



HARBOR FREIGHT DEVELOPMENT CULVER CITY, CA

Traffic Impact Analysis – Final Report

August 2015

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Harbor Freight Development

FINAL REPORT TRAFFIC IMPACT ANALYSIS

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EXECUTIVE SUMMARY

This report documents a Traffic Impact Analysis (TIA) conducted by Kimley-Horn for the proposed Harbor Freight Development (Project). The proposed project is located on the south side of Sepulveda Boulevard (East-West), between Franklin Avenue and Greenlawn Avenue in the City of Culver City, California. The total project site area is approximately 2.67 acres and is expected to be constructed and operational in 2017. The key findings and conclusions, as per the provided site plan, that were used in the analysis are as follows:

- The proposed project will include 17,225 square feet of retail use and 11,610 square feet of specialty retail use.
- As per the site plan, the project will provide a total of 145 parking spaces for the development, which exceeds the required 83 parking spaces per the City's municipal code.
- The project will utilize the two (2) existing driveways along Sepulveda Boulevard. The driveway to the west will provide vehicular ingress to and egress from the site, while the driveway to the east will be restricted to egress only. A review of proposed driveways indicates that the driveway configurations are adequate for the project traffic circulation.
- The traffic impact analysis includes an analysis of five (5) intersections and three (3) roadway segments within the City of Culver City. These intersections and roadway segments were selected for analysis based on discussion with City staff.
- Pass-by trip credits were applied based on project land use:
 - 15% based on City of Culver City Guidelines
- A 10% seasonal factor was used to account for traffic counts taken during the summer season.
- The project is estimated to generate approximately 1,190 new daily trips, 29 new trips during the AM peak hour, and 96 new trips during the PM peak hour.
- Weekday peak hour intersection operations analysis was conducted for (4) scenarios including Existing (2015), Existing With Project (2015), Cumulative (2017), and Cumulative With Project (2017).
- For the Existing (2015) base conditions, four (4) out of five (5) study intersections operate at LOS B or better during the AM and PM peak periods with the exception of Culver Boulevard at Sepulveda Boulevard, which operates at LOS E during the AM and PM peak periods.
- For the Existing (2015) With Project conditions, four (4) intersections out of five (5) study intersections are projected to operate at LOS B or better during the AM and PM peak periods with the exception of Culver Boulevard at Sepulveda Boulevard, which would operate at LOS E during the AM and PM peak periods.
- For the Cumulative (2017) base conditions, four (4) intersections out of five (5) study intersections are projected to operate at LOS C or better during the AM and PM peak periods with the exception of Culver Boulevard at Sepulveda Boulevard, which would operate at LOS E during the AM peak period and LOS F during the PM peak period.
- For the Cumulative (2017) With Project conditions, four (4) out of five (5) study intersections are projected to operate at LOS C or better during the AM and PM peak periods with the exception of Culver Boulevard at Sepulveda Boulevard, which would operate at LOS E during the AM peak period and LOS F during the PM peak period.

- The proposed project is not projected to have a significant impact at the study intersections during the AM and PM peak periods based on Culver City traffic impact criteria. Therefore, mitigation measures would not be required for the proposed project.
- Based on the roadway segment analysis per Culver City significant impact criteria, the project is not expected to result in significant impacts to the roadway segments.
- A CMP arterial evaluation was conducted as per Culver City Traffic Study Guidelines. The project is expected to add fewer than 50 peak hour trips to the arterial monitoring station on Sepulveda Boulevard and therefore no additional CMP arterial analysis is required.
- A freeway impact screening analysis was conducted as per Culver City Traffic Study Guidelines. The project is expected to add fewer than 150 peak hour trips to the freeway monitoring station on I-405 and therefore no additional CMP and Freeway screening analysis is required.

I. INTRODUCTION

PROJECT DESCRIPTION

This report documents a Traffic Impact Analysis (TIA) conducted for the proposed Harbor Freight Development project for ADA Architects, Inc. The proposed project is located on the south side of Sepulveda Boulevard (East-West), between Franklin Avenue and Greenlawn Avenue in the City of Culver City, California and is expected to be constructed and operational in 2017. **Figure 1** illustrates the study area and project location.

The total project site area is roughly 2.67 acres, with 28,835 square feet dedicated to the building development. As per the site plan, the proposed project includes 17,225 square feet of retail use and 11,610 square feet of specialty retail use.

The proposed project would require a minimum of 83 parking spaces per the City's municipal code. There are a total of 143 parking spaces proposed for the development, which exceeds the required 83 parking spaces per the City's municipal code.

For site access, the project will provide two (2) driveways along Sepulveda Boulevard. The driveway to the west will act as the main access driveway and allow vehicular ingress to and egress from the site, while the driveway to the east will be restricted to egress only. The project site plan and driveway locations are provided in **Figure 2**.

STUDY METHODOLOGY

A Traffic Impact Analysis was conducted to analyze the traffic conditions in the project area under the following four scenarios:

1. Existing (2015) Conditions
2. Existing with Project (2015) Conditions
3. Cumulative (2017) Conditions
4. Cumulative with Project (2017) Conditions

The project study area, future analysis, study intersections, and roadway segments were defined in consultation with City of Culver City (City) staff. A Memorandum of Understanding (MOU) which outlined all the study assumptions, growth rate, project trip generation and distribution, was submitted and approved by City staff and is attached in **Appendix A**.

Traffic count data for the study area intersections and roadways was collected during the month of July 2015. Since the schools in study area were not in session during the data collection, a blanket 10% growth factor was applied to existing traffic volumes to arrive at Existing (2015) conditions traffic volumes for use in the analysis. A growth rate of 1%, as approved by City staff in the MOU, was applied to the Existing (2015) Conditions to estimate cumulative (2017) conditions traffic volumes.

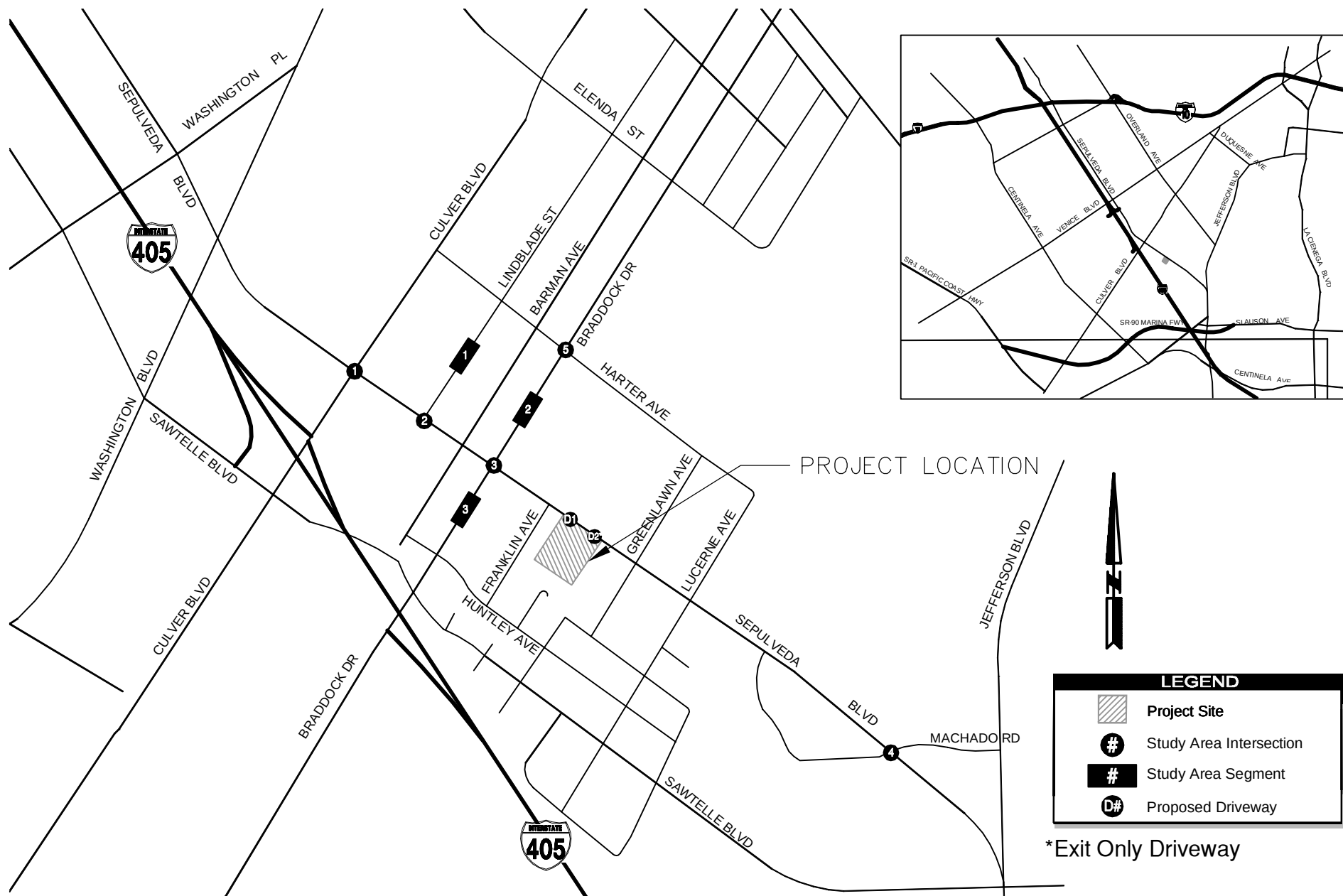


FIGURE 1 - PROJECT LOCATION & VICINITY MAP

II. EXISTING CONDITIONS

STUDY AREA

The project site is located on the south side of Sepulveda Boulevard (East-West) in the City of Culver City between Franklin Avenue and Greenlawn Avenue. The study area is bounded by Venice Boulevard to the north, Centinela Avenue to the west, Duquesne Avenue to the east, and Marina Freeway (SR-90) to the south.

The five (5) intersections and three (3) street segments identified in conjunction with City staff for the purpose of this Traffic Impact Analysis are listed in **Table 1**.

Table 1. Study Area Intersections and Segments

Intersection #	Northbound/ Southbound	Eastbound/ Westbound	Signalized	Signal System
1	Culver Boulevard	Sepulveda Boulevard	Yes	ATSAC
2	Lindblade Street	Sepulveda Boulevard	Yes	ATSAC
3	Braddock Drive	Sepulveda Boulevard	Yes	ATSAC
4	Machado Road	Sepulveda Boulevard	Yes	ATSAC
5	Braddock Drive	Harter Avenue	No	All-Way Stop
Segment #	Street Name	From	To	Distance (mi)
1	Lindblade Street	Sepulveda Boulevard	Harter Avenue	0.18
2	Braddock Drive	Sepulveda Boulevard	Harter Avenue	0.18
3	Braddock Drive	Sepulveda Boulevard	Huntley Avenue	0.13

Figure 3 on the following page illustrates the existing lane configuration and traffic control for each study intersection as well as the extents for the roadway segments.

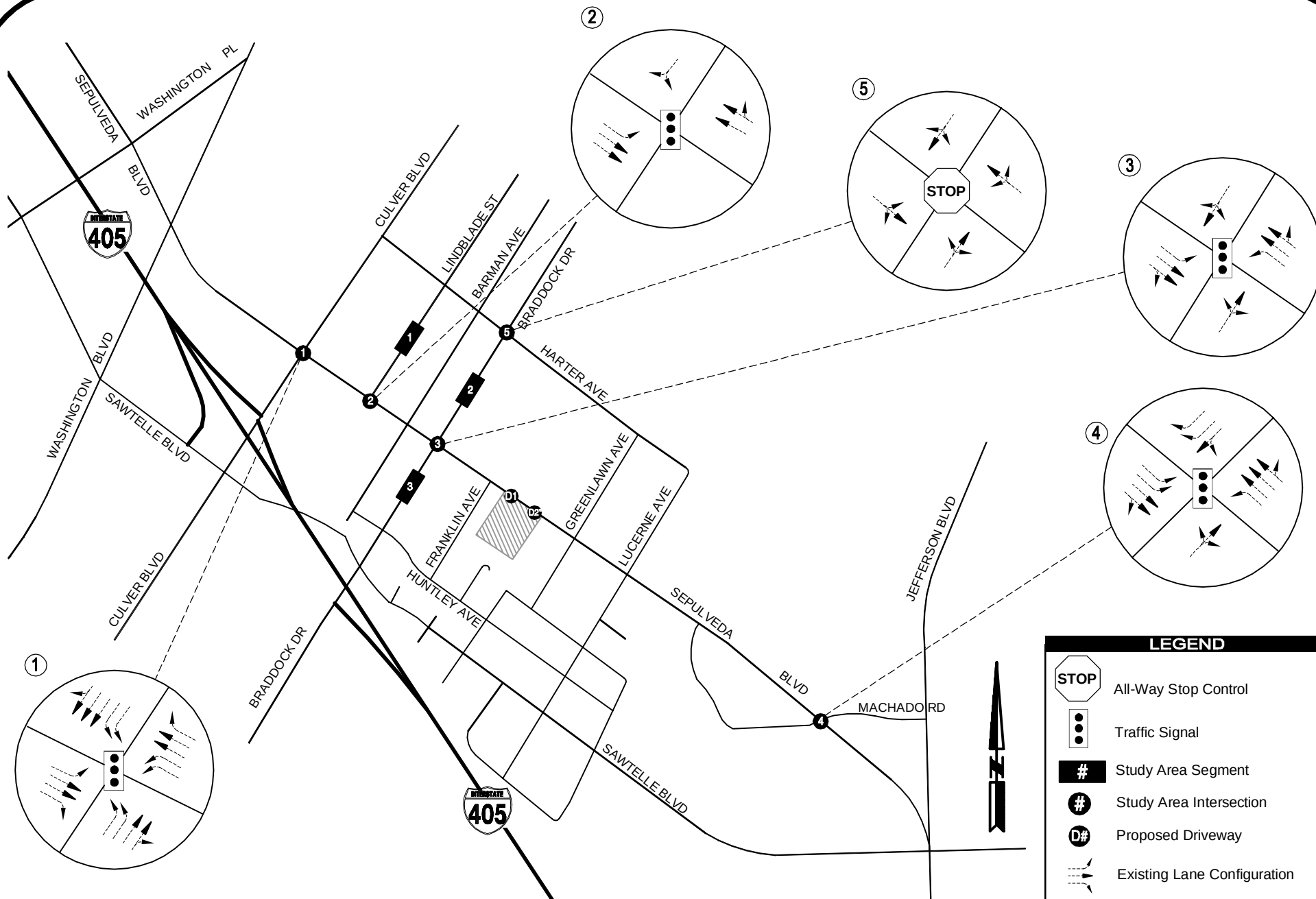


FIGURE 3 - PROJECT INTERSECTION
LANE CONFIGURATION AND TRAFFIC CONTROL

EXISTING STREET SYSTEM

The project site is located on the south side of Sepulveda Boulevard (East-West) between Franklin Avenue and Greenlawn Avenue. The project area is bounded by Venice Boulevard to the north, Centinela Avenue to the west, Duquesne Avenue to the east, and Marina Freeway (SR-90) to the south. The key roadways in the vicinity of the site are noted below:

Sepulveda Boulevard – Sepulveda Boulevard is classified as a primary arterial in the City of Culver City with a posted speed limit of 40 mph within the project area. Sepulveda runs in the north-south direction from San Fernando to Torrance. For this study, Sepulveda is presented in the east-west direction and provides two travel lanes in each direction, a left-turn median, and on-street parking on both sides of the street. Sepulveda Boulevard runs parallel with I-405 and is used as an alternative northbound/southbound local route.

Culver Boulevard - Culver Boulevard is classified as a primary arterial in the City of Culver City with a posted speed limit of 40 mph within the project area. Culver Boulevard runs in the east-west direction from Playa del Rey to Venice Boulevard. For this study, Culver Blvd. is presented in the north-south direction. It provides two travel lanes in each direction and on-street parking is allowed on the south side of the street within the project area. Culver Boulevard provides access to northbound I-405 (San Diego Freeway).

Lindblade Street – Lindblade Street is classified as a local residential street with a posted speed limit of 25 mph within the project area. Lindblade Street runs in the east-west direction and provides one travel lane in each direction. For this study, Lindblade Street is presented in the north-south direction and extends from Sepulveda Boulevard to Coombs Avenue in the project vicinity.

Braddock Drive – Braddock Drive is classified as neighborhood feeder by City of Culver City with a posted speed limit of 25 mph within the project area. Braddock Drive runs in the east-west direction with one travel lane in each direction and on-street parking on both sides of the street. For this study, Braddock Drive is presented in the north-south direction.

San Diego (I-405) Freeway- Interstate 405 (I-405) provides access to the regional interstate system and runs in the north-south direction from I-5 Freeway in the City of Irvine, at the southern end, to the northern terminus at I-5 Freeway in Sylmar. The freeway provides five lanes in the northbound direction and six lanes in the southbound direction, including an HOV lane in both directions north of the SR-90. Freeway interchanges are located at Culver Boulevard and Venice Boulevard/Washington Boulevard in the vicinity of the study area.

EXISTING TRAFFIC VOLUMES

The sections below include the peak hour traffic volumes, methodology utilized for this analysis, and existing operating conditions.

Weekday traffic counts were conducted during the morning peak hours (7:00 to 9:00 AM) and evening peak hours (4:00 to 6:00 PM) for 5 intersections and 3 roadway segments on July 30, 2015. At the time of data collection, the schools were not in session. As per discussions with Culver City staff, a 10% adjustment factor was applied to existing volumes to accommodate an increase in traffic volumes in August when schools in the project vicinity will be back in session.

LEVEL OF SERVICE METHODOLOGY

Culver City traffic analysis guidelines require the use of the Transportation Research Board's Critical Movement Analysis (CMA), Circular 212 Planning Method, to analyze traffic operating conditions at the study intersections. CMA is a method which determines the volume to capacity (V/C) ratio on a critical lane basis and Level of Service (LOS) associated with each V/C ratio at a signalized intersection. V/C ratios are measured on a scale of 0 to 1.000. For the one stop-controlled intersection, Braddock Drive and Harter Avenue, the delay method from the Highway Capacity Manual (HCM) was used. LOS describes the quality of traffic flow and is a measure of such factors as travel speed, travel time, and flow interruptions. LOS ranges from "A" to "F". **Table 2** presents the LOS definitions for signalized and stop-controlled intersections. CMA calculation (CMAC) spreadsheets were utilized in this analysis to determine the LOS at the study intersections. Control Delay for the stop-controlled intersection was calculated using the 2010 Highway Capacity Manual.

Table 2. Intersection Level of Service (LOS) Definitions

V/C Value Signalized ¹	Related LOS Rating
0 to 0.600	A – Excellent free flow conditions
0.601 to 0.700	B – Unconstrained flow
0.701 to 0.800	C – Somewhat constrained flow, maneuverability is reduced
0.801 to 0.900	D – Constrained flow, little maneuverability
0.901 to 1.000	E – Significant vehicle queuing; not all vehicles clear intersection in one cycle
Greater than 1.000	F – Excessive delay; vehicles require more than one signal cycle to clear the intersection
Avg. Control Delay (sec/veh) ²	Related LOS Rating
10.0 or Less	A – Little or no delay
10.1 and less than 15.0	B – Short traffic delays
15.1 and less than 25.0	C – Average traffic delays
25.1 and less than 35.0	D – Long traffic delays
35.1 and less than 50.0	E – Very long traffic delays
50.1 or More	F – Extreme delays

¹Based upon Circular 212 methodology for signalized intersections

²Based upon City of Culver City Traffic Study Criteria / HCM 2010

CITY OF CULVER CITY SIGNIFICANT IMPACT CRITERIA

The City of Culver City defines a significant traffic impact at a signalized or stop controlled intersection as an increase in demand according to the indices shown in **Table 3**.

Table 3. Intersection Significant Impact Criteria

LOS	V/C Ratio	Project Related Increase in V/C Ratio
C	0.701 to 0.800	Equal or greater than 0.050
D	0.801 to 0.900	Equal or greater than 0.040
E, F	Greater than 0.901	Equal or greater than 0.020

¹Based upon City of Culver City Traffic Study Criteria

Using the intersection significant impact criteria, a project would not have a significant impact at an intersection if it operates at LOS D after the addition of the proposed project traffic and the incremental change in V/C is less than 0.040. However if the intersection is operating at LOS F after the addition of the proposed project traffic and the V/C ratio is 0.020 or greater, the project would be considered to have a significant impact.

The City of Culver City defines a significant traffic impact on residential streets as an increase in Average Daily Traffic (ADT) according to the indices shown in **Table 4**.

Table 4. Residential Street Significant Impact Criteria

Projected Average Daily Traffic (ADT) with Project	Project-Related Increase in Average Daily Traffic (ADT) Volume
999 or less	120 or more
1,000 to 1,999	12 percent or more of final ADT
2,000 to 2,999	10 percent or more of final ADT
3,000 or More	8 percent or more of final ADT

¹Based upon City of Culver City Traffic Study Criteria

EXISTING (2015) CONDITIONS LOS ANALYSIS

A LOS analysis for study intersections was conducted for existing traffic conditions using new peak hour (7:00 to 9:00 AM and 4:00 to 6:00 PM) turning movement count data collected on Thursday, July 30, 2015, after increasing by 10%. Traffic count worksheets are provided in **Appendix B** of this report.

Figure 4 illustrates the AM and PM peak hour traffic volumes for the Existing (2015) conditions at each of the study intersections.

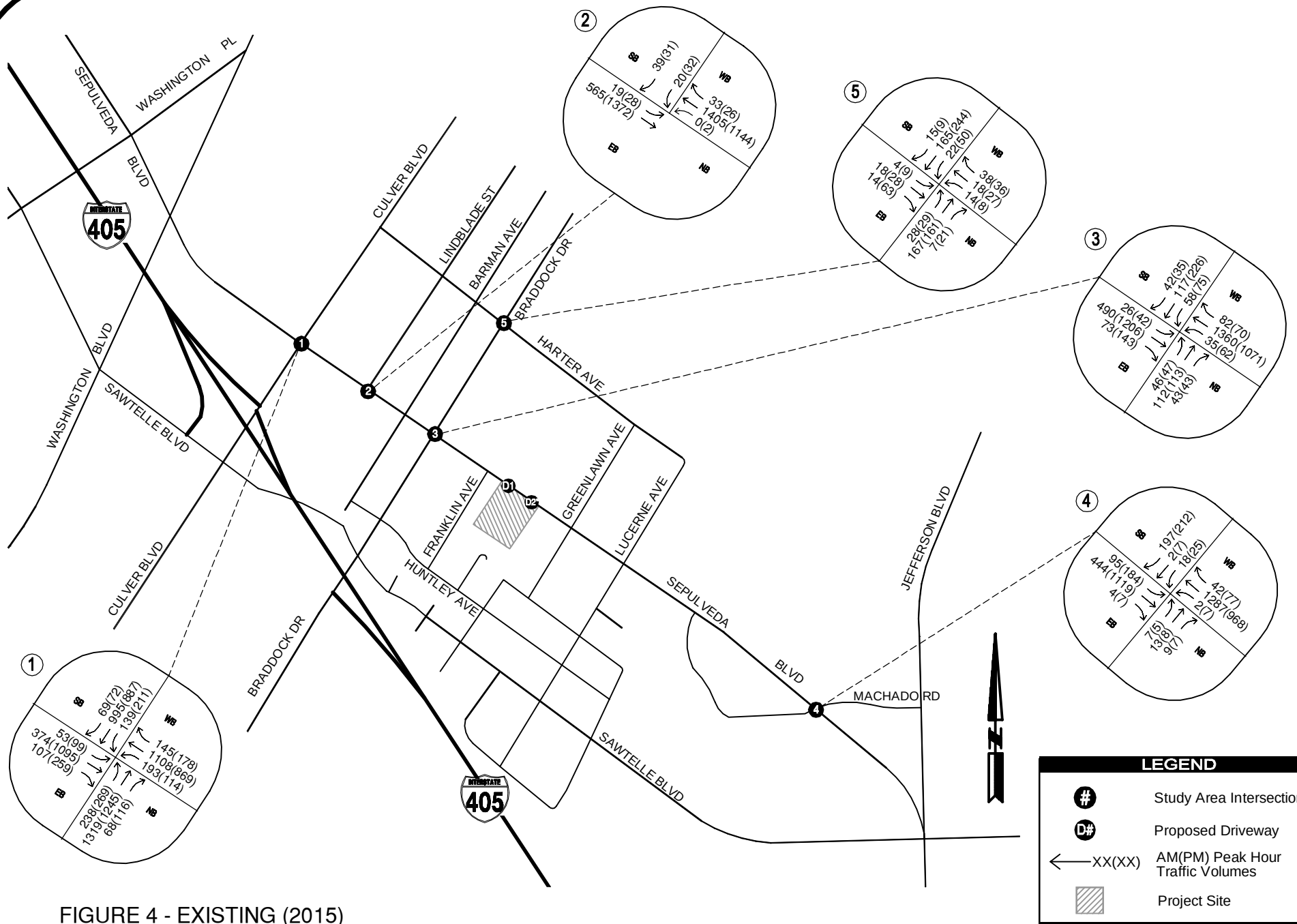


Table 5 presents the Existing (2015) conditions peak hour V/C ratio and the corresponding LOS for each intersection.

Table 5. Existing (2015) Conditions Intersection LOS

Signalized Intersection		LOS Analysis Results			
		AM Peak Hour		PM Peak Hour	
		V/C Ratio	LOS	V/C Ratio	LOS
1	Culver Blvd. at Sepulveda Blvd.	0.931	E	0.953	E
2	Lindblade St. at Sepulveda Blvd.	0.461	A	0.429	A
3	Braddock Dr. at Sepulveda Blvd.	0.603	B	0.676	B
4	Machado Rd. at Sepulveda Blvd.	0.355	A	0.426	A
Stop-Controlled Intersection		Delay (s/veh)	LOS	Delay (s/veh)	LOS
5	Braddock Dr. at Harter Ave.	8.9	A	10.2	B

Source: Kimley-Horn, July 2015

Table 5 indicates that during the AM and PM peak periods, one intersection operates at LOS E while the remaining 4 intersections operate at LOS B or better.

The following section provides an overview of transit lines that serve the study area.

EXISTING TRANSIT LINES

In the existing transit system, eight bus lines operate under three different transportation agencies that currently serve the study area. Five bus lines are operated by the Culver City Bus (C), one bus line is operated by the Los Angeles County Metropolitan Transportation Authority (MTA), one bus line is operated by the Santa Monica Big Blue Bus (SM) and one bus is operated by the Los Angeles Department of Transportation (LADOT CE). A map of existing transit lanes is shown in **Figure 5**. These transit lines are described below.

C Line 1 – Line 1 travels along Washington Boulevard within the study area in the east-west direction. This line runs every day, including holidays. The frequency of service during peak commute hours is approximately 12 minutes. The western terminus is at the intersection of Windward Avenue and Main Street in Venice. The eastern terminus is at the West Los Angeles Transit Center located at the intersection of Apple Street/Fairfax Avenue in West Los Angeles.

C Line 3 – Line 4 is a local line that runs in the north-south direction providing service from the Fox Hills Mall in Culver City to West Los Angeles travelling primarily along Washington Boulevard within the study area. Line 4 runs Monday through Friday approximately every 60 minutes during peak commute hours. No weekend or holiday service is provided. Line 4 terminates at the Fox Hills Mall Transit Center at the south and at West Los Angeles Transit Center located at the north at the intersection of Apple Street/Fairfax Avenue in West Los Angeles.

C Line 4 – Line 4 is a local line that runs in the north-south direction providing service from the Fox Hills Mall in Culver City to West Los Angeles travelling primarily along Washington Boulevard within the study area. Line 4 runs Monday through Friday approximately every 60 minutes during peak commute hours. No weekend or holiday service is provided. Line 4 terminates at the Fox Hills Mall Transit Center at the south and at West Los Angeles Transit Center located at the north at the intersection of Apple Street/Fairfax Avenue in West Los Angeles.

C Line 5 – Line 5 travels primarily along Washington Boulevard and Higuera Street within the project study area. This line travels in the east-west direction and operates Monday through Friday approximately every 60 minutes during commute hours. No weekend or holiday service is provided. This line ends at the intersection of Washington Boulevard/Inglewood Boulevard at the west and at La Cienega Boulevard/Rodeo Road at the east.

C Line 7 – Line 7 is a local east-west line that provides service from Marina Del Rey to Culver City and travels primarily along Culver Boulevard within the study area. This line runs Monday through Saturday approximately every 40 minutes. No service is provided on Sundays and holidays. CC Line 7 ends at the at Fisherman's Village located at the west in Marina Del Rey and at the intersection of Culver Boulevard/Venice Boulevard in Culver City at the east. Hayden Tract Extension was recently added to this transit line.

MTA 733 – Line 733 "Rapid Bus" line runs in the east-west direction and provides service from Santa Monica to Downtown Los Angeles and travels primarily along Venice Boulevard within the study area. This line runs Monday through Friday at a frequency of approximately 10 minutes during peak commute hours. MTA Line 733 also provides service on weekends and holidays. The line route ends at the intersection of Ocean Avenue/Arizona Avenue in Santa Monica and at the Patsaouras Transit Plaza (Union Station) in Downtown Los Angeles to the east.

CE 437 – Line 437 is a commuter express service that runs in the east-west direction and provides service from Downtown Los Angeles to Venice and travels primarily along Culver Boulevard within the study area. Line 437 runs Monday through Friday approximately every 25 minutes during peak commute hours. Line 437 route ends at Pacific Avenue/Washington Boulevard in Venice to the west and at the intersection of San Pedro Street/Temple Street Drive in Los Angeles to the east.

SM Super 12 – Santa Monica Bus Blue Bus Line Super 12 is a commuter line that travels in the north-south direction. This UCLA commuter line provides service from Westwood to West Los Angeles and travels primarily along National Boulevard within the study area. This line runs Monday through Friday at a frequency of approximately 10-15 minutes with no midday service. Line Super 12 does not provide service on weekends and holidays. Super Line 12 route ends at the University of California Los Angeles (UCLA) Ackerman Terminal in Westwood and at the south at the intersection of National Boulevard/Venice Boulevard in West Los Angeles.

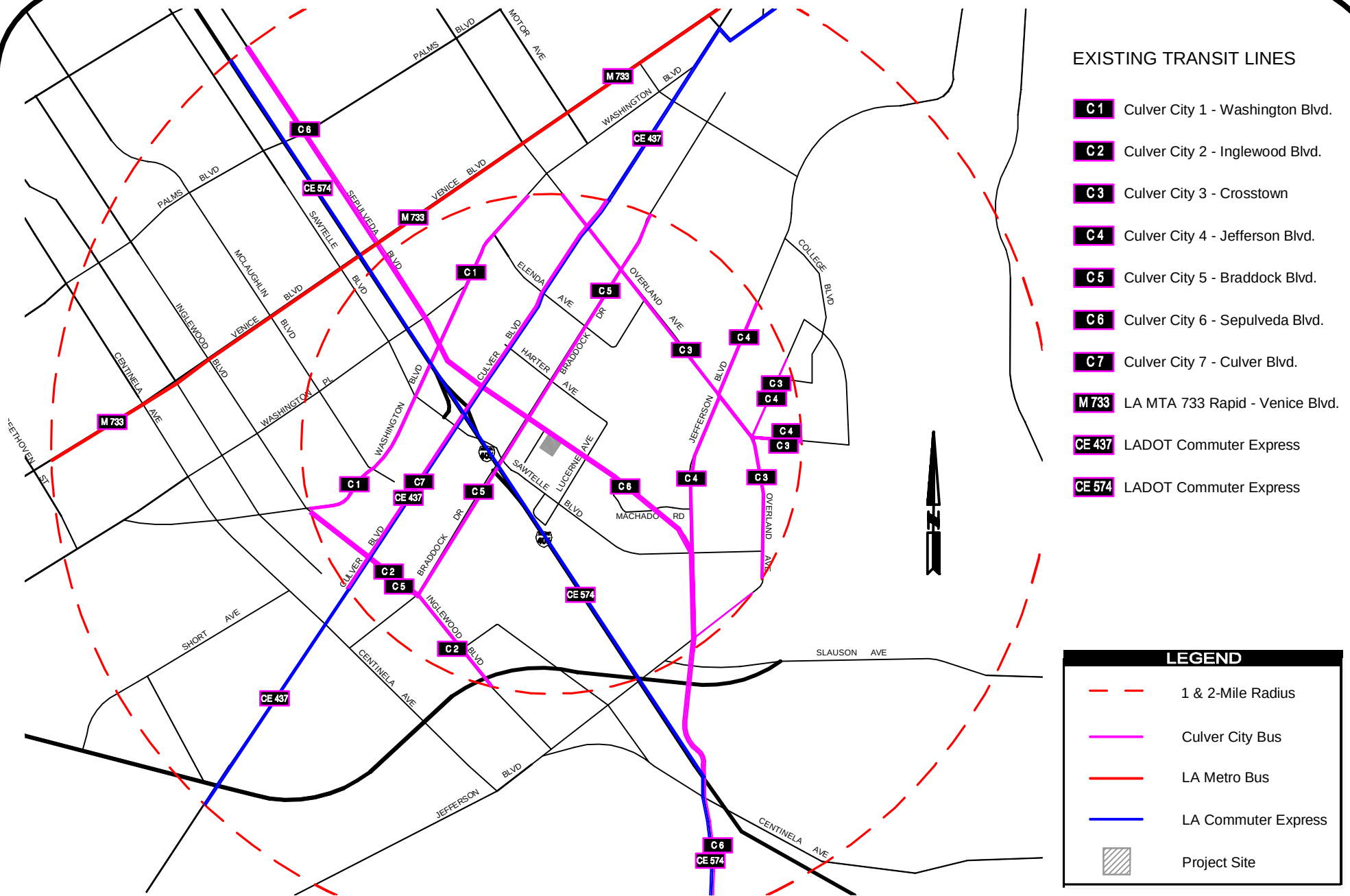


FIGURE 5 - LOCAL & REGIONAL TRANSIT MAP

III. PROJECT CONDITIONS

The proposed project includes a total site area of approximately 2.67 acres and includes 17,225 square feet of retail use and 11,610 square feet of specialty retail use. The project provides 143 total parking spaces for the proposed land uses.

Weekday daily, a.m. and p.m. peak hour trips were estimated for the project using trip generation rates from the ITE publication entitled *Trip Generation, 9th Edition*. Trip generation rates and the resulting trips that would be generated by the proposed project are presented in **Table 6** on the following page. The project is estimated to generate approximately 1,190 new daily trips, 29 new trips during the AM peak hour and 96 new trips during the PM peak hour.

PROJECT TRIP GENERATION

Trip credits were applied to the estimated project trip generation to account for pass-by trips (15%) based upon the guidelines approved by City of Culver City staff. The trip credits that were applied are shown in **Table 6**. The estimated trip generation was submitted to and approved by Culver City staff as part of the MOU process. The approved MOU is attached in **Appendix A** of this report.

PROJECT TRIP DISTRIBUTION

Development of future traffic forecasts for the proposed project consisted of a three-step process that includes project's potential trip generation, trip distribution and traffic assignment to the street system within the study area. **Figure 6** provides the Project Trip Distribution approved by Culver City staff utilized for all proposed project land uses and **Figure 7** illustrates the project peak hour volumes.

Table 6. Traffic Trip Generation Table

ITE Code	Land Use Description	Unit	No. of Units	Daily Rate	AM Rate	PM Rate	Daily Trips	% AM Trips In	% AM Trips Out	% PM Trips In	% PM Trips Out	AM Trips In	AM Trips Out	AM Trips	PM Trips In	PM Trips Out	PM Trips
816	Hardware/Paint Store	1,000 Sq Ft	17.225	51.29	1.08	4.84	884	47%	53%	47%	53%	9	10	19	39	44	83
	Pass-by credit (15%)*						-133					-1	-2	-3	-6	-7	-13
826	Specialty Retail Center (PM)	1,000 Sq Ft	11.61	44.32		2.71	516			44%	56%				14	17	31
	Specialty Retail Center (AM) **	1,000 Sq Ft			1.2			60%	40%			9	6	15			
	Pass-by credit (15%)*						-77					-1	-1	-2	-2	-3	-5
	Total trip generation						1,190					16	13	29	45	51	96

* Credit determined based upon City of Culver City Guidelines

**Trips determined based on SANDAG Trip Generation Manual when land use information is unavailable in ITE's Trip Generation Manual

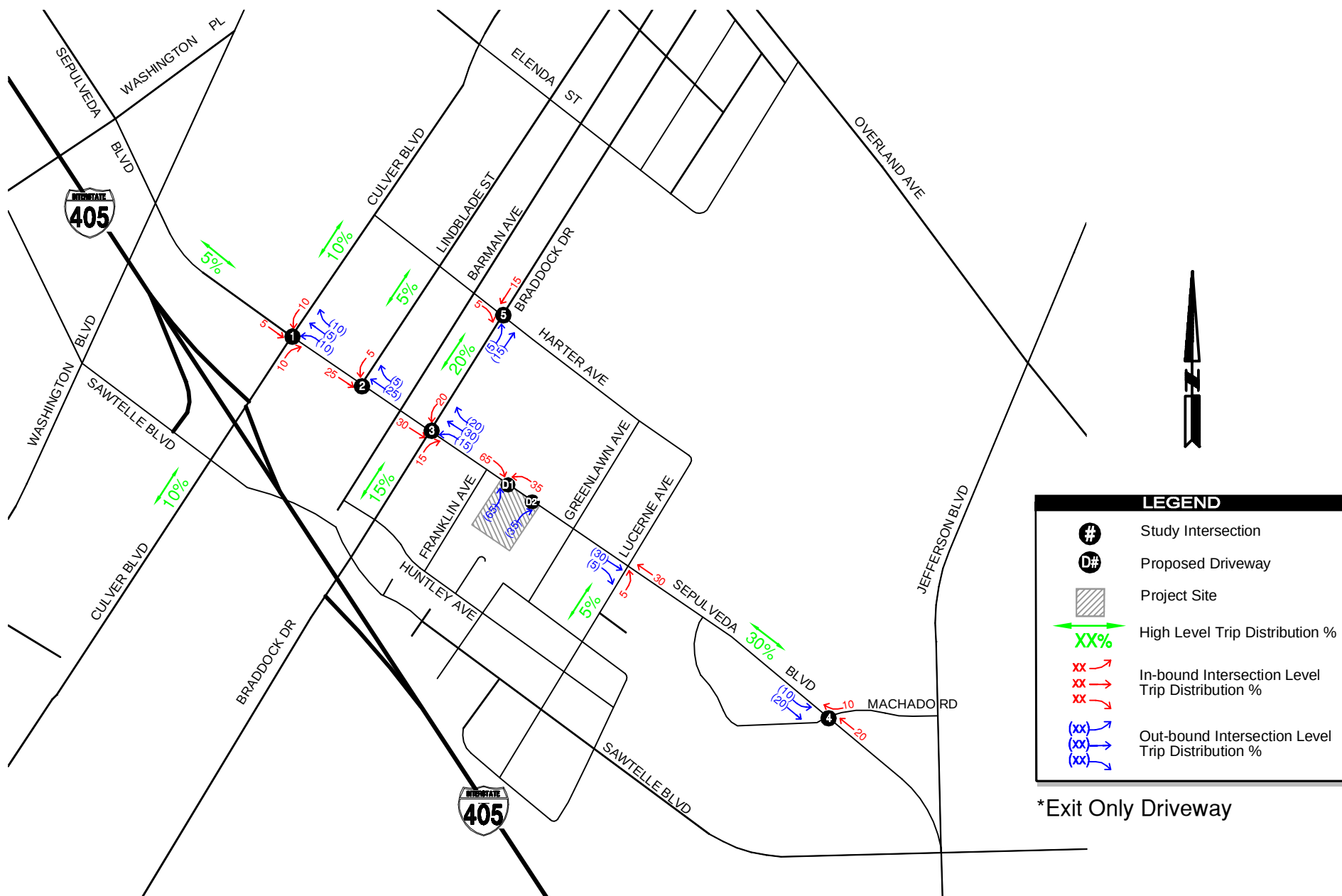


FIGURE 6 - PROJECT TRIP DISTRIBUTION PERCENTAGES FOR ALL LAND USES

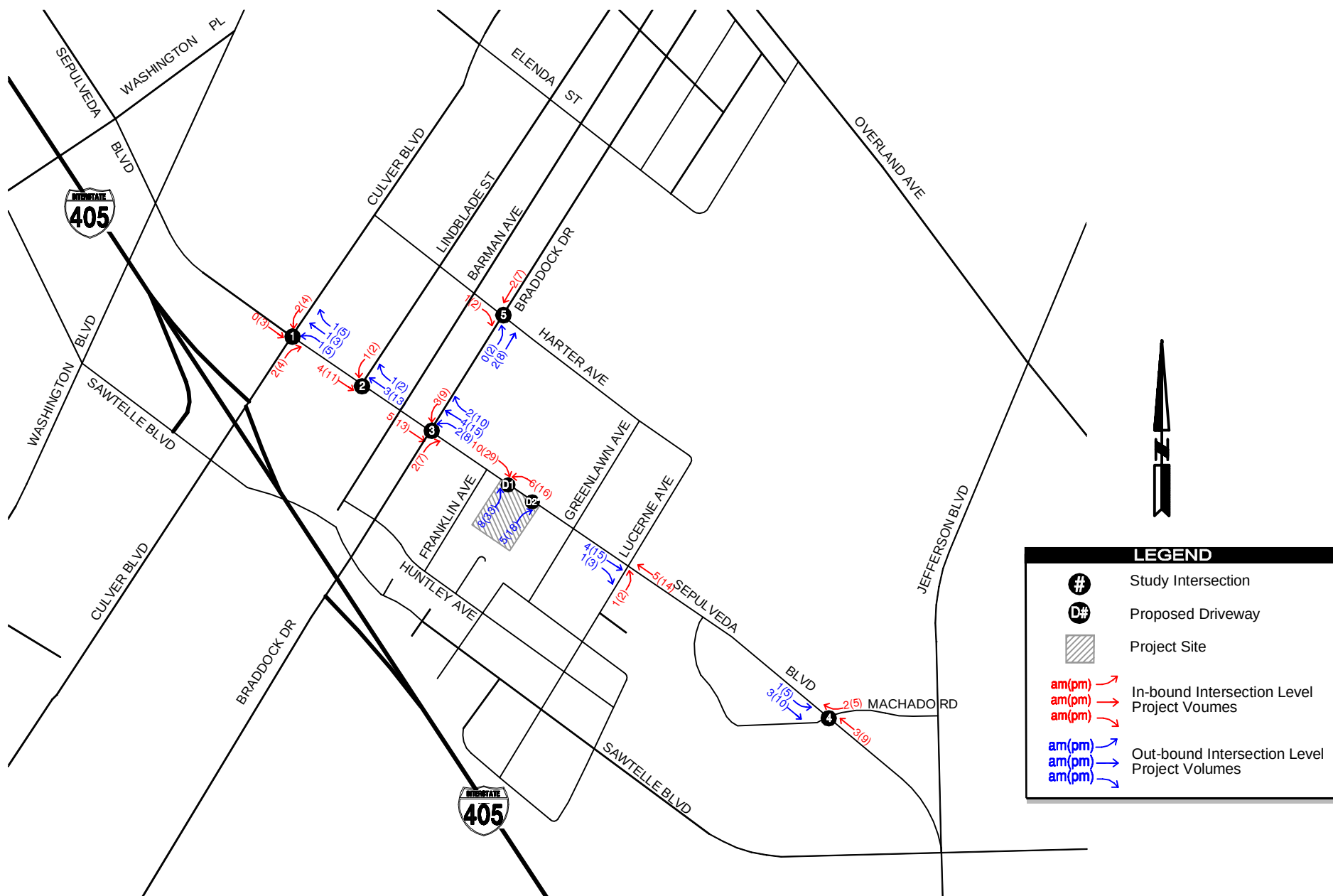


FIGURE 7 - PROJECT AM(PM) PEAK HOUR TURNING MOVEMENT VOLUMES

EXISTING (2015) WITH PROJECT CONDITIONS - LOS

Existing (2015) With Project traffic volumes represent the sum of the Existing (2015) traffic volumes plus the project trips. **Table 7** presents the Existing (2015) With Project conditions peak hour V/C ratio and the corresponding LOS for each intersection.

Table 7. Existing (2015) With Project Conditions Intersection LOS

Signalized Intersection	Existing (2015) Without Project LOS Analysis Results				Existing (2015) With Project LOS Analysis Results				Change	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS	AM	PM
1 Culver Blvd. at Sepulveda Blvd.	0.931	E	0.953	E	0.933	E	0.959	E	0.002	0.006
2 Lindblade St. at Sepulveda Blvd.	0.461	A	0.429	A	0.463	A	0.434	A	0.002	0.005
3 Braddock Dr. at Sepulveda Blvd.	0.603	B	0.676	B	0.607	B	0.694	B	0.004	0.018
4 Machado Rd. at Sepulveda Blvd.	0.355	A	0.426	A	0.357	A	0.431	A	0.002	0.005
Stop-Controlled Intersection	Delay s/veh	LOS	Delay s/veh	LOS	Delay s/veh	LOS	Delay s/veh	LOS	AM	PM
5 Braddock Dr. at Harter Ave.	8.9	A	10.2	B	8.9	A	10.4	B	0.0	0.2

Source: Kimley-Horn, July 2015

Table 7 indicates that for Existing (2015) With Project conditions, one intersection is projected to operate at LOS E while the remaining four intersections would operate at LOS B or better during the AM and PM peak periods.

The peak hour traffic volumes for the Existing (2015) With Project conditions at each of the study intersections are illustrated in **Figure 8**.

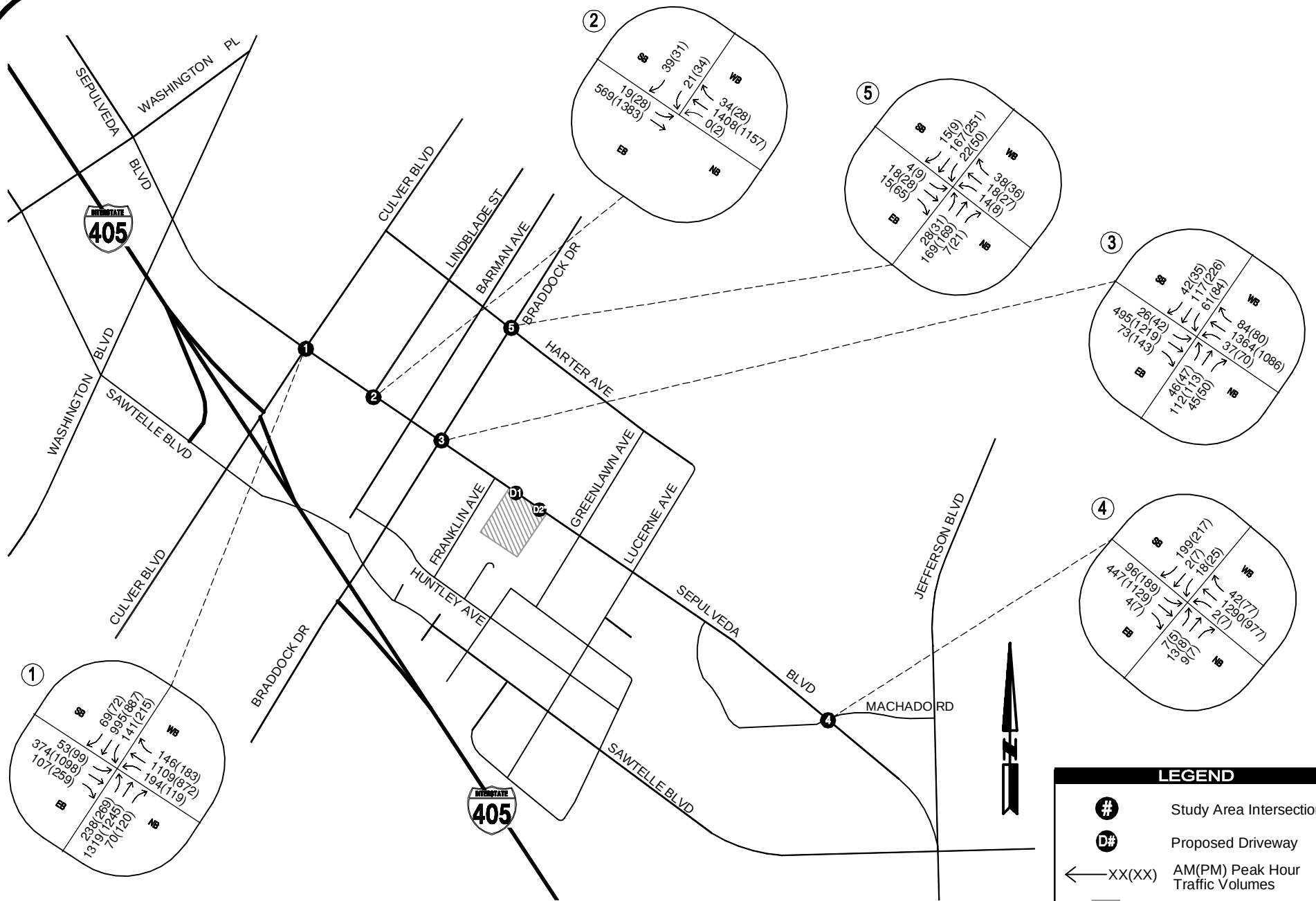


FIGURE 8 - EXISTING (2015) WITH PROJECT AM(PM) PEAK HOUR TURNING MOVEMENT VOLUMES

*Exit Only Driveway

RELATED PROJECTS TRIP GENERATION & ASSIGNMENT

Traffic volumes from related projects (approved or pending projects expected to be built by the year 2017 within 1.5 miles of the proposed project as per City of Culver City TIA Guidelines) were added to the study intersections to simulate future traffic conditions with expected new growth in development in the area. The list of related projects was obtained from City of Culver City staff. Related projects that were constructed and operational were not included as part of the related projects analysis.

A total of 30 related projects were included in the analysis. **Table 8** lists the related projects and the trips generated by each related project based upon trip generation rates from the ITE publication entitled *Trip Generation, 9th Edition*. **Figure 9** illustrates the location of these related projects and **Figure 10** provides the projected peak hour trips for these related projects.

Table 8. Estimated Weekday Trip Generation of Related Projects

ITE #	Map #	Project Name	Address	Description	Project Phase	Daily	AM Peak Hour			PM Peak Hour		
							IN	OUT	TOTAL	IN	OUT	TOTAL
710	1	Sony	10202 Washington Boulevard	Construction of an 8-story 218,450 sq. ft. office building, 51,716 sq. ft. support building, and expansion of an existing parking structure. TOTAL demolition of 57,642 sq. ft. Net new square feet is 212,524 sq. ft.	Construction	2,346	292	40	332	54	263	317
220, 710, 823	2	The Palms Mixed-Use Project	10601 W Washington Boulevard	Mixed-use development with 128 apartment dwelling units, 23,000 sq. ft. office and 18,000 sq. ft. retail	Building Permit	1,904	45	56	101	79	83	162
932	3	Culver City Shopping Center	10799 W Washington Boulevard	2,000 square feet restaurant	Pre-Building Permit	256	12	10	22	12	8	20
270, 826	4	Washington/Inglewood	11924 Washington Boulevard	Mixed use project with 92 residential units and 15,000 sq. ft. commercial.	Entitlement	1,356	10	37	47	55	43	98
850	5	Market Hall - Washington Centinela	12403 Washington Boulevard	New 31,500 sq. ft. market hall and Trader Joes with retail and restaurant and 215 structured parking spaces.	Pre-Application	3,222	66	41	107	152	147	299
710, 932	6	11198 Washington Place	11198 Washington Place	Single story commercial building comprising 3,850 sq. ft. with 11 parking spaces and 500 sq. ft. of outdoor dining/seating on vacant land	Building Permit	108	8	3	11	4	7	11

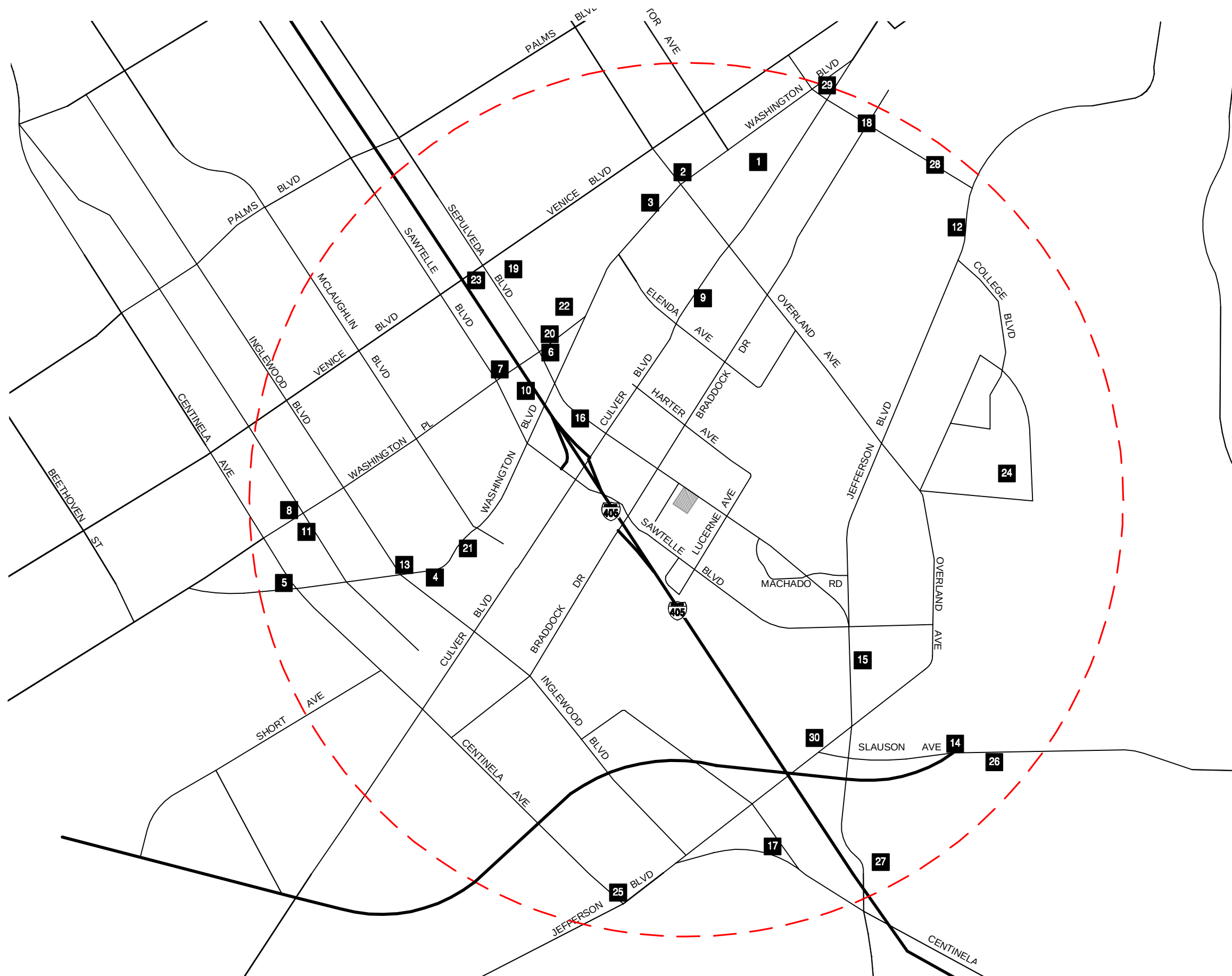
ITE #	Map #	Project Name	Address	Description	Project Phase	Daily	AM Peak Hour			PM Peak Hour		
							IN	OUT	TOTAL	IN	OUT	TOTAL
826	7	Retail Center	11281 Washington Place	Retail center totaling 6,294 sq. ft. with 25 parking spaces	Pre-Building Permit	532	5	3	8	7	10	17
536	8	Wildwood School	12201 Washington Place	Addition of 100 students to existing private school consisting of 300 students. No construction proposed. Addition of 24 students for 2013-14 school year, remainder of students added over 20 year period.	Entitlement (No building permit, just increase in students)	248	49	32	81	7	10	17
580	9	Wende Museum	10808 Culver Boulevard	Museum with 12,596 sq. ft.	Building Permit		3	1	4	0	2	2
270	10	Globe Housing Project	4044-4068 Globe Avenue	Comprehensive Plan and Planned Development for five 2-Unit Residential Units (10 total dwellings)	Pre-Application	76	1	4	5	4	2	6
220	11	Grandview Apartments	4025 Grandview Boulevard	3-story, 58,700 sq. ft. for lease housing development, consisting of 36 units.	Pre-Application	240	4	14	18	14	8	22
710	12	Office Building	9919 Jefferson Boulevard	New 50,000 s.f. office building with tandem parking	Pre-Application	552	69	9	78	13	62	75
520	13	Modification to CUP, enrollment increase (The Help Group)	12095-12101 Washington Blvd.	Increase in enrollment from 600 to 650 students	Entitlement	66	13	10	23	4	4	8
710	14	Punch Studio	6025 Slauson Avenue	Conversion of 3,522 sq. ft. from warehouse to office area and reduction of 7,924 sq. ft. of warehouse with 24 new tandem parking stalls	Entitlement	10	2	1	3	0	2	2

ITE #	Map #	Project Name	Address	Description	Project Phase	Daily	AM Peak Hour			PM Peak Hour		
							IN	OUT	TOTAL	IN	OUT	TOTAL
826	15	New single story retail/ office building	5450 Sepulveda Blvd	Single story retail building totaling 14,800 sq. ft. with rooftop parking	Construction	656	0	0	0	18	22	40
942	16	Westside Brake and Tires	4215 Sepulveda Blvd	Change of use for existing 2,068 sq. ft. building from retail to vehicle maintenance/ repair service use	Construction		3	2	5	3	3	6
841, 942	17	Airport Marina Ford	6002 Centinela Ave	27,568 sq. ft. addition consisting of 29 service bays and 12,900 sq. ft. of parts and service	Construction	892	59	23	82	48	64	112
220	18	4109-4111 Duquesne Ave	4109-4111 Duquesne Ave	Addition of two (2) new dwelling units to existing duplex	Building Permit	14	0	1	1	1	0	1
230	19	Arora Condominiums	3837 Bentley Avenue	Three (3) new condominium dwelling units, resulting in two (2) net new dwellings	Building permit	18	0	1	1	1	1	2
853	20	Chevron Carwash	11197 Washington Place	Conversion of existing vehicle repair and mini-mart into drive-thru carwash and construction of new 2,500 sq. ft. convenience store	Pre-Building Permit	3,256	50	49	99	57	57	114
520	21	Culver City Christian School	11828 Washington Blvd	Proposed reuse of existing buildings for private K- 8th grade school, for approximately 128 students	Pre-Application	166	32	26	58	9	10	19
230	22	5-unit Condominiums	3961 Tilden Avenue	Construction of five (5) new residential condominium units, resulting in two (2) net	Pre-Application	30	0	2	2	2	1	3

ITE #	Map #	Project Name	Address	Description	Project Phase	Daily	AM Peak Hour			PM Peak Hour		
							IN	OUT	TOTAL	IN	OUT	TOTAL
				new residential dwelling units								
853	23	Shell Carwash	11224 Venice Blvd	New 3,150 sq. ft. commercial building, which includes a 2,285 sq. ft. convenience store and 864 sq. ft. automated car wash facility	Pre-Application	3,256	50	49	99	57	57	114
540	24	West Los Angeles College community College Master Plan and EIR (2010)	9000 Overland Ave	Approximately 92,000 of new building construction and renovation. Anticipate future student population of approx. 18,904 students.	Construction	23,252	1,905	363	2,268	1,474	794	2,268
710	25	Radisson Office Tower	6161 Centinela Blvd	342,400 G.S.F. office tower and parking addition	Pre-Building Permit	3,774	470	64	534	87	423	510
710	26	Office & Retail Building	700-701 Corporate Pointe	7-story 281,400 G.S.F. office building and 9-story parking structure	Pre-Building Permit	3,100	385	53	438	71	348	419
310	27	Extended Stay Hotel	5990 Green Valley Circle, Culver City	Expansion of an existing 195-room Hotel which currently includes approximately 3,200 square feet of meeting room space and a 76-seat restaurant with a new extended stay hotel behind the existing hotel. The proposed project would result in an increase of 185 hotel rooms and a net	Entitlement	1,512	58	40	98	57	54	111

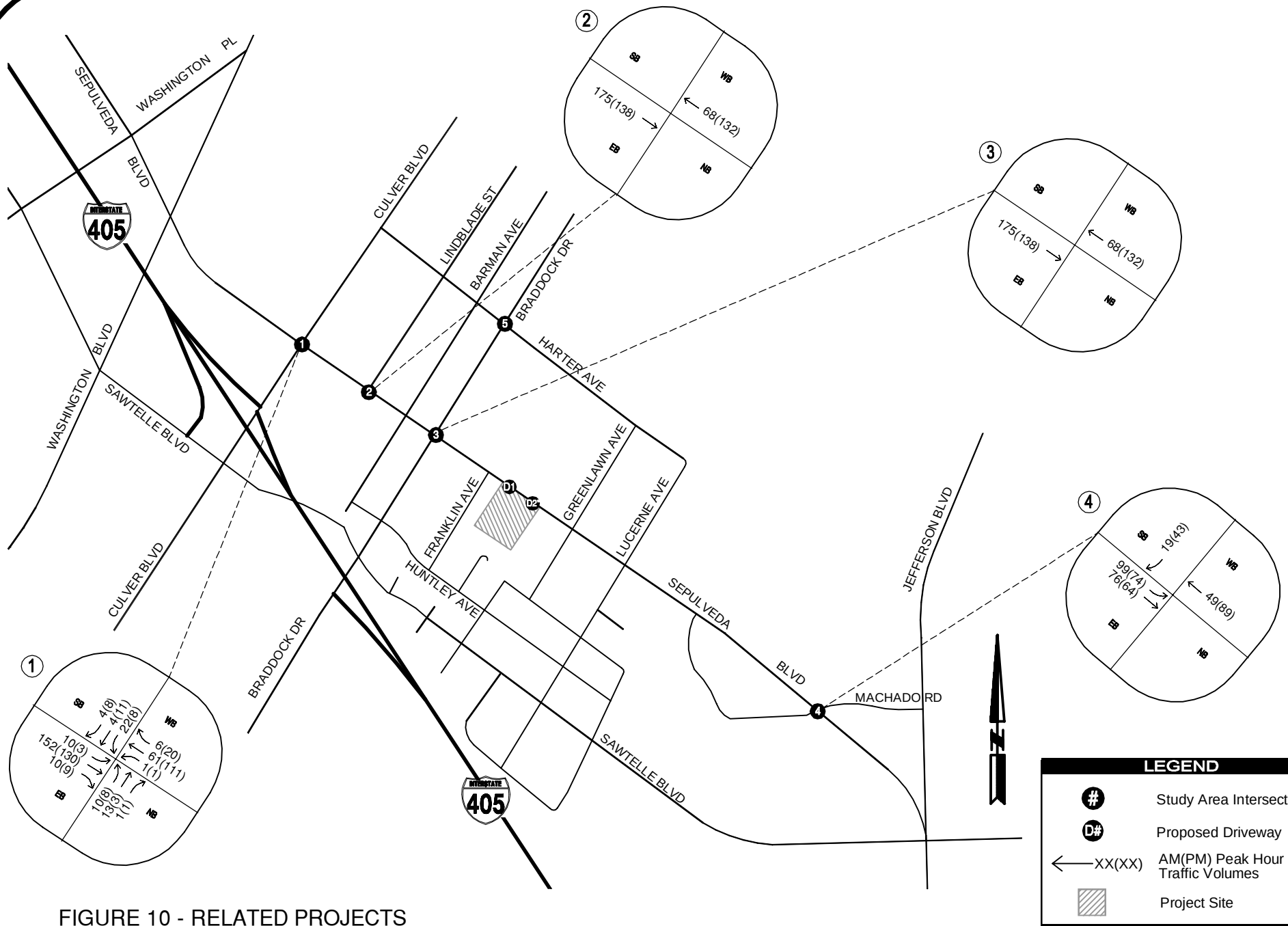
ITE #	Map #	Project Name	Address	Description	Project Phase	Daily	AM Peak Hour			PM Peak Hour		
							IN	OUT	TOTAL	IN	OUT	TOTAL
				decrease of 170 square feet of meeting room space.								
230	28	Three unit condominium/ townhome Redevelopment	4241 Duquesne Avenue	New three detached condominium/ townhomes, resulting in two net new residential dwelling units	Pre-Application	18	0	1	1	1	1	2
441, 580, 939	29	Jazz Bakery	9814 Washington Boulevard	200 seat Performace Theatre with a museum and bakery/café utilizing a total of 2-stories & estimated 7,500 sqare feet	Pre-Application		35	37	72	16	17	33
310	30	Boutique Hotel	11469 Jefferson Blvd	Demolition of 12,958 sq. ft. commercial shopping center. New 5-story hotel of 144 rooms with restaurant and outdoor dining.	Pre-Application	1,178	45	31	76	44	42	86
TOTAL RELATED PROJECT TRIPS						52,038	3,671	1,003	4,674	2,351	2,545	4,896

Source: Kimley-Horn, July 2015 and based on related projects from City of Culver City



LEGEND	
	1.5-Mile Radius
	Related Project
	Project Site

FIGURE 9 - RELATED PROJECTS LOCATION MAP



CUMULATIVE (2017) BASE CONDITIONS

The Cumulative (2017) Base traffic conditions represents the sum of existing volumes, ambient growth and the traffic estimated from related projects. These volumes were assigned to the future baseline network that will be in place at the time the project is completed. As per the information and direction provided by Culver City staff, 30 approved projects within a 1.5-mile radius were included in this traffic impact analysis.

Regional ambient traffic growth was estimated as an annual percentage increase over the existing traffic volumes. A growth rate of 1.0% per year was applied to the peak hour traffic volumes to represent year 2017 traffic volumes, in accordance with discussions with Culver City staff. The 1.0% increase per year is anticipated to account for projects that will be built by 2017 within the project vicinity.

CUMULATIVE (2017) WITHOUT PROJECT CONDITIONS - LOS

Table 9 below presents a summary of the Cumulative (2017) Without Project conditions V/C ratio and the corresponding LOS for each intersection.

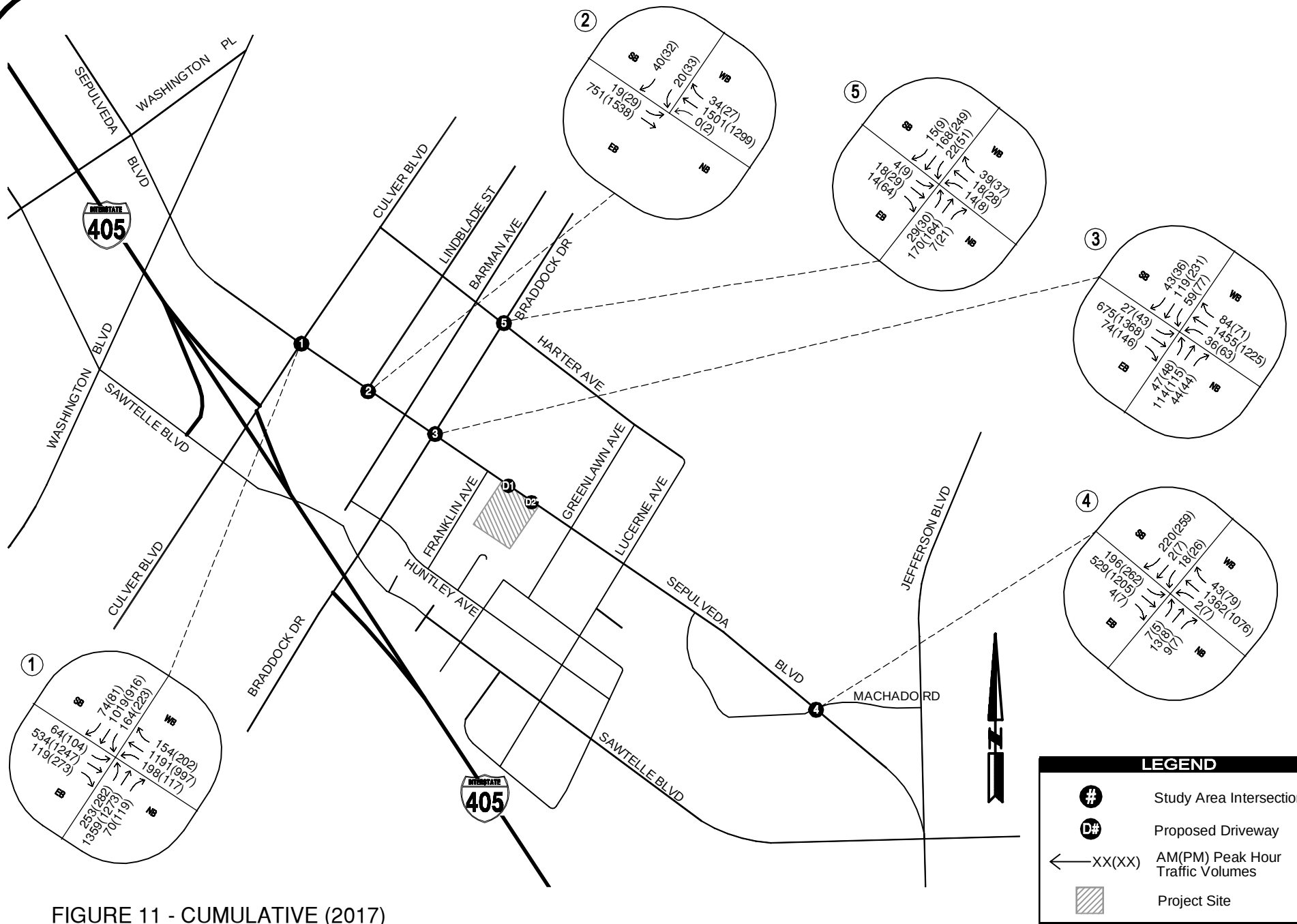
Table 9. Cumulative (2017) Without Project Conditions Intersection LOS

Signalized Intersection		LOS Analysis Results			
		AM Peak Hour		PM Peak Hour	
		V/C Ratio	LOS	V/C Ratio	LOS
1	Culver Blvd. at Sepulveda Blvd.	0.995	E	1.026	F
2	Lindblade St. at Sepulveda Blvd.	0.495	A	0.485	A
3	Braddock Dr. at Sepulveda Blvd.	0.640	B	0.737	C
4	Machado Rd. at Sepulveda Blvd.	0.402	A	0.475	A
Stop-Controlled Intersection		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
5	Braddock Dr. at Harter Ave.	9.0	A	10.4	B

Source: Kimley-Horn, July 2015

Table 9 indicates that one intersection is projected to operate at LOS E during the AM peak period and LOS F during the PM peak period while the remaining 4 intersections would operate at LOS C or better during the AM and PM peak periods. Peak hour analysis worksheets for the Cumulative (2017) Without Project conditions are provided in **Appendix C** of this report.

The peak hour traffic volumes for the Cumulative (2017) Without Project conditions at each of the study intersections are illustrated in **Figure 11**.



CUMULATIVE (2017) WITH PROJECT CONDITIONS - LOS

Cumulative (2017) With Project traffic conditions add the estimated project traffic to the Cumulative Base conditions and are used to evaluate the net change in the traffic conditions and to identify potential traffic impacts associated with the proposed project. The Cumulative (2017) With Project traffic volumes represent the sum of existing traffic volumes raised by ambient growth factor, the traffic estimated from related projects, and the project trips. These volumes were assigned to the future baseline network that will be in place at the time the project is completed in 2017. **Table 10** presents the Cumulative (2017) With Project conditions peak hour V/C ratio and the corresponding LOS for each of the five project study intersections.

Table 10. Cumulative (2017) With Project Conditions Intersection LOS

Signalized Intersection		Cumulative (2017) Without Project LOS Analysis Results				Cumulative (2017) With Project LOS Analysis Results				Change	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS	V/C Ratio	LOS	AM	PM
1	Culver Blvd. at Sepulveda Blvd.	0.995	E	1.026	F	0.997	E	1.032	F	0.002	0.006
2	Lindblade St. at Sepulveda Blvd.	0.495	A	0.485	A	0.497	A	0.490	A	0.002	0.005
3	Braddock Dr. at Sepulveda Blvd.	0.640	B	0.737	C	0.644	B	0.755	C	0.004	0.018
4	Machado Rd. at Sepulveda Blvd.	0.402	A	0.475	A	0.404	A	0.480	A	0.002	0.005
Stop-Controlled Intersection		Delay s/veh	LOS	Delay s/veh	LOS	Delay s/veh	LOS	Delay s/veh	LOS	AM	PM
5	Braddock Dr. at Harter Ave.	9.0	A	10.4	B	9.0	A	10.5	B	0.0	0.1

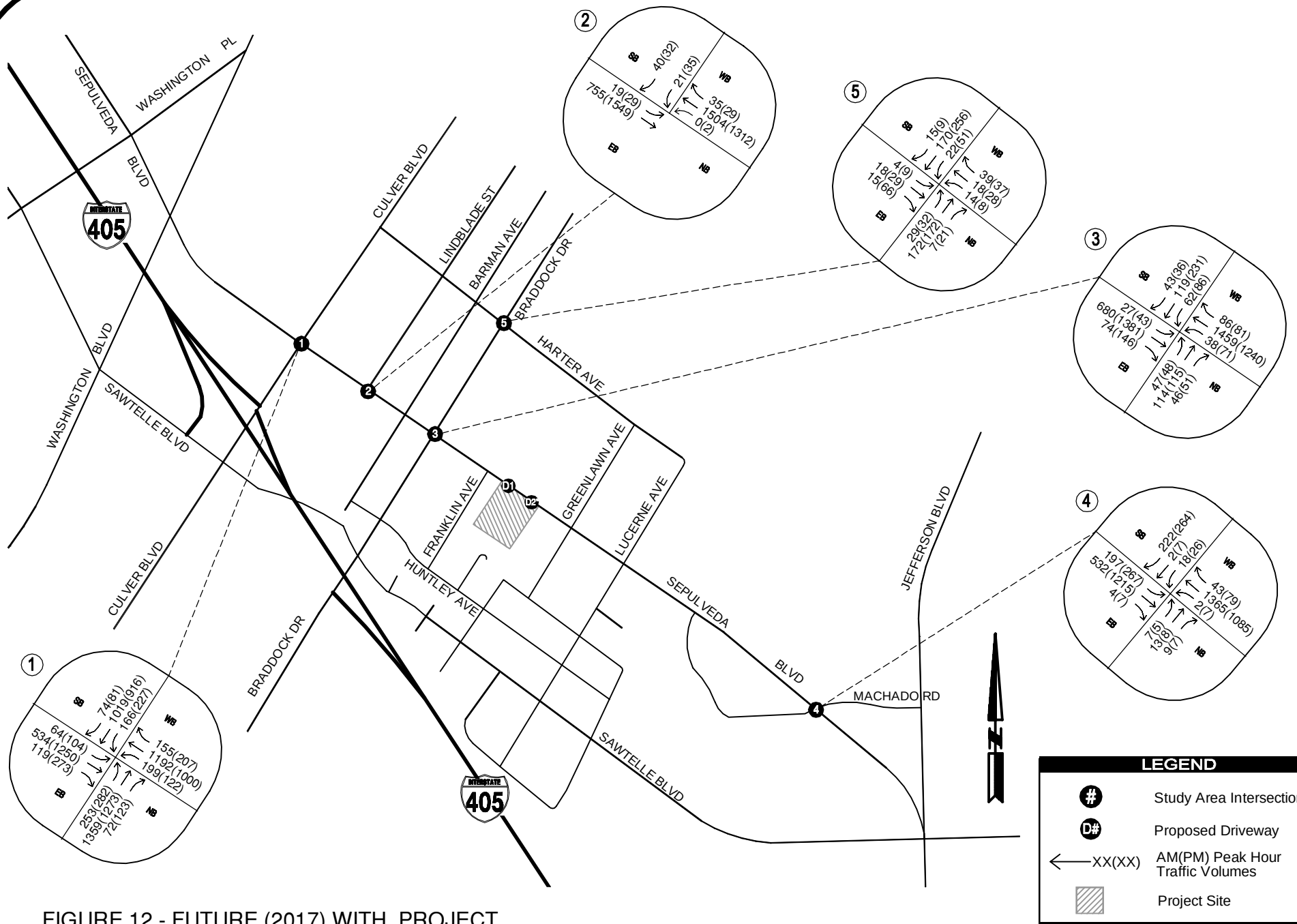
Source: Kimley-Horn, July 2015

Table 10 indicates that for Cumulative (2017) With Project conditions, one intersection is projected to operate at LOS E during the AM peak period and LOS F during the PM peak period while the remaining four intersections would operate at LOS C or better during the AM and PM peak periods. Peak hour analysis worksheets for the Cumulative (2017) With Project conditions are provided in **Appendix C** of this report.

The peak hour traffic volumes for the Cumulative (2017) With Project conditions at each of the study intersections are illustrated in **Figure 12**.

PROJECT IMPACTS

Based on the significant impact criteria as defined by City of Culver City for signalized or stop controlled intersections, the proposed project is not projected to have a significant impact at the study intersections. Therefore, mitigation measures would not be required for the proposed project.



DRIVEWAY ACCESS REVIEW

As per the site plan, two (2) driveways are proposed along Sepulveda Boulevard for providing access to the site. The driveway to the west will act as the main access driveway and allow vehicular ingress to and egress from the site. The driveway to the east will be restricted to egress only. A review of proposed driveways indicates that the driveway configurations are adequate for the project traffic circulation.

NEIGHBORHOOD TRAFFIC ASSESSMENT

Potential impacts to neighboring residential streets were assessed to see if the proposed project would have a significant impact on Braddock Drive and Lindblade Street. Braddock Drive is a collector street which can be used as an alternative to Culver Boulevard. Braddock Drive provides access to I-405 southbound ramps to the south as well as Downtown Culver City to the north. Lindblade Street provides access from Veterans Memorial Park at the north to Sepulveda Boulevard.

Based on the significant impact criteria as defined by the City of Culver City for residential streets, the proposed project is not projected to have a significant impact on the residential streets. A summary of the assessment is shown in **Table 11**.

Table 11. Roadway Segment Analysis Summary

Segment #	Street Name	From	To	Existing ADT	2017 Cumulative Base ADT ¹	Project Trips ²	2017 Cumulative ADT ³	Criteria For Impact ⁴	Significant Impact?
1	Lindblade Street	Sepulveda Boulevard	Harter Avenue	855	872	60	932	>120	No
2	Braddock Drive	Sepulveda Boulevard	Harter Avenue	4,136	4,219	238	4,457	>357	No
3	Braddock Drive	Sepulveda Boulevard	Huntley Avenue	5,259	5,365	179	5,543	>443	No

Source: Kimley-Horn, July 2015

CMP EVALUATION AND FREEWAY IMPACT SCREENING ANALYSIS

The CMP TIA guidelines indicate that if a proposed project would add 50 or more peak hour trips (during the peak hour of adjacent street traffic) to a CMP arterial intersection, then a CMP arterial intersection analysis must be conducted. Sepulveda Boulevard is a CMP arterial, with a monitoring station at Manchester Avenue south of the project site. Based on the project trip assignment, the proposed project

¹ 2017 Cumulative Base ADT was obtained by applying a growth factor of 1% per year for 2 years to Existing ADT.

² Project Trips were determined by multiplying total daily trips generated from the project (1,190) and project trip distribution. For example, the Project Trips (238) on Braddock Drive between Sepulveda Boulevard and Harter Avenue was obtained from multiplying project trip distribution (20%) with total daily trips (1,190) generated from the project.

³ 2017 Cumulative ADT was obtained from the addition of 2017 Cumulative Base ADT, Project Trips, and trips from other related projects.

⁴ As per Culver City significance criteria for residential streets, a project related increase in ADT volume of 8% or more of 2017 Cumulative ADT on Braddock Drive from Sepulveda Boulevard to Harter Avenue would result in a significant impact.

is projected to add fewer than 50 peak hour trips to the arterial monitoring station on Sepulveda Boulevard. Therefore, a separate CMP arterial analysis is not required.

The CMP TIA guidelines indicate that if a proposed development project would add 150 or more trips in either direction during the morning or evening peak hours to the mainline freeway monitoring location, then a CMP freeway analysis must be conducted. The CMP freeway monitoring station closest to the project site is on I-405 between La Tijera Boulevard and Venice Boulevard located west of project site. Based on the project trip assignment shown previously, the proposed project is projected to add fewer than 150 peak hour trips to the freeway monitoring station on I-405. Therefore, a separate CMP and Freeway Screening analysis is not required.

IV. CONCLUSIONS

This report documents the results of a traffic impact analysis for the proposed Harbor Freight Development. The proposed project is located on the south side of Sepulveda Boulevard (East-West), between Franklin Avenue and Greenlawn Avenue in the City of Culver City, California. The total project site area is approximately 2.67 acres and is expected to be constructed and operational in 2017. The following summarizes our key findings and conclusions:

- The proposed project will include 17,225 square feet of retail use and 11,610 square feet of specialty retail use.
- The project will provide a total of 145 parking spaces for the development, which exceeds the required 83 parking spaces per Culver City's municipal code.
- As per the site plan, the project will provide two (2) driveways along Sepulveda Boulevard. The driveway to the west will provide vehicular ingress to and egress from the site, while the driveway to the east will be restricted to egress only. A review of proposed driveways indicates that the driveway configurations are adequate for the project traffic circulation.
- The traffic impact analysis analyzed five (5) intersections and two (2) roadway segments within the City of Culver City.
- Weekday peak hour intersection operations analysis was conducted for four (4) scenarios including Existing (2015), Existing with Project (2015), Cumulative (2017), and Cumulative With Project (2017).
- The existing traffic analysis incorporates a 10% seasonal factor, which adjusts the traffic counts taken during the summer season.
- The project is estimated to generate approximately 1,190 new daily trips, 29 new trips during the AM peak hour and 96 new trips during the PM peak hour.
- For the Existing (2015) base conditions, four (4) out of five (5) study intersections operate at LOS B or better during the AM and PM peak periods with the exception of Culver Boulevard and Sepulveda Boulevard, which operates at LOS E during the AM and PM peak periods.
- For the Existing (2015) With Project conditions, four (4) out of five (5) study intersections are projected to operate at LOS B or better during the AM and PM peak periods with the exception of Culver Boulevard and Sepulveda Boulevard, which would operate at LOS E during the AM and PM peak periods.
- For the Cumulative (2017) base conditions, four (4) out of five (5) study intersections are projected to operate at LOS C or better during the AM and PM peak periods with the exception of Culver Boulevard at Sepulveda Boulevard, which would operate at LOS E during the AM peak period and LOS F during the PM peak period.
- For the Cumulative (2017) With Project conditions, four (4) out of five (5) study intersections are projected to operate at LOS C or better during the AM and PM peak periods with the exception of Culver Boulevard at Sepulveda Boulevard, which would operate at LOS E during the AM peak period and LOS F during the PM peak period.
- The proposed project is not projected to have a significant impact at the study intersections during the AM and PM peak periods based on Culver City traffic impact criteria. Therefore, mitigation measures would not be required for the proposed project

- Based on roadway segment analysis per Culver City guidelines, the project is not expected to result in impacts to the roadway segments.
- A CMP arterial evaluation was conducted as per Culver City Traffic Study Guidelines. The project is expected to add fewer than 50 peak hour trips to the arterial monitoring station on Sepulveda Boulevard and therefore no additional CMP arterial analysis is required.
- A freeway impact screening analysis was conducted as per Culver City Traffic Study Guidelines. The project is expected to add fewer than 150 peak hour trips to the freeway monitoring station on I-405 and therefore no additional CMP and Freeway screening analysis is required.

APPENDICES

- A – Memorandum of Understanding
- B – Traffic Count Worksheets
- C – Critical Movement Analysis (CMA) Worksheets
- D – Synchro/HCM Delay Analysis Reports

APPENDIX A

Memorandum of Understanding

Attachment A

Memorandum Of Understanding For a Traffic Study

This Memorandum Of Understanding (MOU) acknowledges and agrees to all of the City of Culver City requirements and fees for the review of a traffic study for the following project:

Project Name:	Harbor Freight Culver City		
Project Address:	4545 Sepulveda Blvd. Culver City, CA 90230		
Project Description:	GFA* Office /	GFA Industrial	
11,610 Sq Ft	GFA Retail /	Residential Units	
17,225 Sq Ft	GFA Other /	GFA Other	

Project Horizon Year: 2017 Ambient Growth Rate: One (1.0) % Per Year
 Directional Distribution: N: 35 % S: 30 % E: 30 % W: 5 %
 [Attach map(s) illustrating directional distribution percentages at all intersections and driveways.]

Trip Generation Rate(s): ITE Latest Edition / Other: _____

[Show AM, PM and daily trip generation rates for each land use]

Land Use:	Hardware/Paint Store		Specialty Retail Center		Total In	Total Out
	ITE Code #:		ITE Code #:			
	816		826			
	In	Out	In	Out		
AM Trips:	8	8	8	5	16	13
PM Trips:	33	37	12	14	45	51

Attach Total Daily Trips Generation Calculations.

See attached Trip Generation Table

Prior to the start of any proposed project analysis, the Traffic Consultant shall:

1. Obtain a list of related projects from the Planning Division of Culver City and other affected jurisdictions;
2. Prepare a draft list of "related projects specific to the proposed project"; and
3. Obtain written approval from the City of the "related projects specific to the proposed project" list.

Study Intersections: See attached list of Study Intersections

No. _____ Intersection: _____ / Jurisdiction: _____

Residential Streets To Be Studied: See attached list of Study Intersections

No.	Street Name:	/ Limits:	/ Jurisdiction:
-----	--------------	-----------	-----------------

- * Gross Floor Area (GFA) shall be as defined in the most recent ITE publication.
- ** Indicate intersections subject to capacity analysis credit for advanced traffic signal control synchronization.
- *** Indicate non-signalized intersections to be studied.
- **** Use the same numbering system for all lists of intersections and figures in the traffic study.

Indicate Trip Credits To Be Requested (Amount Subject To City Approval):		Yes	No
1.	Existing Uses:	☐	☒
2.	Pass-By Trips:	☒	☐
3.	Internal Trip Capture:	☐	☒
4.	Transit Oriented Developments (TOD):	☐	☒
5.	Transportation Demand Management (TDM):	☐	☒

Maps:

The following maps shall be attached to the MOU:

1. A map showing the project's trip distribution percentages for each land use (inbound and outbound) at the study intersections and project driveways; and
2. A map showing the project's trips at the study intersections and project driveways.

Proposed Traffic Mitigation:

Any proposed traffic mitigation measure shall be listed and accompanied by a drawing of the existing and proposed improvements [including city boundary lines and existing / proposed property lines] and plans shall be of a minimum scale of one inch (1") equal to forty feet (40'-0").

Post-Occupancy Traffic Counts:

By signing below, the Property Owner / Developer / Applicant hereby agrees to pay for and submit to the City a post-occupancy traffic count analysis of the development to the satisfaction of the City. The analysis shall determine the amount of actual traffic (motor vehicle, bicycle and pedestrian) generated by the development compared to the ITE trip generation rates. The analysis shall include a traffic count of all onsite driveways taken upon reaching eighty five percent (85.0%) occupancy of the total building gross floor area or within one (1) year of the issuance of the first Temporary Certificate of Occupancy (TCO), as determined by the City. The data shall be used to confirm the findings in the approved traffic study, and shall not result in any additional traffic mitigation measures and/or conditions of approval on the subject project.

Congestion Management Plan (CMP):

This project shall also be subject to all City imposed CMP developer fees if the Planning Commission approval date is on or after the effective date of any City Council imposed CMP developer fees or as may be otherwise imposed by the City.

Fee:

Payment of a fee to the Engineering Division for the City's processing of a traffic study shall be required prior to the City's approval of the MOU. Said fee shall be in accordance with the most recent Fee Schedule as approved by the City Council.

Signatures:

Property Owner / Applicant:

Name [Signed]: _____
Name [Printed]: _____
Title: _____
Company: _____
Address: _____
City / State / Zip: _____
Office: () _____
Fax: () _____
Cell: () _____
E-Mail: _____

Developer / Applicant:

Brian Quinn

Architect

ADA Architects

17710 Detroit Ave

Cleveland, OH 44107

(216) 521 - 5134 x112

() _____

(216) 244 - 0418

bquinn@adaarchitects.cc

Traffic Consultant:

Name: Sri Chakravarthy, P.E., T.E.
Title: Traffic Engineer
Company: Kimley-Horn & Associates
Address: 660 S. Figueroa St. Suite 2050
City / State / Zip: Los Angeles, CA 90014
Office: (213) 261 - 4037
Fax: () _____
Cell: (310) 621 - 2778
E-Mail: srikanth.chakravarth@kimley-horn.com

If any of the intersection(s) to be studied as part of this traffic study are located within the City of Los Angeles, the unincorporated areas of Los Angeles County and/or impact any other public agency [i.e., CalTrans], then this MOU shall also be approved by the reviewing staff representative from each agency:

City of Los Angeles:

Name [Signed]: _____
Name [Printed]: _____
Title: _____
Department: _____
City of Los Angeles
Address: _____
City / State / Zip: _____
Office: () _____
Fax: () _____
Cell: () _____
E-Mail: _____

County of Los Angeles:

County of Los Angeles

Office: () _____
Fax: () _____
Cell: () _____

Other Public Agency:

Other Public Agency:

Name [Signed]: _____
 Name [Printed]: _____
 Title: _____
 Department: _____
 Name: _____
 Address: _____
 City / State / Zip: _____
 Office: () _____
 Fax: () _____
 Cell: () _____
 E-Mail: _____

() _____

() _____

() _____

Approved By:

_____/_____
Property Owner – Applicant Date

Developer – Applicant Date

 / 07/10/15
Traffic Consultant Date

_____/_____
City of Culver City Date

Note: This MOU shall become valid as of the date of the City's signature and shall expire one (1) year thereafter. If the "administrative draft" of the traffic study has not been filed with the City by the expiration date, this MOU shall also expire and a new MOU filing, fee, review and approval process shall be required.

Study Intersections

- No. 1 Intersection:** Sepulveda Blvd. - Culver Blvd, Culver City, CA
- No. 2 Intersection:** Sepulveda Blvd. – Lindblade St, Culver City,
- No. 3 Intersection:** Sepulveda Blvd. – Braddock Dr, Culver City, CA
- No. 4 Intersection:** Sepulveda Blvd. – Machado Rd, Culver City, CA
- No. 5 Intersection:** Harter Ave. - Braddock Dr, Culver City, CA

Residential Streets to Be Studied

- No. 1 Segment:** Lindblade St. – Between Sepulveda Blvd and Harter Ave, Culver City, CA
- No. 2 Segment:** Braddock Dr. – Between Sepulveda Blvd and Harter Ave, Culver City, CA
- No. 3 Segment:** Braddock Dr. – Between Sepulveda Blvd and Huntley Ave, Culver City, CA

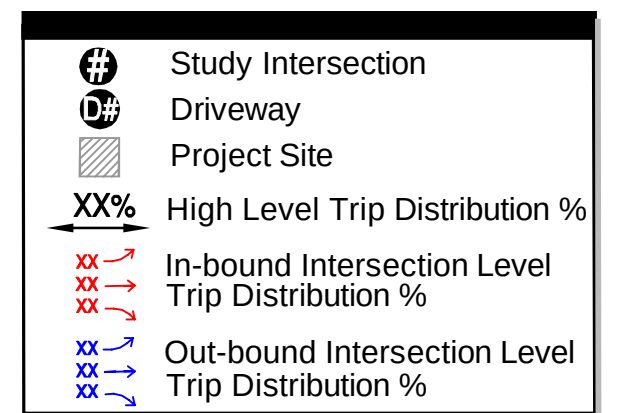
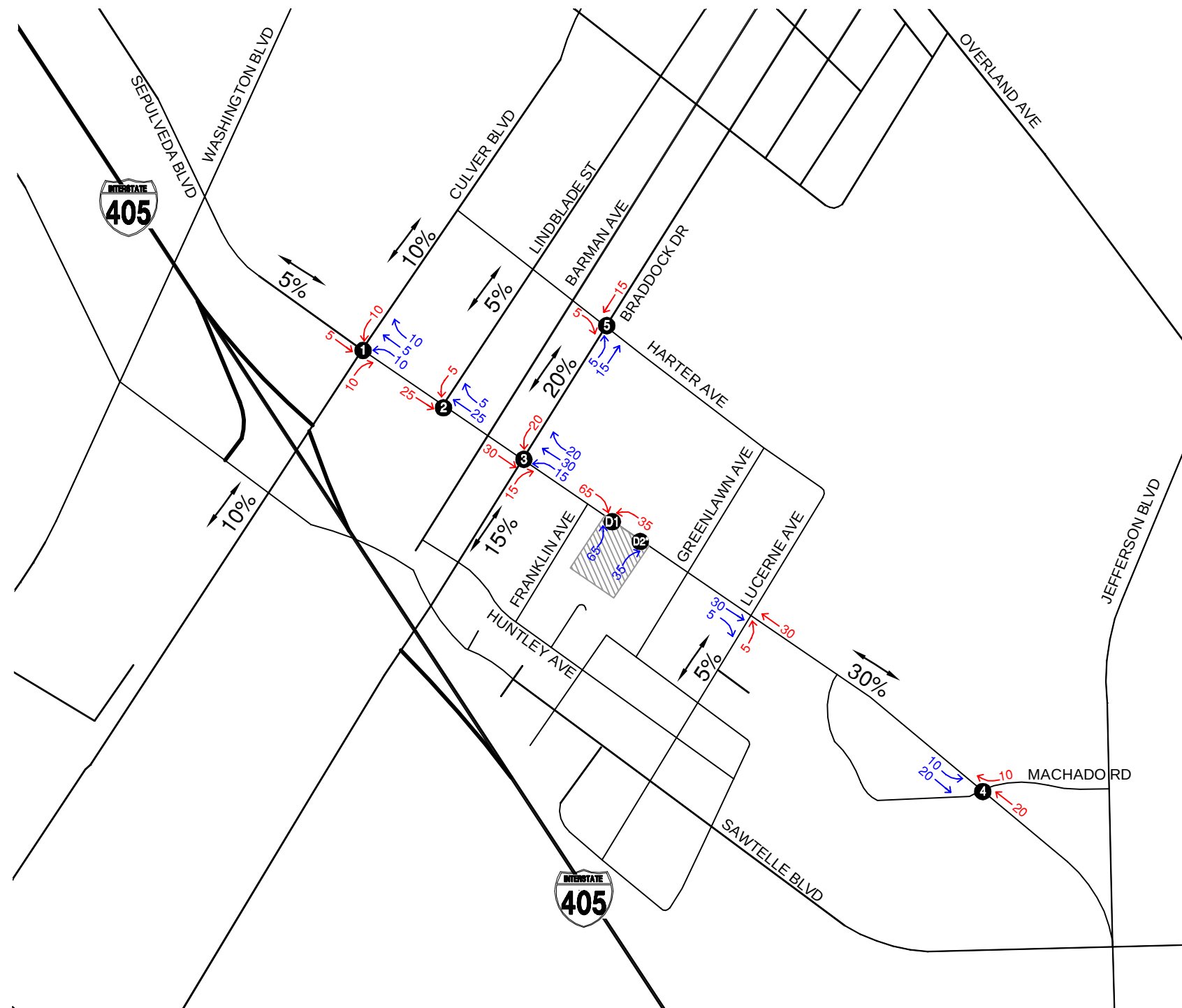
HARBOR FREIGHT TRIP GENERATION TABLE

ITE Code	Land Use Description	Unit	No. of Units	Daily Rate	AM Rate	PM Rate	Daily Trips	% AM Trips In	% AM Trips Out	% PM Trips In	% PM Trips Out	AM Trips In	AM Trips Out	AM Trips	PM Trips In	PM Trips Out	PM Trips
816	Hardware/Paint Store	1,000 Sq Ft	17.225	51.29	1.08	4.84	884	47%	53%	47%	53%	9	10	19	39	44	83
Pass-by credit (15%)*							-133					-1	-2	-3	-6	-7	-13
826	Specialty Retail Center (PM)	1,000 Sq Ft	11.61	44.32		2.71	516			44%	56%				14	17	31
	Specialty Retail Center (AM) **	1,000 Sq Ft			1.2			60%	40%			9	6	15			
Pass-by credit (15%)*							-77					-1	-1	-2	-2	-3	-5
Total trip generation							1190					16	13	29	45	51	96

* Credit determined based upon City of Culver City Guidelines

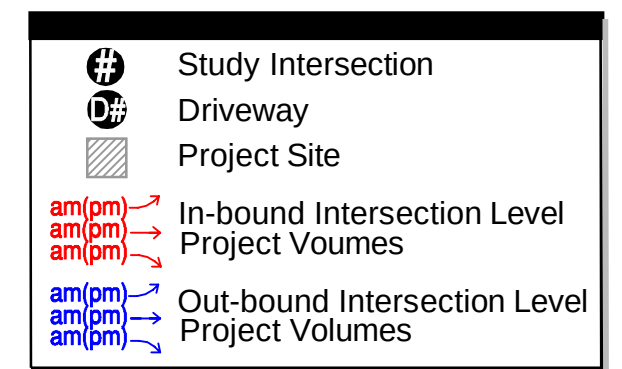
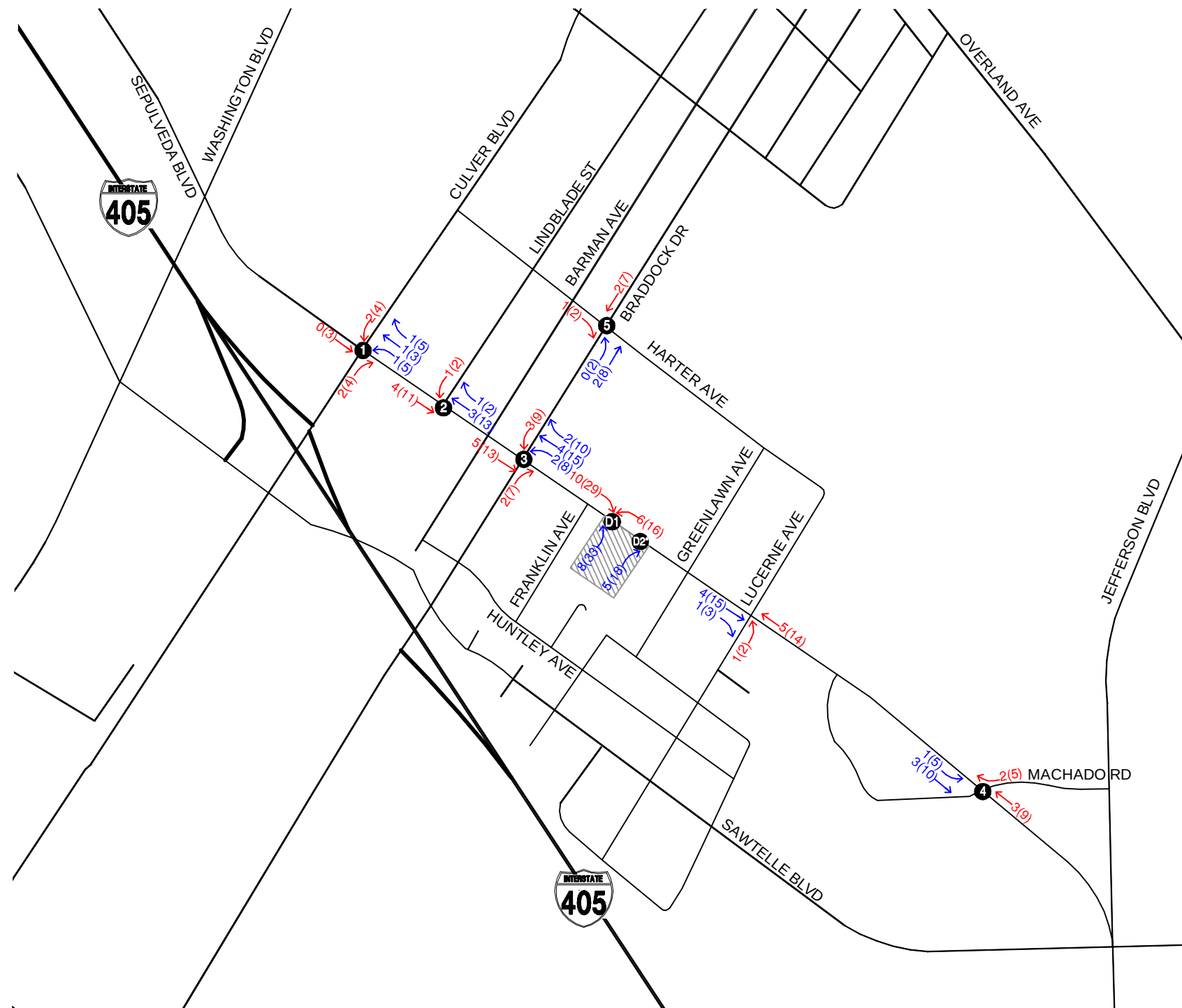
** Trips determined based on SANDAG Trip Generation Manual when land use information is unavailable in ITE's Trip Generation Manual

7/28/2015



*Exit Only Driveway

FIGURE 1 - PROJECT TRIP DISTRIBUTION PERCENTAGES FOR ALL LAND USES



*Exit Only Driveway

FIGURE 2 - PROJECT AM(PM) PEAK HOUR TURNING MOVEMENT VOLUMES

APPENDIX B

Traffic Count Worksheets

ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

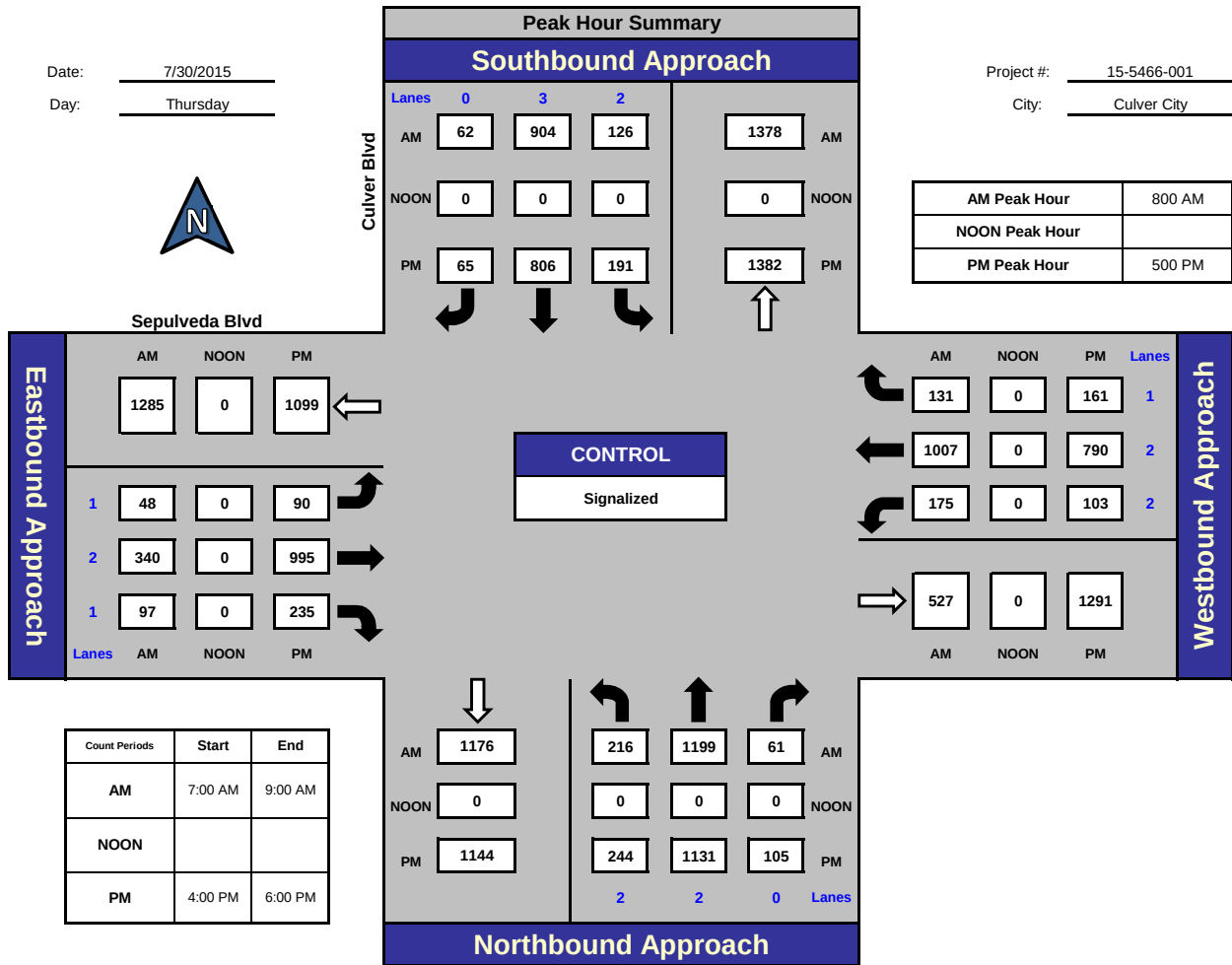
Culver Blvd and Sepulveda Blvd, Culver City

Date: 7/30/2015

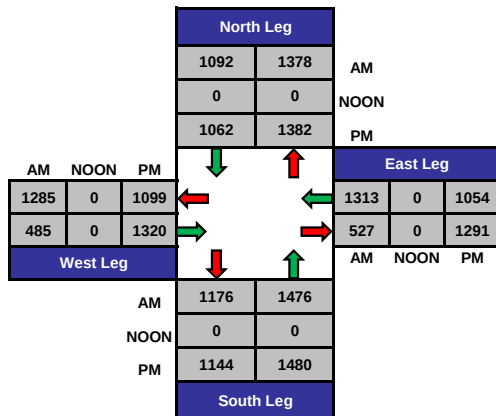
Day: Thursday

Project #: 15-5466-001

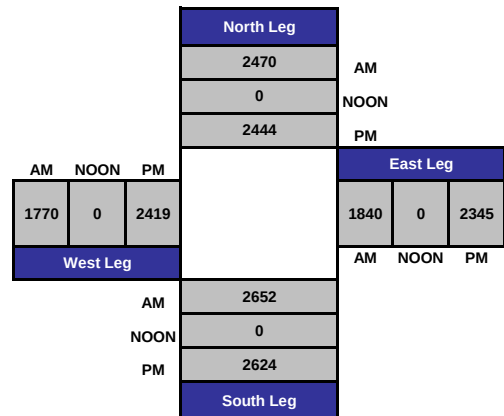
City: Culver City



Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

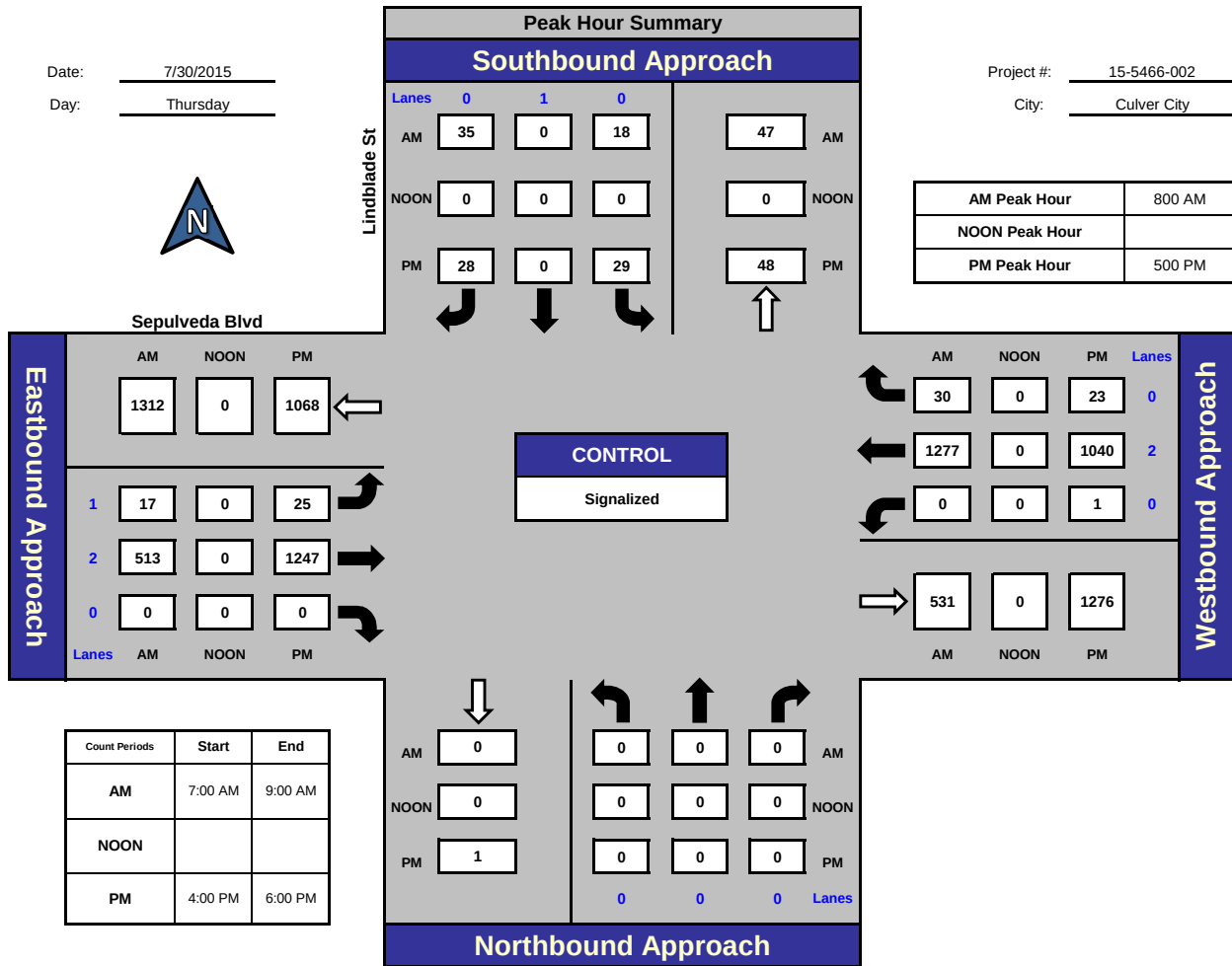
Lindblade St and Sepulveda Blvd , Culver City

Date: 7/30/2015

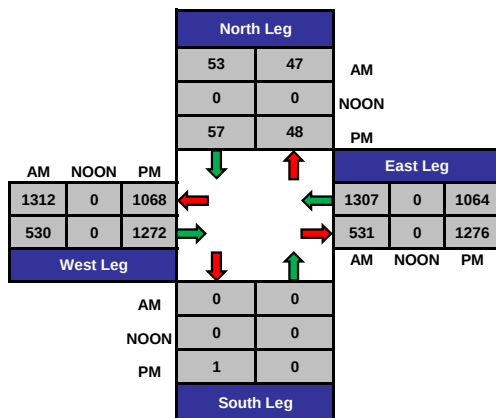
Day: Thursday

Project #: 15-5466-002

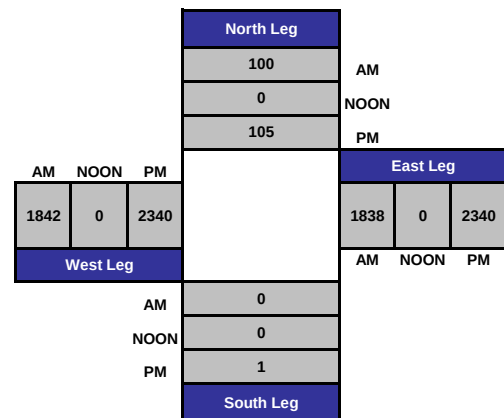
City: Culver City



Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:

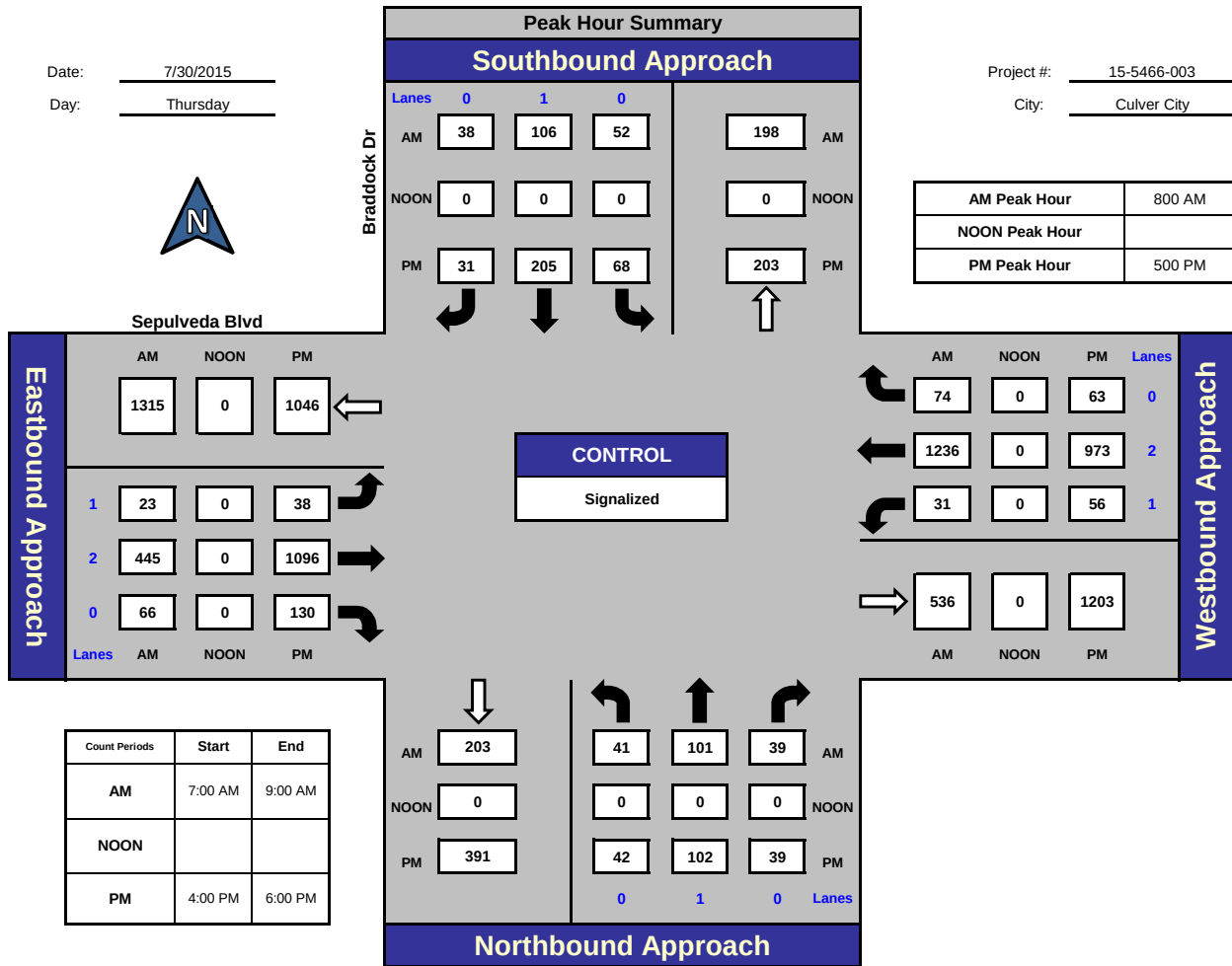


National Data & Surveying Services

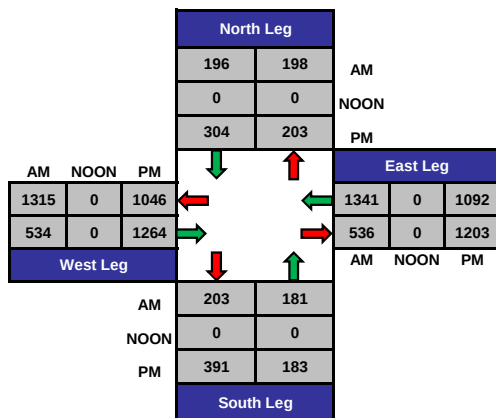
Braddock Dr and Sepulveda Blvd, Culver City

Date: 7/30/2015
Day: Thursday

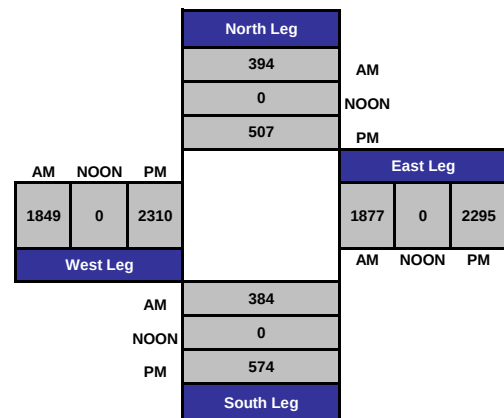
Project #: 15-5466-003
City: Culver City



Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

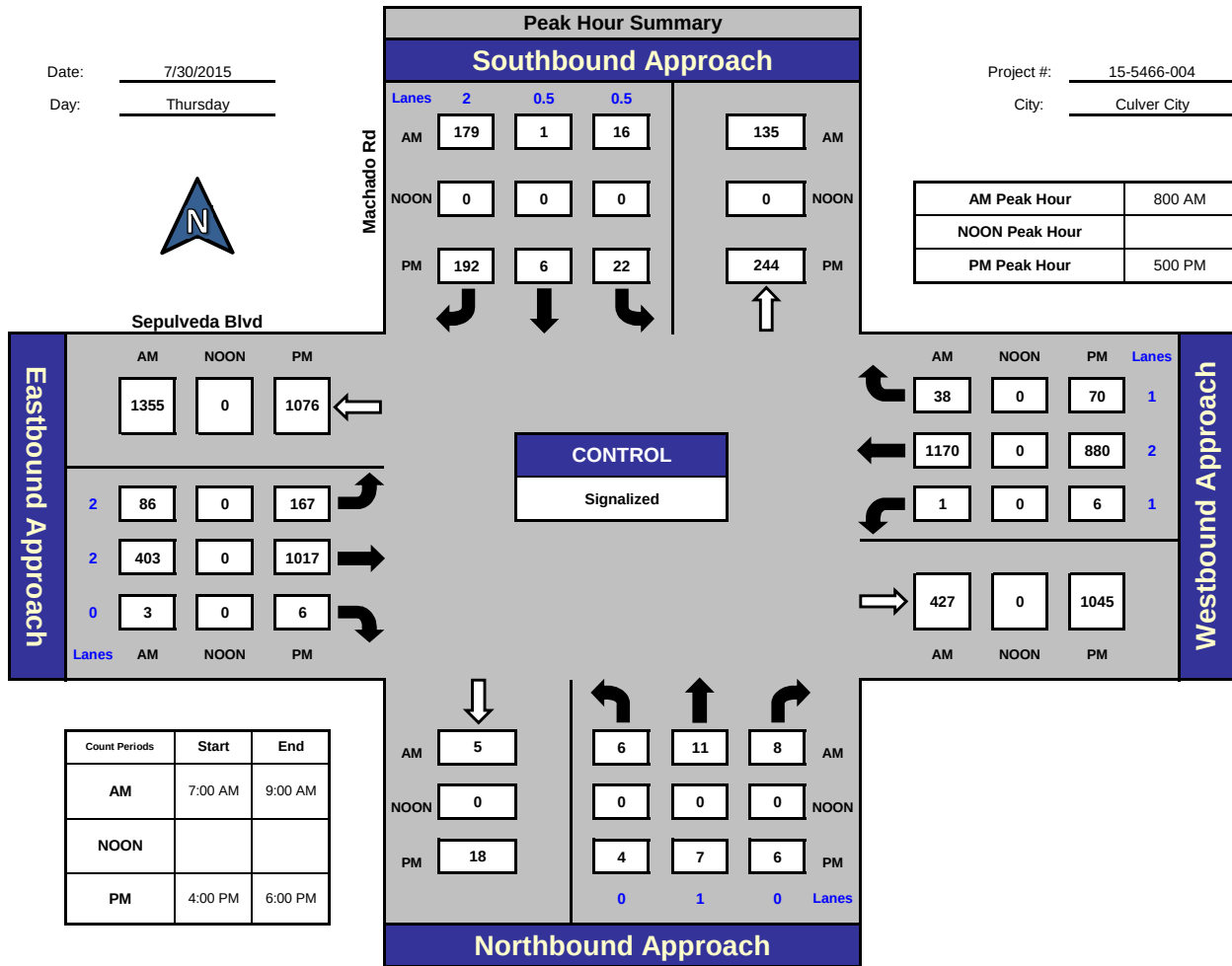
Machado Rd and Sepulveda Blvd , Culver City

Date: 7/30/2015

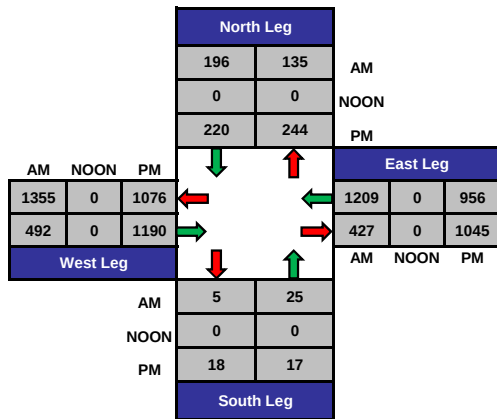
Day: Thursday

Project #: 15-5466-004

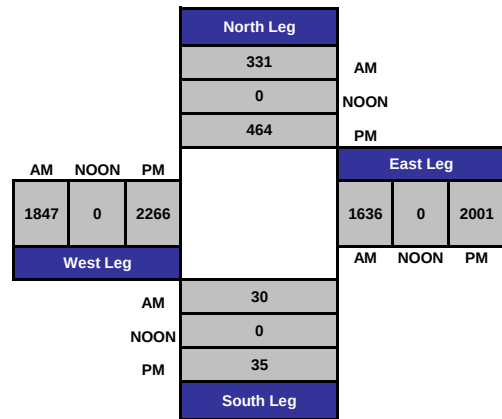
City: Culver City



Total Ins & Outs



Total Volume Per Leg



ITM Peak Hour Summary

Prepared by:



National Data & Surveying Services

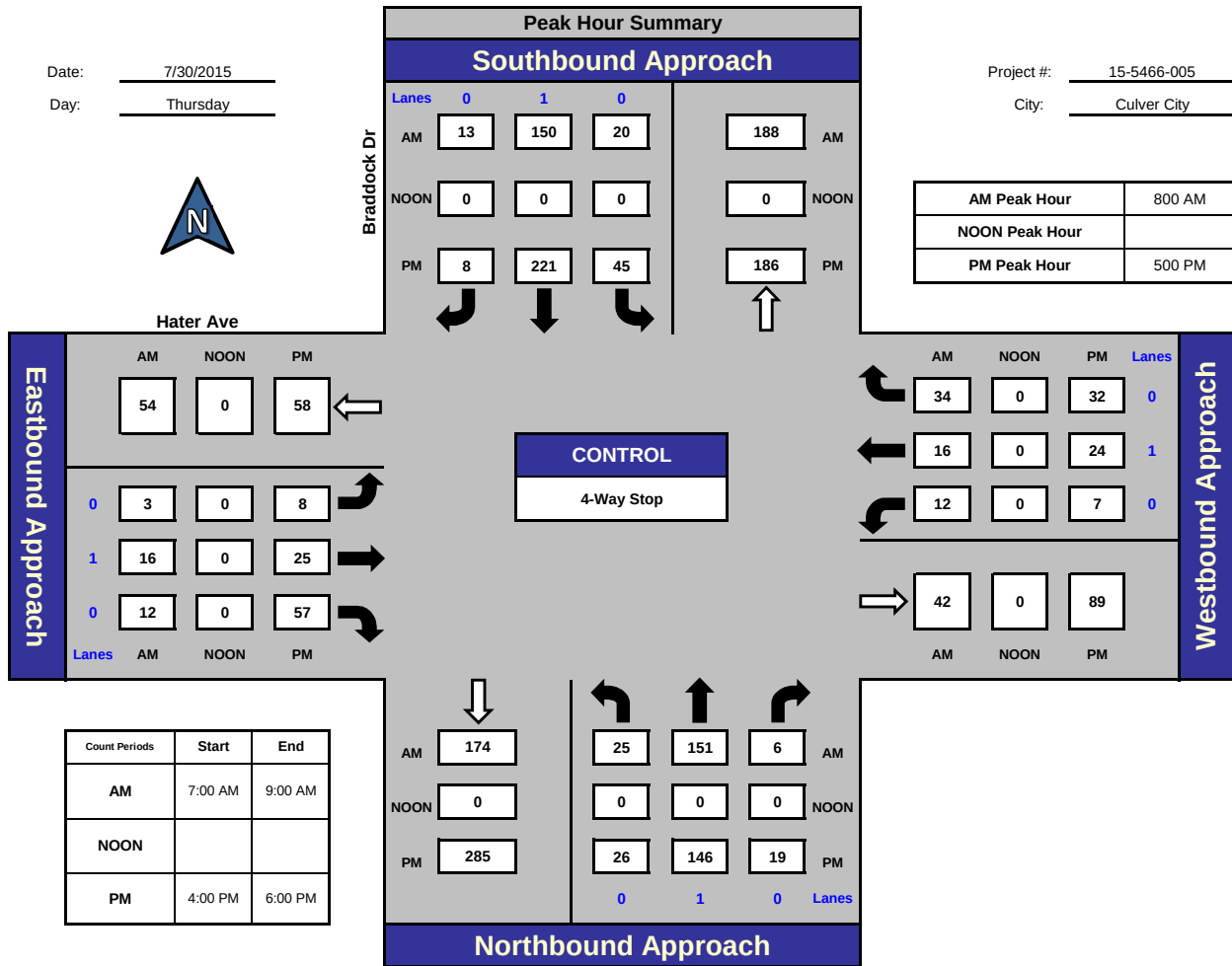
Braddock Dr and Hater Ave , Culver City

Date: 7/30/2015

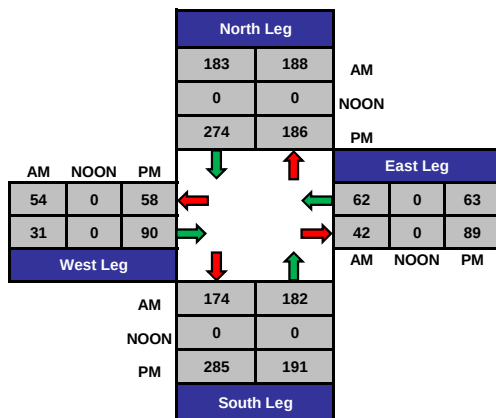
Day: Thursday

Project #: 15-5466-005

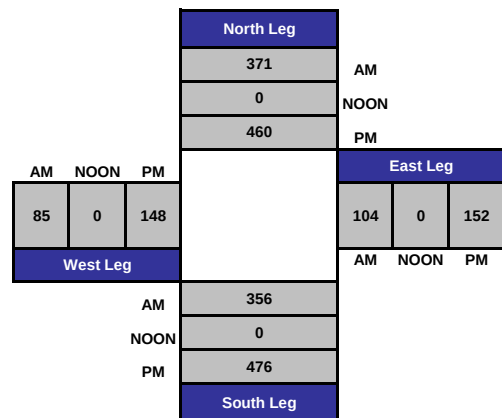
City: Culver City



Total Ins & Outs



Total Volume Per Leg



VOLUME

Lindblade St Bet. Sepulveda Blvd & Harter Ave

Day: Thursday
Date: 7/30/2015

City: Culver City
Project #: CA15_5467_001

DAILY TOTALS					NB	SB					EB	WB	Total
					435	420					0	0	855
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL		
00:00	0	0			0	12:00	13	5			18		
00:15	0	0			0	12:15	25	8			33		
00:30	0	1			1	12:30	10	6			16		
00:45	0	0	1		0	12:45	6	8	27		14	81	
01:00	0	0			0	13:00	4	2			6		
01:15	0	1			1	13:15	3	2			5		
01:30	0	0			0	13:30	9	5			14		
01:45	0	0	1		0	13:45	7	23	4	13	11	36	
02:00	0	0			0	14:00	8	8			16		
02:15	0	0			0	14:15	7	3			10		
02:30	0	0			0	14:30	5	6			11		
02:45	2	2	2	2	4	14:45	6	26	10	27	16	53	
03:00	0	0			0	15:00	3	6			9		
03:15	0	0			0	15:15	5	7			12		
03:30	0	1			1	15:30	14	10			24		
03:45	0	0	1		0	15:45	6	28	5	28	11	56	
04:00	0	0			0	16:00	8	8			16		
04:15	0	0			0	16:15	5	4			9		
04:30	0	0			0	16:30	6	7			13		
04:45	0	0			0	16:45	9	28	10	29	19	57	
05:00	0	0			0	17:00	14	7			21		
05:15	2	1			3	17:15	10	16			26		
05:30	0	2			2	17:30	5	8			13		
05:45	1	3	1	4	2	17:45	10	39	14	45	24	84	
06:00	0	1			1	18:00	11	13			24		
06:15	2	3			5	18:15	4	12			16		
06:30	1	1			2	18:30	6	11			17		
06:45	1	4	4	9	5	18:45	4	25	8	44	12	69	
07:00	7	3			10	19:00	11	2			13		
07:15	4	8			12	19:15	6	5			11		
07:30	5	5			10	19:30	6	5			11		
07:45	13	29	4	20	17	19:45	5	28	2	14	7	42	
08:00	7	10			17	20:00	2	6			8		
08:15	11	6			17	20:15	1	1			2		
08:30	7	8			15	20:30	4	10			14		
08:45	8	33	18	42	26	20:45	6	13	2	19	8	32	
09:00	3	7			10	21:00	3	5			8		
09:15	6	10			16	21:15	5	2			7		
09:30	4	7			11	21:30	3	2			5		
09:45	5	18	9	33	14	21:45	4	15	2	11	6	26	
10:00	7	6			13	22:00	2	2			4		
10:15	3	2			5	22:15	2	2			4		
10:30	6	7			13	22:30	1	2			3		
10:45	6	22	6	21	12	22:45	2	7	1	7	3	14	
11:00	6	4			10	23:00	0	0			0		
11:15	9	4			13	23:15	1	1			2		
11:30	6	4			10	23:30	0	1			1		
11:45	16	37	7	19	23	23:45	0	1	1	3	1	4	
TOTALS	148	153			301	TOTALS	287	267			554		
SPLIT %	49.2%	50.8%			35.2%	SPLIT %	51.8%	48.2%			64.8%		

DAILY TOTALS					NB	SB					EB	WB	Total
					435	420					0	0	855
AM Peak Hour	11:45	08:30			11:45	PM Peak Hour	12:00	17:15			17:15		
AM Pk Volume	64	43			90	PM Pk Volume	54	51			87		
PK Hr Factor	0.640	0.597			0.682	PK Hr Factor	0.540	0.797			0.837		
7 - 9 Volume	62	62	0	0	124	4 - 6 Volume	67	74	0	0	141		
7 - 9 Peak Hour	07:45	08:00			08:00	4 - 6 Peak Hour	16:30	17:00			17:00		
7 - 9 Pk Volume	38	42	0	0	75	4 - 6 Pk Volume	39	45	0	0	84		
PK Hr Factor	0.731	0.583	0.000	0.000	0.721	PK Hr Factor	0.696	0.703	0.000	0.000	0.808		

VOLUME

Braddock Dr Bet. Sepulveda Blvd & Harter Ave

Day: Thursday
Date: 7/30/2015City: Culver City
Project #: CA15_5467_002

DAILY TOTALS					NB	SB	EB					WB	Total
					1,728	2,408						0	0
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL		
00:00	1	0			1	12:00	47	38			85		
00:15	2	2			4	12:15	42	31			73		
00:30	4	2			6	12:30	33	40			73		
00:45	2	9	3	7	5	12:45	22	144	48	157	301		
01:00	0	1			1	13:00	20	29			49		
01:15	0	2			2	13:15	24	25			49		
01:30	1	0			1	13:30	21	31			52		
01:45	0	1	3	6	3	13:45	17	82	29	114	196		
02:00	0	0			0	14:00	19	35			54		
02:15	0	0			0	14:15	25	31			56		
02:30	0	2			2	14:30	26	36			62		
02:45	0	0	2		0	14:45	42	112	26	128	240		
03:00	0	0			0	15:00	30	49			79		
03:15	0	0			0	15:15	29	39			68		
03:30	0	0			0	15:30	25	34			59		
03:45	0	0			0	15:45	21	105	37	159	264		
04:00	0	0			0	16:00	26	38			64		
04:15	1	1			2	16:15	29	45			74		
04:30	0	1			1	16:30	36	52			88		
04:45	2	3	2	4	4	16:45	36	127	54	189	316		
05:00	0	0			0	17:00	53	36			89		
05:15	0	3			3	17:15	43	77			120		
05:30	6	5			11	17:30	38	67			105		
05:45	2	8	10	18	12	17:45	48	182	83	263	445		
06:00	3	5			8	18:00	36	70			106		
06:15	2	10			12	18:15	37	70			107		
06:30	6	11			17	18:30	24	64			88		
06:45	10	21	12	38	22	18:45	30	127	50	254	381		
07:00	20	22			42	19:00	29	50			79		
07:15	19	17			36	19:15	21	33			54		
07:30	21	33			54	19:30	12	51			63		
07:45	38	98	30	102	68	19:45	21	83	18	152	235		
08:00	32	27			59	20:00	21	19			40		
08:15	48	31			79	20:15	14	22			36		
08:30	44	58			102	20:30	24	27			51		
08:45	51	175	45	161	96	20:45	18	77	18	86	163		
09:00	42	41			83	21:00	10	19			29		
09:15	16	56			72	21:15	13	12			25		
09:30	23	34			57	21:30	15	15			30		
09:45	27	108	32	163	59	21:45	15	53	16	62	115		
10:00	23	35			58	22:00	11	24			35		
10:15	20	28			48	22:15	2	16			18		
10:30	13	42			55	22:30	8	9			17		
10:45	22	78	31	136	53	22:45	2	23	6	55	78		
11:00	14	30			44	23:00	9	7			16		
11:15	21	23			44	23:15	1	6			7		
11:30	33	34			67	23:30	2	5			7		
11:45	31	99	43	130	74	23:45	1	13	4	22	35		
TOTALS	600	767			1367	TOTALS	1128	1641			2769		
SPLIT %	43.9%	56.1%			33.1%	SPLIT %	40.7%	59.3%			66.9%		

DAILY TOTALS			NB	SB	EB			WB	Total	
			1,728	2,408				0		
AM Peak Hour	08:15	08:30			08:15	PM Peak Hour	17:00	17:15		
AM Pk Volume	185	200			360	PM Pk Volume	182	297		462
Pk Hr Factor	0.907	0.862			0.882	Pk Hr Factor	0.858	0.895		0.882
7 - 9 Volume	273	263	0	0	536	4 - 6 Volume	309	452	0	0
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	17:00	17:00		17:00
7 - 9 Pk Volume	175	161	0	0	336	4 - 6 Pk Volume	182	263	0	0
Pk Hr Factor	0.858	0.694	0.000	0.000	0.824	Pk Hr Factor	0.858	0.792	0.000	0.000

VOLUME

Braddock Dr Bet. Sepulveda Blvd & Huntley Ave

Day: Thursday
Date: 7/30/2015City: Culver City
Project #: CA15_5467_003

DAILY TOTALS					NB	SB					EB	WB	Total
					2,040	3,219					0	0	5,259
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL		
00:00	2	6			8	12:00	47	73			120		
00:15	0	4			4	12:15	44	59			103		
00:30	3	8			11	12:30	37	50			87		
00:45	0	5	4	22	4	12:45	36	164	42	224	78	388	
01:00	0	2			2	13:00	33	46			79		
01:15	0	3			3	13:15	30	36			66		
01:30	1	0			1	13:30	26	35			61		
01:45	0	1	2	7	2	13:45	35	124	43	160	78	284	
02:00	0	0			0	14:00	33	46			79		
02:15	1	0			1	14:15	22	44			66		
02:30	0	3			3	14:30	31	57			88		
02:45	0	1	0	3	0	14:45	34	120	59	206	93	326	
03:00	0	0			0	15:00	28	64			92		
03:15	1	0			1	15:15	24	46			70		
03:30	0	0			0	15:30	25	59			84		
03:45	0	1	0		0	15:45	29	106	50	219	79	325	
04:00	0	1			1	16:00	35	62			97		
04:15	2	2			4	16:15	28	72			100		
04:30	2	2			4	16:30	41	74			115		
04:45	1	5	3	8	4	16:45	48	152	76	284	124	436	
05:00	0	0			0	17:00	54	80			134		
05:15	1	5			6	17:15	40	87			127		
05:30	4	3			7	17:30	35	106			141		
05:45	9	14	5	13	14	17:45	51	180	106	379	157	559	
06:00	7	8			15	18:00	55	80			135		
06:15	7	11			18	18:15	40	87			127		
06:30	11	7			18	18:30	43	86			129		
06:45	12	37	11	37	23	18:45	47	185	71	324	118	509	
07:00	21	24			45	19:00	35	49			84		
07:15	20	32			52	19:15	43	40			83		
07:30	23	36			59	19:30	28	55			83		
07:45	29	93	46	138	75	19:45	20	126	36	180	56	306	
08:00	43	48			91	20:00	22	26			48		
08:15	44	39			83	20:15	14	27			41		
08:30	37	58			95	20:30	30	32			62		
08:45	59	183	52	197	111	20:45	25	91	20	105	45	196	
09:00	38	58			96	21:00	22	26			48		
09:15	25	70			95	21:15	20	26			46		
09:30	28	49			77	21:30	16	27			43		
09:45	37	128	25	202	62	21:45	21	79	20	99	41	178	
10:00	22	38			60	22:00	6	27			33		
10:15	19	25			44	22:15	11	21			32		
10:30	21	38			59	22:30	14	16			30		
10:45	28	90	50	151	78	22:45	3	34	10	74	13	108	
11:00	25	34			59	23:00	8	11			19		
11:15	27	30			57	23:15	3	7			10		
11:30	27	41			68	23:30	1	9			10		
11:45	28	107	50	155	78	23:45	2	14	5	32	7	46	
TOTALS	665	933			1598	TOTALS	1375	2286			3661		
SPLIT %	41.6%	58.4%			30.4%	SPLIT %	37.6%	62.4%			69.6%		

DAILY TOTALS					NB	SB					EB	WB	Total
					2,040	3,219					0	0	5,259
AM Peak Hour	08:00	08:30			08:30	PM Peak Hour	17:45	17:00			17:15		
AM Pk Volume	183	238			397	PM Pk Volume	189	379			560		
PK Hr Factor	0.775	0.850			0.894	PK Hr Factor	0.859	0.894			0.892		
7 - 9 Volume	276	335	0	0	611	4 - 6 Volume	332	663	0	0	995		
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:30	17:00			17:00		
7 - 9 Pk Volume	183	197	0	0	380	4 - 6 Pk Volume	183	379	0	0	559		
PK Hr Factor	0.775	0.849	0.000	0.000	0.856	PK Hr Factor	0.847	0.894	0.000	0.000	0.890		

APPENDIX C

Critical Movement Analysis (CMA) Worksheets

Project: Harbor Freight TIA (Existing + Project)

DOT Case Number:

Year of counts: 2015

Project buildout: 2015

Ambient growth: 1.0% per year

Filename:

K:\LDT_TPTO\118128001 - Harbor Freight
Culver City\Analysis\CMACalc
Forms\CMACalc_Harbor Freight Ex+Proj.xls

Project Trip Generation		Adjacent to Project			Not Adjacent		
		In	Out	Total	In	Out	Total
Trip Gen	AM Peak	16	13	29			
	PM Peak	45	51	96			

Level of Service and Volume to Capacity Ratio Summary

		Peak	Existing (2015)			Existing with project		Project Impact		After mitigation		
No.	Intersection	Hour	v/c	LOS		v/c	LOS	Δ v/c	significant?	v/c	Δ v/c	mitigated?
1	Culver Boulevard & Sepulveda Boulevard	AM	0.931	E		0.933	E	0.002	NO	--	--	N/A
		PM	0.953	E		0.959	E	0.006	NO	--	--	N/A
2	Lindblade Street & Sepulveda Boulevard	AM	0.461	A		0.463	A	0.002	NO	--	--	N/A
		PM	0.429	A		0.434	A	0.005	NO	--	--	N/A
3	Braddock Drive & Sepulveda Boulevard	AM	0.603	B		0.607	B	0.004	NO	--	--	N/A
		PM	0.676	B		0.694	B	0.018	NO	--	--	N/A
4	Machado Road & Sepulveda Boulevard	AM	0.355	A		0.357	A	0.002	NO	--	--	N/A
		PM	0.426	A		0.431	A	0.005	NO	--	--	N/A
5	Braddock Drive & Harter Avenue	AM	See Appendix D									
		PM	See Appendix D									

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 1		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE			2015, WITH PROJECT				2015, WITH TRAFFIC MITIGATION			
North/South Street:		Critical Phases: 4			Critical Phases: 4			☒ Adjacent				Critical Phases: 4			
Culver Boulevard		Capacity: 1375			Capacity: 1375			Trip AM 16 13 29				Capacity: 1375			
East/West Street:		Signal System: 2			Signal System: 2			Gen 1 PM 45 51 96				☐ Use Dist 2: Signal System: 2			
Sepulveda Boulevard		v/c reduction: 7%			v/c reduction: 7%			Trip AM 0 0 0				v/c reduction: 7%			
Analysis Date: 08/24/2015		Opposed Phasing: 0			Opposed Phasing: 0			Gen 2 PM 0 0 0				Opposed Phasing: 0			
AM Peak: 8:00 AM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total	+ Project	= Total	Lanes	Lane Volume	Adjusted	Total	Lanes	Lane Volume
Northbound	Left	238	2	131	0		238	0%	0	238	0	0	238	2	131
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	1319	1	694	0		1319	0%	0	1319	1	0	1319	1	695
	Th-Rt		1	694			694	0%		694	1		695	1	695
	Right	68	0	0	0		68	10%	2	70	0	0	70	0	0
	Shared		0	0			0	0%		0	0		0	0	0
Southbound	Left	139	2	76	0		139	10%	2	141	2	0	141	2	78
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	995	2	355	0		995	0%	0	995	2	0	995	2	355
	Th-Rt		1	355			355	0%		355	1		355	1	355
	Right	69	0	0	0		69	0%	0	69	0	0	69	0	0
	Shared		0	0			0	0%		0	0		0	0	0
Eastbound	Left	53	1	53	0		53	0%	0	53	1	0	53	1	53
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	374	2	187	0		374	5%	0	374	2	0	374	2	187
	Th-Rt		0	0			0	0%		0	0		0	0	0
	Right	107	1	0	0		107	0%	0	107	1	0	107	1	0
	Shared		0	0			0	0%		0	0		0	0	0
Westbound	Left	193	2	106	0		193	(10%)	1	194	2	0	194	2	107
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	1108	2	554	0		1108	(5%)	1	1109	2	0	1109	2	555
	Th-Rt		0	0			0	0%		0	0		0	0	0
	Right	145	1	75	0		145	(10%)	1	146	1	0	146	1	76
	Shared		0	0			0	0%		0	0		0	0	0
Critical Volumes:		North-South: 770			North-South: 770			North-South: 772				North-South: 772			
		East-West: 607			East-West: 607			East-West: 608				East-West: 608			
		Total: 1377			Total: 1377			Total: 1380				Total: 1380			
Volume/capacity (v/c) ratio:		1.001			1.001			1.003				1.003			
v/c less ATSAC adjustment:		0.931			0.931			0.933				0.933			
Level of Service (LOS):		E			E			E				E			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
 Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.002 Δv/c after mitigation: 0.002
 Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 1		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE			2015, WITH PROJECT				2015, WITH TRAFFIC MITIGATION			
North/South Street:		Critical Phases: 4			Critical Phases: 4			☒ Adjacent				Critical Phases: 4			
Culver Boulevard		Capacity: 1375			Capacity: 1375			Trip AM 16 13 29				Capacity: 1375			
East/West Street:		Signal System: 2			Signal System: 2			Gen 1 PM 45 51 96				☐ Use Dist 2: Signal System: 2			
Sepulveda Boulevard		v/c reduction: 7%			v/c reduction: 7%			Trip AM 0 0 0				v/c reduction: 7%			
Analysis Date: 08/24/2015		Opposed Phasing: 0			Opposed Phasing: 0			Gen 2 PM 0 0 0				Opposed Phasing: 0			
PM Peak: 5:00 PM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total	+ Project	Total	Lanes	Lane Volume	Adjusted	Total	Lanes	Lane Volume
Northbound	Left	269	2	148	0		269	0%	0	269	2	0	269	2	148
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	1245	1	681	0		1245	0%	0	1245	1	0	1245	1	683
	Th-Rt		1	681			681	0%		681	1		683	1	683
	Right	116	0	0	0		116	10%	4	120	0	0	120	0	0
	Shared		0	0			0	0%		0	0		0	0	0
Southbound	Left	211	2	116	0		211	10%	4	215	2	0	215	2	118
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	887	2	320	0		887	0%	0	887	2	0	887	2	320
	Th-Rt		1	320			320	0%		320	1		320	1	320
	Right	72	0	0	0		72	0%	0	72	0	0	72	0	0
	Shared		0	0			0	0%		0	0		0	0	0
Eastbound	Left	99	1	99	0		99	0%	0	99	1	0	99	1	99
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	1095	2	548	0		1095	5%	3	1098	2	0	1098	2	549
	Th-Rt		0	0			0	0%		0	0		0	0	0
	Right	259	1	125	0		259	0%	0	259	1	0	259	1	125
	Shared		0	0			0	0%		0	0		0	0	0
Westbound	Left	114	2	63	0		114	(10%)	5	119	2	0	119	2	65
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	869	2	435	0		869	(5%)	3	872	2	0	872	2	436
	Th-Rt		0	0			0	0%		0	0		0	0	0
	Right	178	1	72	0		178	(10%)	5	183	1	0	183	1	75
	Shared		0	0			0	0%		0	0		0	0	0
Critical Volumes:		North-South: 797			North-South: 797			North-South: 801				North-South: 801			
		East-West: 610			East-West: 610			East-West: 614				East-West: 614			
		Total: 1407			Total: 1407			Total: 1415				Total: 1415			
Volume/capacity (v/c) ratio:		1.023			1.023			1.029				1.029			
v/c less ATSAC adjustment:		0.953			0.953			0.959				0.959			
Level of Service (LOS):		E			E			E				E			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
 Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.006 Δv/c after mitigation: 0.006
 Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 2		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE					2015, WITH PROJECT					2015, WITH TRAFFIC MITIGATION			
North/South Street: Lindblade Street		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2 Capacity: 1500			☒ Adjacent		In	Out	Total	Critical Phases: 2 Capacity: 1500			
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015		Signal System: 2 v/c reduction: 7%		Gen 1	PM	45	51	96	☐ Use Dist 2:		Signal System: 2 v/c reduction: 7%		
Analysis Date: 08/24/2015 AM Peak: 8:00 AM		Opposed Phasing: 0			at: 1.0%		Opposed Phasing: 0		Trip	AM	0	0	0	Opposed Phasing: 0				
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	= Total	Lane		Adjusted	Total	Lane		
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume	
Northbound	Left	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Lt-Th									0%	0	0	0	0	0	0	0	
	Thru	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Th-Rt									0%	0	0	0	0	0	0	0	
	Right	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
Shared		0	0	0			0	0	0	0%	0	0	0	0	0	0	0	
Southbound	Left	20	0	0	0		20	0	0	5%	1	21	0	0	0	0	0	
	Lt-Th									0%	0	0	0	0	0	0	0	
	Thru	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Th-Rt									0%	0	0	0	0	0	0	0	
	Right	39	0	0	0	0	39	0	0	0%	0	39	0	0	0	0	0	
Shared		1		59			1	59		0%	0	1	60	0	39	1	60	
Eastbound	Left	19	1	19	0		19	1	19	0%	0	19	1	19	0	19	1	19
	Lt-Th									0%	0	0	0	0	0	0	0	
	Thru	565	2	283	0		565	2	283	25%	4	569	2	285	0	569	2	285
	Th-Rt									0%	0	0	0	0	0	0	0	
	Right	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
Shared		0	0	0			0	0	0	0%	0	0	0	0	0	0	0	
Westbound	Left	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Lt-Th									0%	0	0	0	0	0	0	0	
	Thru	1405	1	719	0		1405	1	719	(25%)	3	1408	1	721	0	1408	1	721
	Th-Rt									0%	0	1	721			1	721	
	Right	33	0	0	0	0	33	0	0	(5%)	1	34	0	0	0	34	0	0
Shared		0	0	0			0	0	0	0%	0	0	0	0	0	0	0	
Critical Volumes:		North-South: 59 East-West: 738 Total: 797			North-South: 59 East-West: 738 Total: 797					North-South: 60 East-West: 740 Total: 800					North-South: 60 East-West: 740 Total: 800			
Volume/capacity (v/c) ratio:		0.531			0.531					0.533					0.533			
v/c less ATSAC adjustment:		0.461			0.461					0.463					0.463			
Level of Service (LOS):		A			A					A					A			

PROJECT IMPACT

Filename: K:\LDT_TPT0\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.002
Significantly impacted? NO
Δv/c after mitigation: 0.002
Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 2		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE					2015, WITH PROJECT					2015, WITH TRAFFIC MITIGATION			
North/South Street: Lindblade Street		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2 Capacity: 1500			☒ Adjacent		In	Out	Total	Critical Phases: 2 Capacity: 1500			
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2015 at: 1.0%		Signal System: 2 v/c reduction: 7%			Trip	AM	16	13	29	Signal System: 2 v/c reduction: 7%			
Analysis Date: 08/24/2015 PM Peak: 5:00 PM		Opposed Phasing: 0					Opposed Phasing: 0			Gen 1	PM	45	51	96	Opposed Phasing: 0			
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	Total	Lane			Adjusted	Total	Lane	
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		Volume	Volume	Volume	
Northbound	Left	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Lt-Th									0%	0	0	0	0	0	0	0	
	Thru	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Th-Rt									0%	0	0	0	0	0	0	0	
	Right	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
Shared			0	0			0	0	0	0%	0	0	0	0		0	0	
Southbound	Left	32	0	0	0		32	0	0	5%	2	34	0	0	0	34	0	
	Lt-Th									0%	0	0	0	0	0	0	0	
	Thru	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
	Th-Rt									0%	0	0	0	0	0	0	0	
	Right	31	0	0	0	0	31	0	0	0%	0	31	0	0	0	31	0	
Shared			1	63				1	63	0%	0	1	65			1	65	
Eastbound	Left	28	1	28	0		28	1	28	0%	0	28	1	28	0	28	1	
	Lt-Th		0	0				0	0	0%	0	0	0	0		0	0	
	Thru	1372	2	686	0		1372	2	686	25%	11	1383	2	692	0	1383	2	
	Th-Rt		0	0				0	0	0%	0	0	0	0		0	0	
	Right	0	0	0	0		0	0	0	0%	0	0	0	0	0	0	0	
Shared			0	0				0	0	0%	0	0	0	0		0	0	
Westbound	Left	2	0	0	0		2	0	0	0%	0	2	0	0	0	2	0	
	Lt-Th		0	0				0	0	0%	0	0	0	0		0	0	
	Thru	1144	1	585	0		1144	1	585	(25%)	13	1157	1	593	0	1157	1	
	Th-Rt		1	585				1	585	0%	0		1	593		1	593	
	Right	26	0	0	0	0	26	0	0	(5%)	2	28	0	0	0	28	0	
Shared			0	0				0	0	0%	0	0	0	0		0	0	
Critical Volumes:		North-South: 63 East-West: 686 Total: 749			North-South: 63 East-West: 686 Total: 749					North-South: 65 East-West: 692 Total: 757					North-South: 65 East-West: 692 Total: 757			
Volume/capacity (v/c) ratio:		0.499			0.499					0.504					0.504			
v/c less ATSAC adjustment:		0.429			0.429					0.434					0.434			
Level of Service (LOS):		A			A					A					A			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.005
Significantly impacted? NO
Δv/c after mitigation: 0.005
Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 3		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE			2015, WITH PROJECT				2015, WITH TRAFFIC MITIGATION			
North/South Street: Braddock Drive		Critical Phases: 2 Capacity: 1500			Critical Phases: 2 Capacity: 1500			☒ Adjacent				Critical Phases: 2 Capacity: 1500			
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			Signal System: 2 v/c reduction: 7%			☐ Use Dist 2: Signal System: 2 v/c reduction: 7%				Signal System: 2 v/c reduction: 7%			
Analysis Date: 08/24/2015		Opposed Phasing: 0			Opposed Phasing: 0			Opposed Phasing: 0				Opposed Phasing: 0			
AM Peak: 8:00 AM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total	+ Project	= Total	Lanes	Lane Volume	Adjusted	Total	Lanes	Lane Volume
Northbound	Left	46	0	46	0		46	0%	0	46	0	0	46	0	46
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	112	0	0	0		112	0%	0	112	0	0	112	0	0
	Th-Rt		0	0			0	0%		0	0		0	0	0
	Right	43	0	43	0		43	15%	2	45	0	45	45	0	45
	Shared		1	201			201	0%		1	203		203	1	203
Southbound	Left	58	0	58	0		58	20%	3	61	0	61	61	0	61
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	117	0	0	0		117	0%	0	117	0	117	117	0	0
	Th-Rt		0	0			0	0%		0	0		0	0	0
	Right	42	0	42	0		42	0%	0	42	0	42	42	0	42
	Shared		1	217			217	0%		1	220		220	1	220
Eastbound	Left	26	1	26	0		26	0%	0	26	1	26	26	1	26
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	490	1	282	0		490	30%	5	495	1	284	495	1	284
	Th-Rt		1	282			282	0%		1	284		284	1	284
	Right	73	0	0	0		73	0%	0	73	0	0	73	0	0
	Shared		0	0			0	0%		0	0		0	0	0
Westbound	Left	35	1	35	0		35	(15%)	2	37	1	37	37	1	37
	Lt-Th		0	0			0	0%		0	0		0	0	0
	Thru	1360	1	721	0		1360	(30%)	4	1364	1	724	1364	1	724
	Th-Rt		1	721			721	0%		1	724		724	1	724
	Right	82	0	0	0		82	(20%)	2	84	0	0	84	0	0
	Shared		0	0			0	0%		0	0		0	0	0
Critical Volumes:		North-South: 263			North-South: 263			North-South: 266				North-South: 266			
		East-West: 747			East-West: 747			East-West: 750				East-West: 750			
		Total: 1010			Total: 1010			Total: 1016				Total: 1016			
Volume/capacity (v/c) ratio:		0.673			0.673			0.677				0.677			
v/c less ATSAC adjustment:		0.603			0.603			0.607				0.607			
Level of Service (LOS):		B			B			B				B			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
 Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.004
 Significantly impacted? NO
 Δv/c after mitigation: 0.004
 Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 3		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE					2015, WITH PROJECT					2015, WITH TRAFFIC MITIGATION				
North/South Street: Braddock Drive		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2 Capacity: 1500			☒ Adjacent		In	Out	Total	Critical Phases: 2 Capacity: 1500				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2015 at: 1.0%		Signal System: 2 v/c reduction: 7%			Trip	AM	16	13	29	v/c reduction: 7%				
Analysis Date: 08/24/2015 PM Peak: 5:00 PM		Opposed Phasing: 0					Opposed Phasing: 0			Gen 1	PM	45	51	96	Opposed Phasing: 0				
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	Total	Lane			Adjusted	Total	Lane		
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		Volume	Volume	Volume		
Northbound	Left	47	0	47	0		47	0	47	0%	0	47	0	47	0	47	0	47	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	113	0	0	0		113	0	0	0%	0	113	0	0	0	113	0	0	
	Th-Rt		0	0				0	0	0%	0		0	0		0	0	0	
	Right	43	0	43	0		43	0	43	15%	7	50	0	50	0	50	0	50	
Shared		1	203				1	203	0%		1	210			1	210			
Southbound	Left	75	0	75	0		75	0	75	20%	9	84	0	84	0	84	0	84	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	226	0	0	0		226	0	0	0%	0	226	0	0	0	226	0	0	
	Th-Rt		0	0				0	0	0%	0		0	0		0	0	0	
	Right	35	0	35	0		35	0	35	0%	0	35	0	35	0	35	0	35	
Shared		1	336				1	336	0%		1	345			1	345			
Eastbound	Left	42	1	42	0		42	1	42	0%	0	42	1	42	0	42	1	42	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	1206	1	675	0		1206	1	675	30%	13	1219	1	681	0	1219	1	681	
	Th-Rt		1	675				1	675	0%	0		1	681		1	681		
	Right	143	0	0	0		143	0	0	0%	0	143	0	0	0	143	0	0	
Shared		0	0				0	0	0%	0	0	0			0	0	0	0	
Westbound	Left	62	1	62	0		62	1	62	(15%)	8	70	1	70	0	70	1	70	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	1071	1	571	0		1071	1	571	(30%)	15	1086	1	583	0	1086	1	583	
	Th-Rt		1	571				1	571	0%	0		1	583		1	583		
	Right	70	0	0	0		70	0	0	(20%)	10	80	0	0	0	80	0	0	
Shared		0	0				0	0	0%	0	0	0			0	0	0	0	
Critical Volumes:		North-South: 383 East-West: 737 Total: 1120					North-South: 383 East-West: 737 Total: 1120					North-South: 395 East-West: 751 Total: 1146					North-South: 395 East-West: 751 Total: 1146		
Volume/capacity (v/c) ratio:		0.746				0.746						0.764				0.764			
v/c less ATSAC adjustment:		0.676				0.676						0.694				0.694			
Level of Service (LOS):		B				B						B				B			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
 Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.018 Δv/c after mitigation: 0.018
 Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 4		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE					2015, WITH PROJECT					2015, WITH TRAFFIC MITIGATION				
North/South Street:		Critical Phases: 3			Critical Phases: 3					☒ Adjacent					Critical Phases: 3				
Machado Road		Capacity: 1425			Capacity: 1425					Trip AM 16 13 29					Capacity: 1425				
East/West Street:		Signal System: 2			Signal System: 2					Gen 1 PM 45 51 96					Signal System: 2				
Sepulveda Boulevard		v/c reduction: 7%			v/c reduction: 7%					Trip AM 0 0 0					v/c reduction: 7%				
Analysis Date: 08/24/2015		Opposed Phasing: 1			Opposed Phasing: 1					Gen 2 PM 0 0 0					Opposed Phasing: 1				
AM Peak: 8:00 AM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total Volume	Lanes	Lane Volume	+ Project Volume	= Total Volume	Lanes	Lane Volume	Adjusted Volume	Total Volume	Lanes	Lane Volume		
Northbound	Left	7	0	0	0		7	0	0	0%	0	7	0	0	0	0	0		
	Lt-Th	N/B RTOR:																	
	Thru	Existing: 50%																	
	Th-Rt	Projected: 50%																	
	Right	Mitigated: 50%																	
	Shared		1	29	0		9	1	29	0%	0	9	1	29	0	9	1	29	
Southbound	Left	18	0	18	0		18	0	18	0%	0	18	0	18	0	18	0	18	
	Lt-Th	S/B RTOR:																	
	Thru	Existing: 50%																	
	Th-Rt	Projected: 50%																	
	Right	Mitigated: 50%																	
	Shared		2	82	0		197	2	82	10%	2	199	2	83	0	199	2	83	
Eastbound	Left	95	2	52	0		95	2	52	(10%)	1	96	2	53	0	96	2	53	
	Lt-Th	E/B RTOR:																	
	Thru	Existing: 50%																	
	Th-Rt	Projected: 50%								(20%)	3	447	1	226	0	447	1	226	
	Right	Mitigated: 50%																	
	Shared		4	0	0	0	4	0	0	0%	0	4	0	0	0	4	0	0	
Westbound	Left	2	1	2	0		2	1	2	0%	0	2	1	2	0	2	1	2	
	Lt-Th	W/B RTOR:																	
	Thru	Existing: 50%																	
	Th-Rt	Projected: 50%								20%	3	1290	2	444	0	1290	2	444	
	Right	Mitigated: 50%																	
	Shared		42	0	0	0	42	0	0	0%	0	42	0	0	0	42	0	0	
Critical Volumes:		North-South: 111			North-South: 111					North-South: 112					North-South: 112				
		East-West: 495			East-West: 495					East-West: 497					East-West: 497				
		Total: 606			Total: 606					Total: 609					Total: 609				
Volume/capacity (v/c) ratio:		0.425			0.425					0.427					0.427				
v/c less ATSAC adjustment:		0.355			0.355					0.357					0.357				
Level of Service (LOS):		A			A					A					A				

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.002
Significantly impacted? NO
Δv/c after mitigation: 0.002
Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 4		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE					2015, WITH PROJECT					2015, WITH TRAFFIC MITIGATION				
North/South Street: Machado Road		Critical Phases: 3 Capacity: 1425			Critical Phases: 3 Capacity: 1425					Critical Phases: 3 Capacity: 1425					Critical Phases: 3 Capacity: 1425				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			Signal System: 2 v/c reduction: 7%					Signal System: 2 v/c reduction: 7%					Signal System: 2 v/c reduction: 7%				
Analysis Date: 08/24/2015		Opposed Phasing: 1			Opposed Phasing: 1					Opposed Phasing: 1					Opposed Phasing: 1				
PM Peak: 5:00 PM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total Volume	Lanes	Lane Volume	+ Project Volume	Total Volume	Lanes	Lane Volume	Adjusted Volume	Total Volume	Lanes	Lane Volume		
Northbound	Left	5	0	0	0		5	0	0	0%	0	5	0	0	0	5	0	0	
	Lt-Th	8	0	0	0		8	0	0	0%	0	8	0	0	0	8	0	0	
	Thru	7	0	0	0		7	0	0	0%	0	7	0	0	0	7	0	0	
	Th-Rt																		
	Right																		
Shared		1		20	0		1		20	0%	0	1		20	0	1		20	
Southbound	Left	25	0	25	0		25	0	25	0%	0	25	0	25	0	25	0	25	
	Lt-Th	7	1	32	0		7	1	32	0%	0	7	1	32	0	7	1	32	
	Thru																		
	Th-Rt																		
	Right	212	2	117	0		212	2	117	10%	5	217	2	119	0	217	2	119	
Shared		0		0	0		0		0	0%	0	0		0	0	0		0	
Eastbound	Left	184	2	101	0		184	2	101	(10%)	5	189	2	104	0	189	2	104	
	Lt-Th									0%									
	Thru	1119	1	563	0		1119	1	563	(20%)	10	1129	1	568	0	1129	1	568	
	Th-Rt									0%									
	Right	7	0	0	0		7	0	0	0%	0	7	0	0	0	7	0	0	
Shared		0		0	0		0		0	0%	0	0		0	0	0		0	
Westbound	Left	7	1	7	0		7	1	7	0%	0	7	1	7	0	7	1	7	
	Lt-Th									0%									
	Thru	968	2	348	0		968	2	348	20%	9	977	2	351	0	977	2	351	
	Th-Rt									0%									
	Right	77	0	0	0		77	0	0	0%	0	77	0	0	0	77	0	0	
Shared		0		0	0		0		0	0%	0	0		0	0	0		0	
Critical Volumes:		North-South: 137				North-South: 137				North-South: 139				North-South: 139					
		East-West: 570				East-West: 570				East-West: 575				East-West: 575					
		Total: 707				Total: 707				Total: 714				Total: 714					
Volume/capacity (v/c) ratio:		0.496				0.496				0.501				0.501					
v/c less ATSAC adjustment:		0.426				0.426				0.431				0.431					
Level of Service (LOS):		A				A				A				A					

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex+Proj.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.005
Significantly impacted? NO
Δv/c after mitigation: 0.005
Fully mitigated? N/A

Project: Harbor Freight TIA

DOT Case Number:

Year of counts: 2015

Project buildout: 2017

Ambient growth: 1.0% per year

Filename:

K:\LDT_TPTO\118128001 - Harbor Freight
Culver City\Analysis\CMACalc
Forms\CMACalc_Harbor Freight.xls

Project Trip Generation		Adjacent to Project			Not Adjacent		
		In	Out	Total	In	Out	Total
Trip Gen	AM Peak	16	13	29			
	PM Peak	45	51	96			

Level of Service and Volume to Capacity Ratio Summary

No.	Intersection	Peak Hour	Existing (2015) v/c LOS	Cumulative Base v/c LOS	Future with project v/c LOS	Project Impact Δ v/c significant?	After mitigation v/c Δ v/c mitigated?
1	Culver Boulevard & Sepulveda Boulevard	AM	0.931 E	0.995 E	0.997 E	0.002 NO	-- -- N/A
		PM	0.953 E	1.026 F	1.032 F	0.006 NO	-- -- N/A
2	Lindblade Street & Sepulveda Boulevard	AM	0.461 A	0.495 A	0.497 A	0.002 NO	-- -- N/A
		PM	0.429 A	0.485 A	0.490 A	0.005 NO	-- -- N/A
3	Braddock Drive & Sepulveda Boulevard	AM	0.603 B	0.640 B	0.644 B	0.004 NO	-- -- N/A
		PM	0.676 B	0.737 C	0.755 C	0.018 NO	-- -- N/A
4	Machado Road & Sepulveda Boulevard	AM	0.355 A	0.402 A	0.404 A	0.002 NO	-- -- N/A
		PM	0.426 A	0.475 A	0.480 A	0.005 NO	-- -- N/A
5	Braddock Drive & Harter Avenue	AM PM	See Appendix D See Appendix D				

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 1		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street:		Critical Phases: 4			Critical Phases: 4					☒ Adjacent					Critical Phases: 4				
Culver Boulevard		Capacity: 1375			Capacity: 1375					Trip AM 16 13 29					Capacity: 1375				
East/West Street:		Signal System: 2			Signal System: 2					Gen 1 PM 45 51 96					Signal System: 2				
Sepulveda Boulevard		v/c reduction: 7%			v/c reduction: 7%					Trip AM 0 0 0					v/c reduction: 7%				
Analysis Date: 08/24/2015		Opposed Phasing: 0			Opposed Phasing: 0					Gen 2 PM 0 0 0					Opposed Phasing: 0				
AM Peak: 8:00 AM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total Volume	Lanes	Lane Volume	+ Project Volume	= Total Volume	Lanes	Lane Volume	Adjusted Volume	Total Volume	Lanes	Lane Volume		
Northbound	Left	238	2	131	5	10	253	2	139	0%	0	253	2	139	0	253	2	139	
	Lt-Th		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	1319	1	694	27	13	1359	1	714	0%	0	1359	1	715	0	1359	1	715	
	Th-Rt		1	694			1	714	0%	0	1	715	1	715	0	1	715	1	715
	Right	68	0	0	1	1	70	0	0	10%	2	72	0	0	0	72	0	0	
	Shared		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
Southbound	Left	139	2	76	3	22	164	2	90	10%	2	166	2	91	0	166	2	91	
	Lt-Th		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	995	2	355	20	4	1019	2	364	0%	0	1019	2	364	0	1019	2	364	
	Th-Rt		1	355			1	364	0%	0	1	364	1	364	0	1	364	1	364
	Right	69	0	0	1	4	74	0	0	0%	0	74	0	0	0	74	0	0	
	Shared		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
Eastbound	Left	53	1	53	1	10	64	1	64	0%	0	64	1	64	0	64	1	64	
	Lt-Th		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	374	2	187	8	152	534	2	267	5%	0	534	2	267	0	534	2	267	
	Th-Rt		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
	Right	107	1	0	2	10	119	1	0	0%	0	119	1	0	0	119	1	0	
	Shared		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
Westbound	Left	193	2	106	4	1	198	2	109	(10%)	1	199	2	109	0	199	2	109	
	Lt-Th		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	1108	2	554	22	61	1191	2	596	(5%)	1	1192	2	596	0	1192	2	596	
	Th-Rt		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
	Right	145	1	75	3	6	154	1	72	(10%)	1	155	1	72	0	155	1	72	
	Shared		0	0			0	0	0	0%	0	0	0	0	0	0	0	0	
Critical Volumes:		North-South: 770			North-South: 805					North-South: 807					North-South: 807				
		East-West: 607			East-West: 660					East-West: 660					East-West: 660				
		Total: 1377			Total: 1464					Total: 1467					Total: 1467				
Volume/capacity (v/c) ratio:		1.001			1.065					1.067					1.067				
v/c less ATSAC adjustment:		0.931			0.995					0.997					0.997				
Level of Service (LOS):		E			E					E					E				

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.002
Significantly impacted? NO
Δv/c after mitigation: 0.002
Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 1		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street:		Critical Phases: 4			Critical Phases: 4					☒ Adjacent					Critical Phases: 4				
Culver Boulevard		Capacity: 1375			Capacity: 1375					Trip AM 16 13 29					Capacity: 1375				
East/West Street:		Signal System: 2			Signal System: 2					Gen 1 PM 45 51 96					Signal System: 2				
Sepulveda Boulevard		v/c reduction: 7%			v/c reduction: 7%					Trip AM 0 0 0					v/c reduction: 7%				
Analysis Date: 08/24/2015		Opposed Phasing: 0			Opposed Phasing: 0					Gen 2 PM 0 0 0					Opposed Phasing: 0				
PM Peak: 5:00 PM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total Volume	Lanes	Lane Volume	+ Project Volume	Total Volume	Lanes	Lane Volume	Adjusted Volume	Total Volume	Lanes	Lane Volume		
Northbound	Left	269	2	148	5	8	282	2	155	0%	0	282	2	155	0	282	2	155	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	1245	1	681	25	3	1273	1	696	0%	0	1273	1	698	0	1273	1	698	
	Th-Rt		1	681				1	696	0%	0		1	698			1	698	
	Right	116	0	0	2	1	119	0	0	10%	4	123	0	0	0	123	0	0	
	Shared		0	0				0	0	0%	0		0	0			0	0	
Southbound	Left	211	2	116	4	8	223	2	123	10%	4	227	2	125	0	227	2	125	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	887	2	320	18	11	916	2	332	0%	0	916	2	332	0	916	2	332	
	Th-Rt		1	320				1	332	0%	0		1	332			1	332	
	Right	72	0	0	1	8	81	0	0	0%	0	81	0	0	0	81	0	0	
	Shared		0	0				0	0	0%	0		0	0			0	0	
Eastbound	Left	99	1	99	2	3	104	1	104	0%	0	104	1	104	0	104	1	104	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	1095	2	548	22	130	1247	2	624	5%	3	1250	2	625	0	1250	2	625	
	Th-Rt		0	0				0	0	0%	0		0	0		0	0	0	
	Right	259	1	125	5	9	273	1	132	0%	0	273	1	132	0	273	1	132	
	Shared		0	0				0	0	0%	0		0	0			0	0	
Westbound	Left	114	2	63	2	1	117	2	65	(10%)	5	122	2	67	0	122	2	67	
	Lt-Th		0	0				0	0	0%	0		0	0		0	0	0	
	Thru	869	2	435	17	111	997	2	499	(5%)	3	1000	2	500	0	1000	2	500	
	Th-Rt		0	0				0	0	0%	0		0	0		0	0	0	
	Right	178	1	72	4	20	202	1	90	(10%)	5	207	1	93	0	207	1	93	
	Shared		0	0				0	0	0%	0		0	0			0	0	
Critical Volumes:		North-South: 797			North-South: 819					North-South: 823					North-South: 823				
		East-West: 610			East-West: 688					East-West: 692					East-West: 692				
		Total: 1407			Total: 1507					Total: 1515					Total: 1515				
Volume/capacity (v/c) ratio:		1.023			1.096					1.102					1.102				
v/c less ATSAC adjustment:		0.953			1.026					1.032					1.032				
Level of Service (LOS):		E			F					F					F				

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
 Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.006 Δv/c after mitigation: 0.006
 Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 2		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street: Lindblade Street		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2 Capacity: 1500			☒ Adjacent		In	Out	Total	Critical Phases: 2 Capacity: 1500				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2017 at: 1.0%		Signal System: 2 v/c reduction: 7%			Trip Gen 1		AM PM	16 45	13 51	29 96	☐ Use Dist 2: Signal System: 2 v/c reduction: 7%			
Analysis Date: 08/24/2015 AM Peak: 8:00 AM		Opposed Phasing: 0					Opposed Phasing: 0			Trip Gen 2		AM PM	0 0	0 0	0 0	Opposed Phasing: 0			
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	= Total	Lane			Adjusted	Total	Lane		
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		Volume	Volume	Volume		
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Lt-Th	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Th-Rt	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Shared		0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Southbound	Left	20	0	0	0	0	20	0	0	5%	1	21	0	0	0	21	0		
	Lt-Th	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Th-Rt	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Right	39	0	0	1	0	40	0	0	0%	0	40	0	0	0	40	0		
Shared		59	1	59	1	0	60	1	60	0%	0	61	1	61	1	61	61		
Eastbound	Left	19	1	19	0	0	19	1	19	0%	0	19	1	19	0	19	1		
	Lt-Th	565	2	283	11	175	751	2	376	25%	4	755	2	378	0	755	2		
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Th-Rt	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Shared		0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Westbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Lt-Th	1405	1	719	28	68	1501	1	767	(25%)	3	1504	1	769	0	1504	1		
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Th-Rt	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Right	33	0	0	1	0	34	0	0	(5%)	1	35	0	0	0	35	0		
Shared		0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Critical Volumes:		North-South: 59 East-West: 738 Total: 797			60 787 847					North-South: 61 East-West: 789 Total: 850					North-South: 61 East-West: 789 Total: 850				
Volume/capacity (v/c) ratio:		0.531			0.565					0.567					0.567				
v/c less ATSAC adjustment:		0.461			0.495					0.497					0.497				
Level of Service (LOS):		A			A					A					A				

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.002
Significantly impacted? NO
Δv/c after mitigation: 0.002
Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 2		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street: Lindblade Street		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2 Capacity: 1500			☒ Adjacent		In	Out	Total	Critical Phases: 2 Capacity: 1500				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2017 at: 1.0%		Signal System: 2 v/c reduction: 7%			Trip Gen 1		AM PM	16 45	13 51	29 96	☐ Use Dist 2: Signal System: 2 v/c reduction: 7%			
Analysis Date: 08/24/2015 PM Peak: 5:00 PM		Opposed Phasing: 0					Opposed Phasing: 0			Trip Gen 2		AM PM	0 0	0 0	0 0	Opposed Phasing: 0			
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	Total	Lane		Adjusted	Total	Lane			
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Lt-Th									0%									
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Th-Rt									0%									
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Shared										0%									
Southbound	Left	32	0	0	1	0	33	0	0	5%	2	35	0	0	0	0	0		
	Lt-Th									0%									
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
	Th-Rt									0%									
	Right	31	0	0	1	0	32	0	0	0%	0	32	0	0	0	0	0		
Shared			1	63				1	64	0%		1	66			1	66		
Eastbound	Left	28	1	28	1	0	29	1	29	0%	0	29	1	29	0	29	1	29	
	Lt-Th		0	0				0	0	0%			0	0		0	0		
	Thru	1372	2	686	28	138	1538	2	769	25%	11	1549	2	774	0	1549	2	774	
	Th-Rt		0	0				0	0	0%			0	0		0	0		
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0		
Shared			0	0				0	0	0%			0	0		0	0		
Westbound	Left	2	0	0	0	0	2	0	0	0%	0	2	0	0	0	0	0		
	Lt-Th		0	0				0	0	0%			0	0		0	0		
	Thru	1144	1	585	23	132	1299	1	663	(25%)	13	1312	1	670	0	1312	1	670	
	Th-Rt		1	585				1	663	0%			1	670			1	670	
	Right	26	0	0	1	0	27	0	0	(5%)	2	29	0	0	0	29	0	0	
Shared			0	0				0	0	0%			0	0		0	0		
Critical Volumes:		North-South: 63 East-West: 686 Total: 749			North-South: 64 East-West: 769 Total: 833					North-South: 66 East-West: 774 Total: 841					North-South: 66 East-West: 774 Total: 841				
Volume/capacity (v/c) ratio:		0.499			0.555					0.560					0.560				
v/c less ATSAC adjustment:		0.429			0.485					0.490					0.490				
Level of Service (LOS):		A			A					A					A				

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.005
Significantly impacted? NO
Δv/c after mitigation: 0.005
Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 3		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street: Braddock Drive		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2			☒ Adjacent		In	Out	Total	Critical Phases: 2				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015		Capacity: 1500			Trip	AM	16	13	29	Capacity: 1500				
Analysis Date: 08/24/2015		Opposed Phasing: 0			to: 2017		Signal System: 2			Gen 1	PM	45	51	96	Signal System: 2				
AM Peak: 8:00 AM		Counts Lane Volume Lanes Volume			at: 1.0%		v/c reduction: 7%			Trip	AM	0	0	0	v/c reduction: 7%				
							Opposed Phasing: 0			Gen 2	PM	0	0	0	Opposed Phasing: 0				
					+ Amb.	+ Area	= Total			+ Project		= Total			Adjusted	Total		Lane	
					Growth	Projects	Volume	Lanes	Volume	Volume		Volume	Lanes	Volume	Volume	Volume	Lanes	Volume	
Northbound	Left	46	0	46	1	0	47	0	47	0%	0	47	0	47	0	47	0	47	
	Lt-Th	N/B RTOR:		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	Existing: 50%		112	0	0	2	114	0	0	0%	0	114	0	0	0	114	0	0
	Th-Rt	Projected: 50%		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
	Right	Mitigated: 50%		43	0	43	1	44	0	44	15%	2	46	0	46	0	46	0	46
Shared		1	201	1	0	1	205	1	205	0%		1	207	1	207	1	207	1	207
Southbound	Left	58	0	58	1	0	59	0	59	20%	3	62	0	62	0	62	0	62	
	Lt-Th	S/B RTOR:		0	0	0	2	119	0	0	0%	0	119	0	0	0	119	0	0
	Thru	Existing: 50%		117	0	0	0	0	0	0%	0	0	0	0	0	0	119	0	0
	Th-Rt	Projected: 50%		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
	Right	Mitigated: 50%		42	0	42	1	43	0	43	0%	0	43	0	43	0	43	0	43
Shared		1	217	1	0	1	221	1	221	0%		1	224	1	224	1	224	1	224
Eastbound	Left	26	1	26	1	0	27	1	27	0%	0	27	1	27	0	27	1	27	
	Lt-Th	E/B RTOR:		0	0	0	10	175	675	1	30%	5	680	1	377	0	680	1	377
	Thru	Existing: 0%		490	1	282	1	375	1	375	0%	0	377	1	377	0	377	1	377
	Th-Rt	Projected: 0%		1	282	1	375	1	375	0%	0	377	1	377	0	377	1	377	
	Right	Mitigated: 0%		73	0	0	1	74	0	0	0%	0	74	0	0	0	74	0	0
Shared		0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
Westbound	Left	35	1	35	1	0	36	1	36	(15%)	2	38	1	38	0	38	1	38	
	Lt-Th	W/B RTOR:		0	0	0	27	68	1455	1	0%	4	1459	1	772	0	1459	1	772
	Thru	Existing: 0%		1360	1	721	1	769	1	769	(30%)	0	772	1	772	0	772	1	772
	Th-Rt	Projected: 0%		1	721	1	769	1	769	0%	0	772	1	772	0	772	1	772	
	Right	Mitigated: 0%		82	0	0	2	84	0	0	(20%)	2	86	0	0	0	86	0	0
Shared		0	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
Critical Volumes:		North-South: 263				North-South: 268				North-South: 271				North-South: 271					
		East-West: 747				East-West: 796				East-West: 799				East-West: 799					
		Total: 1010				Total: 1064				Total: 1070				Total: 1070					
Volume/capacity (v/c) ratio:		0.673				0.710				0.714				0.714					
v/c less ATSAC adjustment:		0.603				0.640				0.644				0.644					
Level of Service (LOS):		B				B				B				B					

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.004 Δv/c after mitigation: 0.004
Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 3		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street: Braddock Drive		Critical Phases: 2 Capacity: 1500			Ambient Growth		Critical Phases: 2 Capacity: 1500			☒ Adjacent		In	Out	Total	Critical Phases: 2 Capacity: 1500				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2017 at: 1.0%		Signal System: 2 v/c reduction: 7%			Trip	AM	16	13	29	Signal System: 2 v/c reduction: 7%				
Analysis Date: 08/24/2015 PM Peak: 5:00 PM		Opposed Phasing: 0					Opposed Phasing: 0			Gen 1	PM	45	51	96	Opposed Phasing: 0				
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	Total	Lane			Adjusted	Total	Lane		
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		Volume	Volume	Volume		
Northbound	Left	47	0	47	1	0	48	0	48	0%	0	48	0	48	0	48	0	48	
	Lt-Th	N/B RTOR:		0			0	0	0	0%			0	0	0		0	0	
	Thru	Existing: 50%		113	0	0	2	0	115	0	0	115	0	0	0	0	115	0	0
	Th-Rt	Projected: 50%		0	0	0		0	0	0%			0	0	0	0	0	0	
	Right	Mitigated: 50%		43	0	43	1	0	44	0	44	15%	7	51	0	51	0	51	
Shared		1		203			1	207		0%		1	214		1	214			
Southbound	Left	75	0	75	2	0	77	0	77	20%	9	86	0	86	0	86	0	86	
	Lt-Th	S/B RTOR:		0			0	0	0	0%			0	0	0		0	0	
	Thru	Existing: 50%		226	0	0	5	0	231	0	0	231	0	0	0	0	231	0	0
	Th-Rt	Projected: 50%		0	0	0		0	0	0%			0	0	0	0	0	0	
	Right	Mitigated: 50%		35	0	35	1	0	36	0	36	0%	0	36	0	36	0	36	
Shared		1		336			1	343		0%		1	352		1	352			
Eastbound	Left	42	1	42	1	0	43	1	43	0%	0	43	1	43	0	43	1	43	
	Lt-Th	E/B RTOR:		0			0	0	0	0%			0	0	0		0	0	
	Thru	Existing: 50%		1206	1	675	24	138	1368	1	757	30%	13	1381	1	764	1	764	
	Th-Rt	Projected: 50%		1	675		1	757		0%			1	764		1	764		
	Right	Mitigated: 50%		143	0	0	3	0	146	0	0	0%	0	146	0	0	0	0	
Shared		0		0			0	0		0%		0	0		0	0			
Westbound	Left	62	1	62	1	0	63	1	63	(15%)	8	71	1	71	0	71	1	71	
	Lt-Th	W/B RTOR:		0			0	0	0	0%			0	0	0		0	0	
	Thru	Existing: 50%		1071	1	571	22	132	1225	1	648	(30%)	15	1240	1	660	1	660	
	Th-Rt	Projected: 50%		1	571		1	648		0%			1	660		1	660		
	Right	Mitigated: 50%		70	0	0	1	0	71	0	0	(20%)	10	81	0	0	0	0	
Shared		0		0			0	0		0%		0	0		0	0			
Critical Volumes:		North-South: 383 East-West: 737 Total: 1120				North-South: 391 East-West: 820 Total: 1211				North-South: 403 East-West: 835 Total: 1237				North-South: 403 East-West: 835 Total: 1237					
Volume/capacity (v/c) ratio:		0.746						0.807						0.825			0.825		
v/c less ATSAC adjustment:		0.676						0.737						0.755			0.755		
Level of Service (LOS):		B						C						C			C		

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.018 Δv/c after mitigation: 0.018
Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 4		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street: Machado Road		Critical Phases: 3 Capacity: 1425			Ambient Growth		Critical Phases: 3 Capacity: 1425			☒ Adjacent		In	Out	Total	Critical Phases: 3 Capacity: 1425				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2017 at: 1.0%		Signal System: 2 v/c reduction: 7%			Trip Gen 1		AM	16	13	29	v/c reduction: 7%			
Analysis Date: 08/24/2015 AM Peak: 8:00 AM		Opposed Phasing: 1					Opposed Phasing: 1			Trip Gen 2		AM	0	0	0	Opposed Phasing: 1			
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	= Total	Lane			Adjusted	Total	Lane		
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		Volume	Volume	Volume		
Northbound	Left	7	0	0	0	0	7	0	0	0%	0	7	0	0	0	7	0	0	
	Lt-Th	N/B RTOR: Existing: 50% Projected: 50% Mitigated: 50%	0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru		13	0	0	0	13	0	0	0%	0	13	0	0	0	13	0	0	
	Th-Rt		0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Right		9	0	0	0	9	0	0	0%	0	9	0	0	0	9	0	0	
Shared		1	29		0	0	1	30	0%		1	30		0	1	30			
Southbound	Left	18	0	18	0	0	18	0	18	0%	0	18	0	18	0	18	0	18	
	Lt-Th	S/B RTOR: Existing: 50% Projected: 50% Mitigated: 50%	1	20		0	1	20	0%		1	20		0	1	20			
	Thru		2	0	0	0	2	0	0	0%	0	2	0	0	0	2	0	0	
	Th-Rt		0	0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Right		197	2	82	4	19	220	2	67	10%	2	222	2	68	0	222	2	68
Shared		0	0			0	0	0	0%		0	0	0	0	0	0	0		
Eastbound	Left	95	2	52	2	99	196	2	108	(10%)	1	197	2	108	0	197	2	108	
	Lt-Th	E/B RTOR: Existing: 50% Projected: 50% Mitigated: 50%	0	0		9	76	529	1	267	(20%)	3	532	1	268	0	532	1	268
	Thru		444	1	224		1	267	0%		1	268		0	1	268			
	Th-Rt		1	224		1	267	0%		1	268		0	1	268				
	Right		4	0	0	0	0	4	0	0	0%	0	4	0	0	0	4	0	0
Shared		0	0			0	0	0	0%		0	0	0	0	0	0	0		
Westbound	Left	2	1	2	0	0	2	1	2	0%	0	2	1	2	0	2	1	2	
	Lt-Th	W/B RTOR: Existing: 50% Projected: 50% Mitigated: 50%	0	0			0	0	0	0%		0	0	0	0	0	0	0	
	Thru		1287	2	443	26	49	1362	2	468	20%	3	1365	2	469	0	1365	2	469
	Th-Rt		1	443		1	468	0%		1	469		0	1	469				
	Right		42	0	0	1	0	43	0	0	0%	0	43	0	0	0	43	0	0
Shared		0	0			0	0	0	0%		0	0	0	0	0	0	0		
Critical Volumes:		North-South:	111	North-South:			97	North-South:			98	North-South:			98				
		East-West:	495	East-West:			576	East-West:			578	East-West:			578				
		Total:	606	Total:			673	Total:			675	Total:			675				
Volume/capacity (v/c) ratio:		0.425			0.472			0.474			0.474								
v/c less ATSAC adjustment:		0.355			0.402			0.404			0.404								
Level of Service (LOS):		A			A			A			A								

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight.xls
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.002 Δv/c after mitigation: 0.002
Significantly impacted? NO Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA

Intersection No. 4		2015, EXISTING			2017, PROJECTED CUMULATIVE BASE					2017, WITH PROJECT					2017, WITH TRAFFIC MITIGATION				
North/South Street: Machado Road		Critical Phases: 3 Capacity: 1425			Ambient Growth		Critical Phases: 3 Capacity: 1425			☒ Adjacent		In	Out	Total	Critical Phases: 3 Capacity: 1425				
East/West Street: Sepulveda Boulevard		Signal System: 2 v/c reduction: 7%			from: 2015 to: 2017 at: 1.0%		Signal System: 2 v/c reduction: 7%			Gen 1	PM	45	51	96	☐ Use Dist 2: Signal System: 2 v/c reduction: 7%				
Analysis Date: 08/24/2015 PM Peak: 5:00 PM		Opposed Phasing: 1					Opposed Phasing: 1			Gen 2	PM	0	0	0	Opposed Phasing: 1				
		Counts	Lane		+ Amb.	+ Area	= Total	Lane		+ Project	Total	Lane			Adjusted	Total	Lane		
		Volume	Lanes	Volume	Growth	Projects	Volume	Lanes	Volume	Volume	Volume	Lanes	Volume		Volume	Volume	Volume		
Northbound	Left	5	0	0	0	0	5	0	0	0%	0	5	0	0	0	5	0	0	
	Lt-Th	N/B RTOR:		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	Existing: 0%		8	0	0	8	0	0	0%	0	8	0	0	0	0	8	0	0
	Th-Rt	Projected: 0%		7	0	0	7	0	0	0%	0	7	0	0	0	0	7	0	0
	Shared	Mitigated: 0%		1	20	0	1	20	0	0%	0	1	20	0	0	0	1	20	0
Southbound	Left	25	0	25	1	0	26	0	26	0%	0	26	0	26	0	26	0	26	
	Lt-Th	S/B RTOR:		1	32	0	1	33	0	0%	0	1	33	0	0	0	1	33	
	Thru	Existing: 0%		7	0	0	7	0	0	0%	0	7	0	0	0	0	7	0	0
	Th-Rt	Projected: 0%		212	2	117	4	259	2	143	10%	5	264	2	145	0	264	2	145
	Shared	Mitigated: 0%		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
Eastbound	Left	184	2	101	4	74	262	2	144	(10%)	5	267	2	147	0	267	2	147	
	Lt-Th	E/B RTOR:		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	Existing: 0%		1119	1	563	22	1205	1	606	(20%)	10	1215	1	611	0	1215	1	611
	Th-Rt	Projected: 0%		7	0	0	0	7	0	0	0%	0	7	0	0	0	7	0	0
	Shared	Mitigated: 0%		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
Westbound	Left	7	1	7	0	0	7	1	7	0%	0	7	1	7	0	7	1	7	
	Lt-Th	W/B RTOR:		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	
	Thru	Existing: 0%		968	2	348	19	1076	2	385	20%	9	1085	2	388	0	1085	2	388
	Th-Rt	Projected: 0%		77	1	348	2	79	1	385	0%	0	79	1	388	0	79	1	388
	Shared	Mitigated: 0%		0	0	0	0	0	0	0%	0	0	0	0	0	0	0	0	0
Critical Volumes:		North-South: 137 East-West: 570 Total: 707			North-South: 163 East-West: 613 Total: 776					North-South: 166 East-West: 618 Total: 784					North-South: 166 East-West: 618 Total: 784				
Volume/capacity (v/c) ratio:		0.496			0.545					0.550					0.550				
v/c less ATSAC adjustment:		0.426			0.475					0.480					0.480				
Level of Service (LOS):		A			A					A					A				

PROJECT IMPACT

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Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.005
Significantly impacted? NO
Δv/c after mitigation: 0.005
Fully mitigated? N/A

APPENDIX D

Synchro/HCM 2010 Delay Analysis Reports

Intersection												
Intersection Delay, s/veh	8.9											
Intersection LOS	A											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	4	18	14	0	14	18	38	0	28	167	7
Future Vol, veh/h	0	4	18	14	0	14	18	38	0	28	167	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	20	15	0	15	20	41	0	30	182	8
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.1				8.2				9.1			
HCM LOS	A				A				A			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	20%	11%	11%								
Vol Thru, %	83%	26%	50%	82%								
Vol Right, %	3%	54%	39%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	202	70	36	202								
LT Vol	28	14	4	22								
Through Vol	167	18	18	165								
RT Vol	7	38	14	15								
Lane Flow Rate	220	76	39	220								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.271	0.099	0.052	0.27								
Departure Headway (Hd)	4.451	4.681	4.806	4.423								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	808	765	744	812								
Service Time	2.477	2.715	2.844	2.448								
HCM Lane V/C Ratio	0.272	0.099	0.052	0.271								
HCM Control Delay	9.1	8.2	8.1	9.1								
HCM Lane LOS	A	A	A	A								
HCM 95th-tile Q	1.1	0.3	0.2	1.1								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	22	165	15
Future Vol, veh/h	0	22	165	15
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	24	179	16
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	9.1
HCM LOS	A

Lane

Intersection												
Intersection Delay, s/veh	10.2											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	9	28	63	0	8	27	36	0	29	161	21
Future Vol, veh/h	0	9	28	63	0	8	27	36	0	29	161	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	10	30	68	0	9	29	39	0	32	175	23
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.9				8.8				9.9			
HCM LOS	A				A				A			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	11%	9%	17%								
Vol Thru, %	76%	38%	28%	81%								
Vol Right, %	10%	51%	63%	3%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	211	71	100	303								
LT Vol	29	8	9	50								
Through Vol	161	27	28	244								
RT Vol	21	36	63	9								
Lane Flow Rate	229	77	109	329								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.302	0.109	0.15	0.428								
Departure Headway (Hd)	4.748	5.101	4.975	4.68								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	752	696	714	764								
Service Time	2.81	3.182	3.05	2.736								
HCM Lane V/C Ratio	0.305	0.111	0.153	0.431								
HCM Control Delay	9.9	8.8	8.9	11.2								
HCM Lane LOS	A	A	A	B								
HCM 95th-tile Q	1.3	0.4	0.5	2.2								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	50	244	9
Future Vol, veh/h	0	50	244	9
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	265	10
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	11.2
HCM LOS	B

Lane

Intersection												
Intersection Delay, s/veh	8.9											
Intersection LOS	A											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	4	18	15	0	14	18	38	0	28	169	7
Future Vol, veh/h	0	4	18	15	0	14	18	38	0	28	169	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	20	16	0	15	20	41	0	30	184	8
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.1				8.2				9.2			
HCM LOS	A				A				A			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	20%	11%	11%								
Vol Thru, %	83%	26%	49%	82%								
Vol Right, %	3%	54%	41%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	204	70	37	204								
LT Vol	28	14	4	22								
Through Vol	169	18	18	167								
RT Vol	7	38	15	15								
Lane Flow Rate	222	76	40	222								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.275	0.099	0.054	0.273								
Departure Headway (Hd)	4.46	4.694	4.807	4.432								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	807	762	744	812								
Service Time	2.484	2.73	2.846	2.456								
HCM Lane V/C Ratio	0.275	0.1	0.054	0.273								
HCM Control Delay	9.2	8.2	8.1	9.1								
HCM Lane LOS	A	A	A	A								
HCM 95th-tile Q	1.1	0.3	0.2	1.1								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	22	167	15
Future Vol, veh/h	0	22	167	15
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	24	182	16
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	9.1
HCM LOS	A

Lane

Intersection												
Intersection Delay, s/veh	10.4											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	9	28	65	0	8	27	36	0	31	169	21
Future Vol, veh/h	0	9	28	65	0	8	27	36	0	31	169	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	10	30	71	0	9	29	39	0	34	184	23
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9				8.9				10.1			
HCM LOS	A				A				B			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	11%	9%	16%								
Vol Thru, %	76%	38%	27%	81%								
Vol Right, %	10%	51%	64%	3%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	221	71	102	310								
LT Vol	31	8	9	50								
Through Vol	169	27	28	251								
RT Vol	21	36	65	9								
Lane Flow Rate	240	77	111	337								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.318	0.11	0.154	0.44								
Departure Headway (Hd)	4.77	5.149	5.013	4.701								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	747	688	708	762								
Service Time	2.835	3.238	3.096	2.762								
HCM Lane V/C Ratio	0.321	0.112	0.157	0.442								
HCM Control Delay	10.1	8.9	9	11.4								
HCM Lane LOS	B	A	A	B								
HCM 95th-tile Q	1.4	0.4	0.5	2.3								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	50	251	9
Future Vol, veh/h	0	50	251	9
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	54	273	10
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	11.4
HCM LOS	B

Lane

Intersection												
Intersection Delay, s/veh	9											
Intersection LOS	A											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	4	18	14	0	14	18	39	0	29	170	7
Future Vol, veh/h	0	4	18	14	0	14	18	39	0	29	170	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	20	15	0	15	20	42	0	32	185	8
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.1				8.3				9.2			
HCM LOS	A				A				A			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	20%	11%	11%								
Vol Thru, %	83%	25%	50%	82%								
Vol Right, %	3%	55%	39%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	206	71	36	205								
LT Vol	29	14	4	22								
Through Vol	170	18	18	168								
RT Vol	7	39	14	15								
Lane Flow Rate	224	77	39	223								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.277	0.101	0.052	0.274								
Departure Headway (Hd)	4.459	4.694	4.826	4.433								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	806	762	741	811								
Service Time	2.486	2.728	2.864	2.458								
HCM Lane V/C Ratio	0.278	0.101	0.053	0.275								
HCM Control Delay	9.2	8.3	8.1	9.1								
HCM Lane LOS	A	A	A	A								
HCM 95th-tile Q	1.1	0.3	0.2	1.1								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	22	168	15
Future Vol, veh/h	0	22	168	15
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	24	183	16
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	9.1
HCM LOS	A

Lane

Intersection												
Intersection Delay, s/veh	10.4											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	9	29	64	0	8	28	37	0	30	164	21
Future Vol, veh/h	0	9	29	64	0	8	28	37	0	30	164	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	10	32	70	0	9	30	40	0	33	178	23
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9				8.9				10			
HCM LOS	A				A				A			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	11%	9%	17%								
Vol Thru, %	76%	38%	28%	81%								
Vol Right, %	10%	51%	63%	3%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	215	73	102	309								
LT Vol	30	8	9	51								
Through Vol	164	28	29	249								
RT Vol	21	37	64	9								
Lane Flow Rate	234	79	111	336								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.31	0.113	0.154	0.438								
Departure Headway (Hd)	4.773	5.133	5.007	4.7								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	748	691	710	762								
Service Time	2.838	3.219	3.089	2.761								
HCM Lane V/C Ratio	0.313	0.114	0.156	0.441								
HCM Control Delay	10	8.9	9	11.4								
HCM Lane LOS	A	A	A	B								
HCM 95th-tile Q	1.3	0.4	0.5	2.2								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	51	249	9
Future Vol, veh/h	0	51	249	9
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	55	271	10
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	11.4
HCM LOS	B

Lane

Intersection												
Intersection Delay, s/veh	9											
Intersection LOS	A											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	4	18	15	0	14	18	39	0	29	172	7
Future Vol, veh/h	0	4	18	15	0	14	18	39	0	29	172	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	20	16	0	15	20	42	0	32	187	8
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	8.1				8.3				9.2			
HCM LOS	A				A				A			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	20%	11%	11%								
Vol Thru, %	83%	25%	49%	82%								
Vol Right, %	3%	55%	41%	7%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	208	71	37	207								
LT Vol	29	14	4	22								
Through Vol	172	18	18	170								
RT Vol	7	39	15	15								
Lane Flow Rate	226	77	40	225								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.28	0.101	0.054	0.277								
Departure Headway (Hd)	4.466	4.706	4.825	4.439								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	805	760	740	810								
Service Time	2.493	2.742	2.865	2.465								
HCM Lane V/C Ratio	0.281	0.101	0.054	0.278								
HCM Control Delay	9.2	8.3	8.1	9.2								
HCM Lane LOS	A	A	A	A								
HCM 95th-tile Q	1.1	0.3	0.2	1.1								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	22	170	15
Future Vol, veh/h	0	22	170	15
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	24	185	16
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	9.2
HCM LOS	A

Lane

Intersection												
Intersection Delay, s/veh	10.5											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	9	29	66	0	8	28	37	0	32	172	21
Future Vol, veh/h	0	9	29	66	0	8	28	37	0	32	172	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	10	32	72	0	9	30	40	0	35	187	23
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9.1				9				10.2			
HCM LOS	A				A				B			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	14%	11%	9%	16%								
Vol Thru, %	76%	38%	28%	81%								
Vol Right, %	9%	51%	63%	3%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	225	73	104	316								
LT Vol	32	8	9	51								
Through Vol	172	28	29	256								
RT Vol	21	37	66	9								
Lane Flow Rate	245	79	113	343								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.326	0.114	0.158	0.45								
Departure Headway (Hd)	4.792	5.182	5.047	4.721								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	743	684	703	756								
Service Time	2.863	3.275	3.135	2.786								
HCM Lane V/C Ratio	0.33	0.115	0.161	0.454								
HCM Control Delay	10.2	9	9.1	11.6								
HCM Lane LOS	B	A	A	B								
HCM 95th-tile Q	1.4	0.4	0.6	2.3								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	51	256	9
Future Vol, veh/h	0	51	256	9
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	55	278	10
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	11.6
HCM LOS	B

Lane



September 17, 2015

Barry Kurtz, P.E., T.E.
Traffic Engineer, Public Works Department
9770 Culver Boulevard, Culver City, CA

RE: *Supplemental Traffic Memorandum for Harbor Freight Project*

Dear Barry:

Thank you for providing your comments on the draft Traffic Impact Analysis (TIA) report for Harbor Freight Project dated August 2015. Based on your comments, we have completed re-collected traffic counts at the following study intersections:

- Sepulveda Boulevard and Braddock Drive
- Braddock Drive and Harter Avenue

Peak hour turning movement counts were collected at these 2 locations between 7AM to 9AM and 4PM to 6PM while the school was in session. Based on the comparison between the traffic counts that we used in draft TIA (assuming a growth factor of 10%) and the traffic counts collected yesterday, the difference in traffic counts is not significant. We have completed a Level-of-Service (LOS) analysis for these intersections with the new counts and both intersections continue to operate at an acceptable LOS B or better for both AM and PM peak periods for existing and existing plus project conditions.

We hope that you would find this supplemental analysis acceptable for approval of TIA. Please contact me if you have any questions or require further documentation in this regard.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Sri Chakravarthy'.

Sri Chakravarthy, P.E., T.E.
Project Manager

Attachments:

1. Traffic Counts from 09/16/2015
2. LOS Analysis Worksheets

City of Culver City
N/S: Braddock Drive
E/W: Harter Avenue
Weather: Clear

File Name : CVCBRHAAM
Site Code : 00000053
Start Date : 9/17/2015
Page No : 1

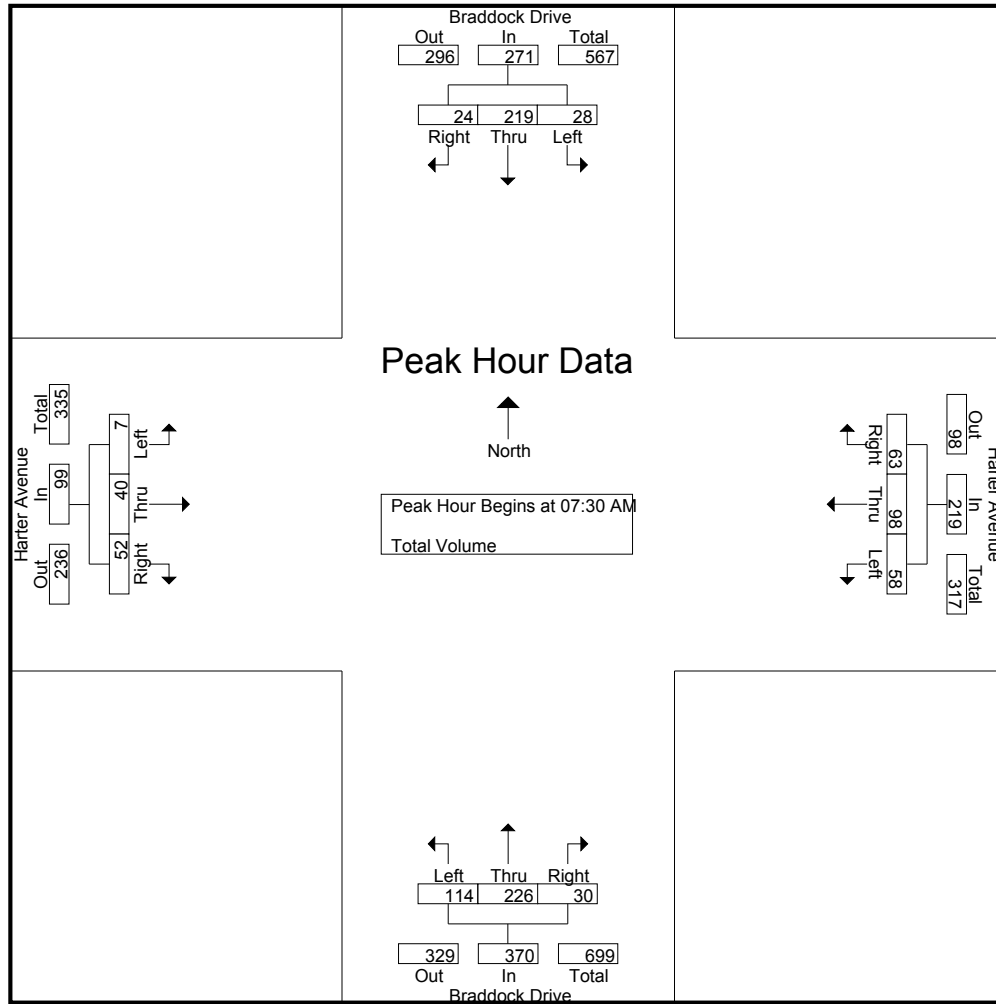
Groups Printed- Total Volume

	Braddock Drive Southbound				Harter Avenue Westbound				Braddock Drive Northbound				Harter Avenue 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
07:00 AM	3	27	1	31	4	7	8	19	1	37	1	39	0	2	6	8	97
07:15 AM	10	52	3	65	5	6	10	21	8	61	1	70	2	3	6	11	167
07:30 AM	5	38	3	46	20	20	20	60	29	74	2	105	0	4	13	17	228
07:45 AM	7	63	10	80	17	38	17	72	34	61	20	115	2	17	19	38	305
Total	25	180	17	222	46	71	55	172	72	233	24	329	4	26	44	74	797
08:00 AM	7	55	7	69	20	34	19	73	40	41	5	86	3	14	8	25	253
08:15 AM	9	63	4	76	1	6	7	14	11	50	3	64	2	5	12	19	173
08:30 AM	6	54	0	60	2	3	11	16	8	65	5	78	1	4	4	9	163
08:45 AM	13	58	0	71	5	4	4	13	10	49	2	61	1	3	1	5	150
Total	35	230	11	276	28	47	41	116	69	205	15	289	7	26	25	58	739
Grand Total	60	410	28	498	74	118	96	288	141	438	39	618	11	52	69	132	1536
Apprch %	12	82.3	5.6		25.7	41	33.3		22.8	70.9	6.3		8.3	39.4	52.3		
Total %	3.9	26.7	1.8	32.4	4.8	7.7	6.2	18.8	9.2	28.5	2.5	40.2	0.7	3.4	4.5	8.6	

	Braddock Drive Southbound				Harter Avenue Westbound				Braddock Drive Northbound				Harter Avenue 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 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	5	38	3	46	20	20	20	60	29	74	2	105	0	4	13	17	228
07:45 AM	7	63	10	80	17	38	17	72	34	61	20	115	2	17	19	38	305
08:00 AM	7	55	7	69	20	34	19	73	40	41	5	86	3	14	8	25	253
08:15 AM	9	63	4	76	1	6	7	14	11	50	3	64	2	5	12	19	173
Total Volume	28	219	24	271	58	98	63	219	114	226	30	370	7	40	52	99	959
% App. Total	10.3	80.8	8.9		26.5	44.7	28.8		30.8	61.1	8.1		7.1	40.4	52.5		
PHF	.778	.869	.600	.847	.725	.645	.788	.750	.713	.764	.375	.804	.583	.588	.684	.651	.786

City of Culver City
N/S: Braddock Drive
E/W: Harter Avenue
Weather: Clear

File Name : CVCBRHAAM
Site Code : 00000053
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:15 AM				07:30 AM			
+0 mins.	7	63	10	80	5	6	10	21	8	61	1	70	0	4	13	17
+15 mins.	7	55	7	69	20	20	20	60	29	74	2	105	2	17	19	38
+30 mins.	9	63	4	76	17	38	17	72	34	61	20	115	3	14	8	25
+45 mins.	6	54	0	60	20	34	19	73	40	41	5	86	2	5	12	19
Total Volume	29	235	21	285	62	98	66	226	111	237	28	376	7	40	52	99
% App. Total	10.2	82.5	7.4		27.4	43.4	29.2		29.5	63	7.4		7.1	40.4	52.5	
PHF	.806	.933	.525	.891	.775	.645	.825	.774	.694	.801	.350	.817	.583	.588	.684	.651

City of Culver City
N/S: Braddock Drive
E/W: Harter Avenue
Weather: Clear

File Name : CVCBRHAPM
Site Code : 00000053
Start Date : 9/17/2015
Page No : 1

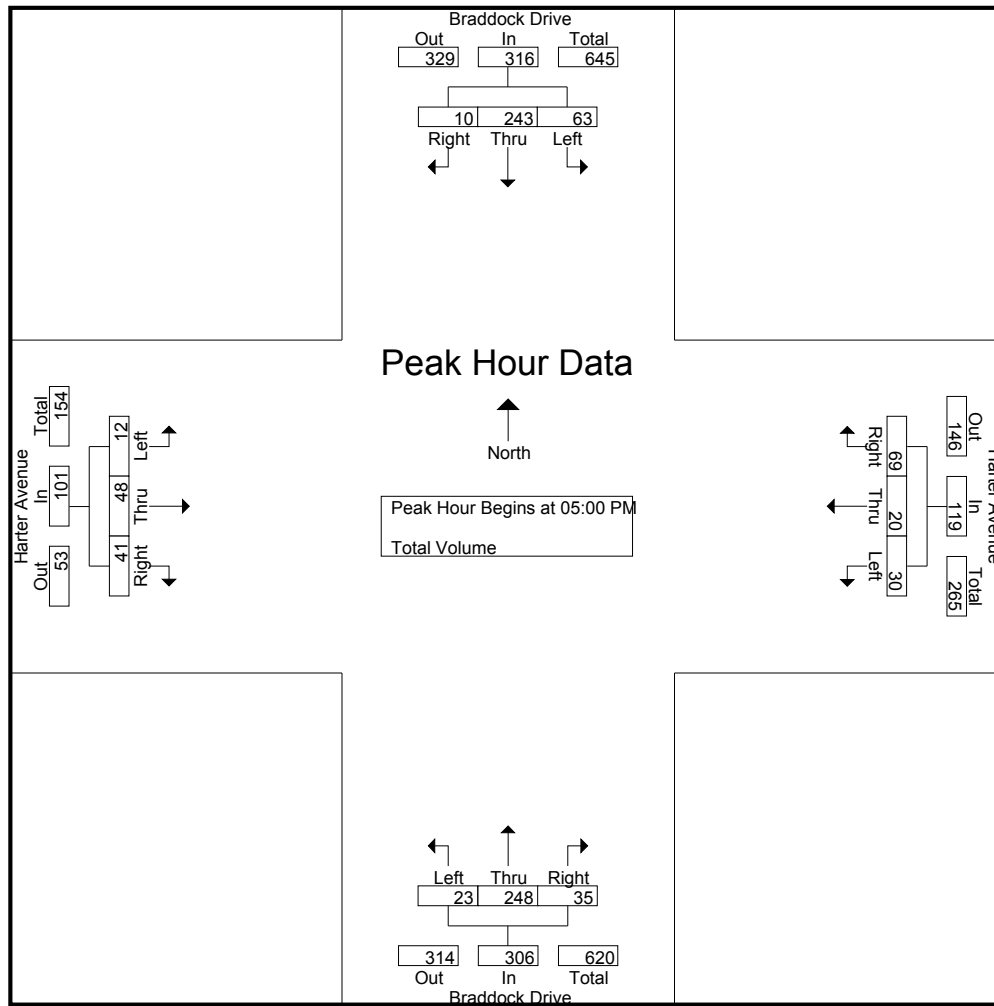
Groups Printed- Total Volume

	Braddock Drive Southbound				Harter Avenue Westbound				Braddock Drive Northbound				Harter Avenue 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	9	40	1	50	3	4	11	18	1	34	5	40	0	4	3	7	115
04:15 PM	11	44	1	56	5	6	9	20	2	36	0	38	2	7	12	21	135
04:30 PM	14	48	2	64	7	8	7	22	4	40	5	49	1	6	8	15	150
04:45 PM	12	55	1	68	2	3	7	12	3	50	7	60	2	9	9	20	160
Total	46	187	5	238	17	21	34	72	10	160	17	187	5	26	32	63	560
05:00 PM	16	59	4	79	4	6	17	27	5	43	5	53	7	12	10	29	188
05:15 PM	11	45	3	59	11	3	24	38	4	53	8	65	3	5	11	19	181
05:30 PM	18	65	2	85	7	6	13	26	6	81	9	96	1	15	12	28	235
05:45 PM	18	74	1	93	8	5	15	28	8	71	13	92	1	16	8	25	238
Total	63	243	10	316	30	20	69	119	23	248	35	306	12	48	41	101	842
Grand Total	109	430	15	554	47	41	103	191	33	408	52	493	17	74	73	164	1402
Apprch %	19.7	77.6	2.7		24.6	21.5	53.9		6.7	82.8	10.5		10.4	45.1	44.5		
Total %	7.8	30.7	1.1	39.5	3.4	2.9	7.3	13.6	2.4	29.1	3.7	35.2	1.2	5.3	5.2	11.7	

	Braddock Drive Southbound				Harter Avenue Westbound				Braddock Drive Northbound				Harter Avenue 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 05:00 PM																	
05:00 PM	16	59	4	79	4	6	17	27	5	43	5	53	7	12	10	29	188
05:15 PM	11	45	3	59	11	3	24	38	4	53	8	65	3	5	11	19	181
05:30 PM	18	65	2	85	7	6	13	26	6	81	9	96	1	15	12	28	235
05:45 PM	18	74	1	93	8	5	15	28	8	71	13	92	1	16	8	25	238
Total Volume	63	243	10	316	30	20	69	119	23	248	35	306	12	48	41	101	842
% App. Total	19.9	76.9	3.2		25.2	16.8	58		7.5	81	11.4		11.9	47.5	40.6		
PHF	.875	.821	.625	.849	.682	.833	.719	.783	.719	.765	.673	.797	.429	.750	.854	.871	.884

City of Culver City
N/S: Braddock Drive
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File Name : CVCBRHAPM
Site Code : 00000053
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	16	59	4	79	4	6	17	27	5	43	5	53	7	12	10	29
+15 mins.	11	45	3	59	11	3	24	38	4	53	8	65	3	5	11	19
+30 mins.	18	65	2	85	7	6	13	26	6	81	9	96	1	15	12	28
+45 mins.	18	74	1	93	8	5	15	28	8	71	13	92	1	16	8	25
Total Volume	63	243	10	316	30	20	69	119	23	248	35	306	12	48	41	101
% App. Total	19.9	76.9	3.2		25.2	16.8	58		7.5	81	11.4		11.9	47.5	40.6	
PHF	.875	.821	.625	.849	.682	.833	.719	.783	.719	.765	.673	.797	.429	.750	.854	.871

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City of Culver City
N/S: Braddock Drive
E/W: Sepulveda Boulevard
Weather: Clear

File Name : CVCGRSEAM
Site Code : 00000006
Start Date : 9/16/2015
Page No : 1

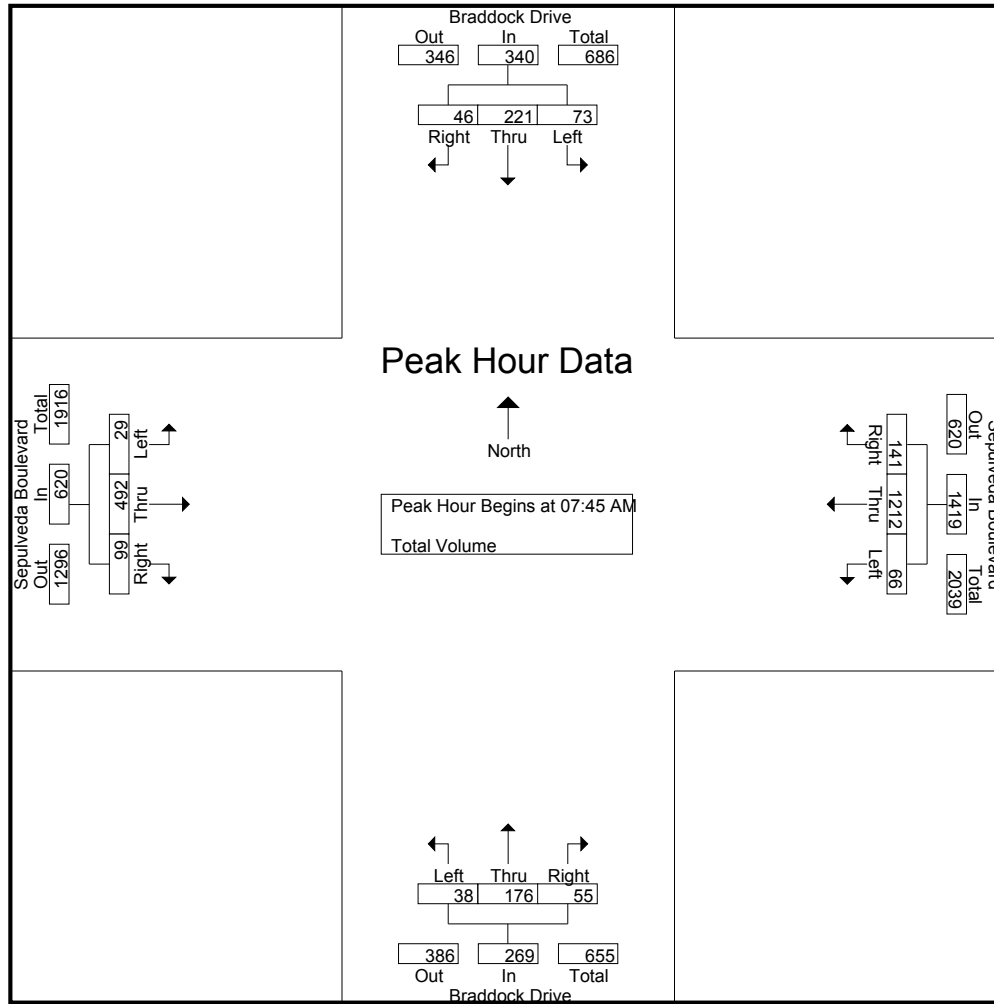
Groups Printed- Total Volume

	Braddock Drive Southbound				Sepulveda Boulevard Westbound				Braddock Drive Northbound				Sepulveda Boulevard 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
07:00 AM	4	25	10	39	6	349	18	373	7	21	4	32	9	64	10	83	527
07:15 AM	10	41	12	63	12	383	35	430	10	34	8	52	6	60	5	71	616
07:30 AM	14	50	10	74	22	285	70	377	9	34	7	50	8	81	15	104	605
07:45 AM	21	64	17	102	21	264	54	339	10	60	13	83	10	102	21	133	657
Total	49	180	49	278	61	1281	177	1519	36	149	32	217	33	307	51	391	2405
08:00 AM	27	56	10	93	21	304	38	363	9	35	17	61	7	128	27	162	679
08:15 AM	11	58	12	81	10	318	23	351	7	36	14	57	5	126	25	156	645
08:30 AM	14	43	7	64	14	326	26	366	12	45	11	68	7	136	26	169	667
08:45 AM	22	37	7	66	15	283	24	322	13	35	17	65	3	127	16	146	599
Total	74	194	36	304	60	1231	111	1402	41	151	59	251	22	517	94	633	2590
Grand Total	123	374	85	582	121	2512	288	2921	77	300	91	468	55	824	145	1024	4995
Apprch %	21.1	64.3	14.6		4.1	86	9.9		16.5	64.1	19.4		5.4	80.5	14.2		
Total %	2.5	7.5	1.7	11.7	2.4	50.3	5.8	58.5	1.5	6	1.8	9.4	1.1	16.5	2.9	20.5	

	Braddock Drive Southbound				Sepulveda Boulevard Westbound				Braddock Drive Northbound				Sepulveda Boulevard 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 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	21	64	17	102	21	264	54	339	10	60	13	83	10	102	21	133	657
08:00 AM	27	56	10	93	21	304	38	363	9	35	17	61	7	128	27	162	679
08:15 AM	11	58	12	81	10	318	23	351	7	36	14	57	5	126	25	156	645
08:30 AM	14	43	7	64	14	326	26	366	12	45	11	68	7	136	26	169	667
Total Volume	73	221	46	340	66	1212	141	1419	38	176	55	269	29	492	99	620	2648
% App. Total	21.5	65	13.5		4.7	85.4	9.9		14.1	65.4	20.4		4.7	79.4	16		
PHF	.676	.863	.676	.833	.786	.929	.653	.969	.792	.733	.809	.810	.725	.904	.917	.917	.975

City of Culver City
N/S: Braddock Drive
E/W: Sepulveda Boulevard
Weather: Clear

File Name : CVCGRSEAM
Site Code : 00000006
Start Date : 9/16/2015
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				07:00 AM				07:45 AM				08:00 AM			
+0 mins.	14	50	10	74	6	349	18	373	10	60	13	83	7	128	27	162
+15 mins.	21	64	17	102	12	383	35	430	9	35	17	61	5	126	25	156
+30 mins.	27	56	10	93	22	285	70	377	7	36	14	57	7	136	26	169
+45 mins.	11	58	12	81	21	264	54	339	12	45	11	68	3	127	16	146
Total Volume	73	228	49	350	61	1281	177	1519	38	176	55	269	22	517	94	633
% App. Total	20.9	65.1	14		4	84.3	11.7		14.1	65.4	20.4		3.5	81.7	14.8	
PHF	.676	.891	.721	.858	.693	.836	.632	.883	.792	.733	.809	.810	.786	.950	.870	.936

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City of Culver City
N/S: Braddock Drive
E/W: Sepulveda Boulevard
Weather: Clear

File Name : CVCGRSEPM
Site Code : 00000006
Start Date : 9/16/2015
Page No : 1

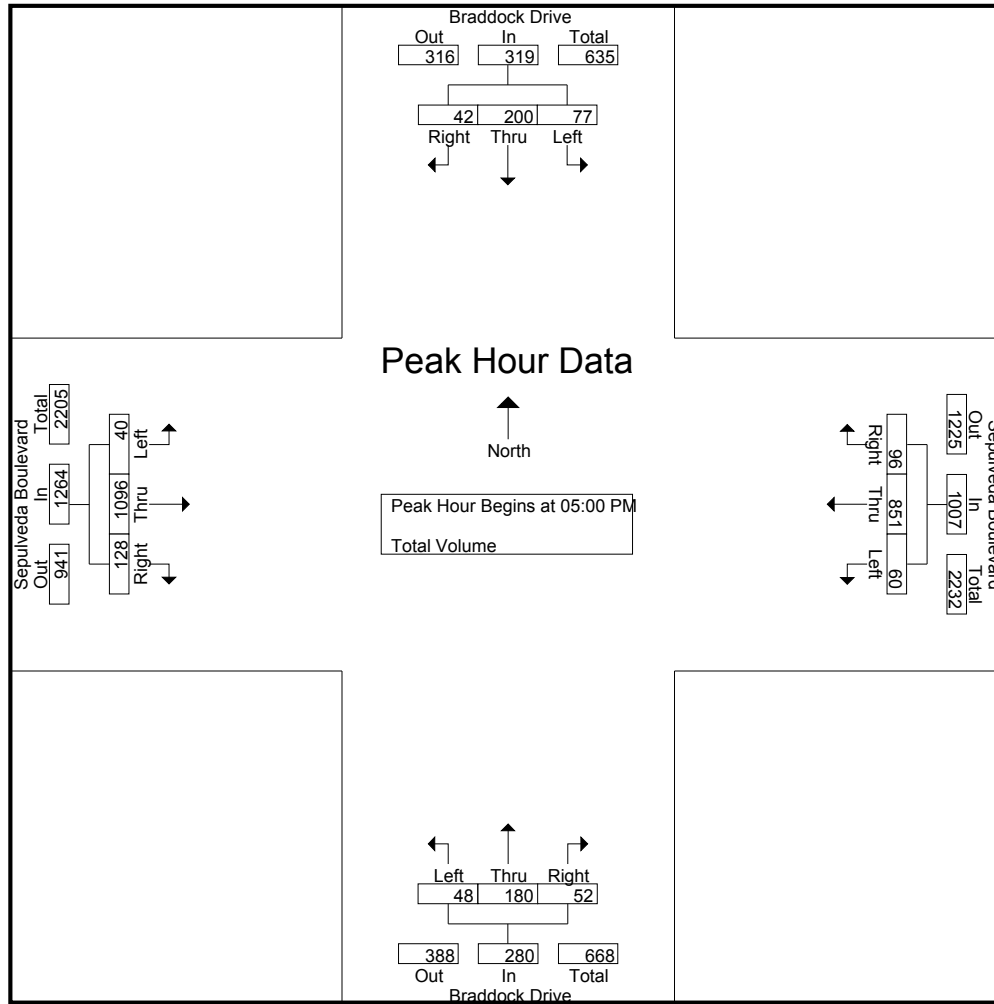
Groups Printed- Total Volume

	Braddock Drive Southbound				Sepulveda Boulevard Westbound				Braddock Drive Northbound				Sepulveda Boulevard 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	26	16	11	53	11	189	11	211	6	27	16	49	6	261	34	301	614
04:15 PM	13	33	10	56	11	190	13	214	4	20	15	39	12	251	27	290	599
04:30 PM	10	42	13	65	20	183	14	217	12	29	9	50	8	278	34	320	652
04:45 PM	19	45	7	71	12	188	17	217	8	23	20	51	14	263	33	310	649
Total	68	136	41	245	54	750	55	859	30	99	60	189	40	1053	128	1221	2514
05:00 PM	16	56	10	82	14	224	18	256	15	27	9	51	7	280	29	316	705
05:15 PM	23	36	11	70	17	208	19	244	13	39	21	73	9	279	35	323	710
05:30 PM	15	59	8	82	14	220	32	266	9	60	12	81	11	265	32	308	737
05:45 PM	23	49	13	85	15	199	27	241	11	54	10	75	13	272	32	317	718
Total	77	200	42	319	60	851	96	1007	48	180	52	280	40	1096	128	1264	2870
Grand Total	145	336	83	564	114	1601	151	1866	78	279	112	469	80	2149	256	2485	5384
Apprch %	25.7	59.6	14.7		6.1	85.8	8.1		16.6	59.5	23.9		3.2	86.5	10.3		
Total %	2.7	6.2	1.5	10.5	2.1	29.7	2.8	34.7	1.4	5.2	2.1	8.7	1.5	39.9	4.8	46.2	

	Braddock Drive Southbound				Sepulveda Boulevard Westbound				Braddock Drive Northbound				Sepulveda Boulevard 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 05:00 PM																	
05:00 PM	16	56	10	82	14	224	18	256	15	27	9	51	7	280	29	316	705
05:15 PM	23	36	11	70	17	208	19	244	13	39	21	73	9	279	35	323	710
05:30 PM	15	59	8	82	14	220	32	266	9	60	12	81	11	265	32	308	737
05:45 PM	23	49	13	85	15	199	27	241	11	54	10	75	13	272	32	317	718
Total Volume	77	200	42	319	60	851	96	1007	48	180	52	280	40	1096	128	1264	2870
% App. Total	24.1	62.7	13.2		6	84.5	9.5		17.1	64.3	18.6		3.2	86.7	10.1		
PHF	.837	.847	.808	.938	.882	.950	.750	.946	.800	.750	.619	.864	.769	.979	.914	.978	.974

City of Culver City
N/S: Braddock Drive
E/W: Sepulveda Boulevard
Weather: Clear

File Name : CVCGRSEPM
Site Code : 00000006
Start Date : 9/16/2015
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				04:30 PM			
+0 mins.	16	56	10	82	14	224	18	256	15	27	9	51	8	278	34	320
+15 mins.	23	36	11	70	17	208	19	244	13	39	21	73	14	263	33	310
+30 mins.	15	59	8	82	14	220	32	266	9	60	12	81	7	280	29	316
+45 mins.	23	49	13	85	15	199	27	241	11	54	10	75	9	279	35	323
Total Volume	77	200	42	319	60	851	96	1007	48	180	52	280	38	1100	131	1269
% App. Total	24.1	62.7	13.2		6	84.5	9.5		17.1	64.3	18.6		3	86.7	10.3	
PHF	.837	.847	.808	.938	.882	.950	.750	.946	.800	.750	.619	.864	.679	.982	.936	.982

Project: Harbor Freight TIA (Existing + Project)

DOT Case Number:

Year of counts: 2015

Project buildout: 2015

Ambient growth: 1.0% per year

Filename:

K:\LD1_TIP\0118128001 - Harbor Freight
Culver City\Analysis\CMACalc
Forms\CMACalc_Harbor Freight Ex_Post School
- Conv.xls

Project Trip Generation		Adjacent to Project			Not Adjacent		
		In	Out	Total	In	Out	Total
Trip Gen	AM Peak	16	13	29			
	PM Peak	45	51	96			

Level of Service and Volume to Capacity Ratio Summary

No.	Intersection	Peak Hour	Existing (2015)		Cumulative Base		Existing with project		Project Impact		After mitigation		
			v/c	LOS	v/c	LOS	v/c	LOS	Δ v/c	significant?	v/c	Δ v/c	mitigated?
3	Braddock Drive & Sepulveda Boulevard	AM	0.664	B	0.664	B	0.669	B	0.005	NO	--	--	N/A
		PM	0.625	B	0.625	B	0.646	B	0.021	NO	--	--	N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 3				2015, EXISTING				2015, PROJECTED CUMULATIVE BASE				2015, WITH PROJECT				2015, WITH TRAFFIC MITIGATION			
North/South Street:				Critical Phases: 2				Critical Phases: 2				Critical Phases: 2				Critical Phases: 2			
Braddock Drive				Capacity: 1500				Capacity: 1500				Capacity: 1500				Capacity: 1500			
East/West Street:				Signal System: 2				Signal System: 2				Signal System: 2				Signal System: 2			
Sepulveda Boulevard				v/c reduction: 7%				v/c reduction: 7%				v/c reduction: 7%				v/c reduction: 7%			
Analysis Date: 09/17/2015				Opposed Phasing: 0				Opposed Phasing: 0				Opposed Phasing: 0				Opposed Phasing: 0			
AM Peak: 8:00 AM																			
				Counts	Lanes	Lane		+ Amb.	+ Area	= Total	Lanes	Lane				Adjusted	Total	Lanes	Lane
				Volume		Volume		Growth	Projects	Volume		Volume		+ Project	= Total	Volume		Volume	
Northbound	Left			38	0	38		0		38	0	38	0%	0	38	0	38	0	38
	Lt-Th	N/B RTOR:											0%						
	Thru	Existing: 50%		176	0	0		0		176	0	0	0%	0	176	0	0	0	0
	Th-Rt	Projected: 50%											0%						
	Right	Mitigated: 50%		55	0	55		0		55	0	55	15%		57	0	57	0	57
	Shared				1	269					1	269	15%	2	57	1	271	1	271
Southbound	Left			73	0	73		0		73	0	73	20%		76	0	76	0	76
	Lt-Th	S/B RTOR:											20%	3	76	0	0	0	0
	Thru	Existing: 50%		221	0	0		0		221	0	0	0%		221	0	0	0	0
	Th-Rt	Projected: 50%											0%						
	Right	Mitigated: 50%		46	0	46		0		46	0	46	0%		46	0	46	0	46
	Shared				1	340					1	340	0%	0	46	1	343	1	343
Eastbound	Left			29	1	29		0		29	1	29	0%		29	1	29	1	29
	Lt-Th	E/B RTOR:											0%						
	Thru	Existing: 0%		492	1	296		0		492	1	296	30%		497	1	298	1	298
	Th-Rt	Projected: 0%											30%	5	497	1	298	1	298
	Right	Mitigated: 0%		99	0	0		0		99	0	0	0%		99	0	0	0	0
	Shared				0	0					0	0	0%	0	99	0	0	0	0
Westbound	Left			66	1	66		0		66	1	66	(15%)		68	1	68	1	68
	Lt-Th	W/B RTOR:											(15%)	2	68	0	0	0	0
	Thru	Existing: 0%		1212	1	677		0		1212	1	677	(30%)		1216	1	680	1	680
	Th-Rt	Projected: 0%											(30%)	4	1216	1	680	1	680
	Right	Mitigated: 0%		141	0	0		0		141	0	0	(20%)		143	0	0	0	0
	Shared				0	0					0	0	(20%)	2	143	0	0	0	0
Critical Volumes:				North-South: 395				North-South: 395				North-South: 400				North-South: 400			
				East-West: 706				East-West: 706				East-West: 709				East-West: 709			
				Total: 1101				Total: 1101				Total: 1109				Total: 1109			
Volume/capacity (v/c) ratio:				0.734				0.734				0.739				0.739			
v/c less ATSAC adjustment:				0.664				0.664				0.669				0.669			
Level of Service (LOS):				B				B				B				B			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex_Post School -
 Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.005
 Significantly impacted? NO
 Δ v/c after mitigation: 0.005
 Fully mitigated? N/A

CMACalc - Critical Movement Analysis Calculator

Harbor Freight TIA (Existing + Project)

Intersection No. 3		2015, EXISTING			2015, PROJECTED CUMULATIVE BASE			2015, WITH PROJECT				2015, WITH TRAFFIC MITIGATION			
North/South Street:		Critical Phases: 2			Critical Phases: 2			☒ Adjacent				Critical Phases: 2			
Braddock Drive		Capacity: 1500			Capacity: 1500			Trip AM 16 13 29				Capacity: 1500			
East/West Street:		Signal System: 2			Signal System: 2			Gen 1 PM 45 51 96				☐ Use Dist 2: Signal System: 2			
Sepulveda Boulevard		v/c reduction: 7%			v/c reduction: 7%			Trip AM 0 0 0				v/c reduction: 7%			
Analysis Date: 09/17/2015		Opposed Phasing: 0			Opposed Phasing: 0			Gen 2 PM 0 0 0				Opposed Phasing: 0			
PM Peak: 5:00 PM		Counts	Lanes	Lane Volume	+ Amb. Growth	+ Area Projects	= Total	+ Project Volume	Total Volume	Lanes	Lane Volume	Adjusted Volume	Total Volume	Lanes	Lane Volume
Northbound	Left	48	0	48	0		48	0%	0	48	0	48	0	48	0
	Lt-Th		0	0			0	0%	0	0	0	0	0	0	0
	Thru		0	0			0	0%	0	0	0	0	0	0	0
	Th-Rt	180	0	0	0		180	0%	0	180	0	0	180	0	0
	Right		0	0			0	0%	0	0	0	0	0	0	0
Southbound	Left	52	1	52	0		52	15%	7	59	1	59	0	59	1
	Lt-Th		1	280			1	15%	7	59	1	287	0	59	1
	Thru		0	0			0	20%	9	86	0	86	0	86	0
	Th-Rt		0	0			0	20%	9	86	0	86	0	86	0
	Right		0	0			0	0%	0	200	0	200	0	200	0
Eastbound	Left		0	0			0	0%	0	42	0	42	0	42	0
	Lt-Th		0	0			0	0%	0	42	0	42	0	42	0
	Thru	200	0	0	0		200	0%	0	42	0	42	0	42	0
	Th-Rt		0	0			0	0%	0	42	0	42	0	42	0
	Right		0	0			0	0%	0	42	0	42	0	42	0
Westbound	Left	42	1	42	0		42	0%	0	42	1	42	0	42	1
	Lt-Th		1	319			1	0%	0	42	1	328	0	42	1
	Thru		0	0			0	0%	0	42	0	42	0	42	0
	Th-Rt		0	0			0	0%	0	42	0	42	0	42	0
	Right		0	0			0	0%	0	42	0	42	0	42	0
Eastbound	Left	40	1	40	0		40	0%	0	40	1	40	0	40	1
	Lt-Th		0	0			0	0%	0	40	0	40	0	40	0
	Thru	1096	1	612	0		1096	30%	13	1109	1	619	0	1109	1
	Th-Rt		1	612			1	30%	13	1109	1	619		1109	1
	Right		0	0			0	0%	0	128	0	128	0	128	0
Westbound	Left	128	0	0	0		128	0%	0	128	0	128	0	128	0
	Lt-Th		0	0			0	0%	0	128	0	128	0	128	0
	Thru		0	0			0	0%	0	128	0	128	0	128	0
	Th-Rt		0	0			0	0%	0	128	0	128	0	128	0
	Right		0	0			0	0%	0	128	0	128	0	128	0
Westbound	Left	60	1	60	0		60	(15%)	8	68	1	68	0	68	1
	Lt-Th		0	0			0	(15%)	8	68	0	68	0	68	0
	Thru	851	1	474	0		851	(30%)	15	866	1	486	0	866	1
	Th-Rt		1	474			1	(30%)	15	866	1	486		866	1
	Right		0	0			0	(20%)	10	106	0	106	0	106	0
Westbound	Left	96	0	96	0		96	(20%)	10	106	0	106	0	106	0
	Lt-Th		0	0			0	(20%)	10	106	0	106	0	106	0
	Thru		0	0			0	(20%)	10	106	0	106	0	106	0
	Th-Rt		0	0			0	(20%)	10	106	0	106	0	106	0
	Right		0	0			0	(20%)	10	106	0	106	0	106	0
Critical Volumes:		North-South: 371			North-South: 371			North-South: 387				North-South: 387			
		East-West: 672			East-West: 672			East-West: 687				East-West: 687			
		Total: 1043			Total: 1043			Total: 1074				Total: 1074			
Volume/capacity (v/c) ratio:		0.695			0.695			0.716				0.716			
v/c less ATSAC adjustment:		0.625			0.625			0.646				0.646			
Level of Service (LOS):		B			B			B				B			

PROJECT IMPACT

Filename: K:\LDT_TPTO\118128001 - Harbor Freight Culver City\Analysis\CMACalc Forms\CMACalc_Harbor Freight Ex_Post School -
Developed 2005-2007 by Ken Aitchison

Change in v/c due to project: 0.021
Significantly impacted? NO
Δv/c after mitigation: 0.021
Fully mitigated? N/A

Intersection												
Intersection Delay, s/veh	14.3											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	7	40	52	0	58	98	63	0	114	226	30
Future Vol, veh/h	0	7	40	52	0	58	98	63	0	114	226	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	8	43	57	0	63	107	68	0	124	246	33
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	10.5				12.8				16.9			
HCM LOS	B				B				C			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	31%	26%	7%	10%								
Vol Thru, %	61%	45%	40%	81%								
Vol Right, %	8%	29%	53%	9%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	370	219	99	271								
LT Vol	114	58	7	28								
Through Vol	226	98	40	219								
RT Vol	30	63	52	24								
Lane Flow Rate	402	238	108	295								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.612	0.392	0.181	0.459								
Departure Headway (Hd)	5.482	5.924	6.052	5.607								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	656	602	588	639								
Service Time	3.55	4.002	4.147	3.68								
HCM Lane V/C Ratio	0.613	0.395	0.184	0.462								
HCM Control Delay	16.9	12.8	10.5	13.4								
HCM Lane LOS	C	B	B	B								
HCM 95th-tile Q	4.2	1.9	0.7	2.4								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	28	219	24
Future Vol, veh/h	0	28	219	24
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	30	238	26
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	13.4
HCM LOS	B

Lane

Intersection												
Intersection Delay, s/veh	12											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	12	48	41	0	30	20	69	0	23	248	35
Future Vol, veh/h	0	12	48	41	0	30	20	69	0	23	248	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	52	45	0	33	22	75	0	25	270	38
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	9.9				10				12.5			
HCM LOS	A				A				B			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	8%	25%	12%	20%								
Vol Thru, %	81%	17%	48%	77%								
Vol Right, %	11%	58%	41%	3%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	306	119	101	316								
LT Vol	23	30	12	63								
Through Vol	248	20	48	243								
RT Vol	35	69	41	10								
Lane Flow Rate	333	129	110	343								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.467	0.2	0.173	0.488								
Departure Headway (Hd)	5.055	5.555	5.672	5.11								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	712	644	631	704								
Service Time	3.089	3.6	3.719	3.143								
HCM Lane V/C Ratio	0.468	0.2	0.174	0.487								
HCM Control Delay	12.5	10	9.9	12.9								
HCM Lane LOS	B	A	A	B								
HCM 95th-tile Q	2.5	0.7	0.6	2.7								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	63	243	10
Future Vol, veh/h	0	63	243	10
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	68	264	11
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	12.9
HCM LOS	B

Lane

Intersection												
Intersection Delay, s/veh	14.4											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	7	40	53	0	58	98	63	0	114	228	30
Future Vol, veh/h	0	7	40	53	0	58	98	63	0	114	228	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	8	43	58	0	63	107	68	0	124	248	33
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	10.5				12.9				17.1			
HCM LOS	B				B				C			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	31%	26%	7%	10%								
Vol Thru, %	61%	45%	40%	81%								
Vol Right, %	8%	29%	53%	9%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	372	219	100	273								
LT Vol	114	58	7	28								
Through Vol	228	98	40	221								
RT Vol	30	63	53	24								
Lane Flow Rate	404	238	109	297								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.617	0.393	0.183	0.463								
Departure Headway (Hd)	5.495	5.941	6.067	5.62								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	655	602	586	638								
Service Time	3.561	4.021	4.163	3.693								
HCM Lane V/C Ratio	0.617	0.395	0.186	0.466								
HCM Control Delay	17.1	12.9	10.5	13.5								
HCM Lane LOS	C	B	B	B								
HCM 95th-tile Q	4.3	1.9	0.7	2.4								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	28	221	24
Future Vol, veh/h	0	28	221	24
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	30	240	26
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	13.5
HCM LOS	B

Lane

Intersection												
Intersection Delay, s/veh	12.3											
Intersection LOS	B											
Movement	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR	NEU	NEL	NET	NER
Traffic Vol, veh/h	0	12	48	43	0	30	20	69	0	25	256	35
Future Vol, veh/h	0	12	48	43	0	30	20	69	0	25	256	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	52	47	0	33	22	75	0	27	278	38
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0
Approach	SE				NW				NE			
Opposing Approach	NW				SE				SW			
Opposing Lanes	1				1				1			
Conflicting Approach Left	SW				NE				SE			
Conflicting Lanes Left	1				1				1			
Conflicting Approach Right	NE				SW				NW			
Conflicting Lanes Right	1				1				1			
HCM Control Delay	10				10.1				12.8			
HCM LOS	A				B				B			
Lane	NELn1	NWLn1	SELn1	SWLn1								
Vol Left, %	8%	25%	12%	20%								
Vol Thru, %	81%	17%	47%	77%								
Vol Right, %	11%	58%	42%	3%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	316	119	103	323								
LT Vol	25	30	12	63								
Through Vol	256	20	48	250								
RT Vol	35	69	43	10								
Lane Flow Rate	343	129	112	351								
Geometry Grp	1	1	1	1								
Degree of Util (X)	0.485	0.202	0.178	0.501								
Departure Headway (Hd)	5.086	5.616	5.722	5.141								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	708	638	626	702								
Service Time	3.121	3.663	3.77	3.176								
HCM Lane V/C Ratio	0.484	0.202	0.179	0.5								
HCM Control Delay	12.8	10.1	10	13.3								
HCM Lane LOS	B	B	A	B								
HCM 95th-tile Q	2.7	0.8	0.6	2.8								

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SWU	SWL	SWT	SWR
Traffic Vol, veh/h	0	63	250	10
Future Vol, veh/h	0	63	250	10
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	68	272	11
Number of Lanes	0	0	1	0

Approach SW

Opposing Approach	NE
Opposing Lanes	1
Conflicting Approach Left	NW
Conflicting Lanes Left	1
Conflicting Approach Right	SE
Conflicting Lanes Right	1
HCM Control Delay	13.3
HCM LOS	B

Lane
