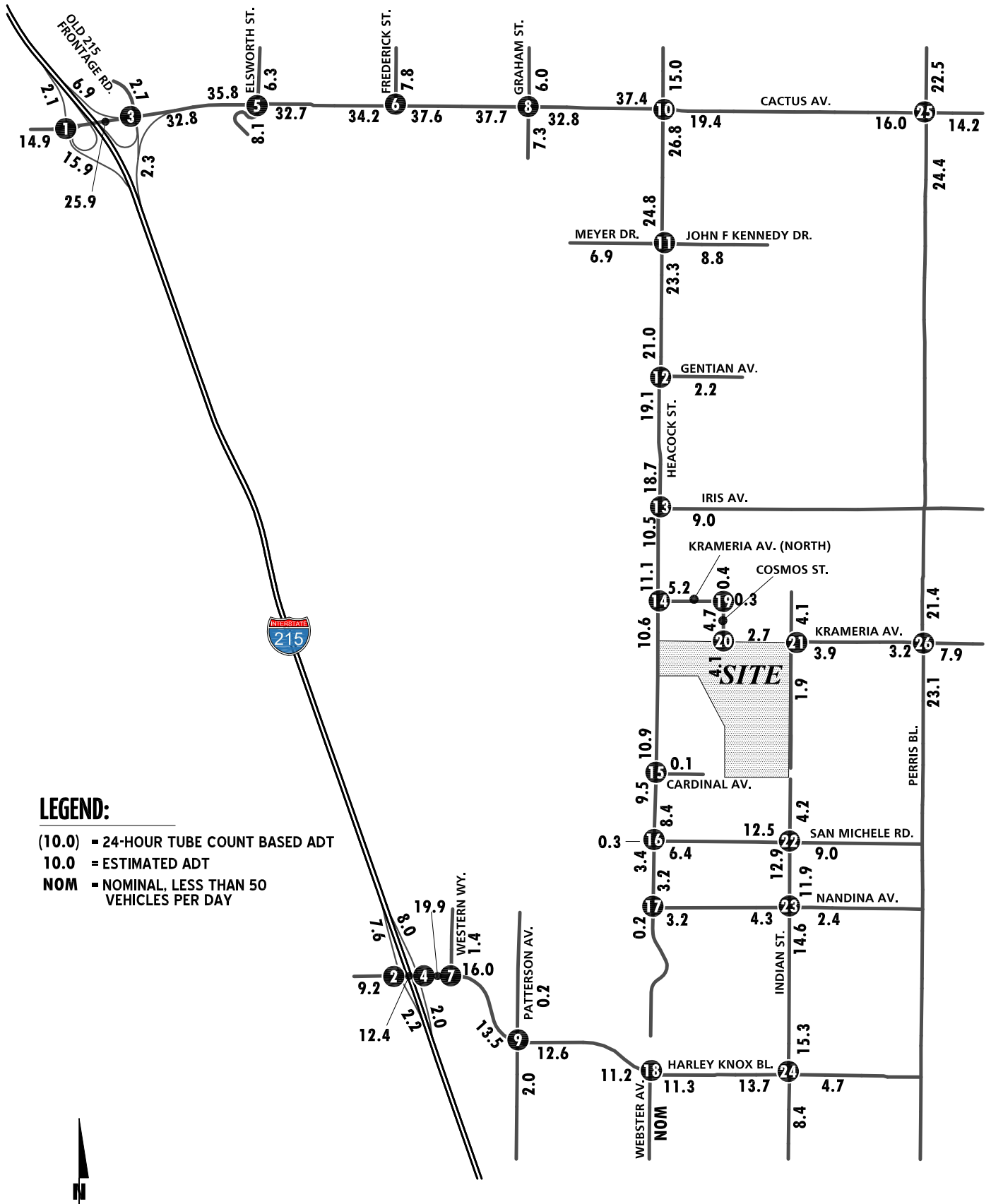


EXHIBIT 5 (2 OF 2): E+P (CONSTRUCTION TRAFFIC) TRAFFIC VOLUMES (IN PCE)

<p>1 I-215 SB Ramps & Cactus Av.</p> <p>214(185) 1280(358) 351(507) 579(736) 333(645) 36(125)</p>	<p>2 I-215 SB Ramps & Harley Knox Bl.</p> <p>156(278) 2(2) 429(369) 163(133) 143(243) 382(393) 9(9)</p>	<p>3 I-215 NB Ramps & Cactus Av.</p> <p>43(36) 0(0) 34(87) 196(66) 1551(1473) 24(14) 851(1223) 37(144) 388(29) 278(30) 5(0)</p>	<p>4 I-215 NB Ramps & Harley Knox Bl.</p> <p>350(484) 302(367) 203(248) 607(514) 4(8) 0(1) 128(148)</p>	<p>5 Elsworth St. & Cactus Av.</p> <p>104(168) 116(20) 77(100) 81(74) 1505(1223) 104(25) 165(97) 1305(1304) 231(23) 51(366) 222(95) 21(181)</p>	<p>6 Frederick St. & Cactus Av.</p> <p>68(102) 106(325) 156(167) 1693(1068) 174(92) 1098(1782)</p>
<p>7 Western Wy. & Harley Knox Bl.</p> <p>40(64) 8(14) 35(17) 612(787) 56(28) 678(635)</p>	<p>8 Graham St./Riverside Dr. & Cactus Av.</p> <p>54(105) 53(138) 60(119) 69(43) 1648(968) 15(6) 99(72) 946(1769) 177(277) 138(158) 53(53) 10(11)</p>	<p>9 Patterson Av. & Harley Knox Bl.</p> <p>6(12) 2(4) 0(8) 2(5) 558(646) 0(3) 6(6) 643(484) 20(47) 110(40) 0(4) 7(6)</p>	<p>10 Heacock St. & Cactus Av.</p> <p>47(43) 277(533) 46(109) 96(67) 1011(560) 9(13) 89(82) 524(933) 381(823) 724(523) 380(465) 11(19)</p>	<p>11 Heacock St. & Meyer Dr./John F. Kennedy Dr.</p> <p>16(25) 469(912) 130(302) 257(144) 108(100) 26(20) 7(26) 43(159) 62(221) 68(75) 755(786) 47(50)</p>	<p>12 Heacock St. & Gentian Av.</p> <p>478(972) 55(124) 92(60) 3(1) 601(713) 2(7)</p>
<p>13 Heacock St. & Iris Av.</p> <p>278(440) 200(512) 383(243) 45(18) 221(470) 36(18)</p>	<p>14 Heacock St. & Krameria Av.</p> <p>243(389) 79(87) 89(182) 48(185) 209(338) 58(67)</p>	<p>15 Heacock St. & Cardinal Av.</p> <p>269(599) 5(0) 1(3) 0(1) 230(409) 3(0)</p>	<p>16 Heacock St. & San Michele Rd.</p> <p>7(2) 88(212) 115(331) 188(256) 5(0) 7(11) 2(11) 4(6) 4(5) 1(0) 39(71) 5(3)</p>	<p>17 Heacock St. & Nandina Av.</p> <p>1(10) 91(200) 40(70) 0(0) 0(2) 2(8)</p>	<p>18 Webster Av. & Harley Knox Bl.</p> <p>410(530) 423(505) 1(0) 1(1)</p>
<p>19 Cosmos St. & Krameria Av. (North)</p> <p>13(15) 0(2) 3(3) 0(0) 0(0) 0(0) 5(11) 23(21) 108(131) 123(344) 3(4) 6(0)</p>	<p>20 Cosmos St. & Krameria Av.</p> <p>0(0) 99(102) 9(31) 56(24) 0(0) 6(7) 0(0) 76(324) 1(62)</p>	<p>21 Indian St. & Krameria Av.</p> <p>1(3) 79(73) 192(175) 188(55) 43(18) 2(4) 1(8) 7(79) 0(10) 14(6) 99(51) 12(4)</p>	<p>22 Indian St. & San Michele Rd.</p> <p>2(24) 5(131) 3(103) 5(45) 165(235) 54(147) 6(11) 59(143) 75(411) 329(323) 11(54) 91(115)</p>	<p>23 Indian St. & Nandina Av.</p> <p>5(46) 107(546) 6(50) 17(14) 22(19) 42(42) 9(7) 14(38) 137(210) 47(56) 398(430) 28(49)</p>	<p>24 Indian St. & Harley Knox Bl.</p> <p>148(506) 62(320) 9(30) 15(6) 245(145) 5(18) 292(265) 257(207) 71(74) 103(57) 239(265) 25(7)</p>
<p>25 Perris Bl. & Cactus Av.</p> <p>41(38) 488(933) 100(125) 76(73) 710(406) 60(48) 64(50) 407(551) 132(203) 193(157) 831(785) 85(47)</p>	<p>26 Perris Bl. & Krameria Av.</p> <p>10(22) 570(775) 89(128) 190(87) 107(55) 186(156) 16(55) 158(97) 64(70) 69(38) 816(845) 286(174)</p>				

LEGEND:

10(10) = AM(PM) PEAK HOUR INTERSECTION VOLUMES

**EXHIBIT 6: SUMMARY OF PEAK HOUR INTERSECTION LOS
FOR E+P (CONSTRUCTION TRAFFIC) CONDITIONS**



EXHIBIT 7: E+P (CONSTRUCTION TRAFFIC) FREEWAY MAINLINE VOLUMES



LEGEND:
← 100/200 - AM/PM PEAK HOUR VOLUMES
NOTE: VOLUMES IN ACTUAL VEHICLES (NOT PCE)



ATTACHMENT A
E+P (CONSTRUCTION TRAFFIC) CONDITIONS INTERSECTION OPERATIONS WORKSHEETS

HCM Signalized Intersection Capacity Analysis Moreno Valley Logistics Center TIA (JN 09301)

1: I-215 SB Ramps & Cactus Av.

11/11/2015















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑				↑			↑
Traffic Volume (vph)	0	333	36	351	1280	0	0	0	579	0	0	214
Future Volume (vph)	0	333	36	351	1280	0	0	0	579	0	0	214
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5	4.0	5.5				5.6			4.0
Lane Util. Factor		*1.00	1.00	1.00	*1.00				1.00			1.00
Frbp, ped/bikes		1.00	1.00	1.00	1.00				1.00			1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00			1.00
Frt		1.00	1.00	1.00	1.00				1.00			1.00
Flt Protected		1.00	1.00	1.00	1.00				1.00			1.00
Satd. Flow (prot)		3800	1900	1900	3800				1900			1900
Flt Permitted		1.00	1.00	1.00	1.00				1.00			1.00
Satd. Flow (perm)		3800	1900	1900	3800				1900			1900
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	351	38	369	1347	0	0	0	609	0	0	225
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	538	0	0	101
Lane Group Flow (vph)	0	351	15	369	1347	0	0	0	71	0	0	124
Confl. Bikes (#/hr)									2			2
Turn Type		NA	Perm	Prot	NA				Prot			Prot
Protected Phases		2		1	6				3			7
Permitted Phases			2									
Actuated Green, G (s)		23.2	23.2	14.7	41.9				7.0			8.6
Effective Green, g (s)		23.2	23.2	14.7	41.9				7.0			8.6
Actuated g/C Ratio		0.39	0.39	0.24	0.70				0.12			0.14
Clearance Time (s)		5.5	5.5	4.0	5.5				5.6			4.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0				2.0			2.0
Lane Grp Cap (vph)		1469	734	465	2653				221			272
v/s Ratio Prot		0.09		c0.19	c0.35				0.04			c0.07
v/s Ratio Perm			0.01									
v/c Ratio		0.24	0.02	0.79	0.51				0.32			0.46
Uniform Delay, d1		12.4	11.4	21.2	4.2				24.3			23.6
Progression Factor		1.00	1.00	1.00	1.00				1.00			1.00
Incremental Delay, d2		0.4	0.1	8.5	0.7				0.3			0.4
Delay (s)		12.8	11.4	29.7	4.9				24.6			24.0
Level of Service		B	B	C	A				C			C
Approach Delay (s)		12.7			10.3			24.6			24.0	
Approach LOS		B			B			C			C	




















Intersection Summary

HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



















HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 2: I-215 SB On Ramp/I-215 SB Off Ramp & Harley Knox Blvd./Harley Knox. Blvd. 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (veh/h)	0	382	9	143	163	0	0	0	0	429	2	156
Future Volume (veh/h)	0	382	9	143	163	0	0	0	0	429	2	156
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	406	5	152	173	0				456	2	102
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	918	390	632	2403	0				512	2	459
Arrive On Green	0.00	0.24	0.24	0.70	1.00	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	3800	1615	1810	3800	0				1802	8	1615
Grp Volume(v), veh/h	0	406	5	152	173	0				458	0	102
Grp Sat Flow(s),veh/h/ln	0	1900	1615	1810	1900	0				1810	0	1615
Q Serve(g_s), s	0.0	10.9	0.3	3.7	0.0	0.0				29.1	0.0	5.8
Cycle Q Clear(g_c), s	0.0	10.9	0.3	3.7	0.0	0.0				29.1	0.0	5.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	918	390	632	2403	0				515	0	459
V/C Ratio(X)	0.00	0.44	0.01	0.24	0.07	0.00				0.89	0.00	0.22
Avail Cap(c_a), veh/h	0	918	390	632	2403	0				830	0	740
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	38.6	34.6	12.3	0.0	0.0				41.1	0.0	32.8
Incr Delay (d2), s/veh	0.0	1.5	0.1	0.1	0.1	0.0				7.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.9	0.1	1.8	0.0	0.0				15.6	0.0	2.6
LnGrp Delay(d),s/veh	0.0	40.2	34.7	12.4	0.1	0.0				48.5	0.0	33.0
LnGrp LOS		D	C	B	A					D		C
Approach Vol, veh/h		411			325						560	
Approach Delay, s/veh		40.1			5.8						45.7	
Approach LOS		D			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	46.9	34.0		39.1		80.9						
Change Period (Y+Rc), s	5.0	* 5		5.0		5.0						
Max Green Setting (Gmax), s	21.5	* 29		55.0		55.0						
Max Q Clear Time (g_c+I1), s	5.7	12.9		31.1		2.0						
Green Ext Time (p_c), s	0.7	1.4		3.0		0.8						
Intersection Summary												
HCM 2010 Ctrl Delay				33.9								
HCM 2010 LOS				C								
Notes												

























HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 3: I-215 NB Ramps/Old 215 Frontage Rd. & Cactus Av. 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	851	37	0	1551	196	388	278	5	34	0	43
Future Volume (veh/h)	24	851	37	0	1551	196	388	278	5	34	0	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	0	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	24	868	32	0	1583	156	396	284	5	35	0	39
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	159	2040	75	0	1909	186	484	533	9	285	0	456
Arrive On Green	0.56	0.56	0.56	0.00	0.56	0.56	0.29	0.29	0.29	0.29	0.00	0.29
Sat Flow, veh/h	282	3642	134	0	3409	332	1390	1861	33	1107	0	1593
Grp Volume(v), veh/h	24	453	447	0	875	864	396	0	289	35	0	39
Grp Sat Flow(s),veh/h/ln	282	1900	1876	0	1900	1841	1390	0	1894	1107	0	1593
Q Serve(g_s), s	5.0	8.9	8.9	0.0	24.4	25.3	17.4	0.0	8.4	1.8	0.0	1.2
Cycle Q Clear(g_c), s	30.3	8.9	8.9	0.0	24.4	25.3	18.6	0.0	8.4	10.1	0.0	1.2
Prop In Lane	1.00		0.07	0.00		0.18	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	159	1064	1051	0	1064	1031	484	0	542	285	0	456
V/C Ratio(X)	0.15	0.43	0.43	0.00	0.82	0.84	0.82	0.00	0.53	0.12	0.00	0.09
Avail Cap(c_a), veh/h	159	1064	1051	0	1064	1031	484	0	542	285	0	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.4	8.3	8.3	0.0	11.7	11.9	24.3	0.0	19.5	23.8	0.0	17.0
Incr Delay (d2), s/veh	2.0	1.2	1.3	0.0	7.2	8.1	14.3	0.0	3.7	0.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.0	5.0	0.0	14.8	15.1	9.0	0.0	4.9	0.6	0.0	0.6
LnGrp Delay(d),s/veh	26.4	9.5	9.5	0.0	18.8	20.0	38.6	0.0	23.3	24.7	0.0	17.3
LnGrp LOS	C	A	A		B	B	D		C	C		B
Approach Vol, veh/h		924			1739			685				74
Approach Delay, s/veh		10.0			19.4			32.1				20.8
Approach LOS		A			B			C				C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		41.4		23.6		41.4		23.6				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		36.4		18.6		36.4		18.6				
Max Q Clear Time (g_c+I1), s		32.3		12.1		27.3		20.6				
Green Ext Time (p_c), s		3.4		1.1		6.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				19.4								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 4: I-215 NB Off Ramp/I-215 NB On Ramp & Harley Knox. Blvd./Harley Knox Blvd. 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	203	607	0	0	302	350	4	0	128	0	0	0
Future Volume (veh/h)	203	607	0	0	302	350	4	0	128	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	221	660	0	0	328	345	4	0	53			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	247	2755	0	0	2126	904	347	0	310			
Arrive On Green	0.27	1.00	0.00	0.00	0.56	0.56	0.19	0.00	0.19			
Sat Flow, veh/h	1810	3800	0	0	3800	1615	1809	0	1615			
Grp Volume(v), veh/h	221	660	0	0	328	345	4	0	53			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1615	1810	0	1615			
Q Serve(g_s), s	14.1	0.0	0.0	0.0	5.0	14.4	0.2	0.0	3.3			
Cycle Q Clear(g_c), s	14.1	0.0	0.0	0.0	5.0	14.4	0.2	0.0	3.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	247	2755	0	0	2126	904	347	0	310			
V/C Ratio(X)	0.90	0.24	0.00	0.00	0.15	0.38	0.01	0.00	0.17			
Avail Cap(c_a), veh/h	550	2755	0	0	2126	904	347	0	310			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.8	0.0	0.0	0.0	12.7	14.8	39.3	0.0	40.5			
Incr Delay (d2), s/veh	4.5	0.2	0.0	0.0	0.2	1.2	0.1	0.0	1.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.3	0.1	0.0	0.0	2.6	6.6	0.1	0.0	1.6			
LnGrp Delay(d),s/veh	47.3	0.2	0.0	0.0	12.9	16.0	39.4	0.0	41.7			
LnGrp LOS	D	A			B	B	D		D			
Approach Vol, veh/h		881			673			57				
Approach Delay, s/veh		12.0			14.5			41.6				
Approach LOS		B			B			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		92.0			19.9	72.1		28.0				
Change Period (Y+Rc), s		5.0			3.5	5.0		5.0				
Max Green Setting (Gmax), s		87.0			36.5	47.0		23.0				
Max Q Clear Time (g_c+I1), s		2.0			16.1	16.4		5.3				
Green Ext Time (p_c), s		5.0			0.3	4.9		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay				14.1								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 5: March AFB/Elsworth Street & Cactus Avenue 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	1305	231	104	1505	81	51	222	21	77	116	104
Future Volume (veh/h)	165	1305	231	104	1505	81	51	222	21	77	116	104
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	174	1374	0	109	1584	77	54	234	1	81	122	56
Adj No. of Lanes	1	3	1	1	3	1	1	1	0	1	1	1
Peak Hour 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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	158	2448	694	119	2324	659	445	465	2	152	159	275
Arrive On Green	0.09	0.43	0.00	0.07	0.41	0.41	0.25	0.25	0.25	0.08	0.08	0.08
Sat Flow, veh/h	1810	5700	1615	1810	5700	1615	1810	1890	8	1810	1900	1591
Grp Volume(v), veh/h	174	1374	0	109	1584	77	54	0	235	81	122	56
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1810	0	1898	1810	1900	1591
Q Serve(g_s), s	10.5	21.7	0.0	7.2	27.3	3.6	2.8	0.0	12.8	5.2	7.5	3.6
Cycle Q Clear(g_c), s	10.5	21.7	0.0	7.2	27.3	3.6	2.8	0.0	12.8	5.2	7.5	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	2448	694	119	2324	659	445	0	467	152	159	275
V/C Ratio(X)	1.10	0.56	0.00	0.91	0.68	0.12	0.12	0.00	0.50	0.53	0.77	0.20
Avail Cap(c_a), veh/h	158	2448	694	119	2324	659	445	0	467	445	467	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	25.7	0.0	55.7	29.1	22.1	35.2	0.0	38.9	52.7	53.8	42.7
Incr Delay (d2), s/veh	100.5	0.9	0.0	55.8	0.7	0.0	0.6	0.0	3.8	1.1	2.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	11.5	0.0	5.4	14.5	1.6	1.5	0.0	7.2	2.6	4.1	1.6
LnGrp Delay(d),s/veh	155.2	26.7	0.0	111.5	29.8	22.1	35.7	0.0	42.8	53.8	56.7	42.8
LnGrp LOS	F	C		F	C	C	D		D	D	E	D
Approach Vol, veh/h		1548			1770			289			259	
Approach Delay, s/veh		41.1			34.5			41.5			52.8	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	57.0		15.6	15.0	54.4		35.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	7.9	32.1		29.5	10.5	29.5		29.5				
Max Q Clear Time (g_c+I1), s	9.2	23.7		9.5	12.5	29.3		14.8				
Green Ext Time (p_c), s	0.0	6.9		0.5	0.0	0.1		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			38.9									
HCM 2010 LOS			D									
Notes												



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	174	1098	1693	156	106	68		
Future Volume (veh/h)	174	1098	1693	156	106	68		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	191	1207	1860	161	116	19		
Adj No. of Lanes	1	2	3	1	2	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	215	1995	1995	553	1221	737		
Arrive On Green	0.12	0.52	0.35	0.35	0.34	0.34		
Sat Flow, veh/h	1810	3800	5700	1579	3619	1615		
Grp Volume(v), veh/h	191	1207	1860	161	116	19		
Grp Sat Flow(s),veh/h/ln	1810	1900	1900	1579	1810	1615		
Q Serve(g_s), s	8.3	17.7	25.2	5.9	1.8	0.5		
Cycle Q Clear(g_c), s	8.3	17.7	25.2	5.9	1.8	0.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	215	1995	1995	553	1221	737		
V/C Ratio(X)	0.89	0.61	0.93	0.29	0.09	0.03		
Avail Cap(c_a), veh/h	215	1995	1995	553	1221	737		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.34	0.34	1.00	1.00		
Uniform Delay (d), s/veh	34.7	13.2	25.1	18.8	18.1	12.0		
Incr Delay (d2), s/veh	32.4	1.4	3.8	0.5	0.2	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.1	9.6	13.8	2.6	0.9	0.7		
LnGrp Delay(d),s/veh	67.1	14.6	28.9	19.3	18.3	12.0		
LnGrp LOS	E	B	C	B	B	B		
Approach Vol, veh/h		1398	2021		135			
Approach Delay, s/veh		21.8	28.1		17.4			
Approach LOS		C	C		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		47.5		32.5	14.0	33.5		
Change Period (Y+Rc), s		5.5		5.5	4.5	5.5		
Max Green Setting (Gmax), s		42.0		27.0	9.5	28.0		
Max Q Clear Time (g_c+I1), s		19.7		3.8	10.3	27.2		
Green Ext Time (p_c), s		15.9		0.2	0.0	0.8		
Intersection Summary								
HCM 2010 Ctrl Delay			25.2					
HCM 2010 LOS			C					

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	56	678	612	35	8	40
Future Vol, veh/h	56	678	612	35	8	40
Conflicting Peds, #/hr	0	0	0	9	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	62	753	680	39	9	44

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	680	0	1181
Stage 1	-	-	680
Stage 2	-	-	501
Critical Hdwy	4.1	-	6.8
Critical Hdwy Stg 1	-	-	5.8
Critical Hdwy Stg 2	-	-	5.8
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	922	-	*330
Stage 1	-	-	*470
Stage 2	-	-	*780
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	922	-	*291
Mov Cap-2 Maneuver	-	-	*291
Stage 1	-	-	*470
Stage 2	-	-	*690

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	922	-	-	-	546
HCM Lane V/C Ratio	0.067	-	-	-	0.098
HCM Control Delay (s)	9.2	0.5	-	-	12.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Notes





















~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
 8: Graham Street & Cactus Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	99	946	177	15	1648	69	138	53	10	60	53	54
Future Volume (veh/h)	99	946	177	15	1648	69	138	53	10	60	53	54
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	106	1017	0	16	1772	72	148	57	8	65	57	23
Adj No. of Lanes	1	2	1	1	3	0	2	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	788	2984	1268	27	1920	78	170	1041	143	84	1207	1209
Arrive On Green	0.44	0.79	0.00	0.01	0.35	0.35	0.05	0.32	0.32	0.05	0.32	0.32
Sat Flow, veh/h	1810	3800	1615	1810	5440	221	3619	3271	449	1810	3800	1593
Grp Volume(v), veh/h	106	1017	0	16	1237	607	148	33	32	65	57	23
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1861	1810	1900	1820	1810	1900	1593
Q Serve(g_s), s	3.0	6.7	0.0	0.7	26.6	26.6	3.5	1.0	1.1	3.0	0.9	0.1
Cycle Q Clear(g_c), s	3.0	6.7	0.0	0.7	26.6	26.6	3.5	1.0	1.1	3.0	0.9	0.1
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	788	2984	1268	27	1341	657	170	605	579	84	1207	1209
V/C Ratio(X)	0.13	0.34	0.00	0.60	0.92	0.92	0.87	0.05	0.06	0.78	0.05	0.02
Avail Cap(c_a), veh/h	788	2984	1268	85	1341	657	170	605	579	85	1207	1209
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.00	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.4	2.7	0.0	41.6	26.4	26.4	40.2	20.1	20.1	40.1	20.1	8.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.7	1.4	2.8	33.8	0.2	0.2	31.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.5	0.0	0.4	14.2	14.2	2.5	0.6	0.6	2.3	0.5	0.2
LnGrp Delay(d),s/veh	14.4	2.9	0.0	42.3	27.8	29.2	74.1	20.3	20.3	71.9	20.2	8.0
LnGrp LOS	B	A		D	C	C	E	C	C	E	C	A
Approach Vol, veh/h		1123			1860			213			145	
Approach Delay, s/veh		4.0			28.3			57.6			41.4	
Approach LOS		A			C			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	73.2	8.5	32.5	43.5	35.5	8.4	32.6				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	5.5	* 5.5	4.5	5.5				
Max Green Setting (Gmax), s	30.0	30.0	4.0	27.0	4.0	* 30	4.0	27.0				
Max Q Clear Time (g_c+1/2), s	8.7	8.7	5.5	2.9	5.0	28.6	5.0	3.1				
Green Ext Time (p_c), s	0.0	4.3	0.0	0.4	0.0	1.0	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				22.6								
HCM 2010 LOS				C								
Notes												

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 9: Patterson Avenue & Harley Knox Boulevard 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	643	20	0	558	2	110	0	7	0	2	6
Future Volume (veh/h)	6	643	20	0	558	2	110	0	7	0	2	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	6	677	21	0	587	2	116	0	7	0	2	6
Adj No. of Lanes	1	1	1	1	1	0	0	1	0	0	1	1
Peak Hour 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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	11	756	642	2	670	2	750	2	42	0	970	825
Arrive On Green	0.01	0.40	0.40	0.00	0.35	0.35	0.51	0.00	0.51	0.00	0.51	0.51
Sat Flow, veh/h	1810	1900	1615	1810	1892	6	1354	3	82	0	1900	1615
Grp Volume(v), veh/h	6	677	21	0	0	589	123	0	0	0	2	6
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	0	1899	1440	0	0	0	1900	1615
Q Serve(g_s), s	0.4	40.0	1.0	0.0	0.0	34.9	5.3	0.0	0.0	0.0	0.1	0.2
Cycle Q Clear(g_c), s	0.4	40.0	1.0	0.0	0.0	34.9	5.4	0.0	0.0	0.0	0.1	0.2
Prop In Lane	1.00		1.00	1.00		0.00	0.94		0.06	0.00		1.00
Lane Grp Cap(c), veh/h	11	756	642	2	0	672	794	0	0	0	970	825
V/C Ratio(X)	0.55	0.90	0.03	0.00	0.00	0.88	0.15	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	68	1180	1003	68	0	1179	794	0	0	0	970	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	59.5	33.8	22.1	0.0	0.0	36.3	15.7	0.0	0.0	0.0	14.4	14.4
Incr Delay (d2), s/veh	15.0	4.1	0.0	0.0	0.0	1.5	0.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	21.7	0.4	0.0	0.0	18.6	2.3	0.0	0.0	0.0	0.0	0.1
LnGrp Delay(d),s/veh	74.4	37.9	22.1	0.0	0.0	37.8	16.1	0.0	0.0	0.0	14.4	14.4
LnGrp LOS	E	D	C			D	B				B	B
Approach Vol, veh/h		704			589			123				8
Approach Delay, s/veh		37.7			37.8			16.1				14.4
Approach LOS		D			D			B				B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		66.8	0.0	53.2		66.8	5.2	48.0				
Change Period (Y+Rc), s		5.5	4.5	5.5		5.5	4.5	5.5				
Max Green Setting (Gmax), s		25.5	4.5	74.5		25.5	4.5	74.5				
Max Q Clear Time (g_c+I1), s		7.4	0.0	42.0		2.2	2.4	36.9				
Green Ext Time (p_c), s		0.4	0.0	5.6		0.4	0.0	5.6				
Intersection Summary												
HCM 2010 Ctrl Delay			35.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 10: Heacock Street & Cactus Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	524	381	9	1011	96	724	380	11	46	277	47
Future Volume (veh/h)	89	524	381	9	1011	96	724	380	11	46	277	47
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	97	570	337	10	1099	95	787	413	10	50	301	35
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	103	2578	1094	18	2177	188	695	1538	37	64	836	96
Arrive On Green	0.06	0.68	0.68	0.01	0.63	0.63	0.19	0.42	0.42	0.04	0.25	0.25
Sat Flow, veh/h	1810	3800	1613	1810	3449	298	3619	3693	89	1810	3345	386
Grp Volume(v), veh/h	97	570	337	10	605	589	787	212	211	50	170	166
Grp Sat Flow(s),veh/h/ln	1810	1900	1613	1810	1900	1847	1810	1900	1882	1810	1900	1831
Q Serve(g_s), s	5.3	5.7	9.5	0.6	17.2	17.3	19.2	7.3	7.4	2.7	7.4	7.5
Cycle Q Clear(g_c), s	5.3	5.7	9.5	0.6	17.2	17.3	19.2	7.3	7.4	2.7	7.4	7.5
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.05	1.00		0.21
Lane Grp Cap(c), veh/h	103	2578	1094	18	1199	1166	695	791	784	64	475	458
V/C Ratio(X)	0.94	0.22	0.31	0.57	0.50	0.51	1.13	0.27	0.27	0.78	0.36	0.36
Avail Cap(c_a), veh/h	103	2578	1094	72	1199	1166	695	791	784	121	475	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	6.1	8.2	49.3	10.0	10.0	40.4	19.2	19.2	47.8	30.9	30.9
Incr Delay (d2), s/veh	57.7	0.1	0.5	10.3	1.5	1.6	75.8	0.8	0.8	7.2	2.1	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	3.0	4.4	0.3	9.4	9.2	16.9	4.0	4.0	1.5	4.1	4.1
LnGrp Delay(d),s/veh	104.7	6.2	8.7	59.6	11.5	11.6	116.2	19.9	20.0	55.0	33.0	33.2
LnGrp LOS	F	A	A	E	B	B	F	B	B	E	C	C
Approach Vol, veh/h		1004			1204			1210			386	
Approach Delay, s/veh		16.6			11.9			82.5			35.9	
Approach LOS		B			B			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	74.3	24.7	30.5	10.2	69.6	8.1	47.1				
Change Period (Y+Rc), s	4.5	5.5	5.5	* 5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	1.0	31.8	19.2	* 25	5.7	30.1	6.7	37.5				
Max Q Clear Time (g_c+1), s	1.0	11.5	21.2	9.5	7.3	19.3	4.7	9.4				
Green Ext Time (p_c), s	0.0	8.0	0.0	0.9	0.0	5.8	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay				38.0								
HCM 2010 LOS				D								
Notes												

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 11: Heacock Street & Meyer Drive/John F. Kennedy Drive 11/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	43	62	26	108	257	68	755	47	130	469	16
Future Volume (veh/h)	7	43	62	26	108	257	68	755	47	130	469	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.94	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	47	22	28	117	118	74	821	36	141	510	10
Adj No. of Lanes	1	1	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	15	212	180	41	217	182	96	1140	458	577	2195	921
Arrive On Green	0.01	0.11	0.11	0.02	0.11	0.11	0.05	0.30	0.30	0.32	0.58	0.58
Sat Flow, veh/h	1810	1900	1615	1810	1900	1594	1810	3800	1526	1810	3800	1594
Grp Volume(v), veh/h	8	47	22	28	117	118	74	821	36	141	510	10
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1594	1810	1900	1526	1810	1900	1594
Q Serve(g_s), s	0.4	1.9	1.0	1.3	4.9	6.0	3.4	16.4	1.1	4.9	5.6	0.2
Cycle Q Clear(g_c), s	0.4	1.9	1.0	1.3	4.9	6.0	3.4	16.4	1.1	4.9	5.6	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	15	212	180	41	217	182	96	1140	458	577	2195	921
V/C Ratio(X)	0.55	0.22	0.12	0.68	0.54	0.65	0.77	0.72	0.08	0.24	0.23	0.01
Avail Cap(c_a), veh/h	85	541	460	123	581	488	183	1140	458	577	2195	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	42.0	34.4	34.0	41.2	35.5	36.0	39.7	26.6	13.6	21.4	8.8	3.5
Incr Delay (d2), s/veh	11.2	0.2	0.1	7.1	0.8	1.4	4.9	3.9	0.3	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.5	0.7	2.6	2.7	1.8	9.2	0.5	2.4	3.0	0.1
LnGrp Delay(d),s/veh	53.2	34.6	34.1	48.3	36.3	37.4	44.6	30.5	14.0	21.5	9.0	3.5
LnGrp LOS	D	C	C	D	D	D	D	C	B	C	A	A
Approach Vol, veh/h		77			263			931			661	
Approach Delay, s/veh		36.4			38.1			31.0			11.6	
Approach LOS		D			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.6	31.0	6.4	15.0	9.0	54.6	6.2	15.2				
Change Period (Y+Rc), s	5.5	* 5.5	4.5	5.5	4.5	5.5	5.5	* 5.5				
Max Green Setting (Gmax), s	5	* 26	5.8	24.2	8.6	26.4	4.0	* 26				
Max Q Clear Time (g_c+10), s	18.4	3.3	3.9	5.4	7.6	2.4	8.0					
Green Ext Time (p_c), s	0.1	2.1	0.0	0.1	0.0	2.0	0.0	0.7				

Intersection Summary												
HCM 2010 Ctrl Delay											25.5	
HCM 2010 LOS											C	

Notes

Intersection

Int Delay, s/veh 1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	3	92	601	2	55	478
Future Vol, veh/h	3	92	601	2	55	478
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	65	110	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	97	633	2	58	503

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	1252	633	0	0	633	0
Stage 1	633	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	192	483	-	-	960	-
Stage 1	533	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	180	483	-	-	960	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	180	483	960	-
HCM Lane V/C Ratio	-	-	0.018	0.201	0.06	-
HCM Control Delay (s)	-	-	25.4	14.3	9	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.7	0.2	-

Intersection

Intersection Delay, s/veh	16.7
Intersection LOS	C













Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	45	383	0	221	36	0	200	278
Future Vol, veh/h	0	45	383	0	221	36	0	200	278
Peak Hour Factor	0.92	0.94	0.94	0.92	0.94	0.94	0.92	0.94	0.94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	48	407	0	235	38	0	213	296
Number of Lanes	0	1	1	0	1	0	0	1	1

Approach

	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	19.1	15.3	15.2
HCM LOS	C	C	C

Lane

	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	86%	0%	0%	0%	100%
Vol Right, %	14%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	257	45	383	200	278
LT Vol	0	45	0	200	0
Through Vol	221	0	0	0	278
RT Vol	36	0	383	0	0
Lane Flow Rate	273	48	407	213	296
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.483	0.095	0.672	0.406	0.522
Departure Headway (Hd)	6.355	7.153	5.934	6.867	6.358
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	566	499	607	523	565
Service Time	4.422	4.92	3.699	4.634	4.125
HCM Lane V/C Ratio	0.482	0.096	0.671	0.407	0.524
HCM Control Delay	15.3	10.7	20.1	14.3	15.9
HCM Lane LOS	C	B	C	B	C
HCM 95th-tile Q	2.6	0.3	5.1	2	3

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	48	89	209	58	79	243		
Future Volume (veh/h)	48	89	209	58	79	243		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	59	110	258	72	98	300		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	170	151	785	668	491	1423		
Arrive On Green	0.09	0.09	0.41	0.41	0.27	0.75		
Sat Flow, veh/h	1810	1615	1900	1615	1810	1900		
Grp Volume(v), veh/h	59	110	258	72	98	300		
Grp Sat Flow(s),veh/h/ln	1810	1615	1900	1615	1810	1900		
Q Serve(g_s), s	2.1	4.6	6.5	1.9	2.9	3.3		
Cycle Q Clear(g_c), s	2.1	4.6	6.5	1.9	2.9	3.3		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	170	151	785	668	491	1423		
V/C Ratio(X)	0.35	0.73	0.33	0.11	0.20	0.21		
Avail Cap(c_a), veh/h	439	392	785	668	491	1423		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	29.7	30.8	13.9	12.6	19.6	2.6		
Incr Delay (d2), s/veh	0.5	2.5	1.1	0.3	0.9	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.1	2.2	3.6	0.9	1.6	1.8		
LnGrp Delay(d),s/veh	30.2	33.3	15.1	12.9	20.6	3.0		
LnGrp LOS	C	C	B	B	C	A		
Approach Vol, veh/h	169		330			398		
Approach Delay, s/veh	32.2		14.6			7.3		
Approach LOS	C		B			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	23.5	34.4				57.9		12.1
Change Period (Y+Rc), s	4.5	5.5				5.5		5.5
Max Green Setting (Gmax), s	19.0	18.5				42.0		17.0
Max Q Clear Time (g_c+I1), s	4.9	8.5				5.3		6.6
Green Ext Time (p_c), s	0.1	1.4				1.9		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			14.7					
HCM 2010 LOS			B					

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	1	230	3	5	269
Future Vol, veh/h	0	1	230	3	5	269
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	0	140	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	1	324	4	7	379

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	717	162	0	0	324	0
Stage 1	324	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.6	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	384	861	-	-	1247	-
Stage 1	711	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	382	861	-	-	1247	-
Mov Cap-2 Maneuver	492	-	-	-	-	-
Stage 1	711	-	-	-	-	-
Stage 2	682	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.2		0		0.1
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	861	1247	-
HCM Lane V/C Ratio	-	-	-	0.002	0.006	-
HCM Control Delay (s)	-	-	0	9.2	7.9	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	0	-

HCM 2010 Signalized Intersection Summary
 18: Heacock Street & San Michele Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	4	4	7	5	188	1	39	5	115	88	7
Future Volume (veh/h)	2	4	4	7	5	188	1	39	5	115	88	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	3	5	2	9	7	184	1	52	7	153	117	8
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	6	95	80	157	254	216	2	618	525	594	1258	1070
Arrive On Green	0.00	0.05	0.05	0.09	0.13	0.13	0.00	0.32	0.32	0.33	0.66	0.66
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1810	1900	1615	1810	1900	1615
Grp Volume(v), veh/h	3	5	2	9	7	184	1	52	7	153	117	8
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1810	1900	1615	1810	1900	1615
Q Serve(g_s), s	0.2	0.3	0.1	0.5	0.3	11.1	0.1	1.9	0.3	6.2	2.2	0.1
Cycle Q Clear(g_c), s	0.2	0.3	0.1	0.5	0.3	11.1	0.1	1.9	0.3	6.2	2.2	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	6	95	80	157	254	216	2	618	525	594	1258	1070
V/C Ratio(X)	0.52	0.05	0.02	0.06	0.03	0.85	0.50	0.08	0.01	0.26	0.09	0.01
Avail Cap(c_a), veh/h	100	551	468	157	523	444	81	618	525	594	1258	1070
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	45.3	36.1	41.9	37.7	42.4	49.9	23.4	22.9	24.6	6.1	2.8
Incr Delay (d2), s/veh	24.3	0.1	0.0	0.0	0.0	2.6	58.7	0.3	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.2	0.2	5.1	0.1	1.0	0.1	3.1	1.2	0.1
LnGrp Delay(d),s/veh	74.1	45.3	36.1	41.9	37.7	44.9	108.6	23.7	22.9	24.7	6.2	2.8
LnGrp LOS	E	D	D	D	D	D	F	C	C	C	A	A
Approach Vol, veh/h		10			200			60			278	
Approach Delay, s/veh		52.1			44.5			25.0			16.3	
Approach LOS		D			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	38.3	38.0	13.2	10.5	4.6	71.7	4.8	18.8				
Change Period (Y+Rc), s	5.5	* 5.5	4.5	5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	14.5	* 33	4.0	29.0	4.5	42.5	5.5	27.5				
Max Q Clear Time (g_c+1), s	10.2	3.9	2.5	2.3	2.1	4.2	2.2	13.1				
Green Ext Time (p_c), s	0.3	0.1	0.0	0.0	0.0	0.5	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				28.2								
HCM 2010 LOS				C								
Notes												

Intersection

Int Delay, s/veh 7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	40	0	2	91	1
Future Vol, veh/h	0	40	0	2	91	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	115	0	-	-	100	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	43	0	2	97	1

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	196	1	0	0	2	0
Stage 1	1	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	797	1090	-	-	1634	-
Stage 1	1028	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	750	1090	-	-	1634	-
Mov Cap-2 Maneuver	719	-	-	-	-	-
Stage 1	1028	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	1090	1634	-
HCM Lane V/C Ratio	-	-	-	0.039	0.059	-
HCM Control Delay (s)	-	-	0	8.4	7.3	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0.1	0.2	-

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	423	1	0	410	0	1
Future Vol, veh/h	423	1	0	410	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	529	1	0	513	0	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	530
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1044
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	1044
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	670	-	-	1044	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	10.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection

Int Delay, s/veh 8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	23	108	0	0	0	123	3	6	3	0	13
Future Vol, veh/h	5	23	108	0	0	0	123	3	6	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	0	200	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	28	132	0	0	0	150	4	7	4	0	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	319	319	8	399	327	4	16	0	0	4	0	0
Stage 1	15	15	-	304	304	-	-	-	-	-	-	-
Stage 2	304	304	-	95	23	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	638	601	1080	565	595	1085	1615	-	-	1631	-	-
Stage 1	1010	887	-	710	667	-	-	-	-	-	-	-
Stage 2	710	667	-	917	880	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	592	544	1080	443	538	1085	1615	-	-	1631	-	-
Mov Cap-2 Maneuver	607	569	-	542	569	-	-	-	-	-	-	-
Stage 1	916	885	-	644	605	-	-	-	-	-	-	-
Stage 2	644	605	-	778	878	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	0	6.9	1.4
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1615	-	-	915	-	1631	-	-
HCM Lane V/C Ratio	0.093	-	-	0.181	-	0.002	-	-
HCM Control Delay (s)	7.5	-	-	9.8	0	7.2	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.7	-	0	-	-

Intersection

Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	6	0	56	0	0	76	1
Future Vol, veh/h	0	0	0	0	0	6	0	56	0	0	76	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	7	0	61	0	0	83	1
Number of Lanes	0	0	1	0	0	1	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	2	2
HCM Control Delay	0	7.4	8.4
HCM LOS	-	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	100%	0%
Vol Thru, %	99%	100%	0%	0%	0%	100%
Vol Right, %	1%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	0	6	56	9	99
LT Vol	0	0	6	0	9	0
Through Vol	76	0	0	0	0	99
RT Vol	1	0	0	56	0	0
Lane Flow Rate	84	0	7	61	10	108
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.109	0	0.01	0.073	0.014	0.139
Departure Headway (Hd)	4.698	5.074	5.496	4.292	5.161	4.66
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	754	0	655	839	689	763
Service Time	2.784	3.077	3.196	1.992	2.928	2.427
HCM Lane V/C Ratio	0.111	0	0.011	0.073	0.015	0.142
HCM Control Delay	8.4	8.1	8.3	7.3	8	8.2
HCM Lane LOS	A	N	A	A	A	A
HCM 95th-tile Q	0.4	0	0	0.2	0	0.5

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	9	99	0
Future Vol, veh/h	0	9	99	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	10	108	0
Number of Lanes	0	1	1	0

Approach

SB

Opposing Approach

NB

Opposing Lanes

1

Conflicting Approach Left

WB

Conflicting Lanes Left

2

Conflicting Approach Right

EB

Conflicting Lanes Right

1

HCM Control Delay

8.2

HCM LOS

A

Lane

Intersection

Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	1	7	0	0	2	43	188	0	14	99	12
Future Vol, veh/h	0	1	7	0	0	2	43	188	0	14	99	12
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1	8	0	0	2	51	221	0	16	116	14
Number of Lanes	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	3
HCM Control Delay	9.4	10.2	10
HCM LOS	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	99	12	1	7	2	43	188	192	79	1
LT Vol	14	0	0	1	0	2	0	0	192	0	0
Through Vol	0	99	0	0	7	0	43	0	0	79	0
RT Vol	0	0	12	0	0	0	0	188	0	0	1
Lane Flow Rate	16	116	14	1	8	2	51	221	226	93	1
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.03	0.197	0.021	0.002	0.015	0.004	0.082	0.316	0.389	0.147	0.002
Departure Headway (Hd)	6.578	6.076	5.372	6.96	6.46	6.455	5.955	5.256	6.192	5.69	4.987
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	546	593	668	516	555	558	606	688	585	633	721
Service Time	4.294	3.791	3.087	4.682	4.182	4.155	3.655	2.956	3.9	3.398	2.695
HCM Lane V/C Ratio	0.029	0.196	0.021	0.002	0.014	0.004	0.084	0.321	0.386	0.147	0.001
HCM Control Delay	9.5	10.3	8.2	9.7	9.3	9.2	9.2	10.4	12.8	9.4	7.7
HCM Lane LOS	A	B	A	A	A	A	A	B	B	A	A
HCM 95th-tile Q	0.1	0.7	0.1	0	0	0	0.3	1.4	1.8	0.5	0

Intersection

Intersection Delay, s/veh
 Intersection LOS

Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	192	79	1
Future Vol, veh/h	0	192	79	1
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	226	93	1
Number of Lanes	0	1	1	1

Approach SB

























Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	11.8
HCM LOS	B

Lane

HCM 2010 Signalized Intersection Summary
28: Indian Street & San Michele Road

Moreno Valley Logistics Center TIA (JN 09301)

11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	59	75	54	165	5	329	11	91	3	5	2
Future Volume (veh/h)	6	59	75	54	165	5	329	11	91	3	5	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	8	81	91	74	226	4	451	15	93	4	7	0
Adj No. of Lanes	1	1	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	15	187	673	80	512	205	1152	1198	1019	8	1161	0
Arrive On Green	0.01	0.10	0.10	0.04	0.13	0.13	0.32	0.63	0.63	0.00	0.31	0.00
Sat Flow, veh/h	1810	1900	1615	1810	3800	1521	3619	1900	1615	1810	3800	0
Grp Volume(v), veh/h	8	81	91	74	226	4	451	15	93	4	7	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1521	1810	1900	1615	1810	1900	0
Q Serve(g_s), s	0.4	3.6	0.5	3.7	4.9	0.2	8.7	0.3	2.0	0.2	0.1	0.0
Cycle Q Clear(g_c), s	0.4	3.6	0.5	3.7	4.9	0.2	8.7	0.3	2.0	0.2	0.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	15	187	673	80	512	205	1152	1198	1019	8	1161	0
V/C Ratio(X)	0.55	0.43	0.14	0.92	0.44	0.02	0.39	0.01	0.09	0.52	0.01	0.00
Avail Cap(c_a), veh/h	80	549	981	80	1098	439	1152	1198	1019	80	1161	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.5	38.2	6.8	42.8	35.8	33.8	23.9	6.2	6.5	44.7	21.7	0.0
Incr Delay (d2), s/veh	9.7	0.5	0.0	72.7	0.2	0.0	0.1	0.0	0.2	19.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.9	0.9	3.5	2.6	0.1	4.3	0.1	0.9	0.1	0.1	0.0
LnGrp Delay(d),s/veh	54.2	38.7	6.9	115.6	36.0	33.8	24.0	6.2	6.7	63.7	21.8	0.0
LnGrp LOS	D	D	A	F	D	C	C	A	A	E	C	
Approach Vol, veh/h		180			304			559			11	
Approach Delay, s/veh		23.3			55.4			20.6			37.0	
Approach LOS		C			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.9	62.3	8.5	14.4	34.1	33.0	5.2	17.6				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	5.5	* 5.5	4.5	5.5				
Max Green Setting (Gmax), s	4.0	36.0	4.0	26.0	12.5	* 28	4.0	26.0				
Max Q Clear Time (g_c+I1), s	2.2	4.0	5.7	5.6	10.7	2.1	2.4	6.9				
Green Ext Time (p_c), s	0.0	1.0	0.0	1.2	0.2	0.0	0.0	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			31.3									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
 29: Indian Street & Nandina Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	14	137	42	22	17	47	398	28	6	107	5
Future Volume (veh/h)	9	14	137	42	22	17	47	398	28	6	107	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	11	17	108	51	27	19	57	485	32	7	130	1
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	19	166	142	66	216	183	74	2356	155	13	2392	18
Arrive On Green	0.01	0.09	0.09	0.04	0.11	0.11	0.04	0.67	0.67	0.01	0.64	0.64
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1810	3522	232	1810	3766	29
Grp Volume(v), veh/h	11	17	108	51	27	19	57	261	256	7	66	65
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1810	1900	1853	1810	1900	1895
Q Serve(g_s), s	0.6	0.8	6.5	2.8	1.3	1.1	3.1	5.3	5.3	0.4	1.3	1.3
Cycle Q Clear(g_c), s	0.6	0.8	6.5	2.8	1.3	1.1	3.1	5.3	5.3	0.4	1.3	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	19	166	142	66	216	183	74	1271	1240	13	1207	1203
V/C Ratio(X)	0.58	0.10	0.76	0.77	0.13	0.10	0.77	0.21	0.21	0.55	0.05	0.05
Avail Cap(c_a), veh/h	100	542	460	172	618	525	208	1271	1240	100	1207	1203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	49.3	42.0	44.6	47.8	39.9	39.8	47.5	6.4	6.4	49.5	6.9	6.9
Incr Delay (d2), s/veh	9.8	0.1	3.2	7.0	0.1	0.1	6.2	0.4	0.4	12.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.4	3.0	1.5	0.7	0.5	1.7	2.9	2.8	0.2	0.7	0.7
LnGrp Delay(d),s/veh	59.1	42.1	47.8	54.8	40.0	39.9	53.7	6.7	6.7	61.5	7.0	7.0
LnGrp LOS	E	D	D	D	D	D	D	A	A	E	A	A
Approach Vol, veh/h		136			97			574			138	
Approach Delay, s/veh		48.0			47.7			11.4			9.7	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	72.4	8.1	14.3	8.6	69.0	5.6	16.9				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	5	36.5	9.5	28.5	11.5	30.5	5.5	32.5				
Max Q Clear Time (g_c+1), s	4	7.3	4.8	8.5	5.1	3.3	2.6	3.3				
Green Ext Time (p_c), s	0.0	2.0	0.0	0.3	0.0	2.0	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			20.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
 30: Indian Street & Harley Knox Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	292	257	71	5	245	15	103	239	25	9	62	148
Future Volume (veh/h)	292	257	71	5	245	15	103	239	25	9	62	148
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	311	273	59	5	261	14	110	254	23	10	66	90
Adj No. of Lanes	1	1	1	1	2	0	2	2	1	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	1157	1841	1565	9	1161	62	145	1369	582	35	608	517
Arrive On Green	0.64	0.97	0.97	0.01	0.32	0.32	0.04	0.36	0.36	0.01	0.32	0.32
Sat Flow, veh/h	1810	1900	1614	1810	3573	191	3619	3800	1615	3619	1900	1615
Grp Volume(v), veh/h	311	273	59	5	138	137	110	254	23	10	66	90
Grp Sat Flow(s),veh/h/ln	1810	1900	1614	1810	1900	1863	1810	1900	1615	1810	1900	1615
Q Serve(g_s), s	7.5	0.5	1.6	0.3	5.3	5.3	3.0	4.6	0.9	0.3	2.4	4.0
Cycle Q Clear(g_c), s	7.5	0.5	1.6	0.3	5.3	5.3	3.0	4.6	0.9	0.3	2.4	4.0
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1157	1841	1565	9	618	606	145	1369	582	35	608	517
V/C Ratio(X)	0.27	0.15	0.04	0.53	0.22	0.23	0.76	0.19	0.04	0.28	0.11	0.17
Avail Cap(c_a), veh/h	1157	1841	1565	72	618	606	145	1369	582	145	608	517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.9	0.1	9.4	49.6	24.6	24.6	47.5	21.9	20.8	49.2	24.0	24.5
Incr Delay (d2), s/veh	0.0	0.2	0.0	16.3	0.8	0.9	18.7	0.3	0.1	1.6	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.3	0.7	0.2	2.9	2.9	1.9	2.5	0.4	0.1	1.3	1.9
LnGrp Delay(d),s/veh	7.9	0.2	9.4	65.9	25.4	25.5	66.2	22.2	20.9	50.8	24.3	25.2
LnGrp LOS	A	A	A	E	C	C	E	C	C	D	C	C
Approach Vol, veh/h		643			280			387			166	
Approach Delay, s/veh		4.8			26.2			34.7			26.4	
Approach LOS		A			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.0	102.6	9.5	37.5	69.6	38.0	5.5	41.5				
Change Period (Y+Rc), s	4.5	5.5	5.5	* 5.5	5.5	* 5.5	4.5	5.5				
Max Green Setting (Gmax), s	4.0	40.0	4.0	* 32	11.5	* 33	4.0	32.0				
Max Q Clear Time (g_c+1), s	1.0	3.6	5.0	6.0	9.5	7.3	2.3	6.6				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.5	0.2	0.8	0.0	1.1				
Intersection Summary												
HCM 2010 Ctrl Delay				19.1								
HCM 2010 LOS				B								
Notes												

HCM 2010 Signalized Intersection Summary
 31: Perris Boulevard & Cactus Avenue
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	407	132	60	710	76	193	831	85	100	488	41
Future Volume (veh/h)	64	407	132	60	710	76	193	831	85	100	488	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	71	452	130	67	789	75	214	923	82	111	542	36
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	92	977	279	992	2914	277	238	1499	133	141	855	358
Arrive On Green	0.05	0.34	0.34	0.55	0.85	0.85	0.13	0.29	0.29	0.08	0.22	0.22
Sat Flow, veh/h	1810	2841	810	1810	3413	324	1810	5159	457	1810	3800	1590
Grp Volume(v), veh/h	71	301	281	67	439	425	214	679	326	111	542	36
Grp Sat Flow(s),veh/h/ln	1810	1900	1751	1810	1900	1838	1810	1900	1816	1810	1900	1590
Q Serve(g_s), s	3.1	9.9	10.0	1.4	3.5	3.5	9.3	12.3	12.4	4.8	10.3	2.1
Cycle Q Clear(g_c), s	3.1	9.9	10.0	1.4	3.5	3.5	9.3	12.3	12.4	4.8	10.3	2.1
Prop In Lane	1.00		0.46	1.00		0.18	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	92	653	602	992	1622	1569	238	1104	528	141	855	358
V/C Ratio(X)	0.78	0.46	0.47	0.07	0.27	0.27	0.90	0.61	0.62	0.79	0.63	0.10
Avail Cap(c_a), veh/h	102	653	602	992	1622	1569	238	1104	528	170	855	358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	20.5	20.5	8.5	1.1	1.1	34.2	24.5	24.5	36.2	28.0	51.6
Incr Delay (d2), s/veh	24.3	2.3	2.6	0.0	0.4	0.4	32.6	2.6	5.3	14.7	3.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	5.6	5.3	0.7	2.0	2.0	6.8	6.8	7.0	3.0	5.8	1.0
LnGrp Delay(d),s/veh	61.8	22.8	23.1	8.5	1.5	1.5	66.8	27.1	29.9	50.9	31.6	52.1
LnGrp LOS	E	C	C	A	A	A	E	C	C	D	C	D
Approach Vol, veh/h		653			931			1219			689	
Approach Delay, s/veh		27.2			2.0			34.8			35.8	
Approach LOS		C			A			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	50.2	33.0	16.0	23.5	8.5	74.6	10.7	28.8				
Change Period (Y+Rc), s	5.5	* 5.5	5.5	* 5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	1.0	* 28	10.5	* 18	4.5	27.0	7.5	21.0				
Max Q Clear Time (g_c+1), s	1.5	12.0	11.3	12.3	5.1	5.5	6.8	14.4				
Green Ext Time (p_c), s	0.0	1.8	0.0	1.2	0.0	3.3	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			24.8									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
 32: Perris Boulevard & Krameria Avenue

Moreno Valley Logistics Center TIA (JN 09301)

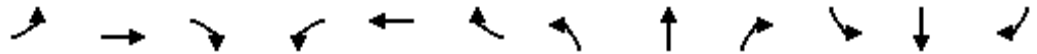
11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	158	64	186	107	190	69	816	286	89	570	10
Future Volume (veh/h)	16	158	64	186	107	190	69	816	286	89	570	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	18	174	54	204	118	109	76	897	289	98	626	9
Adj No. of Lanes	0	1	1	0	2	1	1	3	0	1	3	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	22	212	199	255	268	223	148	2031	652	122	2683	39
Arrive On Green	0.12	0.12	0.12	0.14	0.14	0.14	0.08	0.49	0.49	0.07	0.48	0.48
Sat Flow, veh/h	177	1714	1611	1810	1900	1580	1810	4121	1322	1810	5604	80
Grp Volume(v), veh/h	192	0	54	204	118	109	76	827	359	98	424	211
Grp Sat Flow(s),veh/h/ln	1891	0	1611	1810	1900	1580	1810	1900	1643	1810	1900	1885
Q Serve(g_s), s	11.9	0.0	3.6	13.1	6.8	7.6	4.8	16.9	17.0	6.4	7.9	7.9
Cycle Q Clear(g_c), s	11.9	0.0	3.6	13.1	6.8	7.6	4.8	16.9	17.0	6.4	7.9	7.9
Prop In Lane	0.09		1.00	1.00		1.00	1.00		0.80	1.00		0.04
Lane Grp Cap(c), veh/h	234	0	199	255	268	223	148	1873	810	122	1819	902
V/C Ratio(X)	0.82	0.00	0.27	0.80	0.44	0.49	0.51	0.44	0.44	0.80	0.23	0.23
Avail Cap(c_a), veh/h	473	0	403	452	475	395	148	1873	810	143	1819	902
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	0.0	47.7	49.9	47.2	47.6	52.8	19.7	19.7	55.2	18.4	18.4
Incr Delay (d2), s/veh	2.7	0.0	0.3	2.2	0.4	0.6	12.2	0.8	1.8	20.4	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	1.6	6.7	3.6	3.4	2.9	9.0	8.1	3.9	4.2	4.3
LnGrp Delay(d),s/veh	54.0	0.0	47.9	52.1	47.6	48.2	65.0	20.5	21.5	75.6	18.7	19.0
LnGrp LOS	D		D	D	D	D	E	C	C	E	B	B
Approach Vol, veh/h		246			431			1262			733	
Approach Delay, s/veh		52.7			49.9			23.5			26.4	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.6	64.6		20.4	14.3	62.9		22.4				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	29.5		30.0	9.8	29.2		30.0				
Max Q Clear Time (g_c+I1), s	8.4	19.0		13.9	6.8	9.9		15.1				
Green Ext Time (p_c), s	0.0	5.5		0.7	0.0	7.7		1.1				
Intersection Summary												
HCM 2010 Ctrl Delay			31.2									
HCM 2010 LOS			C									
Notes												

HCM Signalized Intersection Capacity Analysis Moreno Valley Logistics Center TIA (JN 09301)

1: I-215 SB Ramps & Cactus Av.

11/11/2015















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑				↑			↑
Traffic Volume (vph)	0	645	125	507	358	0	0	0	736	0	0	185
Future Volume (vph)	0	645	125	507	358	0	0	0	736	0	0	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5	4.0	5.5				5.6			4.0
Lane Util. Factor		*1.00	1.00	1.00	*1.00				1.00			1.00
Frt		1.00	1.00	1.00	1.00				1.00			1.00
Flt Protected		1.00	1.00	1.00	1.00				1.00			1.00
Satd. Flow (prot)		3800	1900	1900	3800				1900			1900
Flt Permitted		1.00	1.00	1.00	1.00				1.00			1.00
Satd. Flow (perm)		3800	1900	1900	3800				1900			1900
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	679	132	534	377	0	0	0	775	0	0	195
RTOR Reduction (vph)	0	0	90	0	0	0	0	0	429	0	0	156
Lane Group Flow (vph)	0	679	42	534	377	0	0	0	346	0	0	39
Turn Type		NA	Perm	Prot	NA				Prot			Prot
Protected Phases		2		1	6				3			7
Permitted Phases			2									
Actuated Green, G (s)		19.2	19.2	15.3	38.5				10.4			12.0
Effective Green, g (s)		19.2	19.2	15.3	38.5				10.4			12.0
Actuated g/C Ratio		0.32	0.32	0.26	0.64				0.17			0.20
Clearance Time (s)		5.5	5.5	4.0	5.5				5.6			4.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0				2.0			2.0
Lane Grp Cap (vph)		1216	608	484	2438				329			380
v/s Ratio Prot		c0.18		c0.28	0.10				c0.18			0.02
v/s Ratio Perm			0.02									
v/c Ratio		0.56	0.07	1.10	0.15				1.05			0.10
Uniform Delay, d1		16.9	14.2	22.4	4.3				24.8			19.6
Progression Factor		1.00	1.00	1.00	1.00				1.00			1.00
Incremental Delay, d2		1.9	0.2	72.1	0.1				63.8			0.0
Delay (s)		18.7	14.4	94.4	4.4				88.6			19.6
Level of Service		B	B	F	A				F			B
Approach Delay (s)		18.0			57.2			88.6			19.6	
Approach LOS		B			E			F			B	

Intersection Summary




















HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group





















HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 2: I-215 SB On Ramp/I-215 SB Off Ramp & Harley Knox Blvd./Harley Knox. Blvd. 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (veh/h)	0	393	9	243	133	0	0	0	0	369	2	278
Future Volume (veh/h)	0	393	9	243	133	0	0	0	0	369	2	278
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	418	10	259	141	0				393	2	219
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1792	762	283	2529	0				452	2	406
Arrive On Green	0.00	0.47	0.47	0.26	1.00	0.00				0.25	0.25	0.25
Sat Flow, veh/h	0	3800	1615	1810	3800	0				1801	9	1615
Grp Volume(v), veh/h	0	418	10	259	141	0				395	0	219
Grp Sat Flow(s),veh/h/ln	0	1900	1615	1810	1900	0				1810	0	1615
Q Serve(g_s), s	0.0	7.8	0.4	16.7	0.0	0.0				25.1	0.0	14.1
Cycle Q Clear(g_c), s	0.0	7.8	0.4	16.7	0.0	0.0				25.1	0.0	14.1
Prop In Lane	0.00		1.00	1.00		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	1792	762	283	2529	0				455	0	406
V/C Ratio(X)	0.00	0.23	0.01	0.92	0.06	0.00				0.87	0.00	0.54
Avail Cap(c_a), veh/h	0	1792	762	309	2529	0				830	0	740
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.8	16.9	43.6	0.0	0.0				43.0	0.0	38.9
Incr Delay (d2), s/veh	0.0	0.3	0.0	27.7	0.0	0.0				5.2	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	0.2	10.4	0.0	0.0				13.2	0.0	6.4
LnGrp Delay(d),s/veh	0.0	19.1	16.9	71.3	0.0	0.0				48.2	0.0	40.0
LnGrp LOS		B	B	E	A					D		D
Approach Vol, veh/h		428			400						614	
Approach Delay, s/veh		19.1			46.2						45.3	
Approach LOS		B			D						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	23.3	61.6		35.1		84.9						
Change Period (Y+Rc), s	4.5	5.0		5.0		5.0						
Max Green Setting (Gmax), s	20.5	30.0		55.0		55.0						
Max Q Clear Time (g_c+I1), s	18.7	9.8		27.1		2.0						
Green Ext Time (p_c), s	0.1	2.1		3.1		2.2						
Intersection Summary												
HCM 2010 Ctrl Delay				37.8								
HCM 2010 LOS				D								

























HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 3: I-215 NB Ramps/Old 215 Frontage Rd. & Cactus Av. 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1223	144	0	1473	66	29	30	0	87	0	36
Future Volume (veh/h)	14	1223	144	0	1473	66	29	30	0	87	0	36
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	0	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	14	1261	144	0	1519	59	30	31	0	90	0	22
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	191	1872	213	0	2035	79	501	544	0	495	0	462
Arrive On Green	0.56	0.56	0.56	0.00	0.56	0.56	0.29	0.29	0.00	0.29	0.00	0.29
Sat Flow, veh/h	330	3343	380	0	3634	141	1412	1900	0	1400	0	1615
Grp Volume(v), veh/h	14	714	691	0	792	786	30	31	0	90	0	22
Grp Sat Flow(s),veh/h/ln	330	1900	1823	0	1900	1875	1412	1900	0	1400	0	1615
Q Serve(g_s), s	2.2	17.2	17.4	0.0	20.5	20.6	1.0	0.8	0.0	3.2	0.0	0.6
Cycle Q Clear(g_c), s	22.8	17.2	17.4	0.0	20.5	20.6	1.7	0.8	0.0	4.0	0.0	0.6
Prop In Lane	1.00		0.21	0.00		0.08	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	1064	1021	0	1064	1050	501	544	0	495	0	462
V/C Ratio(X)	0.07	0.67	0.68	0.00	0.74	0.75	0.06	0.06	0.00	0.18	0.00	0.05
Avail Cap(c_a), veh/h	191	1064	1021	0	1064	1050	501	544	0	495	0	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.5	10.1	10.1	0.0	10.8	10.8	17.4	16.8	0.0	18.3	0.0	16.8
Incr Delay (d2), s/veh	0.7	3.4	3.6	0.0	4.7	4.9	0.2	0.2	0.0	0.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	9.9	9.7	0.0	12.0	11.9	0.4	0.4	0.0	1.4	0.0	0.3
LnGrp Delay(d),s/veh	20.2	13.5	13.7	0.0	15.5	15.7	17.6	17.0	0.0	19.1	0.0	17.0
LnGrp LOS	C	B	B		B	B	B	B		B		B
Approach Vol, veh/h		1419			1578			61				112
Approach Delay, s/veh		13.7			15.6			17.3				18.7
Approach LOS		B			B			B				B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		41.4		23.6		41.4		23.6				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		36.4		18.6		36.4		18.6				
Max Q Clear Time (g_c+I1), s		24.8		6.0		22.6		3.7				
Green Ext Time (p_c), s		9.0		0.2		10.3		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay				14.9								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 4: I-215 NB Off Ramp/I-215 NB On Ramp & Harley Knox. Blvd./Harley Knox Blvd. 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (veh/h)	248	514	0	0	367	484	8	1	148	0	0	0
Future Volume (veh/h)	248	514	0	0	367	484	8	1	148	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	279	578	0	0	412	519	9	1	57			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	303	2755	0	0	2007	853	314	35	310			
Arrive On Green	0.34	1.00	0.00	0.00	0.53	0.53	0.19	0.19	0.19			
Sat Flow, veh/h	1810	3800	0	0	3800	1614	1636	182	1615			
Grp Volume(v), veh/h	279	578	0	0	412	519	10	0	57			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1614	1818	0	1615			
Q Serve(g_s), s	17.8	0.0	0.0	0.0	6.9	26.8	0.5	0.0	3.5			
Cycle Q Clear(g_c), s	17.8	0.0	0.0	0.0	6.9	26.8	0.5	0.0	3.5			
Prop In Lane	1.00		0.00	0.00		1.00	0.90		1.00			
Lane Grp Cap(c), veh/h	303	2755	0	0	2007	853	348	0	310			
V/C Ratio(X)	0.92	0.21	0.00	0.00	0.21	0.61	0.03	0.00	0.18			
Avail Cap(c_a), veh/h	550	2755	0	0	2007	853	348	0	310			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	39.1	0.0	0.0	0.0	15.0	19.7	39.4	0.0	40.6			
Incr Delay (d2), s/veh	5.4	0.2	0.0	0.0	0.2	3.2	0.2	0.0	1.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.3	0.1	0.0	0.0	3.7	12.7	0.3	0.0	1.7			
LnGrp Delay(d),s/veh	44.5	0.2	0.0	0.0	15.2	22.9	39.6	0.0	41.9			
LnGrp LOS	D	A			B	C	D		D			
Approach Vol, veh/h		857			931			67				
Approach Delay, s/veh		14.6			19.5			41.6				
Approach LOS		B			B			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		92.0			23.6	68.4		28.0				
Change Period (Y+Rc), s		5.0			3.5	5.0		5.0				
Max Green Setting (Gmax), s		87.0			36.5	47.0		23.0				
Max Q Clear Time (g_c+I1), s		2.0			19.8	28.8		5.5				
Green Ext Time (p_c), s		5.5			0.3	4.9		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay				18.0								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 5: March AFB/Elsworth Street & Cactus Avenue 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	1304	23	25	1223	74	366	95	181	100	20	168
Future Volume (veh/h)	97	1304	23	25	1223	74	366	95	181	100	20	168
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	100	1344	0	26	1261	45	304	200	133	118	0	66
Adj No. of Lanes	1	3	1	1	3	1	1	1	0	2	0	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	124	2878	816	33	2589	718	445	262	174	203	0	202
Arrive On Green	0.07	0.50	0.00	0.02	0.45	0.45	0.25	0.25	0.25	0.06	0.00	0.06
Sat Flow, veh/h	1810	5700	1615	1810	5700	1581	1810	1065	709	3619	0	1615
Grp Volume(v), veh/h	100	1344	0	26	1261	45	304	0	333	118	0	66
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1581	1810	0	1774	1810	0	1615
Q Serve(g_s), s	6.5	18.3	0.0	1.7	18.6	1.9	18.3	0.0	20.9	3.8	0.0	4.5
Cycle Q Clear(g_c), s	6.5	18.3	0.0	1.7	18.6	1.9	18.3	0.0	20.9	3.8	0.0	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	124	2878	816	33	2589	718	445	0	436	203	0	202
V/C Ratio(X)	0.80	0.47	0.00	0.80	0.49	0.06	0.68	0.00	0.76	0.58	0.00	0.33
Avail Cap(c_a), veh/h	143	2878	816	119	2589	718	445	0	436	890	0	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.1	19.2	0.0	58.7	22.9	18.4	41.0	0.0	42.0	55.2	0.0	47.9
Incr Delay (d2), s/veh	21.3	0.5	0.0	15.1	0.1	0.0	8.3	0.0	12.0	1.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	9.7	0.0	1.0	9.7	0.8	10.1	0.0	11.7	1.9	0.0	2.0
LnGrp Delay(d),s/veh	76.4	19.8	0.0	73.8	23.0	18.4	49.3	0.0	54.0	56.2	0.0	48.3
LnGrp LOS	E	B		E	C	B	D		D	E		D
Approach Vol, veh/h		1444			1332			637			184	
Approach Delay, s/veh		23.7			23.8			51.7			53.4	
Approach LOS		C			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	66.1		12.2	12.7	60.0		35.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	7.9	32.1		29.5	9.5	30.5		29.5				
Max Q Clear Time (g_c+I1), s	3.7	20.3		6.5	8.5	20.6		22.9				
Green Ext Time (p_c), s	0.0	8.4		0.3	0.0	6.4		1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			30.2									
HCM 2010 LOS			C									
Notes												



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	92	1782	1068	167	325	102		
Future Volume (veh/h)	92	1782	1068	167	325	102		
Number	5	2	6	16	7	14		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	95	1837	1101	164	335	46		
Adj No. of Lanes	1	2	3	1	2	1		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	122	1995	2286	648	1221	654		
Arrive On Green	0.07	0.52	0.40	0.40	0.34	0.34		
Sat Flow, veh/h	1810	3800	5700	1615	3619	1615		
Grp Volume(v), veh/h	95	1837	1101	164	335	46		
Grp Sat Flow(s),veh/h/ln	1810	1900	1900	1615	1810	1615		
Q Serve(g_s), s	4.1	35.6	11.5	5.4	5.4	1.4		
Cycle Q Clear(g_c), s	4.1	35.6	11.5	5.4	5.4	1.4		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	122	1995	2286	648	1221	654		
V/C Ratio(X)	0.78	0.92	0.48	0.25	0.27	0.07		
Avail Cap(c_a), veh/h	215	1995	2286	648	1221	654		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.80	0.80	1.00	1.00		
Uniform Delay (d), s/veh	36.7	17.5	17.8	16.0	19.3	14.6		
Incr Delay (d2), s/veh	3.9	8.5	0.6	0.8	0.6	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.2	20.7	6.1	2.6	2.8	1.7		
LnGrp Delay(d),s/veh	40.6	25.9	18.4	16.7	19.9	14.8		
LnGrp LOS	D	C	B	B	B	B		
Approach Vol, veh/h		1932	1265		381			
Approach Delay, s/veh		26.7	18.2		19.3			
Approach LOS		C	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		47.5		32.5	9.9	37.6		
Change Period (Y+Rc), s		5.5		5.5	4.5	5.5		
Max Green Setting (Gmax), s		42.0		27.0	9.5	28.0		
Max Q Clear Time (g_c+I1), s		37.6		7.4	6.1	13.5		
Green Ext Time (p_c), s		4.0		0.6	0.0	11.3		
Intersection Summary								
HCM 2010 Ctrl Delay			22.9					
HCM 2010 LOS			C					

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	28	635	787	17	14	64
Future Vol, veh/h	28	635	787	17	14	64
Conflicting Peds, #/hr	0	0	0	9	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	30	690	855	18	15	70

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	855	0	428
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	6.9
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	3.3
Pot Cap-1 Maneuver	793	-	581
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	793	-	581
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	793	-	-	-	479
HCM Lane V/C Ratio	0.038	-	-	-	0.177
HCM Control Delay (s)	9.7	0.3	-	-	14.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Notes





















~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
8: Graham Street & Cactus Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷	↷	↶	↷	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (veh/h)	72	1769	277	6	968	43	158	53	11	119	138	105
Future Volume (veh/h)	72	1769	277	6	968	43	158	53	11	119	138	105
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	78	1923	0	7	1052	43	172	58	7	129	150	36
Adj No. of Lanes	1	2	1	1	3	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	1173	3822	1624	13	1918	78	170	1059	126	85	1252	1572
Arrive On Green	0.65	1.00	0.00	0.01	0.35	0.35	0.05	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1810	3800	1615	1810	5435	222	3619	3335	395	1810	3800	1595
Grp Volume(v), veh/h	78	1923	0	7	735	360	172	33	32	129	150	36
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1857	1810	1900	1830	1810	1900	1595
Q Serve(g_s), s	1.3	0.0	0.0	0.3	13.2	13.2	4.0	1.0	1.0	4.0	2.3	0.2
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.3	13.2	13.2	4.0	1.0	1.0	4.0	2.3	0.2
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	1173	3822	1624	13	1341	655	170	604	581	85	1252	1572
V/C Ratio(X)	0.07	0.50	0.00	0.54	0.55	0.55	1.01	0.05	0.06	1.51	0.12	0.02
Avail Cap(c_a), veh/h	1173	3822	1624	85	1341	655	170	604	581	85	1252	1572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.00	0.49	0.49	0.49	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.5	0.0	0.0	42.1	22.1	22.1	40.5	20.1	20.1	40.5	19.9	8.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	6.2	0.8	1.6	71.6	0.2	0.2	282.7	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	0.0	0.2	7.0	7.0	3.7	0.6	0.6	8.7	1.3	0.4
LnGrp Delay(d),s/veh	5.5	0.2	0.0	48.2	22.9	23.7	112.1	20.3	20.3	323.2	20.1	8.0
LnGrp LOS	A	A		D	C	C	F	C	C	F	C	A
Approach Vol, veh/h		2001			1102			237			315	
Approach Delay, s/veh		0.4			23.3			86.9			142.8	
Approach LOS		A			C			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.1	91.8	8.5	33.5	61.4	35.5	9.5	32.5				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	5.5	* 5.5	5.5	* 5.5				
Max Green Setting (Gmax), s	1.0	30.0	4.0	27.0	4.0	* 30	4.0	* 27				
Max Q Clear Time (g_c+1), s	1.0	2.0	6.0	4.3	3.3	15.2	6.0	3.0				
Green Ext Time (p_c), s	0.0	11.6	0.0	0.7	0.0	3.7	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			25.2									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 9: Patterson Avenue & Harley Knox Boulevard 11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	484	47	3	646	5	40	4	6	8	4	12
Future Volume (veh/h)	6	484	47	3	646	5	40	4	6	8	4	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	7	550	53	3	734	6	45	5	7	9	5	14
Adj No. of Lanes	1	1	1	1	1	0	0	1	0	0	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	13	695	590	6	680	6	546	63	71	470	243	634
Arrive On Green	0.01	0.37	0.37	0.00	0.36	0.36	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1810	1900	1615	1810	1882	15	1137	160	182	964	618	1615
Grp Volume(v), veh/h	7	550	53	3	0	740	57	0	0	14	0	14
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	0	1897	1479	0	0	1583	0	1615
Q Serve(g_s), s	0.3	16.8	1.4	0.1	0.0	23.5	0.9	0.0	0.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.3	16.8	1.4	0.1	0.0	23.5	1.4	0.0	0.0	0.3	0.0	0.3
Prop In Lane	1.00		1.00	1.00		0.01	0.79		0.12	0.64		1.00
Lane Grp Cap(c), veh/h	13	695	590	6	0	686	680	0	0	712	0	634
V/C Ratio(X)	0.53	0.79	0.09	0.51	0.00	1.08	0.08	0.00	0.00	0.02	0.00	0.02
Avail Cap(c_a), veh/h	111	695	590	111	0	686	680	0	0	712	0	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	18.4	13.5	32.3	0.0	20.8	12.4	0.0	0.0	12.1	0.0	12.1
Incr Delay (d2), s/veh	11.7	5.7	0.0	23.2	0.0	57.6	0.2	0.0	0.0	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	9.8	0.6	0.1	0.0	23.2	0.7	0.0	0.0	0.2	0.0	0.2
LnGrp Delay(d),s/veh	43.8	24.1	13.5	55.6	0.0	78.3	12.6	0.0	0.0	12.1	0.0	12.2
LnGrp LOS	D	C	B	E		F	B			B		B
Approach Vol, veh/h		610			743			57				28
Approach Delay, s/veh		23.4			78.2			12.6				12.1
Approach LOS		C			E			B				B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		31.0	4.7	29.3		31.0	5.0	29.0				
Change Period (Y+Rc), s		5.5	4.5	5.5		5.5	4.5	5.5				
Max Green Setting (Gmax), s		22.0	4.0	23.5		22.0	4.0	23.5				
Max Q Clear Time (g_c+I1), s		3.4	2.1	18.8		2.3	2.3	25.5				
Green Ext Time (p_c), s		0.2	0.0	2.4		0.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			51.1									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
 10: Heacock Street & Cactus Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	933	823	13	560	67	523	465	19	109	533	43
Future Volume (veh/h)	82	933	823	13	560	67	523	465	19	109	533	43
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	87	993	861	14	596	65	556	495	16	116	567	39
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	111	2758	1172	24	2283	248	462	1229	40	146	977	67
Arrive On Green	0.06	0.73	0.73	0.01	0.68	0.68	0.21	0.56	0.56	0.08	0.28	0.28
Sat Flow, veh/h	1810	3800	1615	1810	3368	367	3619	3659	118	1810	3516	241
Grp Volume(v), veh/h	87	993	861	14	336	325	556	257	254	116	306	300
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1835	1810	1900	1877	1810	1900	1857
Q Serve(g_s), s	4.3	8.7	41.3	0.7	6.2	6.2	11.5	6.9	6.9	5.7	12.5	12.5
Cycle Q Clear(g_c), s	4.3	8.7	41.3	0.7	6.2	6.2	11.5	6.9	6.9	5.7	12.5	12.5
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.06	1.00		0.13
Lane Grp Cap(c), veh/h	111	2758	1172	24	1288	1244	462	638	631	146	528	516
V/C Ratio(X)	0.79	0.36	0.73	0.59	0.26	0.26	1.20	0.40	0.40	0.79	0.58	0.58
Avail Cap(c_a), veh/h	111	2758	1172	80	1288	1244	462	638	631	175	528	516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	4.6	15.6	44.2	5.7	5.7	35.4	14.6	14.6	40.6	28.0	28.0
Incr Delay (d2), s/veh	3.2	0.0	0.4	8.4	0.5	0.5	108.2	1.7	1.7	15.6	4.6	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	4.6	18.3	0.4	3.4	3.3	12.6	3.9	3.8	3.5	7.2	7.1
LnGrp Delay(d),s/veh	44.9	4.6	16.0	52.5	6.2	6.2	143.6	16.3	16.3	56.2	32.6	32.7
LnGrp LOS	D	A	B	D	A	A	F	B	B	E	C	C
Approach Vol, veh/h		1941			675			1067			722	
Approach Delay, s/veh		11.5			7.1			82.7			36.4	
Approach LOS		B			A			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.7	71.8	17.0	30.5	10.0	67.5	11.8	35.7				
Change Period (Y+Rc), s	4.5	5.5	5.5	* 5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	1.0	29.5	11.5	* 25	5.5	28.0	8.7	27.8				
Max Q Clear Time (g_c+1), s	1.0	43.3	13.5	14.5	6.3	8.2	7.7	8.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	9.1	0.0	2.6				

Intersection Summary

HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary Moreno Valley Logistics Center TIA (JN 09301)
 11: Heacock Street & Meyer Drive/John F. Kennedy Drive 11/11/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	159	221	20	100	144	75	786	50	302	912	25
Future Volume (veh/h)	26	159	221	20	100	144	75	786	50	302	912	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	28	169	121	21	106	56	80	836	35	321	970	15
Adj No. of Lanes	1	1	1	1	2	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	87	220	187	33	206	101	103	1068	437	636	2229	948
Arrive On Green	0.05	0.12	0.12	0.02	0.09	0.09	0.06	0.28	0.28	0.47	0.78	0.78
Sat Flow, veh/h	1810	1900	1615	1810	2390	1177	1810	3800	1555	1810	3800	1615
Grp Volume(v), veh/h	28	169	121	21	83	79	80	836	35	321	970	15
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1668	1810	1900	1555	1810	1900	1615
Q Serve(g_s), s	1.3	7.8	5.2	1.0	3.7	4.1	3.9	18.2	1.5	11.1	7.6	0.1
Cycle Q Clear(g_c), s	1.3	7.8	5.2	1.0	3.7	4.1	3.9	18.2	1.5	11.1	7.6	0.1
Prop In Lane	1.00		1.00	1.00		0.71	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	87	220	187	33	164	144	103	1068	437	636	2229	948
V/C Ratio(X)	0.32	0.77	0.65	0.64	0.51	0.55	0.77	0.78	0.08	0.50	0.44	0.02
Avail Cap(c_a), veh/h	87	528	449	101	549	482	183	1068	437	636	2229	948
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.61	0.61	0.61
Uniform Delay (d), s/veh	41.4	38.6	24.9	43.9	39.3	39.5	41.9	29.8	23.8	18.5	4.9	1.6
Incr Delay (d2), s/veh	0.8	2.1	1.4	7.5	0.9	1.2	4.6	5.7	0.4	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.2	2.4	0.6	2.0	1.9	2.1	10.4	0.7	5.6	4.0	0.1
LnGrp Delay(d),s/veh	42.2	40.7	26.3	51.4	40.2	40.7	46.4	35.5	24.1	18.7	5.3	1.6
LnGrp LOS	D	D	C	D	D	D	D	D	C	B	A	A
Approach Vol, veh/h		318			183			951			1306	
Approach Delay, s/veh		35.4			41.7			36.0			8.5	
Approach LOS		D			D			D			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	37.1	30.8	6.1	15.9	9.6	58.3	8.8	13.3				
Change Period (Y+Rc), s	5.5	* 5.5	4.5	5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	14.7	* 25	5.0	25.0	9.1	30.9	4.0	26.0				
Max Q Clear Time (g_c+I), s	11.5	20.2	3.0	9.8	5.9	9.6	3.3	6.1				
Green Ext Time (p_c), s	0.2	1.7	0.0	0.7	0.0	4.4	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			23.3									
HCM 2010 LOS			C									
Notes												

Intersection

Int Delay, s/veh 1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	1	60	713	7	124	972
Future Vol, veh/h	1	60	713	7	124	972
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	65	110	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	65	767	8	133	1045

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	2079	767	0	0	767	0
Stage 1	767	-	-	-	-	-
Stage 2	1312	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	59	405	-	-	856	-
Stage 1	462	-	-	-	-	-
Stage 2	254	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	50	405	-	-	856	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	462	-	-	-	-	-
Stage 2	215	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.6	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	50	405	856	-
HCM Lane V/C Ratio	-	-	0.022	0.159	0.156	-
HCM Control Delay (s)	-	-	78.6	15.6	10	-
HCM Lane LOS	-	-	F	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.6	0.6	-













Intersection

Intersection Delay, s/veh	53.4
Intersection LOS	F

Movement	WBU	WBL	WBR	NBU	NBT	NBR	SBU	SBL	SBT
Traffic Vol, veh/h	0	18	243	0	470	18	0	512	440
Future Vol, veh/h	0	18	243	0	470	18	0	512	440
Peak Hour Factor	0.92	0.86	0.86	0.92	0.86	0.86	0.92	0.86	0.86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	21	283	0	547	21	0	595	512
Number of Lanes	0	1	1	0	1	0	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	17.7	61.8	58.8
HCM LOS	C	F	F

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	96%	0%	0%	0%	100%
Vol Right, %	4%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	488	18	243	512	440
LT Vol	0	18	0	512	0
Through Vol	470	0	0	0	440
RT Vol	18	0	243	0	0
Lane Flow Rate	567	21	283	595	512
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.995	0.048	0.553	1	0.938
Departure Headway (Hd)	6.311	8.286	7.051	7.11	6.599
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	573	435	511	518	553
Service Time	4.399	5.988	4.787	4.81	4.299
HCM Lane V/C Ratio	0.99	0.048	0.554	1.149	0.926
HCM Control Delay	61.8	11.4	18.2	66.4	49.9
HCM Lane LOS	F	B	C	F	E
HCM 95th-tile Q	14.3	0.2	3.3	13.8	11.9

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	185	182	338	67	87	389		
Future Volume (veh/h)	185	182	338	67	87	389		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	228	225	417	83	107	480		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	307	274	642	545	491	1279		
Arrive On Green	0.17	0.17	0.34	0.34	0.27	0.67		
Sat Flow, veh/h	1810	1615	1900	1615	1810	1900		
Grp Volume(v), veh/h	228	225	417	83	107	480		
Grp Sat Flow(s),veh/h/ln	1810	1615	1900	1615	1810	1900		
Q Serve(g_s), s	8.4	9.4	13.0	2.5	3.2	7.7		
Cycle Q Clear(g_c), s	8.4	9.4	13.0	2.5	3.2	7.7		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	307	274	642	545	491	1279		
V/C Ratio(X)	0.74	0.82	0.65	0.15	0.22	0.38		
Avail Cap(c_a), veh/h	439	392	642	545	491	1279		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	27.6	28.0	19.7	16.2	19.7	5.0		
Incr Delay (d2), s/veh	1.9	6.1	5.0	0.6	1.0	0.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.3	4.7	7.7	1.2	1.7	4.3		
LnGrp Delay(d),s/veh	29.5	34.1	24.7	16.8	20.8	5.8		
LnGrp LOS	C	C	C	B	C	A		
Approach Vol, veh/h	453		500			587		
Approach Delay, s/veh	31.8		23.4			8.6		
Approach LOS	C		C			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	23.5	29.1				52.6		17.4
Change Period (Y+Rc), s	4.5	5.5				5.5		5.5
Max Green Setting (Gmax), s	19.0	18.5				42.0		17.0
Max Q Clear Time (g_c+I1), s	5.2	15.0				9.7		11.4
Green Ext Time (p_c), s	0.1	1.3				3.2		0.5
Intersection Summary								
HCM 2010 Ctrl Delay			20.2					
HCM 2010 LOS			C					

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	1	3	409	0	0	599
Future Vol, veh/h	1	3	409	0	0	599
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	0	140	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	4	576	0	0	844

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1420	288	0	0	576	0
Stage 1	576	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Critical Hdwy	6.6	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	140	715	-	-	1007	-
Stage 1	531	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	140	715	-	-	1007	-
Mov Cap-2 Maneuver	278	-	-	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	425	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	12.1		0		0
HCM LOS	B				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	278	715	1007	-
HCM Lane V/C Ratio	-	-	0.005	0.006	-	-
HCM Control Delay (s)	-	-	18	10.1	0	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-

HCM 2010 Signalized Intersection Summary
 18: Heacock Street & San Michele Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	11	6	5	11	0	256	0	71	3	331	212	2
Future Volume (veh/h)	11	6	5	11	0	256	0	71	3	331	212	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	16	9	7	16	0	366	0	101	0	473	303	3
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	25	456	387	25	456	388	2	634	539	445	1172	997
Arrive On Green	0.01	0.24	0.24	0.01	0.00	0.24	0.00	0.33	0.00	0.25	0.62	0.62
Sat Flow, veh/h	1810	1900	1612	1810	1900	1615	1810	1900	1615	1810	1900	1615
Grp Volume(v), veh/h	16	9	7	16	0	366	0	101	0	473	303	3
Grp Sat Flow(s),veh/h/ln	1810	1900	1612	1810	1900	1615	1810	1900	1615	1810	1900	1615
Q Serve(g_s), s	1.1	0.4	0.4	1.1	0.0	26.7	0.0	4.5	0.0	29.5	8.7	0.1
Cycle Q Clear(g_c), s	1.1	0.4	0.4	1.1	0.0	26.7	0.0	4.5	0.0	29.5	8.7	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	25	456	387	25	456	388	2	634	539	445	1172	997
V/C Ratio(X)	0.64	0.02	0.02	0.64	0.00	0.94	0.00	0.16	0.00	1.06	0.26	0.00
Avail Cap(c_a), veh/h	113	467	396	113	467	397	60	634	539	445	1172	997
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.00	0.80	0.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	34.8	34.8	58.9	0.0	44.8	0.0	28.1	0.0	45.3	10.5	8.8
Incr Delay (d2), s/veh	9.8	0.0	0.0	7.9	0.0	26.4	0.0	0.5	0.0	60.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.2	0.2	0.6	0.0	14.8	0.0	2.5	0.0	22.2	4.7	0.0
LnGrp Delay(d),s/veh	68.7	34.8	34.8	66.8	0.0	71.2	0.0	28.7	0.0	105.7	11.0	8.8
LnGrp LOS	E	C	C	E		E		C		F	B	A
Approach Vol, veh/h		32			382			101			779	
Approach Delay, s/veh		51.7			71.0			28.7			68.5	
Approach LOS		D			E			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	34.0	45.5	6.2	34.3	0.0	79.5	6.2	34.3				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	29.5	33.5	7.5	29.5	4.0	59.0	7.5	29.5				
Max Q Clear Time (g_c+Rt), s	11.5	6.5	3.1	2.4	0.0	10.7	3.1	28.7				
Green Ext Time (p_c), s	0.0	1.2	0.0	0.6	0.0	1.3	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			65.7									
HCM 2010 LOS			E									

Intersection

Int Delay, s/veh 7.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	0	70	2	8	200	10
Future Vol, veh/h	0	70	2	8	200	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	115	0	-	-	100	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	93	3	11	267	13

Major/Minor	Minor1	Minor2	Major1	Major2	Major3	Major4
Conflicting Flow All	555	8	0	0	13	0
Stage 1	8	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	496	1080	-	-	1619	-
Stage 1	1020	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	414	1080	-	-	1619	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	488	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	1080	1619	-
HCM Lane V/C Ratio	-	-	-	0.086	0.165	-
HCM Control Delay (s)	-	-	0	8.6	7.7	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0.3	0.6	-

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	505	0	0	530	0	1
Future Vol, veh/h	505	0	0	530	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	555	0	0	582	0	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	555
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1026
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	1
Mov Cap-1 Maneuver	-	-	1026
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	1026	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	10.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	11	21	131	0	0	0	344	4	0	3	2	15
Future Vol, veh/h	11	21	131	0	0	0	344	4	0	3	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	0	200	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	26	160	0	0	0	420	5	0	4	2	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	863	863	12	956	872	5	21	0	0	5	0	0
Stage 1	19	19	-	844	844	-	-	-	-	-	-	-
Stage 2	844	844	-	112	28	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	277	295	1074	240	291	1084	1608	-	-	1630	-	-
Stage 1	1005	884	-	361	382	-	-	-	-	-	-	-
Stage 2	361	382	-	898	876	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	221	217	1074	151	214	1084	1608	-	-	1630	-	-
Mov Cap-2 Maneuver	249	263	-	229	264	-	-	-	-	-	-	-
Stage 1	743	882	-	267	282	-	-	-	-	-	-	-
Stage 2	267	282	-	740	874	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	0	7.9	1.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1608	-	-	663	-	1630	-
HCM Lane V/C Ratio	0.261	-	-	0.3	-	0.002	-
HCM Control Delay (s)	8	-	-	12.7	0	7.2	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	1.1	-	-	1.3	-	0	-

Intersection

Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	0	0	0	0	7	0	24	0	0	324	62
Future Vol, veh/h	0	0	0	0	0	7	0	24	0	0	324	62
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	0	0	8	0	26	0	0	352	67
Number of Lanes	0	0	1	0	0	1	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	1	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	2	2
HCM Control Delay	0	8.2	12.8
HCM LOS	-	A	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%	100%	0%
Vol Thru, %	84%	100%	0%	0%	0%	100%
Vol Right, %	16%	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	386	0	7	24	31	102
LT Vol	0	0	7	0	31	0
Through Vol	324	0	0	0	0	102
RT Vol	62	0	0	24	0	0
Lane Flow Rate	420	0	8	26	34	111
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.532	0	0.013	0.037	0.051	0.151
Departure Headway (Hd)	4.568	5.903	6.339	5.128	5.399	4.896
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	776	0	567	701	666	736
Service Time	2.665	3.916	4.048	2.837	3.106	2.603
HCM Lane V/C Ratio	0.541	0	0.014	0.037	0.051	0.151
HCM Control Delay	12.8	8.9	9.1	8	8.4	8.5
HCM Lane LOS	B	N	A	A	A	A
HCM 95th-tile Q	3.2	0	0	0.1	0.2	0.5

Intersection				
Intersection Delay, s/veh				
Intersection LOS				
Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	31	102	0
Future Vol, veh/h	0	31	102	0
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	34	111	0
Number of Lanes	0	1	1	0
Approach		SB		
Opposing Approach		NB		
Opposing Lanes		1		
Conflicting Approach Left		WB		
Conflicting Lanes Left		2		
Conflicting Approach Right		EB		
Conflicting Lanes Right		1		
HCM Control Delay		8.5		
HCM LOS		A		
Lane				

Intersection

Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Traffic Vol, veh/h	0	8	79	10	0	4	18	55	0	6	51	4
Future Vol, veh/h	0	8	79	10	0	4	18	55	0	6	51	4
Peak Hour Factor	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85	0.92	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	9	93	12	0	5	21	65	0	7	60	5
Number of Lanes	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	3	2	3
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	3	3	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	3	3	3
HCM Control Delay	9.5	8.4	9
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	89%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	11%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	51	4	8	89	4	18	55	175	73	3
LT Vol	6	0	0	8	0	4	0	0	175	0	0
Through Vol	0	51	0	0	79	0	18	0	0	73	0
RT Vol	0	0	4	0	10	0	0	55	0	0	3
Lane Flow Rate	7	60	5	9	105	5	21	65	206	86	4
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.012	0.095	0.007	0.016	0.163	0.008	0.034	0.091	0.328	0.125	0.004
Departure Headway (Hd)	6.204	5.702	4.999	6.191	5.612	6.262	5.762	5.062	5.738	5.237	4.535
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	573	623	709	575	636	568	617	702	624	680	783
Service Time	3.984	3.482	2.779	3.959	3.38	4.036	3.536	2.836	3.503	3.001	2.299
HCM Lane V/C Ratio	0.012	0.096	0.007	0.016	0.165	0.009	0.034	0.093	0.33	0.126	0.005
HCM Control Delay	9.1	9.1	7.8	9.1	9.5	9.1	8.7	8.3	11.3	8.8	7.3
HCM Lane LOS	A	A	A	A	A	A	A	A	B	A	A
HCM 95th-tile Q	0	0.3	0	0	0.6	0	0.1	0.3	1.4	0.4	0

Intersection

Intersection Delay, s/veh
 Intersection LOS

























Movement	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	175	73	3
Future Vol, veh/h	0	175	73	3
Peak Hour Factor	0.92	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	206	86	4
Number of Lanes	0	1	1	1

Approach SB

Opposing Approach	NB
Opposing Lanes	3
Conflicting Approach Left	WB
Conflicting Lanes Left	3
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	10.5
HCM LOS	B

Lane

HCM 2010 Signalized Intersection Summary
 28: Indian Street & San Michele Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	143	411	147	235	45	323	54	115	103	131	24
Future Volume (veh/h)	11	143	411	147	235	45	323	54	115	103	131	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		1.00	1.00		0.49
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	17	217	553	223	356	45	489	82	89	156	198	24
Adj No. of Lanes	1	1	1	1	2	1	2	1	1	1	2	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	26	329	697	252	1132	478	966	797	677	184	739	81
Arrive On Green	0.00	0.06	0.06	0.14	0.30	0.30	0.27	0.42	0.42	0.10	0.25	0.25
Sat Flow, veh/h	1810	1900	1535	1810	3800	1604	3619	1900	1613	1810	3007	331
Grp Volume(v), veh/h	17	217	553	223	356	45	489	82	89	156	118	104
Grp Sat Flow(s),veh/h/ln	1810	1900	1535	1810	1900	1604	1810	1900	1613	1810	1900	1438
Q Serve(g_s), s	1.1	13.4	9.9	14.5	8.7	2.4	13.7	3.1	4.1	10.2	6.0	7.1
Cycle Q Clear(g_c), s	1.1	13.4	9.9	14.5	8.7	2.4	13.7	3.1	4.1	10.2	6.0	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	26	329	697	252	1132	478	966	797	677	184	467	354
V/C Ratio(X)	0.65	0.66	0.79	0.89	0.31	0.09	0.51	0.10	0.13	0.85	0.25	0.29
Avail Cap(c_a), veh/h	83	420	770	354	1409	595	966	797	677	264	467	354
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.50	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.4	53.1	12.7	50.7	32.6	30.4	37.3	21.1	21.4	53.0	36.4	36.8
Incr Delay (d2), s/veh	5.0	0.6	2.3	14.0	0.1	0.0	0.2	0.2	0.4	11.6	1.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	7.1	10.3	8.2	4.6	1.1	6.9	1.7	1.9	5.7	3.3	3.0
LnGrp Delay(d),s/veh	64.5	53.7	15.0	64.7	32.7	30.5	37.5	21.4	21.8	64.7	37.7	38.9
LnGrp LOS	E	D	B	E	C	C	D	C	C	E	D	D
Approach Vol, veh/h		787			624			660			378	
Approach Delay, s/veh		26.8			44.0			33.3			49.1	
Approach LOS		C			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	55.8	21.2	26.3	37.5	35.0	6.2	41.2				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	5.5	* 5.5	4.5	5.5				
Max Green Setting (Gmax), s	17.5	32.5	23.5	26.5	20.5	* 30	5.5	44.5				
Max Q Clear Time (g_c+I1), s	12.2	6.1	16.5	15.4	15.7	9.1	3.1	10.7				
Green Ext Time (p_c), s	0.1	1.2	0.2	2.7	0.5	0.7	0.0	3.4				
Intersection Summary												
HCM 2010 Ctrl Delay			36.4									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
 29: Indian Street & Nandina Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	38	210	42	19	14	56	430	49	50	546	46
Future Volume (veh/h)	7	38	210	42	19	14	56	430	49	50	546	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	10	54	179	60	27	1	80	614	66	71	780	60
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	183	263	223	77	127	108	103	1693	182	91	1727	133
Arrive On Green	0.10	0.14	0.14	0.04	0.07	0.07	0.06	0.50	0.50	0.05	0.50	0.50
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1810	3373	362	1810	3485	268
Grp Volume(v), veh/h	10	54	179	60	27	1	80	345	335	71	425	415
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1810	1900	1835	1810	1900	1853
Q Serve(g_s), s	0.4	1.9	8.1	2.5	1.0	0.0	3.3	8.3	8.3	2.9	10.9	10.9
Cycle Q Clear(g_c), s	0.4	1.9	8.1	2.5	1.0	0.0	3.3	8.3	8.3	2.9	10.9	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.14
Lane Grp Cap(c), veh/h	183	263	223	77	127	108	103	954	921	91	942	918
V/C Ratio(X)	0.05	0.21	0.80	0.78	0.21	0.01	0.78	0.36	0.36	0.78	0.45	0.45
Avail Cap(c_a), veh/h	183	608	517	97	608	517	109	954	921	109	942	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.64	0.64	0.64
Uniform Delay (d), s/veh	30.5	28.7	31.3	35.6	33.1	21.1	34.9	11.4	11.4	35.2	12.3	12.3
Incr Delay (d2), s/veh	0.0	0.1	2.5	21.0	0.3	0.0	24.9	1.1	1.1	14.1	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	3.7	1.7	0.5	0.0	2.4	4.6	4.5	1.8	5.9	5.8
LnGrp Delay(d),s/veh	30.5	28.8	33.9	56.5	33.5	21.1	59.8	12.4	12.5	49.2	13.3	13.3
LnGrp LOS	C	C	C	E	C	C	E	B	B	D	B	B
Approach Vol, veh/h		243			88			760			911	
Approach Delay, s/veh		32.6			49.0			17.4			16.1	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	43.2	7.7	15.9	8.8	42.7	13.1	10.5				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	4.5	5.5	5.5	* 5.5				
Max Green Setting (Gmax), s	1.5	22.5	4.0	24.0	4.5	22.5	4.0	* 24				
Max Q Clear Time (g_c+1), s	1.5	10.3	4.5	10.1	5.3	12.9	2.4	3.0				
Green Ext Time (p_c), s	0.0	4.4	0.0	0.4	0.0	3.9	0.1	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.1									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
 30: Indian Street & Harley Knox Boulevard



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	207	74	18	145	6	57	265	7	30	320	506
Future Volume (veh/h)	265	207	74	18	145	6	57	265	7	30	320	506
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	344	269	96	23	188	8	74	344	9	39	416	652
Adj No. of Lanes	1	1	1	1	2	0	2	2	1	2	2	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	1016	1700	1445	35	1238	52	130	1354	575	98	640	544
Arrive On Green	0.56	0.89	0.89	0.02	0.34	0.34	0.04	0.36	0.36	0.03	0.34	0.34
Sat Flow, veh/h	1810	1900	1615	1810	3618	153	3619	3800	1615	3619	1900	1615
Grp Volume(v), veh/h	344	269	96	23	98	98	74	344	9	39	416	652
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1871	1810	1900	1615	1810	1900	1615
Q Serve(g_s), s	9.8	1.6	2.8	1.2	3.4	3.4	1.9	6.1	0.3	1.0	17.7	32.0
Cycle Q Clear(g_c), s	9.8	1.6	2.8	1.2	3.4	3.4	1.9	6.1	0.3	1.0	17.7	32.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1016	1700	1445	35	650	640	130	1354	575	98	640	544
V/C Ratio(X)	0.34	0.16	0.07	0.66	0.15	0.15	0.57	0.25	0.02	0.40	0.65	1.20
Avail Cap(c_a), veh/h	1016	1700	1445	99	650	640	152	1354	575	152	640	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	0.6	10.7	46.3	21.7	21.7	45.1	21.6	19.8	45.5	26.7	31.5
Incr Delay (d2), s/veh	0.1	0.2	0.1	7.8	0.5	0.5	1.4	0.5	0.0	1.0	5.1	106.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.9	1.3	0.7	1.9	1.9	1.0	3.3	0.2	0.5	10.1	30.2
LnGrp Delay(d),s/veh	11.4	0.8	10.8	54.1	22.2	22.2	46.5	22.1	19.8	46.4	31.8	137.7
LnGrp LOS	B	A	B	D	C	C	D	C	B	D	C	F
Approach Vol, veh/h		709			219			427			1107	
Approach Delay, s/veh		7.3			25.5			26.3			94.7	
Approach LOS		A			C			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	91.9	8.9	37.5	60.3	38.0	7.1	39.3				
Change Period (Y+Rc), s	4.5	5.5	5.5	* 5.5	5.5	* 5.5	4.5	5.5				
Max Green Setting (Gmax), s	5.2	33.8	4.0	* 32	6.5	* 33	4.0	32.0				
Max Q Clear Time (g_c+1), s	13.2	4.8	3.9	34.0	11.8	5.4	3.0	8.1				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	0.6	0.0	1.3				

Intersection Summary

HCM 2010 Ctrl Delay	51.5
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
 31: Perris Boulevard & Cactus Avenue

























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (veh/h)	50	551	203	48	406	73	157	785	47	125	933	38
Future Volume (veh/h)	50	551	203	48	406	73	157	785	47	125	933	38
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	51	562	186	49	414	65	160	801	37	128	952	28
Adj No. of Lanes	1	2	0	1	2	0	1	3	0	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	65	916	302	533	1943	303	174	1560	72	161	1021	434
Arrive On Green	0.04	0.33	0.33	0.29	0.61	0.61	0.10	0.29	0.29	0.09	0.27	0.27
Sat Flow, veh/h	1810	2735	902	1810	3204	499	1810	5407	249	1810	3800	1615
Grp Volume(v), veh/h	51	390	358	49	244	235	160	562	276	128	952	28
Grp Sat Flow(s),veh/h/ln	1810	1900	1738	1810	1900	1804	1810	1900	1856	1810	1900	1615
Q Serve(g_s), s	2.2	13.7	13.8	1.6	4.6	4.7	7.0	9.9	9.9	5.5	19.6	1.2
Cycle Q Clear(g_c), s	2.2	13.7	13.8	1.6	4.6	4.7	7.0	9.9	9.9	5.5	19.6	1.2
Prop In Lane	1.00		0.52	1.00		0.28	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	65	637	582	533	1152	1093	174	1096	535	161	1021	434
V/C Ratio(X)	0.78	0.61	0.62	0.09	0.21	0.21	0.92	0.51	0.52	0.79	0.93	0.06
Avail Cap(c_a), veh/h	90	637	582	533	1152	1093	174	1096	535	188	1021	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	22.3	22.3	20.5	7.1	7.1	35.8	23.8	23.8	35.7	28.5	28.7
Incr Delay (d2), s/veh	17.0	4.4	4.8	0.0	0.4	0.4	44.7	1.7	3.5	15.4	15.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4	7.9	7.3	0.8	2.6	2.5	5.7	5.4	5.6	3.5	12.4	0.6
LnGrp Delay(d),s/veh	55.2	26.6	27.1	20.5	7.5	7.6	80.5	25.5	27.3	51.1	44.5	29.0
LnGrp LOS	E	C	C	C	A	A	F	C	C	D	D	C
Approach Vol, veh/h		799			528			998			1108	
Approach Delay, s/veh		28.7			8.8			34.8			44.8	
Approach LOS		C			A			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.6	32.3	13.2	27.0	7.4	54.6	11.6	28.6				
Change Period (Y+Rc), s	5.5	* 5.5	5.5	* 5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	1.0	* 27	7.7	* 22	4.0	26.8	8.3	20.9				
Max Q Clear Time (g_c+1), s	1.6	15.8	9.0	21.6	4.2	6.7	7.5	11.9				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.0	1.6	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay				32.6								
HCM 2010 LOS				C								
Notes												

HCM 2010 Signalized Intersection Summary
 32: Perris Boulevard & Krameria Avenue

Moreno Valley Logistics Center TIA (JN 09301)

11/11/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	97	70	156	55	87	38	845	174	128	775	22
Future Volume (veh/h)	55	97	70	156	55	87	38	845	174	128	775	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	60	107	61	171	60	-4	42	929	166	141	852	22
Adj No. of Lanes	0	1	1	0	2	1	1	3	0	1	3	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	75	134	180	218	229	195	148	2414	429	143	2825	73
Arrive On Green	0.11	0.11	0.11	0.12	0.12	0.00	0.08	0.51	0.51	0.08	0.51	0.51
Sat Flow, veh/h	671	1196	1611	1810	1900	1615	1810	4701	836	1810	5530	143
Grp Volume(v), veh/h	167	0	61	171	60	-4	42	750	345	141	585	289
Grp Sat Flow(s),veh/h/ln	1866	0	1611	1810	1900	1615	1810	1900	1738	1810	1900	1873
Q Serve(g_s), s	10.5	0.0	4.2	11.0	3.4	0.0	2.6	14.4	14.5	9.3	10.7	10.7
Cycle Q Clear(g_c), s	10.5	0.0	4.2	11.0	3.4	0.0	2.6	14.4	14.5	9.3	10.7	10.7
Prop In Lane	0.36		1.00	1.00		1.00	1.00		0.48	1.00		0.08
Lane Grp Cap(c), veh/h	209	0	180	218	229	195	148	1951	892	143	1941	957
V/C Ratio(X)	0.80	0.00	0.34	0.78	0.26	-0.02	0.28	0.38	0.39	0.98	0.30	0.30
Avail Cap(c_a), veh/h	467	0	403	452	475	404	148	1951	892	143	1941	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	0.0	49.2	51.2	47.9	0.0	51.8	17.7	17.7	55.2	17.0	17.0
Incr Delay (d2), s/veh	2.7	0.0	0.4	2.3	0.2	0.0	4.8	0.6	1.3	70.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	1.9	5.7	1.8	0.0	1.5	7.7	7.2	7.4	5.7	5.8
LnGrp Delay(d),s/veh	54.7	0.0	49.6	53.6	48.1	0.0	56.6	18.3	19.0	125.2	17.4	17.8
LnGrp LOS	D		D	D	D		E	B	B	F	B	B
Approach Vol, veh/h		228			227			1137			1015	
Approach Delay, s/veh		53.3			53.1			19.9			32.5	
Approach LOS		D			D			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	67.1		18.9	14.3	66.8		20.0				
Change Period (Y+Rc), s	4.5	5.5		5.5	4.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	29.5		30.0	9.8	29.2		30.0				
Max Q Clear Time (g_c+I1), s	11.3	16.5		12.5	4.6	12.7		13.0				
Green Ext Time (p_c), s	0.0	6.7		0.7	0.0	7.7		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			30.6									
HCM 2010 LOS			C									
Notes												

ATTACHMENT B
E+P (CONSTRUCTION TRAFFIC) CONDITIONS OFF-RAMP QUEUING ANALYSIS WORKSHEETS

Queues
1: I-215 SB Ramps & Cactus Av.



Lane Group	EBT	EBR	WBL	WBT	NBR	SBR
Lane Group Flow (vph)	351	38	369	1347	609	225
v/c Ratio	0.24	0.05	0.79	0.51	0.78	0.60
Control Delay	14.1	0.1	35.5	5.4	10.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	0.1	35.5	5.4	10.3	18.8
Queue Length 50th (ft)	42	0	120	83	0	36
Queue Length 95th (ft)	74	0	#242	154	69	87
Internal Link Dist (ft)	658			955		
Turn Bay Length (ft)						
Base Capacity (vph)	1468	807	504	2652	849	474
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.05	0.73	0.51	0.72	0.47

Intersection Summary

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

Queues



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	406	10	152	173	458	166
v/c Ratio	0.26	0.01	0.47	0.07	0.80	0.24
Control Delay	25.8	0.0	35.8	10.4	48.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	0.0	35.8	10.4	48.8	4.6
Queue Length 50th (ft)	103	0	48	25	325	0
Queue Length 95th (ft)	161	0	73	43	396	43
Internal Link Dist (ft)	844			267	1109	
Turn Bay Length (ft)		100	80			270
Base Capacity (vph)	1545	810	324	2336	870	960
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.01	0.47	0.07	0.53	0.17

Intersection Summary

Queues

3: I-215 NB Ramps/Old 215 Frontage Rd. & Cactus Av.

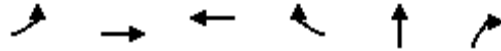


Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	906	1783	396	289	35	44
v/c Ratio	0.21	0.42	0.83	1.00	0.53	0.14	0.08
Control Delay	12.5	8.9	16.1	73.4	23.7	19.1	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	8.9	16.1	73.4	23.7	19.1	8.8
Queue Length 50th (ft)	4	92	257	~156	95	10	3
Queue Length 95th (ft)	19	127	349	#321	164	30	23
Internal Link Dist (ft)		240	1109		1221		592
Turn Bay Length (ft)	175			145		100	
Base Capacity (vph)	117	2133	2143	395	544	250	560
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.42	0.83	1.00	0.53	0.14	0.08

Intersection Summary

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

Queues



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	221	660	328	380	4	139
v/c Ratio	0.76	0.24	0.16	0.32	0.01	0.29
Control Delay	39.5	6.3	14.8	2.4	39.5	8.4
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0
Total Delay	39.6	6.9	14.8	2.4	39.5	8.4
Queue Length 50th (ft)	157	73	61	0	3	0
Queue Length 95th (ft)	212	128	96	49	13	54
Internal Link Dist (ft)		267	594		929	
Turn Bay Length (ft)	60			100		265
Base Capacity (vph)	577	2755	2059	1203	364	476
Starvation Cap Reductn	9	1620	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.58	0.16	0.32	0.01	0.29

Intersection Summary

Queues
1: I-215 SB Ramps & Cactus Av.



Lane Group	EBT	EBR	WBL	WBT	NBR	SBR
Lane Group Flow (vph)	679	132	534	377	775	195
v/c Ratio	0.56	0.19	1.10	0.15	1.02	0.25
Control Delay	19.0	4.2	98.0	4.5	50.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	4.2	98.0	4.5	50.5	0.7
Queue Length 50th (ft)	100	0	~227	22	~107	0
Queue Length 95th (ft)	144	30	#391	35	#325	0
Internal Link Dist (ft)	658		955			
Turn Bay Length (ft)						
Base Capacity (vph)	1216	697	484	2438	758	790
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.19	1.10	0.15	1.02	0.25

Intersection Summary

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

Queues



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	418	10	259	141	395	296
v/c Ratio	0.25	0.01	0.78	0.06	0.77	0.41
Control Delay	24.7	0.0	66.6	11.2	50.0	4.9
Queue Delay	0.0	0.0	8.3	0.0	0.0	0.0
Total Delay	24.7	0.0	74.9	11.2	50.0	4.9
Queue Length 50th (ft)	101	0	216	17	283	0
Queue Length 95th (ft)	172	0	304	47	351	58
Internal Link Dist (ft)	844			267	1109	
Turn Bay Length (ft)		100	80			270
Base Capacity (vph)	1647	857	359	2456	870	1031
Starvation Cap Reductn	0	0	68	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.01	0.89	0.06	0.45	0.29

Intersection Summary

Queues

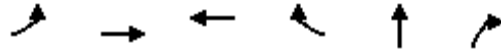
3: I-215 NB Ramps/Old 215 Frontage Rd. & Cactus Av.



Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	14	1409	1587	30	31	90	37
v/c Ratio	0.12	0.66	0.74	0.08	0.06	0.23	0.07
Control Delay	9.8	11.6	13.4	17.7	17.3	19.6	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	11.6	13.4	17.7	17.3	19.6	7.7
Queue Length 50th (ft)	2	171	212	9	9	27	1
Queue Length 95th (ft)	12	232	286	26	26	60	19
Internal Link Dist (ft)		240	1109		1221		592
Turn Bay Length (ft)	175			145		100	
Base Capacity (vph)	117	2138	2133	398	543	400	567
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.66	0.74	0.08	0.06	0.23	0.07

Intersection Summary

Queues



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	279	578	412	544	10	166
v/c Ratio	0.79	0.21	0.21	0.44	0.03	0.33
Control Delay	46.2	1.6	17.3	2.8	39.8	8.1
Queue Delay	0.1	0.3	0.0	0.0	0.0	0.0
Total Delay	46.3	1.9	17.3	2.8	39.8	8.1
Queue Length 50th (ft)	65	4	84	0	6	0
Queue Length 95th (ft)	78	22	128	57	22	56
Internal Link Dist (ft)		267	594		929	
Turn Bay Length (ft)	60			100		265
Base Capacity (vph)	577	2755	1941	1223	364	498
Starvation Cap Reductn	23	1457	0	0	0	0
Spillback Cap Reductn	0	0	123	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.45	0.23	0.44	0.03	0.33

Intersection Summary

ATTACHMENT C
E+P (CONSTRUCTION TRAFFIC) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS
WORKSHEETS

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **E+P (Construction) Conditions - Weekday PM Peak Hour**

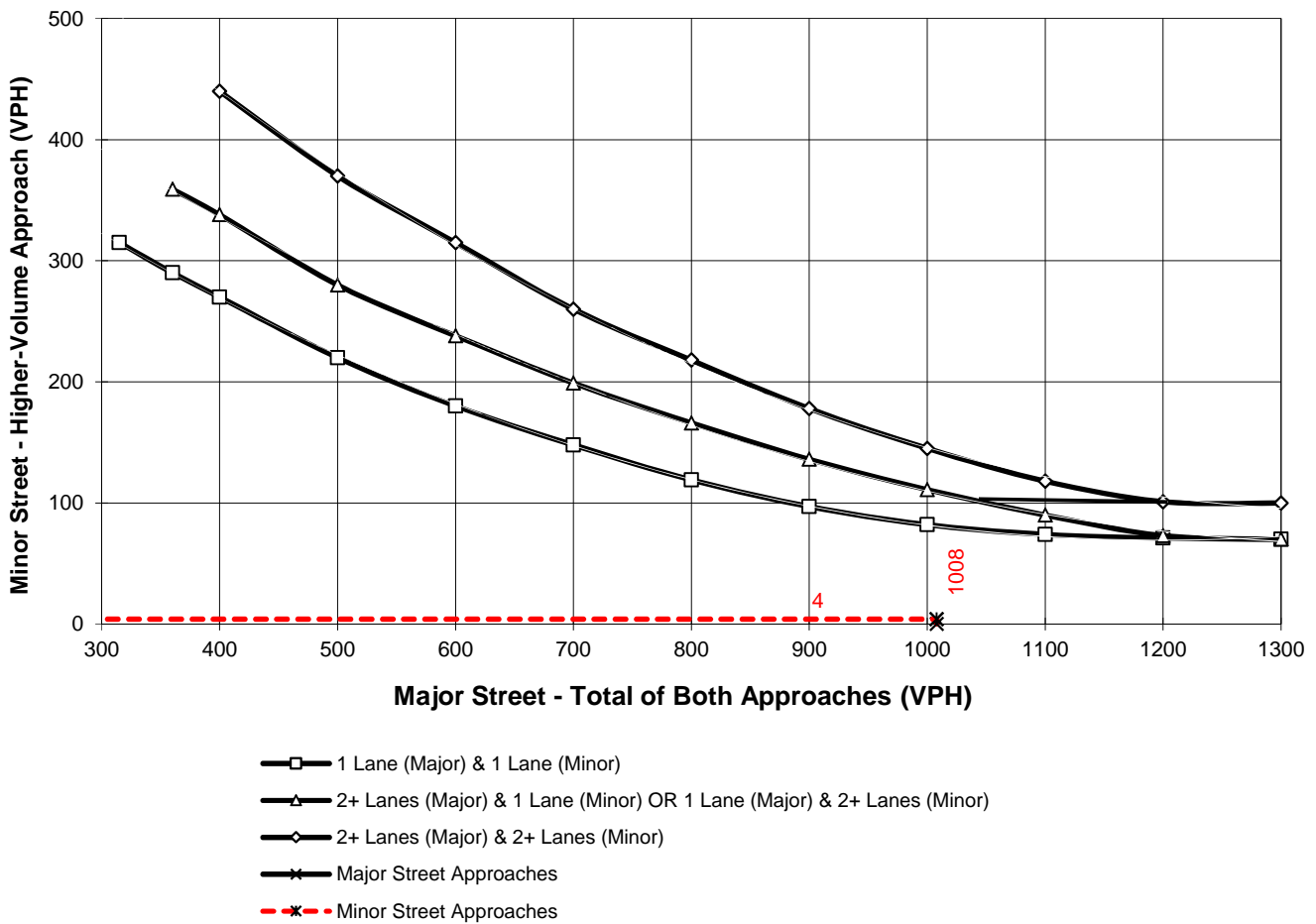
Major Street Name = **Heacock Street**

Total of Both Approaches (VPH) = **1008**
 Number of Approach Lanes Major Street = **1**

Minor Street Name = **Cardinal Avenue**

High Volume Approach (VPH) = **4**
 Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **E+P (Construction) Conditions - Weekday PM Peak Hour**

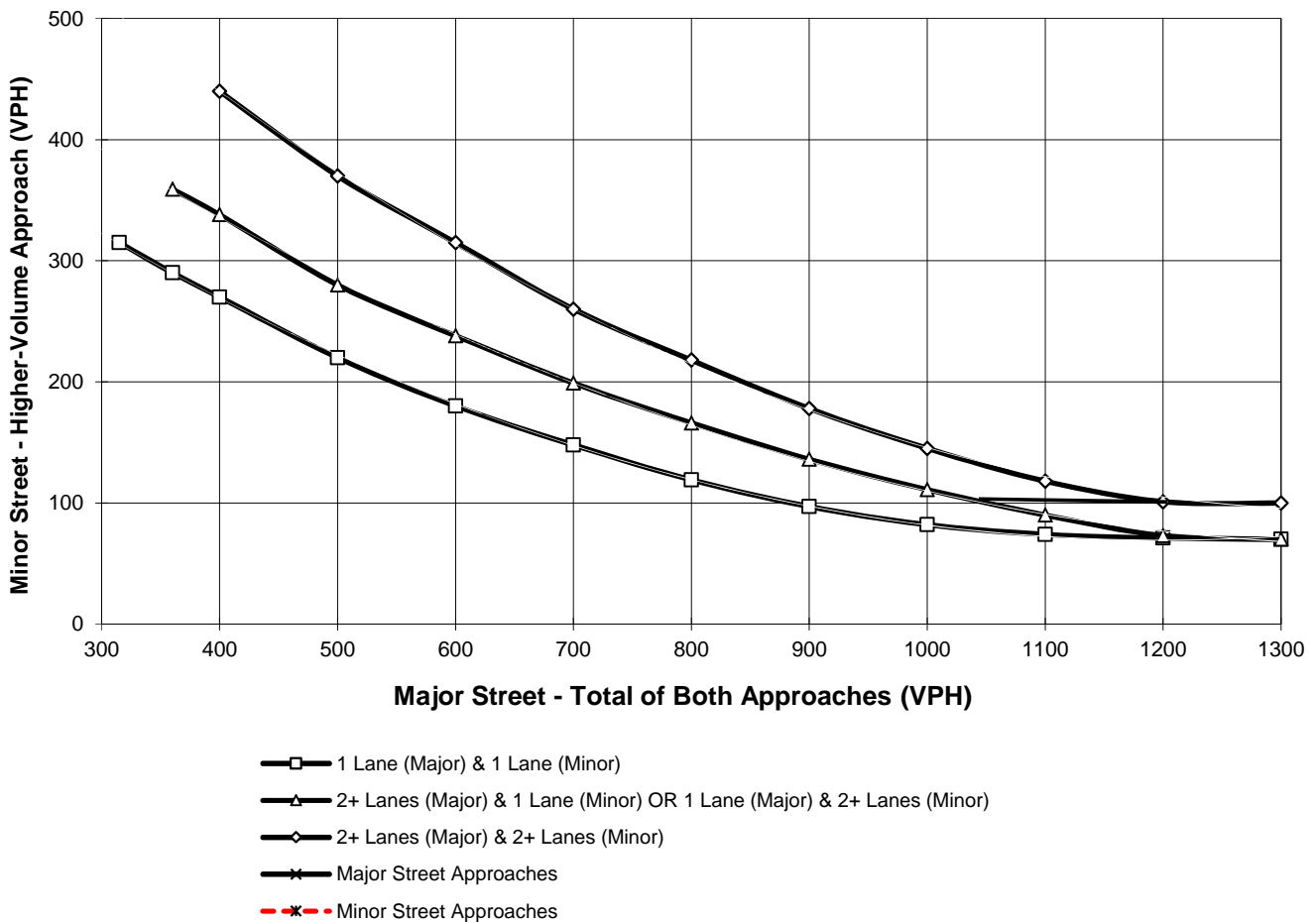
Major Street Name = **Heacock Street**

Total of Both Approaches (VPH) = **220**
 Number of Approach Lanes Major Street = **1**

Minor Street Name = **Nandina Avenue**

High Volume Approach (VPH) = **70**
 Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P (Construction) Conditions - Weekday AM Peak Hour**

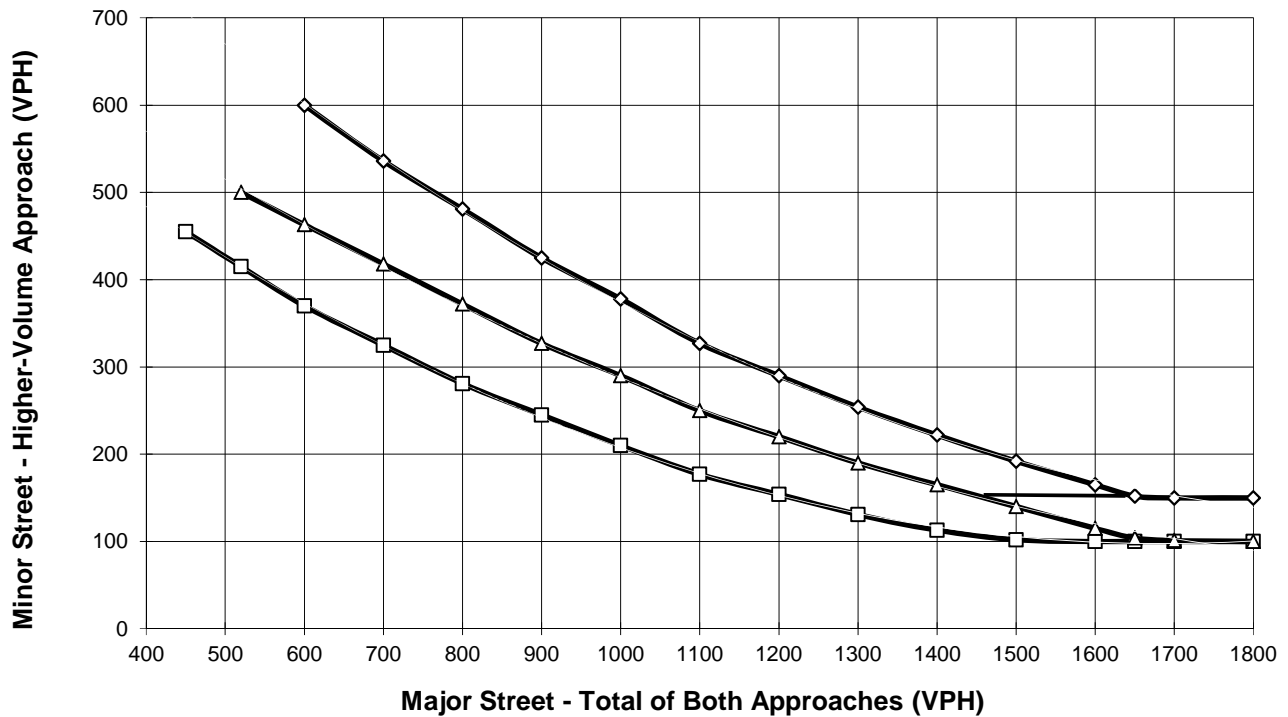
Major Street Name = **Cosmos Street**

Total of Both Approaches (VPH) = **368**
 Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Krameria Avenue (North)**

High Volume Approach (VPH) = **163**
 Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- x— Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **E+P (Construction) Conditions - Weekday AM Peak Hour**

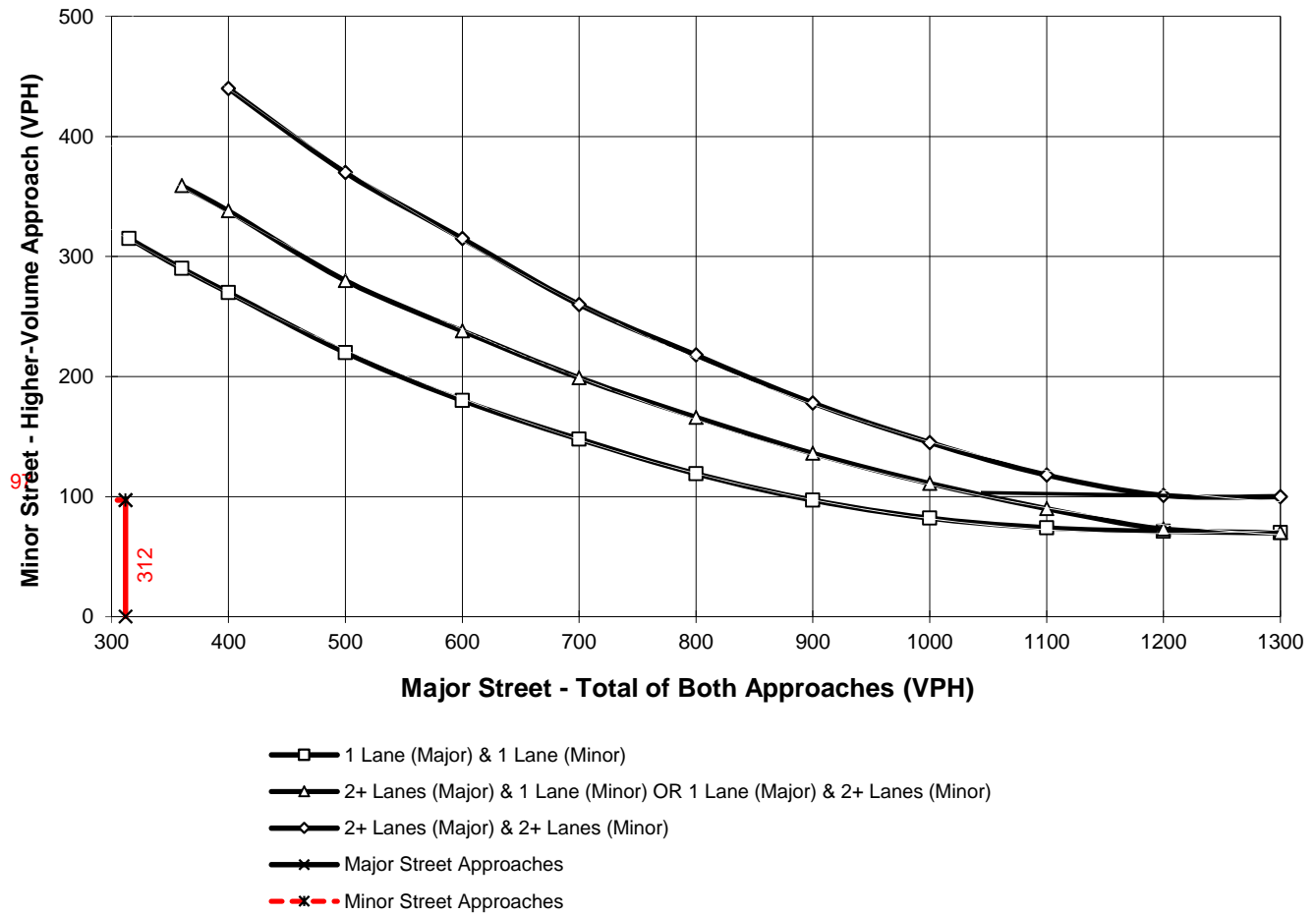
Major Street Name = **Indian Avenue**

Total of Both Approaches (VPH) = **312**
 Number of Approach Lanes Major Street = **1**

Minor Street Name = **Krameria Avenue**

High Volume Approach (VPH) = **97**
 Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

ATTACHMENT D
E+P (CONSTRUCTION TRAFFIC) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS
WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Cactus Avenue
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	5024	veh/h	Peak-Hour Factor, PHF 0.92
AADT		veh/day	%Trucks and Buses, P _T 5
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	4		f _{LW} mph
Total Ramp Density, TRD		ramps/mi	f _{LC} mph
FFS (measured)	70.0	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS 70.0 mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1399	pc/h/ln	Design LOS
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	69.5	mph	x f _p)
D = v _p / S	20.1	pc/mi/ln	S
LOS	C		D = v _p / S
			pc/mi/ln
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	South of Cactus Avenue
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	4706	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			4
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.980
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	4	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1304	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	69.9	x f _p)	
mph		S	
D = v _p / S	18.7	mph	
pc/mi/ln		D = v _p / S	
LOS	C	pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2557	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			4
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	
			0.980
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
945	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	70.0	x f _p)	
D = v _p / S	13.5	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	South of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2198	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			3
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.985
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	808	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	70.0	x f _p)	
D = v _p / S	11.5	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Northbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Cactus Avenue
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2748	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			8
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.962
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	4	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
777	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	70.0	x f _p)	
S	mph	S	mph
D = v _p / S	11.1	D = v _p / S	pc/mi/ln
LOS	B	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Northbound
Agency or Company	Urban Crossroads, Inc.	From/To	South of Cactus Avenue
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	3687	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	4	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1027	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	70.0	x f _p)	
S	mph	S	mph
D = v _p / S	14.7	D = v _p / S	pc/mi/ln
pc/mi/ln		Required Number of Lanes, N	
LOS	B		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Northbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	4100	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1523	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	68.8	x f _p)	
D = v _p / S	22.1	S	mph
LOS	C	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Northbound
Agency or Company	Urban Crossroads, Inc.	From/To	South of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	3741	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			4
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.980
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1383	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	69.6	x f _p)	
S	mph	S	mph
D = v _p / S	19.9	D = v _p / S	pc/mi/ln
19.9	pc/mi/ln	Required Number of Lanes, N	
LOS	C		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Cactus Avenue
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	5584	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	4	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1555	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	68.5	x f _p)	
mph		S	
D = v _p / S	22.7	mph	
pc/mi/ln		D = v _p / S	
LOS	C	pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	3870	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			5
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.976
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1437	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	69.3	x f _p)	
S	mph	S	mph
D = v _p / S	20.7	D = v _p / S	pc/mi/ln
pc/mi/ln		Required Number of Lanes, N	
LOS	C		
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Southbound
Agency or Company	Urban Crossroads, Inc.	From/To	South of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	3506	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			4
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.980
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		mph
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1296	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
x f _p)		x f _p)	
S	69.9	S	mph
D = v _p / S	18.5	D = v _p / S	pc/mi/ln
LOS	C	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Northbound
Agency or Company	Urban Crossroads, Inc.	From/To	North of Cactus Avenue
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2646	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			6
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.5
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.971
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	4	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	741 pc/h/ln	Design LOS	
S	70.0 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	10.6 pc/mi/ln	S	mph
LOS	A	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	CHS	Highway/Direction of Travel	I-215 Northbound
Agency or Company	Urban Crossroads, Inc.	From/To	South of Harley Knox Bl.
Date Performed	11/11/15	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction
Project Description <i>Moreno Valley Logistics Center TIA (JN 09301)</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2801	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.92
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			3
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.985
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	3	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
1030	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	70.0	x f _p)	
D = v _p / S	14.7	S	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

ATTACHMENT E
E+P (CONSTRUCTION TRAFFIC) CONDITIONS FREEWAY MERGE/DIVERGE RAMP JUNCTION
ANALYSIS WORKSHEETS

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Southbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Cactus Off-ramp Loop Upstream						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		4		Downstream Adj Ramp				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input type="checkbox"/> No <input checked="" type="checkbox"/> Off	Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = 1000 ft	Deceleration Lane Length L _D		0		L _{down} = ft				
V _u = 173 veh/h	Freeway Volume, V _F		4851		V _D = veh/h				
	Ramp Volume, V _R		510						
	Freeway Free-Flow Speed, S _{FF}		70.0						
	Ramp Free-Flow Speed, S _{FR}		15.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	4851	0.92	Level	5	0	0.976	1.00	5405	
Ramp	510	0.92	Level	10	0	0.952	1.00	582	
UpStream	173	0.92	Level	14	0	0.935	1.00	201	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.436 using Equation (Exhibit 13-7) V ₁₂ = 2685 pc/h V ₃ or V _{av34} 1360 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	5405	Exhibit 13-8	9600	No
					V _{FO} = V _F - V _R	4823	Exhibit 13-8	9600	No
					V _R	582	Exhibit 13-10	1800	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2685	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 27.3 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.740 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 49.3 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = 75.4 mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 59.7 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	CHS	Freeway/Dir of Travel	I-215 Southbound							
Agency or Company	Urban Crossroads, Inc.	Junction	Cactus Off-ramp Loop Downstream							
Date Performed	11/11/15	Jurisdiction	Caltrans							
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction							
Project Description Moreno Valley Logistics Center TIA (JN 09301)										
Inputs										
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off L _{up} = ft V _u = veh/h	Freeway Number of Lanes, N Ramp Number of Lanes, N Acceleration Lane Length, L _A Deceleration Lane Length L _D Freeway Volume, V _F Ramp Volume, V _R Freeway Free-Flow Speed, S _{FF} Ramp Free-Flow Speed, S _{FR}	4 1 0 4851 510 70.0 15.0					Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On <input type="checkbox"/> No <input type="checkbox"/> Off L _{down} = 1500 ft V _D = 365 veh/h			
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	4851	0.92	Level	5	0	0.976	1.00	5405		
Ramp	510	0.92	Level	10	0	0.952	1.00	582		
UpStream										
DownStream	365	0.92	Level	6	0	0.971	1.00	409		
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.436 using Equation (Exhibit 13-7) V ₁₂ = 2685 pc/h V ₃ or V _{av34} 1360 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	5405	Exhibit 13-8	9600	No	
					V _{FO} = V _F - V _R	4823	Exhibit 13-8	9600	No	
					V _R	582	Exhibit 13-10	1800	No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?		
V _{R12}		Exhibit 13-8			V ₁₂	2685	Exhibit 13-8	4400:All	No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 27.3 (pc/mi/ln) LOS = C (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.740 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 49.3 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = 75.4 mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 59.7 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS		Freeway/Dir of Travel	I-215 Southbound					
Agency or Company	Urban Crossroads, Inc.		Junction	Harley Knox Off-Ramp					
Date Performed	11/11/15		Jurisdiction	Caltrans					
Analysis Time Period	AM Peak Hour		Analysis Year	E+P Construction					
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			3			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D			195			L _{down} = 1420 ft	
V _u = veh/h		Freeway Volume, V _F			2557			V _D = 110 veh/h	
		Ramp Volume, V _R			469				
		Freeway Free-Flow Speed, S _{FF}			70.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2557	0.92	Level	4	0	0.980	1.00	2835	
Ramp	469	0.92	Level	18	0	0.917	1.00	556	
UpStream									
DownStream	110	0.92	Level	35	0	0.851	1.00	140	
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.664 using Equation (Exhibit 13-7) V ₁₂ = 2068 pc/h V ₃ or V _{av34} 767 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2835	Exhibit 13-8	7200	No
					V _{FO} = V _F - V _R	2279	Exhibit 13-8	7200	No
					V _R	556	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2068	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 20.3 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.348 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 60.3 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = 76.8 mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 64.0 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET								
General Information				Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Southbound					
Agency or Company	Urban Crossroads, Inc.	Junction	Harley Knox On-Ramp					
Date Performed	11/11/15	Jurisdiction	Caltrans					
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction					
Project Description Moreno Valley Logistics Center TIA (JN 09301)								
Inputs								
Upstream Adj Ramp	Freeway Number of Lanes, N	3	Downstream Adj Ramp					
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N	1	<input type="checkbox"/> Yes <input type="checkbox"/> On					
<input type="checkbox"/> No <input checked="" type="checkbox"/> Off	Acceleration Lane Length, L _A	260	<input checked="" type="checkbox"/> No <input type="checkbox"/> Off					
L _{up} = 1420 ft	Deceleration Lane Length L _D		L _{down} = ft					
V _u = 469 veh/h	Freeway Volume, V _F	2088	V _D = veh/h					
	Ramp Volume, V _R	110						
	Freeway Free-Flow Speed, S _{FF}	70.0						
	Ramp Free-Flow Speed, S _{FR}	45.0						
Conversion to pc/h Under Base Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p
Freeway	2088	0.92	Level	1	0	0.995	1.00	2281
Ramp	110	0.92	Level	35	0	0.851	1.00	140
UpStream	469	0.92	Level	18	0	0.917	1.00	556
DownStream								
Merge Areas				Diverge Areas				
Estimation of v ₁₂				Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = 584.93 (Equation 13-6 or 13-7) P _{FM} = 0.585 using Equation (Exhibit 13-6) V ₁₂ = 1334 pc/h V ₃ or V _{av34} = 947 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1334 pc/h (Equation 13-16, 13-18, or 13-19)				$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks				Capacity Checks				
	Actual	Capacity	LOS F?	Actual	Capacity	LOS F?		
V _{FO}	2421	Exhibit 13-8	No	V _F	Exhibit 13-8			
				V _{FO} = V _F - V _R	Exhibit 13-8			
				V _R	Exhibit 13-10			
Flow Entering Merge Influence Area				Flow Entering Diverge Influence Area				
	Actual	Max Desirable	Violation?	Actual	Max Desirable	Violation?		
V _{R12}	1474	Exhibit 13-8	4600:All	No	V ₁₂	Exhibit 13-8		
Level of Service Determination (if not F)				Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 15.3 (pc/mi/ln) LOS = B (Exhibit 13-2)				$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination				Speed Determination				
M _S = 0.315 (Exhibit 13-11)				D _s = (Exhibit 13-12)				
S _R = 61.2 mph (Exhibit 13-11)				S _R = mph (Exhibit 13-12)				
S ₀ = 68.4 mph (Exhibit 13-11)				S ₀ = mph (Exhibit 13-12)				
S = 63.8 mph (Exhibit 13-13)				S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Northbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Cactus On-ramp						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction						
Project Description					Moreno Valley Logistics Center TIA (JN 09301)				
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		3		Downstream Adj Ramp				
<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On	Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L _A		0		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = 1075 ft	Deceleration Lane Length L _D				L _{down} = ft				
V _u = 15 veh/h	Freeway Volume, V _F		2441		V _D = veh/h				
	Ramp Volume, V _R		307						
	Freeway Free-Flow Speed, S _{FF}		70.0						
	Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2441	0.92	Level	7	0	0.966	1.00	2746	
Ramp	307	0.92	Level	12	0	0.943	1.00	354	
UpStream	15	0.92	Level	87	0	0.697	1.00	23	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = 0.577 using Equation (Exhibit 13-6) V ₁₂ = 1586 pc/h V ₃ or V _{av34} = 1160 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1586 pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity	LOS F?			Actual	Capacity	LOS F?	
V _{FO}	3100	Exhibit 13-8	No		V _F	Exhibit 13-8			
					V _{FO} = V _F - V _R	Exhibit 13-8			
					V _R	Exhibit 13-10			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?	
V _{R12}	1940	Exhibit 13-8	4600:All		No	V ₁₂	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 20.4 (pc/mi/ln) LOS = C (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.348 (Exhibit 13-11)					D _s = (Exhibit 13-12)				
S _R = 60.3 mph (Exhibit 13-11)					S _R = mph (Exhibit 13-12)				
S ₀ = 67.6 mph (Exhibit 13-11)					S ₀ = mph (Exhibit 13-12)				
S = 62.8 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Northbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Harley Knox On-Ramp						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N	3		Downstream Adj Ramp				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N	1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input type="checkbox"/> No <input checked="" type="checkbox"/> Off		Acceleration Lane Length, L _A	300		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = 1395 ft		Deceleration Lane Length L _D			L _{down} = ft				
V _u = 110 veh/h		Freeway Volume, V _F	3631		V _D = veh/h				
		Ramp Volume, V _R	469						
		Freeway Free-Flow Speed, S _{FF}	70.0						
		Ramp Free-Flow Speed, S _{FR}	45.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	3631	0.92	Level	3	0	0.985	1.00	4006	
Ramp	469	0.92	Level	14	0	0.935	1.00	545	
UpStream	110	0.92	Level	18	0	0.917	1.00	130	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = 1058.51 (Equation 13-6 or 13-7) P _{FM} = 0.586 using Equation (Exhibit 13-6) V ₁₂ = 2347 pc/h V ₃ or V _{av34} = 1659 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 2347 pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	4551	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2892	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = 25.9 (pc/mi/ln) LOS = C (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.364 (Exhibit 13-11)					D _S = (Exhibit 13-12)				
S _R = 59.8 mph (Exhibit 13-11)					S _R = mph (Exhibit 13-12)				
S ₀ = 65.8 mph (Exhibit 13-11)					S ₀ = mph				
S = 61.9 mph (Exhibit 13-13)									

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Northbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Harley Knox Off-Ramp						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	AM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		3		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1		<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L _A				<input type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft	Deceleration Lane Length L _D		280		L _{down} = 1395 ft				
V _u = veh/h	Freeway Volume, V _F		3741		V _D = 469 veh/h				
	Ramp Volume, V _R		110						
	Freeway Free-Flow Speed, S _{FF}		70.0						
	Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	3741	0.92	Level	4	0	0.980	1.00	4148	
Ramp	110	0.92	Level	18	0	0.917	1.00	130	
UpStream									
DownStream	469	0.92	Level	14	0	0.935	1.00	545	
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.650 using Equation (Exhibit 13-7) V ₁₂ = 2743 pc/h V ₃ or V _{av34} 1405 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	4148	Exhibit 13-8	7200	No
					V _{FO} = V _F - V _R	4018	Exhibit 13-8	7200	No
					V _R	130	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2743	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 25.3 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.310 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 61.3 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = 75.2 mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 65.4 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Southbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Cactus Off-ramp Loop Upstream						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		4		Downstream Adj Ramp				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input type="checkbox"/> No <input checked="" type="checkbox"/> Off	Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = 1000 ft	Deceleration Lane Length L _D		0		L _{down} = ft				
V _u = 152 veh/h	Freeway Volume, V _F		5432		V _D = veh/h				
	Ramp Volume, V _R		682						
	Freeway Free-Flow Speed, S _{FF}		70.0						
	Ramp Free-Flow Speed, S _{FR}		15.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	5432	0.92	Level	5	0	0.976	1.00	6052	
Ramp	682	0.92	Level	6	0	0.971	1.00	764	
UpStream	152	0.92	Level	13	0	0.939	1.00	176	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.436 using Equation (Exhibit 13-7) V ₁₂ = 3070 pc/h V ₃ or V _{av34} 1491 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	6052	Exhibit 13-8	9600	No
					V _{FO} = V _F - V _R	5288	Exhibit 13-8	9600	No
					V _R	764	Exhibit 13-10	1800	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	3070	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 30.7 (pc/mi/ln) LOS = D (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.757 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 48.8 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = 74.9 mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 58.9 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Southbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Cactus Off-ramp Loop Downstream						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Freeway Number of Lanes, N	4	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On <input type="checkbox"/> No <input type="checkbox"/> Off	Freeway Volume, V _F	5432	L _{down} =	1500 ft	Freeway Free-Flow Speed, S _{FF}	70.0
L _{up} =	Ramp Number of Lanes, N	1	V _D =	Ramp Volume, V _R	682				
V _u =	Acceleration Lane Length, L _A								
	Deceleration Lane Length L _D	0							
	Freeway Free-Flow Speed, S _{FF}	70.0							
	Ramp Free-Flow Speed, S _{FR}	15.0							
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	5432	0.92	Level	5	0	0.976	1.00	6052	
Ramp	682	0.92	Level	6	0	0.971	1.00	764	
UpStream									
DownStream	619	0.92	Level	2	0	0.990	1.00	680	
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.436 using Equation (Exhibit 13-7) V ₁₂ = 3070 pc/h V ₃ or V _{av34} 1491 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	6052	Exhibit 13-8	9600	No
			V _{FO} = V _F - V _R	5288	Exhibit 13-8	9600	No		
			V _R	764	Exhibit 13-10	1800	No		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	3070	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 30.7 (pc/mi/ln) LOS = D (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S =	(Exhibit 13-11)				D _S =	0.757 (Exhibit 13-12)			
S _R =	mph (Exhibit 13-11)				S _R =	48.8 mph (Exhibit 13-12)			
S ₀ =	mph (Exhibit 13-11)				S ₀ =	74.9 mph (Exhibit 13-12)			
S =	mph (Exhibit 13-13)				S =	58.9 mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	CHS		Freeway/Dir of Travel	I-215 Southbound						
Agency or Company	Urban Crossroads, Inc.		Junction	Harley Knox Off-Ramp						
Date Performed	11/11/15		Jurisdiction	Caltrans						
Analysis Time Period	PM Peak Hour		Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N			3			Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			195			L _{down} = 1420 ft		
V _u = veh/h		Freeway Volume, V _F			3870			V _D = 183 veh/h		
		Ramp Volume, V _R			547					
		Freeway Free-Flow Speed, S _{FF}			70.0					
		Ramp Free-Flow Speed, S _{FR}			45.0					
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	3870	0.92	Level	5	0	0.976	1.00	4312		
Ramp	547	0.92	Level	14	0	0.935	1.00	636		
UpStream										
DownStream	183	0.92	Level	13	0	0.939	1.00	212		
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.623 using Equation (Exhibit 13-7) V ₁₂ = 2926 pc/h V ₃ or V _{av34} 1386 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	4312	Exhibit 13-8	7200	No	
					V _{FO} = V _F - V _R	3676	Exhibit 13-8	7200	No	
					V _R	636	Exhibit 13-10	2100	No	
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	2926	Exhibit 13-8	4400:All	No	
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 27.7 (pc/mi/ln) LOS = C (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.355 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 60.1 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = 75.3 mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 64.2 mph (Exhibit 13-13)					













RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Southbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Harley Knox On-Ramp						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		3		Downstream Adj Ramp				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input type="checkbox"/> No <input checked="" type="checkbox"/> Off	Acceleration Lane Length, L _A		260		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = 1420 ft	Deceleration Lane Length L _D				L _{down} = ft				
V _u = 547 veh/h	Freeway Volume, V _F		3323		V _D = veh/h				
	Ramp Volume, V _R		183						
	Freeway Free-Flow Speed, S _{FF}		70.0						
	Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	3323	0.92	Level	3	0	0.985	1.00	3666	
Ramp	183	0.92	Level	13	0	0.939	1.00	212	
UpStream	547	0.92	Level	14	0	0.935	1.00	636	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = 896.73 (Equation 13-6 or 13-7) P _{FM} = 0.585 using Equation (Exhibit 13-6) V ₁₂ = 2144 pc/h V ₃ or V _{av34} = 1522 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 2144 pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	3878	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2356	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 22.1 (pc/mi/ln) LOS = C (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.339 (Exhibit 13-11)					D _s = (Exhibit 13-12)				
S _R = 60.5 mph (Exhibit 13-11)					S _R = mph (Exhibit 13-12)				
S ₀ = 66.3 mph (Exhibit 13-11)					S ₀ = mph (Exhibit 13-12)				
S = 62.7 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS		Freeway/Dir of Travel	I-215 Northbound					
Agency or Company	Urban Crossroads, Inc.		Junction	Cactus On-ramp					
Date Performed	11/11/15		Jurisdiction	Caltrans					
Analysis Time Period	PM Peak Hour		Analysis Year	E+P Construction					
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On		Freeway Number of Lanes, N	3		Downstream Adj Ramp		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input type="checkbox"/> No <input type="checkbox"/> Off	<input type="checkbox"/> No <input type="checkbox"/> Off		Ramp Number of Lanes, N	1		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		<input type="checkbox"/> Yes <input type="checkbox"/> On	
$L_{up} =$	1075 ft		Acceleration Lane Length, L_A	0		$L_{down} =$		ft	
$V_u =$	113 veh/h		Deceleration Lane Length L_D			$V_D =$		veh/h	
			Freeway Volume, V_F	2068					
			Ramp Volume, V_R	578					
			Freeway Free-Flow Speed, S_{FF}	70.0					
			Ramp Free-Flow Speed, S_{FR}	45.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$	
Freeway	2068	0.92	Level	6	0	0.971	1.00	2315	
Ramp	578	0.92	Level	7	0	0.966	1.00	650	
UpStream	113	0.92	Level	16	0	0.926	1.00	133	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v_{12}					Estimation of v_{12}				
$L_{EQ} =$	$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7)				$L_{EQ} =$	$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13)			
$P_{FM} =$	0.577 using Equation (Exhibit 13-6)				$P_{FD} =$	using Equation (Exhibit 13-7)			
$V_{12} =$	1337 pc/h				$V_{12} =$	pc/h			
V_3 or V_{av34}	978 pc/h (Equation 13-14 or 13-17)				V_3 or V_{av34}	pc/h (Equation 13-14 or 13-17)			
Is V_3 or $V_{av34} > 2,700$ pc/h?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Is V_3 or $V_{av34} > 2,700$ pc/h?	<input type="checkbox"/> Yes <input type="checkbox"/> No			
Is V_3 or $V_{av34} > 1.5 * V_{12}/2$	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Is V_3 or $V_{av34} > 1.5 * V_{12}/2$	<input type="checkbox"/> Yes <input type="checkbox"/> No			
If Yes, $V_{12a} =$	1337 pc/h (Equation 13-16, 13-18, or 13-19)				If Yes, $V_{12a} =$	pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks				
	Actual	Capacity	LOS F?			Actual	Capacity	LOS F?	
V_{FO}	2965	Exhibit 13-8	No		V_F		Exhibit 13-8		
					$V_{FO} = V_F - V_R$		Exhibit 13-8		
					V_R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?	
V_{R12}	1987	Exhibit 13-8	4600:All		No	V_{12}	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R =$	$5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$				$D_R =$	$4.252 + 0.0086 V_{12} - 0.009 L_D$			
$D_R =$	20.7 (pc/mi/ln)				$D_R =$	(pc/mi/ln)			
LOS =	C (Exhibit 13-2)				LOS =	(Exhibit 13-2)			
Speed Determination					Speed Determination				
$M_S =$	0.349 (Exhibit 13-11)				$D_s =$	(Exhibit 13-12)			
$S_R =$	60.2 mph (Exhibit 13-11)				$S_R =$	mph (Exhibit 13-12)			
$S_0 =$	68.3 mph (Exhibit 13-11)				$S_0 =$	mph (Exhibit 13-12)			
$S =$	62.7 mph (Exhibit 13-13)				$S =$	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information				Site Information					
Analyst	CHS	Freeway/Dir of Travel	I-215 Northbound	Agency or Company	Urban Crossroads, Inc.	Junction	Harley Knox On-Ramp	Date Performed	11/11/15
Date Performed	11/11/15	Jurisdiction	Caltrans	Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction	Project Description	
Project Description		Moreno Valley Logistics Center TIA (JN 09301)							
Inputs									
Upstream Adj Ramp	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On	Freeway Number of Lanes, N	3	Downstream Adj Ramp	<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N	1	<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
	<input type="checkbox"/> No <input checked="" type="checkbox"/> Off	Acceleration Lane Length, L _A	300		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Deceleration Lane Length L _D			
L _{up} =	1395 ft	Freeway Volume, V _F	2664	L _{down} =	ft	Freeway Free-Flow Speed, S _{FF}	70.0	V _D =	veh/h
V _u =	137 veh/h	Ramp Volume, V _R	624			Ramp Free-Flow Speed, S _{FR}	45.0		
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2664	0.92	Level	2	0	0.990	1.00	2925	
Ramp	624	0.92	Level	11	0	0.948	1.00	716	
UpStream	137	0.92	Level	15	0	0.930	1.00	160	
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = 863.77 (Equation 13-6 or 13-7) P _{FM} = 0.586 using Equation (Exhibit 13-6) V ₁₂ = 1714 pc/h V ₃ or V _{av34} = 1211 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = 1714 pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity	LOS F?			Actual	Capacity	LOS F?	
V _{FO}	3641	Exhibit 13-8	No		V _F	Exhibit 13-8			
					V _{FO} = V _F - V _R	Exhibit 13-8			
					V _R	Exhibit 13-10			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?	
V _{R12}	2430	Exhibit 13-8	4600:All		No	V ₁₂	Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 22.2 (pc/mi/ln) LOS = C (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S =	0.338 (Exhibit 13-11)				D _s =	(Exhibit 13-12)			
S _R =	60.5 mph (Exhibit 13-11)				S _R =	mph (Exhibit 13-12)			
S ₀ =	67.4 mph (Exhibit 13-11)				S ₀ =	mph (Exhibit 13-12)			
S =	62.7 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	CHS	Freeway/Dir of Travel	I-215 Northbound						
Agency or Company	Urban Crossroads, Inc.	Junction	Harley Knox Off-Ramp						
Date Performed	11/11/15	Jurisdiction	Caltrans						
Analysis Time Period	PM Peak Hour	Analysis Year	E+P Construction						
Project Description Moreno Valley Logistics Center TIA (JN 09301)									
Inputs									
Upstream Adj Ramp <input type="checkbox"/> Yes <input type="checkbox"/> On <input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Freeway Number of Lanes, N	3	Downstream Adj Ramp <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> On <input type="checkbox"/> No <input type="checkbox"/> Off	Freeway Volume, V _F	2801	L _{down} =	1395 ft	Freeway Free-Flow Speed, S _{FF}	70.0
L _{up} =	Ramp Number of Lanes, N	1	V _D =	Ramp Volume, V _R	137				
ft	Acceleration Lane Length, L _A								
V _u =	Deceleration Lane Length L _D	280							
veh/h	Freeway Free-Flow Speed, S _{FF}	70.0							
	Ramp Free-Flow Speed, S _{FR}	45.0							
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2801	0.92	Level	3	0	0.985	1.00	3090	
Ramp	137	0.92	Level	15	0	0.930	1.00	160	
UpStream									
DownStream	624	0.92	Level	11	0	0.948	1.00	716	
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ L _{EQ} = (Equation 13-6 or 13-7) P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ L _{EQ} = (Equation 13-12 or 13-13) P _{FD} = 0.675 using Equation (Exhibit 13-7) V ₁₂ = 2139 pc/h V ₃ or V _{av34} 951 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	3090	Exhibit 13-8	7200	No
					V _{FO} = V _F - V _R	2930	Exhibit 13-8	7200	No
					V _R	160	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable	Violation?			Actual	Max Desirable	Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	2139	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 v_{12} - 0.009 L_D$ D _R = 20.1 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S =	(Exhibit 13-11)				D _S =	0.312 (Exhibit 13-12)			
S _R =	mph (Exhibit 13-11)				S _R =	61.3 mph (Exhibit 13-12)			
S ₀ =	mph (Exhibit 13-11)				S ₀ =	76.8 mph (Exhibit 13-12)			
S =	mph (Exhibit 13-13)				S =	65.3 mph (Exhibit 13-13)			

ATTACHMENT F
E+P (CONSTRUCTION TRAFFIC) CONDITIONS INTERSECTION OPERATIONS WORKSHEETS,
WITH IMPROVEMENTS

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	3	92	601	2	55	478		
Future Volume (veh/h)	3	92	601	2	55	478		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	3	97	633	2	58	503		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	138	123	747	635	561	1476		
Arrive On Green	0.08	0.08	0.39	0.39	0.31	0.78		
Sat Flow, veh/h	1810	1615	1900	1615	1810	1900		
Grp Volume(v), veh/h	3	97	633	2	58	503		
Grp Sat Flow(s),veh/h/ln	1810	1615	1900	1615	1810	1900		
Q Serve(g_s), s	0.1	4.4	22.7	0.1	1.7	6.0		
Cycle Q Clear(g_c), s	0.1	4.4	22.7	0.1	1.7	6.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	138	123	747	635	561	1476		
V/C Ratio(X)	0.02	0.79	0.85	0.00	0.10	0.34		
Avail Cap(c_a), veh/h	627	560	747	635	561	1476		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.84	0.84	1.00	1.00		
Uniform Delay (d), s/veh	32.0	34.0	20.7	13.8	18.4	2.5		
Incr Delay (d2), s/veh	0.0	4.1	9.8	0.0	0.0	0.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.1	2.1	13.8	0.0	0.9	3.3		
LnGrp Delay(d),s/veh	32.1	38.1	30.5	13.8	18.5	3.2		
LnGrp LOS	C	D	C	B	B	A		
Approach Vol, veh/h	100		635			561		
Approach Delay, s/veh	38.0		30.4			4.7		
Approach LOS	D		C			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	28.8	35.0				63.8		11.2
Change Period (Y+Rc), s	5.5	* 5.5				5.5		5.5
Max Green Setting (Gmax), s	4.0	* 30				38.0		26.0
Max Q Clear Time (g_c+I1), s	3.7	24.7				8.0		6.4
Green Ext Time (p_c), s	0.1	1.1				1.7		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			19.9					
HCM 2010 LOS			B					
Notes								







































Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	45	383	221	36	200	278		
Future Volume (veh/h)	45	383	221	36	200	278		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	48	407	235	38	213	296		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	491	438	668	108	250	1152		
Arrive On Green	0.27	0.27	0.42	0.42	0.14	0.61		
Sat Flow, veh/h	1810	1615	1596	258	1810	1900		
Grp Volume(v), veh/h	48	407	0	273	213	296		
Grp Sat Flow(s),veh/h/ln	1810	1615	0	1854	1810	1900		
Q Serve(g_s), s	1.8	22.1	0.0	9.0	10.3	6.5		
Cycle Q Clear(g_c), s	1.8	22.1	0.0	9.0	10.3	6.5		
Prop In Lane	1.00	1.00		0.14	1.00			
Lane Grp Cap(c), veh/h	491	438	0	775	250	1152		
V/C Ratio(X)	0.10	0.93	0.00	0.35	0.85	0.26		
Avail Cap(c_a), veh/h	553	493	0	775	392	1152		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.95	0.95		
Uniform Delay (d), s/veh	24.5	31.9	0.0	17.9	37.9	8.3		
Incr Delay (d2), s/veh	0.0	21.7	0.0	1.3	5.8	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.9	12.4	0.0	4.9	5.5	3.5		
LnGrp Delay(d),s/veh	24.6	53.6	0.0	19.1	43.6	8.8		
LnGrp LOS	C	D		B	D	A		
Approach Vol, veh/h	455		273			509		
Approach Delay, s/veh	50.5		19.1			23.4		
Approach LOS	D		B			C		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.9	43.1				60.1		29.9
Change Period (Y+Rc), s	4.5	5.5				5.5		5.5
Max Green Setting (Gmax), s	19.5	27.5				51.5		27.5
Max Q Clear Time (g_c+I1), s	12.3	11.0				8.5		24.1
Green Ext Time (p_c), s	0.2	1.6				1.8		0.3
Intersection Summary								
HCM 2010 Ctrl Delay			32.4					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 18: Heacock Street & San Michele Road

Moreno Valley Logistics Center TIA (JN 09301)

11/12/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	4	4	7	5	188	1	39	5	115	88	7
Future Volume (veh/h)	2	4	4	7	5	188	1	39	5	115	88	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	3	5	2	9	7	184	1	52	7	153	117	8
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	16	95	80	16	95	737	2	618	525	735	1406	1195
Arrive On Green	0.01	0.05	0.05	0.01	0.05	0.05	0.00	0.32	0.32	0.41	0.74	0.74
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1810	1900	1615	1810	1900	1615
Grp Volume(v), veh/h	3	5	2	9	7	184	1	52	7	153	117	8
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1810	1900	1615	1810	1900	1615
Q Serve(g_s), s	0.2	0.3	0.1	0.5	0.4	0.0	0.1	1.9	0.3	5.5	1.7	0.1
Cycle Q Clear(g_c), s	0.2	0.3	0.1	0.5	0.4	0.0	0.1	1.9	0.3	5.5	1.7	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	16	95	80	16	95	737	2	618	525	735	1406	1195
V/C Ratio(X)	0.19	0.05	0.02	0.56	0.07	0.25	0.50	0.08	0.01	0.21	0.08	0.01
Avail Cap(c_a), veh/h	100	551	468	72	523	1100	81	618	525	735	1406	1195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	45.3	36.1	49.4	45.3	16.7	49.9	23.4	22.9	19.2	3.6	1.1
Incr Delay (d2), s/veh	2.1	0.1	0.0	7.6	0.1	0.0	58.7	0.3	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.3	0.2	3.1	0.1	1.0	0.1	2.7	0.9	0.0
LnGrp Delay(d),s/veh	51.3	45.3	36.1	56.9	45.4	16.7	108.6	23.7	22.9	19.3	3.7	1.2
LnGrp LOS	D	D	D	E	D	B	F	C	C	B	A	A
Approach Vol, veh/h		10			200			60			278	
Approach Delay, s/veh		45.3			19.5			25.0			12.2	
Approach LOS		D			B			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	46.1	38.0	5.4	10.5	4.6	79.5	5.4	10.5				
Change Period (Y+Rc), s	5.5	* 5.5	4.5	5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	14.5	* 33	4.0	29.0	4.5	42.5	5.5	27.5				
Max Q Clear Time (g_c+I1), s	7.5	3.9	2.5	2.3	2.1	3.7	2.2	2.4				
Green Ext Time (p_c), s	0.3	0.1	0.0	0.0	0.0	0.5	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			16.9									
HCM 2010 LOS			B									
Notes												

								
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	1	60	713	7	124	972		
Future Volume (veh/h)	1	60	713	7	124	972		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	1	65	767	8	133	1045		
Adj No. of Lanes	1	1	1	1	1	1		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	92	82	965	820	500	1594		
Arrive On Green	0.05	0.05	0.51	0.51	0.28	0.84		
Sat Flow, veh/h	1810	1615	1900	1615	1810	1900		
Grp Volume(v), veh/h	1	65	767	8	133	1045		
Grp Sat Flow(s),veh/h/ln	1810	1615	1900	1615	1810	1900		
Q Serve(g_s), s	0.1	4.0	33.3	0.2	5.7	19.7		
Cycle Q Clear(g_c), s	0.1	4.0	33.3	0.2	5.7	19.7		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	92	82	965	820	500	1594		
V/C Ratio(X)	0.01	0.79	0.79	0.01	0.27	0.66		
Avail Cap(c_a), veh/h	470	420	965	820	500	1594		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.70	0.70	1.00	1.00		
Uniform Delay (d), s/veh	45.1	46.9	20.3	12.2	28.3	2.9		
Incr Delay (d2), s/veh	0.0	6.3	4.8	0.0	0.1	2.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	1.9	18.5	0.1	2.9	10.8		
LnGrp Delay(d),s/veh	45.1	53.2	25.1	12.2	28.4	5.0		
LnGrp LOS	D	D	C	B	C	A		
Approach Vol, veh/h	66		775			1178		
Approach Delay, s/veh	53.1		25.0			7.6		
Approach LOS	D		C			A		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	33.1	56.3				89.4		10.6
Change Period (Y+Rc), s	5.5	* 5.5				5.5		5.5
Max Green Setting (Gmax), s	7.7	* 51				63.0		26.0
Max Q Clear Time (g_c+I1), s	7.7	35.3				21.7		6.0
Green Ext Time (p_c), s	0.0	2.7				5.4		0.1
Intersection Summary								
HCM 2010 Ctrl Delay			15.8					
HCM 2010 LOS			B					
Notes								



























Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	18	243	470	18	512	440		
Future Volume (veh/h)	18	243	470	18	512	440		
Number	3	18	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900		
Adj Flow Rate, veh/h	21	283	547	21	595	512		
Adj No. of Lanes	1	1	1	0	1	1		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86		
Percent Heavy Veh, %	0	0	0	0	0	0		
Cap, veh/h	344	307	591	23	628	1364		
Arrive On Green	0.19	0.19	0.32	0.32	0.35	0.72		
Sat Flow, veh/h	1810	1615	1818	70	1810	1900		
Grp Volume(v), veh/h	21	283	0	568	595	512		
Grp Sat Flow(s),veh/h/ln	1810	1615	0	1888	1810	1900		
Q Serve(g_s), s	1.1	20.6	0.0	34.9	38.4	12.5		
Cycle Q Clear(g_c), s	1.1	20.6	0.0	34.9	38.4	12.5		
Prop In Lane	1.00	1.00		0.04	1.00			
Lane Grp Cap(c), veh/h	344	307	0	613	628	1364		
V/C Ratio(X)	0.06	0.92	0.00	0.93	0.95	0.38		
Avail Cap(c_a), veh/h	392	350	0	613	628	1364		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.70	0.70		
Uniform Delay (d), s/veh	39.8	47.7	0.0	39.1	38.1	6.5		
Incr Delay (d2), s/veh	0.0	25.7	0.0	22.1	18.3	0.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.6	11.4	0.0	21.9	22.4	6.8		
LnGrp Delay(d),s/veh	39.8	73.4	0.0	61.2	56.3	7.1		
LnGrp LOS	D	E		E	E	A		
Approach Vol, veh/h	304		568			1107		
Approach Delay, s/veh	71.1		61.2			33.6		
Approach LOS	E		E			C		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	47.2	44.5				91.7		28.3
Change Period (Y+Rc), s	5.5	* 5.5				5.5		5.5
Max Green Setting (Gmax), s	39.5	* 39				83.0		26.0
Max Q Clear Time (g_c+I1), s	40.4	36.9				14.5		22.6
Green Ext Time (p_c), s	0.0	0.5				2.6		0.2
Intersection Summary								
HCM 2010 Ctrl Delay			47.2					
HCM 2010 LOS			D					
Notes								

HCM 2010 Signalized Intersection Summary
 18: Heacock Street & San Michele Road

Moreno Valley Logistics Center TIA (JN 09301)

11/12/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	6	5	11	0	256	0	71	3	331	212	2
Future Volume (veh/h)	11	6	5	11	0	256	0	71	3	331	212	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	16	9	7	16	0	366	0	101	0	473	303	3
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	26	96	81	26	96	831	469	534	454	840	923	784
Arrive On Green	0.01	0.05	0.05	0.01	0.00	0.05	0.00	0.28	0.00	0.46	0.49	0.49
Sat Flow, veh/h	1810	1900	1599	1810	1900	1615	1810	1900	1615	1810	1900	1615
Grp Volume(v), veh/h	16	9	7	16	0	366	0	101	0	473	303	3
Grp Sat Flow(s),veh/h/ln	1810	1900	1599	1810	1900	1615	1810	1900	1615	1810	1900	1615
Q Serve(g_s), s	0.9	0.5	0.4	0.9	0.0	0.0	0.0	4.2	0.0	19.9	10.2	0.1
Cycle Q Clear(g_c), s	0.9	0.5	0.4	0.9	0.0	0.0	0.0	4.2	0.0	19.9	10.2	0.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	26	96	81	26	96	831	469	534	454	840	923	784
V/C Ratio(X)	0.62	0.09	0.09	0.62	0.00	0.44	0.00	0.19	0.00	0.56	0.33	0.00
Avail Cap(c_a), veh/h	86	470	396	69	452	1134	469	534	454	840	923	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.00	0.80	0.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	47.6	47.5	51.5	0.0	16.0	0.0	28.7	0.0	20.4	16.5	13.9
Incr Delay (d2), s/veh	8.8	0.2	0.2	7.1	0.0	0.1	0.0	0.8	0.0	0.5	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.3	0.2	0.5	0.0	6.5	0.0	2.3	0.0	10.0	5.6	0.0
LnGrp Delay(d),s/veh	60.3	47.7	47.7	58.6	0.0	16.1	0.0	29.5	0.0	21.0	17.5	13.9
LnGrp LOS	E	D	D	E		B		C		C	B	B
Approach Vol, veh/h		32			382			101			779	
Approach Delay, s/veh		54.0			17.9			29.5			19.6	
Approach LOS		D			B			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	53.2	35.0	6.0	10.8	31.7	56.5	6.0	10.8				
Change Period (Y+Rc), s	4.5	5.5	4.5	5.5	4.5	5.5	4.5	5.5				
Max Green Setting (Gmax), s	25.5	29.5	4.0	26.0	4.0	51.0	5.0	25.0				
Max Q Clear Time (g_c+I1), s	21.9	6.2	2.9	2.5	0.0	12.2	2.9	2.0				
Green Ext Time (p_c), s	0.3	0.2	0.0	0.0	0.0	0.9	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			20.7									
HCM 2010 LOS			C									