I-1 Traffic Letter Report

This page intentionally left blank.

LINSCOTT
LAW &
GREENSPAN
engineers

Engineers & Planners
Traffic
Transportation
Parking

Linscott, Law &
Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego , CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

December 16, 2019

Mr. Beau Brand
Greystar
444 South Cedros Avenue, Suite 172
Solana Beach, CA 92618

LLG Reference: 3-18-2897

Subject: **Belmont Village Encinitas-by-the-Sea Project, Traffic Letter Report**
City of Encinitas

Dear Mr. Brand,

Linscott, Law & Greenspan, Engineers (LLG) has completed the following traffic assessment letter to evaluate the potential traffic-related impacts associated with the proposed Belmont Village Encinitas-by-the-Sea Senior Living Project (the "Project") to be located at 3111 Manchester Avenue in the City of Encinitas. (See **Figure 1, Project Vicinity Map** & **Figure 2, Project Area Map**). *All figures are included at the end of this letter report.*

The Project proposes to construct 77 independent units, 68 assisted living units, 55 memory care units, and 16 workforce affordable units located between Interstate 5 and Mira Costa College Road, along Manchester Avenue. Access to the Project will be provided via the planned Direct Access Ramp (DAR) Access Road. No day-to-day access to Manchester Avenue will be provided. **Figure 3, Conceptual Site Plan** depicts the proposed Project.

LLG has prepared this traffic assessment letter to evaluate the Project's potential transportation impacts. Included in this letter report are the following:

- Study Area / Existing Roadway Conditions
- Trip Generation/ Distribution / Assignment
- Analysis Methodology & Significance Criteria
- Roadway / Intersection Capacity Analysis
- Summary & Conclusions

Philip M. Linscott, PE (1924-2000)
Jack M. Greenspan, PE (Ret.)
William A. Law, PE (Ret.)
Paul W. Wilkinson, PE
John P. Keating, PE
David S. Shender, PE
John A. Boarman, PE
Clare M. Look-Jaeger, PE
Richard E. Barretto, PE
Keil D. Maberry, PE

An LG2WB Company Founded 1966

STUDY AREA / ROADWAY CONDITIONS

Study Area

The site is located on the north side of Manchester Avenue, east of the proposed DAR Access Road in the City of Encinitas. The following locations were selected for analysis based on the anticipated Project traffic assignment.

Intersections

1. I-5 Southbound Ramps / Manchester Avenue
2. I-5 Northbound Ramps / Manchester Avenue
3. Manchester Avenue / DAR Access Road (Future)

Segments

Manchester Avenue

1. Interstate 5 Southbound Ramps to Interstate 5 Northbound Ramps
2. Interstate 5 Northbound Ramps to DAR Access Road (Future)
3. DAR Access Road (Future) to Mira Costa College Road

Existing Conditions & General Plan Roadway Classifications

The following is a description of the study area roadways:

Manchester Avenue is classified and currently built as a 4-lane major augmented roadway east of I-5, according to the *City of Encinitas General Plan Circulation Element* (last Amended January 2003). Curbside parking is not permitted along the roadway. The posted speed limit is 45 mph. Class II bike lanes are provided along the roadway.

The Manchester DAR Access Roadway is proposed to be constructed by Caltrans. This roadway will provide access to the project site and an adjacent park-and-ride lot and will eventually connect to the I-5 DAR.

Please see **Figure 4, Existing Conditions Diagram**, for an illustration of the study area road segments and intersections.

Existing Traffic Volumes

Existing AM and PM peak hour traffic volumes at the existing study intersection and 24-hour street segment counts were collected in April 2018 while schools were in session. **Table 1** shows the existing street segment Average Daily Traffic (ADT) volumes in the Project area. **Attachment A** contains copies of the existing traffic volumes. The study area was under construction when counts were conducted. Pre-construction ramp volumes were obtained from Caltrans and were utilized to adjust the April 2018 intersection volumes to establish the baseline existing volumes for analysis. See **Figure 5, Existing Traffic Volumes**.

TABLE 1
EXISTING TRAFFIC VOLUMES

Street Segments	ADT [a]	Source	Date
Manchester Street			
1. I-5 Southbound Ramps to I-5 Northbound Ramps	17,649	LLG	Estimated [b]
2. I-5 Northbound Ramps to Mira Costa College	28,565	LLG	Thursday, April 12, 2018

Footnotes:

a. Average Daily Traffic Volumes.

b. The ADT was estimated along this segment based on the ratio of the intersection peak hour volumes and ADT of the adjacent segment.

TRIP GENERATION

The Project proposes to construct 77 independent living units, 68 assisted living units, 55 memory care units, and 16 workforce affordable units. Trip generation for the proposed development was calculated using the SANDAG *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The SANDAG trip rate for "Retirement Community" was used for the independent living units, the trip rate for "Congregate Care" was used for the Assisted Living and Memory Care units, and the trip rate for "Apartment" was used for the workforce affordable units to calculate the trip generation. Using the rates, the Project is expected to generate 712 ADT with 37 AM peak hour trips (16 inbound / 21 outbound) and 57 PM peak hour trips (32 inbound / 25 outbound). **Table 2** shows the Project daily traffic generation.

TABLE 2
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs) [a]		Peak Hour	% of ADT [b]	In:Out	Volume		
		Rate [b]	Volume			Split [b]	In	Out	Total
Retirement Community (Independent Living)	77 Units	4 /unit	308	AM	5%	4:6	6	10	16
				PM	7%	6:4	13	9	22
Congregate Care (Assisted Living)	68 Units	2.5 /unit	170	AM	4%	6:4	4	3	7
				PM	8%	5:5	7	7	14
Congregate Care (Memory Care)	55 Units	2.5 /unit	138	AM	4%	6:4	4	2	6
				PM	8%	5:5	6	6	12
Workforce Units	16 Units	6 /unit	96	AM	20%	2:8	2	6	8
				PM	9%	7:3	6	3	9

Footnotes:

a. ADT = Average Daily Traffic.
b. Rates taken from the SANDAG *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

TRIP DISTRIBUTION/ TRIP ASSIGNMENT

Project trip distribution was based on a combination of observed traffic patterns from existing intersection counts, the location of nearby commercial land uses, the potential location of employees, and professional engineering judgment.

Please see **Figure 6, Project Traffic Distribution**.

Using this distribution, Project traffic was assigned to the proposed driveway and nearby street system. **Figure 7, Project Traffic Volumes** depicts the assigned Project volumes. **Figure 8, Near-Term Traffic Volumes** shows the Project traffic added to the existing area traffic.

If the DAR proposed on Manchester Avenue is constructed, 5% of Project traffic is assumed to utilize the DAR. **Figure 9, Project Traffic Volumes (w/ DAR)**, depicts the assigned Project volumes if the DAR is constructed.

The Project access is proposed via the future DAR Access Road, which does not currently exist. The completion of DAR Access Road, including the proposed signalized intersection at Manchester Avenue, is assumed in the Near-Term analyses. Additionally, there is currently ongoing construction at the Manchester Avenue interchange. The completion of these improvements is assumed in the Near-Term analyses. The assumed intersection configurations of the study intersections correspond with the lane configurations shown in Figure 10.

LONG-TERM CONDITIONS

The I-5 North Coast Corridor Project proposes the provision of approximately 26 miles of additional capacity on mainline Interstate 5 and HOV/managed lanes with direct access ramps (DARs). A DAR is proposed on Manchester Avenue. Since the DAR would affect traffic patterns within the study area, this study includes analysis scenarios without and with the Manchester DAR improvements.

Long-Term without the DAR Improvements

Figure 10, **Long-Term Conditions**, depicts the addition of the proposed DAR Access Road. **Figure 11**, **Long-Term (without DAR) Traffic Volumes**, shows the forecasted traffic volumes based on the I-5 North Coast Traffic Report and including traffic volumes generated by the proposed Westmont Residential Care Facility and the potential housing units proposed by the recently approved Encinitas Housing Element Update that are within the vicinity of the study area. **Attachment B** shows the locations of the housing units included in the analysis. **Figure 12**, **Long-Term without DAR + Project Traffic Volumes**, shows the buildout project traffic volumes added to the forecasted traffic volumes without the DAR.

Long-Term with the DAR Improvements

The I-5 North Coast Corridor Project identifies the "8+4 Buffer Alternative" as the preferred alternative, therefore it was used for analysis purposes of this study. Improvement include the conversion of a right turn only lane into a shared thru right at the intersection of Manchester Avenue & I-5 northbound ramps. **Figure 13**, **Long-Term (w/ DAR) Conditions**, depicts the long-term roadway geometry with the addition of the DAR. **Figure 14**, **Long-Term (with DAR) Traffic Volumes**, shows the forecasted traffic volumes with the DAR improvement conditions. **Figure 15**, **Long-Term + Project (with DAR) Traffic Volumes**, shows the buildout project traffic volumes added to the forecasted traffic volumes with the DAR improvement conditions.

ANALYSIS METHODOLOGY & SIGNIFICANCE CRITERIA

The following scenarios are analyzed in this report:

- Existing
- Near-Term
- Long-Term (without DAR) Conditions
- Long-Term (without DAR) + Project Conditions
- Long-Term (with DAR) Conditions
- Long-Term (with DAR) + Project Conditions

Level of Service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of an intersection. Level of Service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of Service designation is reported differently for signalized and unsignalized intersections.

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 19 of the *Highway Capacity Manual (HCM 6th Edition),* with the assistance of the *Synchro* (version 10) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapter 20 and Chapter 21 of the *HCM 6* with the assistance of the *Synchro 10* computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS.

Street segments were analyzed based upon the comparison of daily traffic volumes (ADT) to the City of Encinitas's published *Roadway Capacity Standards,* March 1989. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. **Attachment C** contains a copy of the City's roadway capacity standards.

Because the Project is not expected to add more than 20 peak hour trips to the I-5 on-ramps, ramp meter analysis is not warranted.

The City of Encinitas utilizes the published, regional SANTEC/ITE criteria for determining the significance of a project's traffic impacts. According to these criteria, a project is considered to have a significant impact if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds for roadway segments and intersections are defined in **Table 3**. If the project exceeds the thresholds in Table 3, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated.

TABLE 3
SANTEC/ITE
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

Level of Service with Project [b]	Allowable Increase Due to Project Impacts [a]	
	Roadway Segments *V/C*	**Intersections** *Delay (sec.)*
D [c], E, & F	0.02	2.0

Footnotes:

a. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. The project applicant shall then identify feasible improvements (within the Traffic Impact Study) that will restore/and maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note b), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating the project's direct significant and/or cumulatively considerable traffic impacts.

b. All LOS measurements are based upon Highway Capacity Manual procedures for peak-hour conditions. However, V/C ratios for roadway segments are estimated on an ADT/24-hour traffic volume basis (using Table 2 of the City's Traffic Impact Study Manual). The acceptable LOS for roadways, and intersections is generally "D" ("C" for undeveloped locations).

c. The City of Encinitas accepts LOS D operations, regardless of project increase in V/C, delay, etc.

ROADWAY / INTERSECTION CAPACITY ANALYSIS

Analysis of Existing and Near-Term Conditions

Intersection Analysis

Peak hour operations at study area intersections are shown to result in LOS C or better with the addition of Project traffic to the existing condition. No intersection impacts were calculated in the Near-Term analysis scenarios.

Table 4, shows the results of the Existing analysis. **Table 6,** shows the results of the Near-Term analysis. **Attachment D** contains the intersection analysis worksheets.

Street Segment Analysis

Based on the results of the street segment capacity analysis, Manchester Avenue is calculated to operate at acceptable better than LOS C for both without and with project scenarios. **Table 5** shows the results of the Existing analysis. **Table 7** shows the results of the Near-Term analysis. No roadway segment impacts were calculated in the existing analysis scenarios.

Analysis of Long-Term Conditions

Intersection Analysis

Peak hour operations at study area intersections are shown to result in LOS D or better for both without and with the addition of Project traffic to the long-term condition without the DAR. Peak hour operations at study area intersections are shown to result in LOS D or better for both without and with the addition of Project traffic to the long-term condition with the DAR. No intersection impacts were calculated in any of the long-term analysis scenarios.

Table 8, shows the results of the analysis. **Attachment D** contains the intersection analysis worksheets.

Street Segment Analysis

Based on the results of the street segment capacity analysis, Manchester Avenue is calculated to operate at LOS D with near-term conditions in both with and without project scenarios with the exception of the segment between the I-5 Southbound Ramps and the I-5 Northbound Ramps, which is calculated to operate at LOS F in both with and without project scenarios. Based on City of Encinitas's significance criteria, no significant impacts are identified on the segment of Manchester Avenue between the I-5 Southbound Ramps and the I-5 Northbound Ramps since the project traffic contribution is below the allowable threshold. In the scenario with the improvements to Manchester Avenue, the roadway is calculated to operate at better than LOS C in both with and without project scenarios. **Table 9**, following Table 8, shows the results of the analysis.

TABLE 4
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay [a]	LOS [b]
1. Manchester Ave / I-5 SB Ramps	AWSC[c]	AM	147.0	F
		PM	38.5	E
2. Manchester Ave / I-5 NB Ramps	Signal	AM	23.1	C
		PM	23.5	C
3. Manchester Ave / DAR Access Rd	Signal	AM	DNE	-
		PM	DNE	-

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service. See table at right for delay thresholds.
c. AWSC = all-way stop controlled

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 5
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Existing Capacity (LOS E) [a]	Existing		
		ADT [b]	LOS [c]	V/C [d]
Manchester Avenue				
1. I-5 Southbound Ramps to I-5 Northbound Ramps	20,000	17,649	D	0.882
2. I-5 Northbound Ramps to DAR Access Road (Future)	45,400	28,565	+C	0.629
3. DAR Access Road (Future) to Mira Costa College	45,400	28,565	+C	0.629

Footnotes:
a. Capacity based on City of Encinitas roadway capacity standards.
b. ADT = Average Daily Traffic Volumes.
c. LOS = Level of Service.
d. V/C = Volume-to-Capacity ratio.

General Notes
1. +C = Better than LOS C operations.

TABLE 6
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term	
			Delay[a]	LOS[b]
1. Manchester Ave / I-5 SB Ramps	Signal	AM	21.8	C
		PM	9.8	A
2. Manchester Ave / I-5 NB Ramps	Signal	AM	23.3	C
		PM	24.0	C
3. Manchester Ave / DAR Access Rd	Signal	AM	17.6	B
		PM	12.8	B

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service. See table at right for delay thresholds.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 7
NEAR-TERM STREET SEGMENT OPERATIONS

Street Segment	Near-Term Capacity (LOS E) [a]	Near-Term		
		ADT[b]	LOS[c]	V/C[d]
Manchester Avenue				
1. I-5 Southbound Ramps to I-5 Northbound Ramps	20,000	17,969	D	0.898
2. I-5 Northbound Ramps to DAR Access Road (Future)	45,400	29,170	+C	0.643
3. DAR Access Road (Future) to Mira Costa College	45,400	28,672	+C	0.632

Footnotes:
a. Capacity based on City of Encinitas roadway capacity standards.
b. ADT = Average Daily Traffic Volumes.
c. LOS = Level of Service.
d. V/C = Volume-to-Capacity ratio.

General Notes
1. +C = Better than LOS C operations.

LINSCOTT LAW & GREENSPAN engineers

TABLE 8
LONG-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Long-Term (without DAR)		Long-Term (without DAR) + Project		Δ [c] Delay	Sig?	Long-Term (with DAR)		Long-Term (with DAR) + Project		Δ Delay	Sig?
			Delay [a]	LOS [b]	Delay [a]	LOS			Delay	LOS	Delay	LOS		
1. Manchester Ave / I-5 SB Ramps	Signal	AM	31.8	C	31.9	C	0.1	No	46.0	D	46.1	D	0.1	No
		PM	18.3	B	18.4	B	0.1	No	14.0	B	14.1	B	0.1	No
2. Manchester Ave / I-5 NB Ramps	Signal	AM	33.6	C	34.4	C	0.8	No	26.7	C	27.1	C	0.4	No
		PM	49.0	D	51.2	D	2.2	No	36.5	D	37.6	D	1.1	No
3. Manchester Ave / DAR Access Rd	Signal	AM	19.6	B	21.4	C	1.8	No	23.1	C	24.4	C	1.3	No
		PM	19.4	B	22.7	C	3.3	No	17.1	B	17.7	B	0.6	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service. See table at right for delay thresholds.
c. Δ = Project-induced change in delay.

General Notes

1. Sig = Significant impact, yes or no.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

LINSCOTT LAW & GREENSPAN engineers

TABLE 9
LONG-TERM STREET SEGMENT OPERATIONS

Street Segment	Long-Term Capacity (LOS E) [a]	Long-Term (without DAR)			Long-Term (without DAR) + Project			Δ [e] V/C	Long-Term (with DAR)			Long-Term (with DAR) + Project			Δ V/C	Sig?
		ADT [b]	LOS [c]	V/C [d]	ADT	LOS	V/C		ADT	LOS	V/C	ADT	LOS	V/C		
Manchester Avenue																
1. I-5 Southbound Ramps to I-5 Northbound Ramps	20,000 / 45,400	22,740	F	1.137	23,060	F	1.153	0.016	20,260	+C	0.446	20,563	+C	0.453	0.007	No
2. I-5 Northbound Ramps to DAR Access Road (Future)	45,400	36,790	D	0.810	37,395	D	0.824	0.013	32,790	+C	0.722	33,395	+C	0.736	0.013	No
3. DAR Access Road (Future) to Mira Costa College	45,400	36,790	D	0.810	36,897	D	0.813	0.002	32,790	+C	0.722	32,897	+C	0.725	0.002	No

Footnotes:

a. Capacity based on City of Encinitas roadway capacity standards.
b. ADT = Average Daily Traffic Volumes.
c. LOS = Level of Service.
d. V/C = Volume-to-Capacity ratio.
e. Δ = Project-induced change in V/C.

General Notes

1. Sig = Significant impact, yes or no.
2. +C = Better than LOS C operations

ACCESS

The Project plans to provide two day-to-day access points, both along the DAR Access Road. The southern driveway should be a right-in/right-out only driveway. For the main driveway, based on the project volumes, it is recommended to provide a one-way stop control with a shared left-turn/right-turn lane on the driveway and one lane in each direction along the DAR Access Road. An emergency-only access driveway is proposed on Manchester Avenue and daily use will be prohibited at this driveway by bollards.

SUMMARY & CONCLUSIONS

Based on the peak hour intersection and daily street segment analyses and the established significance criteria, no significant impacts were determined. Therefore, mitigation measures are not necessary.

Sincerely,

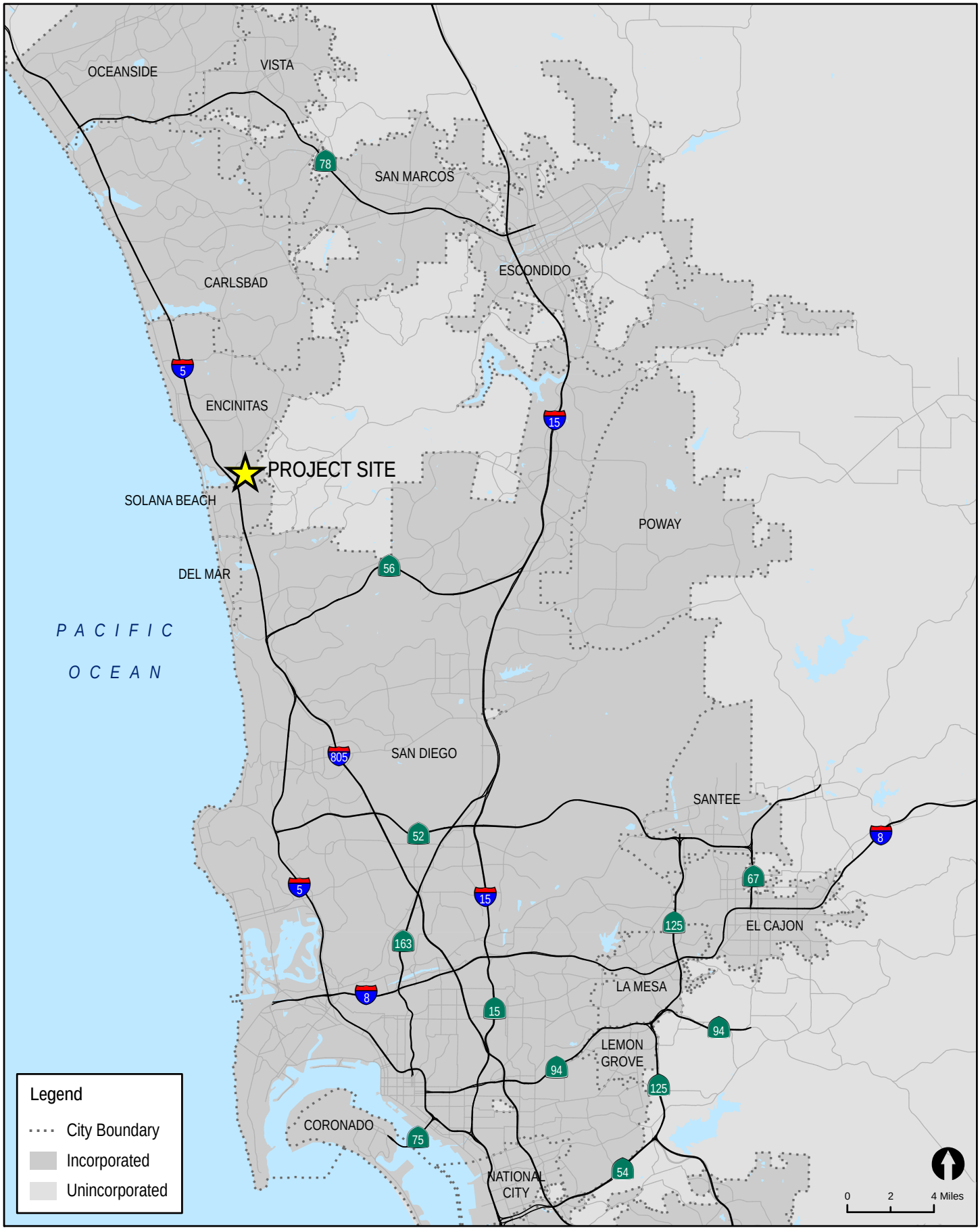
Linscott, Law & Greenspan, Engineers

John Boarman, PE
Principal

Charlene Sadiarin, PE
Transportation Engineer II

Figures:
1: Project Vicinity Map
2: Project Area Map
3. Conceptual Site Plan
4: Existing Conditions Diagram
5: Existing Traffic Volumes
6: Project Traffic Distribution
7: Project Traffic Volumes (w/o DAR)
8: Near-Term Traffic Volumes
9: Project Traffic Volumes (w/ DAR)
10: Long-Term (without DAR) Conditions
11: Long-Term (without DAR) Traffic Volumes
12: Long-Term (without DAR) + Projects Traffic Volumes
13: Long-Term (with DAR) Conditions
14: Long-Term (with DAR) Traffic Volumes
15: Long-Term (with DAR) + Project Traffic Volumes

Attachments:
A: Intersection and Segment Manual Count Sheets
B: City of Encinitas Housing Element Update Potential Rezoning Sites
C: City of Encinitas Roadway Capacity Standards
D: Intersection Analysis Worksheets



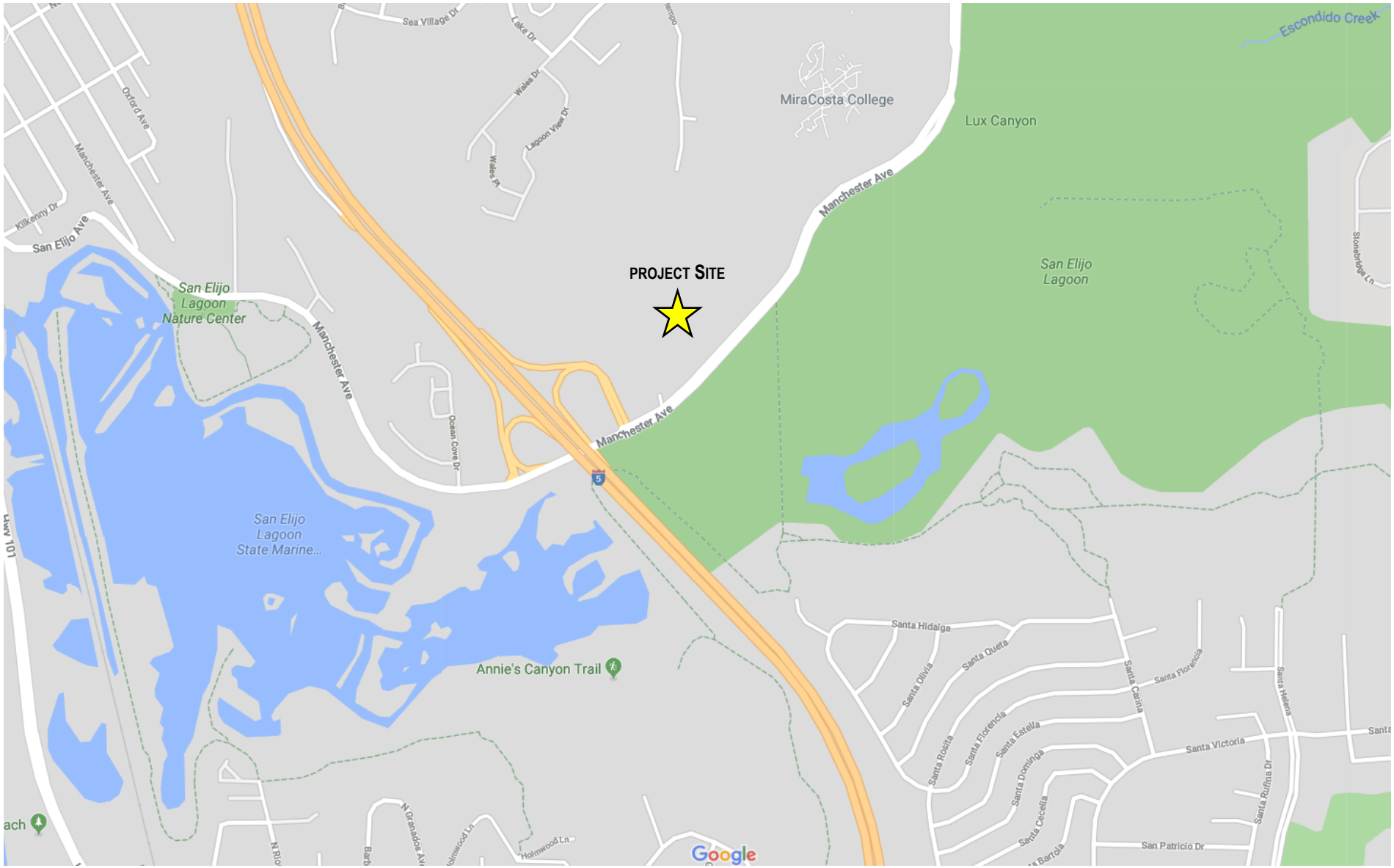
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures
Date: 04/30/18

Figure 1

Vicinity Map

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



Source: Urban Resource

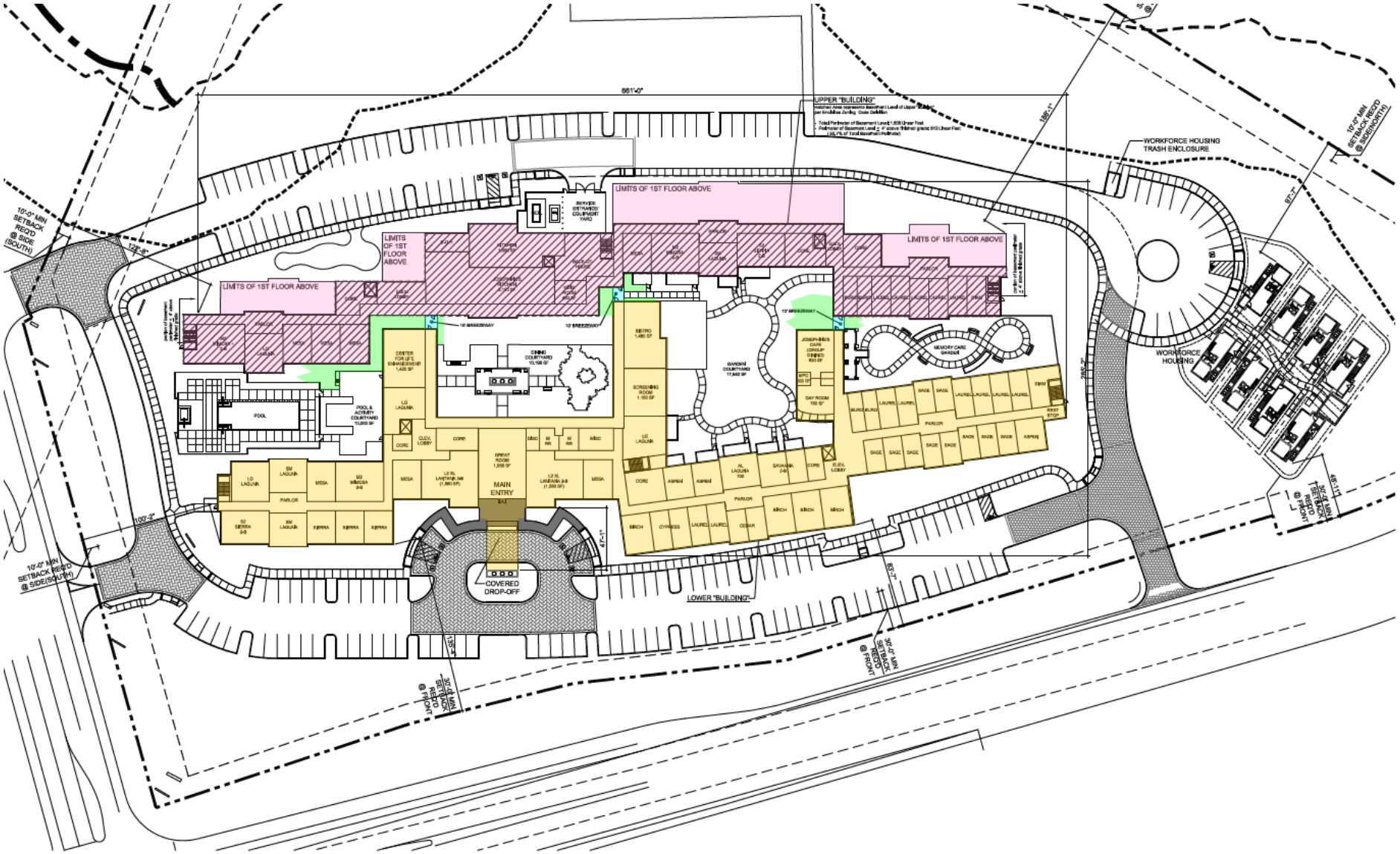
N:\2897\Figures

Figure 2

Project Area Map

BELMONT VILLAGE ENCINITAS-BY-THE-SEA

LINSCOTT LAW & GREENSPAN engineers



Source: Van Tilburg, Banvard & Soderbergh, AIA

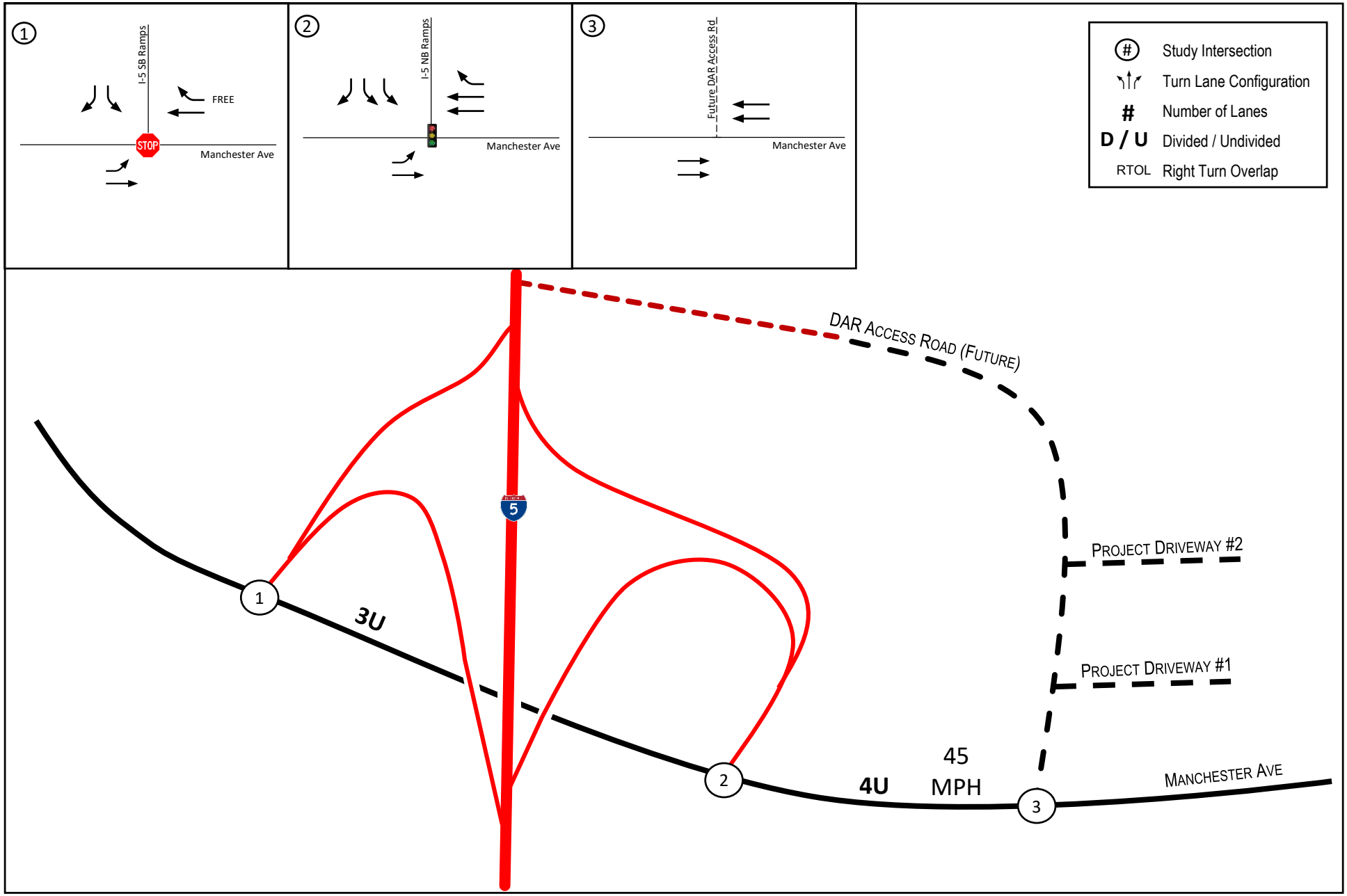
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 3

Site Plan

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



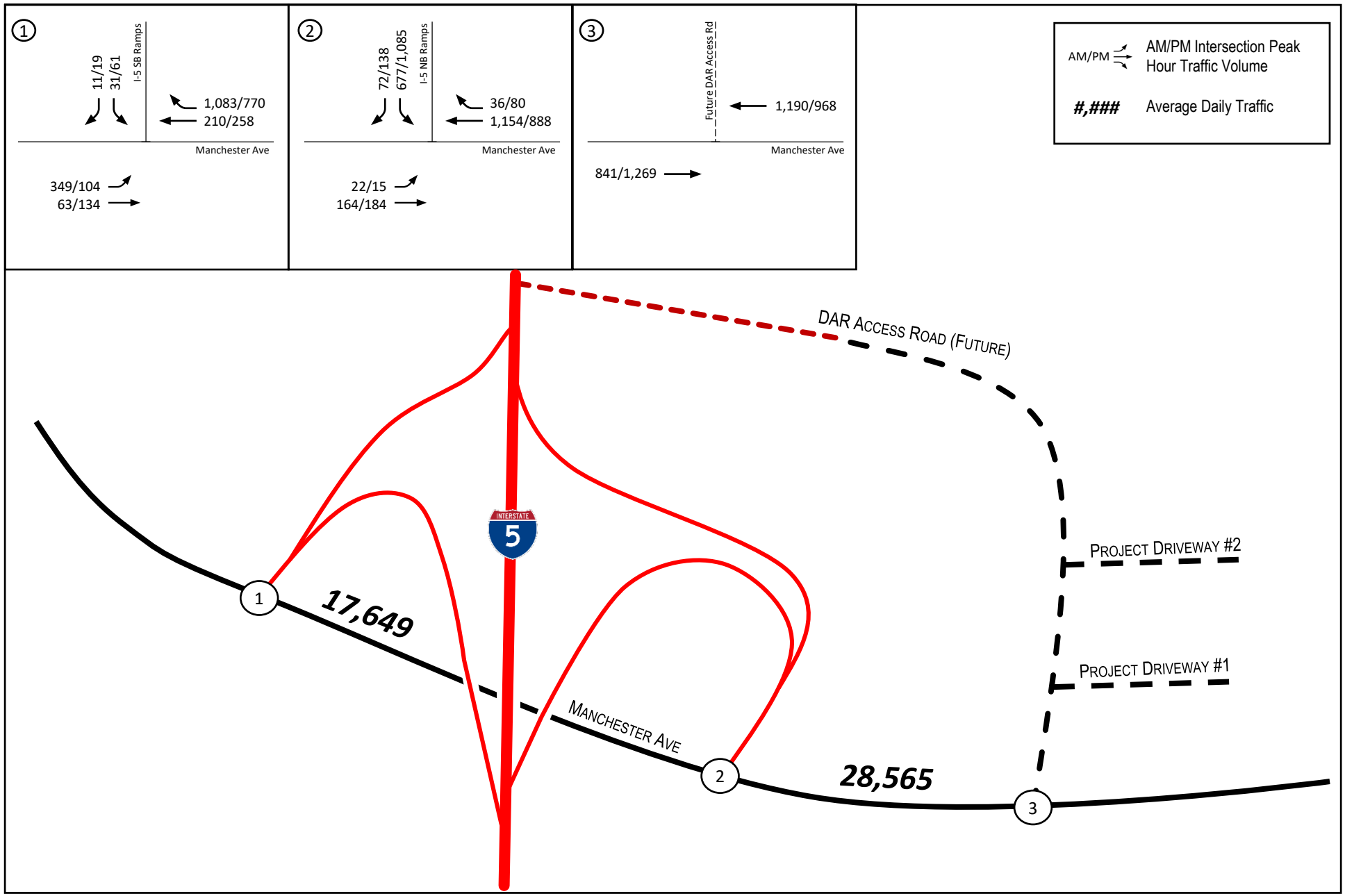
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 4

Existing Conditions

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



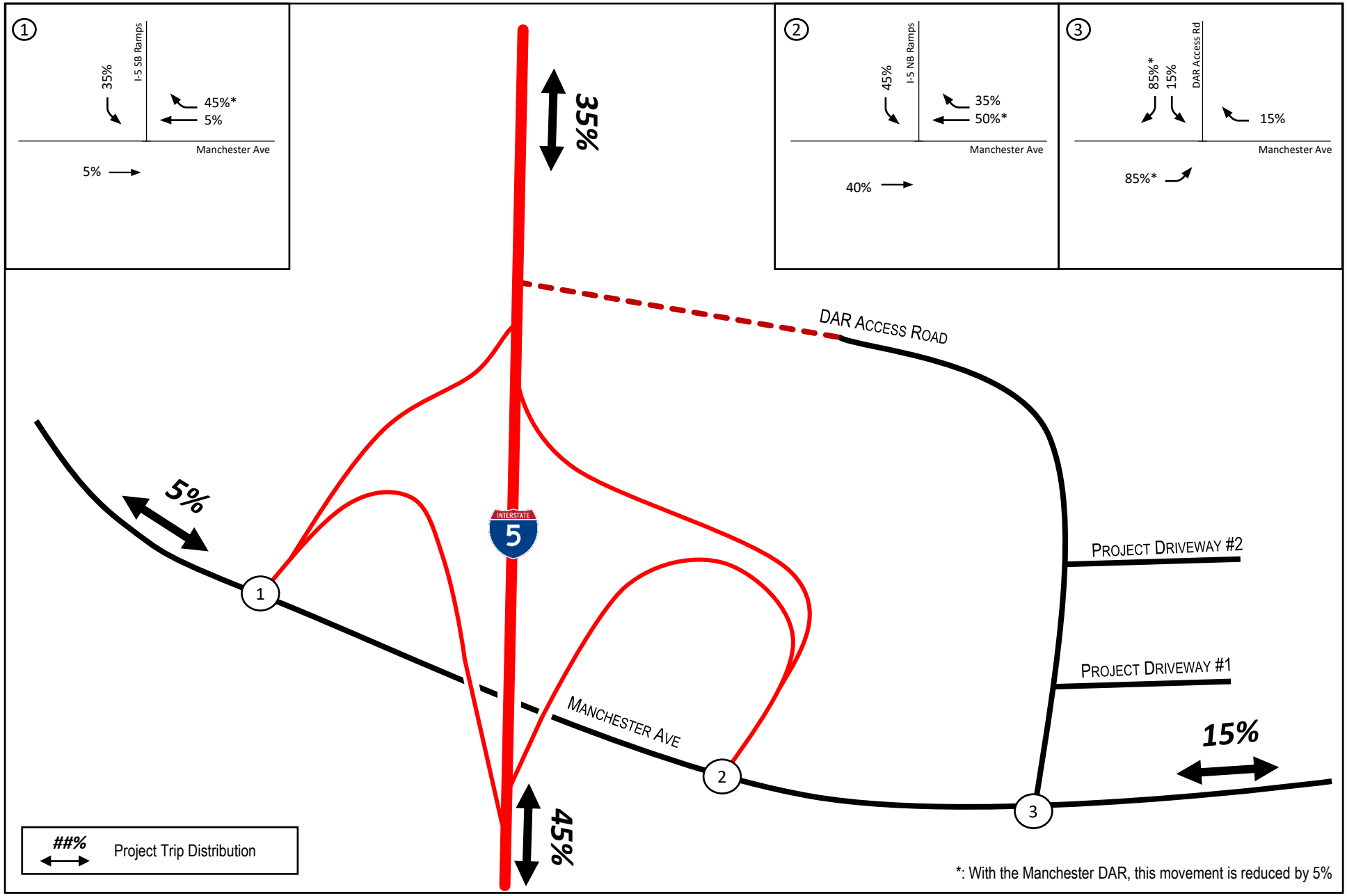
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 5

Existing Traffic Volumes

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



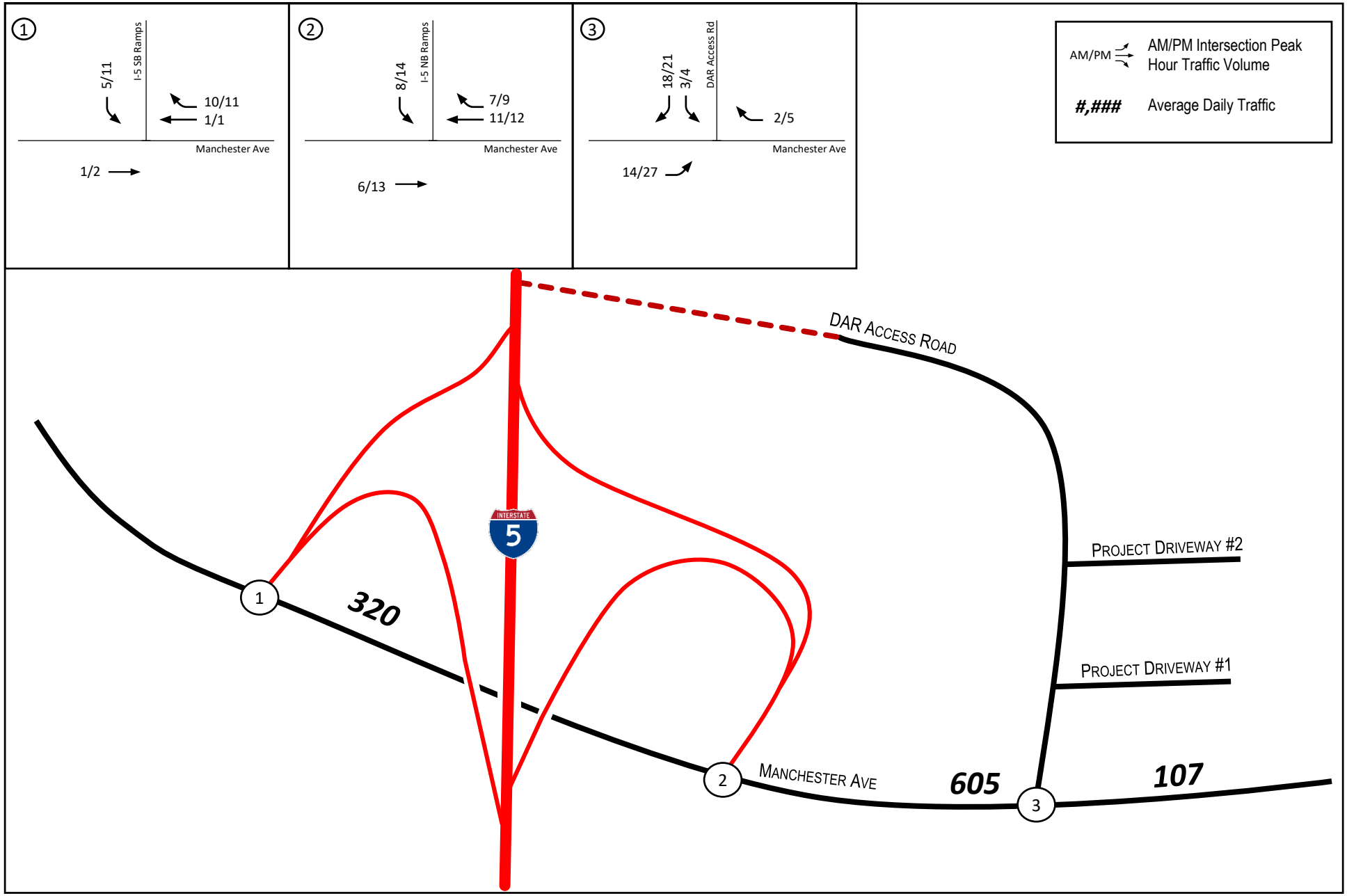
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 6

Project Trip Distribution

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



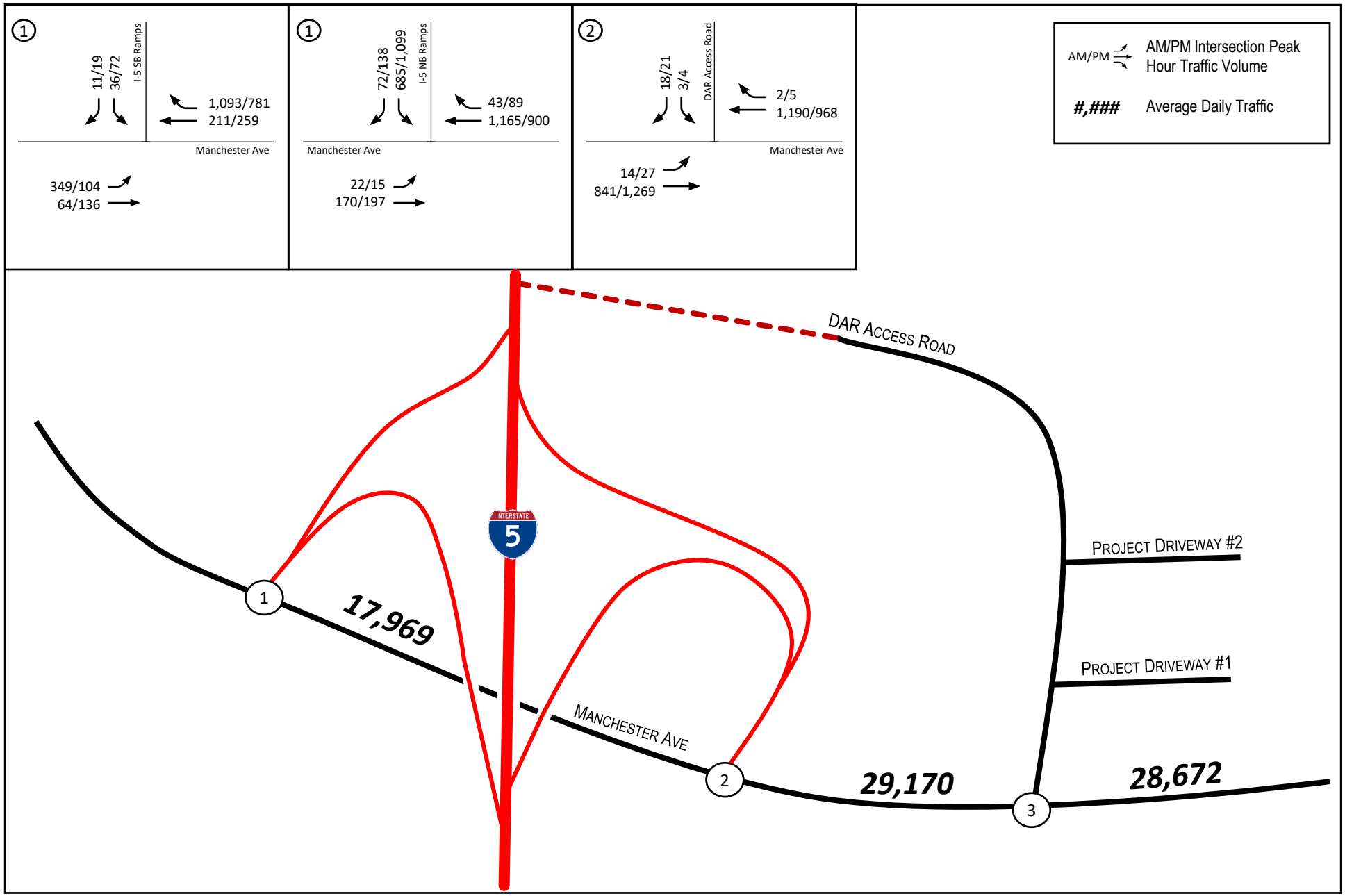
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 7

Project Traffic Volumes (w/out DAR)

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



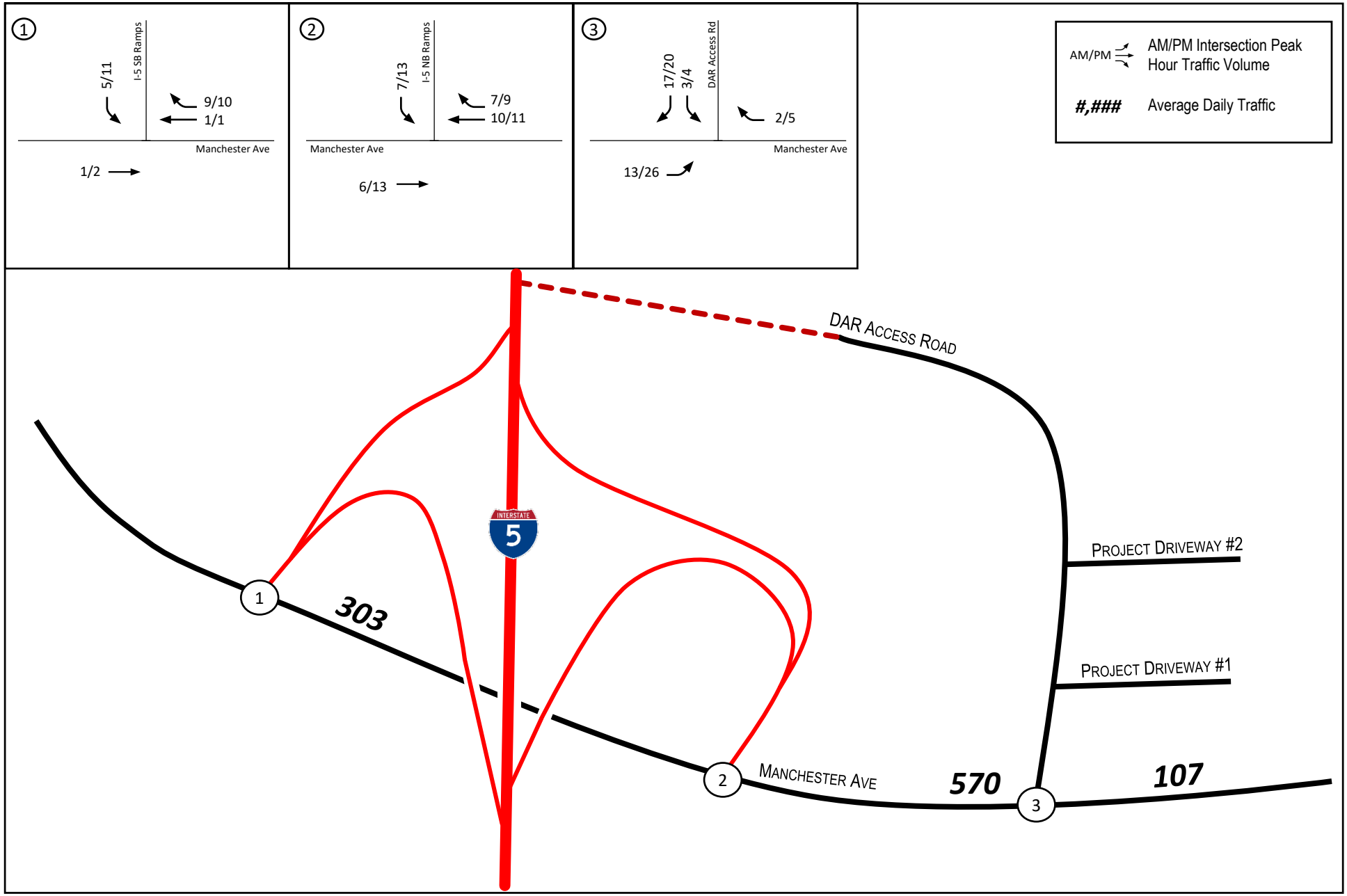
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 8

Near-Term Traffic Volumes

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



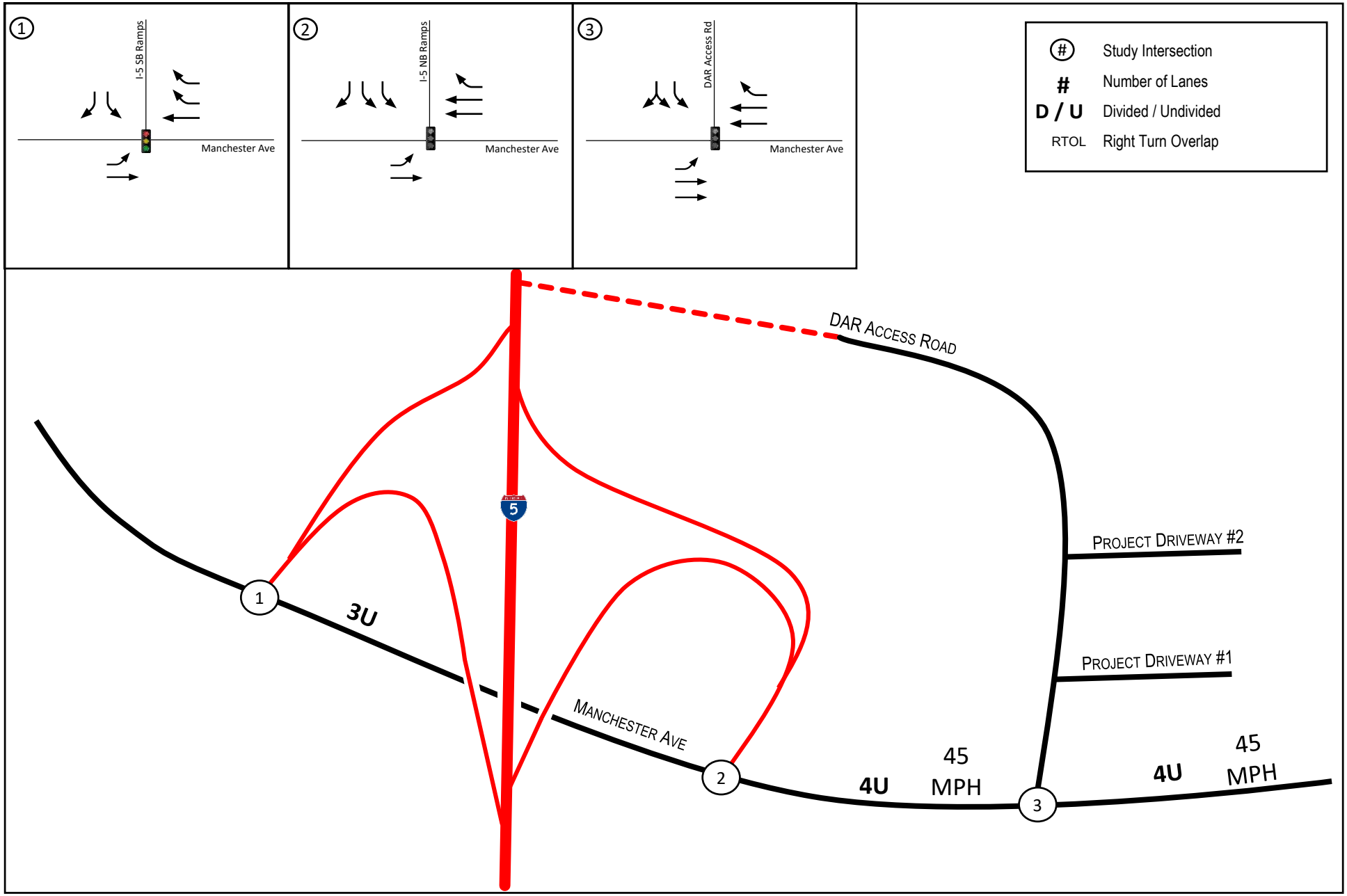
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 9

Project Traffic Volumes (w/ DAR)

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



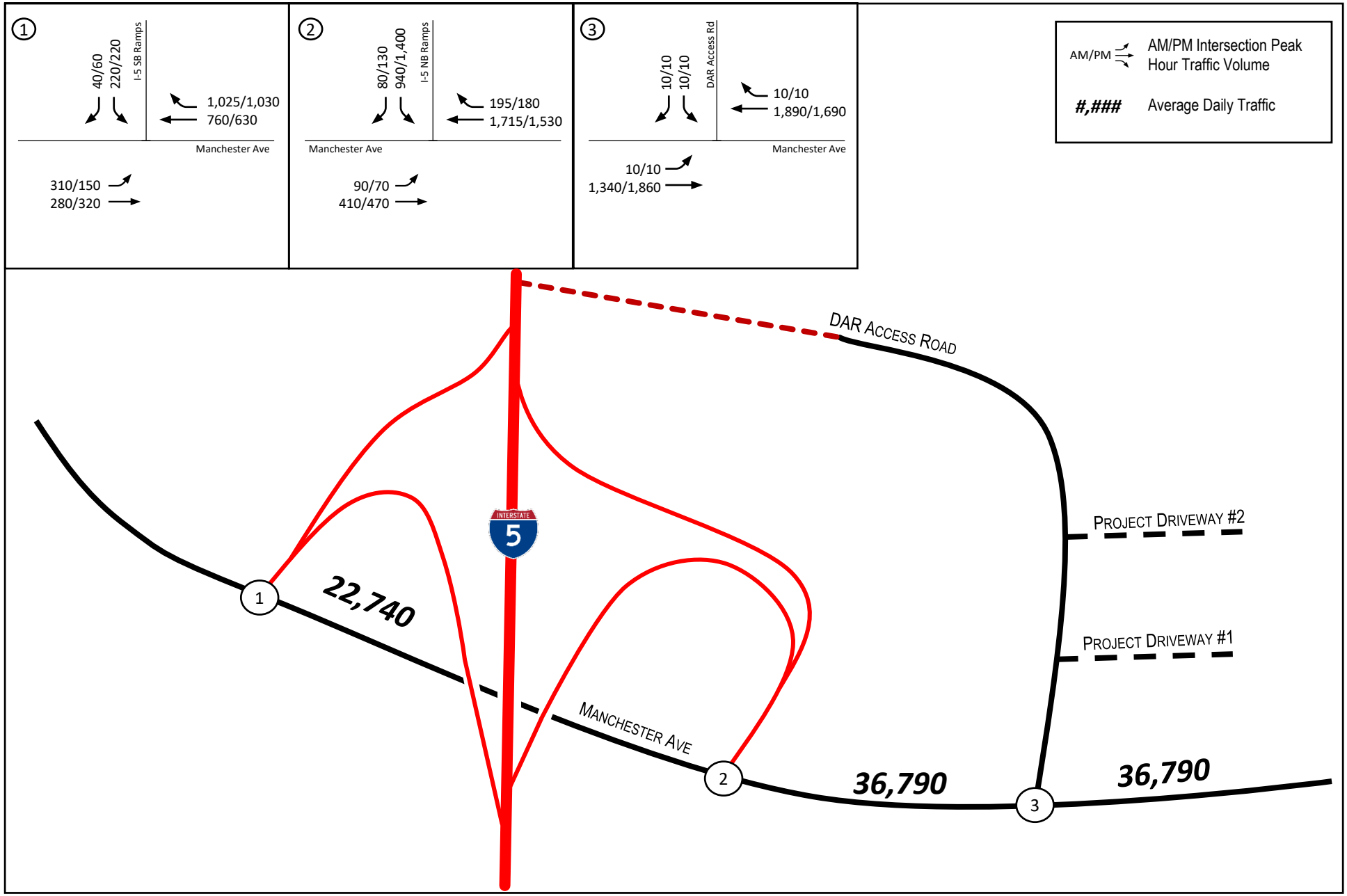
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 10

Long-Term (w/out DAR) Conditions

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



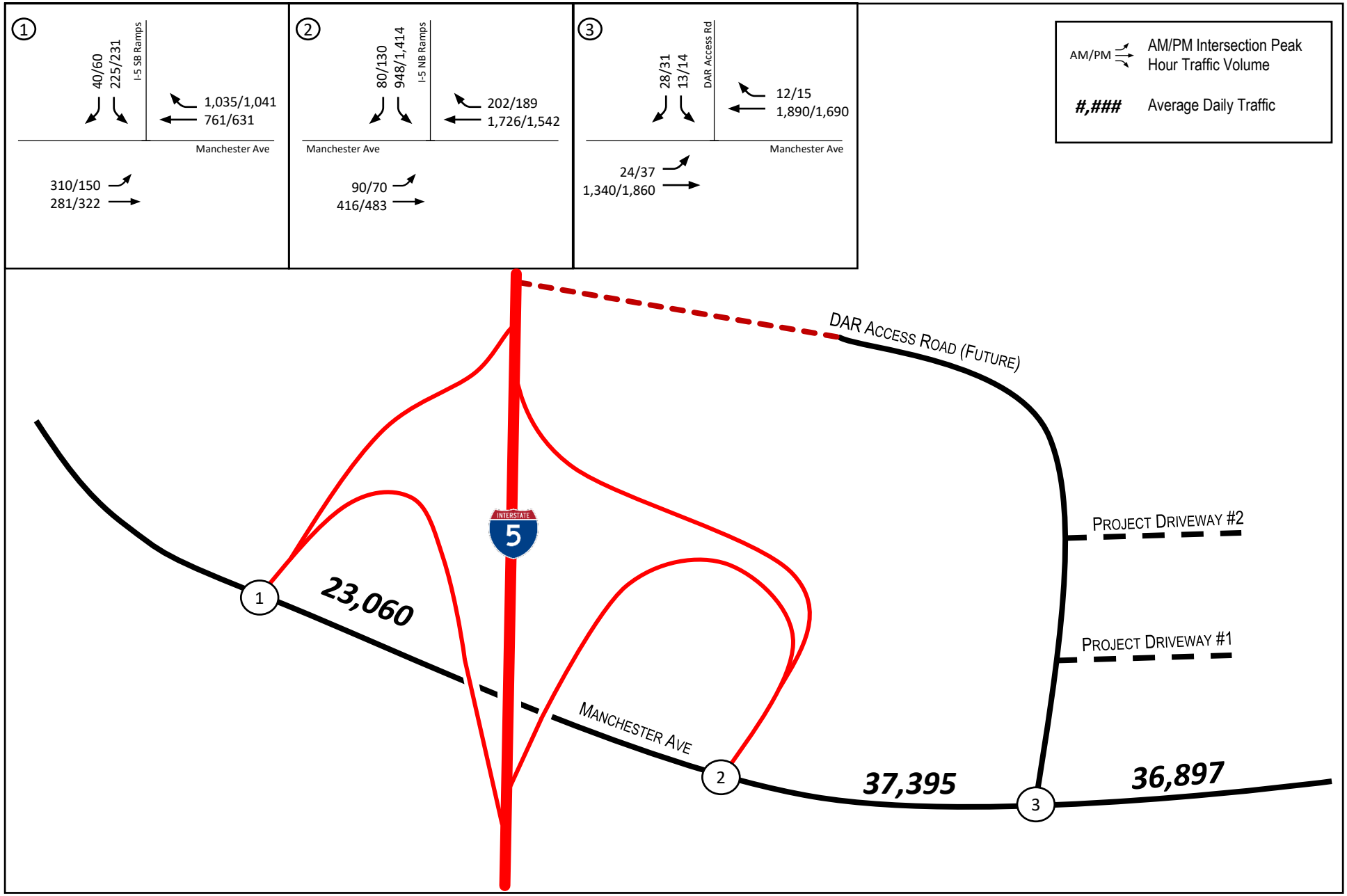
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 11

Long-Term (w/out DAR) Traffic Volumes

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



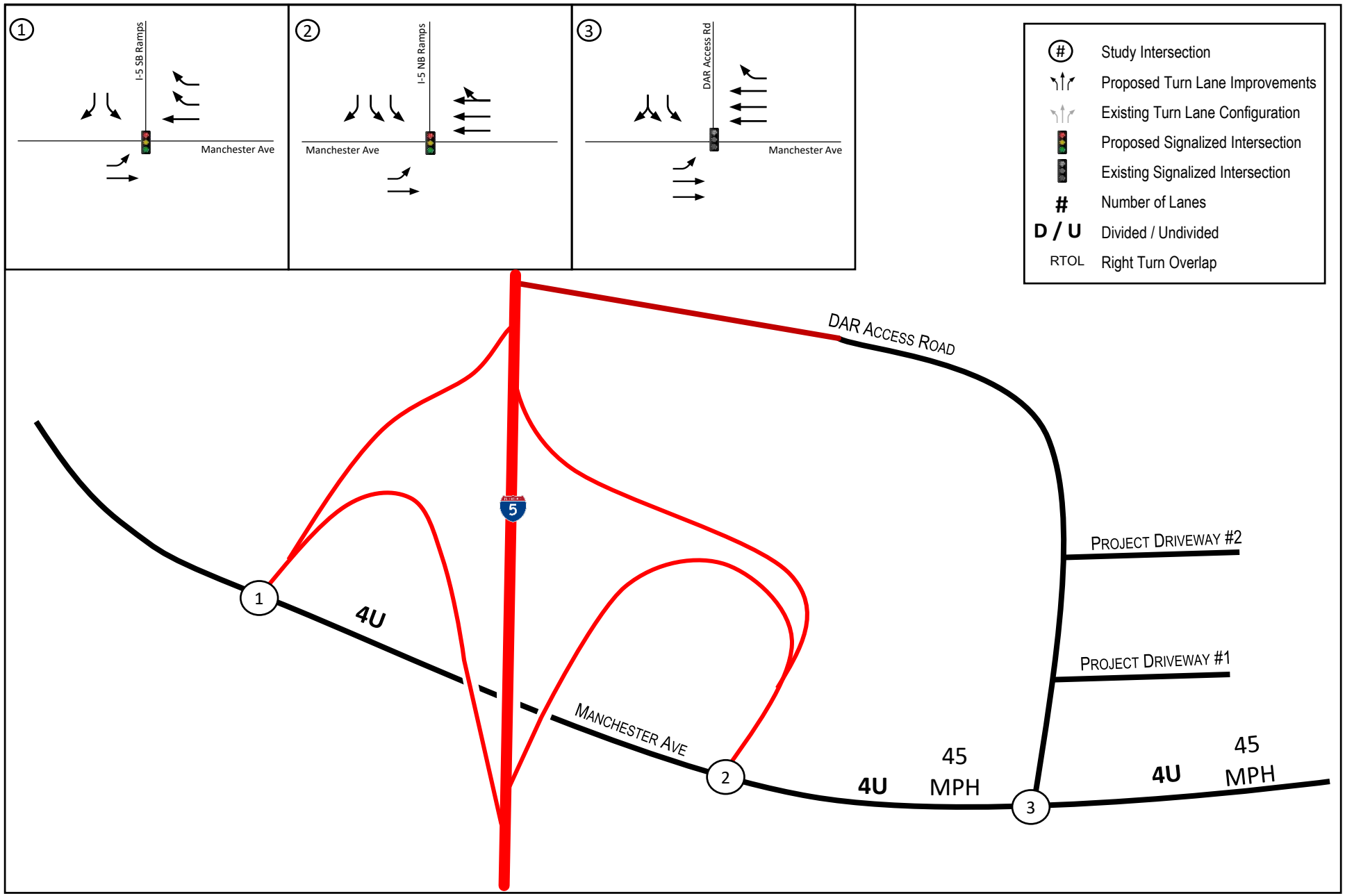
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 12

Long-Term (w/out DAR) + Project Traffic Volumes

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



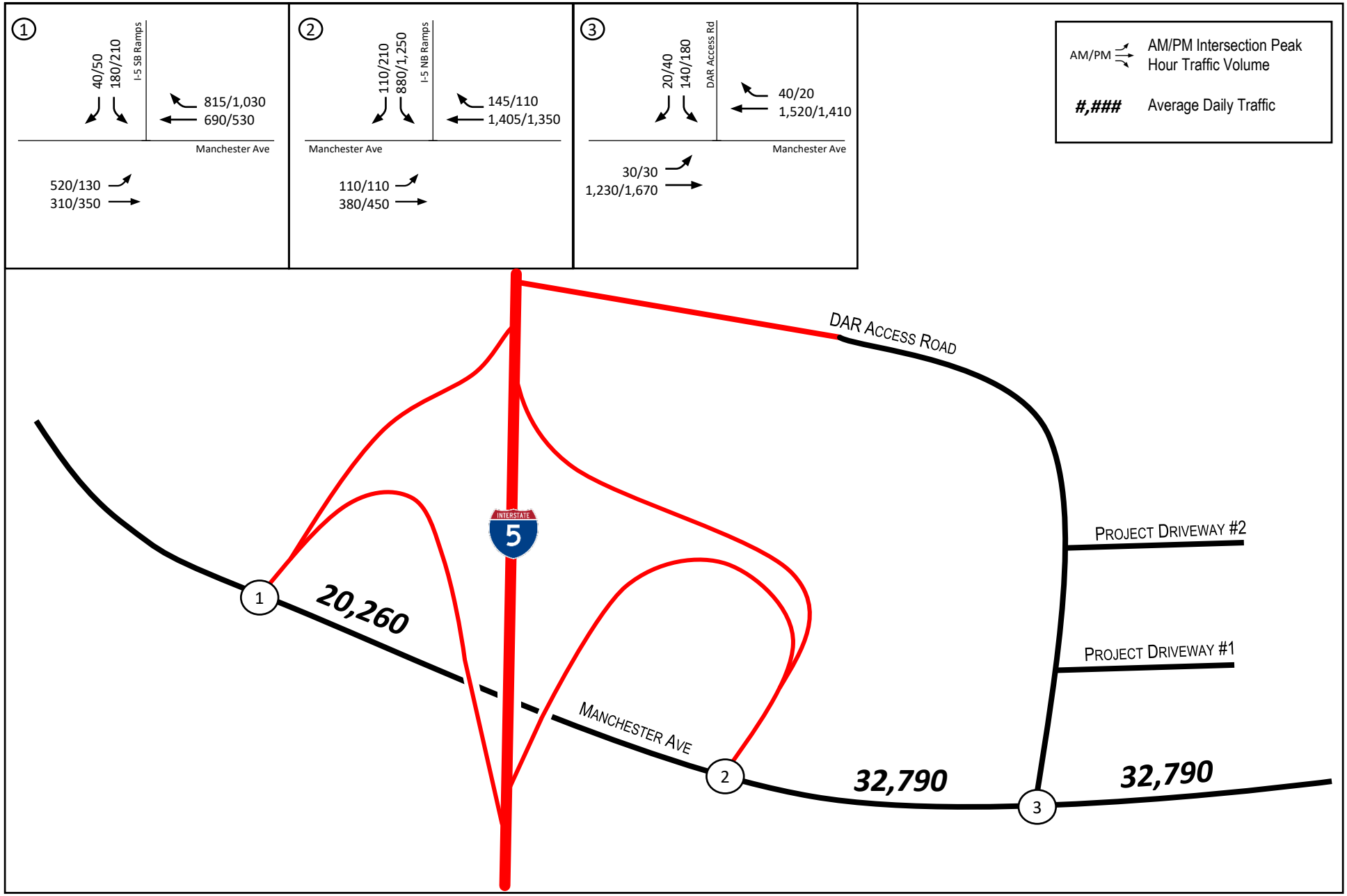
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 13

Long-Term (w/ DAR) Conditions

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



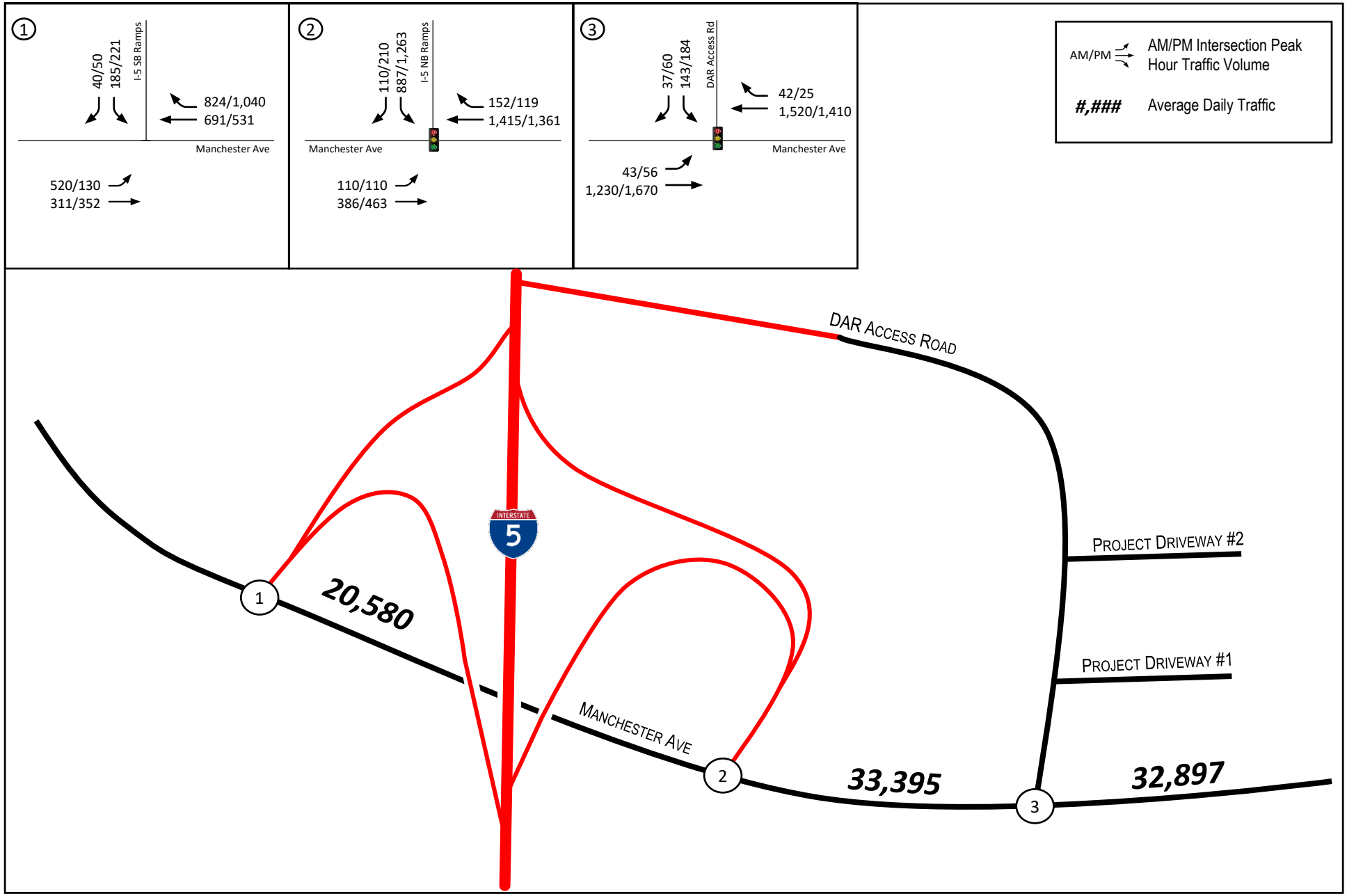
LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 14

Long-Term (w/ DAR) Traffic Volumes

BELMONT VILLAGE ENCINITAS-BY-THE-SEA



LINSCOTT LAW & GREENSPAN engineers

N:\2897\Figures

Figure 15

Long-Term (w/ DAR) + Project Traffic Volumes

BELMONT VILLAGE ENCINITAS-BY-THE-SEA

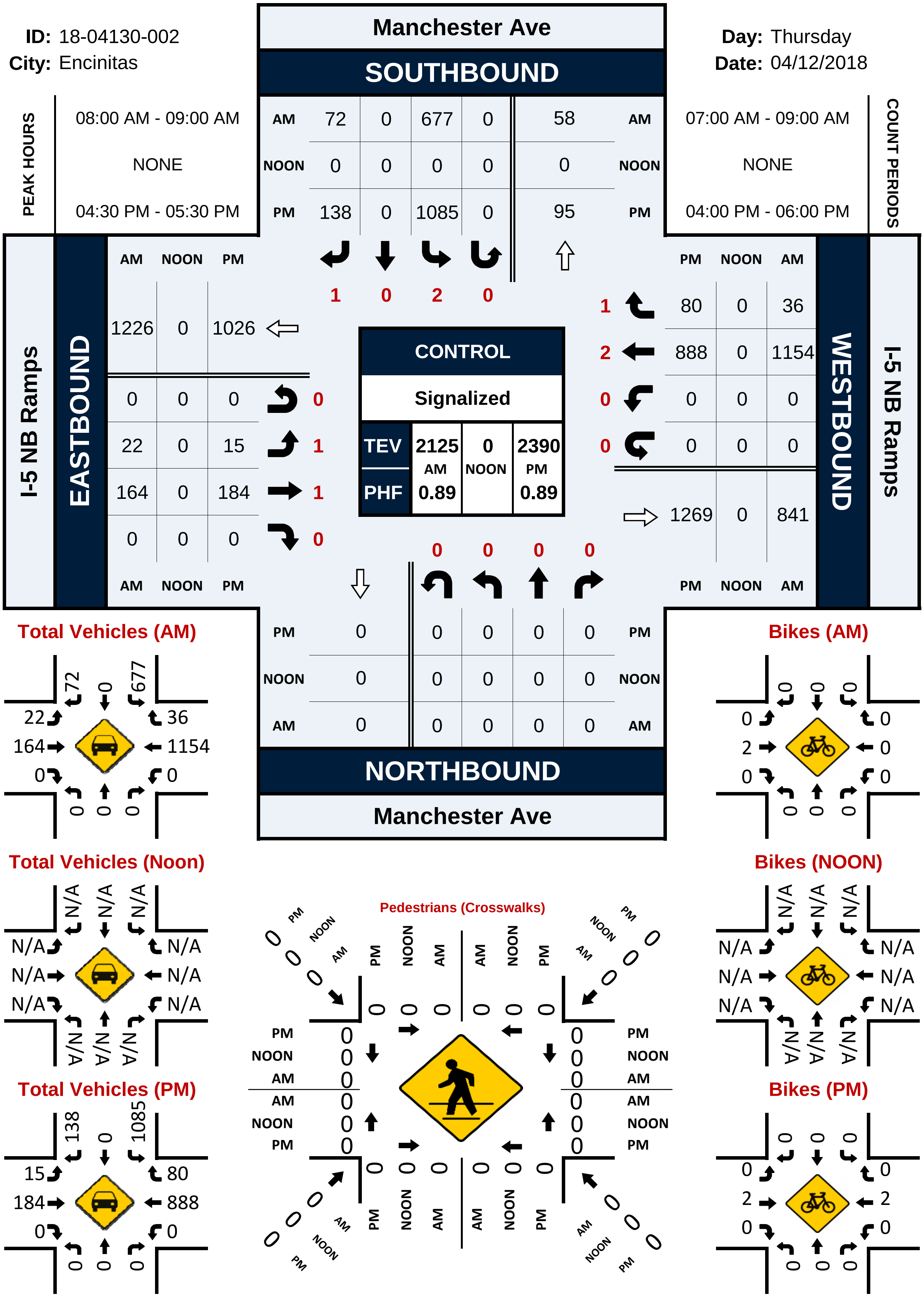
ATTACHMENT A

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS

Prepared by National Data & Surveying Services

Manchester Ave & I-5 NB Ramps

Peak Hour Turning Movement Count



National Data & Surveying Services Intersection Turning Movement Count

Location: Manchester Ave & I-5 SB Ramps
City: Encinitas
Control: 3-Way Stop (SB/EB/WB)

Project ID: 18-04130-001
Date: 4/12/2018

Total

NS/EW Streets:	Manchester Ave				Manchester Ave				I-5 SB Ramps				I-5 SB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0.5	0.5	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	7	0	1	0	42	21	0	0	0	34	276	0	381
7:15 AM	0	0	0	0	5	0	1	0	48	7	0	0	0	32	301	0	394
7:30 AM	0	0	0	0	8	0	3	0	87	18	0	0	0	40	276	0	432
7:45 AM	0	0	0	0	5	0	3	0	125	12	0	0	0	70	237	0	452
8:00 AM	0	0	0	0	13	0	4	0	89	26	0	0	0	68	269	0	469
8:15 AM	0	0	0	0	15	0	1	1	62	24	0	0	0	38	253	0	394
8:30 AM	0	0	0	0	9	0	3	0	66	31	0	0	0	34	244	0	387
8:45 AM	0	0	0	0	24	0	2	0	76	36	0	0	0	48	271	0	457
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	86	0	18	1	595	175	0	0	0	364	2127	0	3366
APPROACH %'s :					81.90%	0.00%	17.14%	0.95%	77.27%	22.73%	0.00%	0.00%	0.00%	14.61%	85.39%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	31	0	11	0	349	63	0	0	0	210	1083	0	1747
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.596	0.000	0.688	0.000	0.698	0.606	0.000	0.000	0.000	0.750	0.900	0.000	0.931
					0.618				0.752				0.959				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0.5	0.5	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	14	0	2	0	26	23	0	0	0	51	200	0	316
4:15 PM	0	0	0	0	12	0	4	0	26	42	0	0	0	54	158	0	296
4:30 PM	0	0	0	0	9	0	3	1	19	36	0	0	0	53	203	0	324
4:45 PM	0	0	0	0	18	0	3	0	31	33	0	0	0	69	192	0	346
5:00 PM	0	0	0	0	18	0	4	0	25	32	0	0	0	56	152	0	287
5:15 PM	0	0	0	0	15	0	9	0	29	33	0	0	0	80	223	0	389
5:30 PM	0	0	0	0	16	0	6	0	16	22	0	0	0	57	142	0	259
5:45 PM	0	0	0	0	12	0	4	0	28	27	0	0	0	63	165	0	299
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	114	0	35	1	200	248	0	0	0	483	1435	0	2516
APPROACH %'s :					76.00%	0.00%	23.33%	0.67%	44.64%	55.36%	0.00%	0.00%	0.00%	25.18%	74.82%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	60	0	19	1	104	134	0	0	0	258	770	0	1346
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.833	0.000	0.528	0.250	0.839	0.931	0.000	0.000	0.000	0.806	0.863	0.000	0.865
					0.833				0.930				0.848				

Prepared by National Data & Surveying Services

Manchester Ave & I-5 SB Ramps

Peak Hour Turning Movement Count

ID: 18-04130-001
City: Encinitas

Day: Thursday
Date: 04/12/2018

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Manchester Ave — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	11	0	31	0	1432
NOON	0	0	0	0	0
PM	19	0	60	1	875
Lanes	0.5	0.5	0	0	

I-5 SB Ramps — EASTBOUND

	AM	NOON	PM	Lanes
Departing	221	0	277	
U-Turn	0	0	0	0
Left	349	0	104	1
Thru	63	0	134	1
Right	0	0	0	0

I-5 SB Ramps — WESTBOUND

	PM	NOON	AM	Lanes
Right	770	0	1083	1
Thru	258	0	210	1
Left	0	0	0	0
U-Turn	0	0	0	0
Departing	194	0	94	

Manchester Ave — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Lanes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

3-Way Stop (SB/EB/WB)

	AM	NOON	PM
TEV	1747	0	1346
PHF	0.93		0.87

Total Vehicles (AM)

Approach	Left	Thru	Right
SB	31	0	11
EB	349	63	0
WB	0	210	1083
NB	0	0	0

Total Vehicles (Noon)

Approach	Left	Thru	Right
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

Total Vehicles (PM)

Approach	Left	Thru	Right
SB	60	0	19
EB	104	134	0
WB	0	258	770
NB	0	0	0

Bikes (AM)

Approach	Left	Thru	Right
SB	0	0	0
EB	0	0	0
WB	0	0	0
NB	0	0	0

Bikes (NOON)

Approach	Left	Thru	Right
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

Bikes (PM)

Approach	Left	Thru	Right
SB	0	0	0
EB	0	2	0
WB	0	2	0
NB	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (westbound)	0	0	0
North leg (eastbound)	0	0	0
South leg (westbound)	0	0	0
South leg (eastbound)	0	0	0
West leg (southbound)	0	0	0
West leg (northbound)	0	0	0
East leg (southbound)	0	0	0
East leg (northbound)	0	0	0
NW corner (diagonal)	0	0	0
NE corner (diagonal)	0	0	0
SW corner (diagonal)	0	0	0
SE corner (diagonal)	0	0	0

National Data & Surveying Services Intersection Turning Movement Count

Location: Manchester Ave & I-5 NB Ramps
City: Encinitas
Control: Signalized

Project ID: 18-04130-002
Date: 4/12/2018

Total

NS/EW Streets:	Manchester Ave				Manchester Ave				I-5 NB Ramps				I-5 NB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	1	0	1	1	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	112	0	12	0	5	24	0	0	0	301	4	0	458
7:15 AM	0	0	0	0	105	0	7	0	2	12	0	0	0	346	3	0	475
7:30 AM	0	0	0	0	122	0	14	0	3	23	0	0	0	312	2	0	476
7:45 AM	0	0	0	0	168	0	17	0	4	15	0	0	0	287	5	0	496
8:00 AM	0	0	0	0	154	0	16	0	5	29	0	0	0	327	9	0	540
8:15 AM	0	0	0	0	155	0	13	0	6	36	0	0	0	269	7	0	486
8:30 AM	0	0	0	0	167	0	20	0	4	38	0	0	0	260	10	0	499
8:45 AM	0	0	0	0	201	0	23	0	7	61	0	0	0	298	10	0	600
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1184	0	122	0	36	238	0	0	0	2400	50	0	4030
APPROACH %'s :					90.66%	0.00%	9.34%	0.00%	13.14%	86.86%	0.00%	0.00%	0.00%	97.96%	2.04%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	677	0	72	0	22	164	0	0	0	1154	36	0	2125
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.842	0.000	0.783	0.000	0.786	0.672	0.000	0.000	0.000	0.882	0.900	0.000	0.885
					0.836				0.684				0.885				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	1	0	1	1	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	244	0	34	0	2	41	0	0	0	208	24	0	553
4:15 PM	0	0	0	0	261	0	27	0	4	43	0	1	0	194	19	0	549
4:30 PM	0	0	0	0	227	0	35	0	6	45	0	0	0	220	22	0	555
4:45 PM	0	0	0	0	265	0	36	0	3	47	0	0	0	229	19	0	599
5:00 PM	0	0	0	0	296	0	32	0	3	46	0	0	0	174	12	0	563
5:15 PM	0	0	0	0	297	0	35	0	3	46	0	0	0	265	27	0	673
5:30 PM	0	0	0	0	296	0	34	0	5	30	0	0	0	170	16	0	551
5:45 PM	0	0	0	0	260	0	39	0	2	41	0	0	0	190	10	0	542
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	2146	0	272	0	28	339	0	1	0	1650	149	0	4585
APPROACH %'s :					88.75%	0.00%	11.25%	0.00%	7.61%	92.12%	0.00%	0.27%	0.00%	91.72%	8.28%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1085	0	138	0	15	184	0	0	0	888	80	0	2390
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.913	0.000	0.958	0.000	0.625	0.979	0.000	0.000	0.000	0.838	0.741	0.000	0.888
					0.921				0.975				0.829				

Prepared by NDS/ATD

VOLUME

Manchester Ave Bet. I-5 & Mira Costa College Rd

Day: Thursday
Date: 4/12/2018

City: Encinitas
Project #: CA18_4131_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	13,397	15,168	28,565

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			16		11		27		12:00			205		284		489	
00:15			9		4		13		12:15			197		288		485	
00:30			4		6		10		12:30			171		252		423	
00:45			6	35	8	29	14	64	12:45			201	774	265	1089	466	1863
01:00			3		2		5		13:00			199		253		452	
01:15			8		4		12		13:15			259		323		582	
01:30			5		2		7		13:30			236		308		544	
01:45			6	22	3	11	9	33	13:45			233	927	288	1172	521	2099
02:00			4		5		9		14:00			244		261		505	
02:15			2		5		7		14:15			232		256		488	
02:30			4		4		8		14:30			235		304		539	
02:45			4	14	1	15	5	29	14:45			296	1007	359	1180	655	2187
03:00			2		7		9		15:00			266		291		557	
03:15			4		6		10		15:15			275		270		545	
03:30			4		2		6		15:30			268		254		522	
03:45			5	15	6	21	11	36	15:45			255	1064	251	1066	506	2130
04:00			3		10		13		16:00			282		219		501	
04:15			3		10		13		16:15			272		233		505	
04:30			9		16		25		16:30			278		204		482	
04:45			13	28	39	75	52	103	16:45			303	1135	225	881	528	2016
05:00			17		38		55		17:00			315		198		513	
05:15			18		46		64		17:15			351		278		629	
05:30			25		72		97		17:30			300		179		479	
05:45			53	113	109	265	162	378	17:45			290	1256	178	833	468	2089
06:00			57		152		209		18:00			301		210		511	
06:15			68		153		221		18:15			296		191		487	
06:30			86		265		351		18:30			235		179		414	
06:45			128	339	293	863	421	1202	18:45			203	1035	136	716	339	1751
07:00			136		308		444		19:00			201		157		358	
07:15			107		332		439		19:15			176		139		315	
07:30			150		293		443		19:30			155		105		260	
07:45			179	572	249	1182	428	1754	19:45			128	660	104	505	232	1165
08:00			157		286		443		20:00			111		103		214	
08:15			193		254		447		20:15			116		101		217	
08:30			190		283		473		20:30			110		102		212	
08:45			249	789	277	1100	526	1889	20:45			110	447	80	386	190	833
09:00			177		277		454		21:00			111		97		208	
09:15			185		250		435		21:15			92		84		176	
09:30			189		272		461		21:30			94		66		160	
09:45			194	745	276	1075	470	1820	21:45			59	356	49	296	108	652
10:00			217		258		475		22:00			62		29		91	
10:15			267		255		522		22:15			61		26		87	
10:30			227		247		474		22:30			52		32		84	
10:45			209	920	275	1035	484	1955	22:45			46	221	14	101	60	322
11:00			196		238		434		23:00			25		26		51	
11:15			211		295		506		23:15			22		11		33	
11:30			196		320		516		23:30			18		15		33	
11:45			237	840	351	1204	588	2044	23:45			18	83	16	68	34	151
TOTALS				4432		6875		11307	TOTALS				8965		8293		17258
SPLIT %				39.2%		60.8%		39.6%	SPLIT %				51.9%		48.1%		60.4%

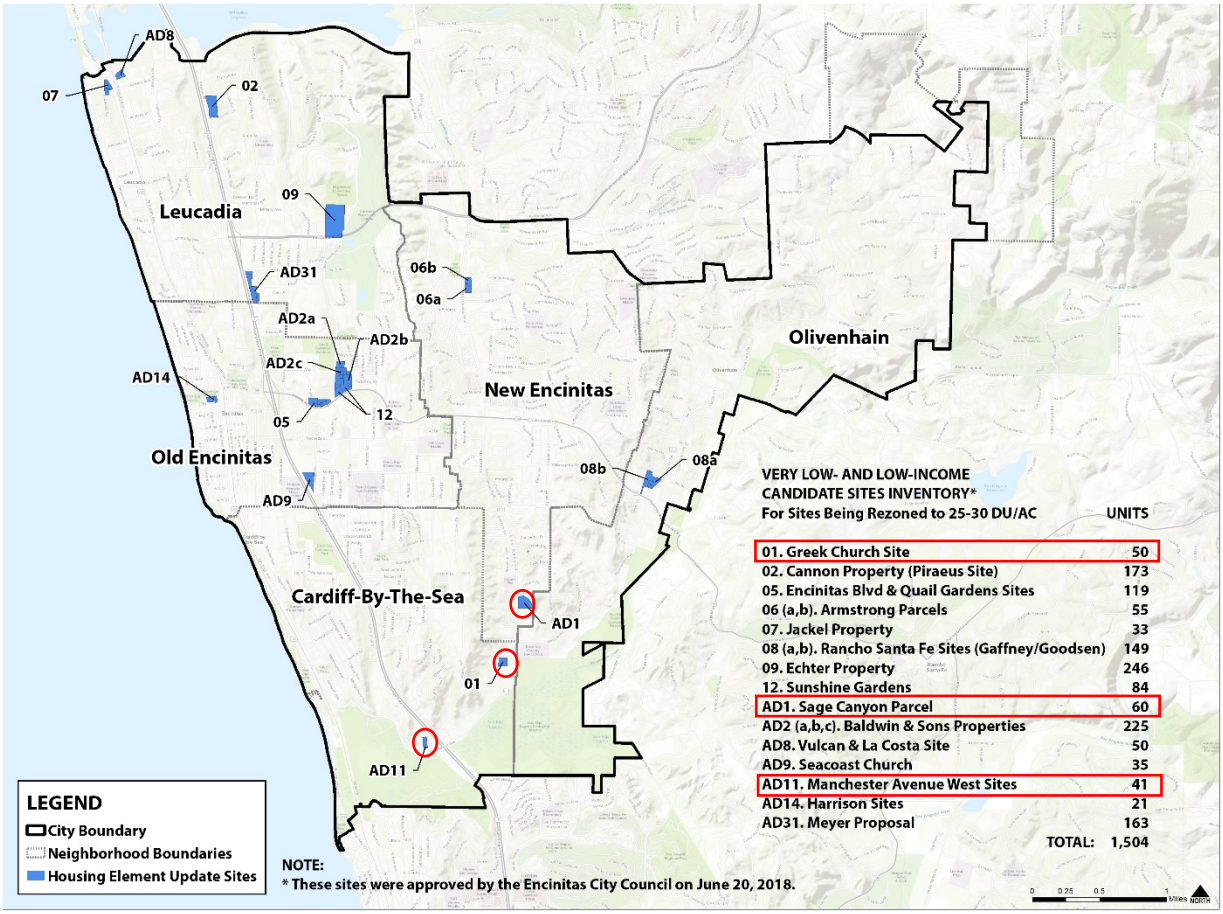
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	13,397	15,168	28,565

AM Peak Hour			10:00	11:15	11:15	PM Peak Hour			16:45	14:30	14:30
AM Pk Volume			920	1250	2099	PM Pk Volume			1269	1224	2296
Pk Hr Factor			0.861	0.890	0.892	Pk Hr Factor			0.904	0.852	0.876
7 - 9 Volume	0	0	1361	2282	3643	4 - 6 Volume	0	0	2391	1714	4105
7 - 9 Peak Hour			08:00	07:00	08:00	4 - 6 Peak Hour			16:45	16:30	16:30
7 - 9 Pk Volume	0	0	789	1182	1889	4 - 6 Pk Volume	0	0	1269	905	2152
Pk Hr Factor	0.000	0.000	0.792	0.890	0.898	Pk Hr Factor	0.000	0.000	0.904	0.814	0.855

ATTACHMENT B

CITY OF ENCINITAS HOUSING ELEMENT UPDATE
POTENTIAL REZONING SITES

FIGURE 2-1: HOUSING STRATEGY MAP – VERY LOW AND LOW INCOME SITES



This rezoning program will create an opportunity for 1,504 units that may be constructed during the planning period pursuant to Section 65583.2. This exceeds the remaining RHNA lower income obligation of 1,141 units by 363 units (31 percent), providing an adequate buffer in consideration of the no net loss requirement under SB 166; requirements of AB 1397 for determining site capacity; and desire to provide some flexibility for future development to property owners. The capacity of vacant sites is 609 units, 53 percent of the City's total lower income RHNA.[1] HCD does not consider sites numbers 06a and 06b adequate sites to meet any portion of the Regional Housing Needs Allocation for lower-income households; excluding these units, the rezoning program still exceeds the remaining RHNA lower income obligation by 308 units (27 percent), with 583 units accommodated on vacant sites (51 percent of the City's remaining lower income RHNA).

[1] Including Sites 01, 07, and AD2c, but excluding site 06a, the capacity of vacant sites is 701 units, or approximately 62% of the City's remaining lower income RHNA. See Table 2-6 for additional discussion.

ATTACHMENT C

CITY OF ENCINITAS ROADWAY CAPACITY STANDARDS

ROADWAY CAPACITY STANDARDS

Fac. Type	# of Lanes	ADT Capacity		
		LOS C	LOS D	LOS E
Freeway	6	108,000	120,000	135,000
	8	145,000	160,000	175,000
	10	175,000	195,000	215,000
Prime Arterial	6	46,000	51,200	57,000
Prime Arterial-Augmented	6	53,000	60,000	66,000
Major Roadway	4	28,200	31,600	35,200
Major Roadway-Augmented	4 +	36,300	41,000	45,400
Collector Roadway	4	26,000	29,200	32,400
Local Roadway	2	11,200	12,600	14,000
Local Roadway-Augmented	2 +	16,000	18,000	20,000

* Capacity means the maximum volume for the stated level of service.

Source: CITY OF ENCINITAS
3/29/89

ATTACHMENT D

INTERSECTION ANALYSIS WORKSHEETS

Intersection	
Intersection Delay, s/veh	147
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	349	63	210	1083	31	11
Future Vol, veh/h	349	63	210	1083	31	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	379	68	228	1177	34	12
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	18.5	192.3	11.5
HCM LOS	C	F	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	349	63	210	1083	31	11
LT Vol	349	0	0	0	31	0
Through Vol	0	63	210	0	0	0
RT Vol	0	0	0	1083	0	11
Lane Flow Rate	379	68	228	1177	34	12
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.642	0.106	0.328	1.46	0.074	0.022
Departure Headway (Hd)	6.535	6.029	5.169	4.465	8.548	7.313
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	558	598	696	824	422	492
Service Time	4.235	3.729	2.901	2.196	6.248	5.013
HCM Lane V/C Ratio	0.679	0.114	0.328	1.428	0.081	0.024
HCM Control Delay	20.2	9.4	10.4	227.6	11.9	10.2
HCM Lane LOS	C	A	B	F	B	B
HCM 95th-tile Q	4.5	0.4	1.4	54.1	0.2	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	164	1154	36	677	72
Future Volume (veh/h)	22	164	1154	36	677	72
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	178	1254	39	736	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	49	1126	1778	793	770	353
Arrive On Green	0.03	0.60	0.50	0.50	0.22	0.22
Sat Flow, veh/h	1781	1870	3647	1585	3456	1585
Grp Volume(v), veh/h	24	178	1254	39	736	78
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1728	1585
Q Serve(g_s), s	0.8	2.4	15.4	0.7	11.9	2.3
Cycle Q Clear(g_c), s	0.8	2.4	15.4	0.7	11.9	2.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	49	1126	1778	793	770	353
V/C Ratio(X)	0.49	0.16	0.71	0.05	0.96	0.22
Avail Cap(c_a), veh/h	157	1240	1778	793	770	353
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	27.1	4.9	10.9	7.2	21.7	18.0
Incr Delay (d2), s/veh	2.7	0.0	2.4	0.1	23.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	5.4	0.2	6.9	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.8	5.0	13.3	7.4	45.1	19.4
LnGrp LOS	C	A	B	A	D	B
Approach Vol, veh/h		202	1293		814	
Approach Delay, s/veh		7.9	13.1		42.6	
Approach LOS		A	B		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		39.4		17.2	5.8	33.6
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		37.5		12.6	* 5	28.3
Max Q Clear Time (g_c+I1), s		4.4		13.9	2.8	17.4
Green Ext Time (p_c), s		0.7		0.0	0.0	5.0

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	38.5
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	104	134	258	770	61	19
Future Vol, veh/h	104	134	258	770	61	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	146	280	837	66	21
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	10.6	47.1	11.2
HCM LOS	B	E	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	134	258	770	61	19
LT Vol	104	0	0	0	61	0
Through Vol	0	134	258	0	0	0
RT Vol	0	0	0	770	0	19
Lane Flow Rate	113	146	280	837	66	21
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.2	0.237	0.399	1.027	0.14	0.037
Departure Headway (Hd)	6.469	5.963	5.122	4.418	7.753	6.533
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	558	606	698	820	465	551
Service Time	4.169	3.663	2.88	2.175	5.453	4.233
HCM Lane V/C Ratio	0.203	0.241	0.401	1.021	0.142	0.038
HCM Control Delay	10.8	10.5	11.3	59.1	11.7	9.5
HCM Lane LOS	B	B	B	F	B	A
HCM 95th-tile Q	0.7	0.9	1.9	19	0.5	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	184	888	80	1085	138
Future Volume (veh/h)	15	184	888	80	1085	138
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	200	965	87	1179	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	34	893	1419	633	1327	609
Arrive On Green	0.02	0.48	0.40	0.40	0.38	0.38
Sat Flow, veh/h	1781	1870	3647	1585	3456	1585
Grp Volume(v), veh/h	16	200	965	87	1179	150
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1728	1585
Q Serve(g_s), s	0.6	4.5	16.0	2.5	22.8	4.6
Cycle Q Clear(g_c), s	0.6	4.5	16.0	2.5	22.8	4.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	34	893	1419	633	1327	609
V/C Ratio(X)	0.47	0.22	0.68	0.14	0.89	0.25
Avail Cap(c_a), veh/h	125	988	1419	633	1327	609
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	34.6	10.9	17.7	13.6	20.6	15.0
Incr Delay (d2), s/veh	3.7	0.0	2.6	0.5	9.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.7	6.5	0.9	10.0	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.4	11.0	20.3	14.1	29.7	15.9
LnGrp LOS	D	B	C	B	C	B
Approach Vol, veh/h		216	1052		1329	
Approach Delay, s/veh		13.0	19.8		28.1	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		39.4		32.0	5.6	33.8
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		37.7		27.4	* 5	28.5
Max Q Clear Time (g_c+I1), s		6.5		24.8	2.6	18.0
Green Ext Time (p_c), s		0.7		1.1	0.0	3.7

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	349	64	211	1092	37	11
Future Volume (veh/h)	349	64	211	1092	37	11
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	379	70	229	1187	40	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	416	1184	648	1641	431	383
Arrive On Green	0.23	0.63	0.35	0.35	0.24	0.24
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	379	70	229	1187	40	12
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	16.4	1.1	7.2	24.1	1.4	0.5
Cycle Q Clear(g_c), s	16.4	1.1	7.2	24.1	1.4	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	416	1184	648	1641	431	383
V/C Ratio(X)	0.91	0.06	0.35	0.72	0.09	0.03
Avail Cap(c_a), veh/h	424	1207	663	1663	431	383
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	29.5	5.5	19.2	11.7	23.2	22.9
Incr Delay (d2), s/veh	23.5	0.0	0.3	1.6	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	0.4	3.0	11.7	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.0	5.5	19.6	13.2	23.7	23.0
LnGrp LOS	D	A	B	B	C	C
Approach Vol, veh/h		449	1416		52	
Approach Delay, s/veh		45.6	14.2		23.5	
Approach LOS		D	B		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				55.3		23.7	22.6	32.7
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				51.0		19.1	* 19	28.0
Max Q Clear Time (g_c+I1), s				3.1		3.4	18.4	26.1
Green Ext Time (p_c), s				0.4		0.1	0.1	1.3

Intersection Summary	
HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	170	1165	43	685	72
Future Volume (veh/h)	22	170	1165	43	685	72
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	185	1266	47	745	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	49	1123	1771	790	776	356
Arrive On Green	0.03	0.60	0.50	0.50	0.22	0.22
Sat Flow, veh/h	1781	1870	3647	1585	3456	1585
Grp Volume(v), veh/h	24	185	1266	47	745	78
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1728	1585
Q Serve(g_s), s	0.8	2.5	15.7	0.9	12.1	2.3
Cycle Q Clear(g_c), s	0.8	2.5	15.7	0.9	12.1	2.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	49	1123	1771	790	776	356
V/C Ratio(X)	0.49	0.16	0.71	0.06	0.96	0.22
Avail Cap(c_a), veh/h	157	1237	1771	790	776	356
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	27.1	5.0	11.1	7.3	21.7	17.9
Incr Delay (d2), s/veh	2.7	0.0	2.5	0.1	24.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	5.5	0.3	7.0	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.8	5.0	13.5	7.5	45.7	19.3
LnGrp LOS	C	A	B	A	D	B
Approach Vol, veh/h		209	1313		823	
Approach Delay, s/veh		7.9	13.3		43.2	
Approach LOS		A	B		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		39.3		17.3	5.8	33.5
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		37.4		12.7	* 5	28.2
Max Q Clear Time (g_c+I1), s		4.5		14.1	2.8	17.7
Green Ext Time (p_c), s		0.7		0.0	0.0	4.9

Intersection Summary	
HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Manchester Avenue & Manchester DAR

Ex + P AM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	841	1190	2	3	18
Future Volume (veh/h)	14	841	1190	2	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	15	914	1293	2	3	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	184	1421	1421	634	713	644
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	426	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	15	914	1293	2	3	20
Grp Sat Flow(s),veh/h/ln	426	1777	1777	1585	1781	1610
Q Serve(g_s), s	1.5	9.3	15.4	0.0	0.0	0.3
Cycle Q Clear(g_c), s	17.0	9.3	15.4	0.0	0.0	0.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	184	1421	1421	634	713	644
V/C Ratio(X)	0.08	0.64	0.91	0.00	0.00	0.03
Avail Cap(c_a), veh/h	184	1421	1421	634	713	644
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	20.7	10.9	12.7	8.1	8.1	8.2
Incr Delay (d2), s/veh	0.2	1.0	9.0	0.0	0.0	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	0.1	3.0	6.4	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.9	11.9	21.7	8.1	8.1	8.3
LnGrp LOS	C	B	C	A	A	A
Approach Vol, veh/h		929	1295		23	
Approach Delay, s/veh		12.0	21.7		8.3	
Approach LOS		B	C		A	

Timer - Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				22.5		22.5		22.5
Change Period (Y+Rc), s				4.5		4.5		4.5
Max Green Setting (Gmax), s				18.0		18.0		18.0
Max Q Clear Time (g_c+I1), s				19.0		2.3		17.4
Green Ext Time (p_c), s				0.0		0.0		0.4

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Manchester Avenue & I-5 SB Ramps

Ex + P PM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	104	136	259	781	72	19
Future Volume (veh/h)	104	136	259	781	72	19
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	148	282	849	78	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	147	862	556	1802	621	553
Arrive On Green	0.08	0.46	0.30	0.30	0.35	0.35
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	113	148	282	849	78	21
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	3.2	2.4	6.5	8.0	1.5	0.5
Cycle Q Clear(g_c), s	3.2	2.4	6.5	8.0	1.5	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	147	862	556	1802	621	553
V/C Ratio(X)	0.77	0.17	0.51	0.47	0.13	0.04
Avail Cap(c_a), veh/h	336	1513	1009	2477	621	553
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	23.3	8.2	15.1	4.7	11.5	11.2
Incr Delay (d2), s/veh	8.2	0.1	0.7	0.2	0.4	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	1.6	0.8	2.5	4.5	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.5	8.3	15.8	4.9	11.9	11.3
LnGrp LOS	C	A	B	A	B	B
Approach Vol, veh/h		261	1131		99	
Approach Delay, s/veh		18.4	7.6		11.8	
Approach LOS		B	A		B	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.2		22.7	8.5	20.7
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				42.0		18.1	* 9.8	28.0
Max Q Clear Time (g_c+I1), s				4.4		3.5	5.2	10.0
Green Ext Time (p_c), s				0.9		0.2	0.1	5.4

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	197	900	89	1099	138
Future Volume (veh/h)	15	197	900	89	1099	138
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	214	978	97	1195	150
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	34	893	1419	633	1327	609
Arrive On Green	0.02	0.48	0.40	0.40	0.38	0.38
Sat Flow, veh/h	1781	1870	3647	1585	3456	1585
Grp Volume(v), veh/h	16	214	978	97	1195	150
Grp Sat Flow(s),veh/h/ln	1781	1870	1777	1585	1728	1585
Q Serve(g_s), s	0.6	4.8	16.3	2.8	23.2	4.6
Cycle Q Clear(g_c), s	0.6	4.8	16.3	2.8	23.2	4.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	34	893	1419	633	1327	609
V/C Ratio(X)	0.47	0.24	0.69	0.15	0.90	0.25
Avail Cap(c_a), veh/h	125	988	1419	633	1327	609
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	34.6	11.0	17.8	13.7	20.7	15.0
Incr Delay (d2), s/veh	3.7	0.1	2.8	0.5	10.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.8	6.6	1.0	10.4	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.4	11.1	20.5	14.2	30.7	15.9
LnGrp LOS	D	B	C	B	C	B
Approach Vol, veh/h		230	1075		1345	
Approach Delay, s/veh		13.0	19.9		29.1	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		39.4		32.0	5.6	33.8
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		37.7		27.4	* 5	28.5
Max Q Clear Time (g_c+I1), s		6.8		25.2	2.6	18.3
Green Ext Time (p_c), s		0.8		0.9	0.0	3.8

Intersection Summary			
HCM 6th Ctrl Delay			24.0
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	1269	968	5	4	21
Future Volume (veh/h)	27	1269	968	5	4	21
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	29	1379	1052	5	4	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	274	1695	1695	756	627	567
Arrive On Green	0.48	0.48	0.48	0.48	0.35	0.35
Sat Flow, veh/h	534	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	29	1379	1052	5	4	23
Grp Sat Flow(s),veh/h/ln	534	1777	1777	1585	1781	1610
Q Serve(g_s), s	2.2	17.4	11.6	0.1	0.1	0.5
Cycle Q Clear(g_c), s	13.8	17.4	11.6	0.1	0.1	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	274	1695	1695	756	627	567
V/C Ratio(X)	0.11	0.81	0.62	0.01	0.01	0.04
Avail Cap(c_a), veh/h	299	1859	1859	829	627	567
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	15.3	11.8	10.2	7.2	11.1	11.2
Incr Delay (d2), s/veh	0.2	2.7	0.6	0.0	0.0	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	0.3	6.0	3.7	0.0	0.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.5	14.4	10.8	7.2	11.1	11.3
LnGrp LOS	B	B	B	A	B	B
Approach Vol, veh/h		1408	1057		27	
Approach Delay, s/veh		14.4	10.8		11.3	
Approach LOS		B	B		B	

Timer - Assigned Phs				4		6	8
Phs Duration (G+Y+Rc), s				29.6		23.0	29.6
Change Period (Y+Rc), s				4.5		4.5	4.5
Max Green Setting (Gmax), s				27.5		18.5	27.5
Max Q Clear Time (g_c+I1), s				19.4		2.5	13.6
Green Ext Time (p_c), s				5.6		0.0	6.4

Intersection Summary			
HCM 6th Ctrl Delay			12.8
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	310	280	760	1025	220	40
Future Volume (veh/h)	310	280	760	1025	220	40
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	304	826	1114	239	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	357	1307	854	1837	360	320
Arrive On Green	0.20	0.70	0.46	0.46	0.20	0.20
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	337	304	826	1114	239	43
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	18.6	5.8	42.9	22.7	12.4	2.2
Cycle Q Clear(g_c), s	18.6	5.8	42.9	22.7	12.4	2.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	357	1307	854	1837	360	320
V/C Ratio(X)	0.95	0.23	0.97	0.61	0.66	0.13
Avail Cap(c_a), veh/h	357	1309	856	1840	360	320
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	39.4	5.4	26.4	9.7	36.7	32.7
Incr Delay (d2), s/veh	33.6	0.1	23.0	0.6	9.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	2.0	23.5	11.4	6.2	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	73.0	5.5	49.5	10.3	46.0	33.5
LnGrp LOS	E	A	D	B	D	C
Approach Vol, veh/h		641	1940		282	
Approach Delay, s/veh		41.0	27.0		44.1	
Approach LOS		D	C		D	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				75.1		24.8	24.2	50.9
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				69.9		20.2	* 20	45.7
Max Q Clear Time (g_c+I1), s				7.8		14.4	20.6	44.9
Green Ext Time (p_c), s				2.0		0.4	0.0	0.7

Intersection Summary			
HCM 6th Ctrl Delay			31.8
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	90	410	1715	195	940	80
Future Volume (veh/h)	90	410	1715	195	940	80
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	446	1864	212	1022	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	120	1045	2042	231	1097	503
Arrive On Green	0.07	0.56	0.44	0.44	0.32	0.32
Sat Flow, veh/h	1781	1870	4822	526	3456	1585
Grp Volume(v), veh/h	98	446	1360	716	1022	87
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1776	1728	1585
Q Serve(g_s), s	4.3	11.1	29.9	30.3	22.9	3.2
Cycle Q Clear(g_c), s	4.3	11.1	29.9	30.3	22.9	3.2
Prop In Lane	1.00			0.30	1.00	1.00
Lane Grp Cap(c), veh/h	120	1045	1494	779	1097	503
V/C Ratio(X)	0.82	0.43	0.91	0.92	0.93	0.17
Avail Cap(c_a), veh/h	120	1045	1494	779	1097	503
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	36.8	10.2	21.0	21.1	26.5	19.7
Incr Delay (d2), s/veh	31.6	0.1	9.9	17.7	15.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	4.1	12.9	15.3	11.2	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.4	10.3	30.8	38.8	41.5	20.5
LnGrp LOS	E	B	C	D	D	C
Approach Vol, veh/h		544	2076		1109	
Approach Delay, s/veh		20.8	33.6		39.8	
Approach LOS		C	C		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		50.0		30.0	9.6	40.4
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		44.7		25.4	* 5.4	35.1
Max Q Clear Time (g_c+I1), s		13.1		24.9	6.3	32.3
Green Ext Time (p_c), s		1.9		0.2	0.0	2.3

Intersection Summary			
HCM 6th Ctrl Delay			33.6
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Manchester Avenue & DAR Access Road

Yr 2030 (no DAR) AM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	1340	1890	10	10	10
Future Volume (veh/h)	10	1340	1890	10	10	10
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	11	1457	2054	11	11	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	24	2395	2141	955	373	337
Arrive On Green	0.01	0.67	0.60	0.60	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	11	1457	2054	11	11	11
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1610
Q Serve(g_s), s	0.5	19.5	46.8	0.2	0.4	0.5
Cycle Q Clear(g_c), s	0.5	19.5	46.8	0.2	0.4	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	24	2395	2141	955	373	337
V/C Ratio(X)	0.46	0.61	0.96	0.01	0.03	0.03
Avail Cap(c_a), veh/h	104	2565	2151	959	373	337
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	42.1	7.7	16.1	6.8	27.0	27.0
Incr Delay (d2), s/veh	13.1	0.4	11.4	0.0	0.1	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	0.3	6.2	19.4	0.1	0.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.2	8.1	27.5	6.8	27.2	27.2
LnGrp LOS	E	A	C	A	C	C
Approach Vol, veh/h		1468	2065		22	
Approach Delay, s/veh		8.5	27.4		27.2	
Approach LOS		A	C		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				62.9		23.0	6.2	56.8
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				62.0		18.0	5.0	52.0
Max Q Clear Time (g_c+I1), s				21.5		2.5	2.5	48.8
Green Ext Time (p_c), s				16.1		0.0	0.0	3.0

Intersection Summary			
HCM 6th Ctrl Delay			19.6
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Manchester Avenue & I-5 SB Ramps

Yr 2030 No DAR PM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	150	320	630	1030	220	60
Future Volume (veh/h)	150	320	630	1030	220	60
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	348	685	1120	239	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	200	1081	757	1910	498	443
Arrive On Green	0.11	0.58	0.40	0.40	0.28	0.28
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	163	348	685	1120	239	65
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	6.2	6.7	23.9	14.7	7.7	2.1
Cycle Q Clear(g_c), s	6.2	6.7	23.9	14.7	7.7	2.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	200	1081	757	1910	498	443
V/C Ratio(X)	0.81	0.32	0.90	0.59	0.48	0.15
Avail Cap(c_a), veh/h	200	1097	773	1933	498	443
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	30.1	7.6	19.4	5.8	20.8	18.8
Incr Delay (d2), s/veh	22.1	0.2	13.9	0.5	3.3	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	2.3	12.2	8.1	3.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.2	7.8	33.3	6.2	24.1	19.5
LnGrp LOS	D	A	C	A	C	B
Approach Vol, veh/h		511	1805		304	
Approach Delay, s/veh		21.9	16.5		23.1	
Approach LOS		C	B		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				45.4		24.0	12.0	33.4
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				40.7		19.4	* 7.8	28.7
Max Q Clear Time (g_c+I1), s				8.7		9.7	8.2	25.9
Green Ext Time (p_c), s				2.3		0.6	0.0	2.2

Intersection Summary			
HCM 6th Ctrl Delay			18.3
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	470	1530	180	1400	130
Future Volume (veh/h)	70	470	1530	180	1400	130
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	511	1663	196	1522	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	91	855	1686	198	1534	704
Arrive On Green	0.05	0.46	0.36	0.36	0.44	0.44
Sat Flow, veh/h	1781	1870	4800	544	3456	1585
Grp Volume(v), veh/h	76	511	1221	638	1522	141
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1772	1728	1585
Q Serve(g_s), s	4.2	20.4	35.6	35.8	43.8	5.4
Cycle Q Clear(g_c), s	4.2	20.4	35.6	35.8	43.8	5.4
Prop In Lane	1.00			0.31	1.00	1.00
Lane Grp Cap(c), veh/h	91	855	1239	645	1534	704
V/C Ratio(X)	0.84	0.60	0.99	0.99	0.99	0.20
Avail Cap(c_a), veh/h	91	855	1239	645	1534	704
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	47.0	20.3	31.5	31.6	27.6	17.0
Incr Delay (d2), s/veh	44.3	0.8	22.3	32.9	21.1	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	3.0	8.8	17.9	20.6	21.6	6.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	91.3	21.1	53.8	64.5	48.8	17.6
LnGrp LOS	F	C	D	E	D	B
Approach Vol, veh/h		587	1859		1663	
Approach Delay, s/veh		30.2	57.5		46.1	
Approach LOS		C	E		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		51.0		49.0	9.3	41.7
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		45.7		44.4	* 5.1	36.4
Max Q Clear Time (g_c+I1), s		22.4		45.8	6.2	37.8
Green Ext Time (p_c), s		2.1		0.0	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			49.0
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	1860	1690	10	10	10
Future Volume (veh/h)	10	1860	1690	10	10	10
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	11	2022	1837	11	11	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	24	2276	1999	892	412	372
Arrive On Green	0.01	0.64	0.56	0.56	0.23	0.23
Sat Flow, veh/h	1781	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	11	2022	1837	11	11	11
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1610
Q Serve(g_s), s	0.5	37.0	36.4	0.2	0.4	0.4
Cycle Q Clear(g_c), s	0.5	37.0	36.4	0.2	0.4	0.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	24	2276	1999	892	412	372
V/C Ratio(X)	0.45	0.89	0.92	0.01	0.03	0.03
Avail Cap(c_a), veh/h	114	2374	1999	892	412	372
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	38.1	11.7	15.4	7.5	23.1	23.2
Incr Delay (d2), s/veh	12.7	4.4	7.4	0.0	0.1	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	0.3	12.9	14.6	0.1	0.2	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.8	16.1	22.8	7.5	23.3	23.3
LnGrp LOS	D	B	C	A	C	C
Approach Vol, veh/h		2033	1848		22	
Approach Delay, s/veh		16.3	22.7		23.3	
Approach LOS		B	C		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				54.9		23.0	6.1	48.8
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				52.0		18.0	5.0	42.0
Max Q Clear Time (g_c+I1), s				39.0		2.4	2.5	38.4
Green Ext Time (p_c), s				10.9		0.0	0.0	3.1

Intersection Summary			
HCM 6th Ctrl Delay			19.4
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	310	281	761	1035	225	40
Future Volume (veh/h)	310	281	761	1035	225	40
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	305	827	1125	245	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	357	1307	854	1838	360	320
Arrive On Green	0.20	0.70	0.46	0.46	0.20	0.20
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	337	305	827	1125	245	43
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	18.6	5.9	43.0	23.0	12.7	2.2
Cycle Q Clear(g_c), s	18.6	5.9	43.0	23.0	12.7	2.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	357	1307	854	1838	360	320
V/C Ratio(X)	0.95	0.23	0.97	0.61	0.68	0.13
Avail Cap(c_a), veh/h	357	1308	855	1840	360	320
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	39.4	5.4	26.4	9.8	36.9	32.7
Incr Delay (d2), s/veh	33.6	0.1	23.3	0.6	9.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	2.0	23.6	11.6	6.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	73.1	5.5	49.7	10.4	46.8	33.6
LnGrp LOS	E	A	D	B	D	C
Approach Vol, veh/h		642	1952		288	
Approach Delay, s/veh		41.0	27.0		44.8	
Approach LOS		D	C		D	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				75.1		24.8	24.2	50.9
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				69.9		20.2	* 20	45.7
Max Q Clear Time (g_c+I1), s				7.9		14.7	20.6	45.0
Green Ext Time (p_c), s				2.0		0.4	0.0	0.6

Intersection Summary			
HCM 6th Ctrl Delay			31.9
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	90	416	1726	202	948	80
Future Volume (veh/h)	90	416	1726	202	948	80
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	452	1876	220	1030	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	120	1045	2035	237	1097	503
Arrive On Green	0.07	0.56	0.44	0.44	0.32	0.32
Sat Flow, veh/h	1781	1870	4806	540	3456	1585
Grp Volume(v), veh/h	98	452	1373	723	1030	87
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1773	1728	1585
Q Serve(g_s), s	4.3	11.2	30.4	30.9	23.2	3.2
Cycle Q Clear(g_c), s	4.3	11.2	30.4	30.9	23.2	3.2
Prop In Lane	1.00			0.30	1.00	1.00
Lane Grp Cap(c), veh/h	120	1045	1494	778	1097	503
V/C Ratio(X)	0.82	0.43	0.92	0.93	0.94	0.17
Avail Cap(c_a), veh/h	120	1045	1494	778	1097	503
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	36.8	10.3	21.1	21.3	26.5	19.7
Incr Delay (d2), s/veh	31.6	0.1	10.6	19.0	15.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	4.1	13.2	15.8	11.4	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.4	10.4	31.8	40.2	42.5	20.5
LnGrp LOS	E	B	C	D	D	C
Approach Vol, veh/h		550	2096		1117	
Approach Delay, s/veh		20.7	34.7		40.8	
Approach LOS		C	C		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		50.0		30.0	9.6	40.4
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		44.7		25.4	* 5.4	35.1
Max Q Clear Time (g_c+I1), s		13.2		25.2	6.3	32.9
Green Ext Time (p_c), s		1.9		0.1	0.0	1.9

Intersection Summary			
HCM 6th Ctrl Delay			34.4
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Manchester Avenue & DAR Access Road

Yr 2030 no DAR + P AM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	1340	1890	12	13	28
Future Volume (veh/h)	24	1340	1890	12	13	28
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	26	1457	2054	13	14	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	48	2413	2114	943	368	332
Arrive On Green	0.03	0.68	0.59	0.59	0.21	0.21
Sat Flow, veh/h	1781	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	26	1457	2054	13	14	30
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1610
Q Serve(g_s), s	1.3	19.5	48.4	0.3	0.5	1.3
Cycle Q Clear(g_c), s	1.3	19.5	48.4	0.3	0.5	1.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	48	2413	2114	943	368	332
V/C Ratio(X)	0.54	0.60	0.97	0.01	0.04	0.09
Avail Cap(c_a), veh/h	102	2526	2118	945	368	332
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	41.9	7.6	17.0	7.2	27.7	28.0
Incr Delay (d2), s/veh	9.3	0.4	13.5	0.0	0.2	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	0.7	6.2	20.8	0.1	0.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	51.3	8.0	30.4	7.2	27.9	28.5
LnGrp LOS	D	A	C	A	C	C
Approach Vol, veh/h		1483	2067		44	
Approach Delay, s/veh		8.8	30.3		28.3	
Approach LOS		A	C		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				64.2		23.0	7.3	56.9
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				62.0		18.0	5.0	52.0
Max Q Clear Time (g_c+I1), s				21.5		3.3	3.3	50.4
Green Ext Time (p_c), s				16.1		0.1	0.0	1.5

Intersection Summary			
HCM 6th Ctrl Delay			21.4
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Manchester Avenue & I-5 SB Ramps

Yr 2030 no DAR + P PM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	150	322	631	1041	231	60
Future Volume (veh/h)	150	322	631	1041	231	60
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	350	686	1132	251	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	200	1081	758	1910	498	443
Arrive On Green	0.11	0.58	0.41	0.41	0.28	0.28
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	163	350	686	1132	251	65
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	6.2	6.7	23.9	15.0	8.2	2.1
Cycle Q Clear(g_c), s	6.2	6.7	23.9	15.0	8.2	2.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	200	1081	758	1910	498	443
V/C Ratio(X)	0.81	0.32	0.91	0.59	0.50	0.15
Avail Cap(c_a), veh/h	200	1096	773	1933	498	443
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	30.1	7.6	19.4	5.8	21.0	18.8
Incr Delay (d2), s/veh	22.1	0.2	14.0	0.5	3.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	2.3	12.2	8.3	3.7	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.3	7.8	33.4	6.3	24.6	19.5
LnGrp LOS	D	A	C	A	C	B
Approach Vol, veh/h		513	1818		316	
Approach Delay, s/veh		21.9	16.5		23.6	
Approach LOS		C	B		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				45.4		24.0	12.0	33.4
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				40.7		19.4	* 7.8	28.7
Max Q Clear Time (g_c+I1), s				8.7		10.2	8.2	25.9
Green Ext Time (p_c), s				2.3		0.7	0.0	2.2

Intersection Summary			
HCM 6th Ctrl Delay			18.4
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	483	1542	189	1414	130
Future Volume (veh/h)	70	483	1542	189	1414	130
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	525	1676	205	1537	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	91	855	1678	205	1534	704
Arrive On Green	0.05	0.46	0.36	0.36	0.44	0.44
Sat Flow, veh/h	1781	1870	4779	562	3456	1585
Grp Volume(v), veh/h	76	525	1236	645	1537	141
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1769	1728	1585
Q Serve(g_s), s	4.2	21.2	36.2	36.4	44.4	5.4
Cycle Q Clear(g_c), s	4.2	21.2	36.2	36.4	44.4	5.4
Prop In Lane	1.00			0.32	1.00	1.00
Lane Grp Cap(c), veh/h	91	855	1239	644	1534	704
V/C Ratio(X)	0.84	0.61	1.00	1.00	1.00	0.20
Avail Cap(c_a), veh/h	91	855	1239	644	1534	704
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	47.0	20.5	31.8	31.8	27.8	17.0
Incr Delay (d2), s/veh	44.3	1.0	24.9	35.9	23.4	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	3.0	9.1	18.6	21.4	22.3	6.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	91.3	21.5	56.7	67.7	51.2	17.6
LnGrp LOS	F	C	E	F	F	B
Approach Vol, veh/h		601	1881		1678	
Approach Delay, s/veh		30.3	60.5		48.4	
Approach LOS		C	E		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		51.0		49.0	9.3	41.7
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		45.7		44.4	* 5.1	36.4
Max Q Clear Time (g_c+I1), s		23.2		46.4	6.2	38.4
Green Ext Time (p_c), s		2.2		0.0	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			51.2
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	1860	1690	15	14	31
Future Volume (veh/h)	37	1860	1690	15	14	31
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	40	2022	1837	16	15	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	66	2276	1915	854	412	372
Arrive On Green	0.04	0.64	0.54	0.54	0.23	0.23
Sat Flow, veh/h	1781	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	40	2022	1837	16	15	34
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1610
Q Serve(g_s), s	1.7	37.0	38.4	0.4	0.5	1.3
Cycle Q Clear(g_c), s	1.7	37.0	38.4	0.4	0.5	1.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	66	2276	1915	854	412	372
V/C Ratio(X)	0.60	0.89	0.96	0.02	0.04	0.09
Avail Cap(c_a), veh/h	114	2374	1917	855	412	372
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	36.9	11.7	17.1	8.4	23.2	23.5
Incr Delay (d2), s/veh	8.5	4.4	12.3	0.0	0.2	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	12.9	16.7	0.1	0.2	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.5	16.1	29.5	8.4	23.4	24.0
LnGrp LOS	D	B	C	A	C	C
Approach Vol, veh/h		2062	1853		49	
Approach Delay, s/veh		16.7	29.3		23.8	
Approach LOS		B	C		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				54.9		23.0	7.9	47.0
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				52.0		18.0	5.0	42.0
Max Q Clear Time (g_c+I1), s				39.0		3.3	3.7	40.4
Green Ext Time (p_c), s				10.9		0.1	0.0	1.4

Intersection Summary			
HCM 6th Ctrl Delay			22.7
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	520	310	690	815	180	40
Future Volume (veh/h)	520	310	690	815	180	40
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	565	337	750	886	196	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	557	1389	733	1560	298	265
Arrive On Green	0.31	0.74	0.39	0.39	0.17	0.17
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	565	337	750	886	196	43
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	34.4	6.2	43.1	22.6	11.3	2.6
Cycle Q Clear(g_c), s	34.4	6.2	43.1	22.6	11.3	2.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	557	1389	733	1560	298	265
V/C Ratio(X)	1.01	0.24	1.02	0.57	0.66	0.16
Avail Cap(c_a), veh/h	557	1389	733	1560	298	265
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	37.8	4.4	33.5	15.7	42.9	39.2
Incr Delay (d2), s/veh	41.7	0.1	39.3	0.5	10.8	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.1	2.1	26.9	10.3	5.9	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	79.5	4.5	72.8	16.2	53.7	40.5
LnGrp LOS	F	A	F	B	D	D
Approach Vol, veh/h		902	1636		239	
Approach Delay, s/veh		51.5	42.1		51.3	
Approach LOS		D	D		D	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				87.0		23.0	38.6	48.4
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				81.7		18.4	* 34	43.1
Max Q Clear Time (g_c+I1), s				8.2		13.3	36.4	45.1
Green Ext Time (p_c), s				2.3		0.3	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			46.0
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	380	1405	145	880	110
Future Volume (veh/h)	110	380	1405	145	880	110
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	413	1527	158	957	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	148	1034	1927	199	1056	485
Arrive On Green	0.08	0.55	0.41	0.41	0.31	0.31
Sat Flow, veh/h	1781	1870	4869	486	3456	1585
Grp Volume(v), veh/h	120	413	1105	580	957	120
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1783	1728	1585
Q Serve(g_s), s	4.6	8.9	19.9	19.9	18.6	4.0
Cycle Q Clear(g_c), s	4.6	8.9	19.9	19.9	18.6	4.0
Prop In Lane	1.00			0.27	1.00	1.00
Lane Grp Cap(c), veh/h	148	1034	1396	731	1056	485
V/C Ratio(X)	0.81	0.40	0.79	0.79	0.91	0.25
Avail Cap(c_a), veh/h	148	1034	1396	731	1056	485
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	31.6	9.0	18.0	18.1	23.3	18.3
Incr Delay (d2), s/veh	26.5	0.1	4.7	8.6	12.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.1	7.9	9.1	8.9	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.0	9.1	22.7	26.7	36.0	19.5
LnGrp LOS	E	A	C	C	D	B
Approach Vol, veh/h		533	1685		1077	
Approach Delay, s/veh		20.1	24.1		34.1	
Approach LOS		C	C		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.0		26.0	10.0	34.0
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		38.7		21.4	* 5.8	28.7
Max Q Clear Time (g_c+I1), s		10.9		20.6	6.6	21.9
Green Ext Time (p_c), s		1.7		0.3	0.0	4.4

Intersection Summary			
HCM 6th Ctrl Delay			26.7
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Manchester Avenue & DAR Access Road

Yr 2030 w/ DAR AM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	1230	1520	40	140	20
Future Volume (veh/h)	30	1230	1520	40	140	20
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	33	1337	1652	43	173	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	61	2075	1690	754	953	431
Arrive On Green	0.03	0.58	0.48	0.48	0.27	0.00
Sat Flow, veh/h	1781	3647	3647	1585	3563	1610
Grp Volume(v), veh/h	33	1337	1652	43	173	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1610
Q Serve(g_s), s	1.2	16.9	30.7	1.0	2.5	0.0
Cycle Q Clear(g_c), s	1.2	16.9	30.7	1.0	2.5	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	61	2075	1690	754	953	431
V/C Ratio(X)	0.54	0.64	0.98	0.06	0.18	0.00
Avail Cap(c_a), veh/h	132	2218	1690	754	953	431
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	0.00
Uniform Delay (d), s/veh	32.0	9.3	17.3	9.5	19.0	0.0
Incr Delay (d2), s/veh	7.3	0.6	16.8	0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.4	14.7	0.3	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.3	9.9	34.1	9.5	19.4	0.0
LnGrp LOS	D	A	C	A	B	A
Approach Vol, veh/h		1370	1695		173	
Approach Delay, s/veh		10.6	33.5		19.4	
Approach LOS		B	C		B	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				44.3		23.0	7.3	37.0
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				42.0		18.0	5.0	32.0
Max Q Clear Time (g_c+I1), s				18.9		4.5	3.2	32.7
Green Ext Time (p_c), s				11.1		0.4	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			23.1
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Manchester Avenue & I-5 SB Ramps

Yr 2030 w/ DAR PM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	350	530	1030	210	50
Future Volume (veh/h)	130	350	530	1030	210	50
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	380	576	1120	228	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	178	1026	719	1911	535	476
Arrive On Green	0.10	0.55	0.38	0.38	0.30	0.30
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	141	380	576	1120	228	54
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	5.1	7.5	18.0	13.9	6.7	1.6
Cycle Q Clear(g_c), s	5.1	7.5	18.0	13.9	6.7	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	178	1026	719	1911	535	476
V/C Ratio(X)	0.79	0.37	0.80	0.59	0.43	0.11
Avail Cap(c_a), veh/h	223	1152	799	2029	535	476
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	28.8	8.4	18.0	5.4	18.4	16.6
Incr Delay (d2), s/veh	14.1	0.2	5.4	0.4	2.5	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	2.8	2.6	8.0	7.9	2.9	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.9	8.6	23.3	5.8	20.9	17.1
LnGrp LOS	D	A	C	A	C	B
Approach Vol, veh/h		521	1696		282	
Approach Delay, s/veh		17.9	11.8		20.1	
Approach LOS		B	B		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				41.3		24.3	10.8	30.5
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				40.4		19.7	* 8.2	28.0
Max Q Clear Time (g_c+I1), s				9.5		8.7	7.1	20.0
Green Ext Time (p_c), s				2.5		0.6	0.0	5.2

Intersection Summary			
HCM 6th Ctrl Delay			14.0
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	450	1350	110	1250	210
Future Volume (veh/h)	110	450	1350	110	1250	210
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	489	1467	120	1359	228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	150	885	1646	135	1440	661
Arrive On Green	0.08	0.47	0.34	0.34	0.42	0.42
Sat Flow, veh/h	1781	1870	4979	393	3456	1585
Grp Volume(v), veh/h	120	489	1038	549	1359	228
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1800	1728	1585
Q Serve(g_s), s	5.9	16.7	25.9	25.9	33.9	8.8
Cycle Q Clear(g_c), s	5.9	16.7	25.9	25.9	33.9	8.8
Prop In Lane	1.00			0.22	1.00	1.00
Lane Grp Cap(c), veh/h	150	885	1165	616	1440	661
V/C Ratio(X)	0.80	0.55	0.89	0.89	0.94	0.35
Avail Cap(c_a), veh/h	155	890	1165	616	1440	661
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	40.4	16.9	27.9	27.9	25.2	17.8
Incr Delay (d2), s/veh	22.7	0.4	10.5	17.7	13.6	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	6.9	11.8	13.7	15.8	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	63.1	17.3	38.4	45.6	38.8	19.3
LnGrp LOS	E	B	D	D	D	B
Approach Vol, veh/h		609	1587		1587	
Approach Delay, s/veh		26.3	40.9		36.0	
Approach LOS		C	D		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		47.7		42.0	11.7	36.0
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		42.7		37.4	* 7.8	30.7
Max Q Clear Time (g_c+I1), s		18.7		35.9	7.9	27.9
Green Ext Time (p_c), s		2.0		0.8	0.0	2.0

Intersection Summary			
HCM 6th Ctrl Delay			36.5
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	1670	1410	20	180	40
Future Volume (veh/h)	30	1670	1410	20	180	40
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	33	1815	1533	22	236	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	62	2003	2303	715	1000	452
Arrive On Green	0.03	0.56	0.45	0.45	0.28	0.00
Sat Flow, veh/h	1781	3647	5274	1585	3563	1610
Grp Volume(v), veh/h	33	1815	1533	22	236	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1702	1585	1781	1610
Q Serve(g_s), s	1.2	29.2	15.1	0.5	3.3	0.0
Cycle Q Clear(g_c), s	1.2	29.2	15.1	0.5	3.3	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	62	2003	2303	715	1000	452
V/C Ratio(X)	0.53	0.91	0.67	0.03	0.24	0.00
Avail Cap(c_a), veh/h	139	2050	2303	715	1000	452
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	0.00
Uniform Delay (d), s/veh	30.5	12.5	13.8	9.8	17.8	0.0
Incr Delay (d2), s/veh	7.0	6.2	0.7	0.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	10.8	5.2	0.2	1.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.5	18.7	14.6	9.8	18.3	0.0
LnGrp LOS	D	B	B	A	B	A
Approach Vol, veh/h		1848	1555		236	
Approach Delay, s/veh		19.0	14.5		18.3	
Approach LOS		B	B		B	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				41.2		23.0	7.2	33.9
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				37.0		18.0	5.0	27.0
Max Q Clear Time (g_c+I1), s				31.2		5.3	3.2	17.1
Green Ext Time (p_c), s				4.9		0.6	0.0	6.9

Intersection Summary			
HCM 6th Ctrl Delay			17.1
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	520	311	691	824	185	40
Future Volume (veh/h)	520	311	691	824	185	40
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	565	338	751	896	201	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	557	1389	733	1560	298	265
Arrive On Green	0.31	0.74	0.39	0.39	0.17	0.17
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	565	338	751	896	201	43
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	34.4	6.2	43.1	22.9	11.7	2.6
Cycle Q Clear(g_c), s	34.4	6.2	43.1	22.9	11.7	2.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	557	1389	733	1560	298	265
V/C Ratio(X)	1.01	0.24	1.02	0.57	0.67	0.16
Avail Cap(c_a), veh/h	557	1389	733	1560	298	265
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	37.8	4.4	33.5	15.8	43.0	39.2
Incr Delay (d2), s/veh	41.7	0.1	39.7	0.5	11.6	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.1	2.1	27.0	10.5	6.1	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	79.5	4.5	73.1	16.3	54.6	40.5
LnGrp LOS	F	A	F	B	D	D
Approach Vol, veh/h		903	1647		244	
Approach Delay, s/veh		51.5	42.2		52.1	
Approach LOS		D	D		D	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				87.0		23.0	38.6	48.4
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				81.7		18.4	* 34	43.1
Max Q Clear Time (g_c+I1), s				8.2		13.7	36.4	45.1
Green Ext Time (p_c), s				2.3		0.3	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			46.1
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	386	1415	152	887	110
Future Volume (veh/h)	110	386	1415	152	887	110
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	420	1538	165	964	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	148	1034	1920	206	1056	485
Arrive On Green	0.08	0.55	0.41	0.41	0.31	0.31
Sat Flow, veh/h	1781	1870	4851	502	3456	1585
Grp Volume(v), veh/h	120	420	1118	585	964	120
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1780	1728	1585
Q Serve(g_s), s	4.6	9.1	20.2	20.2	18.8	4.0
Cycle Q Clear(g_c), s	4.6	9.1	20.2	20.2	18.8	4.0
Prop In Lane	1.00			0.28	1.00	1.00
Lane Grp Cap(c), veh/h	148	1034	1396	730	1056	485
V/C Ratio(X)	0.81	0.41	0.80	0.80	0.91	0.25
Avail Cap(c_a), veh/h	148	1034	1396	730	1056	485
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	31.6	9.0	18.1	18.2	23.4	18.3
Incr Delay (d2), s/veh	26.5	0.1	4.9	9.1	13.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.2	8.1	9.3	9.0	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.0	9.1	23.1	27.2	36.7	19.5
LnGrp LOS	E	A	C	C	D	B
Approach Vol, veh/h		540	1703		1084	
Approach Delay, s/veh		20.0	24.5		34.8	
Approach LOS		B	C		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.0		26.0	10.0	34.0
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		38.7		21.4	* 5.8	28.7
Max Q Clear Time (g_c+I1), s		11.1		20.8	6.6	22.2
Green Ext Time (p_c), s		1.7		0.2	0.0	4.2

Intersection Summary			
HCM 6th Ctrl Delay			27.1
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Manchester Avenue & DAR Access Road

Yr 2030 w/ DAR + P AM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	1230	1520	42	143	37
Future Volume (veh/h)	43	1230	1520	42	143	37
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	47	1337	1652	46	98	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	77	2089	1674	747	472	427
Arrive On Green	0.04	0.59	0.47	0.47	0.26	0.26
Sat Flow, veh/h	1781	3647	3647	1585	1781	1610
Grp Volume(v), veh/h	47	1337	1652	46	98	102
Grp Sat Flow(s),veh/h/ln	1781	1777	1777	1585	1781	1610
Q Serve(g_s), s	1.8	16.9	31.2	1.1	2.9	3.4
Cycle Q Clear(g_c), s	1.8	16.9	31.2	1.1	2.9	3.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	77	2089	1674	747	472	427
V/C Ratio(X)	0.61	0.64	0.99	0.06	0.21	0.24
Avail Cap(c_a), veh/h	131	2197	1674	747	472	427
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	31.9	9.2	17.8	9.8	19.4	19.6
Incr Delay (d2), s/veh	7.6	0.6	18.9	0.0	1.0	1.3
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	5.4	15.4	0.3	1.3	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.5	9.8	36.7	9.8	20.4	20.9
LnGrp LOS	D	A	D	A	C	C
Approach Vol, veh/h		1384	1698		200	
Approach Delay, s/veh		10.8	35.9		20.7	
Approach LOS		B	D		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				44.9		23.0	7.9	37.0
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				42.0		18.0	5.0	32.0
Max Q Clear Time (g_c+I1), s				18.9		5.4	3.8	33.2
Green Ext Time (p_c), s				11.1		0.5	0.0	0.0

Intersection Summary			
HCM 6th Ctrl Delay			24.4
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Manchester Avenue & I-5 SB Ramps

Yr 2030 w/ DAR + P PM
12/13/2019

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	130	352	531	1040	221	50
Future Volume (veh/h)	130	352	531	1040	221	50
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	383	577	1130	240	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	178	1027	720	1911	535	476
Arrive On Green	0.10	0.55	0.38	0.38	0.30	0.30
Sat Flow, veh/h	1781	1870	1870	2790	1781	1585
Grp Volume(v), veh/h	141	383	577	1130	240	54
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1395	1781	1585
Q Serve(g_s), s	5.1	7.6	18.0	14.1	7.2	1.6
Cycle Q Clear(g_c), s	5.1	7.6	18.0	14.1	7.2	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	178	1027	720	1911	535	476
V/C Ratio(X)	0.79	0.37	0.80	0.59	0.45	0.11
Avail Cap(c_a), veh/h	223	1151	798	2028	535	476
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	28.9	8.4	18.0	5.5	18.6	16.6
Incr Delay (d2), s/veh	14.1	0.2	5.4	0.4	2.7	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	2.8	2.6	8.0	8.0	3.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.0	8.6	23.3	5.9	21.3	17.1
LnGrp LOS	D	A	C	A	C	B
Approach Vol, veh/h		524	1707		294	
Approach Delay, s/veh		17.9	11.8		20.5	
Approach LOS		B	B		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				41.3		24.3	10.8	30.6
Change Period (Y+Rc), s				5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s				40.4		19.7	* 8.2	28.0
Max Q Clear Time (g_c+I1), s				9.6		9.2	7.1	20.0
Green Ext Time (p_c), s				2.5		0.7	0.0	5.2

Intersection Summary			
HCM 6th Ctrl Delay			14.1
HCM 6th LOS			B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	463	1361	119	1263	210
Future Volume (veh/h)	110	463	1361	119	1263	210
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	120	503	1479	129	1373	228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	150	885	1636	143	1440	661
Arrive On Green	0.08	0.47	0.34	0.34	0.42	0.42
Sat Flow, veh/h	1781	1870	4951	417	3456	1585
Grp Volume(v), veh/h	120	503	1053	555	1373	228
Grp Sat Flow(s),veh/h/ln	1781	1870	1702	1795	1728	1585
Q Serve(g_s), s	5.9	17.4	26.4	26.4	34.5	8.8
Cycle Q Clear(g_c), s	5.9	17.4	26.4	26.4	34.5	8.8
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	150	885	1165	614	1440	661
V/C Ratio(X)	0.80	0.57	0.90	0.90	0.95	0.35
Avail Cap(c_a), veh/h	155	890	1165	614	1440	661
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	40.4	17.1	28.1	28.1	25.3	17.8
Incr Delay (d2), s/veh	22.7	0.5	11.5	19.2	14.9	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	7.2	12.2	14.1	16.3	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	63.1	17.6	39.6	47.3	40.2	19.3
LnGrp LOS	E	B	D	D	D	B
Approach Vol, veh/h		623	1608		1601	
Approach Delay, s/veh		26.4	42.3		37.3	
Approach LOS		C	D		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		47.7		42.0	11.7	36.0
Change Period (Y+Rc), s		5.3		4.6	* 4.2	5.3
Max Green Setting (Gmax), s		42.7		37.4	* 7.8	30.7
Max Q Clear Time (g_c+I1), s		19.4		36.5	7.9	28.4
Green Ext Time (p_c), s		2.1		0.5	0.0	1.6

Intersection Summary			
HCM 6th Ctrl Delay			37.6
HCM 6th LOS			D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	1670	1410	25	184	60
Future Volume (veh/h)	56	1670	1410	25	184	60
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1900
Adj Flow Rate, veh/h	61	1815	1533	27	132	137
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0
Cap, veh/h	92	2003	2216	688	500	452
Arrive On Green	0.05	0.56	0.43	0.43	0.28	0.28
Sat Flow, veh/h	1781	3647	5274	1585	1781	1610
Grp Volume(v), veh/h	61	1815	1533	27	132	137
Grp Sat Flow(s),veh/h/ln	1781	1777	1702	1585	1781	1610
Q Serve(g_s), s	2.2	29.2	15.6	0.6	3.7	4.3
Cycle Q Clear(g_c), s	2.2	29.2	15.6	0.6	3.7	4.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	92	2003	2216	688	500	452
V/C Ratio(X)	0.66	0.91	0.69	0.04	0.26	0.30
Avail Cap(c_a), veh/h	139	2050	2216	688	500	452
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	29.9	12.5	14.7	10.5	17.9	18.1
Incr Delay (d2), s/veh	7.9	6.2	0.9	0.0	1.3	1.7
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	10.8	5.5	0.2	1.6	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.8	18.7	15.6	10.5	19.2	19.9
LnGrp LOS	D	B	B	B	B	B
Approach Vol, veh/h		1876	1560		269	
Approach Delay, s/veh		19.3	15.5		19.5	
Approach LOS		B	B		B	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				41.2		23.0	8.3	32.8
Change Period (Y+Rc), s				5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s				37.0		18.0	5.0	27.0
Max Q Clear Time (g_c+I1), s				31.2		6.3	4.2	17.6
Green Ext Time (p_c), s				4.9		0.6	0.0	6.7

Intersection Summary			
HCM 6th Ctrl Delay			17.7
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.