KUNZMAN ASSOCIATES, INC.

JEREMY'S TRAVEL PLAZA

TRAFFIC IMPACT ANALYSIS

June 13, 2017

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Prepared by:

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I.   INTRODUCTION

The purpose of this report is to provide an assessment of the traffic impacts resulting from the development of the proposed Jeremy's Travel Plaza[1] project and to identify the traffic mitigation measures necessary to maintain the established level of service standard for the elements of the impacted roadway system. The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act.

The County of San Bernardino is the lead agency responsible for preparation of the traffic impact analysis, in accordance with California Environmental Quality Act authorizing legislation. This report analyzes traffic impacts for the anticipated opening date with partial occupancy of the development in Opening Year 2019, at which time it will be generating trips at its full potential, and for the current traffic forecast year, which is the Year 2040.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided in Appendix A.

A.   Project Description

The proposed development is located east of Harvard Road between Hacienda Road and the I-15 Freeway SB Ramps in the County of San Bernardino. A vicinity map showing the project location is provided on Figure 1.

The project site is proposed to be developed with a 10 fueling position gasoline/service station with convenience market and a 1,800 square foot coffee/donut shop with drive-through window. The project site is proposed to provide access to Harvard Road. Figure 2 illustrates the project site plan. The project access is located 150 feet north of the I-15 SB Off-ramp.

B.   Study Area

Regional access to the project site is mainly provided by the I-15 Freeway. Local access is provided by various roadways in the vicinity of the site. The north-south roadway which will be most affected by the project is Harvard Road. The east-west roadway which will be most affected by the project is Hacienda Road.

A series of scoping discussions were conducted with the County of San Bernardino and the California Department of Transportation to define the desired analysis locations for each future analysis year. In addition, the San Bernardino Associated Governments staff has also been contacted to discuss the project.

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[1] It should be noted that this development has been studied previously and that the project site is partially developed. The land uses within the project site have changed slightly since the original traffic study. This analysis provides a focused analysis at the immediately affected intersections. Previous fees have been paid and should be accounted for during the payment of the suggested improvement fees.

C. **Analysis Methodology**

The analysis of the traffic impacts from the proposed development and the assessment of the required mitigation measures were based on an evaluation of the existing and forecast traffic conditions in the vicinity of the site with and without the project. The following analysis years are considered in this report:

- ■ Existing Conditions (2017)
- ■ Existing Plus Project Conditions[2]
- ■ Project Opening Year Conditions (2019)
- ■ Horizon Year Conditions (2040)

Existing intersection traffic conditions were established through Friday evening and Sunday mid-day peak hour traffic counts obtained by Kunzman Associates, Inc. from June 2016 (see Appendix C). In addition, truck classification counts were conducted at the study area intersections. The existing percent of trucks was used in the conversion of trucks to Passenger Car Equivalent's (see Appendix E).

Project traffic volumes for all future projections were estimated using the manual approach. Trip generation has been based upon rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012.

The distributions of the project trips were based on existing travel patterns calculated using existing traffic counts. This methodology was approved by the County of San Bernardino Transportation Department and the California Department of Transportation staff (see Appendix B).

The average daily traffic volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model (SBTAM) Year 2008 and Year 2035 average daily traffic volume forecasts (see Appendix E). Traffic model plots are included in Appendix D. This difference defines the growth in traffic over the 27 year period. The incremental growth in average daily traffic volume has been factored to reflect the forecast growth between Year 2017 and Year 2040. For this purpose, linear growth between the Year 2008 base condition and the forecast Year 2035 condition was assumed. Since the increment between Year 2017 and Year 2040 is 23 years of the 27 year time frame, a factor of 0.85 (i.e., 23/27) was used.

The Year 2040 without project daily and peak hour directional roadway segment volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model Year 2008 and Year 2035 peak hour volumes. The growth increment calculation worksheets are shown in Appendix E. Current peak hour intersection approach/departure data is a necessary input to this approach. The existing traffic count data serves as both the starting point for the refinement process, and also provides important insight into current travel patterns and the relationship between peak hour and daily traffic conditions. The initial turning movement proportions are estimated

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[2] The existing plus project conditions has been analyzed to comply with the Sunnyvale West Neighborhood Association v. City of Sunnyvale CEQA court case. This scenario assumes the full development of the proposed project and full absorption of the proposed project trips on the circulation system at the present time.

based upon the relationship of each approach leg's forecast traffic volume to the other legs forecast volumes at the intersection. The initial estimate of turning movement proportions is then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program Report 255. A linear programming algorithm is used to calculate individual turning movements that match the known directional roadway segment volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The Opening Year (2019) traffic volumes have been interpolated from the Year 2040 traffic volumes based upon a portion of the future growth increment. The remaining un-built portion of the original project is then added to the projected volumes to create the new future base volumes.

The remaining un-built portion of the original project is then added to the Year 2040 San Bernardino Transportation Analysis Model volumes to create the new future base volumes. Project traffic is then added to the new future base volumes. Quality control checks and forecast adjustments were performed as necessary to ensure that all future traffic volume forecasts reflect a minimum of 10% growth over existing traffic volumes. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix F) based on the Highway Capacity Manual – Transportation Research Board Special Report 209. To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection. The signalized intersections are considered deficient (Level of Service F) if the overall intersection critical volume to capacity ratio equals or exceeds 1.0, even if the Level of Service defined by the delay value is below the defined Level of Service standard. The volume to capacity ratio is defined as the critical volumes divided by the intersection capacity. A volume to capacity ratio greater than 1.0 implies an infinite queue.

The Level of Service analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of two seconds per phase. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis. The following formula has been used to calculate the pedestrian minimum times for all Highway Capacity Manual runs:

(Curb to curb distance) / (4 feet/second) + 7 seconds

For existing/existing plus project/Opening Year (2019) traffic conditions, saturation flow rates of 1,800 vehicles per hour of green for through and right turn lanes and 1,700 vehicles per lane for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes and 1,500 vehicles per lane for triple left turn lanes have been assumed for the capacity analysis.

For Year 2040 traffic conditions, saturation flow rates of 1,900 vehicles per hour of green for through and right turn lanes and 1,800 vehicles per lane for single left turn lanes, 1,700

vehicles per lane for dual left turn lanes and 1,800 vehicles per lane for double right turn lanes have been assumed for the capacity analysis.

The peak hour traffic volumes have been adjusted to peak 15 minute volumes for analysis purposes using the existing observed peak 15 minute to peak hour factors for all scenarios analyzed. Where feasible improvements in accordance with the local jurisdiction's General Plan and which result in acceptable operations cannot be identified, the Year 2040 peak hour factor has been adjusted upwards to 0.95. This is to account for the effects of congestion on peak spreading. Peak spreading refers to the tendency of traffic to spread more evenly across time as congestion increases.

The traffic mitigation needs anticipated at the time of the project opening with full occupancy and for the Year 2040 were combined into a summary of mitigation requirements and costs. The mitigation cost responsibility for the proposed development was estimated based on the percent of the increase in traffic from the existing condition to the Year 2040 that was attributed to the project generated trips.

D. **Definition of Deficiency and Significant Impact**

The following definitions of deficiencies and significant impacts have been developed in accordance with the County of San Bernardino requirements.

1. Definition of Deficiency

    The definition of an intersection deficiency has been obtained from the County of San Bernardino General Plan. The General Plan states that peak hour intersection operations of Level of Service C or better are generally acceptable. Therefore, any intersection operating at Level of Service D to F will be considered deficient.

    For freeway facilities, the Congestion Management Program controls the definition of deficiency for purposes of this study. The Congestion Management Program definition of deficiency is based on maintaining a Level of Service standard of Level of Service E or better, except where an existing Level of Service F condition is identified in the Congestion Management Program document (San Bernardino County Congestion Management Program Table 2-1). A Congestion Management Program deficiency is, therefore, defined as any freeway segment operating or projected to operate at Level of Service F, unless the segment is identified explicitly in the Congestion Management Program document.

    The identification of a Congestion Management Program deficiency requires further analysis in satisfaction of Congestion Management Program requirements, including:

    ■   Evaluation of the mitigation measures required to restore traffic operations to an acceptable level with respect to Congestion Management Program Level of Service standards.

    ■   Calculation of the project share of new traffic on the impacted Congestion Management Program facility during peak hours of traffic.

■   Estimation of the cost required to implement the improvements required to restore traffic operations to an acceptable Level of Service as described above.

This study incorporates each of these aspects for all locations where a Congestion Management Program deficiency is identified.

2.   Definition of Significant Impact

The identification of significant impacts is a requirement of the California Environmental Quality Act.   The County of San Bernardino General Plan and Circulation Element have been adopted in accordance with California Environmental Quality Act requirements, and any roadway improvements within the County of San Bernardino that are consistent with these documents are not considered a significant impact, so long as the project contributes its "fair share" funding for improvements.

A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the Level of Service at any off-site location projected to experience deficient operations under foreseeable cumulative conditions, where feasible improvements consistent with the County of San Bernardino General Plan cannot be constructed.

Figure 1
Project Location Map

Site

Hacienda Road

Harvard Road

Yermo Road

15

15

Legend

1 = Intersection Reference Number

Figure 2
Site Plan

STATE HWY 15 SOUTHBOUND OFFRAMP
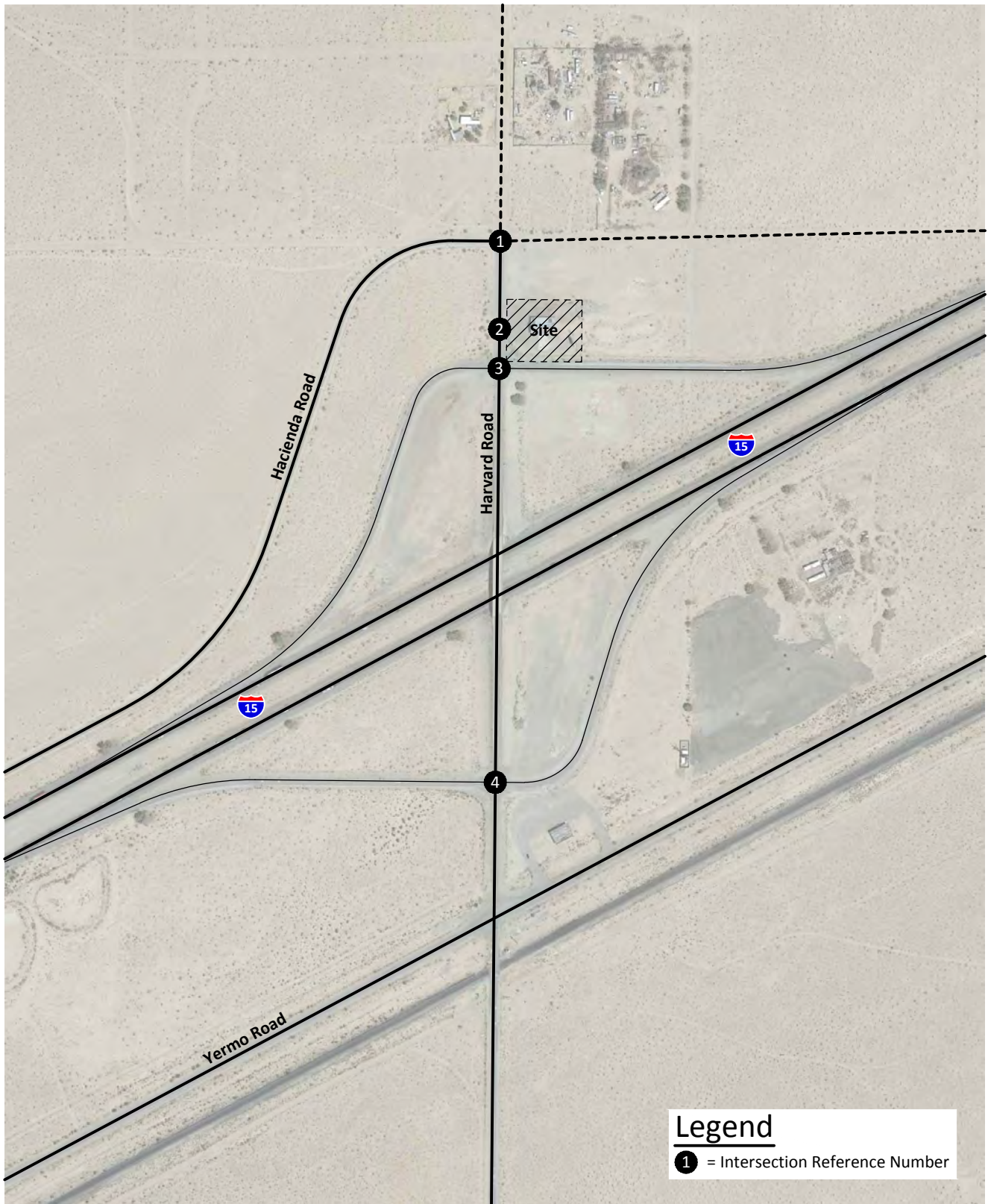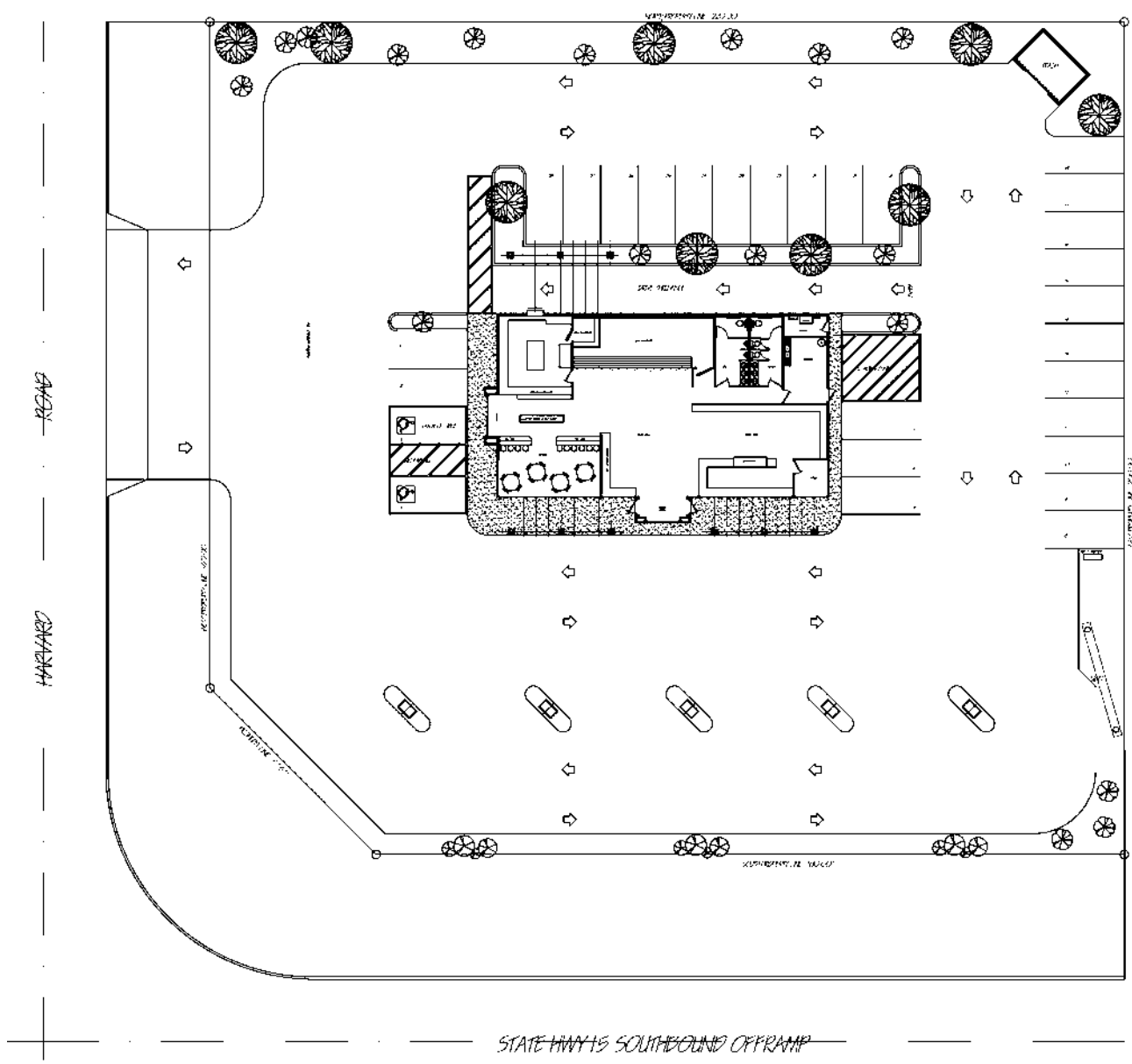
II. EXISTING CONDITIONS

A. Existing Roadway System

Figure 3 identifies the existing conditions for the study area roadways. The number of through lanes for existing roadways and the existing intersection controls are identified.

Regional access to the project site is mainly provided by the I-15 Freeway. Local access is provided by various roadways in the vicinity of the site. The north-south roadway which will be most affected by the project is Harvard Road. The east-west roadway which will be most affected by the project is Hacienda Road.

B. Existing Volumes

Existing intersection traffic conditions were established through Friday evening and Sunday mid-day peak hour traffic counts obtained by Kunzman Associates, Inc. from June 2016 (see Appendix C) and shown on Figures 4 and 5, respectively. Explicit peak hour factors have been calculated using the data collected for this effort as well. The Friday evening peak hour traffic volumes were identified by counting the two-hour period from 4:00 PM – 6:00 PM. The Sunday mid-day peak hour traffic volumes were identified by counting the three-hour period from 12:00 Noon – 3:00 PM. The peak periods were defined by the County of San Bernardino and verified by the California Department of Transportation.

Traffic volumes at project access points have been calculated using the turning movement volumes at adjacent intersections. If more than one intersection counted contributes traffic to a street segment, the highest volumes are utilized. It is important to note that vehicles appear to be temporarily parking near the project site. The project access points assume this higher volume that will not likely occur once the project is built.

It should be noted that a large number of vehicles are by-passing the I-15 Freeway in the northbound direction on Friday evening by driving Yermo Road north, making a left onto Harvard Road, and then making a right onto the I-15 Freeway NB Ramps. This movement significantly impacts the study area. This known traffic volume pattern is what determined the special peak hours for this analysis.

C. Existing Level of Service

The existing delay and Level of Service for the intersection in the vicinity of the project are shown in Table 1. The study area intersections currently operate within acceptable Levels of Service during the peak hours for existing traffic conditions. Existing delay worksheets are provided in Appendix F.

D. Planned Transportation Improvements and Relationship to General Plan

The County of San Bernardino General Plan Circulation Element is shown on Figure 6. Existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 6. This figure shows the nature and extent of arterial

highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The County of San Bernardino General Plan roadway cross-sections are illustrated on Figure 7.

Table 1

Existing Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay Level of Service[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:																
Hacienda Road (EW) - #1	County of San Bernardino	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.1-A	9.1-A
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	CSS	0	1	0	0	1	0	0	0	0	0	1	0	9.2-A	10.8-B
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	CSS	0	1	0	0	1	0	0	1	0	0	0	0	9.2-A	11.0-B

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

  L = Left; T = Through; R = Right

[2] Delay and Level of Service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown

  for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop

Figure 3
Existing Through Travel Lanes and Intersection Controls

Harvard Road (NS)/ Hacienda Road (EW)

1

Harvard Road (NS)/ Project Access (EW)

2

Harvard Road (NS)/ I-15 Freeway SB Ramps (EW)

3

Harvard Road (NS)/ I-15 Freeway NB Ramps (EW)

4

Hacienda Road

2U

Harvard Road

2U

Site

2U

4D

I-15

2U

I-15

4D

2U

2U

2U

STOP

STOP

Yermo Road

2U

2U

Legend
STOP = Stop Sign
#D = #-Lane Divided Roadway
#U = #-Lane Undivided Roadway
= Existing Lane

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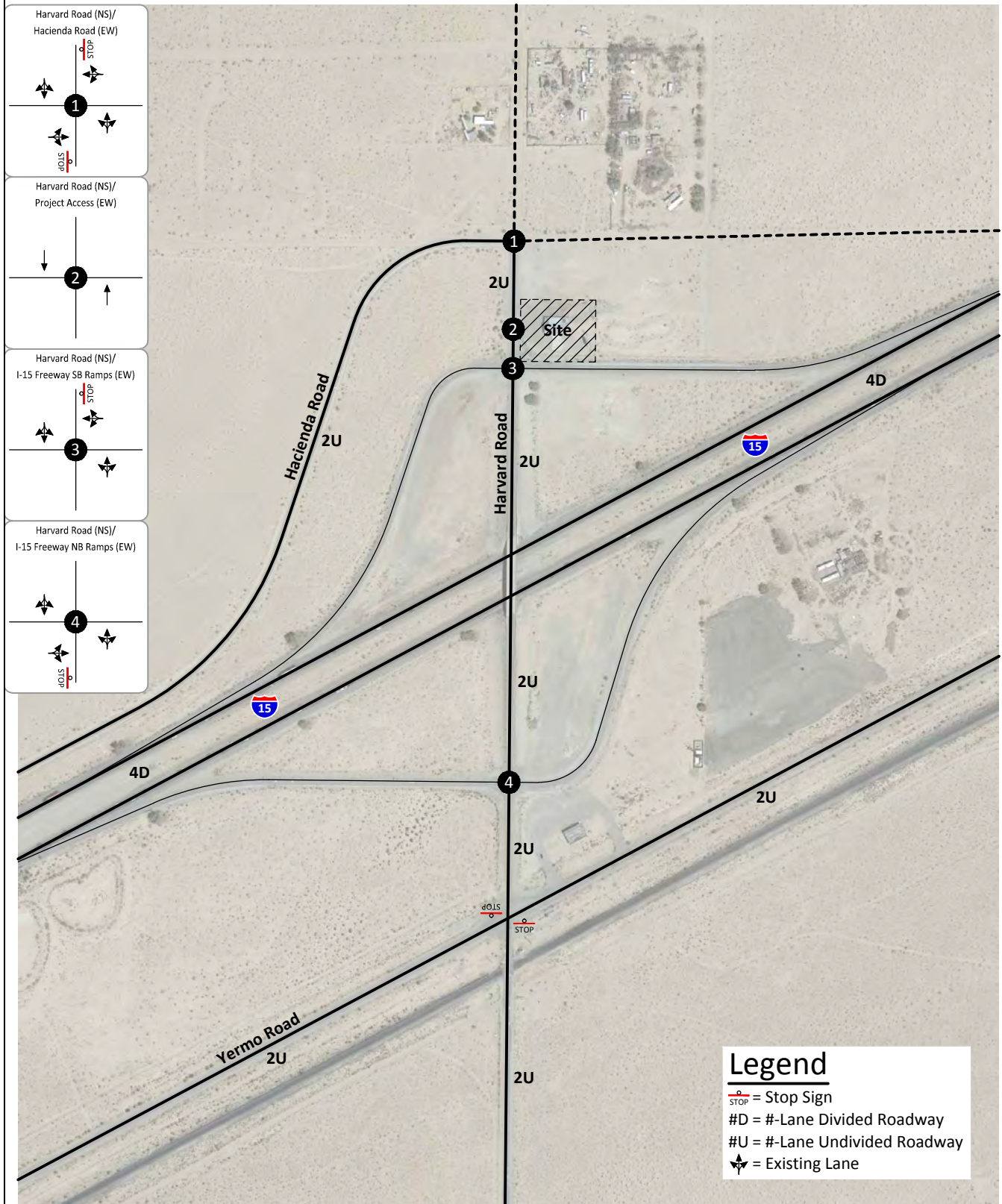
Figure 4
Existing Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

1

Harvard Road (NS)/
Project Access (EW)

2

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

3

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

4

Hacienda Road

Harvard Road

Yermo Road

Site

Legend

1 = Intersection Reference Number
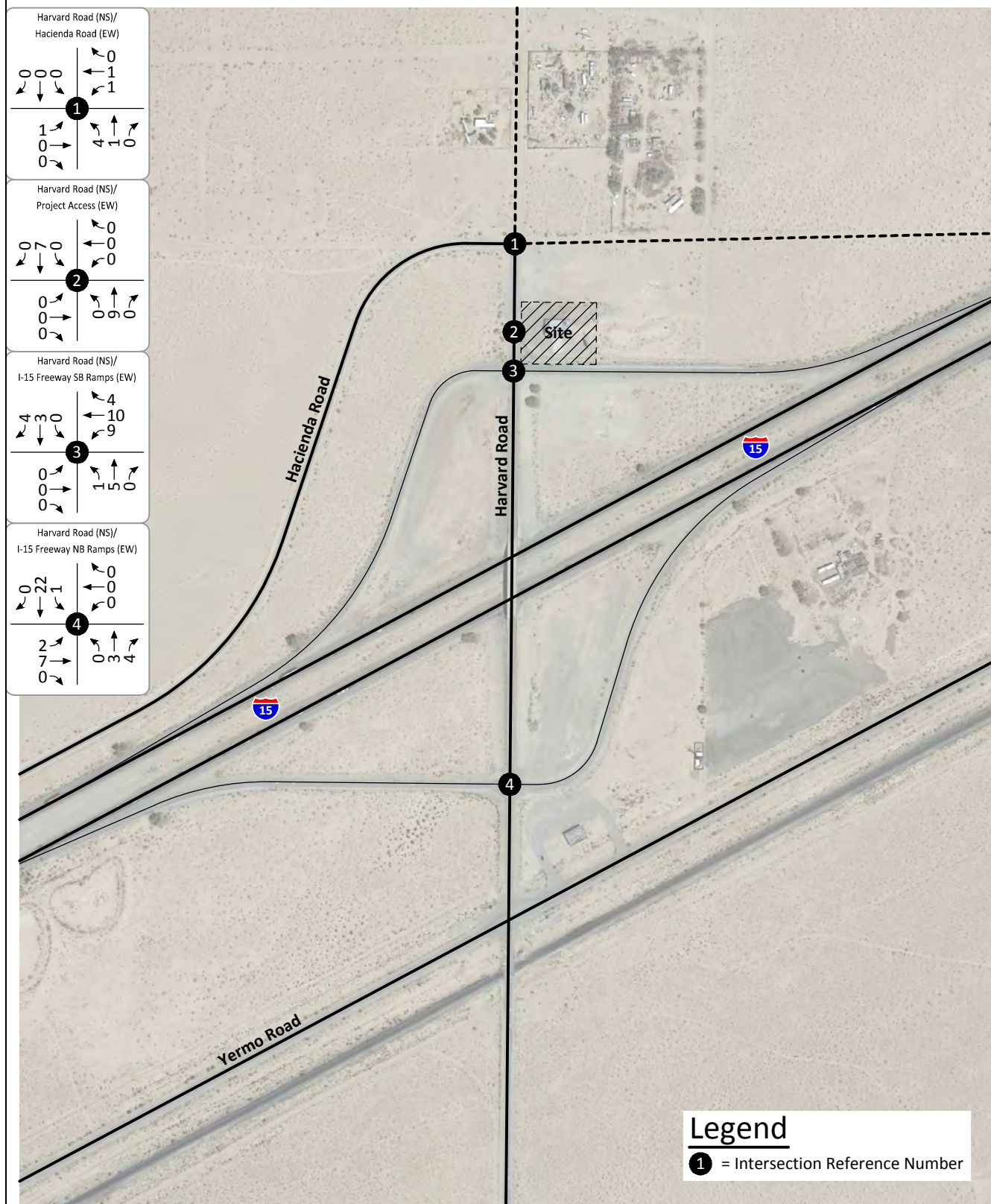
Figure 5
Existing Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

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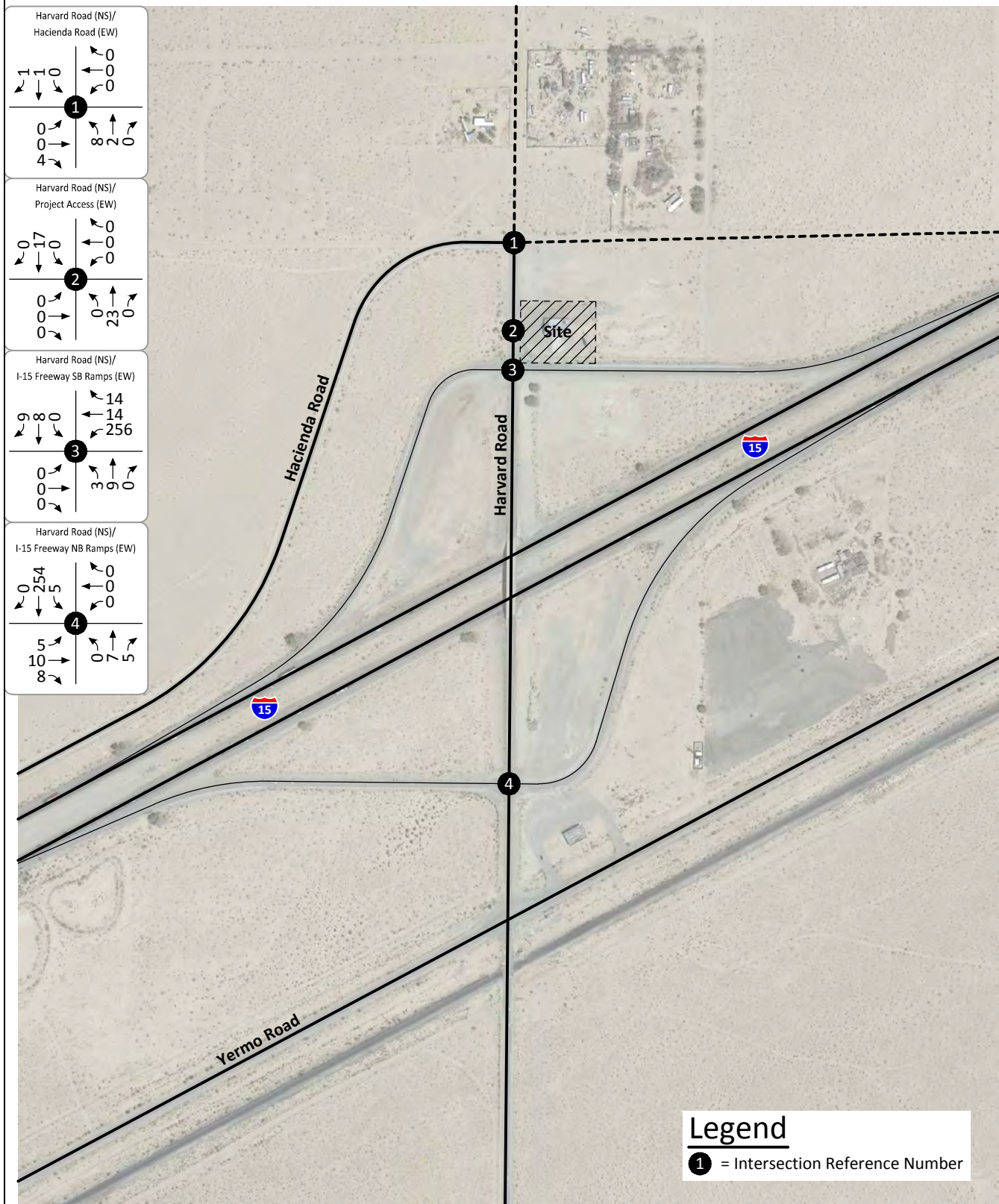
Figure 6
County of San Bernardino General Plan Circulation Element

* Site

Legend

EXISTING   PROPOSED

▬▬▬▬ ▪▪▪▪▪▪	Freeway
▬▬▬▬ ▪▪▪▪▪▪	Major Divided Highway
▬▬▬▬ ▪▪▪▪▪▪	Major Arterial Highway
▬▬▬▬ ▪▪▪▪▪▪	Major Highway
▬▬▬▬ ▪▪▪▪▪▪	Secondary Highway
▬▬▬▬ ▪▪▪▪▪▪	Controlled/Limited Access Collector
▬▬▬▬ ▪▪▪▪▪▪	Mountain Major Highway
▬▬▬▬ ▪▪▪▪▪▪	Mountain Secondary Highway
▬▬▬▬ ▪▪▪▪▪▪	State Highway (Special Standards or Conditions)
┼┼┼┼┼┼	Railroads

Source: County of San Bernardino

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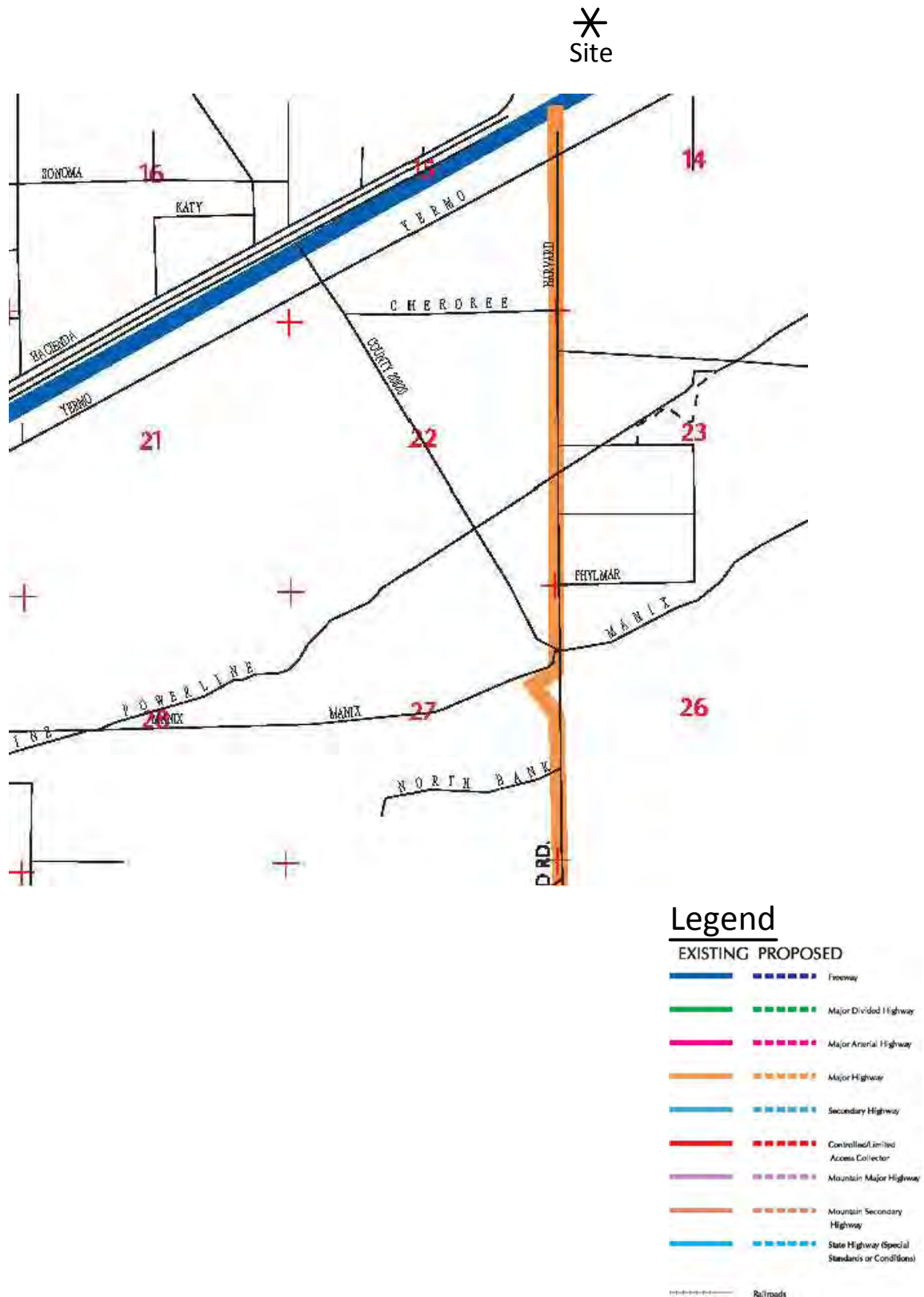
Figure 7
County of San Bernardino General Plan Roadway Cross-Sections

120' ROW
94'
0.5' | 4' | 8.5' | 12' | 26' | 9' | 9' | 26' | 12' | 8.5' | 4' | 0.5'
2% — 2%
MAJOR DIVIDED HIGHWAY

104' ROW
80'
12' | 10' | 12' | 14' | 4' | 4' | 14' | 12' | 10' | 12'
2% — 2%
MAJOR HIGHWAY

104' ROW
80'
12' | 10' | 12' | 12' | 6' | 6' | 12' | 12' | 10' | 12'
2% — 2%
MAJOR HIGHWAY

88' ROW
64'
12' | 8' | 12' | 12' | 12' | 12' | 8' | 12'
2% — 2%
SECONDARY HIGHWAY

120' ROW
104'
8' | 10' | 12' | 12' | 14' | 4' | 4' | 14' | 12' | 12' | 10' | 8'
2% — 2%
MAJOR ARTERIAL

120' ROW
104'
8' | 10' | 12' | 12' | 12' | 6' | 6' | 12' | 12' | 12' | 10' | 8'
2% — 2%
MAJOR ARTERIAL

66' ROW
44'
10.5' | 11' | 11' | 11' | 11' | 10.5'
2% — 2%
COLLECTOR STREET

60' ROW
44'
7.5' | 11' | 11' | 11' | 11' | 7.5'
2% — 2%
INDUSTRIAL COLLECTOR

80' ROW
36'
22' | 6' | 5' | 13' | 13' | 5' | 4' | 22'
2% 2%
1.5:1 max | 1.5:1 or less
DESERT ROAD

50' ROW
36'
7' | 12.5' | 5.5' | 5.5' | 12.5' | 7'
2% — 2%
LOCAL STREET

KUNZMAN ASSOCIATES, INC.

Source: County of San Bernardino

OVER 40 YEARS OF EXCELLENT SERVICE

15

JN 6906

III. PROJECT TRAFFIC

A. Project Description

The project site is proposed to be developed with a 10 fueling position gasoline/service station with convenience market and a 1,800 square foot coffee/donut shop with drive-through window. The project site is proposed to provide access to Harvard Road. The project access is located 150 feet north of the I-15 SB Off-ramp.

B. Trip Generation

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are based on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily traffic and Friday evening peak hour inbound and outbound traffic, and Sunday mid-day peak hour inbound and outbound traffic for the proposed land uses. By multiplying the trip generation rates by the land use quantities, the traffic volumes are determined. The project trip generation is based upon rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012.

For the gasoline/service station with convenience market land use, peak hour trip generation rates for Friday evening and Sunday mid-day peak periods are not available. Weekday evening peak hour of generator trip generation has been used for Friday evening and Sunday mid-day because it is the highest trip generating period for this land use. Daily trip generation rates for Friday and Sunday are not available. Weekday daily trip generation rates have been used.

For the coffee/donut shop with drive-through window land use, peak hour trip generation rates for Friday evening and Sunday mid-day peak periods are not available. Weekday evening peak hour trip generation has been used for Friday evening because it is the highest weekday trip generating period for this land use. Saturday peak hour of generator trip generation has been used for Sunday mid-day because it is the highest weekend trip generating period for this land use. Daily trip generation rates for Friday and Sunday are not available. Weekday daily trip generation rates have been used.

Traffic volumes shown in Table 2 consist of the total trips generated for each project land use. As a gasoline/service station with convenience market or coffee/donut shop with drive-through window land use trip generated by the project will also be making trips to the coffee/donut shop with drive-through window or gasoline/service station with convenience market land use within the project, a double counting of those trips occurs. Internal capture has been calculated based off of the methodology in the Institute of Transportation Engineers, Trip Generation Handbook, 2004, Multi-Use Development Trip Generation and Internal Capture Worksheet (see Appendix G).

As shown in Table 2, the proposed development is projected to generate a total of approximately 2,233 daily vehicle trips, 174 of which will occur during the Friday evening peak hour and 234 of which will occur during the Sunday mid-day peak hour.

It should be noted that this facility is very isolated and adjacent to the I-15 Freeway. It is projected that the proposed project adds virtually no additional traffic volumes to the adjacent I-15 Freeway but all its traffic volumes are pass-by/diverted from the study area intersections.

C.   Trip Distribution

The distributions of the project trips were based on existing travel patterns calculated using existing traffic counts. This methodology was approved by the County of San Bernardino Transportation Department and the California Department of Transportation staff. Figures 8 and 9 contain the directional distributions of the project trips for the proposed land use.

D.   Trip Assignment

Based on the identified trip generation and distributions, Friday evening and Sunday mid-day peak hour intersection turning movement volumes expected from the project are shown on Figures 10 and 11, respectively.

Based on the maximum trip generation for the project being assumed for both Friday evening and Sunday mid-day and the likely trip distribution of basically equal vehicle trips coming from northbound and southbound trips along this stretch of the I-15 Freeway, Figures 10 and 11 display the same project trips for both Friday evening and Sunday mid-day peak periods.

Table 2

Project Trip Generation[1]

Land Use	Quantity	Units[2]	Friday Evening			Sunday Mid-day			Weekday Daily[3]
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Gasoline/Service Station with Convenience Market		FP	6.79	6.78	13.57	6.79	6.78	13.57	162.78
Coffee/Donut Shop with Drive-Through Window		TSF	21.40	21.40	42.80	42.26	42.26	84.52	818.58
Trips Generated									
Gasoline/Service Station with Convenience Market[4]	10	FP	68	68	136	68	68	136	1,628
Coffee/Donut Shop with Drive-Through Window[5]	1.800	TSF	39	39	78	76	76	152	1,473
Subtotal			107	107	214	144	144	288	3,101
- Internal Capture (19% PM/Sunday, 28% Daily)[6]			-20	-20	-40	-27	-27	-54	-868
Total Trips Generated			87	87	174	117	117	234	2,233

[1] Source: Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012, Land Use Codes 937 and 945.

[2] FP = Fueling Positions; TSF = Thousand Square Feet

[3] Weekday daily trip generation rates have been used.

[4] Peak hour trip generation rates for Friday evening and Sunday mid-day peak periods are not available. Weekday evening peak hour of generator trip generation has been used for Friday evening and Sunday mid-day because it is the highest trip generating period for this land use.

[5] Peak hour trip generation rates for Friday evening and Sunday mid-day peak periods are not available. Weekday evening peak hour trip generation has been used for Friday evening because it is the highest weekday trip generating period for this land use. Saturday peak hour of generator trip generation has been used for Sunday mid-day because it is the highest weekend trip generating period for this land use.

[6] Source: Institute of Transportation Engineers, Trip Generation Manual User's Guide and Handbook, 9th Edition, 2012.

It should be noted that this facility is very isolated and adjacent to the I-15 Freeway. It is projected that the propoed project adds virtually no additional traffic volumes to the adjacent I but all its traffic volumes are pass-by/diverted from the study area intersections.

Figure 8
Project Outbound Trip Distribution

5%

95%

Site
100%

45%

Hacienda Road

Harvard Road

50%

5%

45%

5%

Yermo Road

Legend
10% = Percent From Project

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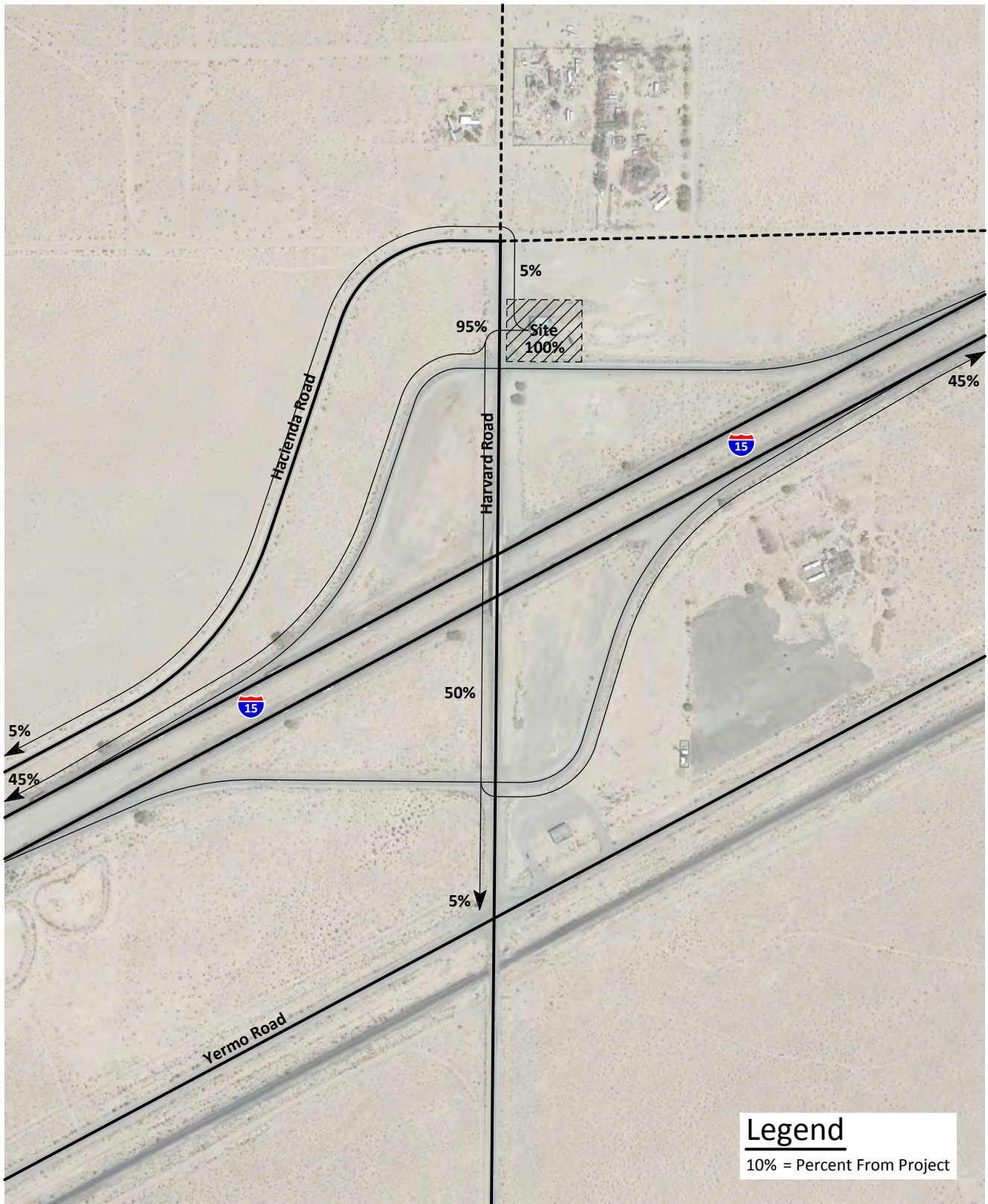
Figure 9
Project Inbound Trip Distribution

45%

5%

100%
Site

95%

Hacienda Road

Harvard Road

15

15

50%

5%

5%

45%

5%

Yermo Road

Legend
10% = Percent To Project
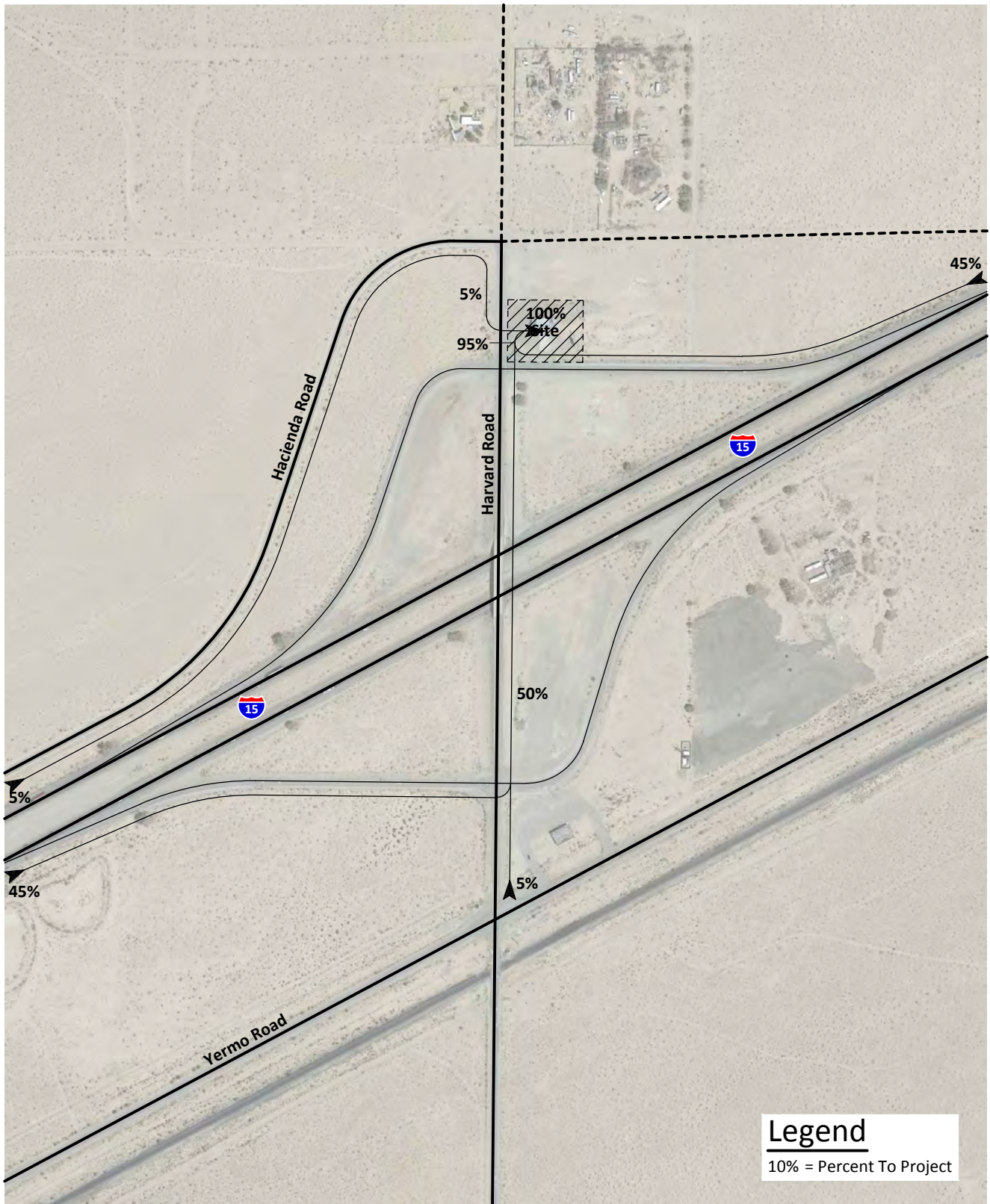
Figure 10
Project Friday Evening
Peak Hour Intersection Turning Movement Volumes

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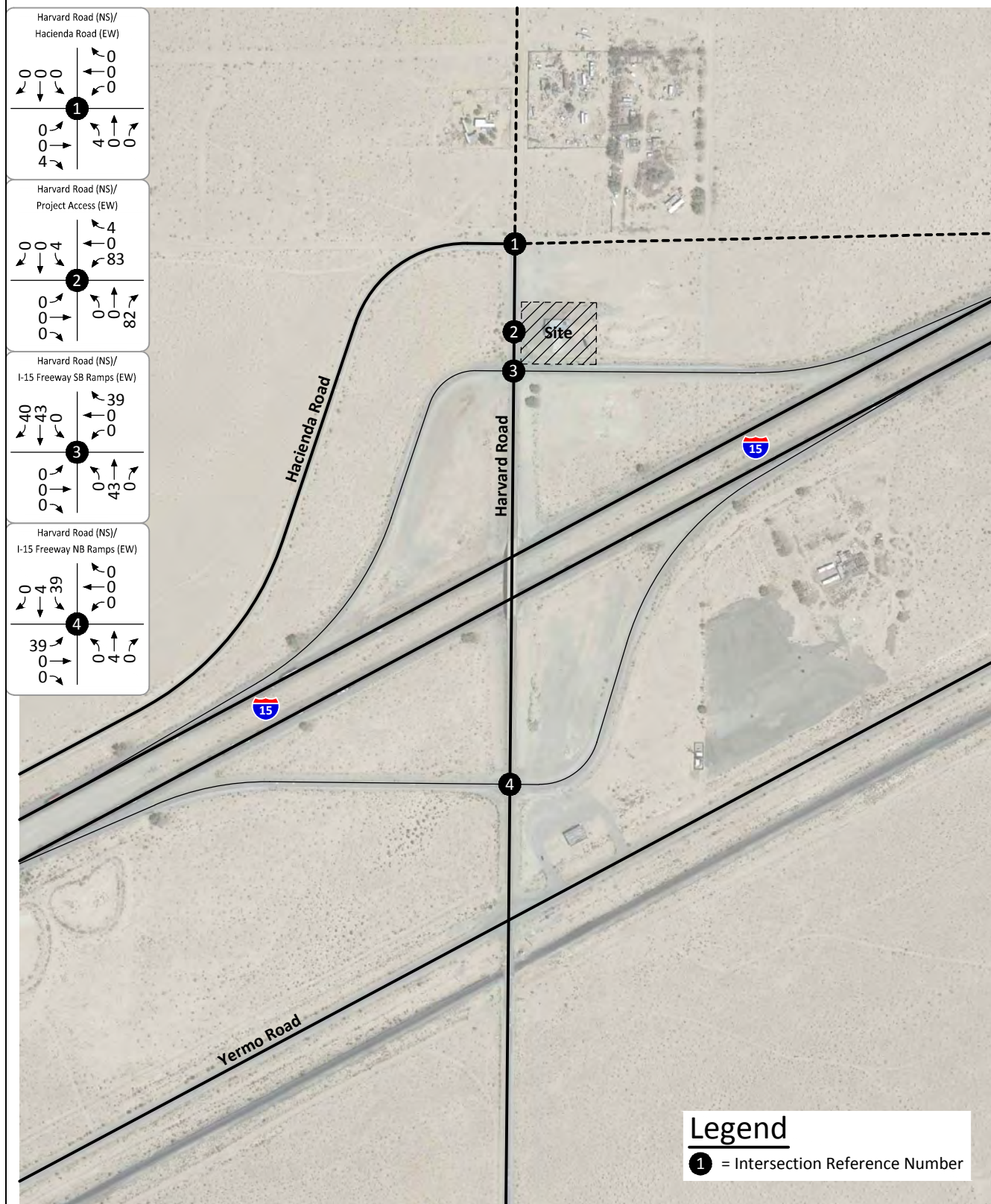
Figure 11
Project Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

0
0
0

0 0 0

0
0
6

1

Harvard Road (NS)/
Project Access (EW)

6
0
111

0 0 6

0
0
0

2

112

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

53
0
0

52 59 0

0
0
0

3

59

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

0
0
0

0 6 53

53
0
0

4

Hacienda Road

Harvard Road

Yermo Road

1

2 Site

3

4

I-15

I-15

Legend

1 = Intersection Reference Number
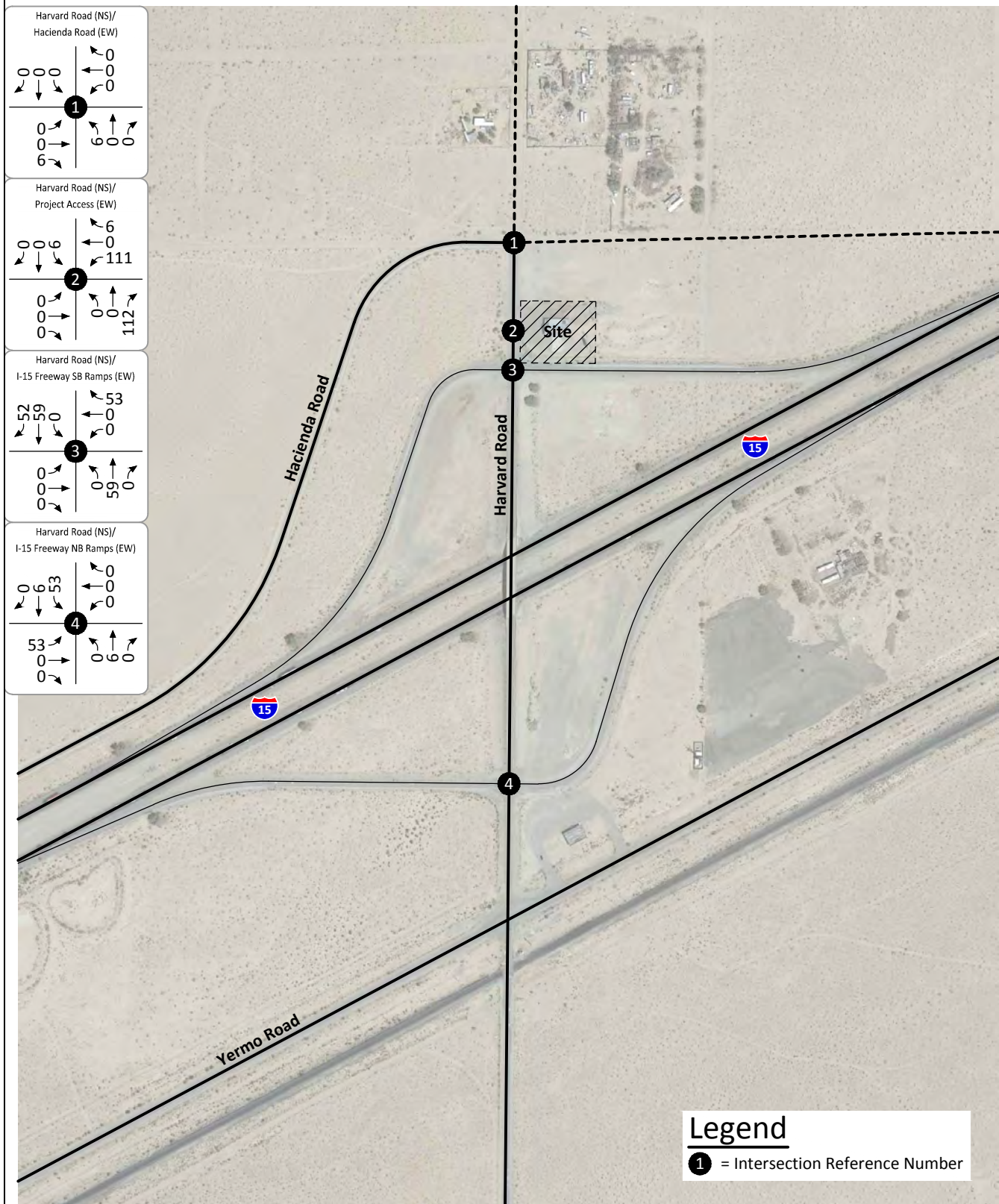
IV. FUTURE CONDITIONS

A. Future Volumes

As described within Section I.C., the Year 2040 average daily traffic volume forecasts with the project are developed using a growth increment process based on volumes predicted by the San Bernardino Transportation Analysis Model Year 2008 and Year 2035 traffic models. The growth increment for Year 2040 on each roadway segment is the increase in San Bernardino Transportation Analysis Model volumes from existing Year 2017 to Year 2040. The final Year 2040 roadway segment volume used for analysis purposes is then determined by adding the Year 2040 growth increment volume to the existing counted volume.

The Opening Year (2019) traffic projections have been interpolated between Year 2040 traffic volumes and existing traffic volumes utilizing a portion of the growth increment (see Section I.C.). Project traffic volumes for all future projections were estimated using the manual approach. In addition to the interpolated traffic volumes, other developments within the study area have also been added to existing, Year 2019, and Year 2040 traffic volumes.

Table 3 provides the other development trip generation and Figure 12 illustrates the other development location map. Other development morning and evening peak hour intersection turning movement volumes are shown on Figures 13 and 14, respectively.

B. Future Level of Service

1. Existing Plus Project

The Existing Plus Project delay and Level of Service for the study area roadway network are shown in Table 4 without and with improvements. Existing Plus Project delay calculation worksheets are provided in Appendix F. Existing Plus Project Friday evening and Sunday mid-day peak hour intersection turning movement volumes are shown on Figures 15 and 16, respectively.

For Existing Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours.

2. Opening Year (2019) Without Project

The Opening Year (2019) Without Project delay and Level of Service for the study area roadway network without the proposed project are shown in Table 5 without and with improvements. Opening Year (2019) Without Project delay calculation worksheets are provided in Appendix F. Opening Year (2019) Without Project Friday evening and Sunday mid-day peak hour intersection turning movement volumes are shown on Figures 17 and 18, respectively.

For Opening Year (2019) Without Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours.

3.   Opening Year (2019) With Project

The Opening Year (2019) With Project delay and Level of Service for the study area roadway network are shown in Table 6 without and with improvements. Opening Year (2019) With Project delay calculation worksheets are provided in Appendix F. Opening Year (2019) With Project Friday evening and Sunday mid-day peak hour intersection turning movement volumes are shown on Figures 19 and 20, respectively.

For Opening Year (2019) With Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

4.   Year 2040 Without Project

The Year 2040 Without Project delay and Level of Service for the study area roadway network are shown in Table 7 without and with improvements. Year 2040 Without Project delay calculation worksheets are provided in Appendix F. Year 2040 Without Project Friday evening and Sunday mid-day peak hour intersection turning movement volumes are shown on Figures 21 and 22, respectively.

For Year 2040 Without Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

5.   Year 2040 With Project

The Year 2040 With Project delay and Level of Service for the study area roadway network are shown in Table 8 without and with improvements. Year 2040 With Project delay calculation worksheets are provided in Appendix F. Year 2040 With Project Friday evening and Sunday mid-day peak hour intersection turning movement volumes are shown on Figures 23 and 24, respectively.

For Year 2040 With Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

C.   Intersection Level of Service Summary

Table 9 provides a summary of the study area intersection Levels of Service during the peak hours.

D.   Freeway Ramp Queuing Analysis

Table 10 provides a freeway ramp queuing analysis. It appears that more than adequate ramp storage area is provided for the freeway ramps for all scenarios.

E. **Traffic Signal Warrant Analysis**

Traffic signals are not projected to be warranted at any study area intersections for Year 2040 With Project traffic conditions (see Appendix H). The unsignalized intersections have been evaluated for traffic signals using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the <u>California Manual of Uniform Traffic Control Devices</u>.

Table 3

Other Development Trip Generation[1]

Land Use	Quantity[2]	Units[3]	Friday Evening[4]			Sunday Afternoon[4]			Daily[5]
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Gasoline/Service Station with Convenience Market		FP	6.79	6.78	13.57	6.79	6.78	13.57	162.78
Trips Generated									
Gasoline/Service Station with Convenience Market	14	FP	95	95	190	95	95	190	2,279

[1] Source: Institute of Transportation Engineers, Trip Generatio Manual, 9th Edition, 2012, Land Use Code 945.

[2] The proposed service station is projected to consist of 12 passenger car fueling positions and 2 diesel truck fueling positions. To remain conservative, the 2 diesel truck fueling positions have been assumed to have the same trip generation as a passenger car fueling position.

[3] FP = Fueling Positions

[4] Peak hour trip generation rates for Friday evening and Saturday Mid-day peak periods are not available. Weekday evening peak hour of generator trip generation has been used because it is the highest trip generating period for this land use.

[5] Weekday daily trip generation rates have been used.

Table 4

Existing Plus Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Northbound			Southbound			Eastbound			Westbound			Peak Hour Delay Level of Service[2]	
			L	T	R	L	T	R	L	T	R	L	T	R	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:																
Hacienda Road (EW) - #1	County of San Bernardino	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.1-A	9.2-A
Project Access (EW) - #2	County of San Bernardino	**CSS**	0	1	0	0	1	0	0	0	0	0	**1**	0	9.2-A	9.7-A
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	CSS	0	1	0	0	1	0	0	0	0	0	1	0	10.1-B	13.6-B
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	CSS	0	1	0	0	1	0	0	1	0	0	0	0	10.1-B	13.2-B

Table header spanning: "Intersection Approach Lanes[1]" over Northbound/Southbound/Eastbound/Westbound.

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

   L = Left; T = Through; R = Right; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown

   for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop

Table 5

Opening Year (2019) Without Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay	
			Northbound			Southbound			Eastbound			Westbound			Level of Service[2]	
			L	T	R	L	T	R	L	T	R	L	T	R	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:																
Hacienda Road (EW) - #1	County of San Bernardino	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.9-A	9.9-A
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	CSS	0	1	0	0	1	0	0	0	0	0	1	0	10.3-B	13.1-B
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	CSS	0	1	0	0	1	0	0	1	0	0	0	0	10.2-B	12.8-B

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

   L = Left; T = Through; R = Right

[2] Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown

   for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop

Table 6

Opening Year (2019) With Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay Level of Service[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:																
Hacienda Road (EW) - #1	County of San Bernardino	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.0-A	10.0-B
Project Access (EW) - #2	County of San Bernardino	**CSS**	0	1	0	0	1	0	0	0	0	0	**1**	0	10.6-B	11.4-B
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	CSS	0	1	0	0	1	0	0	0	0	0	1	0	11.5-B	17.9-C
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	CSS	0	1	0	0	1	0	0	1	0	0	0	0	11.5-B	16.4-C

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

  L = Left; T = Through; R = Right; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown

  for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop

Table 7

Year 2040 Without Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay Level of Service[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:																
Hacienda Road (EW) - #1	County of San Bernardino	CSS	0	1	0	0	1	0	0	1	0	0	1	0	9.9-A	10.2-B
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	CSS	0	1	0	0	1	0	0	0	0	0	1	0	10.7-B	14.0-B
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	CSS	0	1	0	0	1	0	0	1	0	0	0	0	10.5-B	13.4-B

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

L = Left; T = Through; R = Right; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop

Table 8

Year 2040 With Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay Level of Service[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:																
Hacienda Road (EW) - #1	County of San Bernardino	CSS	0	1	0	0	1	0	0	1	0	0	1	0	10.0-A	10.3-B
Project Access (EW) - #2	County of San Bernardino	**CSS**	0	1	0	0	1	0	0	0	0	0	**1**	0	10.9-B	11.6-B
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	CSS	0	1	0	0	1	0	0	0	0	0	1	0	12.0-B	20.3-C
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	CSS	0	1	0	0	1	0	0	1	0	0	0	0	11.9-B	17.5-C

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

  L = Left; T = Through; R = Right; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Vistro, Version 4.00-00. Per the Highway Capacity Manual, overall average intersection delay and level of service are shown

  for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop

Table 9

Intersection Delay and Level of Service Summary

		Peak Hour Delay Level of Service											
		Existing[1]		Existing Plus Project[2]		Opening Yeay (2019)				Year 2040			
						Without Project[3]		With Project[4]		Without Project[5]		With Project[6]	
Intersection	Jurisdiction	Friday Evening	Sunday Mid-day	Friday Evening	Sunday Mid-day	Friday Evening	Sunday Mid-day	Friday Evening	Sunday Mid-day	Friday Evening	Sunday Mid-day	Friday Evening	Sunday Mid-day
Harvard Road (NS) at:													
Hacienda Road (EW) - #1	County of San Bernardino	9.1-A	9.1-A	9.1-A	9.2-A	9.9-A	9.9-A	10.0-A	10.0-B	9.9-A	10.2-B	10.0-A	10.3-B
Project Access (EW) - #2	County of San Bernardino	NA	NA	9.2-A	9.7-A	NA	NA	10.6-B	11.4-B	NA	NA	10.9-B	11.6-B
I-15 Freeway SB Ramps (EW) - #3	California Department of Transportation	9.2-A	10.8-B	10.1-B	13.6-B	10.3-B	13.1-B	11.5-B	17.9-C	10.7-B	14.0-B	12.0-B	20.3-C
I-15 Freeway NB Ramps (EW) - #4	California Department of Transportation	9.2-A	11.0-B	10.1-B	13.2-B	10.2-B	12.8-B	11.5-B	16.4-C	10.5-B	13.4-B	11.9-B	17.5-C

[1] See Table 1.

[2] See Table 4.

[3] See Table 5.

[4] See Table 6.

[5] See Table 7.

[6] See Table 8.

Table 10

Freeway Ramp Queuing Analysis

Intersection Number	Leg	Control[1]	Scenario	Storage Length In Feet		
					Minimum Required	
					Peak Hour	
				Currently Provided	Friday	Sunday
3	North	No Control	Existing	150	50	50
			Existing Plus Project	150	75	100
			Opening Year (2019) Without Project	150	75	100
			Opening Year (2019) With Project	150	150	175
			Year 2040 Without Project	150	100	100
			Year 2040 With Project	150	175	200
	South	No Control	Existing	1,400	50	50
			Existing Plus Project	1,400	50	50
			Opening Year (2019) Without Project	1,400	50	50
			Opening Year (2019) With Project	1,400	75	100
			Year 2040 Without Project	1,400	75	50
			Year 2040 With Project	1,400	100	100
	East	Stop	Existing	1,575	50	225
			Existing Plus Project	1,575	50	275
			Opening Year (2019) Without Project	1,575	50	275
			Opening Year (2019) With Project	1,575	100	325
			Year 2040 Without Project	1,575	50	300
			Year 2040 With Project	1,575	100	350
4	North	No Control	Existing	1,400	50	225
			Existing Plus Project	1,400	50	275
			Opening Year (2019) Without Project	1,400	50	250
			Opening Year (2019) With Project	1,400	100	300
			Year 2040 Without Project	1,400	75	275
			Year 2040 With Project	1,400	100	325
	South	No Control	Existing	400	50	50
			Existing Plus Project	400	50	50
			Opening Year (2019) Without Project	400	50	50
			Opening Year (2019) With Project	400	50	50
			Year 2040 Without Project	400	50	50
			Year 2040 With Project	400	50	50
	West	Stop	Existing	1,600	50	50
			Existing Plus Project	1,600	50	75
			Opening Year (2019) Without Project	1,600	50	50
			Opening Year (2019) With Project	1,600	75	100
			Year 2040 Without Project	1,600	50	50
			Year 2040 With Project	1,600	75	100

[1]Typically, vehicle queue is not calculated for incontrolled legs on an intersection.

Figure 12
Other Development Location Map

Hacienda Road

Harvard Road

Yermo Road

15

15

Site

Legend

⬜ = Other Development

KUNZMAN ASSOCIATES, INC.
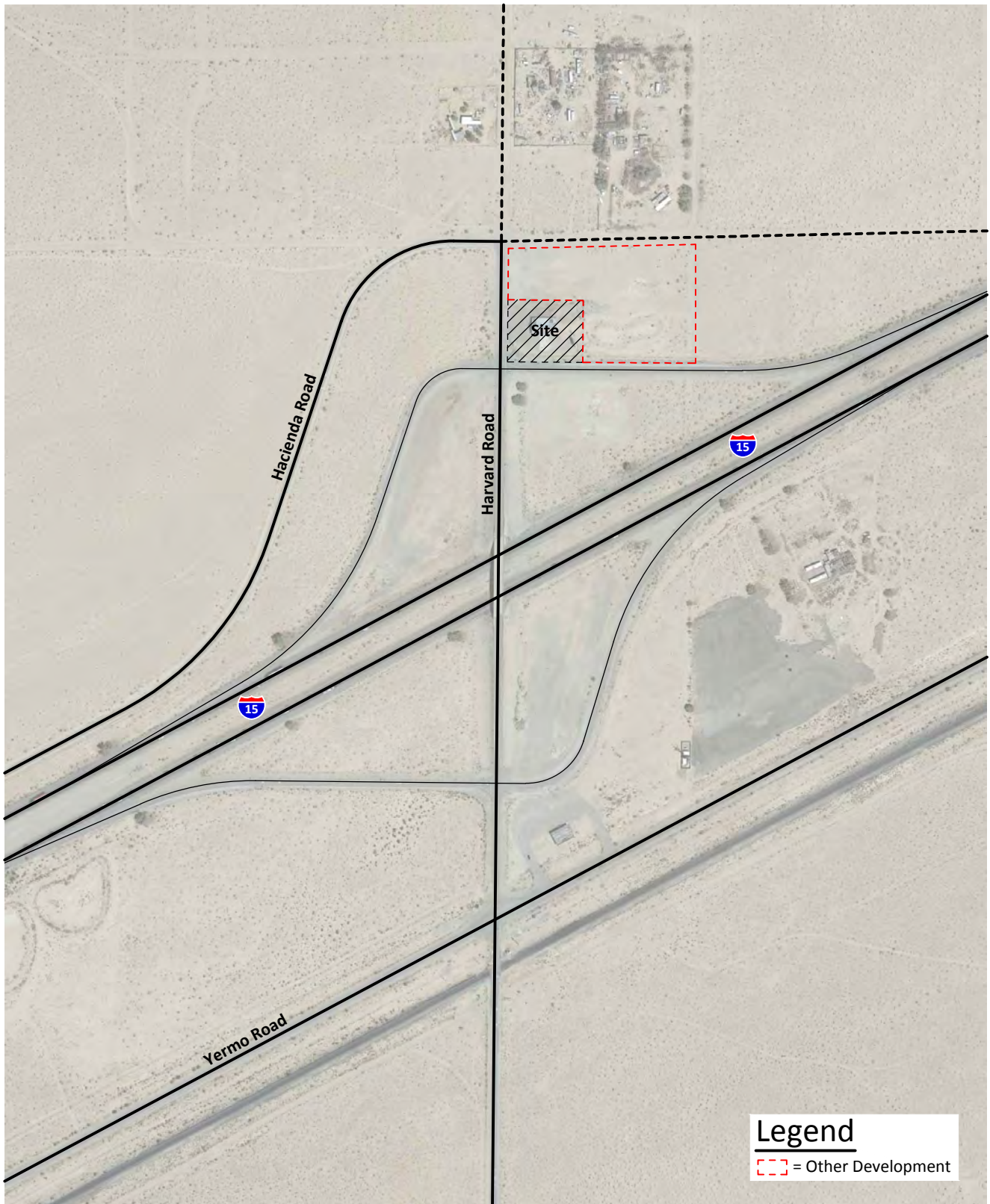
Figure 13
Other Development Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

Intersection **1**
- ← 0
- ← 5
- ↙ 90
- ↓ 0 0 0
- 0 →
- 5 →
- 0 ↘
- ↑ 0 0
- ↑ 91

Harvard Road (NS)/
Project Access (EW)

Intersection **2**
- ↖ 0
- ← 0
- ↙ 0
- 0 90 0
- 0 →
- 0 →
- 0 ↘
- ↑ 0 91
- ↑ 0

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

Intersection **3**
- ↖ 43
- ← 0
- ↙ 0
- 42 48 0
- 0 →
- 0 →
- 0 ↘
- ↑ 0 48
- ↑ 0

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

Intersection **4**
- ↖ 0
- ← 0
- ↙ 0
- 0 5 43
- 43 →
- 0 →
- 0 ↘
- ↑ 0 5
- ↑ 0

Hacienda Road

Harvard Road

Yermo Road

I-15

Site

Legend

1 = Intersection Reference Number

JN 6906
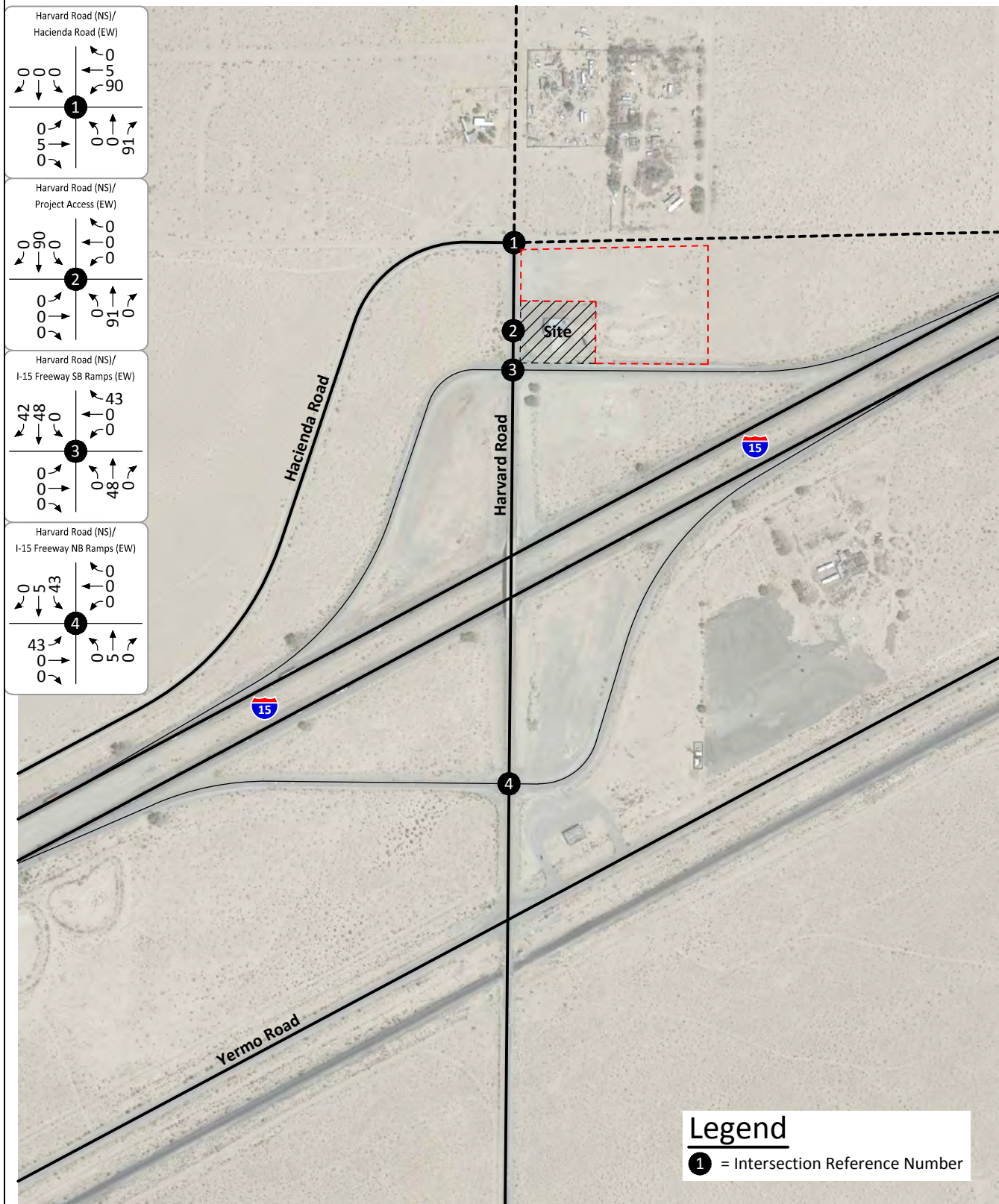
Figure 14
Other Development Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

1

Harvard Road (NS)/
Project Access (EW)

2

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

3

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

4

Hacienda Road

Harvard Road

Yermo Road

Site

I-15

Legend

1 = Intersection Reference Number

JN 6906
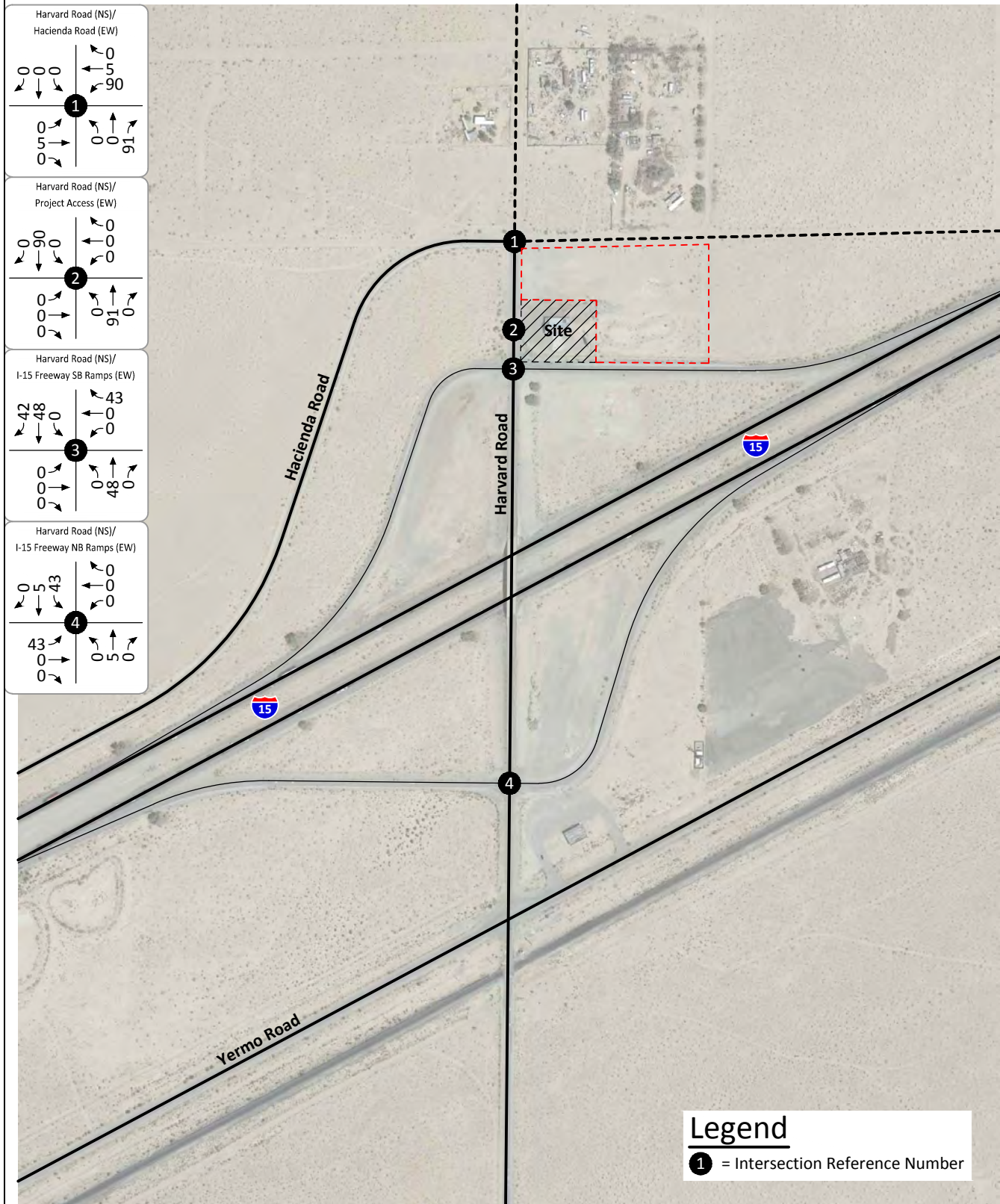
Figure 15
Existing Plus Project Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

0 0 0
↗ 0
← 1
↙ 1

1
0 →
4
8 1 0

Harvard Road (NS)/
Project Access (EW)

0 7 4
↗ 4
← 0
↙ 83

0
0 →
0
0 9 82

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

44 46 0
↗ 43
← 10
↙ 9

0
0 →
0
1 48 0

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

0 26 40
↗ 0
← 0
↙ 0

41
7 →
0
0 7 4

Hacienda Road

Harvard Road

Yermo Road

Site

Legend

1 = Intersection Reference Number
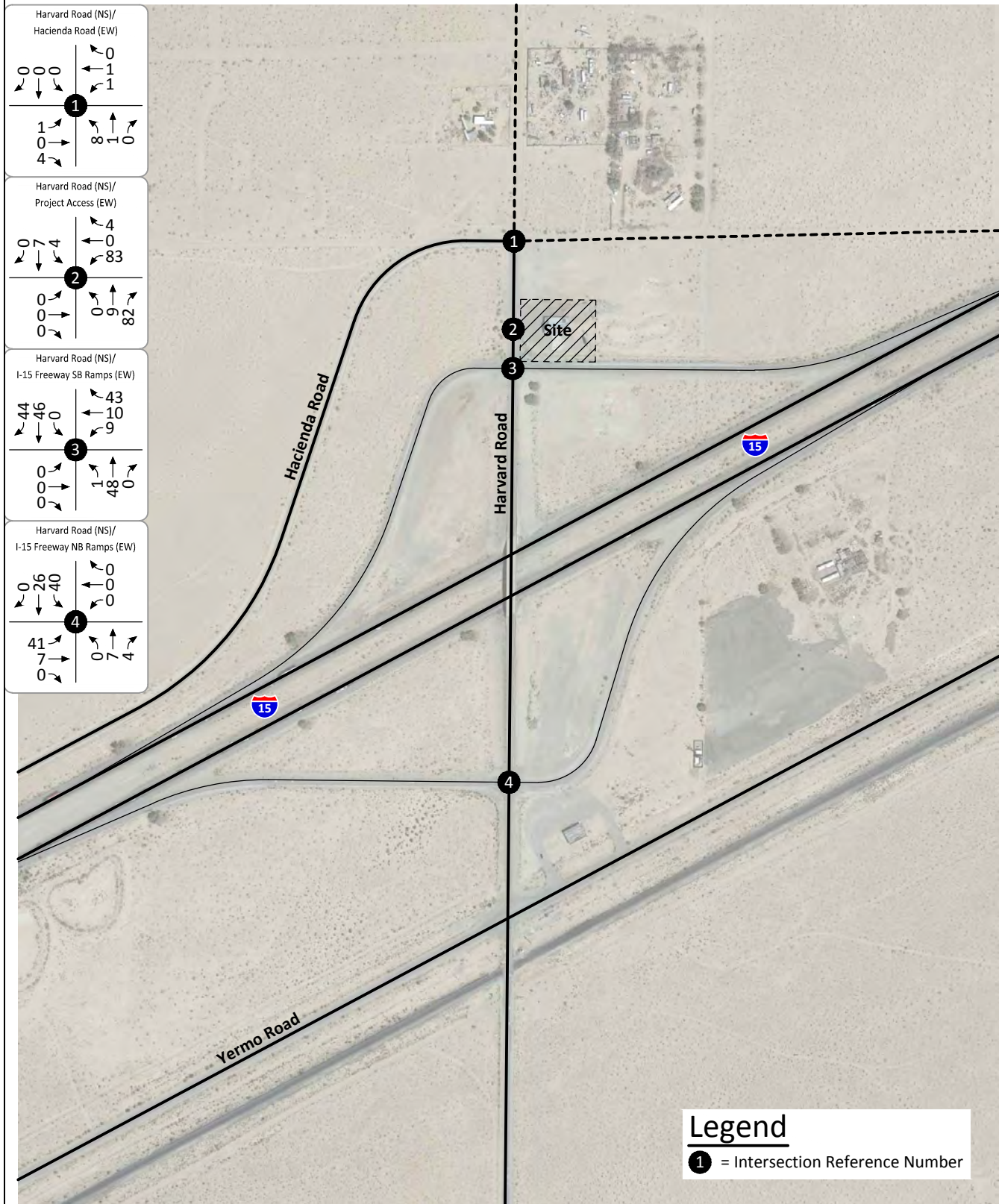
Figure 16
Existing Plus Project Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

Intersection 1

Harvard Road (NS)/
Project Access (EW)

Intersection 2

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

Intersection 3

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

Intersection 4

Hacienda Road

Harvard Road

Yermo Road

Site

I-15

Legend
1 = Intersection Reference Number
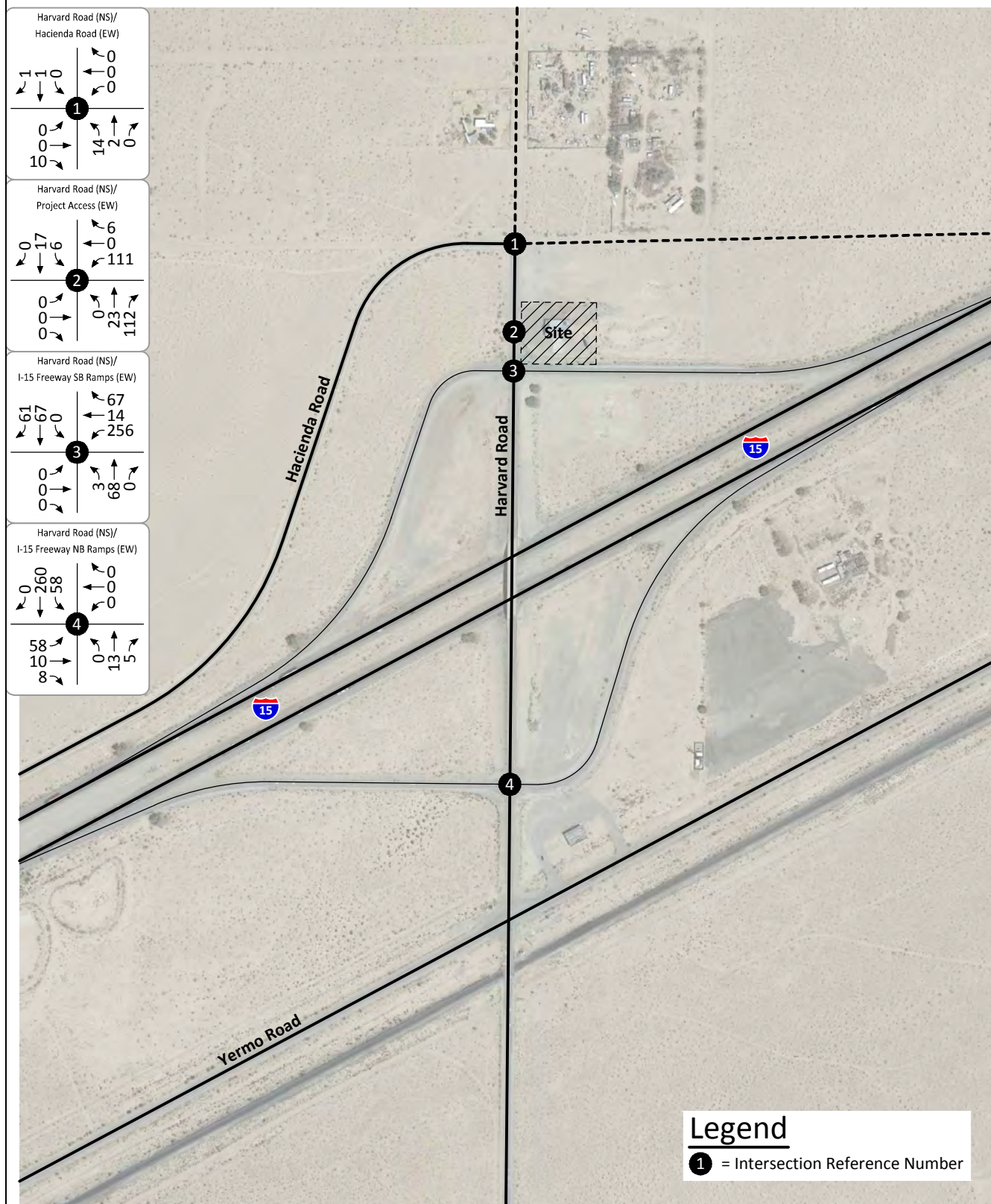
Figure 17
Opening Year (2019) Without Project Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

- ↰ 0
- ← 6
- ↙ 91

0 ↑, 0 ↓, 0 →
(1)

1 ↰, 5 →, 0 ↘
10, 1, 91 ↑

Harvard Road (NS)/
Project Access (EW)

- ↰ 0
- ← 0
- ↙ 0

0, 100, 0
(2)

0 ↰, 0 →, 0 ↘
0, 102, 0

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

- ↰ 47
- ← 11
- ↙ 9

49, 51, 0
(3)

0 ↰, 0 →, 0 ↘
3, 55, 0

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

- ↰ 0
- ← 0
- ↙ 0

0, 27, 44
(4)

47 ↰, 7 →, 0 ↘
0, 11, 4

Hacienda Road

Harvard Road

Site

I-15

I-15

Yermo Road

Legend
(1) = Intersection Reference Number
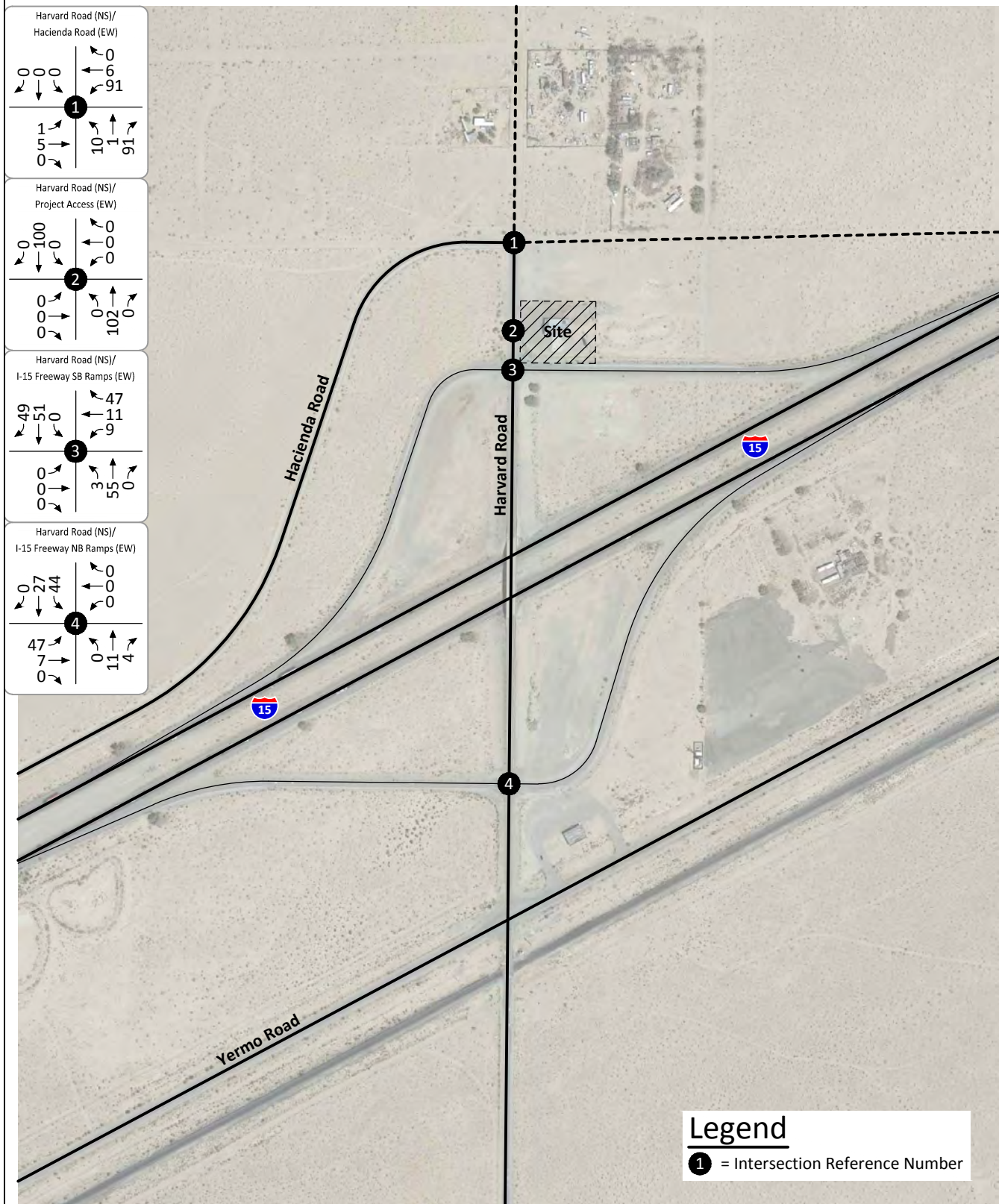
Figure 18
Opening Year (2019) Without Project Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

Harvard Road (NS)/
Project Access (EW)

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

Site

Hacienda Road

Harvard Road

Yermo Road

KUNZMAN ASSOCIATES, INC.

OVER 40 YEARS OF EXCELLENT SERVICE

Legend

1 = Intersection Reference Number

JN 6906

40
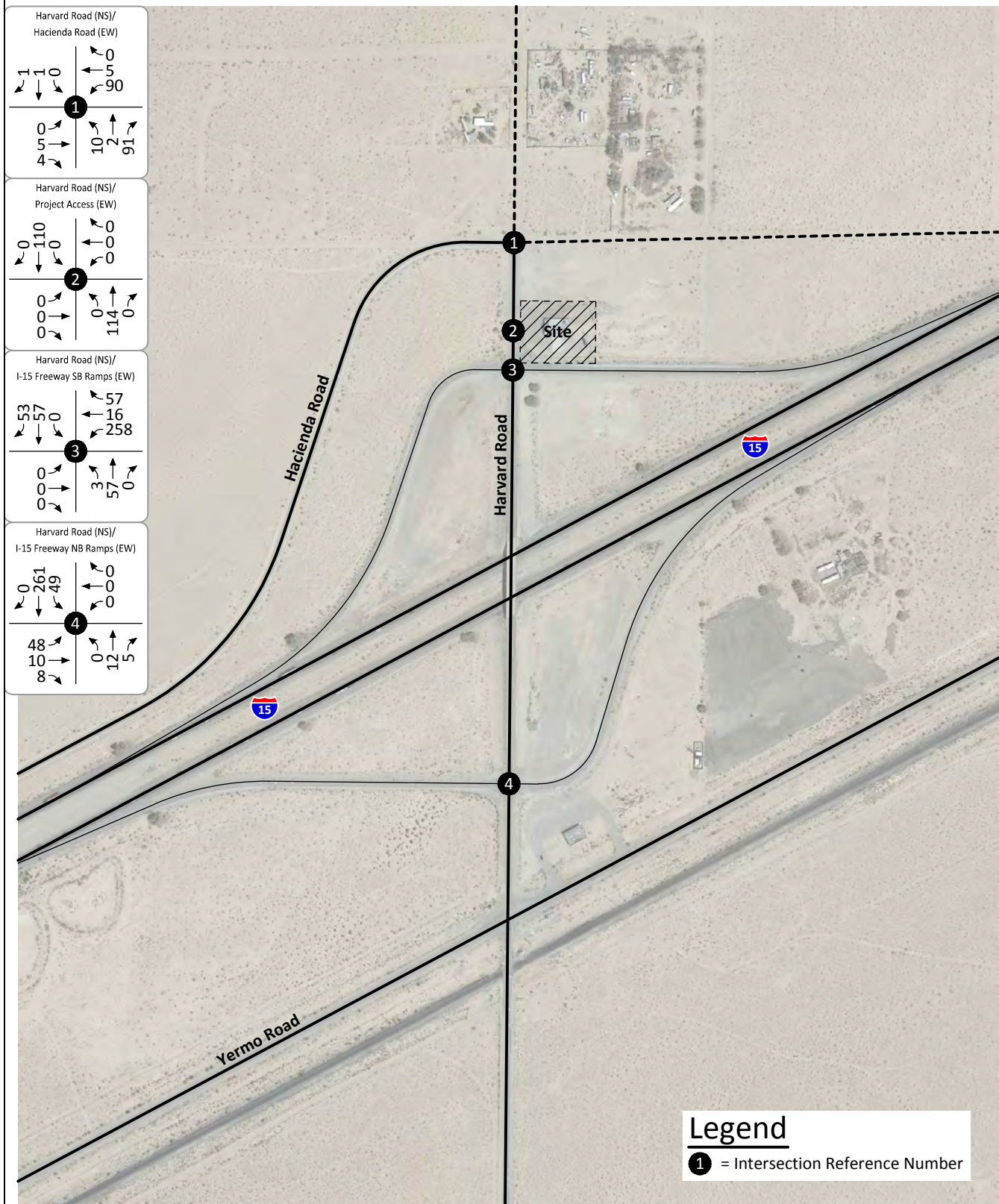
Figure 19
Opening Year (2019) With Project Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

```
        ↖ 0
        ← 6
  0 0 0 ↙ 91
  ↓     ①
  ↙ ↓ ↘
  1    ↑ ↗
  5 →  14 1 91
  4 ↘
```

Harvard Road (NS)/
Project Access (EW)

```
         ↖ 4
  0 100 4 ← 0
         ↙ 83
  ↓
  ②
  ↙ ↓ ↘
  0    ↑ ↗
  0 →  0 102 82
  0 ↘
```

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

```
         ↖ 86
  89 94 0 ← 11
         ↙ 9
  ↓
  ③
  ↙ ↓ ↘
  0    ↑ ↗
  0 →  3 98 0
  0 ↘
```

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

```
         ↖ 0
  0 31 83 ← 0
         ↙ 0
  ↓
  ④
  ↗ ↓ ↘
  86    ↑ ↗
  7 →  0 15 4
  0 ↘
```

Site

Hacienda Road

Harvard Road

Yermo Road

I-15

Legend
① = Intersection Reference Number
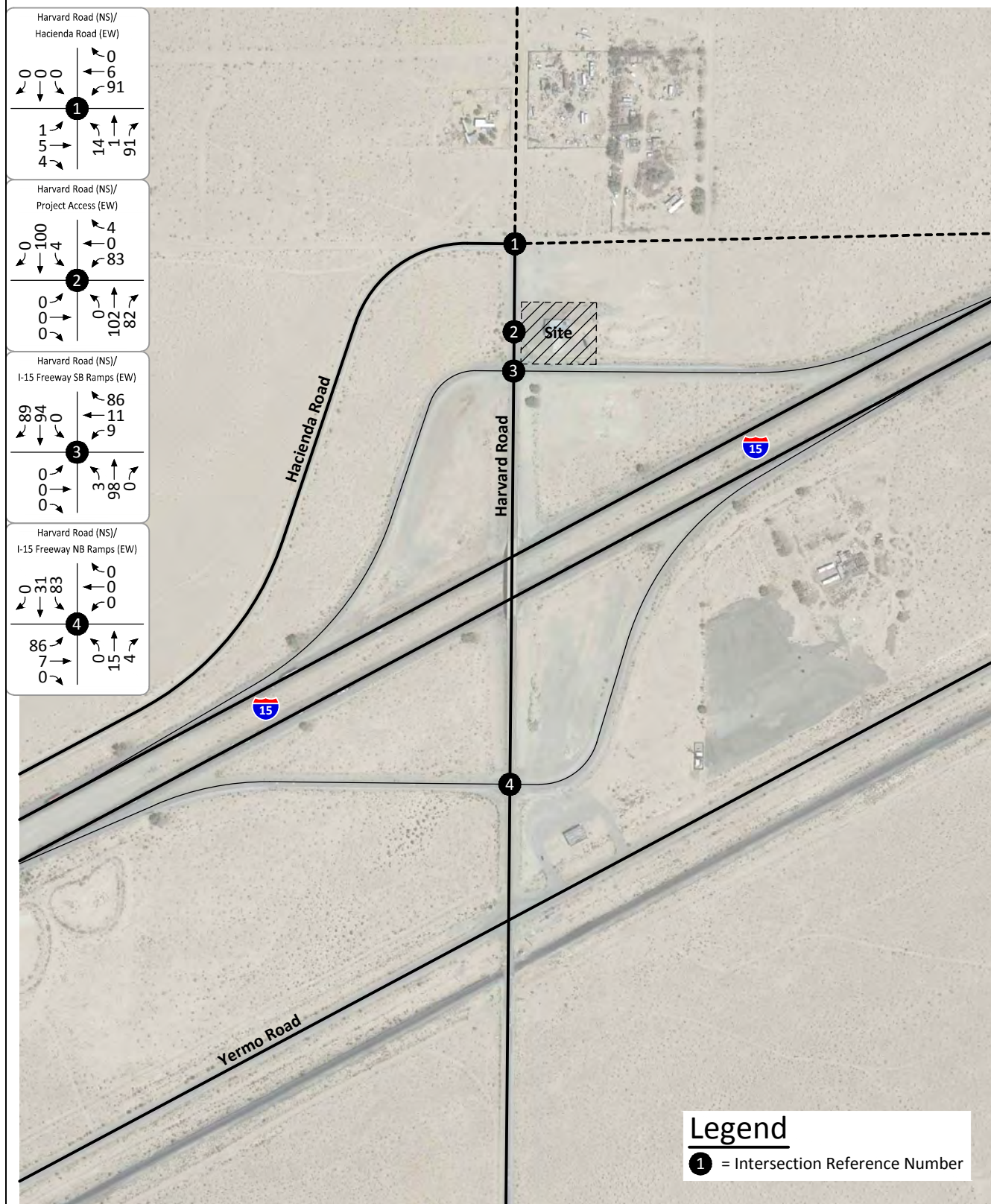
Figure 20
Opening Year (2019) With Project Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/Hacienda Road (EW) — Intersection 1
- 0, 5, 90
- 1, 1, 0
- 0, 5, 10
- 16, 2, 91

Harvard Road (NS)/Project Access (EW) — Intersection 2
- 6, 0, 111
- 0, 110, 6
- 0, 0, 0
- 0, 114, 112

Harvard Road (NS)/I-15 Freeway SB Ramps (EW) — Intersection 3
- 110, 16, 258
- 105, 116, 0
- 0, 0, 0
- 3, 116, 0

Harvard Road (NS)/I-15 Freeway NB Ramps (EW) — Intersection 4
- 0, 0, 0
- 0, 267, 102
- 101, 10, 8
- 0, 18, 5

Hacienda Road

Harvard Road

Yermo Road

I-15

Site

Legend
1 = Intersection Reference Number
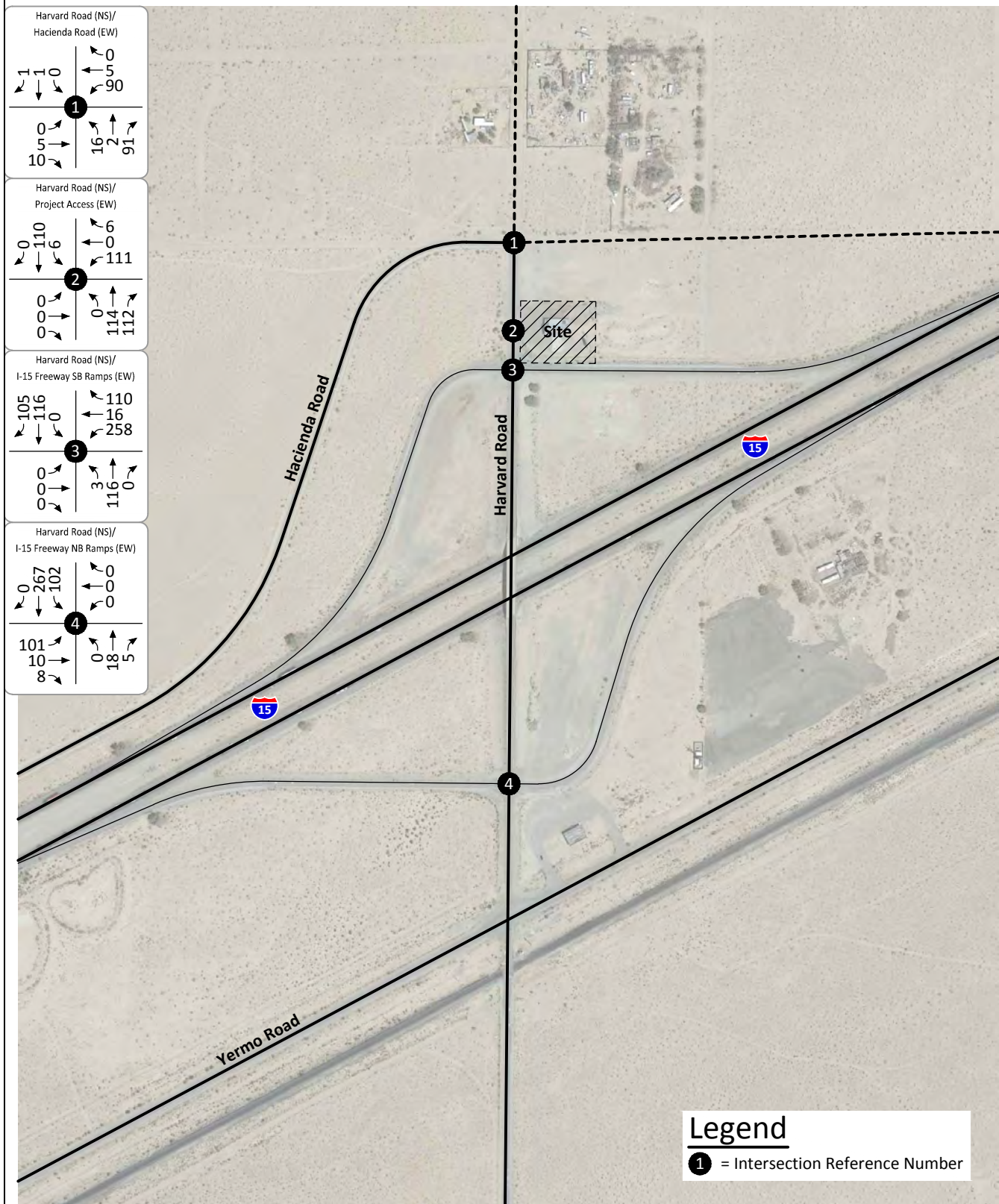
Figure 21
Year 2040 Without Project Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

Harvard Road (NS)/
Project Access (EW)

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

Legend

1 = Intersection Reference Number
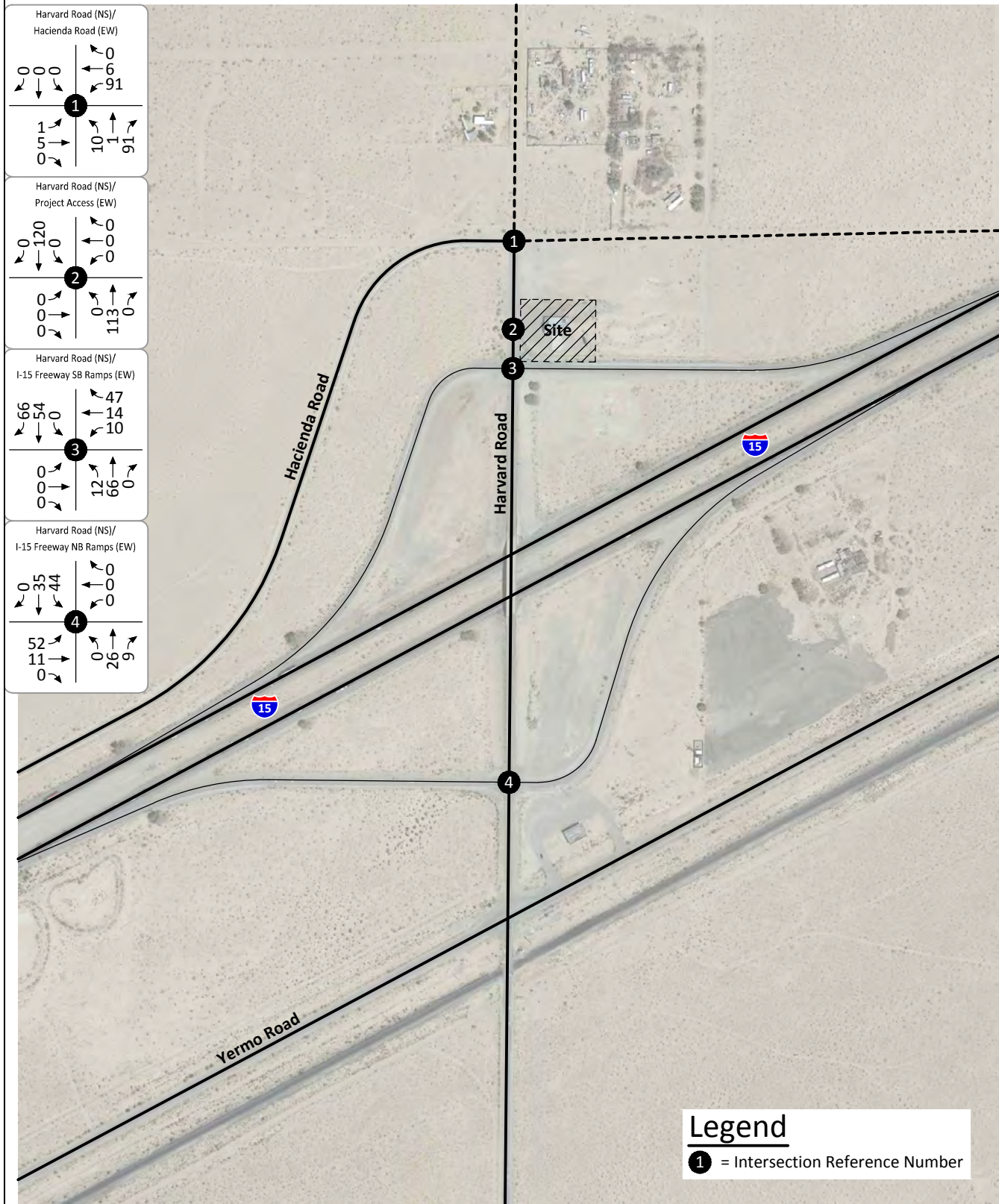
Figure 22
Year 2040 Without Project Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

KUNZMAN ASSOCIATES, INC.
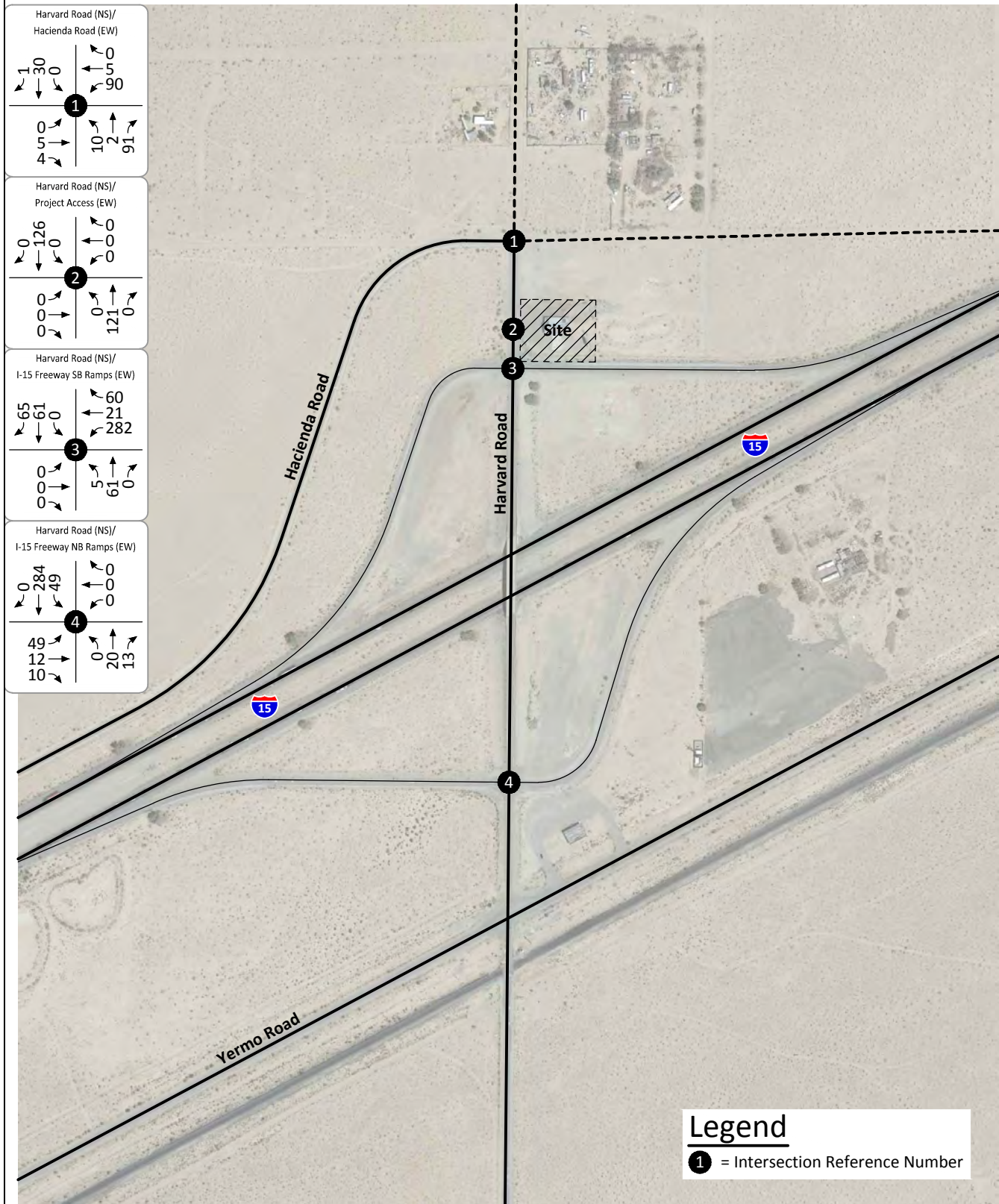
Figure 23
Year 2040 With Project Friday Evening
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

Harvard Road (NS)/
Project Access (EW)

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

Site

Hacienda Road

Harvard Road

Yermo Road

Legend

1 = Intersection Reference Number

JN 6906
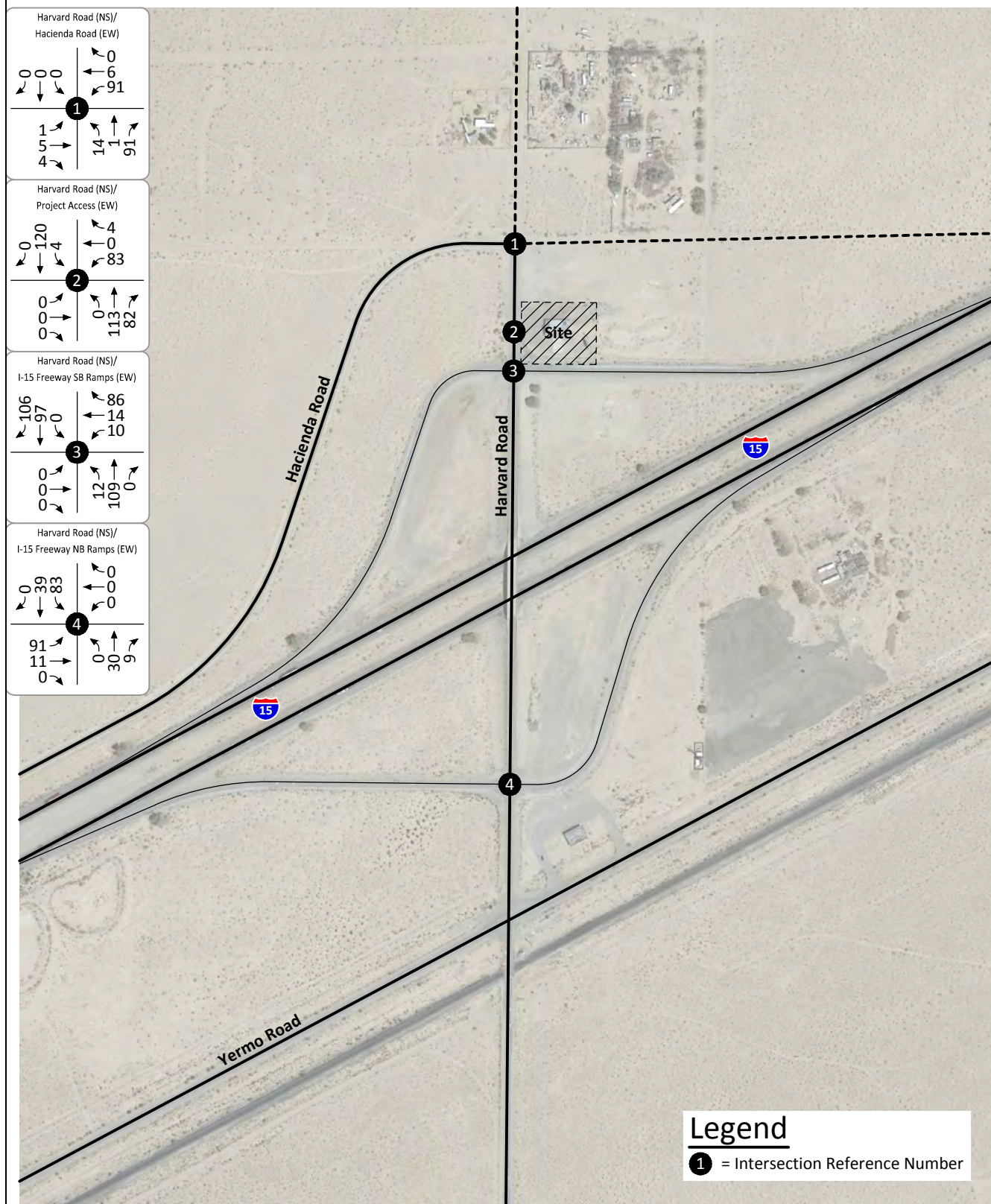
Figure 24
Year 2040 With Project Sunday Mid-Day
Peak Hour Intersection Turning Movement Volumes

Harvard Road (NS)/
Hacienda Road (EW)

- ← 0
- ← 5
- ↙ 90

1 / 30 / 0

- 0 →
- 5 →
- 10 ↘

16 / 2 / 91

1

Harvard Road (NS)/
Project Access (EW)

- ↖ 6
- ← 0
- ↙ 111

0 / 126 / 6

- 0 →
- 0 →
- 0 ↘

0 / 121 / 112

2

Harvard Road (NS)/
I-15 Freeway SB Ramps (EW)

- ↖ 113
- ← 21
- ↙ 282

117 / 120 / 0

- 0 →
- 0 →
- 0 ↘

5 / 120 / 0

3

Harvard Road (NS)/
I-15 Freeway NB Ramps (EW)

- ← 0
- ← 0
- ← 0

0 / 290 / 102

- 102 ↗
- 12 →
- 10 ↘

0 / 26 / 13

4

Hacienda Road

Harvard Road

Yermo Road

I-15

Site

1
2
3
4

Legend

1 = Intersection Reference Number

JN 6906
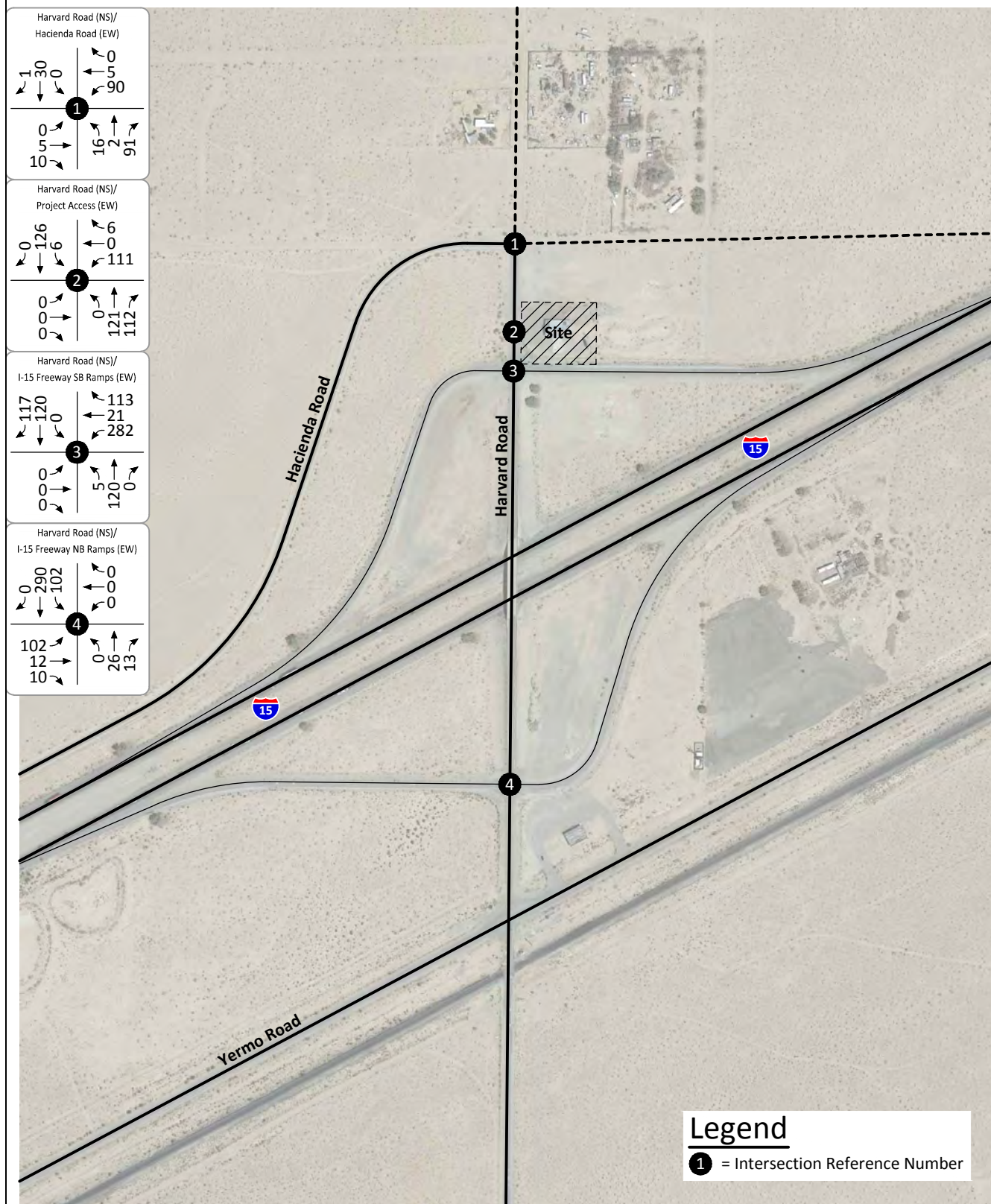
V. CONCLUSIONS AND RECOMMENDATIONS

A. Summary

The traffic issues related to the proposed land uses and development have been evaluated in the context of the California Environmental Quality Act.

The County of San Bernardino is the lead agency responsible for preparation of the traffic impact analysis, in accordance with California Environmental Quality Act authorizing legislation. This report analyzes traffic impacts for the anticipated opening date with full occupancy of the development in Year 2019, at which time it will be generating trips at its full potential, and for the current traffic forecast year, which is the Year 2040.

A series of scoping discussions were conducted with the County of San Bernardino and the California Department of Transportation to define the desired analysis locations for each future analysis year. In addition, the San Bernardino Associated Governments staff has also been contacted to discuss the project.

The average daily traffic volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model Year 2008 and Year 2035 average daily traffic volume forecasts (see Appendix E). Traffic model plots are included in Appendix D. This difference defines the growth in traffic over the 27 year period. The incremental growth in average daily traffic volume has been factored to reflect the forecast growth between Year 2017 and Year 2040. For this purpose, linear growth between the Year 2008 base condition and the forecast Year 2035 condition was assumed. Since the increment between Year 2017 and Year 2040 is 23 years of the 27 year time frame, a factor of 0.85 (i.e., 23/27) was used.

The Year 2040 without project daily and peak hour directional roadway segment volume forecasts have been determined using the growth increment approach on the San Bernardino Transportation Analysis Model Year 2008 and Year 2035 peak hour volumes. The growth increment calculation worksheets are shown in Appendix E. Current peak hour intersection approach/departure data is a necessary input to this approach. The existing traffic count data serves as both the starting point for the refinement process, and also provides important insight into current travel patterns and the relationship between peak hour and daily traffic conditions. The initial turning movement proportions are estimated based upon the relationship of each approach leg's forecast traffic volume to the other legs forecast volumes at the intersection. The initial estimate of turning movement proportions is then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program Report 255. A linear programming algorithm is used to calculate individual turning movements that match the known directional roadway segment volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

Project traffic volumes were then added to the Year 2040 San Bernardino Transportation Analysis Model volumes. Quality control checks and forecast adjustments were performed

as necessary to ensure that all future traffic volume forecasts reflect a minimum of 10% growth over existing traffic volumes. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

B.   Existing Conditions

Regional access to the project site is mainly provided by the I-15 Freeway. Local access is provided by various roadways in the vicinity of the site. The north-south roadway which will be most affected by the project is Harvard Road.

The existing delay and Level of Service for the intersection in the vicinity of the project are shown in Table 1. The study area intersections currently operate within acceptable Levels of Service during the peak hours for existing traffic conditions.

C.   Project Traffic

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are based on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

As shown in Table 2, the proposed development is projected to generate a total of approximately 2,233 daily vehicle trips, 174 of which will occur during the Friday evening peak hour and 234 of which will occur during the Sunday mid-day peak hour.

It should be noted that this facility is very isolated and adjacent to the I-15 Freeway. It is projected that the proposed project adds virtually no additional traffic volumes to the adjacent I-15 Freeway but all its traffic volumes are pass-by/diverted from the study area intersections.

The distributions of the project trips were based on existing travel patterns calculated using existing traffic counts. This methodology was approved by the County of San Bernardino Transportation Department and the California Department of Transportation and the California Department of Transportation staff.

D.   Future Conditions

An Existing Plus Project, Opening Year (2019) analysis, and Year 2040 analysis are included in this report. Existing Plus Project traffic operations analysis has been completed for Friday evening and Sunday mid-day peak hours and is shown in Table 3. Opening Year (2019) traffic operations analysis has been completed for Friday evening and Sunday mid-day peak hours and is shown in Tables 4 and 5. Year 2040 traffic operations analysis has been completed for Friday evening and Sunday mid-day peak hours and is shown in Tables 6 and 7.

For Existing Plus Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

For Opening Year (2019) Without Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

For Opening Year (2019) With Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

For Year 2040 Without Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

For Year 2040 With Project traffic conditions, the study area intersections are projected to operate at an acceptable Levels of Service during the peak hours.

Traffic signals are not projected to be warranted at any study area intersections for Year 2040 With Project traffic conditions.

E.   **Recommendations**

Site-specific circulation and access recommendations are depicted on Figure 25.

1.   On-Site Improvements

Construct Harvard Road from the north project boundary to the south project boundary at its ultimate cross-section width including landscaping and parkway improvements in conjunction with development, as necessary.

The project site should provide sufficient parking spaces to meet County of San Bernardino parking code requirements in order to service on-site parking demand.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

Sight distance at each project access should be reviewed with respect to California Department of Transportation/County of San Bernardino standards in conjunction with the preparation of final grading, landscaping, and street improvement plans.

2.   Off-Site Improvements

As is the case for any roadway design, the County of San Bernardino should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Figure 25
Circulation Recommendations

Construct Harvard Road from the north project boundary to the south project boundary at its ultimate cross-section width including landscaping and parkway improvements in conjunction with development, as necessary.

The project site should provide sufficient parking spaces to meet County of San Bernardino parking code requirements in order to service on-site parking demand.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

Sight distance at each project access should be reviewed with respect to California Department of Transportation/County of San Bernardino standards in conjunction with the preparation of final grading, landscaping, and street improvement plans.

As is the case for any roadway design, the County of San Bernardino should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Legend

= Stop Sign

= Full Access Driveway

APPENDICES

Appendix A – Glossary of Transportation Terms

Appendix B – Scoping Agreement

Appendix C – Traffic Count Worksheets

Appendix D – San Bernardino Transportation Analysis Model Plots

Appendix E – Future Growth Increment Calculation Worksheets

Appendix F – Explanation and Calculation of Intersection Delay

Appendix G – Internal Capture Calculation Worksheets

Appendix H – Traffic Signal Warrant Worksheets

APPENDIX A

GLOSSARY OF TRANSPORTATION TERMS

GLOSSARY OF TRANSPORTATION TERMS

COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CYCLE LENGTH: The time period in seconds required for one complete signal cycle.

CUL-DE-SAC STREET: A local street open at one end only, and with special provisions for turning around.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

PASSENGER CAR EQUIVALENTS (PCE): One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

SCOPING AGREEMENT

SCOPE FOR TRAFFIC STUDY

Project Name:	Jeremy's Travel Plaza

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	North East Corner of Harvard Road and I-15 Freeway SB Ramps		
Project Description:	10 fueling position gasoline/service station with convenience market and a 1,800 square foot donut shop with drive-through window.		
City:	Unincorporated County of San Bernardino		
Project Buildout Year:	2019	**Ambient Growth Rate per Year:**	SBTAM
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	Harvard Road		
Xtn E/W Street Name:	Hacienda Road		
Thomas Guide Pg+Grid:	3504 F-6	**County Supervisorial District:**	1st

	Engineer	**Developer**
Company:	Kunzman Associates, Inc.	Capstone Builders
Name:	Robert Kunzman	Amer Sabbah
Address:	1111 Town & Country Rd., Ste. 34	30707 East Sunset Drive
City, State, Zip Code:	Orange, CA 92868	Redlands, CA 92373
Phone #:	1-714-973-8383	1-909-583-4596
Fax #:	1-714-973-8821	1-909-798-0938
Email:	robert@traffic-engineer.com	Asabbah3@aol.com

By: *Robert Kunzman*

Print Name: Robert Kunzman   3-14-2017

Consultant/Developer's Representative   **Date**

Reviewed By:

Print Name:

Traffic Divsion Representative   **Date**

1

SCOPE FOR TRAFFIC STUDY

Project Name:	Jeremy's Travel Plaza

1. Traffic Distribution: Please insert or attach Figure(s) illustrating project trip distribution in percentages and volumes at the study intersections analyzed.

2. Trip Credit: Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	No	0
Existing Active Land Use	No	0
Previous Land Use	No	0
Internal Trip Reduction	Yes	ITE Calculated
Pass-by Trip Reduction	No	0

3. Related Projects: Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for our review and approval before being incorporated in the study.

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered.

The project does not contribute trips greater than the freeway threshold volume of 100 two-way peak hour

Virtually all of the project trips are from pass-by. The only new trips associated with the project are

Vehicles and employees.

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tiguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at:
http://www.sanbag.ca.gov/planning/subr_congestion.html

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SCOPE FOR TRAFFIC STUDY

Project Name:	Jeremy's Travel Plaza

5. Trip Generation

Trip Generation Rate(s) Source: ITE Trip Generation	I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:						**Edition:**	9th

Land Use Code	Land Use	Rate Based on	Qty	*AVTE vs	ADT	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour	
						In	Out	In	Out	In	Out
945	Gasoline/Service Station with Convenience Market	I	10		1,628			68	68	68	68
937	Coffee/Donut Shop with Drive-through Windows	I	1.800		1,473			39	39	76	76
	Internal Capture Calculated	I			-868			-20	-20	-27	-27

* - Average Vehicle Trip Ends.
 For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store

SCOPE FOR TRAFFIC STUDY

Project Name:	Jeremy's Travel Plaza

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change after related projects, trip generation and distribution are determined. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

Xtn #	%County	Thomas Guide Page+Grid	NS/EW Street Name	City	Signalized	CMP
1	100%	3504F-6	Harvard Road (NS) at Hacienda Road (EW)	County of San Bernardino	No	
2	0%	3504F-6	Harvard Road (NS) at I-15 Freeway WB Ramps (EW)	CALTRANS	No	
3	0%	3504F-6	Harvard Road (NS) at I-15 Freeway EB Ramps (EW)	CALTRANS	No	

Cites to be consulted: None

Project Name:	Jeremy's Travel Plaza

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays (see below).
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.
Peak counts have been conducted on Friday from 4:00 PM to 6:00 PM and on Sunday from 12:00 PM to 3:00 PM. These are the analysis periods to be studied.
SBTAM Model used for forecasting of 2019 and 2040. Other development in the area will be added to SBTAM Model output.
Study Scenarios: Existing, Existing Plus Project, Opening Year (2019) Without, Opening Year (2019) With Project, Year 2040 Without Project, and Year 2040 With Project.

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County's Road Planning and Design Standards.

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $3400 is required at the time that a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

Project Name:	Jeremy's Travel Plaza

9. Contact Information:

Please submit a signed copy of this scope for approval by the Traffic Division. Draft scopes may be sent electronically. Final scope with signature should be submitted in person or by US Mail to:

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: epetre@dpw.sbcounty.gov (Ed Petre)

Table 2

Project Trip Generation[1]

Land Use	Quantity	Units[2]	Friday Evening			Sunday Mid-day			Weekday Daily[3]
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Gasoline/Service Station with Convenience Market		FP	6.79	6.78	13.57	6.79	6.78	13.57	162.78
Coffee/Donut Shop with Drive-Through Window		TSF	21.40	21.40	42.80	42.26	42.26	84.52	818.58
Trips Generated									
Gasoline/Service Station with Convenience Market[4]	10	FP	68	68	136	68	68	136	1,628
Coffee/Donut Shop with Drive-Through Window[5]	1.800	TSF	39	39	78	76	76	152	1,473
Subtotal			107	107	214	144	144	288	3,101
- Internal Capture (19% PM/Sunday, 28% Daily)[6]			-20	-20	-40	-27	-27	-54	-868
Total Trips Generated			87	87	174	117	117	234	2,233

[1] Source: Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012, Land Use Categories 937 and 945.

[2] FP = Fueling Positions; TSF = Thousand Square Feet

[3] Weekday daily trip generation rates have been used.

[4] Peak hour trip generation rates for Friday evening and Sunday mid-day peak periods are not available. Weekday evening peak hour of generator trip generation has been used for Friday evening and Sunday mid-day because it is the highest trip generating period for this land use.

[5] Peak hour trip generation rates for Friday evening and Sunday mid-day peak periods are not available. Weekday evening peak hour trip generation has been used for Friday evening because it is the highest weekday trip generating period for this land use. Saturday peak hour of genertor trip generation has been used for Sunday mid-day because it is the highest weekend trip generating period for this land use.

[6] Source: Institute of Transportation Engineers, Trip Generation Manual User's Guide and Handbook, 9th Edition, 2012.

It should be noted that this facility is very isolated and adjacent to the I-15 Freeway. It is projected that the site adds virtually no traffic to the adjacent I-15 Freeway but all its traffic utilizes the study area intersections.

Multi-Use Trip Generation Calculation (Internal Capture)

Analyst: AA
Date: 2/24/2017

Project: Jeremy's Travel Plaza
Time Period: PM Peak Hour

Land Use: Retail/Commercial

ITE Land Use Code			
Size			TSF
	Total	Internal	External
Enter	**68**	14	54
Exit	**68**	14	54
Total	136	28	108
%	100%	21%	79%

Exit to External: 54
Enter from External: 54

20%	14
Demand	
0	
Balanced	
20%	0
Demand	

20%	14
Demand	
0	
Balanced	
20%	0
Demand	

20%	14
Demand	
14	
Balanced	
20%	15
Demand	

20%	14
Demand	
14	
Balanced	
20%	15
Demand	

Land Use: Retail/Commercial

ITE Land Use Code	**n/a**		
Size	**0.000**		TSF
	Total	Internal	External
Enter	**0**	0	0
Exit	**0**	0	0
Total	0	0	0
%	100%	0%	0%

Exit to External: 0
Enter from External: 0

20%	0		0		20%	15
Demand		Balanced			Demand	

20%	0		0		20%	15
Demand		Balanced			Demand	

Land Use: Retail/Commercial

ITE Land Use Code			
Size			TSF
	Total	Internal	External
Enter	**76**	14	62
Exit	**76**	14	62
Total	152	28	124
%	100%	18%	82%

Exit to External: 62
Enter from External: 62

Net External Trips for Multi-Use Development					
	Land Use:	Land Use:	Land Use:	Total	
Enter	54	0	62	116	
Exit	54	0	62	116	
Total	108	0	124	232	Internal Capture
Single-Use Trip Generation Est.	136	0	152	288	**19%**

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Multi-Use Trip Generation Calculation (Internal Capture)

Analyst: AA
Date: 2/24/2017

Project: Jeremy's Travel Plaza
Time Period: Daily

Land Use: **Retail/Commercial**

ITE Land Use Code			
	Size		TSF
	Total	Internal	External
Enter	**814**	221	593
Exit	**814**	206	608
Total	1628	427	1201
%	100%	26%	74%

Exit to External: 608
Enter from External: 593

30% | 244
Demand
0
Balanced
28% | 0
Demand

28% | 228
Demand
0
Balanced
30% | 0
Demand

30% | 244
Demand
206
Balanced
28% | 206
Demand

28% | 228
Demand
221
Balanced
30% | 221
Demand

28% | 0   0   30% | 221
Demand   Balanced   Demand

30% | 0   0   28% | 206
Demand   Balanced   Demand

Land Use: **Retail/Commercial**

ITE Land Use Code	**n/a**		
	Size	**0.000**	TSF
	Total	Internal	External
Enter	**0**	0	0
Exit	**0**	0	0
Total	0	0	0
%	100%	0%	0%

Exit to External: 0
Enter from External: 0

Land Use: **Retail/Commercial**

ITE Land Use Code			
	Size		TSF
	Total	Internal	External
Enter	**736**	206	530
Exit	**737**	221	516
Total	1473	427	1046
%	100%	29%	71%

Exit to External: 516
Enter from External: 530

Net External Trips for Multi-Use Development					
	Land Use:	Land Use:	Land Use:	Total	
Enter	593	0	530	1123	
Exit	608	0	516	1124	
Total	1201	0	1046	2247	Internal Capture
Single-Use Trip Generation Est.	1628	0	1473	3101	**28%**

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Figure 1
Project Location Map

Figure 2
Site Plan

STATE HWY 79 SOUTHBOUND OFFRAMP

Figure 3
Project Trip Distribution

Hacienda Road

Harvard Road

Yermo Road

I-15

5%

95%

Site
100%

45%

50%

5%

5%

45%

5%

Legend
10% = Percent To/From Project

Steve Garrett

From:	Johnson, Jeremy - DPW <Jeremy.Johnson@dpw.sbcounty.gov>
Sent:	Monday, March 20, 2017 10:32 AM
To:	'Robert Kunzman'
Subject:	RE: Jeremy's Travel Plaza
Attachments:	JeremyTravelPlazaScoping APN 0539-223-03.pdf

With Caltrans approval below, signed agreement is attached.

Jeremy Johnson
Department of Public Works
Phone: 909-387-8186
Fax: 909-387-7809
825 E. Third Street
San Bernardino, CA 92415

SAN BERNARDINO
COUNTY

Our job is to create a county in which those who reside and invest can prosper and achieve well-being.
www.SBCounty.gov

County of San Bernardino Confidentiality Notice: This communication contains confidential information sent solely for the use of the intended recipient. If you are not the intended recipient of this communication, you are not authorized to use it in any manner, except to immediately destroy it and notify the sender.

From: Robert Kunzman [mailto:Robert@Traffic-Engineer.com]
Sent: Monday, March 20, 2017 10:20 AM
To: 'Roberts, Mark B@DOT'; Johnson, Jeremy - DPW; Petre, Ed
Subject: RE: Jeremy's Travel Plaza

Mark,

Thank you very much!

Robert Kunzman
Principal Associate

KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

KUNZMAN ASSOCIATES, INC.
1111 Town & Country Road, Suite 34
Orange, CA 92868
p. 714-973-8383 x 204
c. 714-321-4863
e. robert@traffic-engineer.com

Traffic Engineering | Transportation Planning | Parking | Expert Witness
Noise/Vibration | Air Quality | Climate Change | Health Risk Assessments

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From: Roberts, Mark B@DOT [mailto:mark.roberts@dot.ca.gov]
Sent: Monday, March 20, 2017 10:17 AM

To: Robert Kunzman; 'Johnson, Jeremy - DPW'; 'Petre, Ed'
Subject: Jeremy's Travel Plaza

Hello

I'm ok with the scope as written.

****

Caltrans
District 8 (San Bernardino and Riverside Counties)
Mark Roberts
Office of Intergovernmental Review, Community and Regional Planning
Senior Transportation Planner, AICP
464 West 4th Street, 6th Floor, MS 725
San Bernardino, CA 92401-1400
(909) 383-4557

From: Robert Kunzman [mailto:Robert@Traffic-Engineer.com]
Sent: Tuesday, March 14, 2017 12:40 PM
To: 'Johnson, Jeremy - DPW' <Jeremy.Johnson@dpw.sbcounty.gov>; 'Petre, Ed' <epetre@dpw.sbcounty.gov>
Cc: Roberts, Mark B@DOT <mark.roberts@dot.ca.gov>
Subject: RE: Jeremy's Travel Plaza

Jeremy,

Sorry about that. I have updated description and I have attached a PDF copy for your review. Thank you very much.

Robert Kunzman
Principal Associate

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e. robert@traffic-engineer.com

Traffic Engineering | Transportation Planning | Parking | Expert Witness
Noise/Vibration | Air Quality | Climate Change | Health Risk Assessments

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From: Johnson, Jeremy - DPW [mailto:Jeremy.Johnson@dpw.sbcounty.gov]
Sent: Tuesday, March 14, 2017 11:42 AM
To: 'Robert Kunzman'; Petre, Ed
Cc: 'Roberts, Mark B@DOT'
Subject: RE: Jeremy's Travel Plaza

2

Robert,

      It is recommended to update the Project Description to reflect the current proposal (10 fueling positions with drive through donut shop?). Otherwise the County Traffic Division is ok with the scope.

Jeremy Johnson
Department of Public Works
Phone: 909-387-8186
Fax: 909-387-7809
825 E. Third Street
San Bernardino, CA 92415

From: Robert Kunzman [mailto:Robert@Traffic-Engineer.com]
Sent: Monday, February 27, 2017 1:43 PM
To: Petre, Ed
Cc: 'Roberts, Mark B@DOT'; Johnson, Jeremy - DPW
Subject: Jeremy's Travel Plaza

Ed,

I have attached a PDF copy of a scoping agreement for a traffic study for the Jeremy's Travel Plaza project. This project is right next to the "Newberry Springs Service Station" project I did a while back. I am proposing the same analysis as we did on the last job. Friday evening and Sunday mid-day, SBTAM for projections, the Newberry Springs Service Station as a cumulative, etc. Just like the other job, virtually all of this projects trips are from pass-by. The only new trips are deliveries and employees. Pass-by is not shown in the trip generation because all of the trips will utilize the ramps. I plan on conducting new counts and using the model data I have. Please let me know if you have any questions. Thank you.

Robert Kunzman
Principal Associate

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OVER 40 YEARS OF EXCELLENT SERVICE

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e. robert@traffic-engineer.com

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Noise/Vibration | Air Quality | Climate Change | Health Risk Assessments

APPENDIX C

TRAFFIC COUNT WORKSHEETS

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	3
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	0	0	0	1	1	0	2	4	1	0	5	1	0	0	1	8
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Grand Total	0	0	0	0	1	1	0	2	5	1	0	6	1	1	0	2	10
Apprch %	0	0	0		50	50	0		83.3	16.7	0		50	50	0		
Total %	0	0	0	0	10	10	0	20	50	10	0	60	10	10	0	20	
Passenger Vehicles	0	0	0	0	1	1	0	2	5	1	0	6	1	1	0	2	10
% Passenger Vehicles	0	0	0	0	100	100	0	100	100	100	0	100	100	100	0	100	100
Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Large 2 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	3
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
Total Volume	0	0	0	0	1	1	0	2	4	1	0	5	1	0	0	1	8
% App. Total	0	0	0		50	50	0		80	20	0		100	0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.500	.250	.000	.625	.250	.000	.000	.250	.667

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

Peak Hour Data

Harvard Road

Out	In	Total
2	0	2

Right	Thru	Left
0	0	0

Barrett Road

Total	In	Out
6	1	5

Left	Thru	Right
1	0	0

North

Peak Hour Begins at 04:00 PM

Passenger Vehicles
Large 2 Axle Vehicles
3 Axle Vehicles
4+ Axle Trucks

Hacienda Road

Out	In	Total
0	2	2

Right	Thru	Left
0	1	1

Harvard Road

Left	Thru	Right
4	1	0

Out	In	Total
1	5	6

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**1**	0	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
+30 mins.	0	0	0	0	**1**	0	0	**1**	0	**1**	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	**1**	0	1	1	0	0	1	0	0	0	0
Total Volume	0	0	0	0	1	1	0	2	4	1	0	5	1	0	0	1
% App. Total	0	0	0		50	50	0		80	20	0		100	0	0	
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.500	.250	.000	.625	.250	.000	.000	.250

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	3
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	0	0	0	1	1	0	2	4	1	0	5	1	0	0	1	8
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Grand Total	0	0	0	0	1	1	0	2	5	1	0	6	1	1	0	2	10
Apprch %	0	0	0		50	50	0		83.3	16.7	0		50	50	0		
Total %	0	0	0	0	10	10	0	20	50	10	0	60	10	10	0	20	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	3
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
Total Volume	0	0	0	0	1	1	0	2	4	1	0	5	1	0	0	1	8
% App. Total	0	0	0		50	50	0		80	20	0		100	0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.500	.250	.000	.625	.250	.000	.000	.250	.667

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92787
(951) 268-6268

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
2	0	2

Right	Thru	Left
0	0	0

North

Peak Hour Begins at 04:00 PM

Passenger Vehicles

Barrett Road

Total	In	Out
6	1	5

Left	Thru	Right
1	0	0

Hacienda Road

Out	In	Total
0	2	2

Right	Thru	Left
0	1	1

Harvard Road

Left	Thru	Right
4	1	0

Out	In	Total
1	5	6

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**1**	0	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
+30 mins.	0	0	0	0	**1**	0	0	**1**	0	**1**	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	**1**	0	1	1	0	0	1	0	0	0	0
Total Volume	0	0	0	0	1	1	0	2	4	1	0	5	1	0	0	1
% App. Total	0	0	0		50	50	0		80	20	0		100	0	0	
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.500	.250	.000	.625	.250	.000	.000	.250

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

North

Peak Hour Begins at 04:00 PM

Large 2 Axle Vehicles

Barrett Road

Total 0
In 0
Out 0

0	Left
0	Thru
0	Right

Hacienda Road

Out 0
In 0
Total 0

Right	0
Thru	0
Left	0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 2

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 04:00 PM

3 Axle Vehicles

Barrett Road

Total	0

0	Left
In 0	Thru 0
Out 0	Right 0

Hacienda Road

Out	0

Right 0	
Thru 0	In 0
Left 0	

Total	0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAPM
Site Code : 07516358
Start Date : 6/10/2016
Page No   : 1

Groups Printed- 4+ Axle Trucks

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:00 PM

	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

Harvard Road

Out	In	Total
0	0	0

0	0	0

Right · Thru · Left

Peak Hour Data

↑ North

Peak Hour Begins at 04:00 PM

4+ Axle Trucks

Barrett Road

Total 0

Left 0
Thru 0
Right 0

In 0

Out 0

Hacienda Road

Out 0

Right 0
Thru 0
Left 0

In 0

Total 0

Left · Thru · Right

0	0	0

0	0	0

Out · In · Total

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
Site Code : 07516358
Start Date : 6/12/2016
Page No   : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
12:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	2
12:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
12:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
12:45 PM	0	1	0	1	0	0	0	0	3	1	0	4	0	0	1	1	6
Total	0	1	0	1	0	0	0	0	7	1	0	8	1	0	2	3	12
01:00 PM	0	0	1	1	0	0	0	0	2	1	0	3	0	0	0	0	4
01:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	3
01:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	1	3
01:45 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	3	3	5
Total	0	0	1	1	0	0	0	0	7	1	0	8	0	0	6	6	15
02:00 PM	0	0	0	0	0	1	0	1	3	0	0	3	0	0	1	1	5
02:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
02:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
02:45 PM	0	0	0	0	0	0	0	0	4	0	1	5	1	0	0	1	6
Total	0	0	0	0	0	1	0	1	10	0	1	11	1	0	2	3	15
Grand Total	0	1	1	2	0	1	0	1	24	2	1	27	2	0	10	12	42
Apprch %	0	50	50		0	100	0		88.9	7.4	3.7		16.7	0	83.3		
Total %	0	2.4	2.4	4.8	0	2.4	0	2.4	57.1	4.8	2.4	64.3	4.8	0	23.8	28.6	
Passenger Vehicles	0	1	1	2	0	0	0	0	24	2	0	26	2	0	9	11	39
% Passenger Vehicles	0	100	100	100	0	0	0	0	100	100	0	96.3	100	0	90	91.7	92.9
Large 2 Axle Vehicles	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
% Large 2 Axle Vehicles	0	0	0	0	0	100	0	100	0	0	0	0	0	0	10	8.3	4.8
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	100	3.7	0	0	0	0	2.4

	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	1	0	1	0	0	0	0	3	1	0	4	0	0	1	1	6
01:00 PM	0	0	1	1	0	0	0	0	2	1	0	3	0	0	0	0	4
01:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	3
01:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	1	3
Total Volume	0	1	1	2	0	0	0	0	8	2	0	10	0	0	4	4	16
% App. Total	0	50	50		0	0	0		80	20	0		0	0	100		
PHF	.000	.250	.250	.500	.000	.000	.000	.000	.667	.500	.000	.625	.000	.000	.500	.500	.667

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92787
(951) 268-6268

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
2	2	4

Right	Thru	Left
1	1	0

North

Peak Hour Begins at 12:45 PM

Passenger Vehicles
Large 2 Axle Vehicles
3 Axle Vehicles
4+ Axle Trucks

Barrett Road

Total	In	Out
13	4	9

Left	Thru	Right
0	0	4

Hacienda Road

Out	In	Total
0	0	0

Right	Thru	Left
0	0	0

Left	Thru	Right
8	2	0

Out	In	Total
5	10	15

Harvard Road

Peak Hour Analysis From 12:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:15 PM				01:15 PM				02:00 PM				01:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	3	0	0	3	0	0	2	2
+15 mins.	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	1
+30 mins.	0	**1**	0	**1**	0	0	0	0	1	0	0	1	0	0	**3**	**3**
+45 mins.	0	0	**1**	1	0	**1**	0	**1**	4	0	**1**	**5**	0	0	1	1
Total Volume	0	1	1	2	0	1	0	1	10	0	1	11	0	0	7	7
% App. Total	0	50	50		0	100	0		90.9	0	9.1		0	0	100	
PHF	.000	.250	.250	.500	.000	.250	.000	.250	.625	.000	.250	.550	.000	.000	.583	.583

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	2
12:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
12:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
12:45 PM	0	1	0	1	0	0	0	0	3	1	0	4	0	0	1	1	6
Total	0	1	0	1	0	0	0	0	7	1	0	8	1	0	2	3	12
01:00 PM	0	0	1	1	0	0	0	0	2	1	0	3	0	0	0	0	4
01:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	3
01:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	1	3
01:45 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	3	3	5
Total	0	0	1	1	0	0	0	0	7	1	0	8	0	0	6	6	15
02:00 PM	0	0	0	0	0	0	0	0	3	0	0	3	0	0	1	1	4
02:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
02:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	4	0	0	4	1	0	0	1	5
Total	0	0	0	0	0	0	0	0	10	0	0	10	1	0	1	2	12
Grand Total	0	1	1	2	0	0	0	0	24	2	0	26	2	0	9	11	39
Apprch %	0	50	50		0	0	0		92.3	7.7	0		18.2	0	81.8		
Total %	0	2.6	2.6	5.1	0	0	0	0	61.5	5.1	0	66.7	5.1	0	23.1	28.2	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	1	0	1	0	0	0	0	3	1	0	4	0	0	1	1	6
01:00 PM	0	0	1	1	0	0	0	0	2	1	0	3	0	0	0	0	4
01:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	3
01:30 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	1	3
Total Volume	0	1	1	2	0	0	0	0	8	2	0	10	0	0	4	4	16
% App. Total	0	50	50		0	0	0		80	20	0		0	0	100		
PHF	.000	.250	.250	.500	.000	.000	.000	.000	.667	.500	.000	.625	.000	.000	.500	.500	.667

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County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
2	2	4

Right	Thru	Left
1	1	0

Barrett Road

Total	In	Out
13	4	9

Left	Thru	Right
0	0	4

Hacienda Road

Out	In	Total
0	0	0

Right	Thru	Left
0	0	0

North

Peak Hour Begins at 12:45 PM

Passenger Vehicles

Left	Thru	Right
8	2	0

Out	In	Total
5	10	15

Harvard Road

Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:45 PM				12:45 PM				12:45 PM				12:45 PM			
+0 mins.	0	**1**	0	**1**	0	0	0	0	**3**	**1**	0	**4**	0	0	1	1
+15 mins.	0	0	**1**	1	0	0	0	0	2	1	0	3	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	**2**	**2**
+45 mins.	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	1
Total Volume	0	1	1	2	0	0	0	0	8	2	0	10	0	0	4	4
% App. Total	0	50	50		0	0	0		80	20	0		0	0	100	
PHF	.000	.250	.250	.500	.000	.000	.000	.000	.667	.500	.000	.625	.000	.000	.500	.500

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
Site Code : 07516358
Start Date : 6/12/2016
Page No   : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
Grand Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
Apprch %	0	0	0		0	100	0		0	0	0		0	0	100		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	0	0	50	50	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:45 PM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

Peak Hour Data

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

North

Peak Hour Begins at 12:45 PM

Large 2 Axle Vehicles

Barrett Road

Total 0
In 0
Out 0

Left	0
Thru	0
Right	0

Hacienda Road

Out 0
In 0
Total 0

Right	0
Thru	0
Left	0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:45 PM				12:45 PM				12:45 PM				12:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

File Name : CSBHABAMD
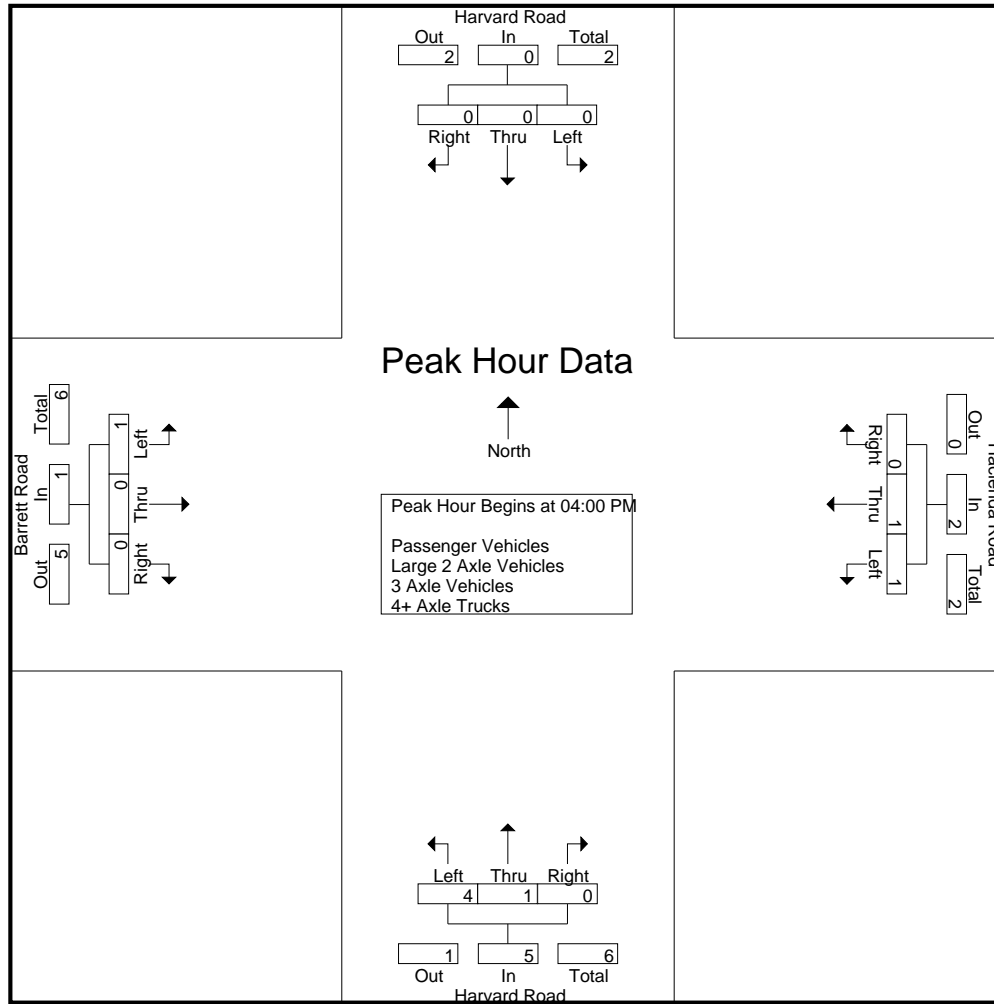Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Harvard Road

Out	In	Total
0	0	0

0	0	0

Right   Thru   Left

Peak Hour Data

North

Peak Hour Begins at 12:45 PM

3 Axle Vehicles

Barrett Road

Total 0

In 0

Out 0

Left 0

Thru 0

Right 0

Hacienda Road

Out 0

In 0

Total 0

Right 0

Thru 0

Left 0

Left   Thru   Right

0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:45 PM				12:45 PM				12:45 PM				12:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

Groups Printed- 4+ Axle Trucks

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Apprch %	0	0	0		0	0	0		0	0	100		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	

Start Time	Harvard Road Southbound				Hacienda Road Westbound				Harvard Road Northbound				Barrett Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 12:45 PM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Barrett Road / Hacienda Road
Weather: Clear

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 12:45 PM

4+ Axle Trucks

Barrett Road

Total	0
In	0
Out	0

Left	0
Thru	0
Right	0

Hacienda Road

Out	0
In	0
Total	0

Right	0
Thru	0
Left	0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 12:45 PM to 01:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:45 PM				12:45 PM				12:45 PM				12:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
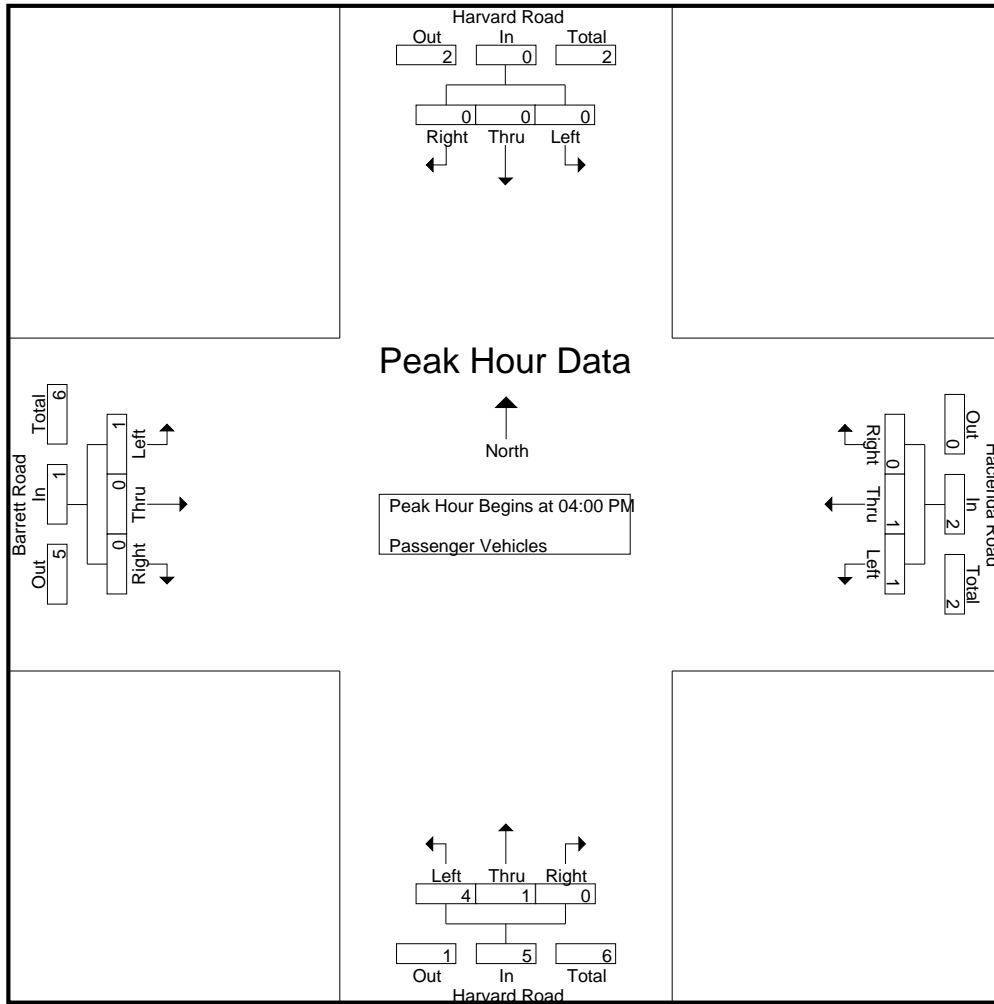Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
04:15 PM	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	3
04:30 PM	0	1	0	1	3	2	1	6	0	1	0	1	0	0	0	0	8
04:45 PM	0	0	0	0	2	1	1	4	0	2	0	2	0	0	0	0	6
Total	0	1	0	1	5	6	3	14	0	5	0	5	0	0	0	0	20
05:00 PM	0	2	3	5	1	2	2	5	0	1	0	1	0	0	0	0	11
05:15 PM	0	0	1	1	2	1	0	3	1	1	0	2	0	0	0	0	6
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	3	0	3	1	1	0	2	0	0	0	0	5
Total	0	2	4	6	3	7	2	12	2	3	0	5	0	0	0	0	23
Grand Total	0	3	4	7	8	13	5	26	2	8	0	10	0	0	0	0	43
Apprch %	0	42.9	57.1		30.8	50	19.2		20	80	0		0	0	0		
Total %	0	7	9.3	16.3	18.6	30.2	11.6	60.5	4.7	18.6	0	23.3	0	0	0	0	
Passenger Vehicles	0	3	4	7	6	9	5	20	2	8	0	10	0	0	0	0	37
% Passenger Vehicles	0	100	100	100	75	69.2	100	76.9	100	100	0	100	0	0	0	0	86
Large 2 Axle Vehicles	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
% Large 2 Axle Vehicles	0	0	0	0	25	0	0	7.7	0	0	0	0	0	0	0	0	4.7
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	4
% 4+ Axle Trucks	0	0	0	0	0	30.8	0	15.4	0	0	0	0	0	0	0	0	9.3

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:30 PM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:30 PM	0	1	0	1	**3**	**2**	1	**6**	0	1	0	1	0	0	0	0	8
04:45 PM	0	0	0	0	2	1	1	4	0	**2**	0	**2**	0	0	0	0	6
05:00 PM	0	**2**	**3**	**5**	1	2	**2**	5	0	1	0	1	0	0	0	0	**11**
05:15 PM	0	0	1	1	2	1	0	3	**1**	1	0	2	0	0	0	0	6
Total Volume	0	3	4	7	8	6	4	18	1	5	0	6	0	0	0	0	31
% App. Total	0	42.9	57.1		44.4	33.3	22.2		16.7	83.3	0		0	0	0		
PHF	.000	.375	.333	.350	.667	.750	.500	.750	.250	.625	.000	.750	.000	.000	.000	.000	.705

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

Harvard Road

Out	In	Total
9	7	16

4	3	0
Right	Thru	Left

Peak Hour Data

North

Interstate 15 Southbound On Ramp

Total	11
In	0
Out	11

0	Left
0	Thru
0	Right

Interstate 15 Southbound Off Ramp

Out	0
In	18
Total	18

4	Right
6	Thru
8	Left

Peak Hour Begins at 04:30 PM

Passenger Vehicles
Large 2 Axle Vehicles
3 Axle Vehicles
4+ Axle Trucks

Left	Thru	Right
1	5	0

11	6	17
Out	In	Total

Harvard Road

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				04:30 PM				04:00 PM			
+0 mins.	0	1	0	1	0	**2**	1	3	0	1	0	1	0	0	0	0
+15 mins.	0	0	0	0	**3**	2	1	**6**	0	**2**	0	**2**	0	0	0	0
+30 mins.	0	**2**	**3**	**5**	2	1	1	4	0	1	0	1	0	0	0	0
+45 mins.	0	0	1	1	1	2	**2**	5	**1**	1	0	2	0	0	0	0
Total Volume	0	3	4	7	6	7	5	18	1	5	0	6	0	0	0	0
% App. Total	0	42.9	57.1		33.3	38.9	27.8		16.7	83.3	0		0	0	0	
PHF	.000	.375	.333	.350	.500	.875	.625	.750	.250	.625	.000	.750	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
04:15 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
04:30 PM	0	1	0	1	2	1	1	4	0	1	0	1	0	0	0	0	6
04:45 PM	0	0	0	0	2	1	1	4	0	2	0	2	0	0	0	0	6
Total	0	1	0	1	4	3	3	10	0	5	0	5	0	0	0	0	16
05:00 PM	0	2	3	5	1	1	2	4	0	1	0	1	0	0	0	0	10
05:15 PM	0	0	1	1	1	1	0	2	1	1	0	2	0	0	0	0	5
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	3	0	3	1	1	0	2	0	0	0	0	5
Total	0	2	4	6	2	6	2	10	2	3	0	5	0	0	0	0	21
Grand Total	0	3	4	7	6	9	5	20	2	8	0	10	0	0	0	0	37
Apprch %	0	42.9	57.1		30	45	25		20	80	0		0	0	0		
Total %	0	8.1	10.8	18.9	16.2	24.3	13.5	54.1	5.4	21.6	0	27	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	1	0	1	2	1	1	4	0	1	0	1	0	0	0	0	6
04:45 PM	0	0	0	0	2	1	1	4	0	2	0	2	0	0	0	0	6
05:00 PM	0	2	3	5	1	1	2	4	0	1	0	1	0	0	0	0	10
05:15 PM	0	0	1	1	1	1	0	2	1	1	0	2	0	0	0	0	5
Total Volume	0	3	4	7	6	4	4	14	1	5	0	6	0	0	0	0	27
% App. Total	0	42.9	57.1		42.9	28.6	28.6		16.7	83.3	0		0	0	0		
PHF	.000	.375	.333	.350	.750	1.00	.500	.875	.250	.625	.000	.750	.000	.000	.000	.000	.675

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92787
(951) 268-6268

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 2

Harvard Road

Out	In	Total
9	7	16

Right	Thru	Left
4	3	0

Peak Hour Data

↑
North

Peak Hour Begins at 04:30 PM

Passenger Vehicles

Interstate 15 Southbound On Ramp

Total 9
In 0
Out 9

Left	Thru	Right
0	0	0

Interstate 15 Southbound Off Ramp

Out 0
In 14
Total 14

Right	Thru	Left
4	4	6

Left	Thru	Right
1	5	0

Out	In	Total
9	6	15

Harvard Road

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	1	0	1	**2**	**1**	1	**4**	0	1	0	1	0	0	0	0
+15 mins.	0	0	0	0	2	1	1	4	0	**2**	0	**2**	0	0	0	0
+30 mins.	0	**2**	**3**	**5**	1	1	**2**	4	0	1	0	1	0	0	0	0
+45 mins.	0	0	1	1	1	1	0	2	**1**	1	0	2	0	0	0	0
Total Volume	0	3	4	7	6	4	4	14	1	5	0	6	0	0	0	0
% App. Total	0	42.9	57.1		42.9	28.6	28.6		16.7	83.3	0		0	0	0	
PHF	.000	.375	.333	.350	.750	1.000	.500	.875	.250	.625	.000	.750	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
Apprch %	0	0	0		100	0	0		0	0	0		0	0	0		
Total %	0	0	0	0	100	0	0	100	0	0	0	0	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0		100	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.500

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PO Box 1178
Corona, CA 92787
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County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
Site Code : 07516358
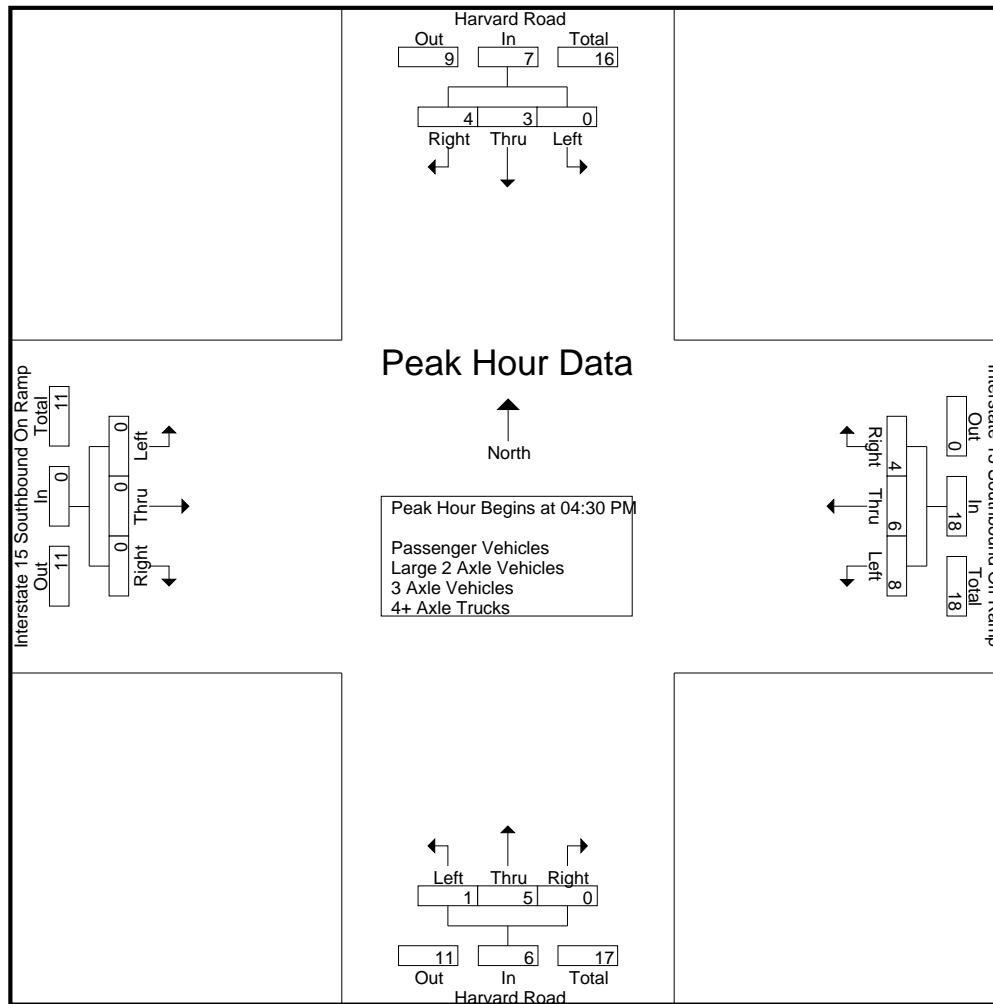Start Date : 6/10/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
0	0	0

Right	Thru	Left
0	0	0

Interstate 15 Southbound On Ramp

Total	0
In	0
Out	0

Left	Thru	Right
0	0	0

Interstate 15 Southbound Off Ramp

Out	0
In	2
Total	2

Right	Thru	Left
0	0	2

North

Peak Hour Begins at 04:30 PM

Large 2 Axle Vehicles

Left	Thru	Right
0	0	0

Out	In	Total
2	0	2

Harvard Road

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
% App. Total	0	0	0		100	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 04:30 PM

3 Axle Vehicles

Interstate 15 Southbound On Ramp

Total 0
In 0
Out 0

Left 0 / Thru 0 / Right 0

Interstate 15 Southbound Off Ramp

Out 0
In 0
Total 0

Right 0 / Thru 0 / Left 0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SPM
Site Code : 07516358
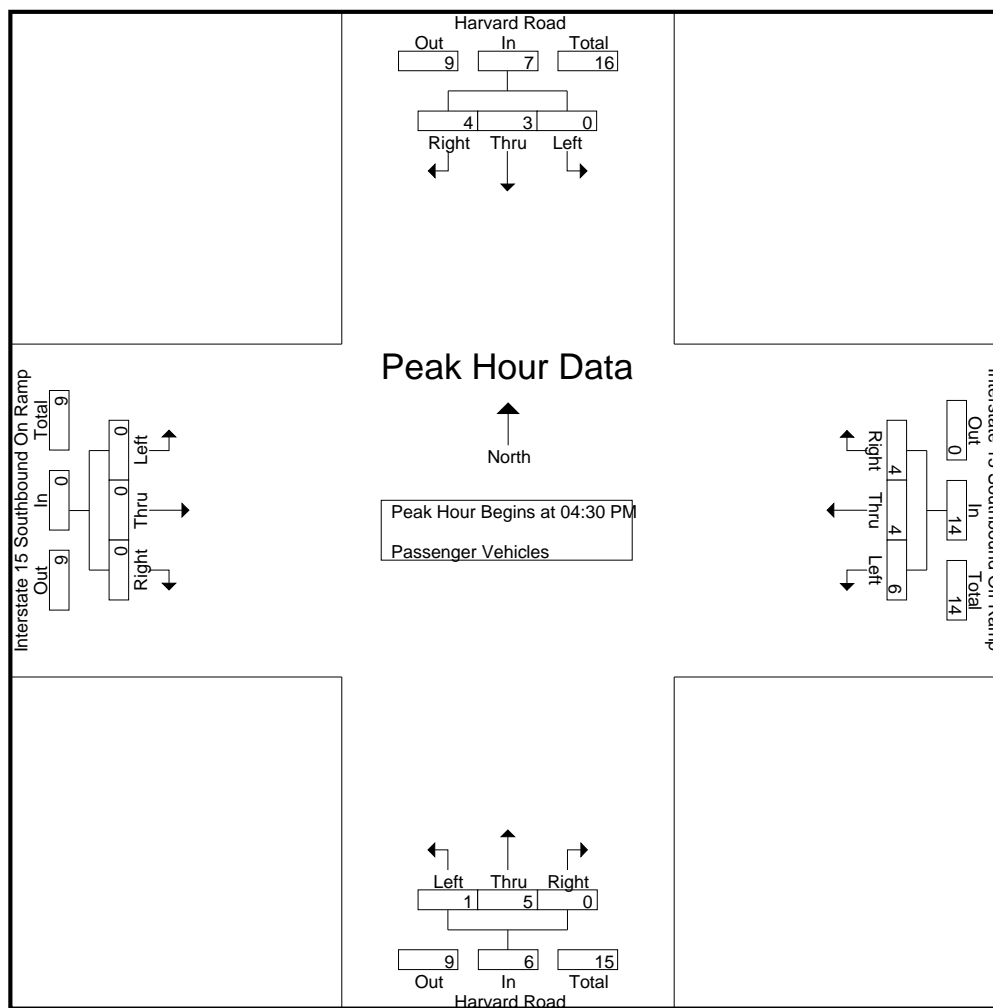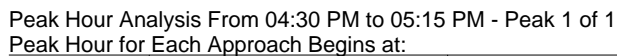Start Date : 6/10/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	4
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0		
Total %	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.500

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County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 04:30 PM

4+ Axle Trucks

Interstate 15 Southbound On Ramp

Total	2
In	0
Out	2

Left	0
Thru	0
Right	0

Interstate 15 Southbound Off Ramp

Out	0
In	2
Total	2

Right	0
Thru	2
Left	0

Left	Thru	Right
0	0	0

Out	In	Total
0	0	0

Harvard Road

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000

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County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	1	1	23	6	1	30	0	0	0	0	0	0	0	0	31
12:15 PM	0	0	2	2	39	3	4	46	0	0	0	0	0	0	0	0	48
12:30 PM	0	2	2	4	23	3	1	27	0	1	0	1	0	0	0	0	32
12:45 PM	0	2	3	5	41	4	6	51	0	3	0	3	0	0	0	0	59
Total	0	4	8	12	126	16	12	154	0	4	0	4	0	0	0	0	170
01:00 PM	0	0	0	0	48	3	1	52	1	1	0	2	0	0	0	0	54
01:15 PM	0	1	1	2	39	3	3	45	2	1	0	3	0	0	0	0	50
01:30 PM	0	1	4	5	54	3	2	59	0	0	0	0	0	0	0	0	64
01:45 PM	0	0	2	2	51	1	1	53	1	1	0	2	0	0	0	0	57
Total	0	2	7	9	192	10	7	209	4	3	0	7	0	0	0	0	225
02:00 PM	0	0	2	2	46	2	4	52	3	1	0	4	0	0	0	0	58
02:15 PM	0	2	1	3	40	4	3	47	1	0	0	1	0	0	0	0	51
02:30 PM	0	2	1	3	75	1	3	79	0	1	0	1	0	0	0	0	83
02:45 PM	0	1	3	4	74	3	3	80	0	4	0	4	0	0	0	0	88
Total	0	5	7	12	235	10	13	258	4	6	0	10	0	0	0	0	280
Grand Total	0	11	22	33	553	36	32	621	8	13	0	21	0	0	0	0	675
Apprch %	0	33.3	66.7		89	5.8	5.2		38.1	61.9	0		0	0	0		
Total %	0	1.6	3.3	4.9	81.9	5.3	4.7	92	1.2	1.9	0	3.1	0	0	0	0	
Passenger Vehicles	0	9	19	28	528	25	29	582	8	12	0	20	0	0	0	0	630
% Passenger Vehicles	0	81.8	86.4	84.8	95.5	69.4	90.6	93.7	100	92.3	0	95.2	0	0	0	0	93.3
Large 2 Axle Vehicles	0	1	0	1	5	4	1	10	0	0	0	0	0	0	0	0	11
% Large 2 Axle Vehicles	0	9.1	0	3	0.9	11.1	3.1	1.6	0	0	0	0	0	0	0	0	1.6
3 Axle Vehicles	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
% 3 Axle Vehicles	0	0	0	0	0	8.3	0	0.5	0	0	0	0	0	0	0	0	0.4
4+ Axle Trucks	0	1	3	4	20	4	2	26	0	1	0	1	0	0	0	0	31
% 4+ Axle Trucks	0	9.1	13.6	12.1	3.6	11.1	6.2	4.2	0	7.7	0	4.8	0	0	0	0	4.6

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 12:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	2	2	46	2	**4**	52	**3**	1	0	**4**	0	0	0	0	58
02:15 PM	0	**2**	1	3	40	**4**	3	47	1	0	0	1	0	0	0	0	51
02:30 PM	0	2	1	3	**75**	1	3	79	0	1	0	1	0	0	0	0	83
02:45 PM	0	1	**3**	4	74	3	3	**80**	0	**4**	0	4	0	0	0	0	**88**
Total Volume	0	5	7	12	235	10	13	258	4	6	0	10	0	0	0	0	280
% App. Total	0	41.7	58.3		91.1	3.9	5		40	60	0		0	0	0		
PHF	.000	.625	.583	.750	.783	.625	.813	.806	.333	.375	.000	.625	.000	.000	.000	.000	.795

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

Harvard Road

Out	In	Total
19	12	31

7	5	0
Right	Thru	Left

Peak Hour Data

North

Interstate 15 Southbound On Ramp

Total	21
In	0
Out	21

0	Left
0	Thru
0	Right

Peak Hour Begins at 02:00 PM

Passenger Vehicles
Large 2 Axle Vehicles
3 Axle Vehicles
4+ Axle Trucks

Interstate 15 Southbound Off Ramp

Out	0
In	258
Total	258

13	Right
10	Thru
235	Left

Left	Thru	Right
4	6	0

240	10	250
Out	In	Total

Harvard Road
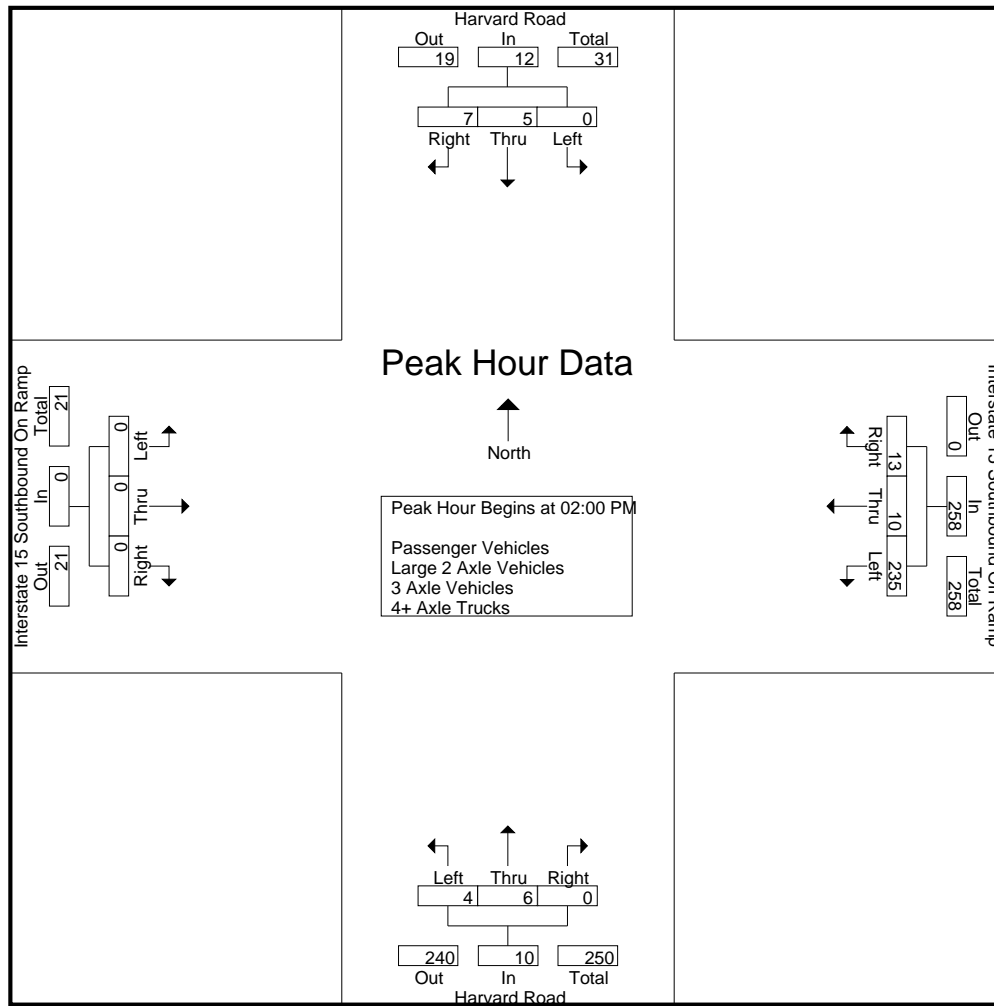
Peak Hour Analysis From 12:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 PM				02:00 PM				02:00 PM				12:00 PM			
+0 mins.	0	0	1	1	46	2	**4**	52	**3**	1	0	**4**	0	0	0	0
+15 mins.	0	0	2	2	40	**4**	3	47	1	0	0	1	0	0	0	0
+30 mins.	0	**2**	2	4	**75**	1	3	79	0	1	0	1	0	0	0	0
+45 mins.	0	2	**3**	**5**	74	3	3	**80**	0	**4**	0	4	0	0	0	0
Total Volume	0	4	8	12	235	10	13	258	4	6	0	10	0	0	0	0
% App. Total	0	33.3	66.7		91.1	3.9	5		40	60	0		0	0	0	
PHF	.000	.500	.667	.600	.783	.625	.813	.806	.333	.375	.000	.625	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
Start Date : 6/12/2016
Page No   : 1

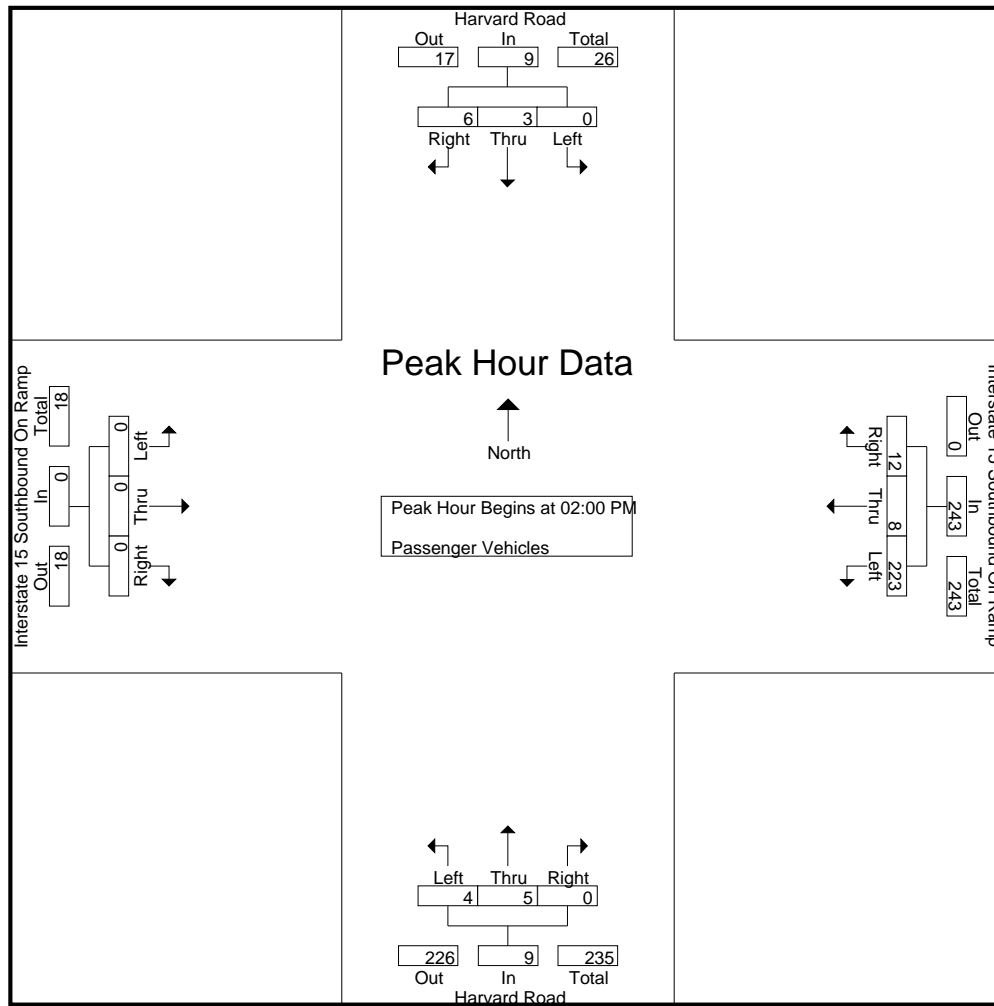Groups Printed- Passenger Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	1	1	22	3	1	26	0	0	0	0	0	0	0	0	27
12:15 PM	0	0	2	2	39	3	4	46	0	0	0	0	0	0	0	0	48
12:30 PM	0	2	2	4	23	1	1	25	0	1	0	1	0	0	0	0	30
12:45 PM	0	2	3	5	41	4	5	50	0	3	0	3	0	0	0	0	58
Total	0	4	8	12	125	11	11	147	0	4	0	4	0	0	0	0	163
01:00 PM	0	0	0	0	42	2	1	45	1	1	0	2	0	0	0	0	47
01:15 PM	0	1	1	2	37	2	2	41	2	1	0	3	0	0	0	0	46
01:30 PM	0	1	2	3	53	2	2	57	0	0	0	0	0	0	0	0	60
01:45 PM	0	0	2	2	48	0	1	49	1	1	0	2	0	0	0	0	53
Total	0	2	5	7	180	6	6	192	4	3	0	7	0	0	0	0	206
02:00 PM	0	0	2	2	46	2	3	51	3	1	0	4	0	0	0	0	57
02:15 PM	0	2	1	3	38	2	3	43	1	0	0	1	0	0	0	0	47
02:30 PM	0	1	1	2	72	1	3	76	0	1	0	1	0	0	0	0	79
02:45 PM	0	0	2	2	67	3	3	73	0	3	0	3	0	0	0	0	78
Total	0	3	6	9	223	8	12	243	4	5	0	9	0	0	0	0	261
Grand Total	0	9	19	28	528	25	29	582	8	12	0	20	0	0	0	0	630
Apprch %	0	32.1	67.9		90.7	4.3	5		40	60	0		0	0	0		
Total %	0	1.4	3	4.4	83.8	4	4.6	92.4	1.3	1.9	0	3.2	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	2	2	46	2	3	51	3	1	0	4	0	0	0	0	57
02:15 PM	0	2	1	3	38	2	3	43	1	0	0	1	0	0	0	0	47
02:30 PM	0	1	1	2	72	1	3	76	0	1	0	1	0	0	0	0	79
02:45 PM	0	0	2	2	67	3	3	73	0	3	0	3	0	0	0	0	78
Total Volume	0	3	6	9	223	8	12	243	4	5	0	9	0	0	0	0	261
% App. Total	0	33.3	66.7		91.8	3.3	4.9		44.4	55.6	0		0	0	0		
PHF	.000	.375	.750	.750	.774	.667	1.00	.799	.333	.417	.000	.563	.000	.000	.000	.000	.826

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(951) 268-6268

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
17	9	26

6	3	0
Right	Thru	Left

North

Peak Hour Begins at 02:00 PM

Passenger Vehicles

Interstate 15 Southbound On Ramp

Total 18
In 0
Out 18

0	Left
0	Thru
0	Right

Interstate 15 Southbound Off Ramp

Out 0
In 243
Total 243

Right	12
Thru	8
Left	223

Left	Thru	Right
4	5	0

226	9	235
Out	In	Total

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	**2**	2	46	2	**3**	51	**3**	1	0	**4**	0	0	0	0
+15 mins.	0	**2**	1	**3**	38	2	3	43	1	0	0	1	0	0	0	0
+30 mins.	0	1	1	2	**72**	1	3	**76**	0	1	0	1	0	0	0	0
+45 mins.	0	0	2	2	67	**3**	3	73	0	**3**	0	3	0	0	0	0
Total Volume	0	3	6	9	223	8	12	243	4	5	0	9	0	0	0	0
% App. Total	0	33.3	66.7		91.8	3.3	4.9		44.4	55.6	0		0	0	0	
PHF	.000	.375	.750	.750	.774	.667	1.000	.799	.333	.417	.000	.563	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

Groups Printed- Large 2 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	3
01:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
01:45 PM	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	2	2	0	4	0	0	0	0	0	0	0	0	4
02:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
Total	0	1	0	1	2	0	1	3	0	0	0	0	0	0	0	0	4
Grand Total	0	1	0	1	5	4	1	10	0	0	0	0	0	0	0	0	11
Apprch %	0	100	0		50	40	10		0	0	0		0	0	0		
Total %	0	9.1	0	9.1	45.5	36.4	9.1	90.9	0	0	0	0	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
Total Volume	0	1	0	1	2	0	1	3	0	0	0	0	0	0	0	0	4
% App. Total	0	100	0		66.7	0	33.3		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.250	.000	.250	.375	.000	.000	.000	.000	.000	.000	.000	.000	.500

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Harvard Road

Out	In	Total
1	1	2

0	1	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 02:00 PM

Large 2 Axle Vehicles

Interstate 15 Southbound On Ramp

Total	0

In	0		Left	0
Out	0		Thru	0
			Right	0

Interstate 15 Southbound Off Ramp

Out	0
In	3	Right	1
		Thru	0
Total	3	Left	2

Left	Thru	Right
0	0	0

Out	In	Total
3	0	3

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	**1**	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	2	0	1	3	0	0	0	0	0	0	0	0
% App. Total	0	100	0		66.7	0	33.3		0	0	0		0	0	0	
PHF	.000	.250	.000	.250	.250	.000	.250	.375	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
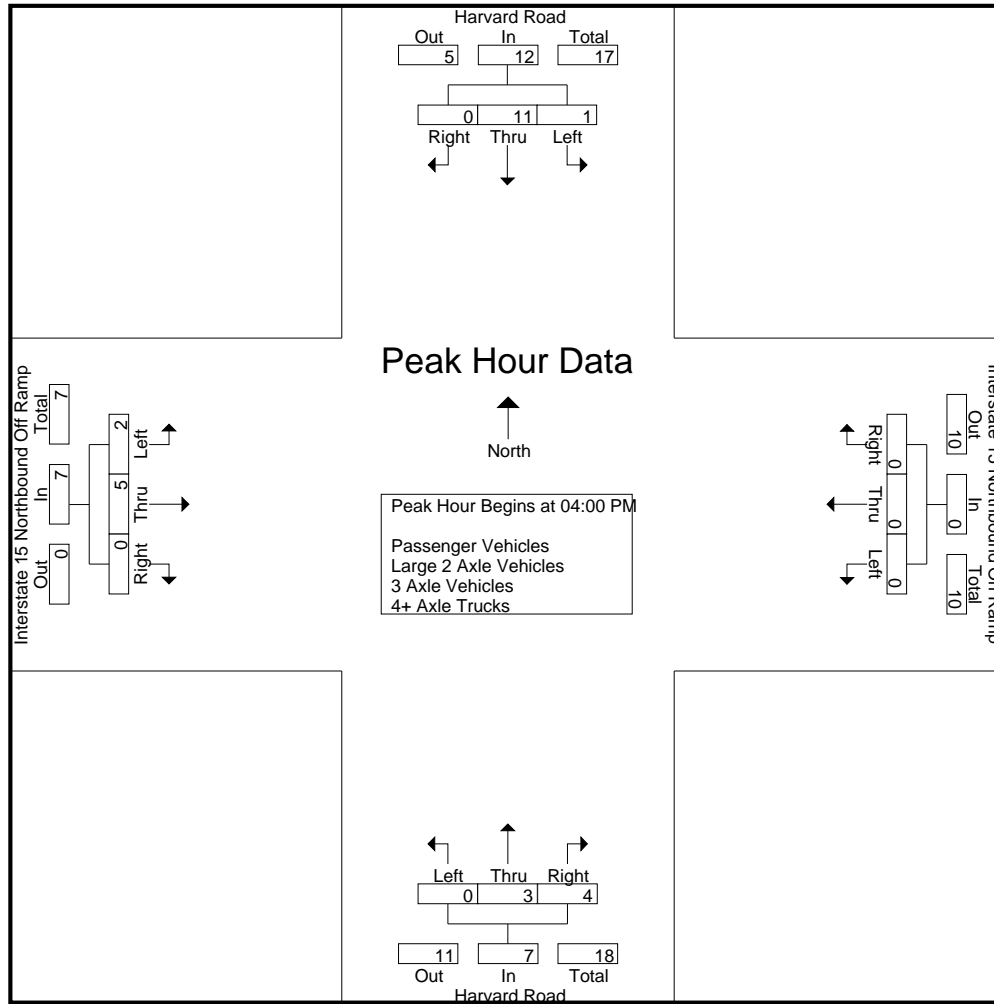Start Date : 6/12/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0		
Total %	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 02:00 PM

3 Axle Vehicles

Interstate 15 Southbound On Ramp

Total 0

	Left	
In 0	0	
	Thru 0	
Out 0	Right 0	

Interstate 15 Southbound Off Ramp

Out 0

	Right	
0	In 0	
Thru 0		
0	Left	

Total 0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
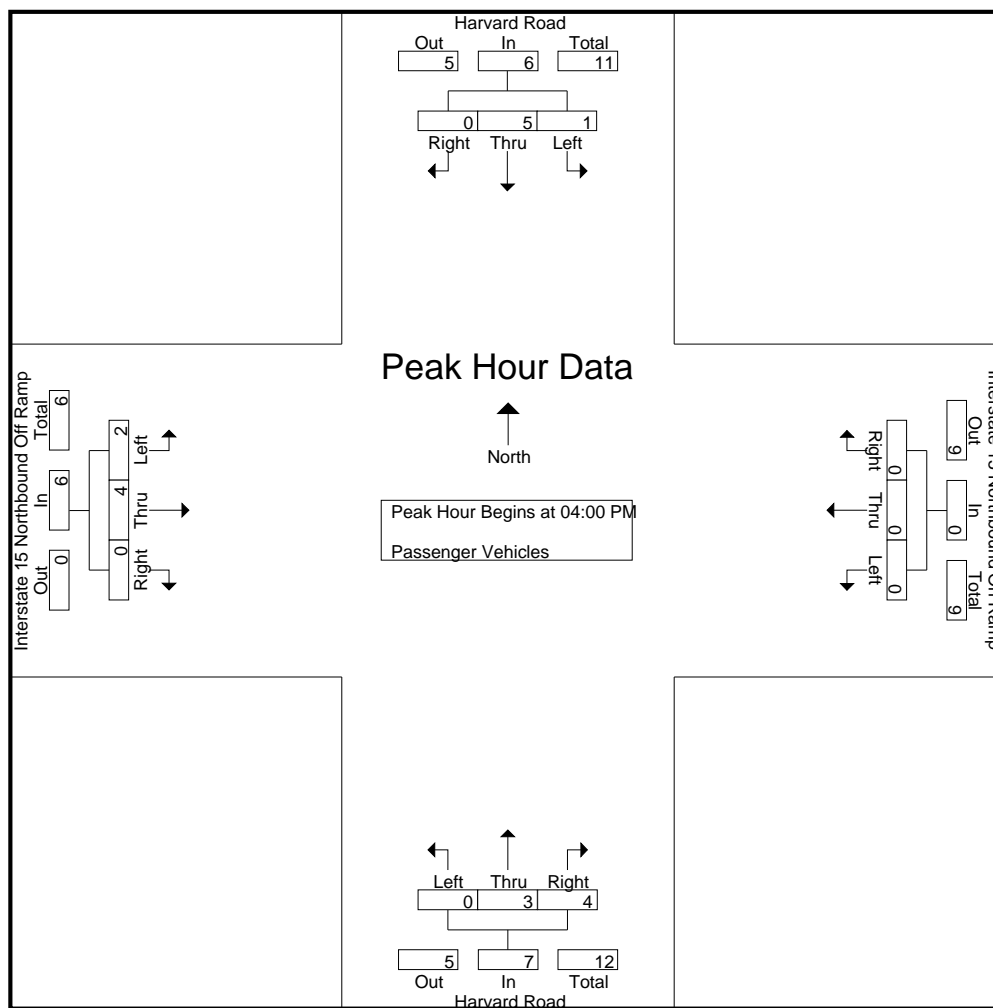Start Date : 6/12/2016
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Groups Printed- 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	3
01:00 PM	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	5
01:15 PM	0	0	0	0	2	0	1	3	0	0	0	0	0	0	0	0	3
01:30 PM	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	0	3
01:45 PM	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	2	2	10	0	1	11	0	0	0	0	0	0	0	0	13
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	2	2	0	4	0	0	0	0	0	0	0	0	4
02:30 PM	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	3
02:45 PM	0	1	1	2	5	0	0	5	0	1	0	1	0	0	0	0	8
Total	0	1	1	2	10	2	0	12	0	1	0	1	0	0	0	0	15
Grand Total	0	1	3	4	20	4	2	26	0	1	0	1	0	0	0	0	31
Apprch %	0	25	75		76.9	15.4	7.7		0	100	0		0	0	0		
Total %	0	3.2	9.7	12.9	64.5	12.9	6.5	83.9	0	3.2	0	3.2	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Southbound Off Ramp Westbound				Harvard Road Northbound				Interstate 15 Southbound On Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	2	2	0	4	0	0	0	0	0	0	0	0	4
02:30 PM	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	3
02:45 PM	0	1	1	2	5	0	0	5	0	1	0	1	0	0	0	0	8
Total Volume	0	1	1	2	10	2	0	12	0	1	0	1	0	0	0	0	15
% App. Total	0	50	50		83.3	16.7	0		0	100	0		0	0	0		
PHF	.000	.250	.250	.250	.500	.250	.000	.600	.000	.250	.000	.250	.000	.000	.000	.000	.469

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County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Southbound Ramps
Weather: Clear

File Name : CSBHA15SMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 2

Peak Hour Data

Peak Hour Begins at 02:00 PM

4+ Axle Trucks
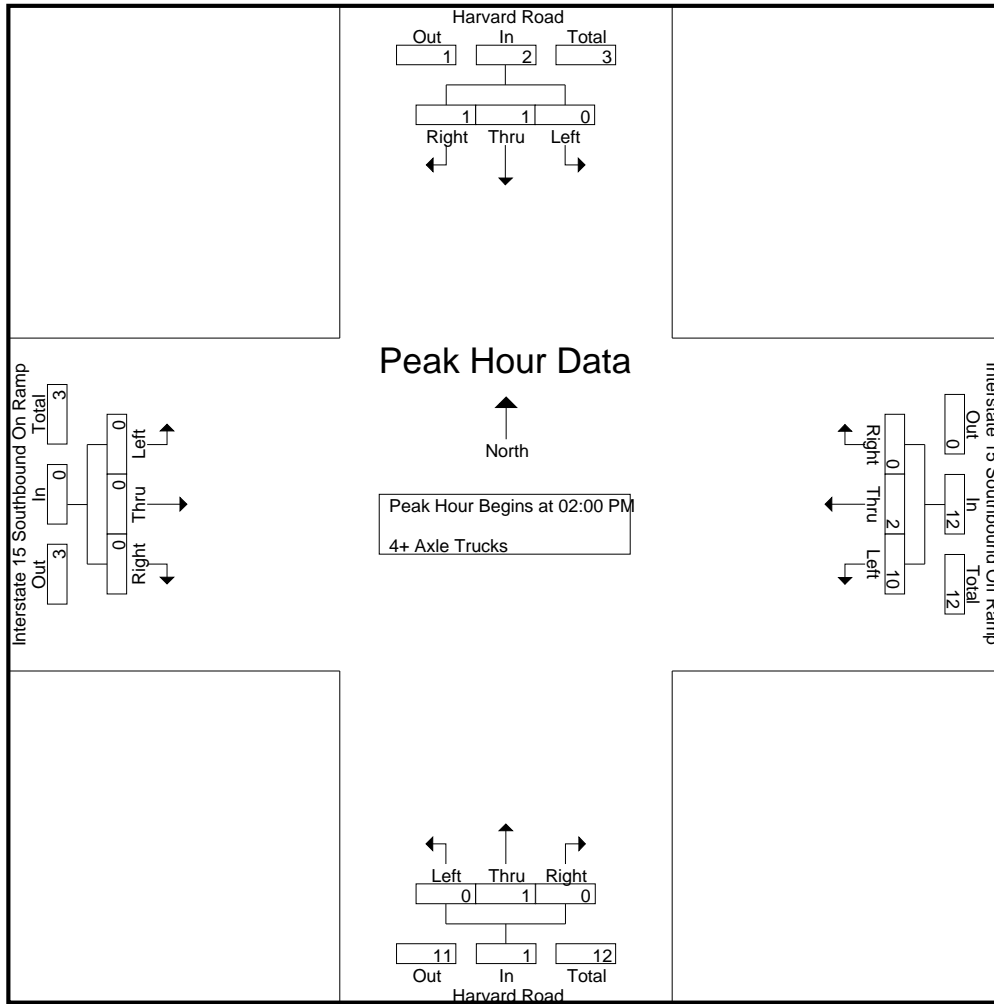
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	2	2	0	4	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0
+45 mins.	0	1	1	2	5	0	0	5	0	1	0	1	0	0	0	0
Total Volume	0	1	1	2	10	2	0	12	0	1	0	1	0	0	0	0
% App. Total	0	50	50		83.3	16.7	0		0	100	0		0	0	0	
PHF	.000	.250	.250	.250	.500	.250	.000	.600	.000	.250	.000	.250	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
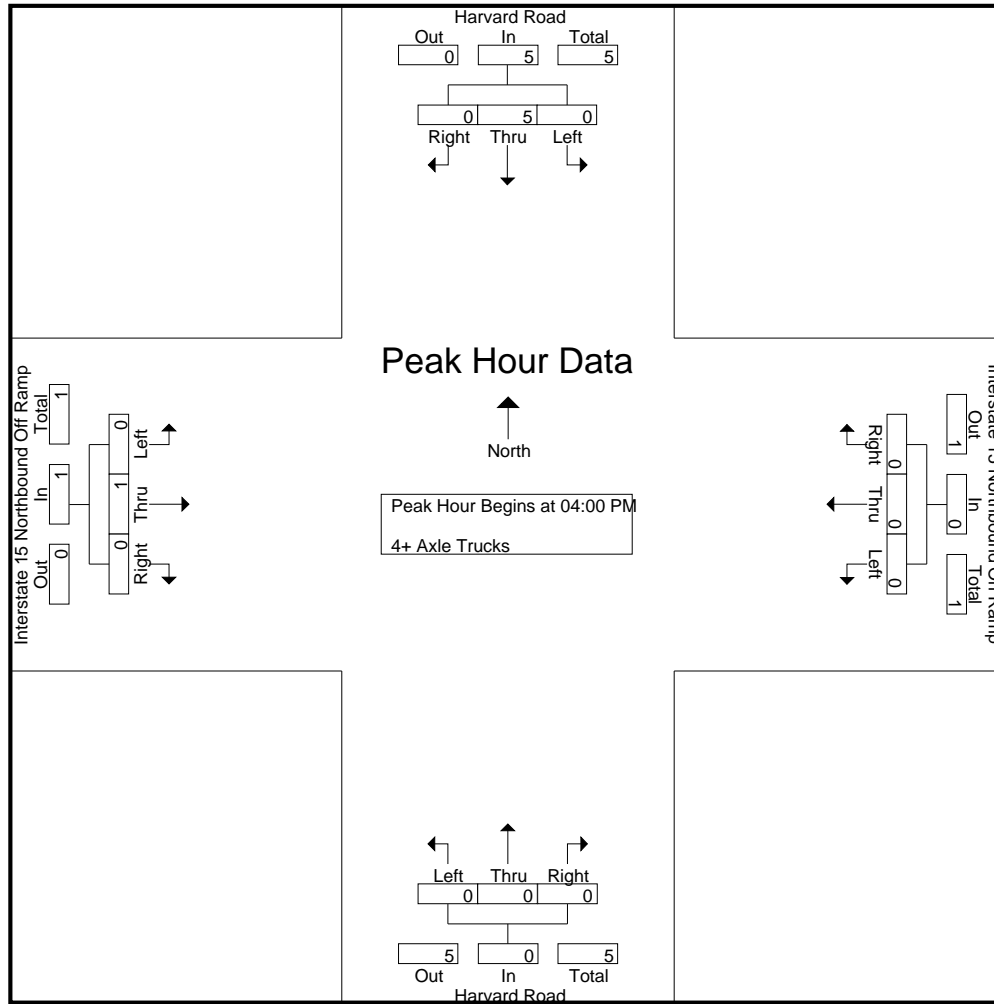Start Date : 6/10/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	6	0	6	0	0	0	0	0	2	2	4	0	2	0	2	12
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	3
04:30 PM	1	3	0	4	0	0	0	0	0	0	0	0	1	0	0	1	5
04:45 PM	0	2	0	2	0	0	0	0	0	1	1	2	1	1	0	2	6
Total	1	11	0	12	0	0	0	0	0	3	4	7	2	5	0	7	26
05:00 PM	3	0	0	3	0	0	0	0	0	0	0	0	1	1	1	3	6
05:15 PM	0	2	0	2	0	0	0	0	0	1	0	1	1	1	2	4	7
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	1	3	1	5	7
Total	3	2	0	5	0	0	0	0	0	2	1	3	3	6	4	13	21
Grand Total	4	13	0	17	0	0	0	0	0	5	5	10	5	11	4	20	47
Apprch %	23.5	76.5	0		0	0	0		0	50	50		25	55	20		
Total %	8.5	27.7	0	36.2	0	0	0	0	0	10.6	10.6	21.3	10.6	23.4	8.5	42.6	
Passenger Vehicles	4	6	0	10	0	0	0	0	0	5	5	10	5	8	4	17	37
% Passenger Vehicles	100	46.2	0	58.8	0	0	0	0	0	100	100	100	100	72.7	100	85	78.7
Large 2 Axle Vehicles	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
% Large 2 Axle Vehicles	0	15.4	0	11.8	0	0	0	0	0	0	0	0	0	0	0	0	4.3
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	5	0	5	0	0	0	0	0	0	0	0	0	3	0	3	8
% 4+ Axle Trucks	0	38.5	0	29.4	0	0	0	0	0	0	0	0	0	27.3	0	15	17

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	6	0	6	0	0	0	0	0	2	2	4	0	2	0	2	12
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	3
04:30 PM	1	3	0	4	0	0	0	0	0	0	0	0	1	0	0	1	5
04:45 PM	0	2	0	2	0	0	0	0	0	1	1	2	1	1	0	2	6
Total Volume	1	11	0	12	0	0	0	0	0	3	4	7	2	5	0	7	26
% App. Total	8.3	91.7	0		0	0	0		0	42.9	57.1		28.6	71.4	0		
PHF	.250	.458	.000	.500	.000	.000	.000	.000	.000	.375	.500	.438	.500	.625	.000	.875	.542

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

Peak Hour Data

Harvard Road

Out	In	Total
5	12	17

Right	Thru	Left
0	11	1

Interstate 15 Northbound Off Ramp

Total 7 | In 7 | Out 0

Left	Thru	Right
2	5	0

North

Interstate 15 Northbound On Ramp

Out 10 | In 0 | Total 10

Right	Thru	Left
0	0	0

Peak Hour Begins at 04:00 PM

Passenger Vehicles
Large 2 Axle Vehicles
3 Axle Vehicles
4+ Axle Trucks

Left	Thru	Right
0	3	4

Out	In	Total
11	7	18

Harvard Road

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	0	**6**	0	**6**	0	0	0	0	0	**2**	**2**	**4**	**1**	1	1	3
+15 mins.	0	0	0	0	0	0	0	0	0	0	1	1	1	1	**2**	4
+30 mins.	**1**	3	0	4	0	0	0	0	0	0	0	0	0	1	0	1
+45 mins.	0	2	0	2	0	0	0	0	0	1	1	2	1	**3**	1	**5**
Total Volume	1	11	0	12	0	0	0	0	0	3	4	7	3	6	4	13
% App. Total	8.3	91.7	0		0	0	0		0	42.9	57.1		23.1	46.2	30.8	
PHF	.250	.458	.000	.500	.000	.000	.000	.000	.000	.375	.500	.438	.750	.500	.500	.650

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	1	0	1	0	0	0	0	0	2	2	4	0	2	0	2	7
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	3
04:30 PM	1	2	0	3	0	0	0	0	0	0	0	0	1	0	0	1	4
04:45 PM	0	2	0	2	0	0	0	0	0	1	1	2	1	0	0	1	5
Total	1	5	0	6	0	0	0	0	0	3	4	7	2	4	0	6	19
05:00 PM	3	0	0	3	0	0	0	0	0	0	0	0	1	1	1	3	6
05:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	1	1	2	4	6
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	1	1	2	1	2	1	4	6
Total	3	1	0	4	0	0	0	0	0	2	1	3	3	4	4	11	18
Grand Total	4	6	0	10	0	0	0	0	0	5	5	10	5	8	4	17	37
Apprch %	40	60	0		0	0	0		0	50	50		29.4	47.1	23.5		
Total %	10.8	16.2	0	27	0	0	0	0	0	13.5	13.5	27	13.5	21.6	10.8	45.9	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	1	0	1	0	0	0	0	0	2	2	4	0	2	0	2	7
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	3
04:30 PM	1	2	0	3	0	0	0	0	0	0	0	0	1	0	0	1	4
04:45 PM	0	2	0	2	0	0	0	0	0	1	1	2	1	0	0	1	5
Total Volume	1	5	0	6	0	0	0	0	0	3	4	7	2	4	0	6	19
% App. Total	16.7	83.3	0		0	0	0		0	42.9	57.1		33.3	66.7	0		
PHF	.250	.625	.000	.500	.000	.000	.000	.000	.000	.375	.500	.438	.500	.500	.000	.750	.679

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92787
(951) 268-6268

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
Start Date : 6/10/2016
Page No   : 2

Peak Hour Data

Harvard Road

Out	In	Total
5	6	11

Right	Thru	Left
0	5	1

Interstate 15 Northbound Off Ramp

Out	In	Total
0	6	6

Right	Thru	Left
0	4	2

Interstate 15 Northbound On Ramp

Out	In	Total
9	0	9

Right	Thru	Left
0	0	0

North

Peak Hour Begins at 04:00 PM

Passenger Vehicles

Left	Thru	Right
0	3	4

Out	In	Total
5	7	12

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	1	0	1	0	0	0	0	0	**2**	**2**	**4**	0	**2**	0	**2**
+15 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2
+30 mins.	**1**	**2**	0	**3**	0	0	0	0	0	0	0	0	**1**	0	0	1
+45 mins.	0	2	0	2	0	0	0	0	0	1	1	2	1	0	0	1
Total Volume	1	5	0	6	0	0	0	0	0	3	4	7	2	4	0	6
% App. Total	16.7	83.3	0		0	0	0		0	42.9	57.1		33.3	66.7	0	
PHF	.250	.625	.000	.500	.000	.000	.000	.000	.000	.375	.500	.438	.500	.500	.000	.750

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
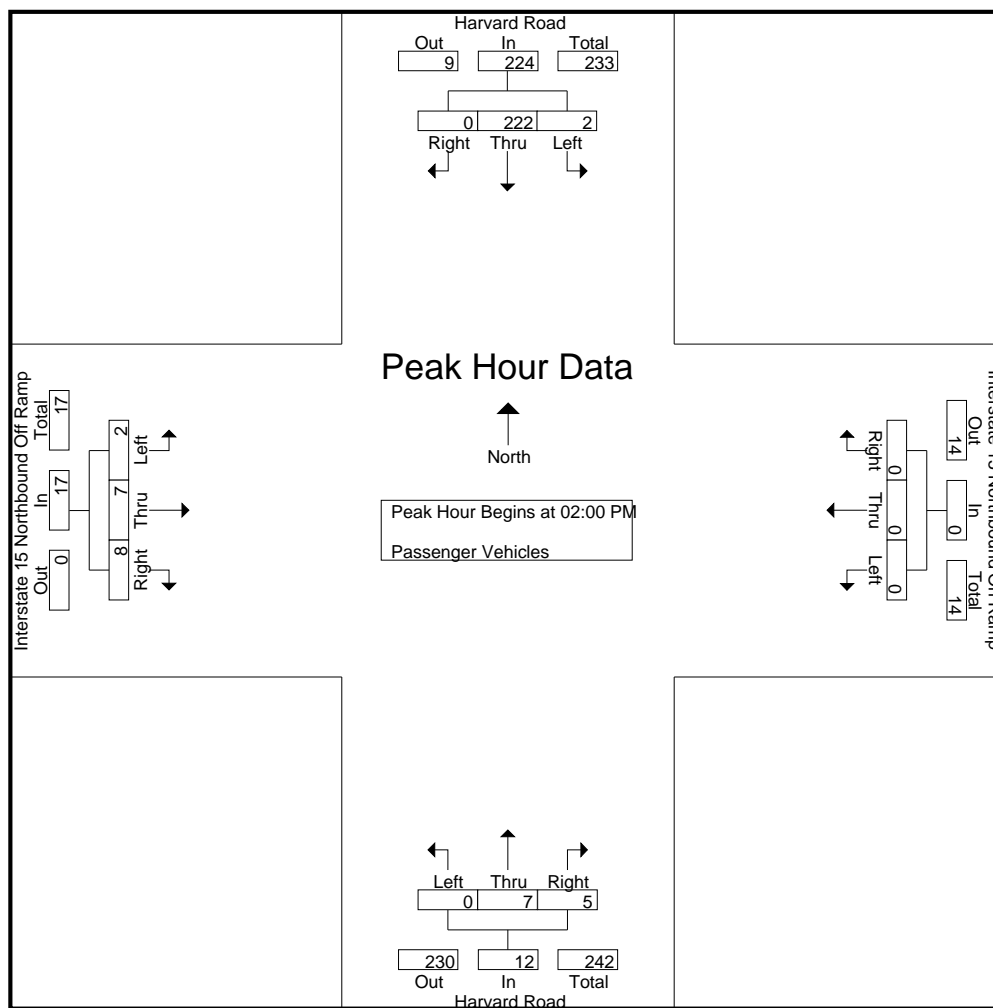Start Date : 6/10/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Apprch %	0	100	0		0	0	0		0	0	0		0	0	0		
Total %	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 04:00 PM

	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 2

Harvard Road

Out	In	Total
0	1	1

0	1	0
Right	Thru	Left

Peak Hour Data

North

Peak Hour Begins at 04:00 PM

Large 2 Axle Vehicles

Interstate 15 Northbound Off Ramp

Total	0
In	0
Out	0

Left	0
Thru	0
Right	0

Interstate 15 Northbound On Ramp

Out	0
In	0
Total	0

Right	0
Thru	0
Left	0

Left	Thru	Right
0	0	0

1	0	1
Out	In	Total

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

Groups Printed- 3 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

Harvard Road

Out	In	Total
0	0	0

Right	Thru	Left
0	0	0

Peak Hour Data

↑ North

Peak Hour Begins at 04:00 PM

3 Axle Vehicles

Interstate 15 Northbound Off Ramp

Total	0
In	0
Out	0

Left	0
Thru	0
Right	0

Interstate 15 Northbound On Ramp

Out	0
In	0
Total	0

Right	0
Thru	0
Left	0

Left	Thru	Right
0	0	0

Out	In	Total
0	0	0

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	5	0	5	0	0	0	0	0	0	0	0	0	1	0	1	6
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Grand Total	0	5	0	5	0	0	0	0	0	0	0	0	0	3	0	3	8
Apprch %	0	100	0		0	0	0		0	0	0		0	100	0		
Total %	0	62.5	0	62.5	0	0	0	0	0	0	0	0	0	37.5	0	37.5	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	5	0	5	0	0	0	0	0	0	0	0	0	1	0	1	6
% App. Total	0	100	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.300

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NPM
Site Code : 07516358
Start Date : 6/10/2016
Page No : 2

Peak Hour Data

Harvard Road

Out	In	Total
0	5	5

Right	Thru	Left
0	5	0

North

Peak Hour Begins at 04:00 PM

4+ Axle Trucks

Interstate 15 Northbound Off Ramp

Total 1 — Left 0
In 1 — Thru 1
Out 0 — Right 0

Interstate 15 Northbound On Ramp

Out 1 — Right 0
In 0 — Thru 0
Total 1 — Left 0

Left	Thru	Right
0	0	0

Out	In	Total
5	0	5

Harvard Road

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	**5**	0	**5**	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	5	0	5	0	0	0	0	0	0	0	0	0	1	0	1
% App. Total	0	100	0		0	0	0		0	0	0		0	100	0	
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	1	22	0	23	0	0	0	0	0	0	1	1	0	3	1	4	28
12:15 PM	0	40	0	40	0	0	0	0	0	0	1	1	0	2	1	3	44
12:30 PM	1	28	0	29	0	0	0	0	0	0	2	2	1	0	2	3	34
12:45 PM	1	40	0	41	0	0	0	0	0	2	0	2	1	1	1	3	46
Total	3	130	0	133	0	0	0	0	0	2	4	6	2	6	5	13	152
01:00 PM	0	50	0	50	0	0	0	0	0	2	1	3	0	1	0	1	54
01:15 PM	1	41	0	42	0	0	0	0	0	1	3	4	1	3	0	4	50
01:30 PM	1	45	0	46	0	0	0	0	0	0	1	1	0	3	1	4	51
01:45 PM	0	49	0	49	0	0	0	0	0	1	0	1	2	2	1	5	55
Total	2	185	0	187	0	0	0	0	0	4	5	9	3	9	2	14	210
02:00 PM	0	50	0	50	0	0	0	0	0	1	0	1	1	2	0	3	54
02:15 PM	1	42	0	43	0	0	0	0	0	2	2	4	0	3	2	5	52
02:30 PM	1	67	0	68	0	0	0	0	0	2	3	5	0	2	3	5	78
02:45 PM	1	75	0	76	0	0	0	0	0	2	0	2	2	1	3	6	84
Total	3	234	0	237	0	0	0	0	0	7	5	12	3	8	8	19	268
Grand Total	8	549	0	557	0	0	0	0	0	13	14	27	8	23	15	46	630
Apprch %	1.4	98.6	0		0	0	0		0	48.1	51.9		17.4	50	32.6		
Total %	1.3	87.1	0	88.4	0	0	0	0	0	2.1	2.2	4.3	1.3	3.7	2.4	7.3	
Passenger Vehicles	7	520	0	527	0	0	0	0	0	13	14	27	7	19	14	40	594
% Passenger Vehicles	87.5	94.7	0	94.6	0	0	0	0	0	100	100	100	87.5	82.6	93.3	87	94.3
Large 2 Axle Vehicles	0	9	0	9	0	0	0	0	0	0	0	0	0	1	0	1	10
% Large 2 Axle Vehicles	0	1.6	0	1.6	0	0	0	0	0	0	0	0	0	4.3	0	2.2	1.6
3 Axle Vehicles	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% 3 Axle Vehicles	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0.2
4+ Axle Trucks	1	19	0	20	0	0	0	0	0	0	0	0	1	3	1	5	25
% 4+ Axle Trucks	12.5	3.5	0	3.6	0	0	0	0	0	0	0	0	12.5	13	6.7	10.9	4

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 12:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 02:00 PM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	0	50	0	50	0	0	0	0	0	1	0	1	1	2	0	3	54
02:15 PM	1	42	0	43	0	0	0	0	0	2	2	4	0	3	2	5	52
02:30 PM	1	67	0	68	0	0	0	0	0	2	3	5	0	2	3	5	78
02:45 PM	1	75	0	76	0	0	0	0	0	2	0	2	2	1	3	6	84
Total Volume	3	234	0	237	0	0	0	0	0	7	5	12	3	8	8	19	268
% App. Total	1.3	98.7	0		0	0	0		0	58.3	41.7		15.8	42.1	42.1		
PHF	.750	.780	.000	.780	.000	.000	.000	.000	.000	.875	.417	.600	.375	.667	.667	.792	.798

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

Peak Hour Data

Harvard Road

Out	In	Total
10	237	247

Right	Thru	Left
0	234	3

North

Peak Hour Begins at 02:00 PM

Passenger Vehicles
Large 2 Axle Vehicles
3 Axle Vehicles
4+ Axle Trucks

Interstate 15 Northbound Off Ramp

Total 19 / In 19 / Out 0

Left	Thru	Right
3	8	8

Interstate 15 Northbound On Ramp

Out 16 / In 0 / Total 16

Right 0 / Thru 0 / Left 0

Left	Thru	Right
0	7	5

Out	In	Total
242	12	254

Harvard Road

Peak Hour Analysis From 12:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				12:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	50	0	50	0	0	0	0	0	1	0	1	1	2	0	3
+15 mins.	1	42	0	43	0	0	0	0	0	2	2	4	0	3	2	5
+30 mins.	1	67	0	68	0	0	0	0	0	2	3	5	0	2	3	5
+45 mins.	1	75	0	76	0	0	0	0	0	2	0	2	2	1	3	6
Total Volume	3	234	0	237	0	0	0	0	0	7	5	12	3	8	8	19
% App. Total	1.3	98.7	0		0	0	0		0	58.3	41.7		15.8	42.1	42.1	
PHF	.750	.780	.000	.780	.000	.000	.000	.000	.000	.875	.417	.600	.375	.667	.667	.792

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	1	21	0	22	0	0	0	0	0	0	1	1	0	2	1	3	26
12:15 PM	0	40	0	40	0	0	0	0	0	0	1	1	0	2	1	3	44
12:30 PM	1	27	0	28	0	0	0	0	0	0	2	2	1	0	2	3	33
12:45 PM	1	40	0	41	0	0	0	0	0	2	0	2	1	1	0	2	45
Total	3	128	0	131	0	0	0	0	0	2	4	6	2	5	4	11	148
01:00 PM	0	43	0	43	0	0	0	0	0	2	1	3	0	1	0	1	47
01:15 PM	1	38	0	39	0	0	0	0	0	1	3	4	1	3	0	4	47
01:30 PM	1	44	0	45	0	0	0	0	0	0	1	1	0	2	1	3	49
01:45 PM	0	45	0	45	0	0	0	0	0	1	0	1	2	1	1	4	50
Total	2	170	0	172	0	0	0	0	0	4	5	9	3	7	2	12	193
02:00 PM	0	50	0	50	0	0	0	0	0	1	0	1	1	2	0	3	54
02:15 PM	1	40	0	41	0	0	0	0	0	2	2	4	0	2	2	4	49
02:30 PM	1	63	0	64	0	0	0	0	0	2	3	5	0	2	3	5	74
02:45 PM	0	69	0	69	0	0	0	0	0	2	0	2	1	1	3	5	76
Total	2	222	0	224	0	0	0	0	0	7	5	12	2	7	8	17	253
Grand Total	7	520	0	527	0	0	0	0	0	13	14	27	7	19	14	40	594
Apprch %	1.3	98.7	0		0	0	0		0	48.1	51.9		17.5	47.5	35		
Total %	1.2	87.5	0	88.7	0	0	0	0	0	2.2	2.4	4.5	1.2	3.2	2.4	6.7	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 02:00 PM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	0	50	0	50	0	0	0	0	0	1	0	1	**1**	**2**	0	3	54
02:15 PM	**1**	40	0	41	0	0	0	0	0	**2**	2	4	0	2	2	4	49
02:30 PM	1	63	0	64	0	0	0	0	0	2	**3**	**5**	0	2	**3**	**5**	74
02:45 PM	0	**69**	0	**69**	0	0	0	0	0	2	0	2	1	1	3	**5**	**76**
Total Volume	2	222	0	224	0	0	0	0	0	7	5	12	2	7	8	17	253
% App. Total	0.9	99.1	0		0	0	0		0	58.3	41.7		11.8	41.2	47.1		
PHF	.500	.804	.000	.812	.000	.000	.000	.000	.000	.875	.417	.600	.500	.875	.667	.850	.832

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

Peak Hour Data

Harvard Road

Out	In	Total
9	224	233

Right	Thru	Left
0	222	2

North

Peak Hour Begins at 02:00 PM

Passenger Vehicles

Interstate 15 Northbound Off Ramp

Total 17 | In 17 | Out 0

Left 2 | Thru 7 | Right 8

Interstate 15 Northbound On Ramp

Out 14 | In 0 | Total 14

Right 0 | Thru 0 | Left 0

Left	Thru	Right
0	7	5

Out	In	Total
230	12	242

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	50	0	50	0	0	0	0	0	1	0	1	1	2	0	3
+15 mins.	1	40	0	41	0	0	0	0	0	2	2	4	0	2	2	4
+30 mins.	1	63	0	64	0	0	0	0	0	2	3	5	0	2	3	5
+45 mins.	0	69	0	69	0	0	0	0	0	2	0	2	1	1	3	5
Total Volume	2	222	0	224	0	0	0	0	0	7	5	12	2	7	8	17
% App. Total	0.9	99.1	0		0	0	0		0	58.3	41.7		11.8	41.2	47.1	
PHF	.500	.804	.000	.812	.000	.000	.000	.000	.000	.875	.417	.600	.500	.875	.667	.850

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
01:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
01:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	5	0	5	0	0	0	0	0	0	0	0	0	1	0	1	6
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	0	9	0	9	0	0	0	0	0	0	0	0	0	1	0	1	10
Apprch %	0	100	0		0	0	0		0	0	0		0	100	0		
Total %	0	90	0	90	0	0	0	0	0	0	0	0	0	10	0	10	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.375	.000	.375	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

Harvard Road

Out	In	Total
0	3	3

Right	Thru	Left
0	3	0

Peak Hour Data

↑ North

Peak Hour Begins at 02:00 PM

Large 2 Axle Vehicles

Interstate 15 Northbound Off Ramp

Total 0 | In 0 | Out 0

Left 0 | Thru 0 | Right 0

Interstate 15 Northbound On Ramp

Out 0 | In 0 | Total 0

Right 0 | Thru 0 | Left 0

Left	Thru	Right
0	0	0

Out	In	Total
3	0	3

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	**2**	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	100	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.375	.000	.375	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	100	0		0	0	0		0	0	0		0	0	0		
Total %	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
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Harvard Road

Out	In	Total
0	0	0

0	0	0
Right	Thru	Left

Peak Hour Data

↑

North

Peak Hour Begins at 02:00 PM

3 Axle Vehicles

Interstate 15 Northbound Off Ramp

Total 0
In 0
Out 0

0	Left
0	Thru
0	Right

Interstate 15 Northbound On Ramp

Out 0
In 0
Total 0

Right | 0
Thru | 0
Left | 0

Left	Thru	Right
0	0	0

0	0	0
Out	In	Total

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
01:00 PM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
01:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
01:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	3
Total	0	10	0	10	0	0	0	0	0	0	0	0	0	1	0	1	11
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	3
02:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
02:45 PM	1	4	0	5	0	0	0	0	0	0	0	0	1	0	0	1	6
Total	1	9	0	10	0	0	0	0	0	0	0	0	1	1	0	2	12
Grand Total	1	19	0	20	0	0	0	0	0	0	0	0	1	3	1	5	25
Apprch %	5	95	0		0	0	0		0	0	0		20	60	20		
Total %	4	76	0	80	0	0	0	0	0	0	0	0	4	12	4	20	

Start Time	Harvard Road Southbound				Interstate 15 Northbound On Ramp Westbound				Harvard Road Northbound				Interstate 15 Northbound Off Ramp Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 02:00 PM																	
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	**1**	0	**1**	3
02:30 PM	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
02:45 PM	**1**	**4**	0	**5**	0	0	0	0	0	0	0	0	**1**	0	0	1	**6**
Total Volume	1	9	0	10	0	0	0	0	0	0	0	0	1	1	0	2	12
% App. Total	10	90	0		0	0	0		0	0	0		50	50	0		
PHF	.250	.563	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.500

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92787
(951) 268-6268

County of San Bernardino
N/S: Harvard Road
E/W: Interstate 15 Northbound Ramps
Weather: Clear

File Name : CSBHA15NMD
Site Code : 07516358
Start Date : 6/12/2016
Page No   : 2

Peak Hour Data

Harvard Road

Out	In	Total
1	10	11

Right	Thru	Left
0	9	1

North

Peak Hour Begins at 02:00 PM

4+ Axle Trucks

Interstate 15 Northbound Off Ramp

Total	In	Out
2	2	0

Left	Thru	Right
1	1	0

Interstate 15 Northbound On Ramp

Out	In	Total
2	0	2

Right	Thru	Left
0	0	0

Left	Thru	Right
0	0	0

Out	In	Total
9	0	9

Harvard Road

Peak Hour Analysis From 02:00 PM to 02:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				02:00 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	2	0	2	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+30 mins.	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	**1**	**4**	0	**5**	0	0	0	0	0	0	0	0	**1**	0	0	1
Total Volume	1	9	0	10	0	0	0	0	0	0	0	0	1	1	0	2
% App. Total	10	90	0		0	0	0		0	0	0		50	50	0	
PHF	.250	.563	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500

APPENDIX D

SAN BERNARDINO TRANSPORTATION ANALYSIS MODEL PLOTS

Harvard Rd & I-15 Study Area
SBTAM 2008
AM Peak Period

TAMI

I 15

YERMO

BARRET

SONOMA

HARVARD

POWERLINE
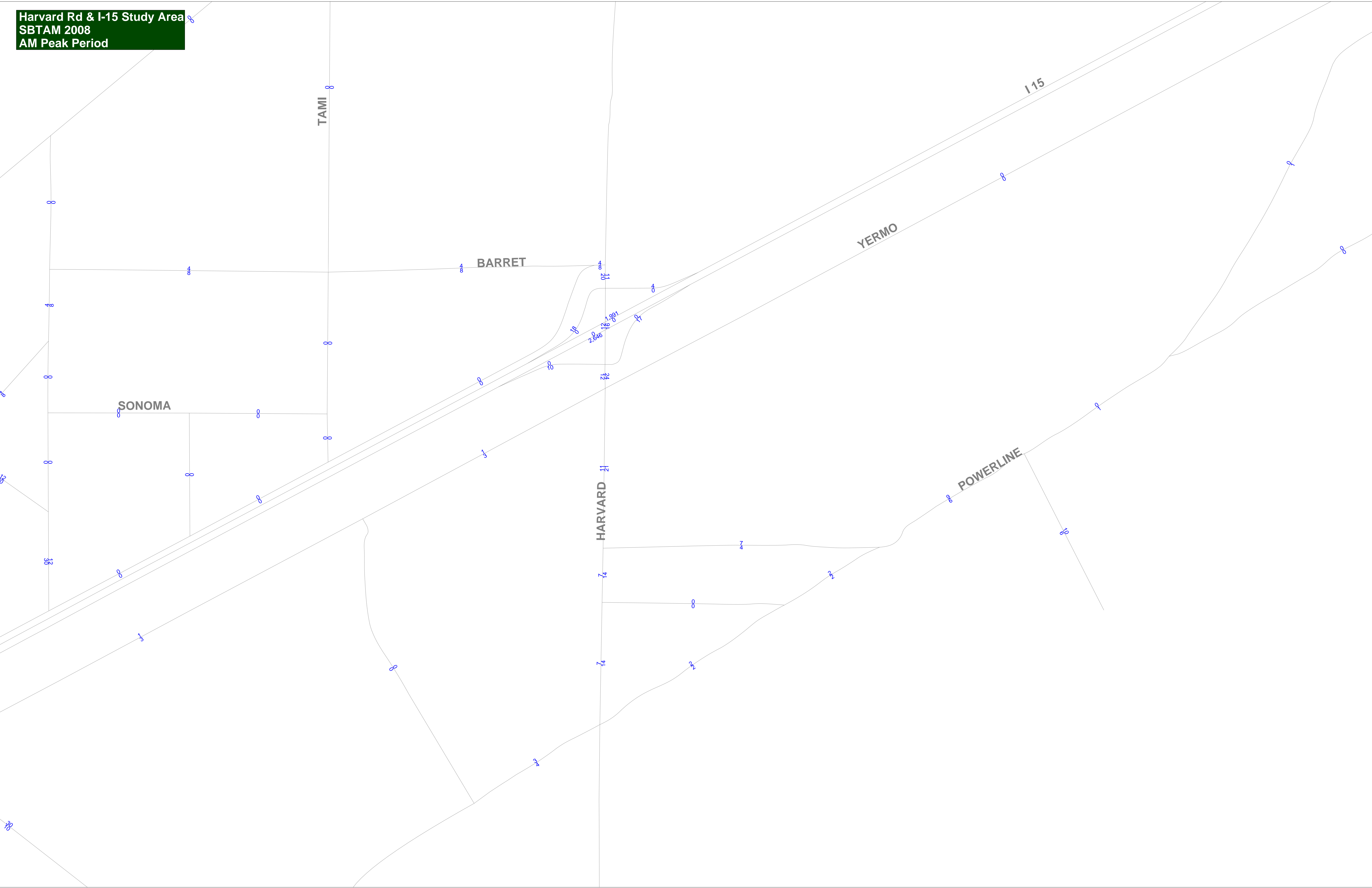
Harvard Rd & I-15 Study Area
SBTAM 2008
PM Peak Period

TAMI

I 15

YERMO

BARRET

SONOMA

HARVARD

POWERLINE
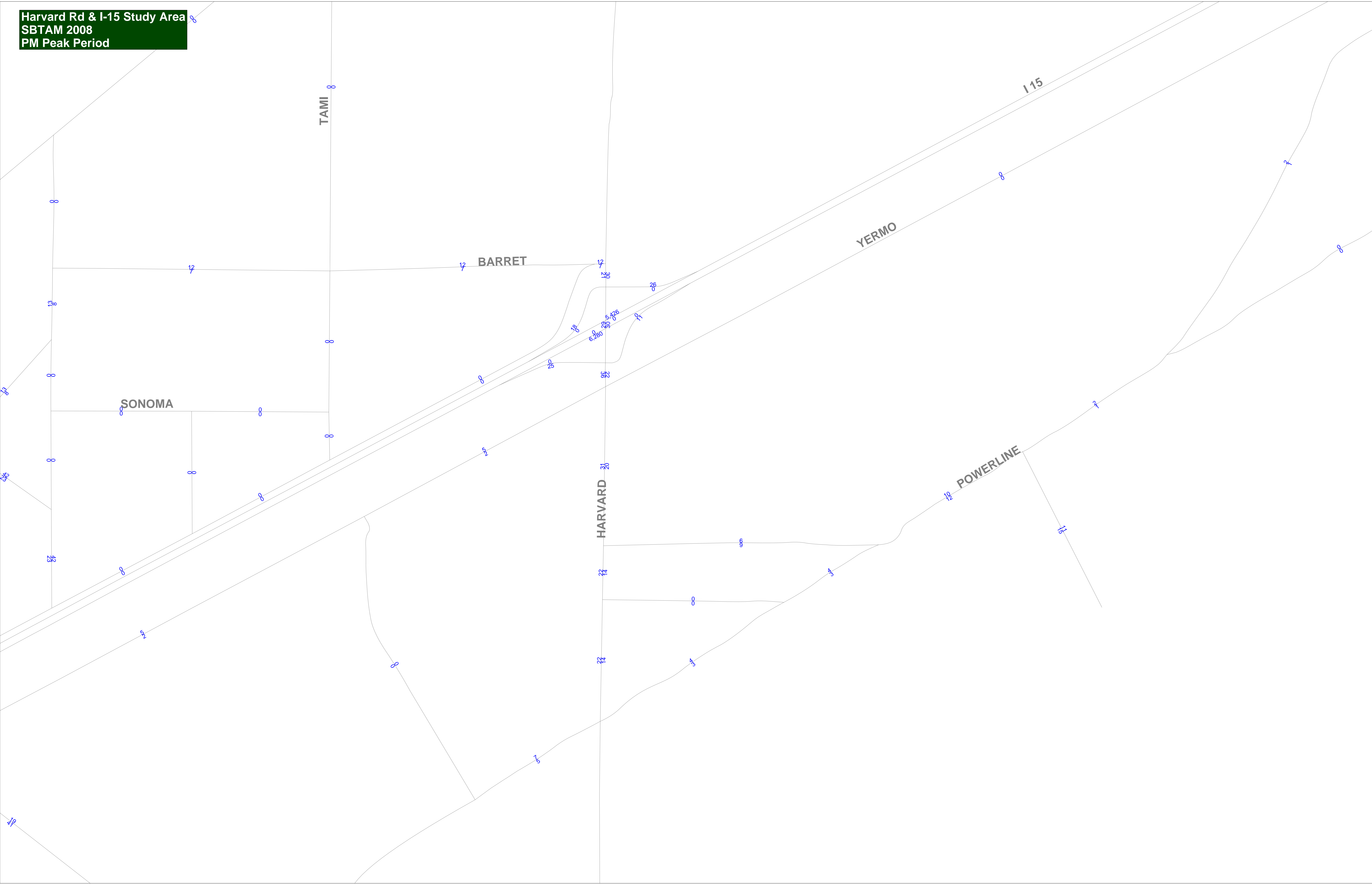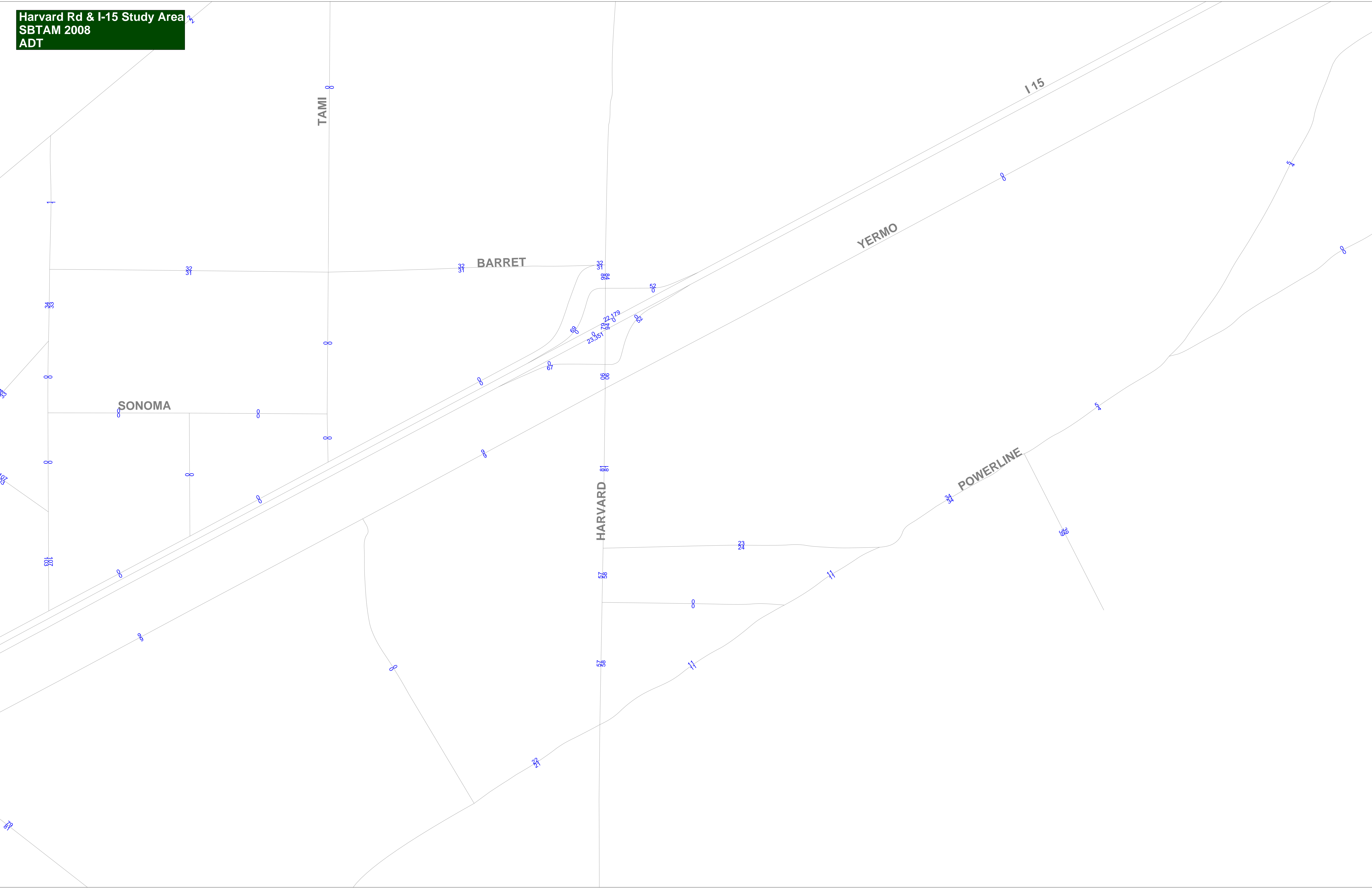
Harvard Rd & I-15 Study Area
SBTAM 2035
AM Peak Period
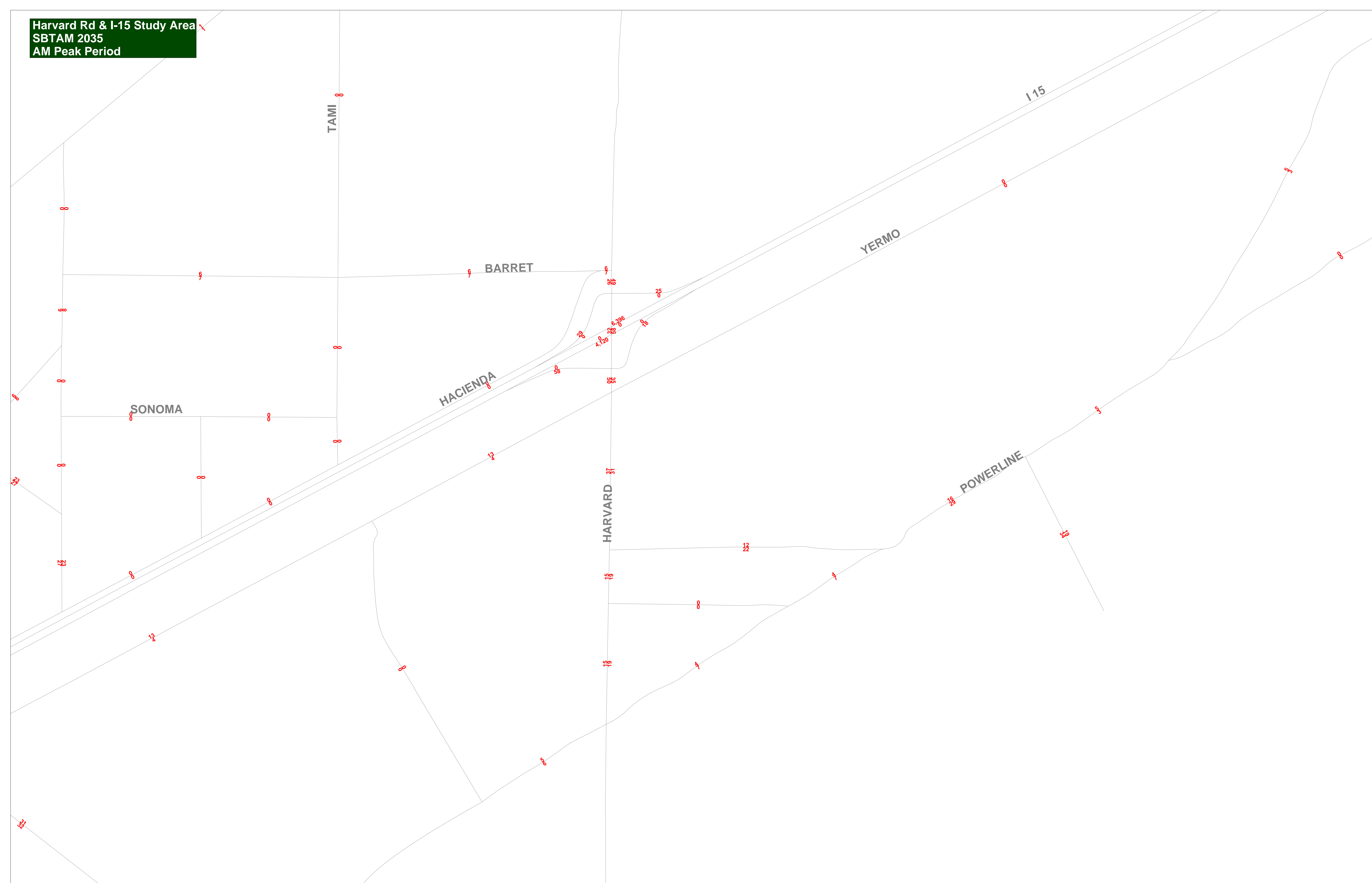
Harvard Rd & I-15 Study Area
SBTAM 2035
PM Peak Period
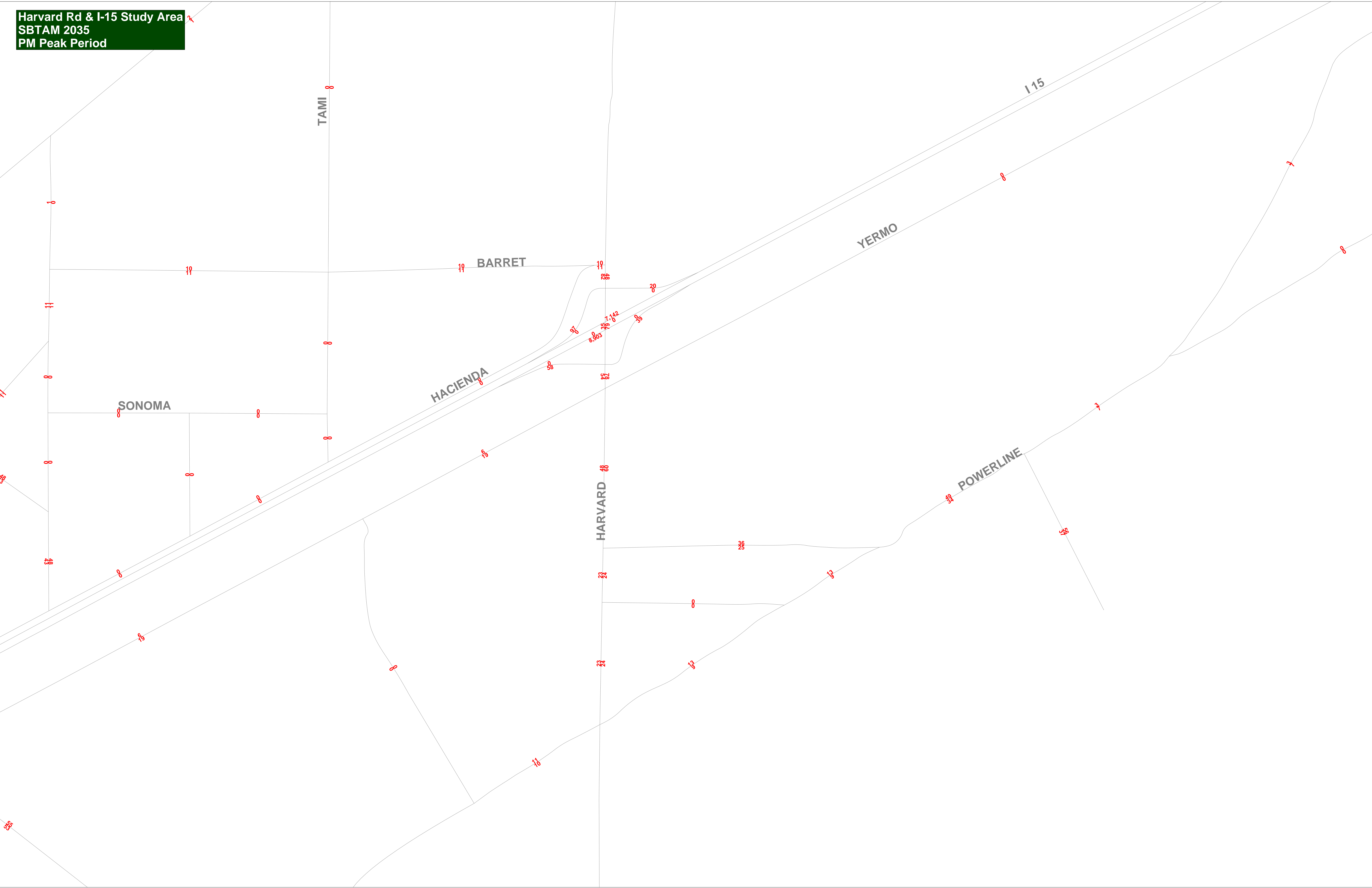
Harvard Rd & I-15 Study Area
SBTAM 2035
ADT

TAMI

I 15

YERMO

BARRET

HACIENDA

SONOMA

POWERLINE
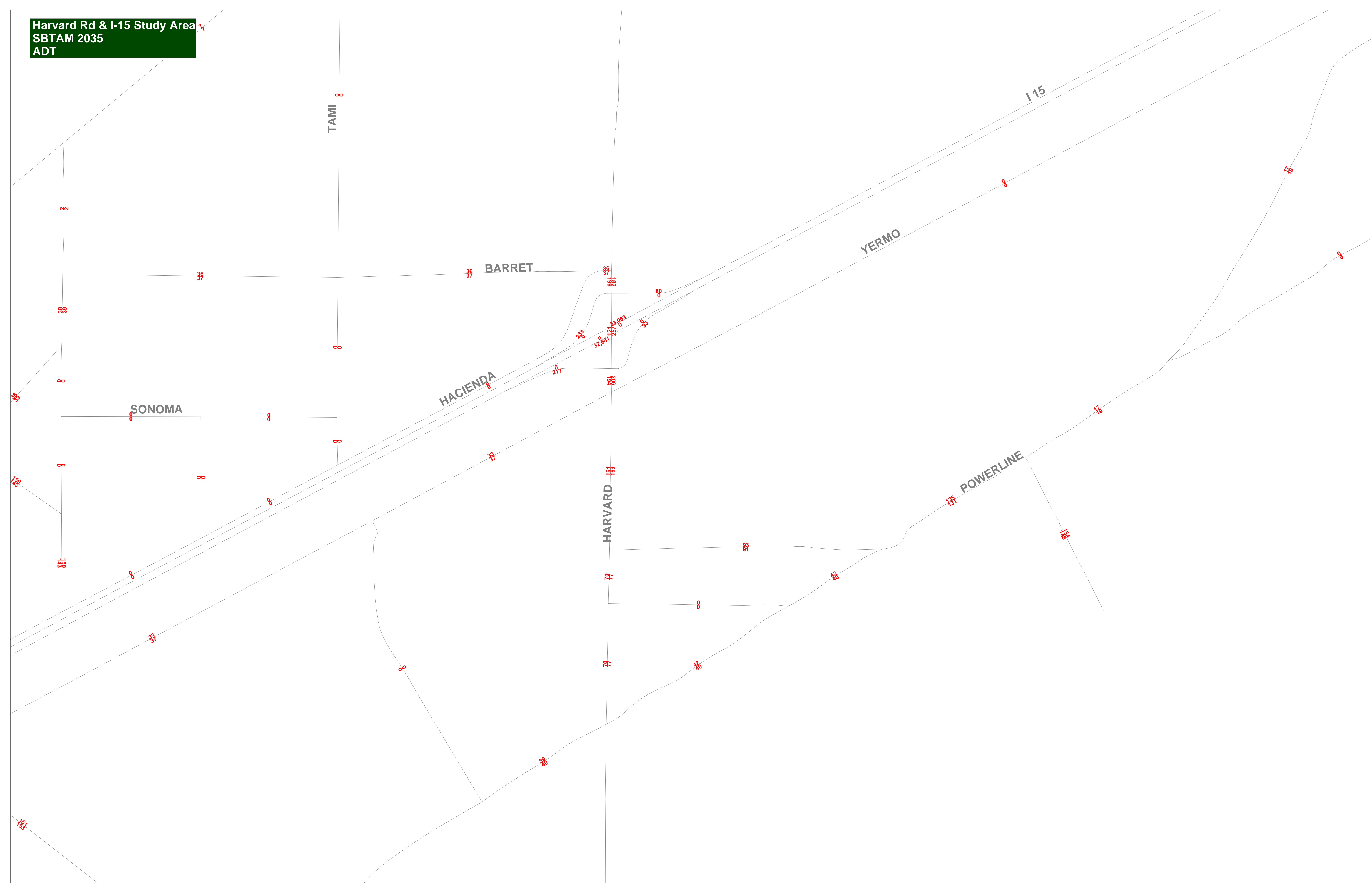
HARVARD

APPENDIX E

FUTURE GROWTH INCREMENT CALCULATION WORKSHEETS

Harvard Road (NS) / Hacienda Road (EW) - #1

MORNING PEAK HOUR	EVENING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

Morning — 2017
```
            0   0   0
            <   v   >
  1  ^              ^  0
  0  >              <  1
  0  v              v  1
            <   ^   >
            4   1   0
```
Evening — 2017
```
            1   1   0
            <   v   >
  0  ^              ^  0
  0  >              <  0
  4  v              v  0
            <   ^   >
            8   2   0
```

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

Morning — 2017
```
              0   2
              v   ^
  5  <  IN  =  8  <  2
  1  >  OUT =  8  >  0
              v   ^
              1   5
```
Evening — 2017
```
              2   2
              v   ^
  9  <  IN  = 16  <  0
  4  >  OUT = 16  >  0
              v   ^
              5  10
```

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCEs):

Morning
```
            0   0   0
            <   v   >
  0  ^              ^  0
  0  >              <  0
  0  v              v  0
            <   ^   >
            0   0   0
```
PCE FACTORS BY AXLE: 2: 1.5   3: 2.0   4+: 3.0

Evening
```
            0   0   0
            <   v   >
  0  ^              ^  0
  0  >              <  0
  0  v              v  0
            <   ^   >
            0   0   0
```
PCE FACTORS BY AXLE: 2: 1.5   3: 2   4+: 3.0

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCEs):

Morning — 2017
```
            0   0   0
            <   v   >
  1  ^              ^  0
  0  >              <  1
  0  v              v  1
            <   ^   >
            4   1   0
```
Evening — 2017
```
            1   1   0
            <   v   >
  0  ^              ^  0
  0  >              <  0
  4  v              v  0
            <   ^   >
            8   2   0
```

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

Morning — 2008
```
              1   5
              v   ^
 12  <  IN  = 39  <  1
  7  >  OUT = 39  >  1
              v   ^
             21  30
```
Evening — 2008
```
              1   5
              v   ^
 12  <  IN  = 39  <  1
  7  >  OUT = 39  >  1
              v   ^
             21  30
```

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCEs):

Morning — 2008
```
              0   0
              v   ^
  0  <  IN  =  0  <  0
  0  >  OUT =  0  >  0
              v   ^
              0   0
```
Evening — 2008
```
              0   0
              v   ^
  0  <  IN  =  0  <  0
  0  >  OUT =  0  >  0
              v   ^
              0   0
```

EXISTING PEAK HOUR MODEL YEAR (PCEs):

Morning — PHF FOR CARS: 0.38   PHF FOR TRUCKS: 0.333
```
              0   2
              v   ^
  5  <  IN  = 15  <  0
  3  >  OUT = 15  >  0
              v   ^
              8  11
```
Evening — PHF FOR CARS: 0.28   PHF FOR TRUCKS: 0.25
```
              0   1
              v   ^
  3  <  IN  = 11  <  0
  2  >  OUT = 11  >  0
              v   ^
              6   8
```

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

Morning — 2035
```
             35   1
              v   ^
 10  <  IN  = 95  <  1
 11  >  OUT = 94  >  1
              v   ^
             82  48
```
Evening — 2035
```
             35   1
              v   ^
 10  <  IN  = 95  <  1
 11  >  OUT = 94  >  1
              v   ^
             82  48
```

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCEs):

Morning — 2035
```
              0   0
              v   ^
  0  <  IN  =  0  <  0
  0  >  OUT =  0  >  0
              v   ^
              0   0
```
Evening — 2035
```
              0   0
              v   ^
  0  <  IN  =  0  <  0
  0  >  OUT =  0  >  0
              v   ^
              0   0
```

FUTURE PEAK HOUR MODEL YEAR (PCEs):

Morning — PHF FOR CARS: 0.38   PHF FOR TRUCKS: 0.333
```
             13   0
              v   ^
  4  <  IN  = 36  <  0
  4  >  OUT = 36  >  0
              v   ^
             31  18
```
Evening — PHF FOR CARS: 0.28   PHF FOR TRUCKS: 0.25
```
             10   0
              v   ^
  3  <  IN  = 27  <  0
  3  >  OUT = 26  >  0
              v   ^
             23  13
```

RAW GROWTH (PCEs): 2008 TO 2035 / CONVERSION OF TRUCKS TO: 2040 / FACTOR = 1.00

Morning
```
             13  -2
              v   ^
 -1  <              <  0
  2  >              >  0
              v   ^
             23   7
```
Evening
```
             10  -1
              v   ^
 -1  <              <  0
  1  >              >  0
              v   ^
             17   5
```

ADJUSTED GROWTH (PCEs): 2008 TO 2035 — 10 MINIMUM GROWTH %

Morning
```
             10   0
              v   ^
  0  <  IN  = 20  <  0
  0  >  OUT = 20  >  0
              v   ^
             20  10
```
Evening
```
             10   0
              v   ^
  0  <  IN  = 20  <  0
  0  >  OUT = 20  >  0
              v   ^
             20  10
```

PRORATED GROWTH (PCEs): 2017 TO 2040 — 23 YEARS

Morning
```
             10   0
              v   ^
  0  <              <  0
  0  >              >  0
              v   ^
             20  10
```
Evening
```
             10   0
              v   ^
  0  <              <  0
  0  >              >  0
              v   ^
             20  10
```

NEW PROJECTED VOLUMES (PCEs): 2040

Morning
```
             10   0
              v   ^
 10  <              <  0
  0  >              >  0
              v   ^
             20  20
```
Evening
```
             10   0
              v   ^
 10  <              <  0
  0  >              >  0
              v   ^
             30  20
```

YEAR 2019 GROWTH: 2017 TO 2019 — 2 YEARS

Morning
```
              0   0
              v   ^
  0  <              <  0
  0  >              >  0
              v   ^
              0   0
```
Evening
```
              0   0
              v   ^
  0  <              <  0
  0  >              >  0
              v   ^
              0   0
```

INITIAL YEAR 2019 VOLUMES: 2019

Morning
```
              0   0
              v   ^
 10  <  IN  = 10  <  0
  0  >  OUT = 10  >  0
              v   ^
              0  10
```
Evening
```
              0   0
              v   ^
 10  <  IN  = 10  <  0
  0  >  OUT = 20  >  0
              v   ^
             10  10
```

BALANCED YEAR 2019 VOLUMES: 2019

Morning
```
              0   0
              v   ^
 10  <  IN  = 10  <  0
  0  >  OUT = 10  >  0
              v   ^
              0  10
```
Evening
```
              0   0
              v   ^
 10  <  IN  = 20  <  0
  0  >  OUT = 20  >  0
              v   ^
             10  20
```

Harvard Road (NS) / Hacienda Road (EW) - #1

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2019 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2019 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2019 TOTAL
NORTH	LEFT	4	SOUTH LEG		NORTH	LEFT	8	SOUTH LEG	
BOUND	THRU	1	IN ...	10	BOUND	THRU	2	IN ...	20
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	10
SOUTH	LEFT	0	NORTH LEG		SOUTH	LEFT	0	NORTH LEG	
BOUND	THRU	0	IN ...	0	BOUND	THRU	1	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	1	OUT ...	0
EAST	LEFT	1	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	0	IN ...	0	BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	10		RIGHT	4	OUT ...	10
WEST	LEFT	1	EAST LEG		WEST	LEFT	0	EAST LEG	
BOUND	THRU	1	IN ...	0	BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0

YEAR 2019 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2019 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2019 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	4	10	NORTH LEG	NORTH	LEFT	8	10	NORTH LEG
BOUND	THRU	1	1	RATIO -	BOUND	THRU	2	2	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH	LEFT	0	0	SOUTH LEG	SOUTH	LEFT	0	0	SOUTH LEG
BOUND	THRU	0	0	RATIO 3.0%	BOUND	THRU	1	1	RATIO -
	RIGHT	0	0	ADT 400		RIGHT	1	1	ADT 0
EAST	LEFT	1	1	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	0	0	RATIO -	BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	4	4	ADT 0
WEST	LEFT	1	1	WEST LEG	WEST	LEFT	0	0	WEST LEG
BOUND	THRU	1	1	RATIO 12.0%	BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 100		RIGHT	0	0	ADT 0

Harvard Road (NS) / Hacienda Road (EW) - #1

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SUNDAY MID-DAY PEAK HOUR INPUT DATA				
	TURNING	BASE YEAR		YEAR 2040		TURNING	BASE YEAR		YEAR 2040
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	4	SOUTH LEG		NORTH	LEFT	8	SOUTH LEG	
BOUND	THRU	1	IN ...	20	BOUND	THRU	2	IN ...	20
	RIGHT	0	OUT ...	20		RIGHT	0	OUT ...	30
SOUTH	LEFT	0	NORTH LEG		SOUTH	LEFT	0	NORTH LEG	
BOUND	THRU	0	IN ...	10	BOUND	THRU	1	IN ...	10
	RIGHT	0	OUT ...	0		RIGHT	1	OUT ...	0
EAST	LEFT	1	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	0	IN ...	0	BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	10		RIGHT	4	OUT ...	10
WEST	LEFT	1	EAST LEG		WEST	LEFT	0	EAST LEG	
BOUND	THRU	1	IN ...	0	BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0		RIGHT	0	OUT ...	0

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SUNDAY MID-DAY PEAK HOUR INPUT DATA				
	TURNING	BASE YEAR	YEAR 2040	PEAK - DAILY		TURNING	BASE YEAR	YEAR 2040	PEAK - DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP
NORTH	LEFT	4	10	NORTH LEG	NORTH	LEFT	8	10	NORTH LEG
BOUND	THRU	1	1	RATIO -	BOUND	THRU	2	2	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	0	0	ADT 0
SOUTH	LEFT	0	0	SOUTH LEG	SOUTH	LEFT	0	0	SOUTH LEG
BOUND	THRU	0	0	RATIO 3.0%	BOUND	THRU	1	30	RATIO -
	RIGHT	0	0	ADT 400		RIGHT	1	1	ADT 0
EAST	LEFT	1	1	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	0	0	RATIO -	BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 0		RIGHT	4	4	ADT 0
WEST	LEFT	1	1	WEST LEG	WEST	LEFT	0	0	WEST LEG
BOUND	THRU	1	1	RATIO 12.0%	BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 100		RIGHT	0	0	ADT 0

Harvard Road (NS) / I-15 Freeway SB Ramps (EW) - #2	
MORNING PEAK HOUR	**EVENING PEAK HOUR**

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

MORNING	EVENING
2017 4 3 0	2017 6 3 0
< v >	< v >
0 ^ ^ 4	0 ^ ^ 12
0 > < 4	0 > < 8
0 v v 6	0 v v 223
< ^ >	< ^ >
1 5 0	3 6 0

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

MORNING	EVENING
2017 7 9	2017 9 18
v ^	v ^
9 < IN = 27 < 14	17 < IN = 261 < 243
0 > OUT = 27 > 0	0 > OUT = 261 > 0
v ^	v ^
9 6	226 9

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCEs):

MORNING	EVENING
0 0 0	3 5 0
< v >	< v >
0 ^ ^ 0	0 ^ ^ 2
0 > < 6	0 > < 6
0 v v 3	0 v v 33
PCE FACTORS BY AXLE: < ^ >	PCE FACTORS BY AXLE: < ^ >
2: 1.5 3: 2.0 4+: 3.0 0 0 0	2: 1.5 3: 2 4+: 3.0 0 3 0

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCEs):

MORNING	EVENING
2017 4 3 0	2017 9 8 0
< v >	< v >
0 ^ ^ 4	0 ^ ^ 14
0 > < 10	0 > < 14
0 v v 9	0 v v 256
< ^ >	< ^ >
1 5 0	3 9 0

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

MORNING	EVENING
2008 21 30	2008 21 30
v ^	v ^
18 < IN = 77 < 26	18 < IN = 77 < 26
0 > OUT = 77 > 0	0 > OUT = 77 > 0
v ^	v ^
29 30	29 30

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCEs):

MORNING	EVENING
2008 0 0	2008 0 0
v ^	v ^
0 < IN = 0 < 0	0 < IN = 0 < 0
0 > OUT = 0 > 0	0 > OUT = 0 > 0
v ^	v ^
0 0	0 0

EXISTING PEAK HOUR MODEL YEAR (PCEs):

MORNING	EVENING
PHF FOR CARS: 0.38 8 11	PHF FOR CARS: 0.28 6 8
PHF FOR TRUCKS: 0.333 v ^	PHF FOR TRUCKS: 0.25 v ^
7 < IN = 29 < 10	5 < IN = 22 < 7
0 > OUT = 29 > 0	0 > OUT = 22 > 0
v ^	v ^
11 11	8 8

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

MORNING	EVENING
2035 82 48	2035 82 48
v ^	v ^
97 < IN = 181 < 20	97 < IN = 181 < 20
0 > OUT = 180 > 0	0 > OUT = 180 > 0
v ^	v ^
35 79	35 79

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCEs):

MORNING	EVENING
2035 0 0	2035 0 0
v ^	v ^
0 < IN = 0 < 0	0 < IN = 0 < 0
0 > OUT = 0 > 0	0 > OUT = 0 > 0
v ^	v ^
0 0	0 0

FUTURE PEAK HOUR MODEL YEAR (PCEs):

MORNING	EVENING
PHF FOR CARS: 0.38 31 18	PHF FOR CARS: 0.28 23 13
PHF FOR TRUCKS: 0.333 v ^	PHF FOR TRUCKS: 0.25 v ^
37 < IN = 69 < 8	27 < IN = 51 < 6
0 > OUT = 68 > 0	0 > OUT = 50 > 0
v ^	v ^
13 30	10 22

RAW GROWTH (PCEs): 2008 TO 2035

MORNING	EVENING
CONVERSION OF TRUCKS TO: 2040 23 7	CONVERSION OF TRUCKS TO: 2040 17 5
FACTOR = 1.00 v ^	FACTOR = 1.00 v ^
30 < < -2	22 < < -2
0 > > 0	0 > > 0
v ^	v ^
2 19	2 14

ADJUSTED GROWTH (PCEs): 2008 TO 2035

MORNING	EVENING
10 MINIMUM GROWTH % 20 10	10 MINIMUM GROWTH % 20 10
v ^	v ^
30 < IN = 40 < 0	20 < IN = 60 < 30
0 > OUT = 40 > 0	0 > OUT = 30 > 0
v ^	v ^
0 20	0 10

PRORATED GROWTH (PCEs): 2017 TO 2040

MORNING	EVENING
23 YEARS 20 10	23 YEARS 20 10
v ^	v ^
30 < < 0	20 < < 30
0 > > 0	0 > > 0
v ^	v ^
0 20	0 10

NEW PROJECTED VOLUMES (PCEs): 2040

MORNING	EVENING
30 20	40 30
v ^	v ^
50 < < 20	50 < < 310
0 > > 0	0 > > 0
v ^	v ^
10 30	260 20

YEAR 2019 GROWTH: 2017 TO 2019

MORNING	EVENING
2 YEARS 0 0	2 YEARS 0 0
v ^	v ^
0 < < 0	0 < < 0
0 > > 0	0 > > 0
v ^	v ^
0 0	0 0

INITIAL YEAR 2019 VOLUMES:

MORNING	EVENING
2019 10 10	2019 20 20
v ^	v ^
20 < IN = 40 < 20	30 < IN = 310 < 280
0 > OUT = 40 > 0	0 > OUT = 310 > 0
v ^	v ^
10 10	260 10

BALANCED YEAR 2019 VOLUMES:

MORNING	EVENING
2019 10 10	2019 20 20
v ^	v ^
20 < IN = 40 < 20	30 < IN = 310 < 280
0 > OUT = 40 > 0	0 > OUT = 310 > 0
v ^	v ^
10 10	260 10

Harvard Road (NS) / I-15 Freeway SB Ramps (EW) - #2
FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255

YEAR 2019 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2019 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2019 TOTAL
NORTH	LEFT	1	SOUTH LEG		NORTH	LEFT	3	SOUTH LEG	
BOUND	THRU	5	IN ...	10	BOUND	THRU	9	IN ...	10
	RIGHT	0	OUT ...	10		RIGHT	0	OUT ...	260
SOUTH	LEFT	0	NORTH LEG		SOUTH	LEFT	0	NORTH LEG	
BOUND	THRU	3	IN ...	10	BOUND	THRU	8	IN ...	20
	RIGHT	4	OUT ...	10		RIGHT	9	OUT ...	20
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	0	IN ...	0	BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	20		RIGHT	0	OUT ...	30
WEST	LEFT	9	EAST LEG		WEST	LEFT	256	EAST LEG	
BOUND	THRU	10	IN ...	20	BOUND	THRU	14	IN ...	280
	RIGHT	4	OUT ...	0		RIGHT	14	OUT ...	0

YEAR 2019 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2019 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2019 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	1	3	NORTH LEG	NORTH	LEFT	3	3	NORTH LEG
BOUND	THRU	5	7	RATIO 3.0%	BOUND	THRU	9	9	RATIO -
	RIGHT	0	0	ADT 700		RIGHT	0	0	ADT 0
SOUTH	LEFT	0	0	SOUTH LEG	SOUTH	LEFT	0	0	SOUTH LEG
BOUND	THRU	3	3	RATIO 0.6%	BOUND	THRU	8	9	RATIO -
	RIGHT	4	7	ADT 3,500		RIGHT	9	11	ADT 0
EAST	LEFT	0	0	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	0	0	RATIO 0.7%	BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 3,600		RIGHT	0	0	ADT 0
WEST	LEFT	9	9	WEST LEG	WEST	LEFT	256	258	WEST LEG
BOUND	THRU	10	11	RATIO 5.3%	BOUND	THRU	14	16	RATIO -
	RIGHT	4	4	ADT 400		RIGHT	14	14	ADT 0

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SUNDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH	LEFT	1	SOUTH LEG		NORTH	LEFT	3	SOUTH LEG	
BOUND	THRU	5	IN ...	30	BOUND	THRU	9	IN ...	20
	RIGHT	0	OUT ...	10		RIGHT	0	OUT ...	260
SOUTH	LEFT	0	NORTH LEG		SOUTH	LEFT	0	NORTH LEG	
BOUND	THRU	3	IN ...	30	BOUND	THRU	8	IN ...	40
	RIGHT	4	OUT ...	20		RIGHT	9	OUT ...	30
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	0	IN ...	0	BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	50		RIGHT	0	OUT ...	50
WEST	LEFT	9	EAST LEG		WEST	LEFT	256	EAST LEG	
BOUND	THRU	10	IN ...	20	BOUND	THRU	14	IN ...	310
	RIGHT	4	OUT ...	0		RIGHT	14	OUT ...	0

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SUNDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	1	12	NORTH LEG	NORTH	LEFT	3	5	NORTH LEG
BOUND	THRU	5	18	RATIO 7.4%	BOUND	THRU	9	13	RATIO -
	RIGHT	0	0	ADT 700		RIGHT	0	0	ADT 0
SOUTH	LEFT	0	0	SOUTH LEG	SOUTH	LEFT	0	0	SOUTH LEG
BOUND	THRU	3	6	RATIO 1.3%	BOUND	THRU	8	13	RATIO -
	RIGHT	4	24	ADT 3,500		RIGHT	9	23	ADT 0
EAST	LEFT	0	0	EAST LEG	EAST	LEFT	0	0	EAST LEG
BOUND	THRU	0	0	RATIO 0.8%	BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 3,600		RIGHT	0	0	ADT 0
WEST	LEFT	9	10	WEST LEG	WEST	LEFT	256	282	WEST LEG
BOUND	THRU	10	14	RATIO 12.5%	BOUND	THRU	14	21	RATIO -
	RIGHT	4	4	ADT 400		RIGHT	14	17	ADT 0

Harvard Road (NS) / I-15 Freeway NB Ramps (EW) - #3

MORNING PEAK HOUR	EVENING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

MORNING PEAK HOUR — 2017

```
                        0    5    1
                        <    v    >
              2   ^                    ^   0
              4   >                    <   0
              0   v                    v   0
                        <    ^    >
                        0    3    4
```

EVENING PEAK HOUR — 2017

```
                        0   222   2
                        <    v    >
              2   ^                    ^   0
              7   >                    <   0
              8   v                    v   0
                        <    ^    >
                        0    7    5
```

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2017

```
                        6    5
                        v    ^
              0   <  IN  =   19   <   0
              6   >  OUT =   19   >   9
                        v    ^
                        5    7
```

2017

```
                       224    9
                        v     ^
              0   <  IN  =   253   <   0
             17   >  OUT =   253   >  14
                        v     ^
                       230    12
```

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCEs):

2017

```
                        0    17   0
                        <    v    >
              0   ^                    ^   0
              3   >                    <   0
              0   v                    v   0
```
PCE FACTORS BY AXLE:
```
                        <    ^    >
2:   1.5   3:   2.0   4+:   3.0     0    0    0
```

2017

```
                        0    32   3
                        <    v    >
              3   ^                    ^   0
              3   >                    <   0
              0   v                    v   0
```
PCE FACTORS BY AXLE:
```
                        <    ^    >
2:   1.5   3:   2   4+:   3.0     0    0    0
```

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCEs):

2017

```
                        0    22   1
                        <    v    >
              2   ^                    ^   0
              7   >                    <   0
              0   v                    v   0
                        <    ^    >
                        0    3    4
```

2017

```
                        0   254   5
                        <    v    >
              5   ^                    ^   0
             10   >                    <   0
              8   v                    v   0
                        <    ^    >
                        0    7    5
```

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2008

```
                       29   30
                        v    ^
              0   <  IN  =   76   <   0
             25   >  OUT =   77   >  11
                        v    ^
                       36   22
```

2008

```
                       29   30
                        v    ^
              0   <  IN  =   76   <   0
             25   >  OUT =   77   >  11
                        v    ^
                       36   22
```

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCEs):

2008

```
                        0    0
                        v    ^
              0   <  IN  =   0   <   0
              0   >  OUT =   0   >   0
                        v    ^
                        0    0
```

2008

```
                        0    0
                        v    ^
              0   <  IN  =   0   <   0
              0   >  OUT =   0   >   0
                        v    ^
                        0    0
```

EXISTING PEAK HOUR MODEL YEAR (PCEs):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

```
                       11   11
                        v    ^
              0   <  IN  =   29   <   0
             10   >  OUT =   29   >   4
                        v    ^
                       14    8
```

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

```
                        8    8
                        v    ^
              0   <  IN  =   21   <   0
              7   >  OUT =   22   >   3
                        v    ^
                       10    6
```

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2035

```
                       35   79
                        v    ^
              0   <  IN  =   171   <   0
             58   >  OUT =   172   >  39
                        v    ^
                       54   78
```

2035

```
                       35   79
                        v    ^
              0   <  IN  =   171   <   0
             58   >  OUT =   172   >  39
                        v    ^
                       54   78
```

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCEs):

2035

```
                        0    0
                        v    ^
              0   <  IN  =   0   <   0
              0   >  OUT =   0   >   0
                        v    ^
                        0    0
```

2035

```
                        0    0
                        v    ^
              0   <  IN  =   0   <   0
              0   >  OUT =   0   >   0
                        v    ^
                        0    0
```

FUTURE PEAK HOUR MODEL YEAR (PCEs):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

```
                       13   30
                        v    ^
              0   <  IN  =   65   <   0
             22   >  OUT =   65   >  15
                        v    ^
                       21   30
```

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

```
                       10   22
                        v    ^
              0   <  IN  =   48   <   0
             16   >  OUT =   48   >  11
                        v    ^
                       15   22
```

RAW GROWTH (PCEs): 2008 TO 2035
CONVERSION OF TRUCKS TO: 2040
FACTOR = 1.00

```
                        2   19
                        v    ^
              0   <                 <   0
             13   >                 >  11
                        v    ^
                        7   21
```

RAW GROWTH (PCEs): 2008 TO 2035
CONVERSION OF TRUCKS TO: 2040
FACTOR = 1.00

```
                        2   14
                        v    ^
              0   <                 <   0
              9   >                 >   8
                        v    ^
                        5   16
```

ADJUSTED GROWTH (PCEs): 2008 TO 2035
10 MINIMUM GROWTH %

```
                        0   20
                        v    ^
              0   <  IN  =   30   <   0
             10   >  OUT =   40   >  10
                        v    ^
                       10   20
```

ADJUSTED GROWTH (PCEs): 2008 TO 2035
10 MINIMUM GROWTH %

```
                       30   10
                        v    ^
              0   <  IN  =   60   <   0
             10   >  OUT =   30   >  10
                        v    ^
                       10   20
```

PRORATED GROWTH (PCEs): 2017 TO 2040
23 YEARS

```
                        0   20
                        v    ^
              0   <                 <   0
             10   >                 >  10
                        v    ^
                       10   20
```

PRORATED GROWTH (PCEs): 2017 TO 2040
23 YEARS

```
                       30   10
                        v    ^
              0   <                 <   0
             10   >                 >  10
                        v    ^
                       10   20
```

NEW PROJECTED VOLUMES (PCEs): 2040

```
                       20   30
                        v    ^
              0   <                 <   0
             20   >                 >  20
                        v    ^
                       30   30
```

NEW PROJECTED VOLUMES (PCEs): 2040

```
                      290   20
                        v    ^
              0   <                 <   0
             30   >                 >  30
                        v    ^
                      270   30
```

YEAR 2019 GROWTH: 2017 TO 2019
2 YEARS

```
                        0    0
                        v    ^
              0   <                 <   0
              0   >                 >   0
                        v    ^
                        0    0
```

YEAR 2019 GROWTH: 2017 TO 2019
2 YEARS

```
                        0    0
                        v    ^
              0   <                 <   0
              0   >                 >   0
                        v    ^
                        0    0
```

INITIAL YEAR 2019 VOLUMES:

2019

```
                       20   10
                        v    ^
              0   <  IN  =   40   <   0
             10   >  OUT =   40   >  10
                        v    ^
                       20   10
```

2019

```
                      260   10
                        v    ^
              0   <  IN  =   290   <   0
             20   >  OUT =   290   >  20
                        v    ^
                      260   10
```

BALANCED YEAR 2019 VOLUMES:

2019

```
                       20   10
                        v    ^
              0   <  IN  =   40   <   0
             10   >  OUT =   40   >  10
                        v    ^
                       20   10
```

2019

```
                      260   10
                        v    ^
              0   <  IN  =   290   <   0
             20   >  OUT =   290   >  20
                        v    ^
                      260   10
```

Harvard Road (NS) / I-15 Freeway NB Ramps (EW) - #3
FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255

			YEAR 2019 TRAFFIC CONDITIONS							
	FRIDAY EVENING PEAK HOUR INPUT DATA					SATURDAY MID-DAY PEAK HOUR INPUT DATA				
	TURNING	BASE YEAR		YEAR 2019			TURNING	BASE YEAR		YEAR 2019
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL		APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	0	SOUTH LEG			NORTH	LEFT	0	SOUTH LEG	
BOUND	THRU	3	IN ...	10		BOUND	THRU	7	IN ...	10
	RIGHT	4	OUT ...	20			RIGHT	5	OUT ...	260
SOUTH	LEFT	1	NORTH LEG			SOUTH	LEFT	5	NORTH LEG	
BOUND	THRU	22	IN ...	20		BOUND	THRU	254	IN ...	260
	RIGHT	0	OUT ...	10			RIGHT	0	OUT ...	10
EAST	LEFT	2	WEST LEG			EAST	LEFT	5	WEST LEG	
BOUND	THRU	7	IN ...	10		BOUND	THRU	10	IN ...	20
	RIGHT	0	OUT ...	0			RIGHT	8	OUT ...	0
WEST	LEFT	0	EAST LEG			WEST	LEFT	0	EAST LEG	
BOUND	THRU	0	IN ...	0		BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	10			RIGHT	0	OUT ...	20

			YEAR 2019 TRAFFIC CONDITIONS							
	FRIDAY EVENING PEAK HOUR RESULTS					SATURDAY MID-DAY PEAK HOUR RESULTS				
	TURNING	BASE YEAR	YEAR 2019	PEAK - DAILY			TURNING	BASE YEAR	YEAR 2019	PEAK - DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP		APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP
NORTH	LEFT	0	0	NORTH LEG		NORTH	LEFT	0	0	NORTH LEG
BOUND	THRU	3	6	RATIO 1.0%		BOUND	THRU	7	7	RATIO -
	RIGHT	4	4	ADT 3,400			RIGHT	5	5	ADT 0
SOUTH	LEFT	1	1	SOUTH LEG		SOUTH	LEFT	5	6	SOUTH LEG
BOUND	THRU	22	22	RATIO 0.9%		BOUND	THRU	254	256	RATIO -
	RIGHT	0	0	ADT 3,500			RIGHT	0	0	ADT 0
EAST	LEFT	2	4	EAST LEG		EAST	LEFT	5	5	EAST LEG
BOUND	THRU	7	7	RATIO 6.0%		BOUND	THRU	10	10	RATIO -
	RIGHT	0	0	ADT 200			RIGHT	8	8	ADT 0
WEST	LEFT	0	0	WEST LEG		WEST	LEFT	0	0	WEST LEG
BOUND	THRU	0	0	RATIO 2.8%		BOUND	THRU	0	0	RATIO -
	RIGHT	0	0	ADT 400			RIGHT	0	0	ADT 0

Harvard Road (NS) / I-15 Freeway NB Ramps (EW) - #3

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR INPUT DATA					SUNDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	YEAR 2040 TOTAL
NORTH BOUND	LEFT	0	SOUTH LEG		NORTH BOUND	LEFT	0	SOUTH LEG	
	THRU	3	IN ...	30		THRU	7	IN ...	30
	RIGHT	4	OUT ...	30		RIGHT	5	OUT ...	270
SOUTH BOUND	LEFT	1	NORTH LEG		SOUTH BOUND	LEFT	5	NORTH LEG	
	THRU	22	IN ...	20		THRU	254	IN ...	290
	RIGHT	0	OUT ...	30		RIGHT	0	OUT ...	20
EAST BOUND	LEFT	2	WEST LEG		EAST BOUND	LEFT	5	WEST LEG	
	THRU	7	IN ...	20		THRU	10	IN ...	30
	RIGHT	0	OUT ...	0		RIGHT	8	OUT ...	0
WEST BOUND	LEFT	0	EAST LEG		WEST BOUND	LEFT	0	EAST LEG	
	THRU	0	IN ...	0		THRU	0	IN ...	0
	RIGHT	0	OUT ...	20		RIGHT	0	OUT ...	30

YEAR 2040 TRAFFIC CONDITIONS									
FRIDAY EVENING PEAK HOUR RESULTS					SUNDAY MID-DAY PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2040 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH BOUND	LEFT	0	0	NORTH LEG	NORTH BOUND	LEFT	0	0	NORTH LEG
	THRU	3	21	RATIO 1.8%		THRU	7	15	RATIO -
	RIGHT	4	9	ADT 3,400		RIGHT	5	13	ADT 0
SOUTH BOUND	LEFT	1	1	SOUTH LEG	SOUTH BOUND	LEFT	5	6	SOUTH LEG
	THRU	22	30	RATIO 1.7%		THRU	254	279	RATIO -
	RIGHT	0	0	ADT 3,500		RIGHT	0	0	ADT 0
EAST BOUND	LEFT	2	9	EAST LEG	EAST BOUND	LEFT	5	6	EAST LEG
	THRU	7	11	RATIO 10.5%		THRU	10	12	RATIO -
	RIGHT	0	0	ADT 200		RIGHT	8	10	ADT 0
WEST BOUND	LEFT	0	0	WEST LEG	WEST BOUND	LEFT	0	0	WEST LEG
	THRU	0	0	RATIO 5.0%		THRU	0	0	RATIO -
	RIGHT	0	0	ADT 400		RIGHT	0	0	ADT 0

APPENDIX F

EXPLANATION AND CALCULATION OF INTERSECTION DELAY

EXPLANATION AND CALCULATION OF INTERSECTION
LEVEL OF SERVICE USING DELAY METHODOLOGY

The levels of service at the unsignalized and signalized intersections are calculated using the delay methodology in the Highway Capacity Manual. This methodology views an intersection as consisting of several lane groups. A lane group is a set of lanes serving a movement. If there are two northbound left turn lanes, then the lane group serving the northbound left turn movement has two lanes. Similarly, there may be three lanes in the lane group serving the northbound through movement, one lane in the lane group serving the northbound right turn movement, and so forth. It is also possible for one lane to serve two lane groups. A shared lane might result in there being 1.5 lanes in the northbound left turn lane group and 2.5 lanes in the northbound through lane group.

For each lane group, there is a capacity. That capacity is calculated by multiplying the number of lanes in the lane group times a theoretical maximum lane capacity per lane time's 12 adjustment factors.

Each of the 12 adjustment factors has a value of approximately 1.00. A value less than 1.00 is generally assigned when a less than desirable condition occurs.

The 12 adjustment factors are as follows:

1. Peak hour factor (to account for peaking within the peak hour)

2. Lane utilization factor (to account for not all lanes loading equally)

3. Lane width

4. Percent of heavy trucks

5. Approach grade

6. Parking

7. Bus stops at intersections

8. Area type (CBD or other)

9. Right turns

10. Left turns

11.   Pedestrian activity

12.   Signal progression

The maximum theoretical lane capacity and the 12 adjustment factors for it are all unknowns for which approximate estimates have been recommended in the Highway Capacity Manual. For the most part, the recommended values are not based on statistical analysis but rather on educated estimates. However, it is possible to use the delay method and get reasonable results as will be discussed below.

Once the lane group volume is known and the lane group capacity is known, a volume to capacity ratio can be calculated for the lane group.

With a volume to capacity ratio calculated, average delay per vehicle in a lane group can be estimated. The average delay per vehicle in a lane group is calculated using a complex formula provided by the Highway Capacity Manual, which can be simplified and described as follows:

Delay per vehicle in a lane group is a function of the following:

1.   Cycle length

2.   Amount of red time faced by a lane group

3.   Amount of yellow time for that lane group

4.   The volume to capacity ratio of the lane group

The average delay per vehicle for each lane group is calculated, and eventually an overall average delay for all vehicles entering the intersection is calculated. This average delay per vehicle is then used to judge Level of Service. The Level of Services are defined in the table that follows this discussion.

Experience has shown that when a maximum lane capacity of 1,900 vehicles per hour is used (as recommended in the Highway Capacity Manual), little or no yellow time penalty is used, and none of the 12 penalty factors are applied, calculated delay is realistic. The delay calculation for instance assumes that yellow time is totally unused. Yet experience shows that most of the yellow time is used.

An idiosyncrasy of the delay methodology is that it is possible to add traffic to an intersection and reduce the average total delay per vehicle. If the average total delay is 30 seconds per vehicle for all vehicles traveling through an intersection, and traffic is added to a movement that has an average total delay of 15 seconds per vehicle, then the overall average total delay is reduced.

The delay calculation for a lane group is based on a concept that the delay is a function of the amount of unused capacity available. As the volume approaches capacity and there is no more unused capacity available, then the delay rapidly increases. Delay is not proportional to volume, but rather increases rapidly as the unused capacity approaches zero.

Because delay is not linearly related to volumes, the delay does not reflect how close an intersection is to overloading. If an intersection is operating at Level of Service C and has an average total delay of 18 seconds per vehicle, you know very little as to what percent the traffic can increase before Level of Service E is reached.

LEVEL OF SERVICE DESCRIPTION[1]

Level Of Service	Description	Average Total Delay Per Vehicle (Seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

[1] Source: Highway Capacity Manual Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 2000.

Existing

Jeremy's Travel Plaza

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Scenario 1 Existing
3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.001	9.1	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.000	8.6	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.012	9.2	A
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.008	9.2	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.001

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	4	1	0	0	0	0	1	0	0	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1	0	0	0	0	1	0	0	1	1	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	4	1	0	0	0	0	1	0	0	1	1	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.21	0.00	0.00	7.20	0.00	0.00	8.56	9.06	8.30	8.56	9.06	8.31
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft]	0.23	0.23	0.23	0.00	0.00	0.00	0.07	0.07	0.07	0.16	0.16	0.16
d_A, Approach Delay [s/veh]	5.76			2.40			8.56			8.81		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.88											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop		Delay (sec / veh):		8.6
Analysis Method:	HCM 6th Edition		Level Of Service:		A
Analysis Period:	15 minutes		Volume to Capacity (v/c):		0.000

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⊢		⊣		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	9	0	0	7	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	0	0	7	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	0	2	0	0
Total Analysis Volume [veh/h]	9	0	0	7	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.22	0.00	8.57	8.34
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		8.46	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	1	5	0	0	3	4	0	0	0	9	10	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	5	0	0	3	4	0	0	0	9	10	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	0	0	1	1	0	0	0	2	3	1
Total Analysis Volume [veh/h]	1	5	0	0	3	4	0	0	0	9	11	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	7.21	0.00	0.00	7.21	0.00	0.00	0.00	0.00	0.00	8.66	9.17	8.42
Movement LOS	A	A	A	A	A	A				A	A	A
95th-Percentile Queue Length [veh]	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.08
95th-Percentile Queue Length [ft]	0.28	0.28	0.28	0.00	0.00	0.00	0.00	0.00	0.00	1.93	1.93	1.93
d_A, Approach Delay [s/veh]	1.20			0.00			0.00			8.85		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.94											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	3	4	1	22	0	2	7	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	4	1	22	0	2	7	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	1	0	6	0	1	2	0	0	0	0
Total Analysis Volume [veh/h]	0	3	4	1	23	0	2	7	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.24	0.00	0.00	7.21	0.00	0.00	8.70	9.21	8.44	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.04	0.04	0.04	0.03	0.03	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	1.12	1.12	1.12	0.77	0.77	0.77	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.30			9.10			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.23											
Intersection LOS	A											

Jeremy's Travel Plaza

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Scenario 1 Existing
3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	9.1	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.000	8.7	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.017	10.8	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.018	11.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Jeremy's Travel Plaza

Scenario 1: 1 Existing

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✚			✚			✚			✚		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	8	2	0	0	1	1	0	0	4	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	2	0	0	1	1	0	0	4	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	0	0	0	0	0	0	1	0	0	0
Total Analysis Volume [veh/h]	8	2	0	0	1	1	0	0	4	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.21	0.00	0.00	7.20	0.00	0.00	8.63	9.13	8.32	8.64	9.12	8.31
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.02	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.46	0.46	0.46	0.00	0.00	0.00	0.28	0.28	0.28	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	5.77			0.00			8.32			8.69		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.69											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⊢		⊣		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	23	0	0	17	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	0	0	17	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	0	4	0	0
Total Analysis Volume [veh/h]	24	0	0	18	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.24	0.00	8.70	8.40
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration		✛			✛						✛	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	3	9	0	0	8	9	0	0	0	256	14	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	9	0	0	8	9	0	0	0	256	14	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	0	0	2	2	0	0	0	67	4	4
Total Analysis Volume [veh/h]	3	9	0	0	8	9	0	0	0	269	15	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.02	0.01
d_M, Delay for Movement [s/veh]	7.24	0.00	0.00	7.22	0.00	0.00	0.00	0.00	0.00	10.24	10.76	9.93
Movement LOS	A	A	A	A	A	A				B	B	A
95th-Percentile Queue Length [veh]	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.29	1.29	1.29
95th-Percentile Queue Length [ft]	0.56	0.56	0.56	0.00	0.00	0.00	0.00	0.00	0.00	32.29	32.29	32.29
d_A, Approach Delay [s/veh]	1.81			0.00			0.00			10.25		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	9.41											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	7	5	5	254	0	5	10	8	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	7	5	5	254	0	5	10	8	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	1	1	67	0	1	3	2	0	0	0
Total Analysis Volume [veh/h]	0	7	5	5	267	0	5	11	8	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.75	0.00	0.00	7.23	0.00	0.00	10.59	10.98	9.83	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	B	B	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.60	0.60	0.60	0.11	0.11	0.11	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	15.08	15.08	15.08	2.75	2.75	2.75	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.13			10.52			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	0.94											
Intersection LOS	B											

Existing Plus Project

Jeremy's Travel Plaza

Vistro File: J:\...\E Fri.vistro

Report File: J:\...\Fri EP.pdf

Scenario 2 Existing Plus Project

3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	9.1	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.092	9.2	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.015	10.1	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.009	10.1	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	4	1	0	0	0	0	1	0	0	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	0	0	0	0	0	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	1	0	0	0	0	1	0	4	1	1	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	0	0	0	0	0	0	1	0	0	0
Total Analysis Volume [veh/h]	8	1	0	0	0	0	1	0	4	1	1	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane	No			No			No			No		
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance	No			No			No			No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.21	0.00	0.00	7.20	0.00	0.00	8.62	9.12	8.32	8.64	9.11	8.31
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.02	0.02	0.02	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
95th-Percentile Queue Length [ft]	0.41	0.41	0.41	0.00	0.00	0.00	0.35	0.35	0.35	0.16	0.16	0.16
d_A, Approach Delay [s/veh]	6.41			2.40			8.38			8.87		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	7.33											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.092

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⊢		⊣		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	9	0	0	7	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	82	4	0	83	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	82	4	7	83	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	22	1	2	22	1
Total Analysis Volume [veh/h]	9	86	4	7	87	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.09	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	9.23	8.93
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.02	0.02	0.32	0.32
95th-Percentile Queue Length [ft]	0.00	0.00	0.55	0.55	7.98	7.98
d_A, Approach Delay [s/veh]	0.00		2.69		9.22	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.41					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	1	5	0	0	3	4	0	0	0	9	10	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	43	0	0	43	40	0	0	0	0	0	39
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	48	0	0	46	44	0	0	0	9	10	43
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	0	0	12	12	0	0	0	2	3	11
Total Analysis Volume [veh/h]	1	51	0	0	48	46	0	0	0	9	11	45
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.04
d_M, Delay for Movement [s/veh]	7.38	0.00	0.00	7.30	0.00	0.00	0.00	0.00	0.00	9.50	10.10	8.81
Movement LOS	A	A	A	A	A	A				A	B	A
95th-Percentile Queue Length [veh]	0.11	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.22
95th-Percentile Queue Length [ft]	2.67	2.67	2.67	0.00	0.00	0.00	0.00	0.00	0.00	5.57	5.57	5.57
d_A, Approach Delay [s/veh]	0.14			0.00			0.00			9.12		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.84											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 2: 2 Existing Plus Project

Friday Evening Peak Hour

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	3	4	1	22	0	2	7	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	39	4	0	39	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	7	4	40	26	0	41	7	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	1	11	7	0	11	2	0	0	0	0
Total Analysis Volume [veh/h]	0	7	4	42	27	0	43	7	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.05	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.25	0.00	0.00	7.28	0.00	0.00	9.55	10.07	8.69	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	B	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.13	0.13	0.13	0.19	0.19	0.19	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	3.33	3.33	3.33	4.81	4.81	4.81	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			4.43			9.62			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.05											
Intersection LOS	B											

Jeremy's Travel Plaza

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Scenario 2 Existing Plus Project
3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.000	9.2	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.132	9.7	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.022	13.6	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.022	13.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✚			✚			✚			✚		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	8	2	0	0	1	1	0	0	4	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	0	0	0	0	0	0	6	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	2	0	0	1	1	0	0	10	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	0	0	0	0	0	0	3	0	0	0
Total Analysis Volume [veh/h]	15	2	0	0	1	1	0	0	11	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.20	0.00	0.00	8.74	9.24	8.34	8.77	9.21	8.31
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.03	0.03	0.03	0.00	0.00	0.00	0.03	0.03	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.79	0.79	0.79	0.00	0.00	0.00	0.77	0.77	0.77	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	6.37			0.00			8.34			8.76		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.67											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.132

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	23	0	0	17	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	112	6	0	111	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	112	6	17	111	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	29	2	4	29	2
Total Analysis Volume [veh/h]	24	118	6	18	117	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop
Flared Lane	No		No		No
Storage Area [veh]	0		0		0
Two-Stage Gap Acceptance	No		No		No
Number of Storage Spaces in Median	0		0		0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.13	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.49	0.00	9.72	9.31
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.05	0.05	0.48	0.48
95th-Percentile Queue Length [ft]	0.00	0.00	1.26	1.26	11.98	11.98
d_A, Approach Delay [s/veh]	0.00		1.87		9.70	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.28					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	3	9	0	0	8	9	0	0	0	256	14	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	59	0	0	59	52	0	0	0	0	0	53
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	68	0	0	67	61	0	0	0	256	14	67
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	18	0	0	18	16	0	0	0	67	4	18
Total Analysis Volume [veh/h]	3	72	0	0	71	64	0	0	0	269	15	71
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.02	0.07
d_M, Delay for Movement [s/veh]	7.47	0.00	0.00	7.34	0.00	0.00	0.00	0.00	0.00	12.98	13.63	12.00
Movement LOS	A	A	A	A	A	A				B	B	B
95th-Percentile Queue Length [veh]	0.16	0.16	0.16	0.00	0.00	0.00	0.00	0.00	0.00	2.24	2.24	2.24
95th-Percentile Queue Length [ft]	4.05	4.05	4.05	0.00	0.00	0.00	0.00	0.00	0.00	55.89	55.89	55.89
d_A, Approach Delay [s/veh]	0.30			0.00			0.00			12.81		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.09											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 2: 2 Existing Plus Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⭲			⭲			⭲					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	7	5	5	254	0	5	10	8	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	53	6	0	53	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	5	58	260	0	58	10	8	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	1	15	68	0	15	3	2	0	0	0
Total Analysis Volume [veh/h]	0	14	5	61	274	0	61	11	8	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.11	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.77	0.00	0.00	7.32	0.00	0.00	12.86	13.22	10.80	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	B	B	B			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.78	0.78	0.78	0.51	0.51	0.51	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	19.60	19.60	19.60	12.73	12.73	12.73	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			1.33			12.70			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	3.37											
Intersection LOS	B											

Opening Year (2019) Without Project

Jeremy's Travel Plaza

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Scenario 1 Opening Year (2019) Without Project
3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.007	9.9	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.000	9.6	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.017	10.3	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.010	10.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	1	0	0	0	0	1	0	0	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	0	0	5	0	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	1	91	0	0	0	1	5	0	91	6	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	24	0	0	0	0	1	0	24	2	0
Total Analysis Volume [veh/h]	11	1	96	0	0	0	1	5	0	96	6	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.21	0.00	0.00	7.39	0.00	0.00	8.99	9.71	8.33	9.45	9.91	9.01
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.21	0.21	0.21	0.00	0.00	0.00	0.02	0.02	0.02	0.38	0.38	0.38
95th-Percentile Queue Length [ft]	5.29	5.29	5.29	0.00	0.00	0.00	0.57	0.57	0.57	9.48	9.48	9.48
d_A, Approach Delay [s/veh]	0.73			2.46			9.59			9.48		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.11											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⊢		⊣		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	11	0	0	10	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	0	0	90	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	0	0	100	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	0	0	26	0	0
Total Analysis Volume [veh/h]	107	0	0	105	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane	No		No		No	
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No		No		No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.41	0.00	9.61	8.78
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.20	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	3	7	0	0	3	7	0	0	0	9	11	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	48	42	0	0	0	0	0	43
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	55	0	0	51	49	0	0	0	9	11	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	14	0	0	13	13	0	0	0	2	3	12
Total Analysis Volume [veh/h]	3	58	0	0	54	52	0	0	0	9	12	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05
d_M, Delay for Movement [s/veh]	7.41	0.00	0.00	7.31	0.00	0.00	0.00	0.00	0.00	9.66	10.28	8.87
Movement LOS	A	A	A	A	A	A				A	B	A
95th-Percentile Queue Length [veh]	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.25
95th-Percentile Queue Length [ft]	3.18	3.18	3.18	0.00	0.00	0.00	0.00	0.00	0.00	6.13	6.13	6.13
d_A, Approach Delay [s/veh]	0.36			0.00			0.00			9.21		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.82											
Intersection LOS	B											

Jeremy's Travel Plaza

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✚			✚			✚					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	6	4	1	22	0	4	7	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	43	5	0	43	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	11	4	44	27	0	47	7	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	1	12	7	0	12	2	0	0	0	0
Total Analysis Volume [veh/h]	0	12	4	46	28	0	49	7	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.06	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.25	0.00	0.00	7.29	0.00	0.00	9.70	10.22	8.75	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	B	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.14	0.14	0.14	0.22	0.22	0.22	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	3.60	3.60	3.60	5.55	5.55	5.55	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			4.53			9.76			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.04											
Intersection LOS	B											

Jeremy's Travel Plaza

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Scenario 1 Opening year (2019) Without Project

3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.006	9.9	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.000	9.8	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.024	13.1	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.021	12.8	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Jeremy's Travel Plaza

Scenario 1: 1 Opening year (2019) Without Project   Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✚			✚			✚			✚		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	2	0	0	1	1	0	0	4	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	0	0	5	0	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	91	0	1	1	0	5	4	90	5	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	24	0	0	0	0	1	1	24	1	0
Total Analysis Volume [veh/h]	11	2	96	0	1	1	0	5	4	95	5	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.39	0.00	0.00	9.00	9.74	8.35	9.49	9.92	9.02
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.21	0.21	0.21	0.00	0.00	0.00	0.03	0.03	0.03	0.37	0.37	0.37
95th-Percentile Queue Length [ft]	5.36	5.36	5.36	0.00	0.00	0.00	0.77	0.77	0.77	9.36	9.36	9.36
d_A, Approach Delay [s/veh]	0.73			0.00			9.12			9.51		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.06											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	23	0	0	20	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	0	0	90	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	0	0	110	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	0	0	29	0	0
Total Analysis Volume [veh/h]	120	0	0	116	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.43	0.00	9.76	8.84
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.30	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Jeremy's Travel Plaza

Scenario 1: 1 Opening year (2019) Without Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	3	9	0	0	9	11	0	0	0	258	16	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	48	42	0	0	0	0	0	43
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	57	0	0	57	53	0	0	0	258	16	57
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	15	0	0	15	14	0	0	0	68	4	15
Total Analysis Volume [veh/h]	3	60	0	0	60	56	0	0	0	272	17	60
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.02	0.06
d_M, Delay for Movement [s/veh]	7.43	0.00	0.00	7.31	0.00	0.00	0.00	0.00	0.00	12.44	13.07	11.59
Movement LOS	A	A	A	A	A	A				B	B	B
95th-Percentile Queue Length [veh]	0.13	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	2.07	2.07	2.07
95th-Percentile Queue Length [ft]	3.32	3.32	3.32	0.00	0.00	0.00	0.00	0.00	0.00	51.77	51.77	51.77
d_A, Approach Delay [s/veh]	0.35			0.00			0.00			12.33		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.19											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 1: 1 Opening year (2019) Without Project | Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	7	5	6	256	0	5	10	8	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	43	5	0	43	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	5	49	261	0	48	10	8	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	1	13	69	0	13	3	2	0	0	0
Total Analysis Volume [veh/h]	0	13	5	52	275	0	51	11	8	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.09	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.77	0.00	0.00	7.31	0.00	0.00	12.42	12.78	10.58	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	B	B	B			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.76	0.76	0.76	0.42	0.42	0.42	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	19.00	19.00	19.00	10.52	10.52	10.52	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			1.16			12.26			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	2.98											
Intersection LOS	B											

Opening Year (2019) With Project

Jeremy's Travel Plaza

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Scenario 2 Opening Year (2019) With Project

3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.007	10.0	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.119	10.6	B
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.020	11.5	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.011	11.5	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop		Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition		Level Of Service:	A
Analysis Period:	15 minutes		Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	1	0	0	0	0	1	0	0	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	91	0	0	0	0	5	4	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	1	91	0	0	0	1	5	4	91	6	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	24	0	0	0	0	1	1	24	2	0
Total Analysis Volume [veh/h]	15	1	96	0	0	0	1	5	4	96	6	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.39	0.00	0.00	9.05	9.79	8.35	9.55	9.99	9.04
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.22	0.22	0.22	0.00	0.00	0.00	0.03	0.03	0.03	0.39	0.39	0.39
95th-Percentile Queue Length [ft]	5.50	5.50	5.50	0.00	0.00	0.00	0.86	0.86	0.86	9.69	9.69	9.69
d_A, Approach Delay [s/veh]	0.97			2.46			9.14			9.58		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.25											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.119

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	11	0	0	10	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	82	4	90	83	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	82	4	100	83	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	22	1	26	22	1
Total Analysis Volume [veh/h]	107	86	4	105	87	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane	No		No		No	
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No		No		No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.59	0.00	10.64	9.68
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.25	0.25	0.42	0.42
95th-Percentile Queue Length [ft]	0.00	0.00	6.36	6.36	10.55	10.55
d_A, Approach Delay [s/veh]	0.00		0.28		10.59	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.53					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	3	7	0	0	3	7	0	0	0	9	11	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	91	0	0	91	82	0	0	0	0	0	82
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	98	0	0	94	89	0	0	0	9	11	86
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	0	0	25	23	0	0	0	2	3	23
Total Analysis Volume [veh/h]	3	103	0	0	99	94	0	0	0	9	12	91
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.10
d_M, Delay for Movement [s/veh]	7.59	0.00	0.00	7.40	0.00	0.00	0.00	0.00	0.00	10.73	11.47	9.36
Movement LOS	A	A	A	A	A	A				B	B	A
95th-Percentile Queue Length [veh]	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.44	0.44
95th-Percentile Queue Length [ft]	6.17	6.17	6.17	0.00	0.00	0.00	0.00	0.00	0.00	10.91	10.91	10.91
d_A, Approach Delay [s/veh]	0.21			0.00			0.00			9.69		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.70											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	6	4	1	22	0	4	7	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	82	9	0	82	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	15	4	83	31	0	86	7	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	1	22	8	0	23	2	0	0	0	0
Total Analysis Volume [veh/h]	0	16	4	87	33	0	91	7	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.13	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.26	0.00	0.00	7.36	0.00	0.00	10.95	11.48	9.28	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	B	B	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.24	0.24	0.24	0.49	0.49	0.49	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	6.04	6.04	6.04	12.16	12.16	12.16	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			5.34			10.99			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	7.22											
Intersection LOS	B											

Jeremy's Travel Plaza

Vistro File: J:\...\OY Sun.vistro   Scenario 2 Opening Year (2019) With Project
Report File: J:\...\Sun OYP.pdf   3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.006	10.0	B
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.171	11.4	B
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.030	17.9	C
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.026	16.4	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Jeremy's Travel Plaza

Scenario 2: 2 Opening Year (2019) With Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✝			✝			✝			✝		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	2	0	0	1	1	0	0	4	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	91	0	0	0	0	5	6	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	2	91	0	1	1	0	5	10	90	5	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	24	0	0	0	0	1	3	24	1	0
Total Analysis Volume [veh/h]	17	2	96	0	1	1	0	5	11	95	5	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.23	0.00	0.00	7.39	0.00	0.00	9.11	9.85	8.37	9.66	10.04	9.05
Movement LOS	A	A	A	A	A	A	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.23	0.23	0.23	0.00	0.00	0.00	0.05	0.05	0.05	0.39	0.39	0.39
95th-Percentile Queue Length [ft]	5.67	5.67	5.67	0.00	0.00	0.00	1.28	1.28	1.28	9.70	9.70	9.70
d_A, Approach Delay [s/veh]	1.07			0.00			8.83			9.68		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.29											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 2: 2 Opening Year (2019) With Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.171

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⊢		⊣		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	23	0	0	20	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	112	6	90	111	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	112	6	110	111	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	29	2	29	29	2
Total Analysis Volume [veh/h]	120	118	6	116	117	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.17	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.70	0.00	11.36	10.26
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.30	0.30	0.64	0.64
95th-Percentile Queue Length [ft]	0.00	0.00	7.49	7.49	16.04	16.04
d_A, Approach Delay [s/veh]	0.00		0.38		11.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.98					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	3	9	0	0	9	11	0	0	0	258	16	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	107	0	0	107	94	0	0	0	0	0	96
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	116	0	0	116	105	0	0	0	258	16	110
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	31	0	0	31	28	0	0	0	68	4	29
Total Analysis Volume [veh/h]	3	122	0	0	122	111	0	0	0	272	17	116
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.03	0.12
d_M, Delay for Movement [s/veh]	7.68	0.00	0.00	7.44	0.00	0.00	0.00	0.00	0.00	17.14	17.94	15.45
Movement LOS	A	A	A	A	A	A				C	C	C
95th-Percentile Queue Length [veh]	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	3.67	3.67	3.67
95th-Percentile Queue Length [ft]	7.66	7.66	7.66	0.00	0.00	0.00	0.00	0.00	0.00	91.64	91.64	91.64
d_A, Approach Delay [s/veh]	0.18			0.00			0.00			16.69		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	8.89											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	7	5	6	256	0	5	10	8	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	96	11	0	96	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	18	5	102	267	0	101	10	8	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	1	27	70	0	27	3	2	0	0	0
Total Analysis Volume [veh/h]	0	19	5	107	281	0	106	11	8	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.00	0.24	0.03	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.78	0.00	0.00	7.40	0.00	0.00	16.09	16.40	12.70	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	C	C	B			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.95	0.95	0.95	1.11	1.11	1.11	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	23.78	23.78	23.78	27.71	27.71	27.71	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			2.04			15.90			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	5.18											
Intersection LOS	C											

Year 2040 Without Project

Jeremy's Travel Plaza

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Scenario 1 Year 2040 Without Project

3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.007	9.9	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.000	9.8	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.022	10.7	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.017	10.5	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	1	0	0	0	0	1	0	0	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	0	0	5	0	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	1	91	0	0	0	1	5	0	91	6	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	24	0	0	0	0	1	0	24	2	0
Total Analysis Volume [veh/h]	11	1	96	0	0	0	1	5	0	96	6	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.21	0.00	0.00	7.39	0.00	0.00	8.99	9.71	8.33	9.45	9.91	9.01
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.21	0.21	0.21	0.00	0.00	0.00	0.02	0.02	0.02	0.38	0.38	0.38
95th-Percentile Queue Length [ft]	5.29	5.29	5.29	0.00	0.00	0.00	0.57	0.57	0.57	9.48	9.48	9.48
d_A, Approach Delay [s/veh]	0.73			2.46			9.59			9.48		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.11											
Intersection LOS	A											

Jeremy's Travel Plaza

Scenario 1: 1 Year 2040 Without Project   Friday Evening Peak Hour

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	22	0	0	30	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	0	0	90	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	0	0	120	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	0	0	32	0	0
Total Analysis Volume [veh/h]	119	0	0	126	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane	No		No		No	
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No		No		No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.43	0.00	9.81	8.84
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.33	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Jeremy's Travel Plaza

Scenario 1: 1 Year 2040 Without Project

Friday Evening Peak Hour

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.022

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛						✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	12	18	0	0	6	24	0	0	0	10	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	48	42	0	0	0	0	0	43
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	66	0	0	54	66	0	0	0	10	14	47
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	17	0	0	14	17	0	0	0	3	4	12
Total Analysis Volume [veh/h]	13	69	0	0	57	69	0	0	0	11	15	49
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.05
d_M, Delay for Movement [s/veh]	7.47	0.00	0.00	7.33	0.00	0.00	0.00	0.00	0.00	10.04	10.72	8.98
Movement LOS	A	A	A	A	A	A				B	B	A
95th-Percentile Queue Length [veh]	0.18	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.28
95th-Percentile Queue Length [ft]	4.42	4.42	4.42	0.00	0.00	0.00	0.00	0.00	0.00	6.99	6.99	6.99
d_A, Approach Delay [s/veh]	1.18			0.00			0.00			9.49		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.86											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 1: 1 Year 2040 Without Project

Friday Evening Peak Hour

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration		✛			✛			✛				
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	21	9	1	30	0	9	11	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	43	5	0	43	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	26	9	44	35	0	52	11	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	7	2	12	9	0	14	3	0	0	0	0
Total Analysis Volume [veh/h]	0	27	9	46	37	0	55	12	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.07	0.02	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.27	0.00	0.00	7.33	0.00	0.00	9.99	10.51	8.90	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	B	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.17	0.17	0.17	0.28	0.28	0.28	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	4.13	4.13	4.13	7.07	7.07	7.07	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			4.06			10.08			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	5.45											
Intersection LOS	B											

Jeremy's Travel Plaza

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Scenario 1 Year 2040 Without Project

3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.006	10.2	B
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.000	9.9	A
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.032	14.0	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.026	13.4	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Jeremy's Travel Plaza

Scenario 1: 1 Year 2040 Without Project   Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	2	0	0	30	1	0	0	4	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	0	0	5	0	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	91	0	30	1	0	5	4	90	5	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	24	0	8	0	0	1	1	24	1	0
Total Analysis Volume [veh/h]	11	2	96	0	32	1	0	5	4	95	5	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	7.39	0.00	0.00	9.19	9.93	8.48	9.73	10.15	9.07
Movement LOS	A	A	A	A	A	A	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.22	0.22	0.22	0.00	0.00	0.00	0.03	0.03	0.03	0.39	0.39	0.39
95th-Percentile Queue Length [ft]	5.51	5.51	5.51	0.00	0.00	0.00	0.80	0.80	0.80	9.86	9.86	9.86
d_A, Approach Delay [s/veh]	0.73			0.00			9.29			9.75		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.54											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop		Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition		Level Of Service:	A
Analysis Period:	15 minutes		Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	30	0	0	36	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	0	0	90	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	0	0	126	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	0	0	33	0	0
Total Analysis Volume [veh/h]	127	0	0	133	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.45	0.00	9.91	8.88
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.39	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	5	13	0	0	13	23	0	0	0	282	21	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	48	0	0	48	42	0	0	0	0	0	43
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	61	0	0	61	65	0	0	0	282	21	60
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	16	0	0	16	17	0	0	0	74	6	16
Total Analysis Volume [veh/h]	5	64	0	0	64	68	0	0	0	297	22	63
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.03	0.06
d_M, Delay for Movement [s/veh]	7.46	0.00	0.00	7.32	0.00	0.00	0.00	0.00	0.00	13.37	14.04	12.41
Movement LOS	A	A	A	A	A	A				B	B	B
95th-Percentile Queue Length [veh]	0.15	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	2.53	2.53	2.53
95th-Percentile Queue Length [ft]	3.70	3.70	3.70	0.00	0.00	0.00	0.00	0.00	0.00	63.22	63.22	63.22
d_A, Approach Delay [s/veh]	0.54			0.00			0.00			13.25		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.75											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 1: 1 Year 2040 Without Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	13.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	15	13	6	279	0	6	12	10	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	43	5	0	43	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	20	13	49	284	0	49	12	10	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	3	13	75	0	13	3	3	0	0	0
Total Analysis Volume [veh/h]	0	21	14	52	299	0	52	13	11	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.10	0.03	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.83	0.00	0.00	7.34	0.00	0.00	12.98	13.36	10.92	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	B	B	B			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.85	0.85	0.85	0.49	0.49	0.49	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	21.14	21.14	21.14	12.17	12.17	12.17	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			1.09			12.75			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	2.92											
Intersection LOS	B											

Year 2040 With Project

Jeremy's Travel Plaza

Vistro File: J:\...\LR Fri.vistro

Report File: J:\...\Fri LRP.pdf

Scenario 2 Year 2040 With Project

3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.007	10.0	A
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.125	10.9	B
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.026	12.0	B
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.020	11.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	1	0	0	0	0	1	0	0	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	91	0	0	0	0	5	4	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	1	91	0	0	0	1	5	4	91	6	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	24	0	0	0	0	1	1	24	2	0
Total Analysis Volume [veh/h]	15	1	96	0	0	0	1	5	4	96	6	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.39	0.00	0.00	9.05	9.79	8.35	9.55	9.99	9.04
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.22	0.22	0.22	0.00	0.00	0.00	0.03	0.03	0.03	0.39	0.39	0.39
95th-Percentile Queue Length [ft]	5.50	5.50	5.50	0.00	0.00	0.00	0.86	0.86	0.86	9.69	9.69	9.69
d_A, Approach Delay [s/veh]	0.97			2.46			9.14			9.58		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.25											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.125

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	22	0	0	30	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	82	4	90	83	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	82	4	120	83	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	22	1	32	22	1
Total Analysis Volume [veh/h]	119	86	4	126	87	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane	No		No		No	
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No		No		No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.62	0.00	10.92	9.81
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.31	0.31	0.44	0.44
95th-Percentile Queue Length [ft]	0.00	0.00	7.79	7.79	11.07	11.07
d_A, Approach Delay [s/veh]	0.00		0.23		10.87	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.39					
Intersection LOS	B					

Jeremy's Travel Plaza

Scenario 2: 2 Year 2040 With Project

Friday Evening Peak Hour

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛						✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	12	18	0	0	6	24	0	0	0	10	14	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	91	0	0	91	82	0	0	0	0	0	82
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	109	0	0	97	106	0	0	0	10	14	86
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	0	0	26	28	0	0	0	3	4	23
Total Analysis Volume [veh/h]	13	115	0	0	102	112	0	0	0	11	15	91
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.10
d_M, Delay for Movement [s/veh]	7.66	0.00	0.00	7.42	0.00	0.00	0.00	0.00	0.00	11.22	12.04	9.52
Movement LOS	A	A	A	A	A	A				B	B	A
95th-Percentile Queue Length [veh]	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.48	0.48
95th-Percentile Queue Length [ft]	7.73	7.73	7.73	0.00	0.00	0.00	0.00	0.00	0.00	12.12	12.12	12.12
d_A, Approach Delay [s/veh]	0.78			0.00			0.00			10.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.77											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 2: 2 Year 2040 With Project

Friday Evening Peak Hour

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.020

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	21	9	1	30	0	9	11	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	0	82	9	0	82	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	30	9	83	39	0	91	11	0	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	8	2	22	10	0	24	3	0	0	0	0
Total Analysis Volume [veh/h]	0	32	9	87	41	0	96	12	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.06	0.00	0.00	0.14	0.02	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	7.41	0.00	0.00	11.36	11.89	9.51	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	B	B	A			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.26	0.26	0.26	0.57	0.57	0.57	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	6.60	6.60	6.60	14.34	14.34	14.34	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			5.04			11.42			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	6.78											
Intersection LOS	B											

Jeremy's Travel Plaza

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Report File: J:\...\Sun LRP.pdf

Scenario 2 Year 2040 With Project
3/29/2017

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Harvard Road (NS) at Hacienda Road (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.007	10.3	B
2	Harvard Road (NS) at Project Access (EW)	Two-way stop	HCM 6th Edition	WB Left	0.176	11.6	B
3	Harvard Road (NS) at I-15 Freeway SB Ramps (EW)	Two-way stop	HCM 6th Edition	WB Thru	0.040	20.3	C
4	Harvard Road (NS) at I-15 Freeway NB Ramps (EW)	Two-way stop	HCM 6th Edition	EB Thru	0.032	17.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Harvard Road (NS) at Hacienda Road (EW)

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	✛			✛			✛			✛		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			Hacienda Road (EW)			Hacienda Road (EW)		
Base Volume Input [veh/h]	10	2	0	0	30	1	0	0	4	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	91	0	0	0	0	5	6	90	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	2	91	0	30	1	0	5	10	90	5	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	24	0	8	0	0	1	3	24	1	0
Total Analysis Volume [veh/h]	17	2	96	0	32	1	0	5	11	95	5	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.11	0.01	0.00
d_M, Delay for Movement [s/veh]	7.29	0.00	0.00	7.39	0.00	0.00	9.31	10.05	8.51	9.91	10.28	9.11
Movement LOS	A	A	A	A	A	A	A	B	A	A	B	A
95th-Percentile Queue Length [veh]	0.23	0.23	0.23	0.00	0.00	0.00	0.05	0.05	0.05	0.41	0.41	0.41
95th-Percentile Queue Length [ft]	5.83	5.83	5.83	0.00	0.00	0.00	1.33	1.33	1.33	10.23	10.23	10.23
d_A, Approach Delay [s/veh]	1.08			0.00			8.99			9.93		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.78											
Intersection LOS	B											

Jeremy's Travel Plaza

Scenario 2: 2 Year 2040 With Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 2: Harvard Road (NS) at Project Access (EW)

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.176

Intersection Setup

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	⊢		⊣		⊤	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Harvard Road (NS)		Harvard Road (NS)		Project Access (EW)	
Base Volume Input [veh/h]	30	0	0	36	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	112	6	90	111	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	112	6	126	111	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	29	2	33	29	2
Total Analysis Volume [veh/h]	127	118	6	133	117	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free		Free		Stop	
Flared Lane	No		No		No	
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No		No		No	
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.18	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.71	0.00	11.61	10.38
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.35	0.35	0.67	0.67
95th-Percentile Queue Length [ft]	0.00	0.00	8.71	8.71	16.64	16.64
d_A, Approach Delay [s/veh]	0.00		0.33		11.55	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.89					
Intersection LOS	B					

Jeremy's Travel Plaza

Scenario 2: 2 Year 2040 With Project

Sunday Mid-Day Peak Hour

Intersection Level Of Service Report
Intersection 3: Harvard Road (NS) at I-15 Freeway SB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.040

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	5	13	0	0	13	23	0	0	0	282	21	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	107	0	0	107	94	0	0	0	0	0	96
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	120	0	0	120	117	0	0	0	282	21	113
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	32	0	0	32	31	0	0	0	74	6	30
Total Analysis Volume [veh/h]	5	126	0	0	126	123	0	0	0	297	22	119
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.04	0.13
d_M, Delay for Movement [s/veh]	7.72	0.00	0.00	7.44	0.00	0.00	0.00	0.00	0.00	19.49	20.34	17.66
Movement LOS	A	A	A	A	A	A				C	C	C
95th-Percentile Queue Length [veh]	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	4.61	4.61	4.61
95th-Percentile Queue Length [ft]	8.19	8.19	8.19	0.00	0.00	0.00	0.00	0.00	0.00	115.26	115.26	115.26
d_A, Approach Delay [s/veh]	0.29			0.00			0.00			19.03		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	10.24											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 4: Harvard Road (NS) at I-15 Freeway NB Ramps (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.032

Intersection Setup

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvard Road (NS)			Harvard Road (NS)			I-15			I-15		
Base Volume Input [veh/h]	0	15	13	6	279	0	6	12	10	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	96	11	0	96	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	26	13	102	290	0	102	12	10	0	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	7	3	27	76	0	27	3	3	0	0	0
Total Analysis Volume [veh/h]	0	27	14	107	305	0	107	13	11	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane	No	No	No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No	No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

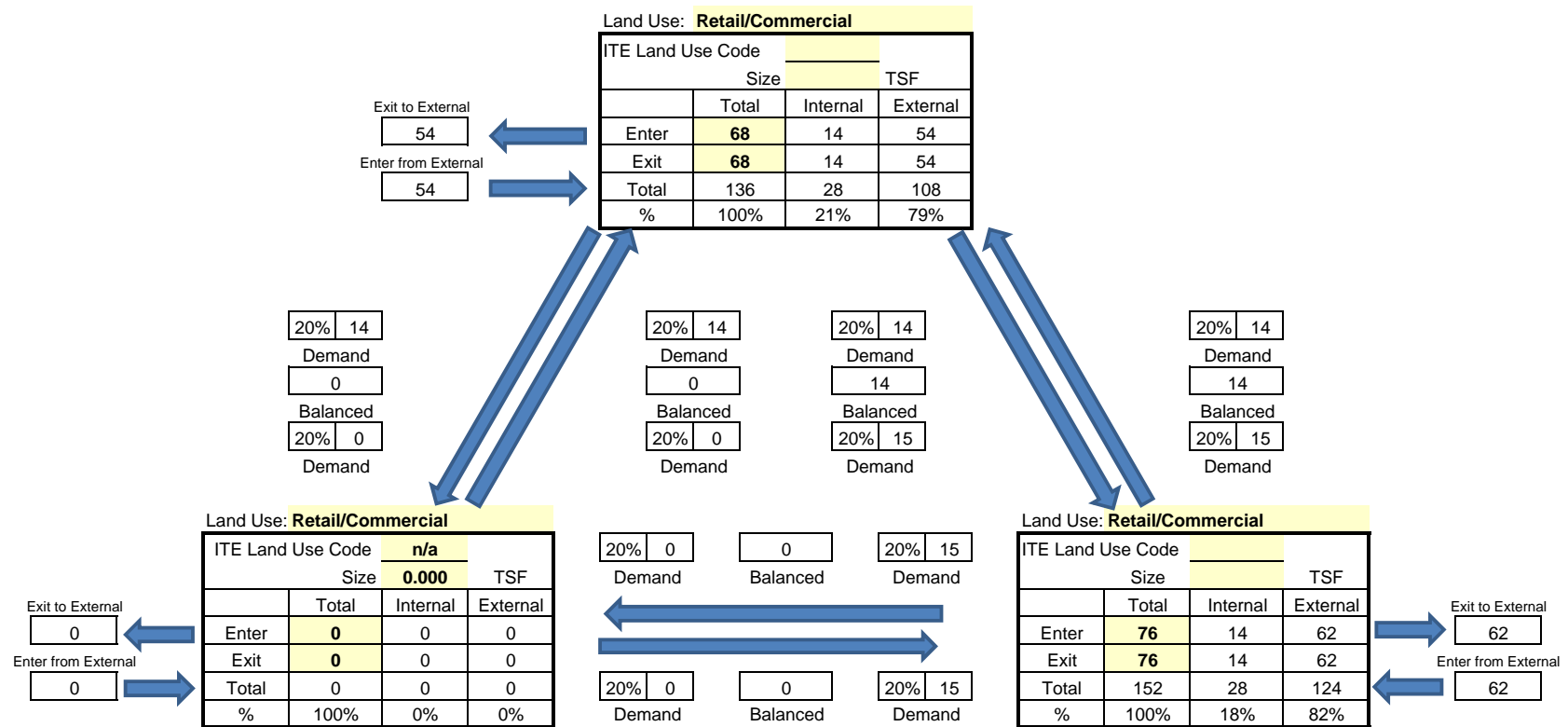|												
V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.00	0.26	0.03	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.84	0.00	0.00	7.44	0.00	0.00	17.16	17.48	13.43	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A	C	C	B			
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	1.05	1.05	1.05	1.26	1.26	1.26	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	26.24	26.24	26.24	31.47	31.47	31.47	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			1.93			16.88			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	5.15											
Intersection LOS	C											

APPENDIX G

INTERNAL CAPTURE CALCULATION WORKSHEETS

Multi-Use Trip Generation Calculation (Internal Capture)

Analyst: AA
Date: 2/24/2017

Project: Jeremy's Travel Plaza
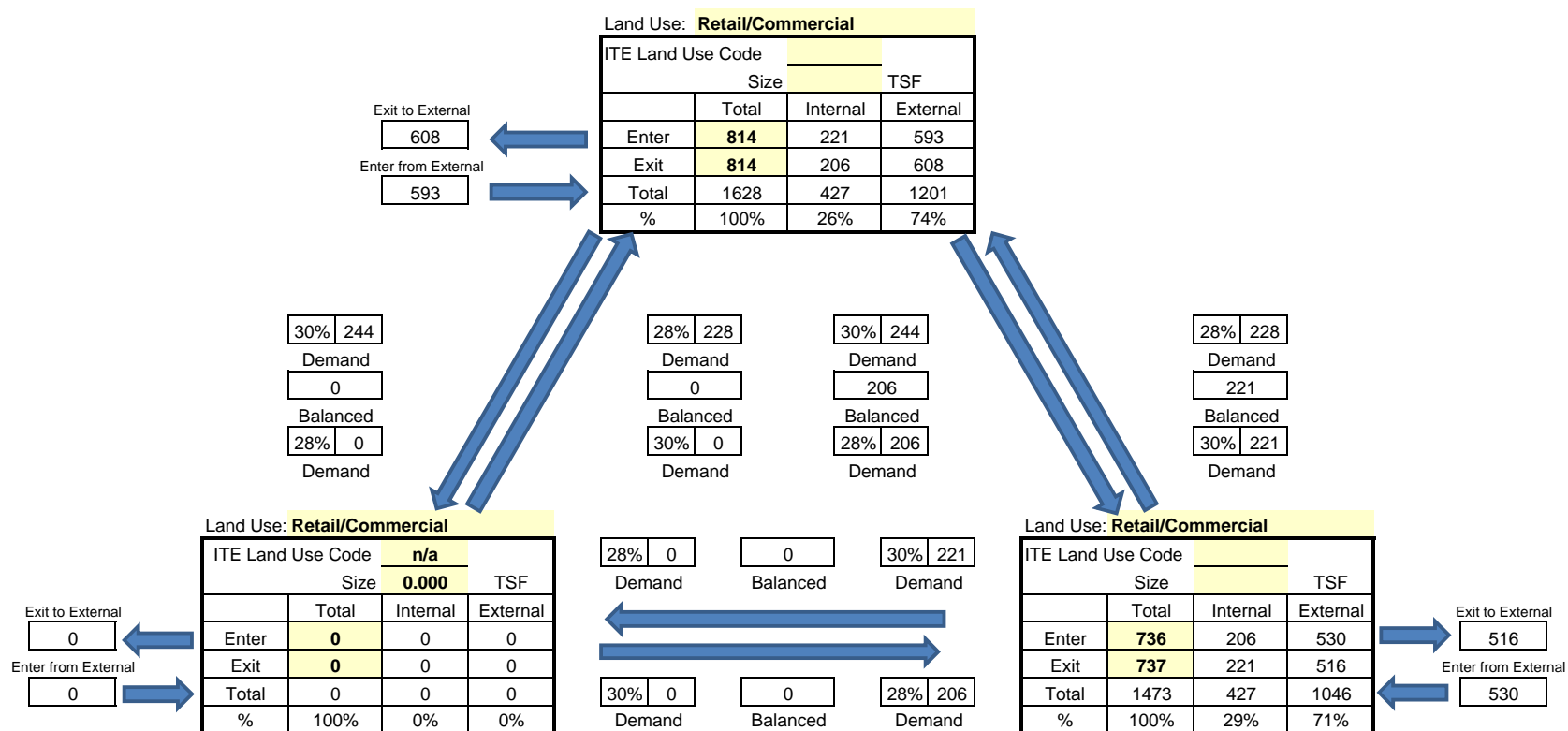Time Period: PM Peak Hour

Land Use: Retail/Commercial

ITE Land Use Code

	Size		TSF
	Total	Internal	External
Enter	**68**	14	54
Exit	**68**	14	54
Total	136	28	108
%	100%	21%	79%

Exit to External: 54
Enter from External: 54

20%	14		20%	14		20%	14		20%	14
Demand			Demand			Demand			Demand	
0			0			14			14	
Balanced			Balanced			Balanced			Balanced	
20%	0		20%	0		20%	15		20%	15
Demand			Demand			Demand			Demand	

Land Use: Retail/Commercial

ITE Land Use Code	**n/a**	
	Size **0.000**	TSF
	Total	Internal	External
Enter	**0**	0	0
Exit	**0**	0	0
Total	0	0	0
%	100%	0%	0%

Exit to External: 0
Enter from External: 0

20%	0		0		20%	15
Demand		Balanced		Demand	
20%	0		0		20%	15
Demand		Balanced		Demand	

Land Use: Retail/Commercial

ITE Land Use Code

	Size		TSF
	Total	Internal	External
Enter	**76**	14	62
Exit	**76**	14	62
Total	152	28	124
%	100%	18%	82%

Exit to External: 62
Enter from External: 62

Net External Trips for Multi-Use Development				
	Land Use:	Land Use:	Land Use:	Total
Enter	54	0	62	116
Exit	54	0	62	116
Total	108	0	124	232
Single-Use Trip Generation Est.	136	0	152	288

Internal Capture: **19%**

Multi-Use Trip Generation Calculation (Internal Capture)

Analyst: AA
Date: 2/24/2017

Project: Jeremy's Travel Plaza
Time Period: Daily

Land Use: Retail/Commercial

ITE Land Use Code			
Size			TSF
	Total	Internal	External
Enter	**814**	221	593
Exit	**814**	206	608
Total	1628	427	1201
%	100%	26%	74%

Exit to External: 608
Enter from External: 593

30%	244

Demand: 0
Balanced
28% | 0
Demand

28%	228

Demand: 0
Balanced
30% | 0
Demand

30%	244

Demand: 206
Balanced
28% | 206
Demand

28%	228

Demand: 221
Balanced
30% | 221
Demand

Land Use: Retail/Commercial

ITE Land Use Code	**n/a**		
Size	**0.000**		TSF
	Total	Internal	External
Enter	**0**	0	0
Exit	**0**	0	0
Total	0	0	0
%	100%	0%	0%

Exit to External: 0
Enter from External: 0

28%	0

Demand

0
Balanced

30%	221

Demand

30%	0

Demand

0
Balanced

28%	206

Demand

Land Use: Retail/Commercial

ITE Land Use Code			
Size			TSF
	Total	Internal	External
Enter	**736**	206	530
Exit	**737**	221	516
Total	1473	427	1046
%	100%	29%	71%

Exit to External: 516
Enter from External: 530

Net External Trips for Multi-Use Development					
	Land Use:	Land Use:	Land Use:	Total	
Enter	593	0	530	1123	
Exit	608	0	516	1124	
Total	1201	0	1046	2247	Internal Capture
Single-Use Trip Generation Est.	1628	0	1473	3101	**28%**

9

APPENDIX H

TRAFFIC SIGNAL WARRANT WORKSHEETS

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Year 2040 With Project Friday Evening

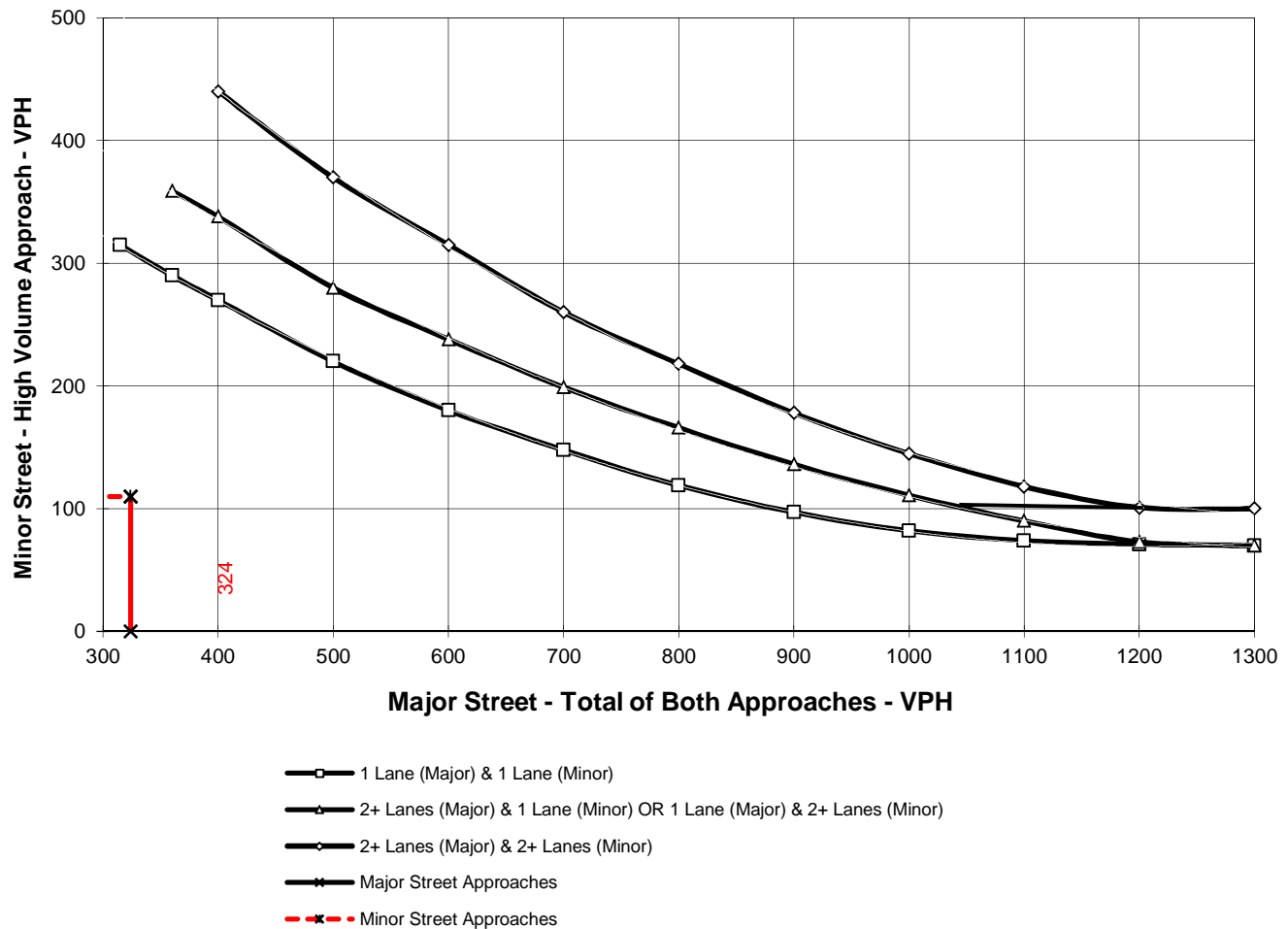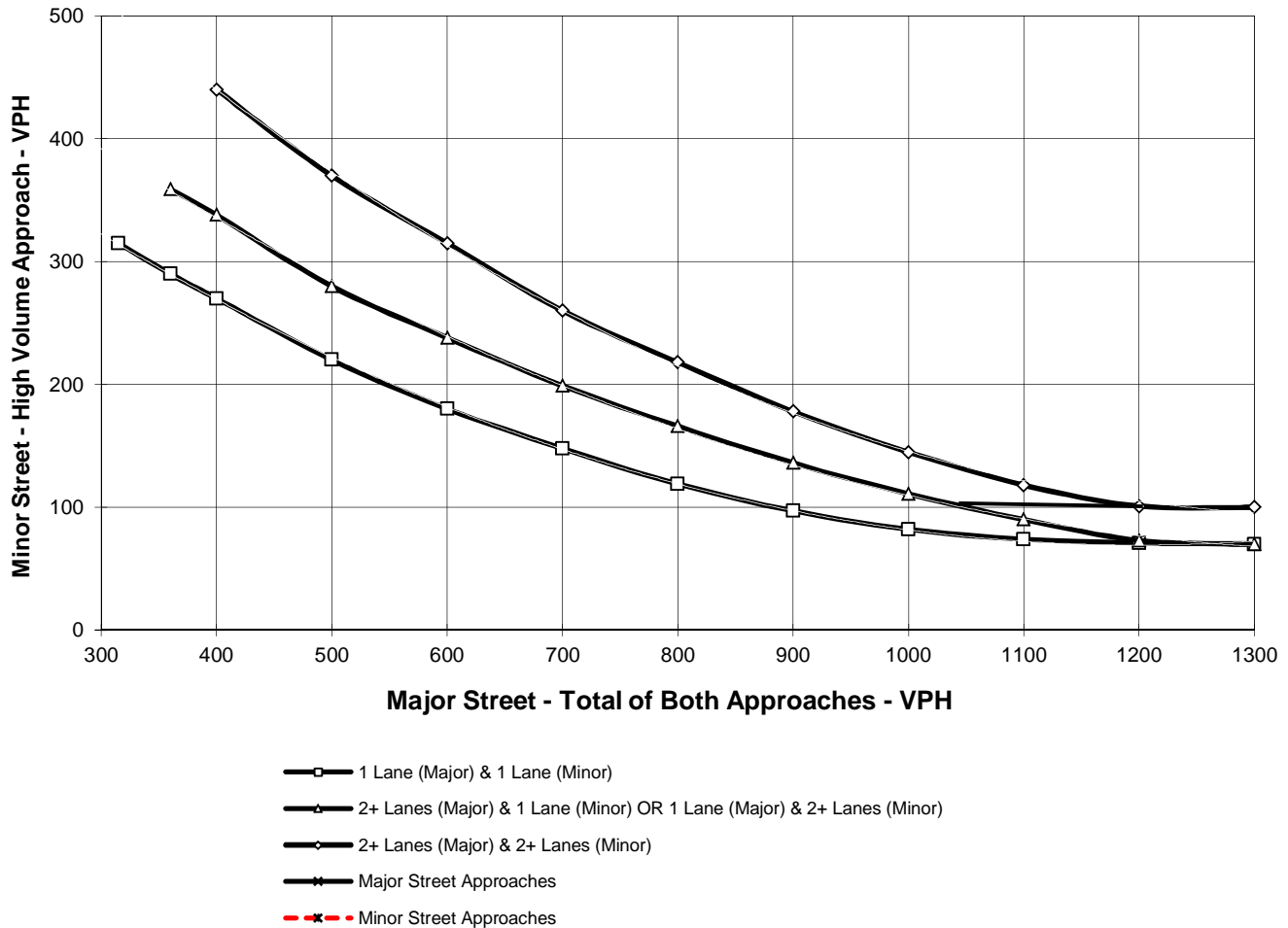Major Street Name = **Harvard Road**   Total of Both Approaches (VPH) = **324**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **I-15 Freeway SB Ramps**   High Volume Approach (VPH) = **110**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED

Legend:
- 1 Lane (Major) & 1 Lane (Minor)
- 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- 2+ Lanes (Major) & 2+ Lanes (Minor)
- Major Street Approaches
- Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET
APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER
THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Year 2040 With Project Friday Evening

Major Street Name = **Harvard Road**   Total of Both Approaches (VPH) = **161**
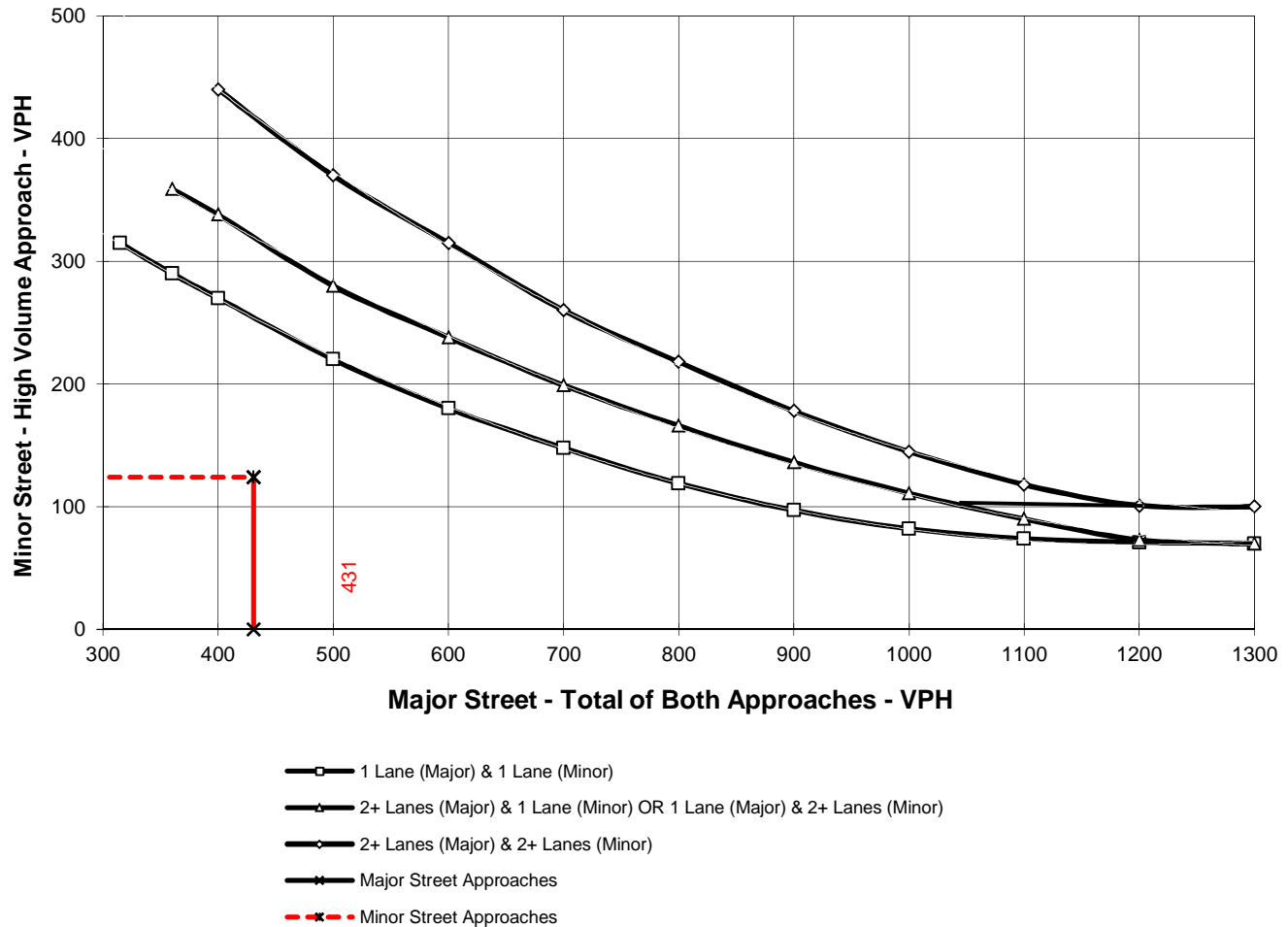
Number of Approach Lanes Major Street = **1**

Minor Street Name = **I-15 Freeway NB Ramps**   High Volume Approach (VPH) = **102**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED

Minor Street - High Volume Approach - VPH

Major Street - Total of Both Approaches - VPH

- 1 Lane (Major) & 1 Lane (Minor)
- 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- 2+ Lanes (Major) & 2+ Lanes (Minor)
- Major Street Approaches
- Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET
APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER
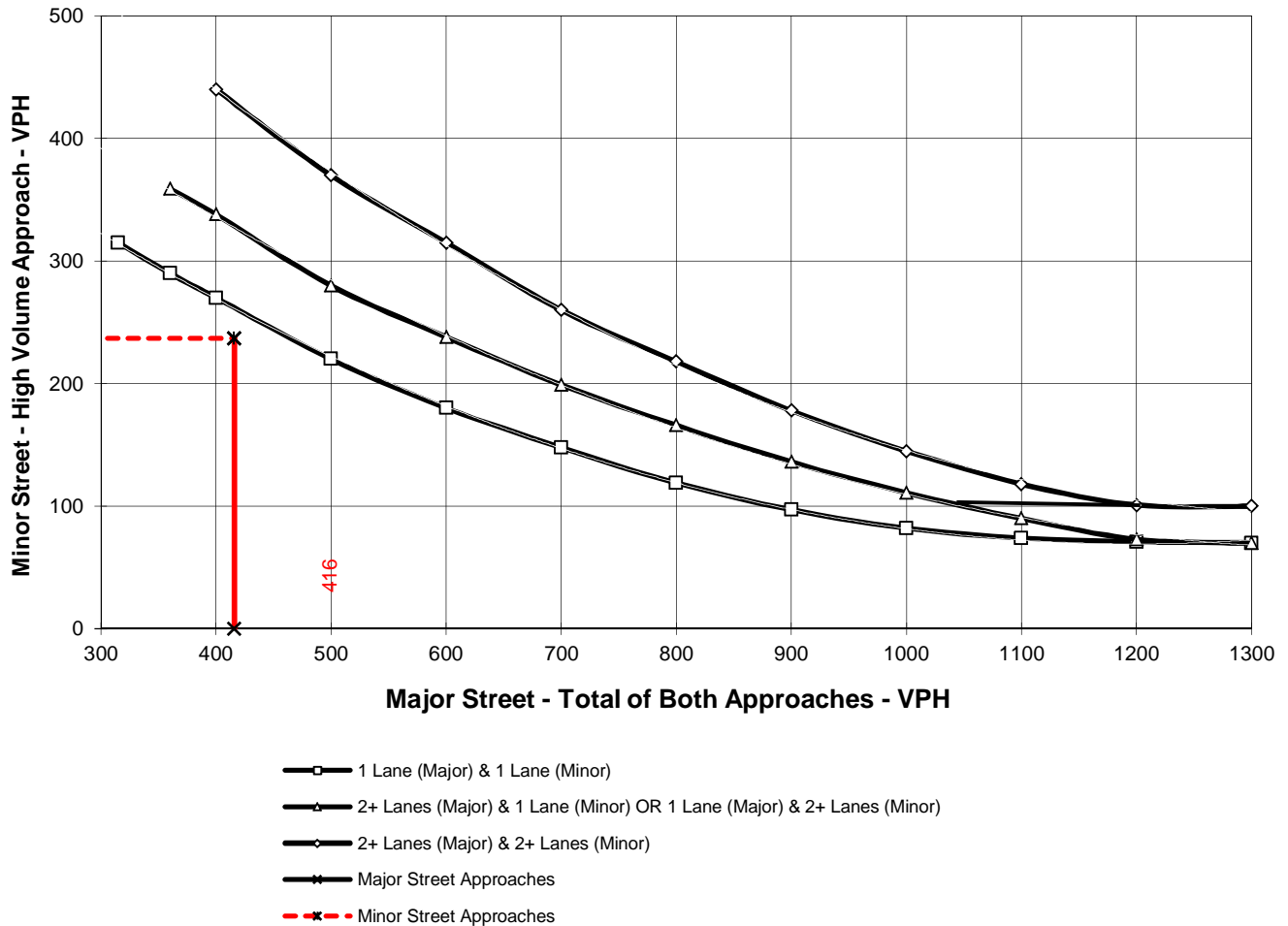THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Year 2040 With Project Sunday Mid-Day

Major Street Name = **Harvard Road**   Total of Both Approaches (VPH) = **431**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **I-15 Freeway SB Ramps**   High Volume Approach (VPH) = **124**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED

Major Street - Total of Both Approaches - VPH

Legend:
- ☐ 1 Lane (Major) & 1 Lane (Minor)
- △ 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇ 2+ Lanes (Major) & 2+ Lanes (Minor)
- ✕ Major Street Approaches
- ✕ Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET
APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER
THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Year 2040 With Project Sunday Mid-Day

Major Street Name = **I-15 Freeway NB Ramps**   Total of Both Approaches (VPH) = **416**

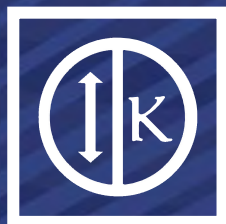Number of Approach Lanes Major Street = **1**

Minor Street Name = **Harvard Road**   High Volume Approach (VPH) = **237**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED

Major Street - Total of Both Approaches - VPH

Legend:
- —□— 1 Lane (Major) & 1 Lane (Minor)
- —△— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- —◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- —✕— Major Street Approaches
- – –✕– – Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET
APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER
THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Kunzman Associates, Inc.

OVER 40 YEARS OF EXCELLENT SERVICE