Caltrans

I-405 HOV LANE OVER SEPULVEDA PASS (10 TO 101) PROJECT

TRAFFIC ANALYSIS REPORT

IBI GROUP

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I. EXECUTIVE SUMMARY

The California Department of Transportation (Caltrans) is proposing to add a High Occupancy Vehicle (HOV) lane to northbound Interstate 405 (I-405) from approximately National Boulevard to Ventura Boulevard in Los Angeles, California. The proposed 10.2-mile High Occupancy Vehicle (HOV) lane will fill in an existing "gap" in the HOV network and will provide a continuous northbound HOV lane along the entire I-405 corridor in Los Angeles County. As part of the Transportation Congestion Relief Program (TCRP), this project is expected to enhance traffic operations by adding freeway capacity in an area that experiences heavy congestion.

An analysis was completed that examines the traffic operations for the existing conditions and the five project alternatives within the project area. Potential benefits and impacts to traffic operations associated with four "build" alternatives are summarized relative to the "no build" alternative. The analysis serves as a supporting document to the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) that is being prepared for the subject project. The alternatives examined in the analysis are the following:

- Existing Conditions
- Alternative 1: No build
- Alternative 2A: Add a standard northbound HOV lane
- Alternative 2B: Add a standard northbound HOV lane and a northbound HOV direct-access off-ramp to Santa Monica Boulevard
- Alternative 3A: Add a standard northbound HOV lane and standardize the southbound HOV lane, general lanes, median, and shoulder
- Alternative 3B: Add a standard northbound HOV lane and standardize the southbound HOV lane, general lanes, median and shoulder, and add a northbound HOV direct-access off-ramp and a southbound HOV direct-access on-ramp at Santa Monica Boulevard

For each of the build alternatives, selected access ramps are also modified to accommodate the freeway widening. Alternatives 2A.1 and 2A.2 are sub-alternatives of Alternative 2A that contain the same HOV lane improvements, but vary in access ramp configuration and trip redistribution through adjacent intersections. Sub-alternatives 3A.1 and 3A.2 have the same HOV lane and mainline freeway geometry with differing ramp locations and intersection volumes in certain areas.

The traffic analysis focused on the three key components of the roadway network that impact freeway performance; freeway segments, access ramps, and signalized intersections. Information related to operations is summarized for the existing condition (year 2005) and horizon years of 2015 and 2031.

Freeways

Interstate 405 currently operates at a deficient level of service for a large portion of the day within the project limits. If no capacity improvements are made, conditions will continue to deteriorate in the future due to ambient growth alone. The northbound capacity increase provided with Alternative 2 (which includes the Alternative 2A.1, 2A.2, and 2B conditions) results in an estimated reduction of 14,860 vehicle-hours of delay for the year 2015 and 16,060 vehicle-hours of delay for the year 2031 compared to the no build condition (Alternative 1). The northbound and southbound improvements provided through Alternative 3 (3A.1, 3A.2, and 3B) are associated with a forecast reduction of 15,320 vehicle-hours of delay for the year 2015 and 16,190 vehicle-hours of delay for the year 2031 compared to Alternative 1.

Additionally, there are a number of safety benefits attributable to HOV lanes. It is expected that the northbound HOV lane will reduce the number of accidents in the study area caused by improper lane changes. From a traffic operations perspective, Alternative 2 and Alternative 3 result in an improved condition with significant benefits in reducing delay.

Access Ramps

In the existing condition, forty-one I-405 freeway on and off-ramps were identified for analysis. Three on-ramps currently carry volumes that exceed 900 vehicles per lane per hour during one or both peak periods, and may have capacity deficiencies in the future. Three ramps in the year 2015 and eight ramps in the year 2031 are forecast to carry volumes that exceed theoretical capacity during one or more peak periods due to ambient traffic growth alone.

For Alternative 2A.1, ramp improvements on the Wilshire Boulevard interchange reduce the number of ramps with volumes that exceeds capacity in the year 2015 from three to two. In year 2031, eight ramps are forecast to carry volumes that exceed capacity. For Alternative 2A.2, there are three ramps in the year 2015 and eight ramps in the year 2031 that carry volumes that exceed capacity. In general, ramp conditions for the build alternatives are similar to and not significantly worse than the no build alternative.

Alternative 2B is the same as Alternative 2A, with the addition of a northbound HOV off-ramp at Santa Monica Boulevard. The configuration is such that this ramp runs directly from the carpool lane in a tunnel under the freeway to the Santa Monica Boulevard exit. This configuration results in a separation of HOV from regular traffic only up to the intersection where but HOV and regular off-ramps converge. HOV vehicles that use the general off-ramp are expected to utilize the drop-ramp, resulting in reduced volumes on the general ramp and improved operations.

Ramp configurations and volumes for Alternative 3 are the same as Alternative 2, except that the southbound on-ramp at Sunset Boulevard is removed. Alternative 3B is the same as Alternative 3A, with the addition of a northbound HOV off-ramp and a southbound HOV on-ramp at Santa Monica Boulevard that run directly from the carpool lane in a tunnel under the freeway to/from Santa Monica Boulevard. HOV vehicles that use the general on- and off-ramp are expected to utilize the drop-ramps, resulting in reduced volumes on the general ramps and improved operations.

Intersections

In the existing condition, 13 of the 53 project study intersections currently operate at LOS F. For the Alternative 1 (no build) condition, 22 intersections are forecast to operate at LOS F in the year 2015, and 41 will be at LOS F in the year 2031. Ramp closures associated with Alternatives 2 and 3 result in three locations where study intersections no longer exist. For Alternative 2, twenty-two intersections experience volume and delay changes due to ramp modifications, with a balance between locations that experience an increase in average delay and locations that have reduced average delay. Alternative 3 intersection configuration is the same as Alternative 2, so analysis results are identical.

Overall, safety and operations are improved in Alternatives 2 and 3. The improvements associated with the build alternatives do not generate trips, so trip reduction is not applicable as a mitigation measure. Some location are impacted by traffic redistribution due to ramp closures. Analysis indicates that additional lanes at the impacted locations would yield insignificant improvements but require excessive right-of-way. It is important to note that the increase in delay at select intersections is balanced by decrease in delay at other intersections and significantly decreased delays on the freeway.

Conclusion

Travel demand and traffic congestion are expected to increase sizably in the future for the I-405 freeway. In general, analysis indicates that the build Alternatives 2A.1, 2A.2, 2B, 3A, 3A.1, 3A.2 and 3B will each provide a significant and reasonable improvement over Alternative 1, the no build scenario. Results include reduced congestion, smoother operations, a decrease in weaving, and improved safety over the no-build. Although volumes on certain ramps and adjacent intersections will increase due to ramp closures and traffic redistribution, the overall benefits of the improved condition will be significant. And as expected, additional improvements from Alternative 2 to 3 and from A to B result in higher levels of performance and better operational benefits.

II. INTRODUCTION

A. Project Description and Purpose

Caltrans is proposing to add a High Occupancy Vehicle (HOV) lane to northbound Interstate 405 (I-405) from approximately National Boulevard to Ventura Boulevard in Los Angeles, California. The proposed 10.2-mile HOV lane will fill in an existing "gap" in the HOV network and will provide a continuous northbound HOV lane along the entire I-405 corridor in Los Angeles County. As part of the Transportation Congestion Relief Program (TCRP), this project is expected to enhance traffic operations by adding freeway capacity in an area that experiences heavy congestion. The location and limits of the planned project are illustrated in Figure 1.

The purpose of this report is to analyze the traffic operations for the existing conditions and the proposed project alternatives within the project area. In particular, this report identifies the potential benefits and impacts to traffic operations associated with the "build" alternatives compared to the "no build" alternative. This report is a supporting document to the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) that is being prepared for the subject project.

B. Overview of Project Alternatives

There are three viable alternatives proposed for this project, consisting of the "no build" alternative (Alternative 1) and two "build" alternatives (Alternatives 2 and 3). In addition, there are a number of options for the build alternatives that include different combinations of general access ramps and the installation of HOV direct access ramps at Santa Monica Boulevard. Alternatives involving an HOV viaduct structure (previously considered as Alternatives 4 and 5) are deemed "non-viable" by Caltrans and do not require further analysis. Common features associated with all of the viable "build" alternatives include:

- Standard 12-foot wide traffic lanes and a standard 10-foot outside shoulder along northbound I-405 will be provided within the project limits, except in the I-405/I-10 interchange area. (The nonstandard freeway section has been proposed due to the limited available width between some of the columns supporting the existing I-405/I-10 connector structures.)
- All 12 freeway undercrossings within the project limits will be widened.
- The freeway overcrossings at Sunset Boulevard, Skirball Center Drive, and Mulholland Drive will be replaced. Other structures that will be replaced include: a portion of the connector from eastbound Interstate 10 to northbound Interstate 405; the Sunset Boulevard off-ramp overcrossing; and the overcrossing on the northbound 405 on-ramp from eastbound Sunset Boulevard.
- New overcrossing structures are planned along Interstate 405 at the following locations: the northbound on-ramp from eastbound Wilshire Boulevard; the northbound off-ramp to eastbound Wilshire Boulevard; southbound off-ramp to eastbound Wilshire Boulevard; and the northbound on-ramp from westbound Sunset Boulevard.
- The two existing overcrossings on the northbound 405 on- and off-ramps from/to eastbound Wilshire Boulevard will be removed.
- Retaining walls will be constructed at various locations where right-of-way is constrained.
- Soundwalls will be required adjacent to some of the residential and business developments along the project alignment.
- Minor realignment of on- and off-ramps located within the project limits may be necessary, except as noted below.
- The Wilshire Boulevard Interchange will be improved in both directions of Interstate 405 to provide full movements and eliminate freeway weaving. In order to achieve this, the northbound on-ramp from eastbound Wilshire Boulevard will be grade-separated from Sepulveda Boulevard and from the northbound off-ramp to westbound Wilshire Boulevard. In addition, the southbound off-ramp to eastbound Wilshire Boulevard will be grade separated from the southbound on-ramp from westbound Wilshire Boulevard.

- The northbound off-ramp to Montana Avenue/Sepulveda Boulevard will be closed.
- The northbound Sunset Boulevard interchange will be modified to maintain standard freeway and ramp shoulder widths and to accommodate widening of northbound 405 mainline. The new Sunset Boulevard Overcrossing will have two exclusive lanes for the northbound on-ramp from eastbound Sunset Boulevard.
- The northbound off- and on-ramps to Getty Center will be realigned to form a complete diamond interchange at Sepulveda Boulevard. The two existing separate 3-legged ramp intersections will be replaced with a single 4-legged ramp intersection.
- The southbound Skirball Center Drive Interchange will be relocated approximately 1,900 feet to the south. The proposed new hook ramps will form a 'T' intersection with Sepulveda Boulevard. This relocation will eliminate the existing ramp intersection that is located 65-feet east of the Skirball Center Drive/ Sepulveda Boulevard Intersection.
- In order to accommodate the widening of Interstate 405 and maintain existing street widths, Sepulveda Boulevard will be realigned along the east side of Interstate 405 between Montana Avenue and Moraga Drive and between Getty Center Drive and the northbound Getty Center off-ramp. Sepulveda Boulevard will be slightly realigned at the relocated Skirball Center Drive off- and on-ramps in order to add a left turn lane to the on-ramp.

1. Alternative 1: No Build

Alternative 1 is the "no build" option. This will maintain the current configuration of the existing freeway, ramps, and local intersections within the project limits. It is important to note that although the current configuration is maintained, travel demand and traffic congestion is expected to increase over time.

2. Alternative 2A: Add a Standard Northbound HOV Lane

This alternative proposes widening of the existing facility to add one standard northbound HOV lane. It will install standard freeway cross-sections for the northbound Interstate 405 within the project limits except through the Interstate 405/10 interchange. In the northbound direction, it provides a 12-foot half median, one 12-foot HOV lane, a 4-foot HOV buffer, five 12-foot mixed flow lanes, and a 10-foot outside shoulder. Most of the freeway widening required for this alternative will occur along the east side of Interstate 405. Some widening will also occur along the west side of the freeway within the following segments: between Ohio Avenue and Waterford Street; between Bel Air Crest and Mulholland Drive; and between the southbound on-ramp from Sepulveda/Valley Vista to the north end of the project (just south of Ventura Boulevard).

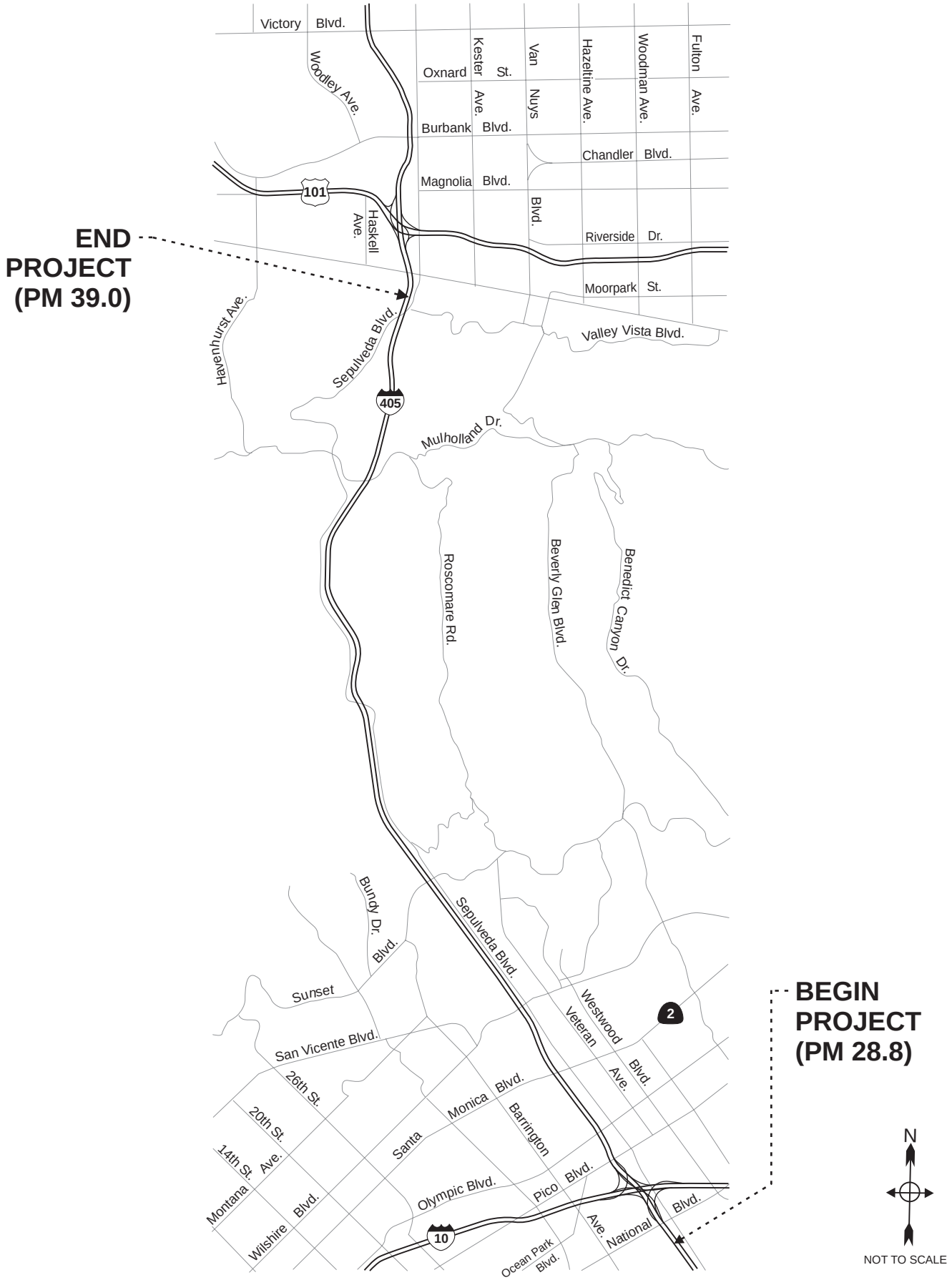
In addition to the freeway and ramp improvements common to all of the build alternatives, Caltrans examined two more ramp configuration options in sub-alternatives 2A.1 and 2A.2. Each of the sub-alternative configurations may or may not be included in final design, depending on a number of factors besides traffic.

Alternative 2A.1

Caltrans is proposing to add a new northbound 405 on-ramp from westbound Sunset Boulevard. In order to build the new ramp structure, the northbound 405 on- and off-ramps at Moraga Drive would be removed, as well as the Sepulveda Way street segment that currently connects Sunset Boulevard with Sepulveda Boulevard, which are grade-separated. The effects of this reconfiguration are analyzed in Alternative 2A.1.

Alternative 2A.2

The southbound 405 off-ramp to Valley Vista Boulevard may be removed as part of a separate project. The impacts of this ramp closure are analyzed in Alternative 2A.2.



IBI GROUP	I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project	Figure 1
	Project Study Area	

3. Alternative 2B: Add a Standard Northbound HOV Lane with a HOV Busway Off-ramp to Santa Monica Boulevard

This alternative incorporates all of the improvements included in Alternative 2A, along with a northbound HOV drop-ramp to Santa Monica Boulevard. The off-ramp would diverge from the left side of the HOV lane, drop down below (in a tunnel under) the northbound side of the freeway, and exit onto Cotner Avenue just south of the merge between the mainline off-ramp and Cotner Avenue. This merge between the HOV drop-ramp, the freeway off-ramp, and Cotner Avenue will occur approximately 500 feet south of the intersection of Santa Monica Boulevard and Cotner Avenue. The drop-ramp will be available for use by high-occupancy vehicles as well as transit buses.

In order to facilitate the installation of the HOV drop-ramp, the following changes will be made compared to Alternative 2A:

- Additional widening along the east side of I-405 and realignment of the northbound traffic lanes.
- Minor realignment of Cotner Avenue between Missouri Avenue and Nebraska Avenue to accommodate the widening of Interstate 405.
- Realignment of the northbound Olympic/Pico Boulevard on-ramp and the northbound Santa Monica off-ramp from Interstate 405.

4. Alternative 3A: Add One Standard Northbound HOV Lane and Standardize Southbound Lanes, Median, and Shoulder

This alternative proposes widening of the existing facility to add one standard northbound HOV lane and to standardize the non-standard southbound HOV lane, five mix flow lanes, median, and shoulder. It installs standard freeway cross-sections for the northbound and southbound Interstate 405 within the project limits except through the Interstate 405/10 interchange. It provides for a 12-foot half median, 12-foot HOV lane, 4-foot HOV buffer, five 12-foot mixed flow lanes, and a 10-foot outside shoulder in each direction of travel. Interstate 405 will be widened along east side similar to Alternative 2A and along most of the west side throughout the project limits. Other changes associated with this alternative that are not part of Alternative 2A include:

- Close the southbound on-ramp from eastbound Sunset Boulevard. In conjunction with this ramp closure, the ramp intersection located immediately north of the Sunset Boulevard/Church Lane Intersection will be reconfigured so that the existing “pork chop” island is eliminated and the middle lane at the northbound approach will be changed from a through lane to a shared through/right-turn lane.
- Approximately 2,300 feet of Sepulveda Boulevard will be realigned along the west side of Interstate 405 north of the Getty Center/Interstate 405 Interchange due to the widening planned along the west side of Interstate 405.
- Most of Church Lane between approximately Chenault Street and Kiel Street will be realigned to the west to facilitate the Interstate 405 widening.

As in Alternative 2, Caltrans examined two ramp configuration options in sub-alternatives 3A.1 and 3A.2. in addition to the freeway and ramp improvements common to all of the build alternatives and the southbound improvements described in this section, Each of the sub-alternative configurations may or may not be included in final design, depending on a number of factors besides traffic.

Alternative 3A.1

Alternative 3A.1 includes a new northbound 405 on-ramp from westbound Sunset Boulevard. In order to build the new ramp structure, the northbound 405 on- and off-ramps at Moraga Drive would be removed, as well as the Sepulveda Way street segment that currently connects Sunset Boulevard with Sepulveda Boulevard, which are grade-separated.

Alternative 3A.2

In Alternative 3A.2, the southbound 405 off-ramp to Valley Vista Boulevard is closed and the traffic is redistributed to adjacent off-ramps and routes. This ramp may be removed as part of a separate project.

5. Alternative 3B: Add A Standard Northbound HOV Lane and Standardize Southbound Lanes, Median, and Shoulder with HOV On- and Off-ramps at Santa Monica Boulevard

This alternative would include the same improvements as Alternative 3A plus the northbound HOV drop-ramp to Santa Monica Boulevard as described in Alternative 2B. In addition, this alternative includes a southbound HOV on-ramp from Santa Monica Boulevard that would be aligned adjacent to, and east of, the mainline on-ramp. The HOV on-ramp would drop down into a tunnel below the southbound side of the freeway, rise up to freeway grade along the median, and then merge with the southbound HOV lane approximately 850 feet north of Olympic Boulevard. In order to facilitate the installation of this HOV on-ramp, the following changes will be made compared to Alternative 3A:

- Additional widening along the west side of Interstate 405 and realignment of the southbound traffic lanes.
- Realignment of the southbound Santa Monica on-ramp to Interstate 405.
- Construction of a retaining wall along the east side of Beloit Avenue that is required to accommodate the realignment of the on-ramp and Interstate 405 indicated above.

III. TRAFFIC ANALYSIS METHODOLOGY

Three main components of the roadway network are analyzed in this report for the proposed project: freeways, access ramps, and intersections. The methodology used to analyze the existing and forecasted traffic conditions for each of these components is described below. The term "existing" as used throughout this report refers to the base year of 2005.

A. Freeways

The focus of the analysis provided in this report is on the I-405 corridor within the project limits. Other freeways, including the I-10 and US-101, are not expected to be significantly impacted by the proposed build alternatives. The methodology used to analyze existing traffic conditions on the I-405 Freeway consisted of:

Obtaining existing traffic volumes – Caltrans District 7 provided 2005 traffic volume data for the AM peak hour, PM peak hour, and average daily traffic (ADT) along Interstate 405 within the project limits for both directions of travel. Existing traffic volumes are based on the most recent traffic data available (2003) factored up by three percent (i.e. a growth factor of 1.03 from 2003 to 2005). This is consistent with the SCAG[1] regional growth rate for the project area.

Evaluating congestion and vehicular delays – Information available from the Performance Measurement System (PeMS) version 6.2 was used to evaluate the existing level of congestion and total vehicular delays on Interstate 405 within the project limits. PeMS is a traffic data collection, processing and analysis tool used by Caltrans to assist traffic engineers in assessing the performance of the freeway system. PeMS extracts information from real-time and historical data and provides a wide variety of information that can be used to evaluate traffic conditions on freeways in urban areas throughout California. In particular, PeMS 6.2 provides hourly traffic volumes, speed, and vehicular delay data that can be used to evaluate congestion (time periods where average hourly speeds are less than 55 mph) and vehicular delays for selected freeway segments. An example of some of the traffic data that was obtained for this project using PeMS 6.2 is provided in Appendix A. More detailed information about PeMS can be obtained online at http://pems.eecs.berkeley.edu/Public/.

Reviewing accident data – Caltrans District 7 provided accident data for Interstate 405 within the project limits representing a three-year time period between April 1, 2002 and March 31, 2005. This data was used to compare the accident rates in the project area with statewide averages and gain an understanding of the most common type of accidents that are occurring. The data included: a Table B – Selective Accident Rate Calculation (3-year accident rates); TASAS Selective Accident Retrieval (TSAR) Accident Summaries; and a list of potential high accident (Table C) areas.

It is important to note that a conventional level-of-service (LOS) analysis of peak hour traffic conditions on the freeway within the project limits was not performed, since recurrent congestion (LOS F) is common during the peak traffic periods. For this type of condition, a description of the congested time periods, congestion limits, and the overall vehicular delays that are caused by congestion provides a better understanding of traffic conditions than a LOS analysis.

This report includes an analysis of forecasted traffic conditions and a comparison of project alternatives for two different time horizons: 2015, the year by which the project improvements will be completed, and 2031, the target design year. The methodology used to analyze future traffic conditions for the build and no-build alternatives is described below.

[1] SCAG, Southern California Association of Governments, is the regional municipal planning organization for the six county region.

Forecasted traffic volumes – In order to forecast the traffic demand on the I-405 Freeway for 2015 and 2031, growth factors of 1.157 and 1.461, respectively, were applied to the 2005 traffic volumes. These growth factors are based on projected annual growth rate of 1.47 percent, consistent with SCAG guidelines.

Forecasting congestion and vehicular delays – The following process is used to compare the project alternatives based on duration of congestion and total vehicular delays.

- Estimate future hourly traffic demand along the project alignment by multiplying the 2005 hourly flow data obtained from PeMS by the growth factors indicated above.
- Assume that the hourly capacity of the existing freeway (i.e. "no build" alternative) is equal to the existing hourly flow just before congestion starts. Estimate the additional capacity of a new, standardized HOV lane as proportionate to the adjacent mixed flow lanes up to a maximum of 1,900 vehicles per hour (vph) for the "build" alternatives.
- Identify the time when hourly traffic demand begins to exceed hourly capacity for each segment of the freeway being analyzed. This is the estimated time that congested conditions will begin during the AM and/or PM peak periods.
- The end of the congestion period is estimated by determining when traffic demand has diminished to what the hourly traffic demand is at the end of existing congestion periods (with appropriate adjustments made for capacity enhancements).
- If there is currently no congestion during a particular peak period, but congestion is expected in the future due to the growth in traffic demand, the forecasted congestion period starts when demand first exceeds capacity and will continue until cumulative demand equals cumulative capacity.
- Total vehicular delays for each freeway segment is estimated by taking the current vehicular delay and increasing it proportionally to the change in traffic volumes and congested hours. For example, if the existing vehicular delay on a freeway segment was 100 vehicle-hours (veh-hrs) with 4 hours of congestion, and the forecasted traffic growth factor is 1.2 with 6 hours of congestion in the design year, then the forecasted estimate of total vehicular delay is equal to: (100 veh-hrs) x (1.2) x (6/4) = 180 veh-hrs.

The methodology described above is expected to provide an approximation of future congestion and vehicular delays for the purpose of comparing project alternatives. The dollar benefit per day of the proposed build alternatives can be estimated by multiplying the reduction in vehicular delays by a factor of $10 per veh-hr. This value does not represent a tangible cost, but rather a point of reference for comparison.

B. Access Ramps

Existing (2005) and forecasted (2015 and 2031) traffic volumes for freeway access ramps were obtained through a combination of sources, including ramp volume data provided by Caltrans District 7 and turning movement volumes from intersections adjacent to study ramps. A conventional level-of-service (LOS) analysis of the merge and diverge areas where ramps and connectors join the I-405 Freeway was not performed, since recurrent congestion (LOS F) is common during the peak traffic periods. Rather, the traffic analysis was focused on determining whether or not the existing and proposed ramp configurations are consistent with current Caltrans design standards under forecasted traffic conditions. In addition, the impact that closing existing ramps will have on traffic operation at ramps located immediately upstream or downstream is evaluated for the "build" alternatives.

C. Intersections

A total of 54 intersections were initially identified for study in this analysis. A screening analysis was conducted to verify the number of study locations that should be carried forward for analysis. The screening was based on the following parameters:

- Proximity to the build alternative improvements
- Potential for significant change in traffic volumes as a result of the build alternatives relative to the no build condition

Based on these criteria, 52 of the 54 intersections were identified for further analysis in this study. Traffic volumes for the intersections were obtained through a combination of data provided by Caltrans and the City of Los Angeles, as well as new traffic count information collected specifically for this project. The locations of the study intersections are shown in Figures 5A and 5B. As necessary, older counts and existing conditions were factored up using the previously stated growth rates to analysis horizon years.

Traffic operations were analyzed using the capacity analysis methodology published in the 2000 Highway Capacity Manual (HCM) using SYNCHRO software. The detailed intersection level of service calculation sheets are provided in the Appendix of this report.

1. Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the 2000 HCM operations methodology for signalized intersections, which evaluates capacity in terms of the volume-to-capacity (v/c) ratio and evaluates LOS based on controlled delay per vehicle. Controlled delay is defined as the portion of the total delay attributed to the traffic signal operation including deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The relationship between controlled delay per vehicle and LOS for signalized intersections is summarized in Table III.1.

Table III.1 – Level of Service for Signalized Intersections

Level of Service	Description of Traffic Conditions	Controlled Delay (sec/veh)
A	Insignificant delays: no approach phase is fully utilized and no vehicle waits longer than one red indication.	≤ 10
B	Minimal delays: an occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 – 20
C	Acceptable delays: major approach phase may become fully utilized. Most drivers feel somewhat restricted.	> 20 – 35
D	Tolerable delays: drivers may wait through more than one red indication. Queues may develop but dissipate rapidly, without excessive delays.	> 35 – 55
E	Significant delays: volumes approaching capacity. Vehicles may wait through several cycles and long vehicle queues form upstream.	> 55 – 80
F	Excessive delays: represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80
Source: Highway Capacity Manual, Transportation Research Board, 2000.		

2. Unsignalized Intersections

For unsignalized intersections, the HCM 2000 methodology for unsignalized intersections was used. With this methodology, LOS is related to the controlled delay for each stop-controlled movement. The relationship between controlled delay per vehicle and LOS for unsignalized intersections is summarized in Table III.2.

Table III.2 – Level of Service for Unsignalized Intersections

Level of Service	Description of Traffic Conditions	Controlled Delay (sec/veh)
A	No delay for stop-controlled approaches.	0 – 10
B	Operations with minor delay.	> 10 – 15
C	Operations with moderate delays.	> 15 – 25
D	Operations with some delays.	> 25 – 35
E	Operations with high delays and long queues.	> 35 – 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

Source: Highway Capacity Manual, Transportation Research Board, 2000.

IV. EXISTING CONDITIONS

The existing condition analysis considers freeway and roadway facilities as they exist, except for locations that are currently under construction. Santa Monica Boulevard is undergoing significant modifications as part of the Santa Monica Boulevard Transit Parkway Project, which will convert the parallel streets of Santa Monica Boulevard and Little Santa Monica Boulevard into a single roadway with three eastbound and three westbound travel lanes. The project includes a new street lighting and traffic signal system, a landscaped median, bicycle lanes and bus priority features. Construction of this project began in March of 2003, and is scheduled for completion in early 2007. This analysis incorporates all ramp and intersection improvements as shown in design plans provided by Caltrans.

The traffic analysis results for the I-405 freeway mainline, access ramps, and study intersections within the project study area are presented in this section.

A. Freeways

Within the project study area, which is roughly bounded by I-10 to the south and US-101 to the north, the I-405 generally consists of five lanes in each direction. Just south of the I-405/I-10 interchange, the I-405 narrows to three lanes in each direction, and widens back to five lanes between Pico Boulevard and Olympic Boulevard. There are auxiliary merge lanes north and south of Santa Monica Boulevard, and a northbound auxiliary lane south of Valley Vista Boulevard. The I-405 is reduced to three lanes in the northbound direction at the US-101 interchange, with two connector lanes to the US-101. There is a southbound HOV lane in the northern portion of the study area. The southbound HOV lane ends and turns into a general travel lane between Montana Avenue and Constitution Avenue. The number of travel lanes in each direction along given segments is noted in Figure 2. Peak hour and Average Annual Daily Traffic (AADT) volumes are shown in Figure 3.

As noted in Section III A, volume and speed data from the Performance Measurement System (PeMS) version 6.2 was used to evaluate the existing level of congestion and total vehicular delays on Interstate 405 within the project limits. For this analysis, the congested period occurs when average speeds fall below 55 miles per hour. Vehicular delay is the additional time spent traveling through each segment due to the reduced free flow speed.

1. Northbound Freeway Segments

The study corridor was divided into analysis segments that correspond with the PeMS data limits. This section includes descriptions of northbound segment geometry and traffic characteristics for a typical weekday (without additional delay due to weather, accidents, or other hazards in the roadway).

National Boulevard to Pico/Olympic Boulevard

This 0.8-mile segment begins at National Boulevard, passes under Interstate 10, and ends between Pico Boulevard and Olympic Boulevard. The five northbound 405 lanes drop to four lanes at the National Boulevard exit, and further reduce to three lanes to pass beneath the I-10 freeway structure. The freeway widens back to four lanes north of the I-10, and has five through lanes at Pico Boulevard. The bottleneck at this segment creates significant restriction in flow, but the columns that support the I-10 structure limit the space that is available in this area.

Congestion is typically observed by 6:30 AM, with average speeds dropping below 35 miles per hour by 8:00 AM. Flows improve slightly between 11:00 AM and 3:00 PM, but the facility still carries an average of over 1,800 vehicles per hour per lane during this time. Conditions continue to deteriorate during the afternoon rush, with average speeds down to 20 miles per hour around 6:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Pico/Olympic Boulevard to Santa Monica Boulevard

This segment includes the 1.1-mile stretch of freeway from just south of Olympic Boulevard to the Santa Monica Boulevard exit. There are five through lanes in this area, plus an auxiliary lane that begins at the Pico/Olympic on-ramp and ends at the Santa Monica Boulevard exit.

Congestion is typically observed by 8:00 AM, with average speeds dropping below 35 miles per hour by 9:00 AM. Flows improve slightly between 11:00 AM and 3:00 PM, but the facility still carries an average of about 1,500 vehicles per hour per lane during this time. Conditions continue to deteriorate during the afternoon rush, with average speeds down to 15 miles per hour around 6:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Santa Monica Boulevard to Wilshire Boulevard

The 0.6-mile segment between Santa Monica Boulevard and Wilshire Boulevard consists of five through lanes and an auxiliary lane. About three hundred yards north of the exit ramp to westbound Wilshire Boulevard, the auxiliary lane ends at the exit ramp to eastbound Wilshire Boulevard.

Congestion is typically observed by 8:00 AM, but average speeds remain above 40 miles per hour through the morning rush period. Free-flow speeds are observed between 11:00 AM and 3:00 PM, but conditions deteriorate during the afternoon rush. Average speeds drop below 30 miles per hour around 3:00 PM, and decrease to 15 miles per hour by 6:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Wilshire Boulevard to Sunset Boulevard

There are five northbound through lanes on the 1.0-mile segment of the I-405 between Wilshire Boulevard and Sunset Boulevard. Maximum flow occurs during the 8:00 AM hour, with 1,600 vehicles per hour per lane. Average speeds remain above 45 miles per hour through the morning rush period, with free-flow speeds observed between 11:00 AM and 3:00 PM. Conditions deteriorate during the afternoon rush, with average speeds dropping below 30 miles per hour around 3:00 PM and falling below 20 miles per hour by 5:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Sunset Boulevard to Moraga Drive

The 0.9-mile segment of the I-405 from Sunset Boulevard to north of Moraga Drive has five northbound through lanes. A maximum flow rate of over 2,000 vehicles per lane occurs during the 3:00 PM hour, at the beginning of the afternoon rush period. Conditions deteriorate during the next few hours, with average speeds dropping below 20 miles per hour by 5:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Moraga Drive to Getty Center Drive

The 0.9-mile segment of the I-405 from north of Moraga Drive to Getty Center Drive has five northbound through lanes. A maximum flow rate of 2,000 vehicles per lane occurs during the 3:00 PM hour, at the beginning of the afternoon rush period. Conditions deteriorate during the next few hours, with average speeds dropping to 20 miles per hour by 5:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Getty Center Drive to Skirball Center Drive

The 2.3-mile segment of the I-405 from Getty Center Drive to Skirball Center Drive has five northbound through lanes. A maximum flow rate of 2,000 vehicles per lane occurs during the 3:00 PM hour, at the beginning of the afternoon rush period. Conditions deteriorate during the next few hours, with average speeds dropping below 25 miles per hour by 5:00 PM. Traffic begins to dissipate by 7:30 PM, with free flow speeds restored by 8:30 PM.

Skirball Center Drive to Valley Vista Boulevard

There are five northbound through lanes on the 2.1-mile segment of the I-405 between Skirball Center Drive and Valley Vista Boulevard. Maximum flow occurs during the 3:00 PM hour, and the freeway remains congested until 8:00 PM. Average speeds fall below 30 miles per hour by 4:00 PM, and free flow speeds are restored by 9:00 PM.

Valley Vista Boulevard to Burbank Boulevard

At Valley Vista Boulevard, the freeway consists of three northbound through lanes and two auxiliary lanes to the US-101 connector ramps. After the connector lanes branch off of the I-405, they expand into four lanes, with one lane returning to the northbound I-405, two lanes connecting to the northbound US-101, and one lane connecting to the southbound US-101. The I-405 carries three through lanes as it travels beneath the US-101 interchange, with one auxiliary merge lane formed by the connector from the southbound US-101. North of the US-101 interchange, the I-405 gains one more lane from the northbound US-101 connector for a total of five northbound through lanes. The northbound I-405 HOV lane begins at Burbank Boulevard.

2. Southbound Freeway Segments

This section includes descriptions of southbound segment geometry and traffic characteristics for a typical weekday (without additional delay due to weather, accidents, or other hazards in the roadway).

Valley Vista Boulevard to Skirball Center Drive

The 2.1-mile segment between Valley Vista Boulevard and Skirball Center Drive consists of five through lanes and one HOV lane. Congestion is typically observed by 6:30 AM, with average speeds on the mainline dropping below 20 miles per hour by 8:00 AM and below 15 miles per hour around 9:00 AM. The average speed in the HOV lane slows to 35 miles per hour around 6:30 AM and drops below 20 miles per hour by 8:00 AM. Traffic dissipates in this area by 11:00 AM, and free flow speeds are achieved on both the mainline and the HOV lane. In the afternoon, the mainline carries flow rates between 1,600 and 1,800 vehicles per lane per hour and the HOV carries a max flow rate over 1,700 vehicles per hour.

Skirball Center Drive to Getty Center Drive

The 2.1-mile segment between Skirball Center Drive and Getty Center Drive consists of four through lanes and one HOV lane. Congestion is typically observed by 6:30 AM, with average speeds on the mainline near Getty Center Drive dropping below 25 miles per hour by 7:00 AM and below 20 miles per hour around 9:00 AM. The average speed in the HOV lane drops to 40 miles per hour by 7:00 AM, but usually stays above 35 miles per hour for the morning rush. Traffic dissipates in this area by 11:00 AM, and free flow speeds are achieved on both the mainline and the HOV lane. In the afternoon, the mainline carries an average flow rate of 1,650 vehicles per lane per hour and the HOV carries a max flow rate of over 900 vehicles per hour.

Getty Center Drive to Moraga Drive

The 0.8-mile segment between Getty Center Drive and Moraga Drive contains four through lanes and one HOV lane. Congestion is typically observed by 7:00 AM, with average speeds on the mainline dropping to 40 miles per hour by 8:00 AM and to 35 miles per hour around 9:00 AM. The average speed in the HOV lane usually stays above 50 miles per hour throughout the day. In the afternoon, the mainline carries a maximum flow rate of 1,800 vehicles per lane per hour and the HOV carries a max flow rate of about 900 vehicles per hour.

Moraga Drive to Sunset Boulevard

The 0.7-mile segment between Moraga Drive and Sunset Boulevard contains four through lanes and one HOV lane. Congestion is typically observed by 7:00 AM, but average speeds on the mainline usually stay above 40 miles per hour during the morning rush period. Free flow speed is usually achieved in the HOV

lane throughout the day. In the afternoon, the mainline carries a maximum flow rate of over 2,000 vehicles per lane per hour and the HOV carries a max flow rate of over 1,700 vehicles per hour.

Sunset Boulevard to Wilshire Boulevard

The southbound HOV lane ends half way between Sunset Boulevard and Wilshire Boulevard, and converts to a standard mainline lane. The first half of this 1.1-mile segment consists of four mainline lanes and one HOV lane. The second half consists of five general lanes that carry a maximum flow of 1,800 vehicles per lane per hour during the morning rush period. Average speeds are below 40 miles per hour by 10:00 AM, and conditions deteriorate during the afternoon. Average speeds drop below 25 miles per hour by 3:00 PM, and decrease to 15 miles per hour by 4:00 PM. Traffic begins to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

Wilshire Boulevard to Santa Monica Boulevard

The 0.8-mile segment between Wilshire Boulevard and Santa Monica Boulevard consists of five through lanes plus one auxiliary lane, and carries a maximum flow of over 1,800 vehicles per lane per hour during the morning rush period. Average speeds drop below 35 miles per hour by 3:00 PM, but the additional capacity provided by the auxiliary lane allows speeds to remain above 40 miles per hour through the rest of the afternoon. Free flow speeds are restored around 8:00 PM.

Santa Monica Boulevard to Pico/Olympic Boulevard

The 1.0-mile segment between Santa Monica Boulevard and the Pico/Olympic Boulevard exit consists of five mainline lanes. There is a 450-foot long auxiliary merge lane from the southbound on-ramp at Santa Monica Boulevard, but there are effectively five travel lanes through this segment. The maximum flow rate is about 1,950 vehicles per lane per hour during the morning peak. Congestion begins around 2:30 PM, with average speeds falling below 30 miles per hour by 4:00 PM. Traffic begins to dissipate by 7:30 PM, with free flow speeds restored by 8:00 PM.

Pico/Olympic Boulevard to National Boulevard

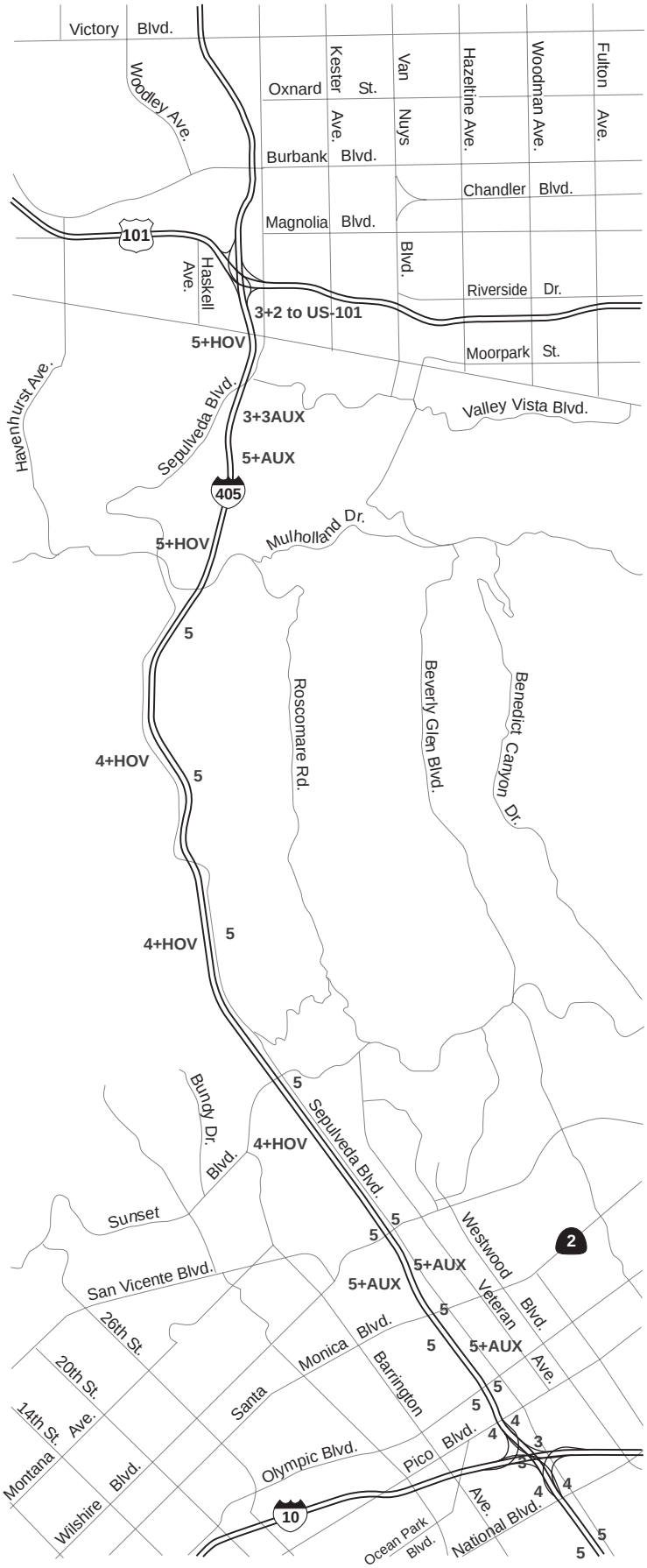
This 0.8-mile segment begins north of Pico Boulevard, passes under Interstate 10, and ends at National Boulevard. North of Pico Boulevard, the southbound number 5 lane branches off to I-10 connector, leaving four mainline lanes. The four southbound 405 lanes merge into three lanes to pass beneath the I-10 freeway structure. The freeway widens back to four lanes as the connector from the eastbound I-10 joins the I-405, and gains a fifth lane from the westbound I-10 connector.

Congestion at the interchange is particularly heavy in the afternoon, with average speeds on the I-405 mainline dropping below 35 miles per hour from 2:00 PM to 8:00 PM. Traffic starts to dissipate by 8:00 PM, with free flow speeds restored by 9:00 PM.

3. Truck Trips

During the year 2004, the I-405 carried an average of fewer than 13,000 trucks per day within the study area, which corresponds to 4.5 percent of the daily vehicle traffic being truck trips[2]. Approximately half of the truck trips were made by 2-axle trucks, and about one third of the trucks had five or more axles. Annual average daily truck traffic information was compiled by Traffic and Vehicle Data Systems, and is available on the State of California Department of Transportation website.

[2] http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/ADA%20format/truck2004final.doc



LEGEND

#	I-405 Mainline Travel Lanes
AUX	Auxiliary Lane
HOV	High-occupancy Vehicle Lane

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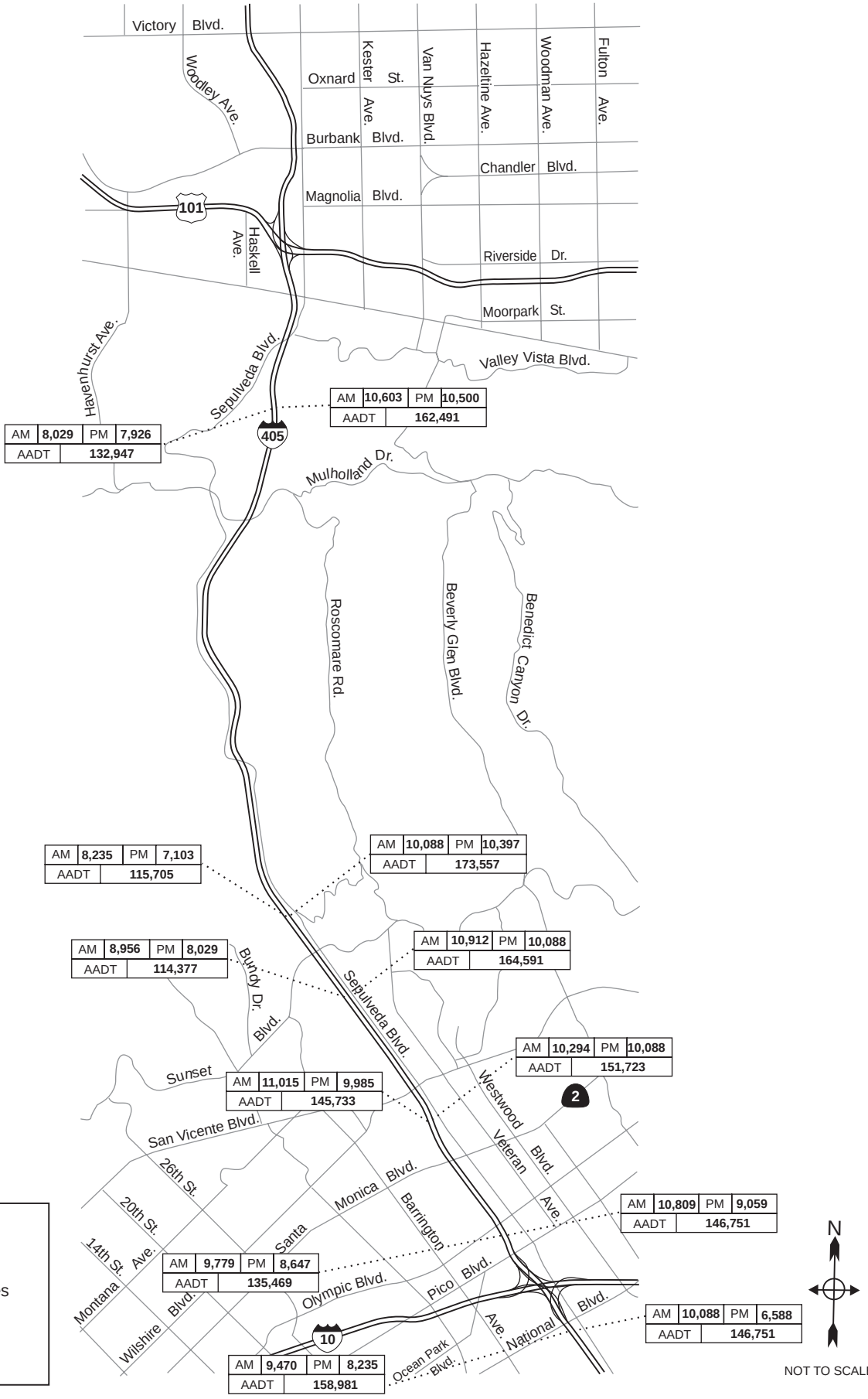
I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project

Existing I-405 Travel Lanes

Figure 2



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I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project

Existing (Year 2005) I-405 Mainline Traffic Volumes

Figure 3

4. Accident Rate Data

Caltrans District 7 provided Traffic Accident Surveillance and Analysis System (TASAS) accident data for both northbound and southbound Interstate 405 within the project limits for the time period of April 1, 2002 through March 31, 2005. The total number of accidents and average accident rates for the segment of the I-405 within the project limits, as well as the statewide average accident rates are provided in Table IV.4.

Table IV.1 – Summary of Table B Accident Rate Data for Interstate 405 within Project Limits

Direction of Travel	Total Number of Accidents	I-405 Average Accident Rates (per million vehicle miles)			California Average Accident Rates (per million vehicle miles)		
		Fat[1]	F+I[2]	Total[3]	Fat[1]	F+I[2]	Total[3]
Northbound	1885	0.003	0.33	1.19	0.006	0.38	1.22
Southbound	2802	0.004	0.51	1.77	0.006	0.38	1.22

Notes: 1) Fat – accidents involving at least one fatality.
2) F+I – accidents involving either a fatality or injury.
3) Total – all reported accidents, which includes accidents with fatalities, injuries, and property damage only.

The TASAS Table B summary indicates that northbound Interstate 405 within the project limits has experienced slightly lower accident rates than the statewide average for the three-year study period. The southbound I-405 within the project limits has experienced significantly higher than average accident rates for injury-related accidents and total accidents (H99 level of significance). A significantly higher than average number of accidents (813) occurred at night along the southbound I-405. A summary of other accident statistics for Interstate 405 within the project area is provided in Table IV.5.

Table IV.2 – Accident Statistics for Interstate 405 within Project Limits

Accident Statistic	Percent of Total Accidents	
	Northbound 405	Southbound 405
AM Peak Period (6:00 – 9:00)	10.0	8.6
Midday Period (10:00 – 2:00)	22.2	30.2
PM Peak Period (3:00 – 7:00)	28.7	26.1
Wet Road Surface	7.5	5.2
Dark Conditions	30.8	29.0
Rear End	58.4	69.7
Sideswipe	22.2	16.0
Run Off Road/Hit Object	13.6	10.2
Multi-Vehicle Accidents	84.7	88.7

As indicated in the above table, there is a high percentage of rear-end type accidents occurring in both directions of travel, which is indicative of stop-and-go traffic related to congested conditions. There is also a relatively large proportion of accidents occurring during the midday traffic period on the southbound 405, which may be related to high traffic volumes combined with intermittent congestion, where drivers may not anticipate stop-and-go traffic. Specific locations along Interstate 405 within the project limits that have had a significantly high accident rate within the last 12 months of the three-year study period is provided here:

- Southbound 405 On-ramp from Eastbound Wilshire Blvd.
- Southbound 405 Off from Westbound Wilshire Blvd.

- Southbound 405 from Post Mile 30.221 to 30.421
- Northbound and Southbound 405 from Post Mile 30.781 to 30.981
- Southbound 405 from Post Mile 31.301 to 31.701
- Southbound 405 from Post Mile 31.761 to 32.161
- Southbound 405 from Post Mile 32.961 to 33.161
- Southbound 405 from Post Mile 34.741 to 31.941
- Southbound 405 from Post Mile 36.441 to 36.841
- Northbound 405 from Post Mile 36.941 to 37.141
- Northbound 405 from Post Mile 38.481 to 39.081

5. HOV Operations Manual Count Data

Count data from the HOV Operations Manual for the I-405 southbound and northbound lanes in the vicinity of the study area are listed in Tables IV.6 and IV.7. Approximately 20 to 25 percent of the observed vehicles carried two or more occupants, and about 75 percent of those vehicles utilized the HOV lane, where it was available. At Burbank Boulevard, the southbound I-405 consists of four general travel lanes and one HOV lane. At this location, 20 percent of the capacity is dedicated to HOV and about 20 percent of the traffic traveled in the HOV lane. This suggests that an HOV lane can be expected to carry volume proportional to adjacent lanes during periods of heavy congestion, and that an HOV lane is not expected to significantly reduce the capacity of the facility.

Table IV.3 – I-405 HOV Operations Manual Count Data (Southbound)

Location of Count		Peak Hour	% of Vehicles With 2+ Occupants	% of Vehicles Using HOV Lane
Description	Post Mile			
Southbound 405 at Palms	28.52	AM	10.1%	N/A
Southbound 405 at Skirball	36.72	AM	20.1%	16.4%
Southbound 405 at Burbank	40.28	AM	26.8%	19.7%
Data provided by Caltrans District 7 N/A – no car pool lane available at count location.				

Table IV.4 – I-405 HOV Operations Manual Count Data (Northbound)

Location of Count		Peak Hour	% of Vehicles With 2+ Occupants	% of Vehicles Using HOV Lane
Description	Post Mile			
Northbound 405 at Palms	28.51	PM	23.4%	N/A
Northbound 405 at Skirball	36.72	AM	9.2%	N/A
Northbound 405 at Burbank	40.27	PM	17.9%	11.9%
Data provided by Caltrans District 7 N/A – no car pool lane available at count location.				

B. Access Ramps

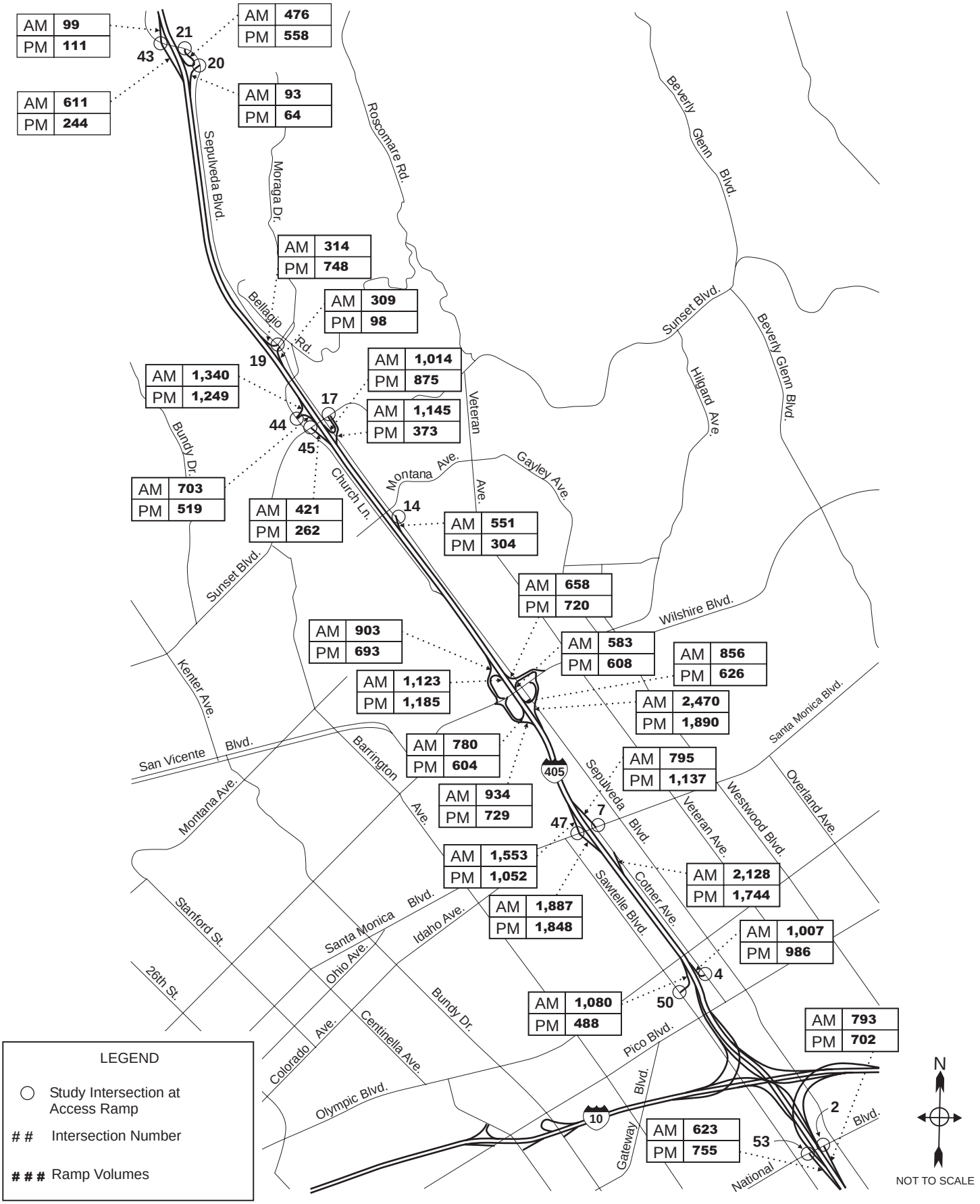
According to the California Highway Design Manual, the capacity of a single entrance or exit ramp is 1,500 vehicles per hour. For new construction, where design year estimated peak hour volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. For this analysis, an effective capacity of 900 vehicles per hour per lane is used for metered on-ramps, as directed by Caltrans staff. Current AM peak and PM peak hour volumes on 22 of the existing northbound on- and off-ramp locations within the project limits are listed in Table IV.5 and shown in Figures 4A and 4B. The northbound on-ramp from eastbound Sunset Boulevard is the only location that currently carries volumes that exceed the theoretic capacity. Additional capacity may be required at this location in the future if queuing issues arise due to traffic growth.

Southbound AM and PM peak hour ramp volumes are listed in Table IV.5 and shown in Figures 4A and 4B. Of the 19 existing southbound ramps analyzed, only the on-ramp from Santa Monica Boulevard and the on-ramp from eastbound Wilshire Boulevard currently carry peak volumes that exceed the established capacity of 900 vehicles per lane per hour. In a queuing analysis of the existing ramps, all locations were found to have adequate storage for current volumes.

Table IV.5 – Year 2005 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	793	702
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,007	986
30.68	NB Off To Santa Monica Blvd.	2	3,000	2,128	1,744
31.01	NB On From Santa Monica Blvd.	2	1,800	795	1,137
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	1,681	1,019
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	856	626
31.63	SEG NB On From EB Wilshire Blvd.	1	900	583	608
31.64	SEG NB On From WB Wilshire Blvd.	1	900	658	720
32.38	NB Off To Montana Ave.	1	1,500	551	304
32.81	NB Off To Sunset Blvd.	2	3,000	1,145	373
32.99	**NB On From EB Sunset Blvd.**	1	900	**1,014**	875
33.30	NB Off To Moraga Drive	2	3,000	309	98
33.47	NB On From Moraga Drive	2	1,800	314	784
34.55	NB Off To Getty Center Drive	1	1,500	93	64
34.73	NB On From Getty Center Drive	2	1,800	476	558
36.69	NB Off to Mulholland/Rimerton	1	1,500	504	469
36.99	NB On from Mulholland/Rimerton	2	1,800	246	405
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	422	486
38.77	NB On From Greenleaf St	2	1,800	559	1,027
	US-101 NB Off to Sepulveda Blvd	1	1,500	672	429

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** type indicate ramps where demand exceeds capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.



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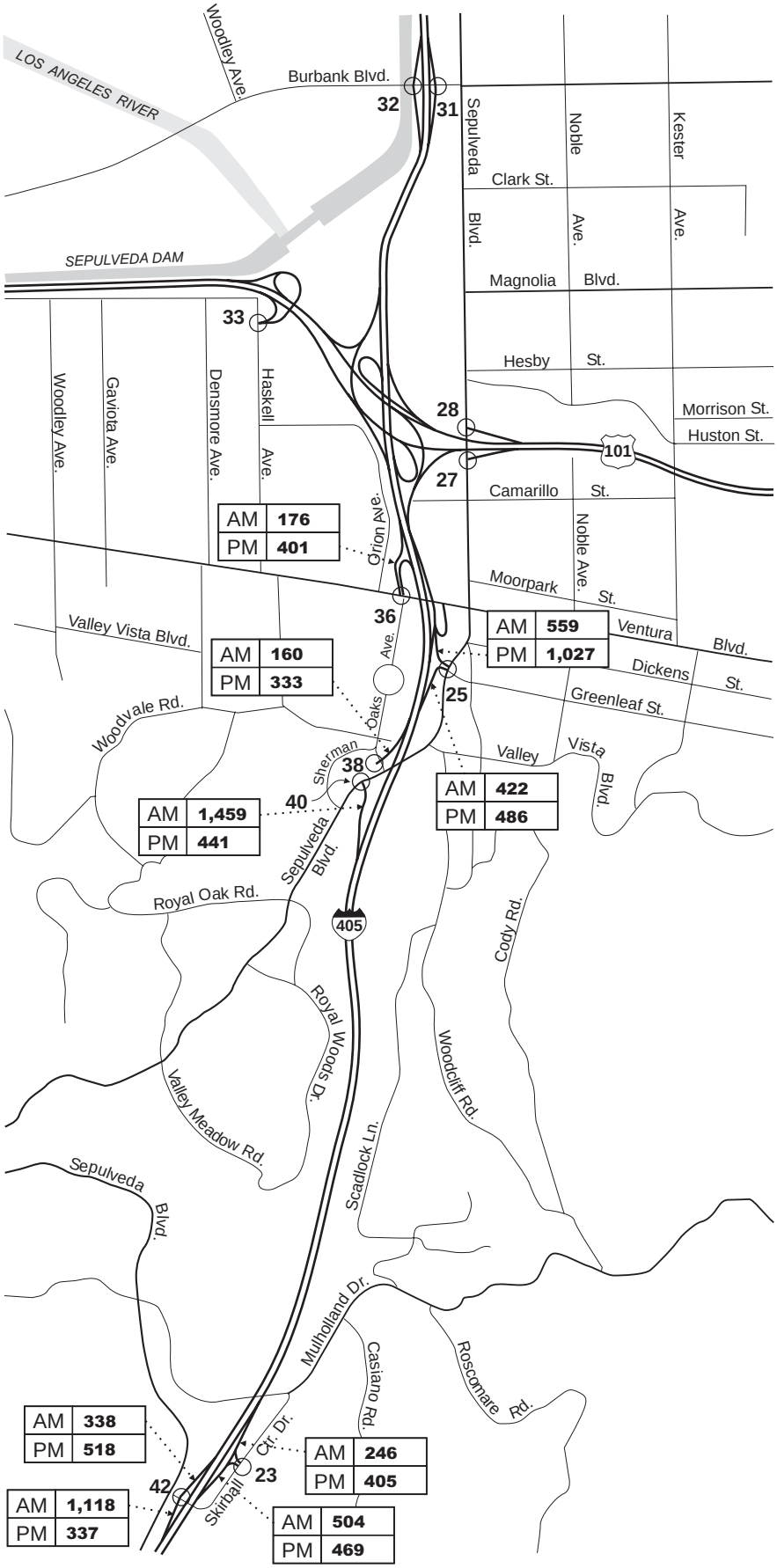
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Existing (Year 2005) Peak Hour Access Ramp Volumes - Southern Area

Figure 4A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Existing (Year 2005) Peak Hour Access Ramp Volumes - Northern Area

Figure 4B

Table IV.6 – Year 2005 Southbound Ramp Peak Hour Volumes

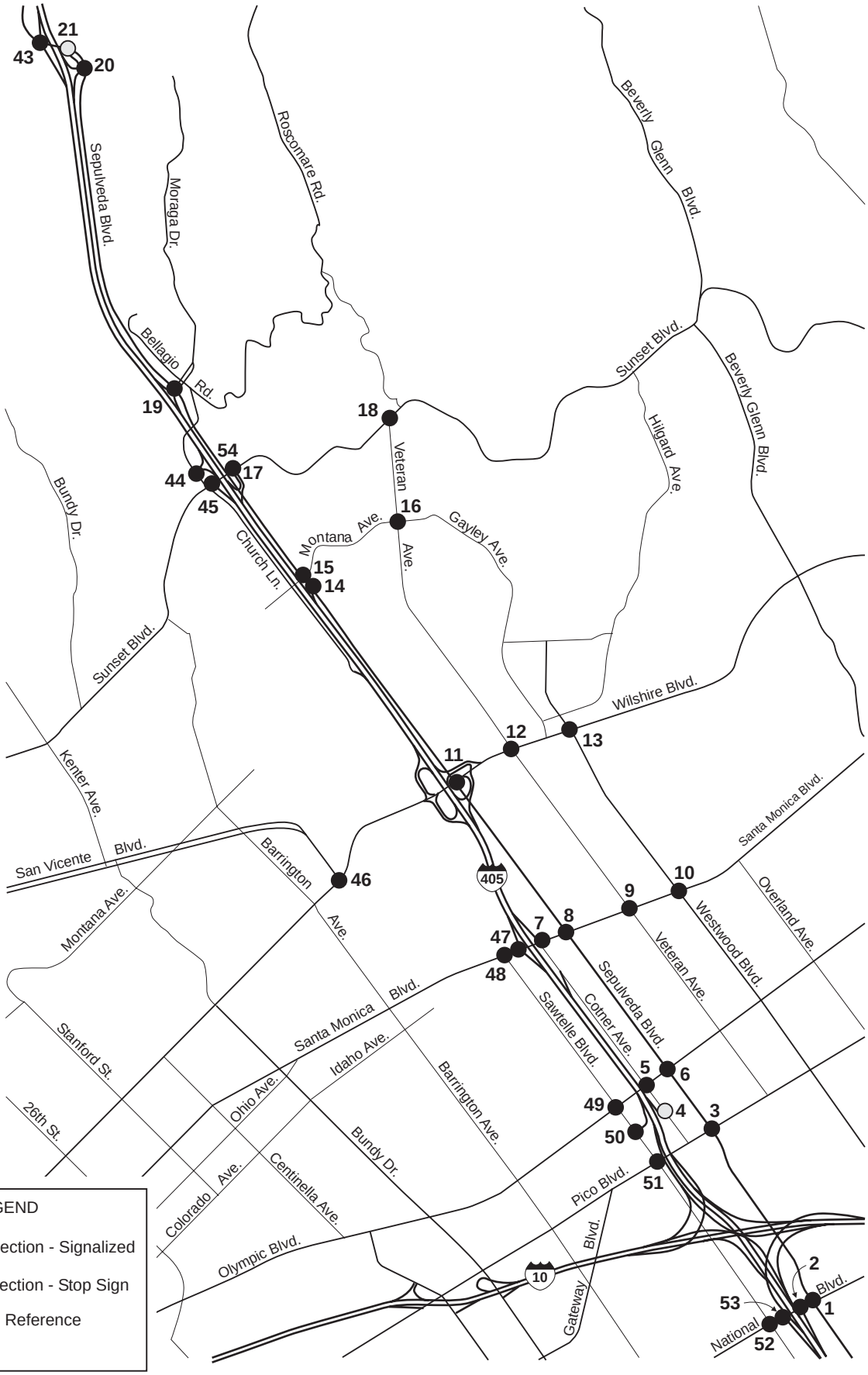
P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	623	755
30.14	SB Off to Olympic/Pico	1	1,500	1,080	488
30.74	**SB On from Santa Monica Blvd**	2	1,800	**1,887**	**1,848**
31.03	SB Off to Santa Monica Blvd	2	3,000	1,553	1,052
31.38	**SB On from EB Wilshire Blvd**	1	900	**934**	729
31.48	SB Off to EB Wilshire Blvd	1	1,500	780	604
31.65	SB On from WB Wilshire Blvd	2	1,800	1,123	1,185
31.73	SB Off to WB Wilshire Blvd	1	1,500	903	693
32.90	SB On from EB Sunset Blvd	2	1,800	421	262
33.04	SB On from Church/Sunset Blvd	2	1,800	703	519
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,340	1,249
34.65	SB On from Getty Center Dr	2	1,800	611	244
35.00	SB Off to Getty Center Dr	1	1,500	99	111
36.50	SB On from Skirball Center Dr	2	1,800	1,118	337
36.86	SB Off to Skirball Center Dr	1	1,500	338	518
38.22	SB On from Valley Vista/Sepulveda Blvd	2	1,800	1,459	441
38.61	SB Off to Valley Vista Blvd	1	1,500	160	333
39.09	SB On from Ventura Blvd	2	1,800	805	348
39.09	US-101 SB Off to Ventura Blvd	1	1,500	176	401
	SB Off to Burbank Blvd	1	1,500	1,279	927

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** type indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

C. Intersections

The locations of the 54 project study intersections are shown in Figures 5A and 5B. Existing geometry at these locations are illustrated in Figures 6A and 6B. The intersections of Santa Monica Boulevard with Sepulveda Boulevard, Veteran Avenue, and Westwood Boulevard are currently under construction. At these locations (study intersections #8, #9, and #10) the geometry shown in the design plans is used for the existing analysis. Construction of this project is scheduled for completion by early 2007.

A level of service (LOS) analysis at the project intersections was performed using Year 2005 turning movement volumes. AM peak hour intersection volumes are shown in Figures 7A and 7B, and PM peak hour volumes are shown in Figures 8A and 8B. The results of the analysis are summarized in Table IV.10. Fourteen locations currently perform at LOS F during one or both peak periods.



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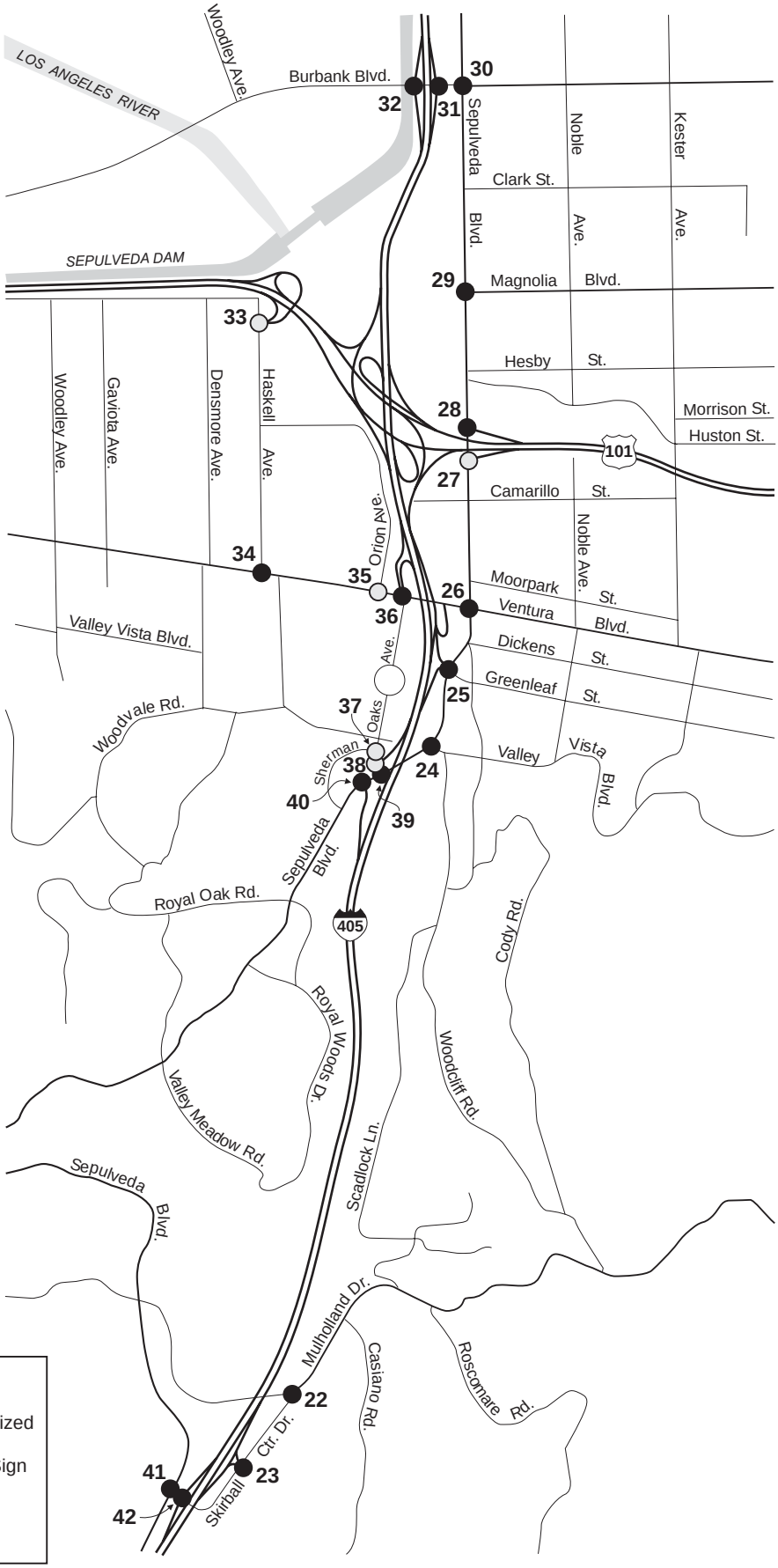
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Study Intersection Locations - Southern Area

Figure 5A



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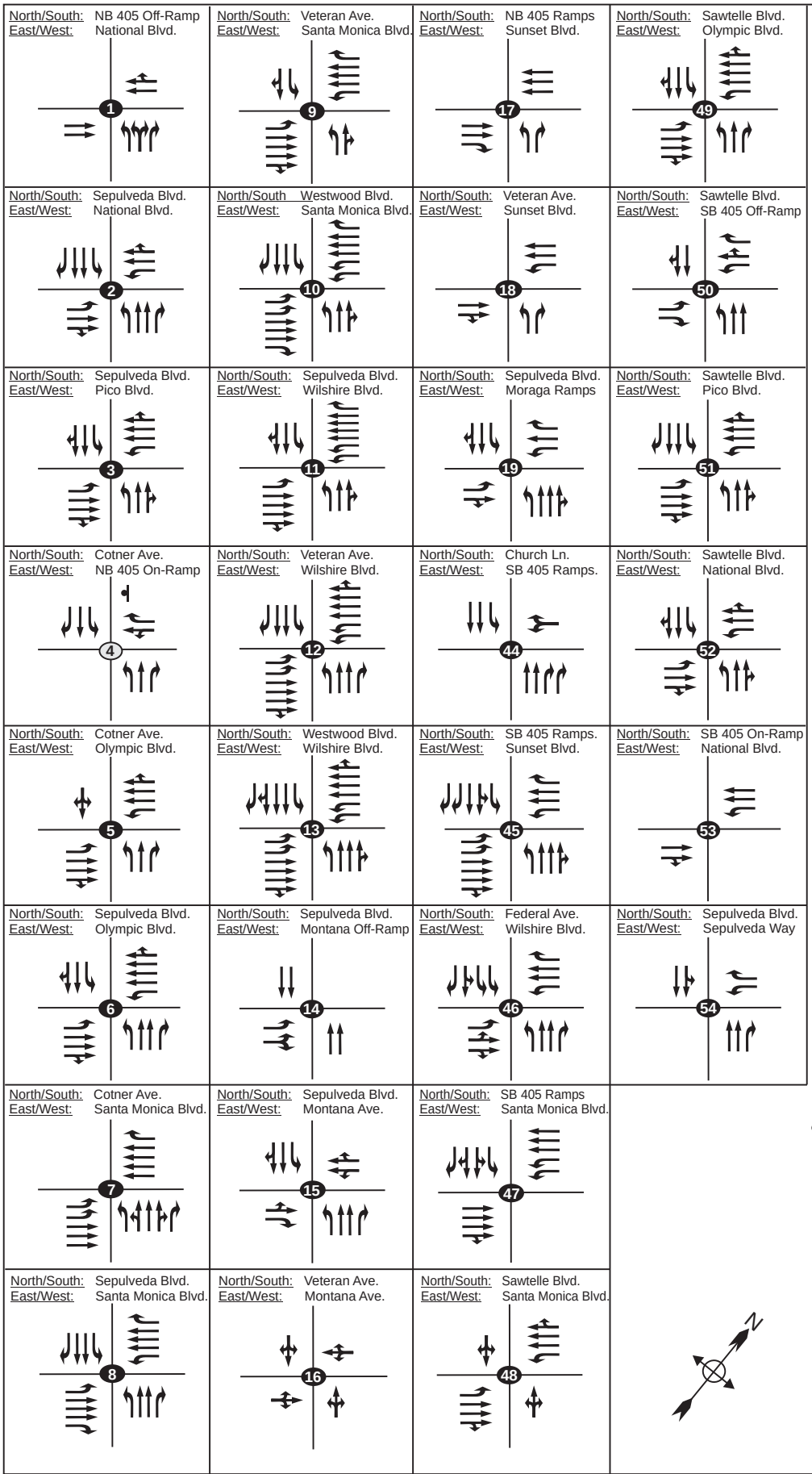
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Study Intersection Locations - Northern Area

Figure 5B



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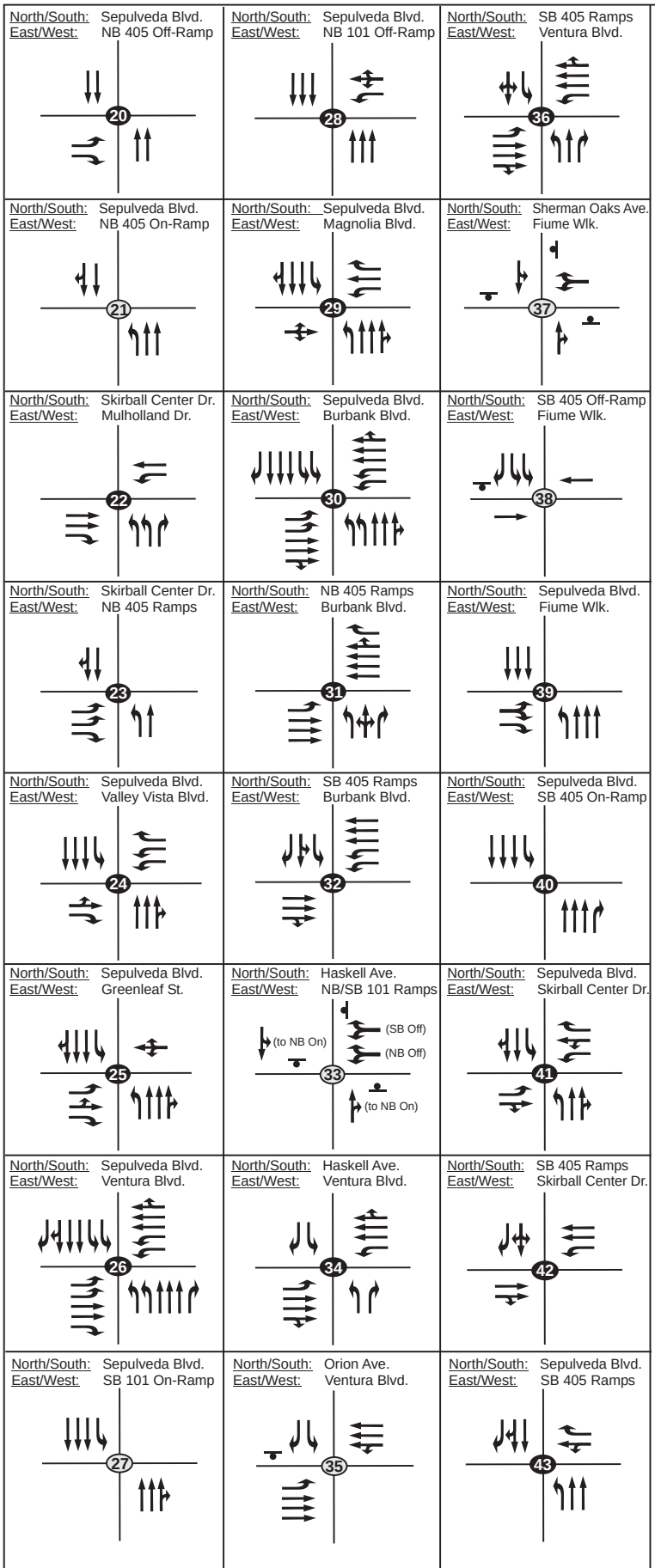
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Existing Study Intersection Geometry (Southern Area)

Figure 6A



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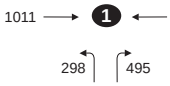
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

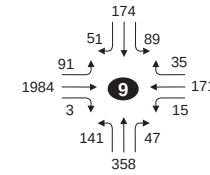
Existing Study Intersection Geometry (Northern Area)

Figure 6B

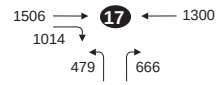
North/South: NB 405 Off-Ramp
East/West: National Blvd.



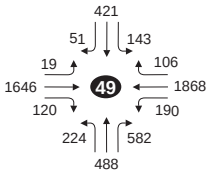
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



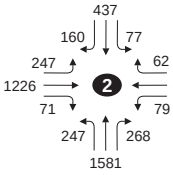
North/South: NB 405 Ramps
East/West: Sunset Blvd.



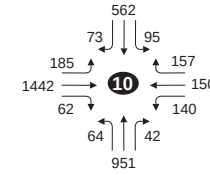
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



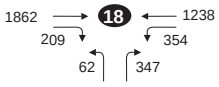
North/South: Sepulveda Blvd.
East/West: National Blvd.



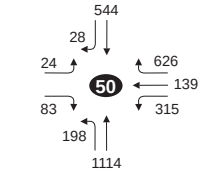
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



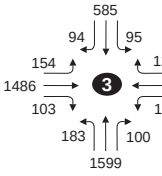
North/South: Veteran Ave.
East/West: Sunset Blvd.



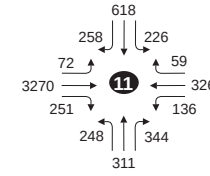
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



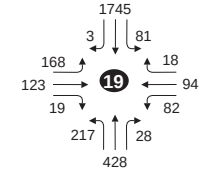
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



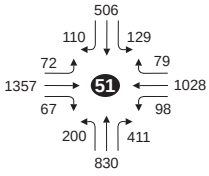
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



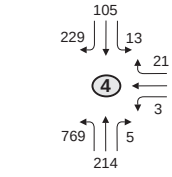
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



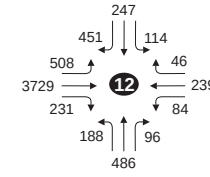
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



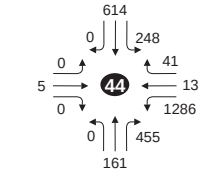
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



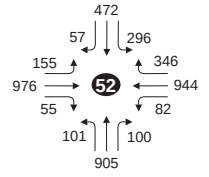
North/South: Veteran Ave.
East/West: Wilshire Blvd.



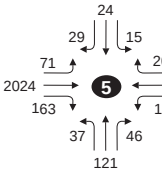
North/South: Church Ln.
East/West: SB 405 Ramps.



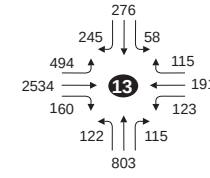
North/South: Sawtelle Blvd.
East/West: National Blvd.



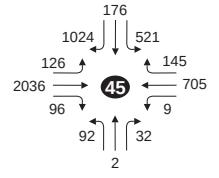
North/South: Cotner Ave.
East/West: Olympic Blvd.



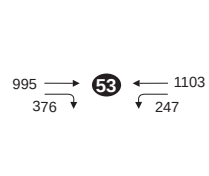
North/South: Westwood Blvd.
East/West: Wilshire Blvd.



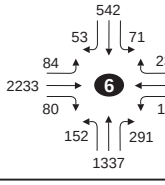
North/South: SB 405 Ramps.
East/West: Sunset Blvd.



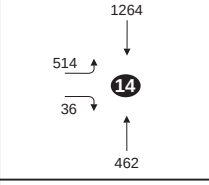
North/South: SB 405 On-Ramp
East/West: National Blvd.



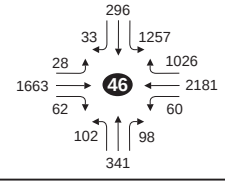
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



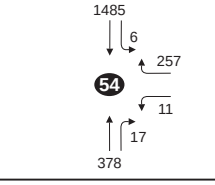
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



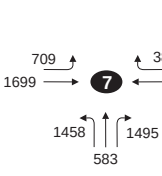
North/South: Federal Ave.
East/West: Wilshire Blvd.



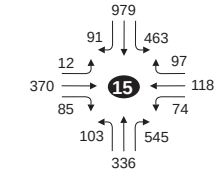
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



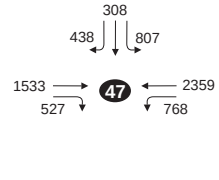
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



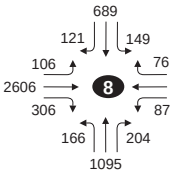
North/South: Sepulveda Blvd.
East/West: Montana Ave.



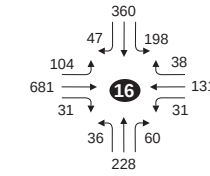
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



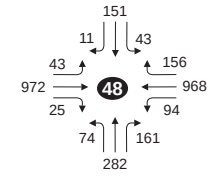
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

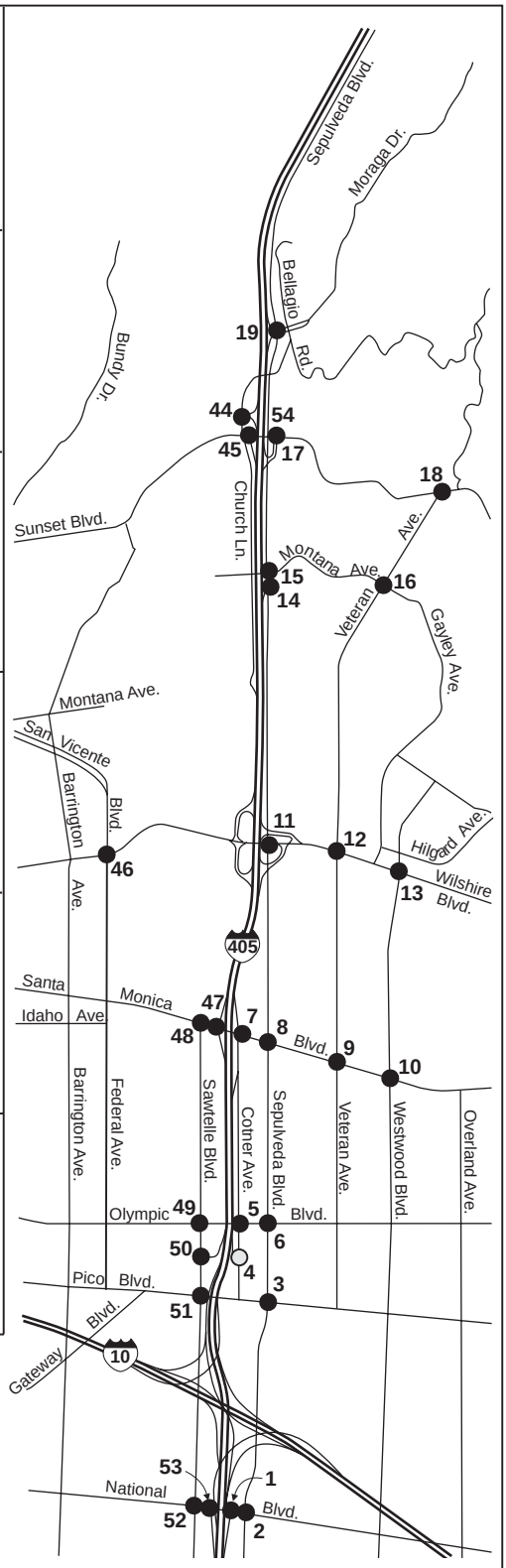


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

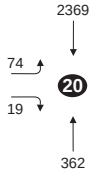
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

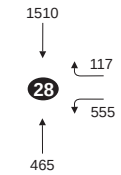
Alternative 1 (Year 2005) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 7A

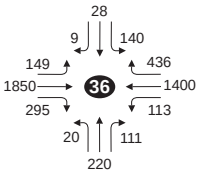
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp



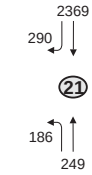
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



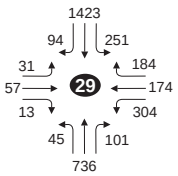
North/South: SB 405 Ramps
East/West: Ventura Blvd.



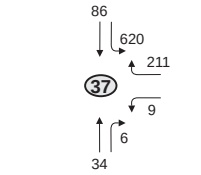
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

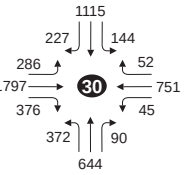


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

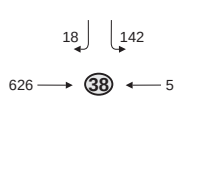
NO DATA AVAILABLE

22

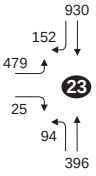
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



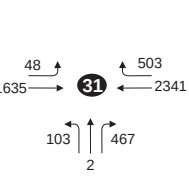
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



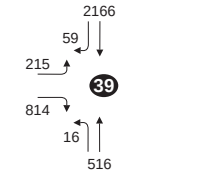
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



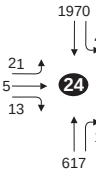
North/South: NB 405 Ramps
East/West: Burbank Blvd.



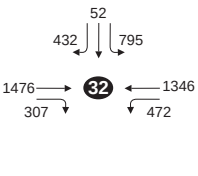
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



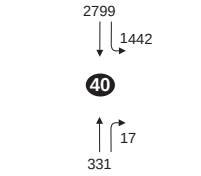
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



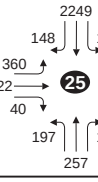
North/South: SB 405 Ramps
East/West: Burbank Blvd.



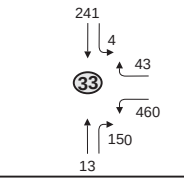
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



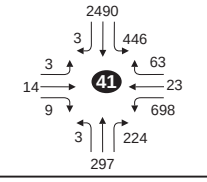
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



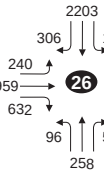
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



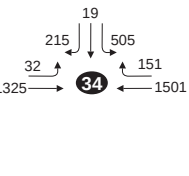
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



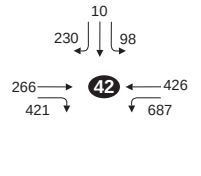
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



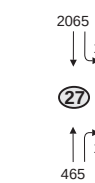
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

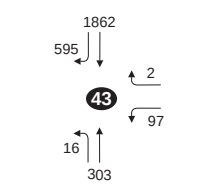


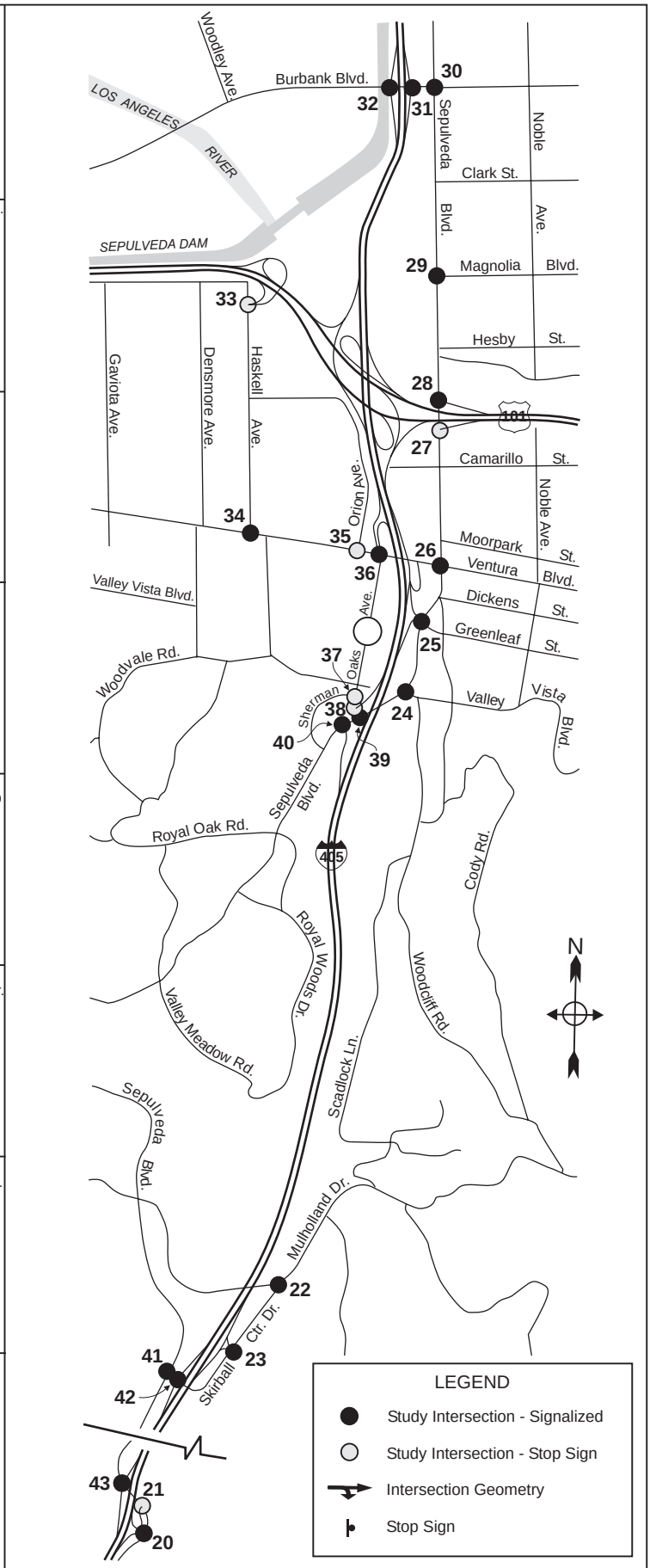
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





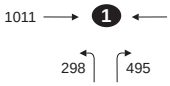
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

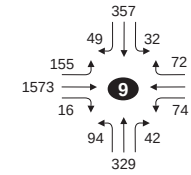
Alternative 1 (Year 2005) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 7B

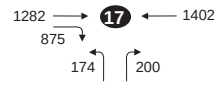
North/South: NB 405 Off-Ramp
East/West: National Blvd.



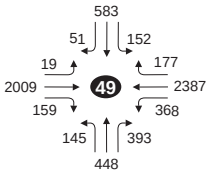
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



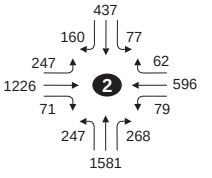
North/South: NB 405 Ramps
East/West: Sunset Blvd.



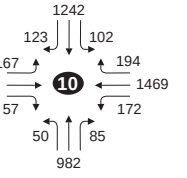
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



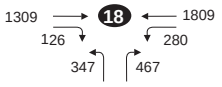
North/South: Sepulveda Blvd.
East/West: National Blvd.



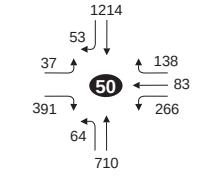
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



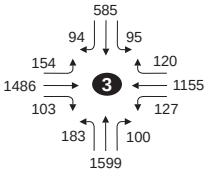
North/South: Veteran Ave.
East/West: Sunset Blvd.



North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



North/South: Sepulveda Blvd.
East/West: Pico Blvd.



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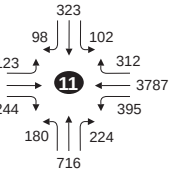
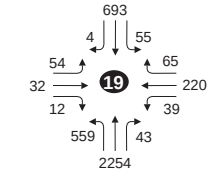
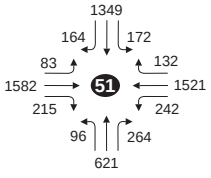
East/West: Wilshire Blvd.



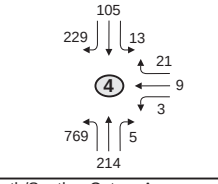
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



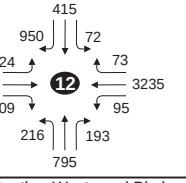
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



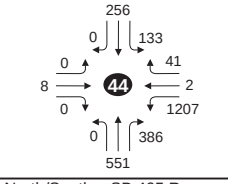
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



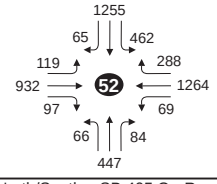
North/South: Veteran Ave.
East/West: Wilshire Blvd.



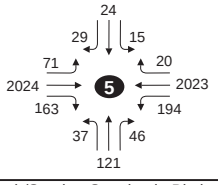
North/South: Church Ln.
East/West: SB 405 Ramps.



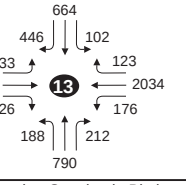
North/South: Sawtelle Blvd.
East/West: National Blvd.



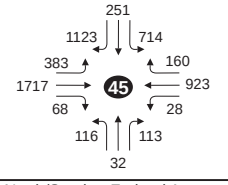
North/South: Cotner Ave.
East/West: Olympic Blvd.



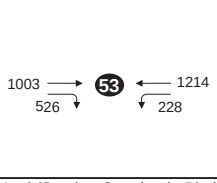
North/South: Westwood Blvd.
East/West: Wilshire Blvd.



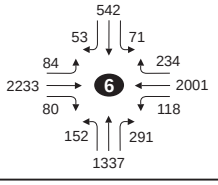
North/South: SB 405 Ramps.
East/West: Sunset Blvd.



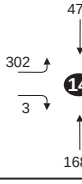
North/South: SB 405 On-Ramp
East/West: National Blvd.



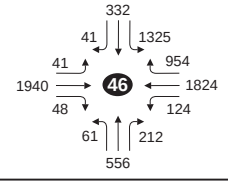
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



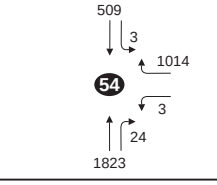
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



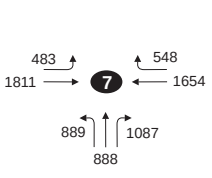
North/South: Federal Ave.
East/West: Wilshire Blvd.



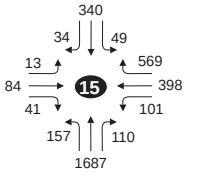
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



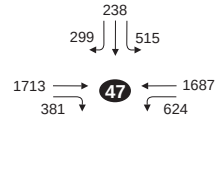
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



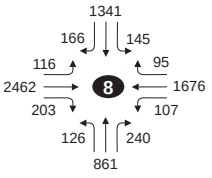
North/South: Sepulveda Blvd.
East/West: Montana Ave.



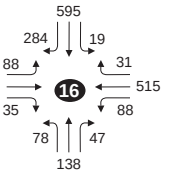
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



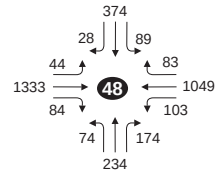
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

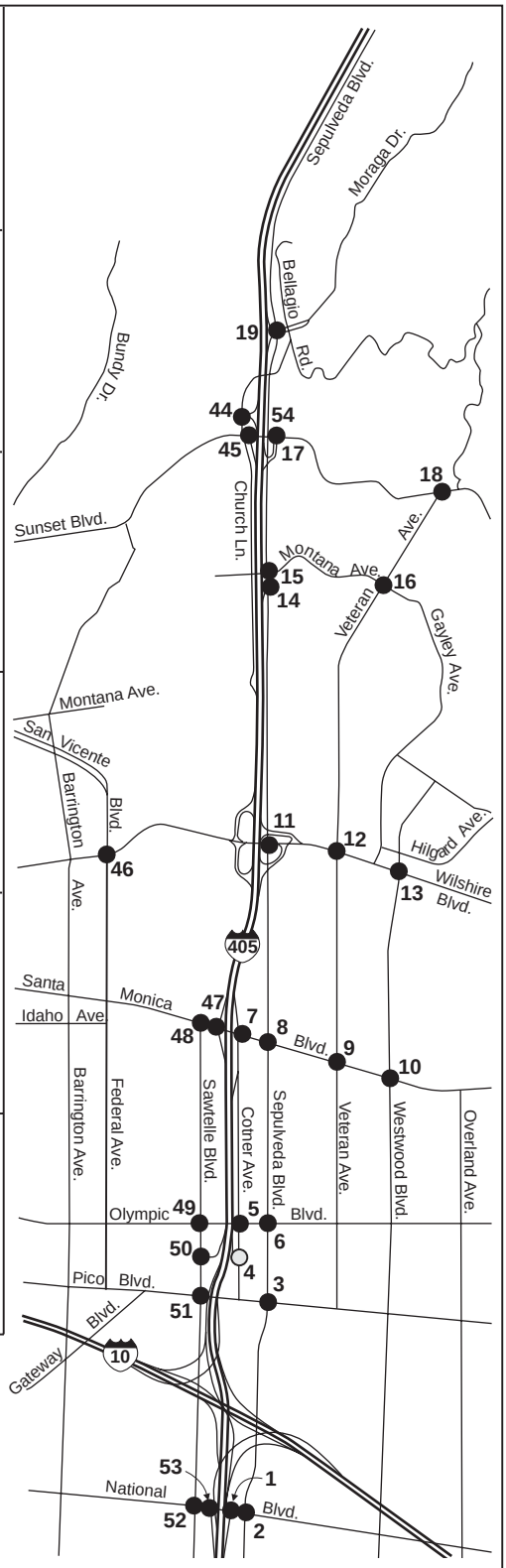


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

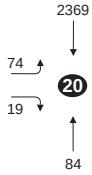
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 (Year 2005) Study Intersection Volumes (Southern Area) - PM Peak Hour

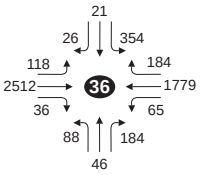
Figure 8A

North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

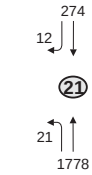


North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp

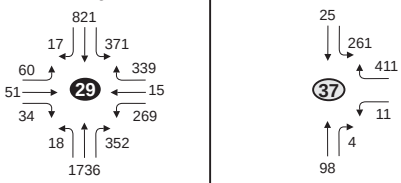
North/South: SB 405 Ramps
East/West: Ventura Blvd.



North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



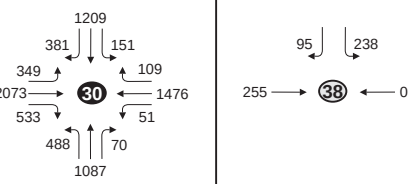
North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

North/South: Skirball Center Dr.
East/West: Mulholland Dr.

NO DATA AVAILABLE

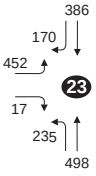
22

North/South: Sepulveda Blvd.
East/West: Burbank Blvd.

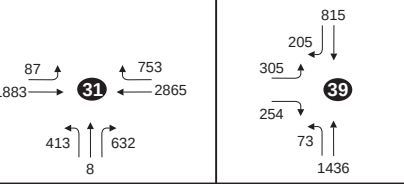


North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

North/South: Skirball Center Dr.
East/West: NB 405 Ramps

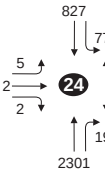


North/South: NB 405 Ramps
East/West: Burbank Blvd.

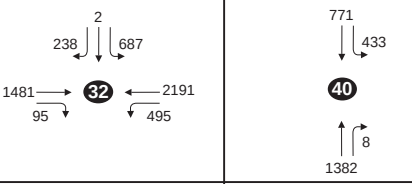


North/South: Sepulveda Blvd.
East/West: Fiume Wlk.

North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.

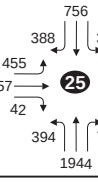


North/South: SB 405 Ramps
East/West: Burbank Blvd.

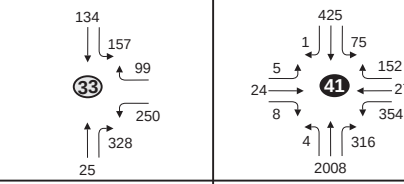


North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp

North/South: Sepulveda Blvd.
East/West: Greenleaf St.

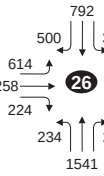


North/South: Haskell Ave.
East/West: NB/SB 101 Ramps

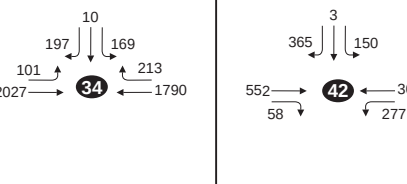


North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.

North/South: Sepulveda Blvd.
East/West: Ventura Blvd.

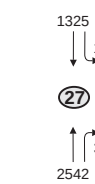


North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.

North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

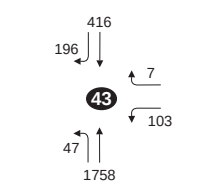


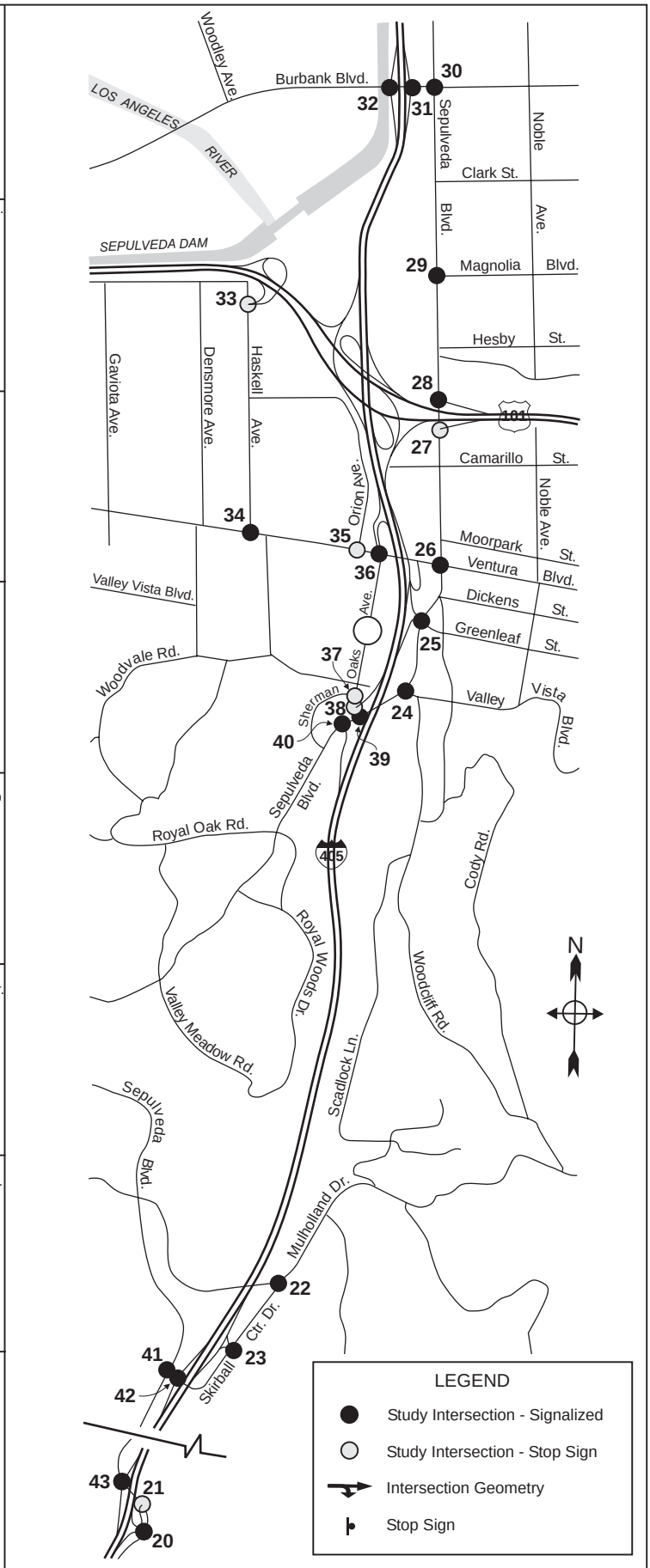
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 (Year 2005) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 8B

Level of Service Analysis

The results of the level of service analysis are summarized in Table IV.7. Thirteen locations are forecast to perform at LOS F during one or both peak periods.

Table IV.7 – Year 2005 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	18.6	B	16.3	B
2	National Blvd & Sepulveda Blvd	Signalized	33.4	C	45.1	D
3	Pico Blvd & Sepulveda Blvd	Signalized	52.3	D	136.6	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	65.0	F	19.6	C
5	Olympic Blvd & Cotner Ave	Signalized	10.5	B	15.4	B
6	Olympic Blvd & Sepulveda Blvd	Signalized	50.6	D	92.9	F
7	Santa Monica Blvd & Cotner Ave	Signalized	92.6	F	51.3	D
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	100.6	F	104.2	F
9	Santa Monica Blvd & Veteran Ave	Signalized	25.8	C	28.7	C
10	Santa Monica Blvd & Westwood Blvd	Signalized	32.6	C	34.4	C
11	Wilshire Blvd & Sepulveda Blvd	Signalized	105.3	F	133.6	F
12	Wilshire Blvd & Veteran Ave	Signalized	65.9	E	120.5	F
13	Wilshire Blvd & Westwood Blvd	Signalized	40.7	D	45.4	D
14	Montana Off-ramp & Sepulveda Blvd	Signalized	21.8	C	58.0	E
15	Montana Ave & Sepulveda Blvd	Signalized	32.4	C	39.7	D
16	Montana Ave & Veteran Ave	Signalized	22.4	C	25.3	C
17	Sunset Blvd & NB 405 Off-ramp	Signalized	24.7	C	10.7	B
18	Sunset Blvd & Veteran Ave	Signalized	61.1	E	31.0	C
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	76.5	E	40.5	D
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	4.8	A	4.4	A
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	Unsignalized	51.0	F	0.4	A
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	9.4	A	9.0	A
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	54.9	D	31.4	C
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	73.6	E	49.9	D
26	Ventura Blvd & Sepulveda Blvd	Signalized	128.5	F	61.5	E
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.4	A	8.1	A
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	16.8	B	14.6	B
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	16.5	B	64.5	E
30	Burbank Blvd & N Sepulveda Blvd	Signalized	157.1	F	272.0	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	13.9	B	53.7	D
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	58.3	E	52.4	D
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	16.4	C	13.5	B
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	9.4	A	8.6	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	14.7	B	9.7	A

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	13.0	B	4.0	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	25.9	C	19.4	B
37	Fiume Walk & Sherman Oak Ave	Unsignalized	33.0	D	11.7	B
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	2.8	A	5.0	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	38.2	D	11.0	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	33.7	C	16.8	B
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	146.1	F	123.1	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	26.1	C	59.2	E
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	16.3	B	16.6	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	33.2	C	38.7	D
45	Sunset Blvd & Church Lane	Signalized	30.3	C	38.0	D
46	Wilshire Blvd & Federal Ave	Signalized	110.7	F	136.4	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	40.0	D	30.2	C
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	52.0	D	554.2	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	30.8	C	76.6	E
50	SB 405 Tennessee Off-ramp & Sawtelle Blvd	Signalized	29.8	C	45.4	D
51	Pico Blvd & Sawtelle Blvd	Signalized	29.4	C	72.6	E
52	National Blvd & Sawtelle Blvd	Signalized	64.6	E	71.0	E
53	National Blvd & SB 405 On-ramp	Signalized	6.8	A	6.7	A
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	0.8	A	5.8	A

Level of service (LOS) values based on HCM 2000 methodology.
N/A – Intersections screened from analysis.

V. ALTERNATIVE 1 – NO BUILD

Alternative 1 is the no build alternative. In the Alternative 1 condition, it is assumed that all facilities remain unimproved as in the existing condition. As discussed in the Existing Conditions section, the Santa Monica Boulevard transit parkway project has been assumed in place and is carried forward in the Alternative 1 case. Analysis results for the I-405 freeway mainline, access ramps, and study intersections within the project study area for the horizon years of 2015 and 2031 are presented in this section. Traffic volume forecasts were derived from existing count data using the growth factors discussed in Section III.

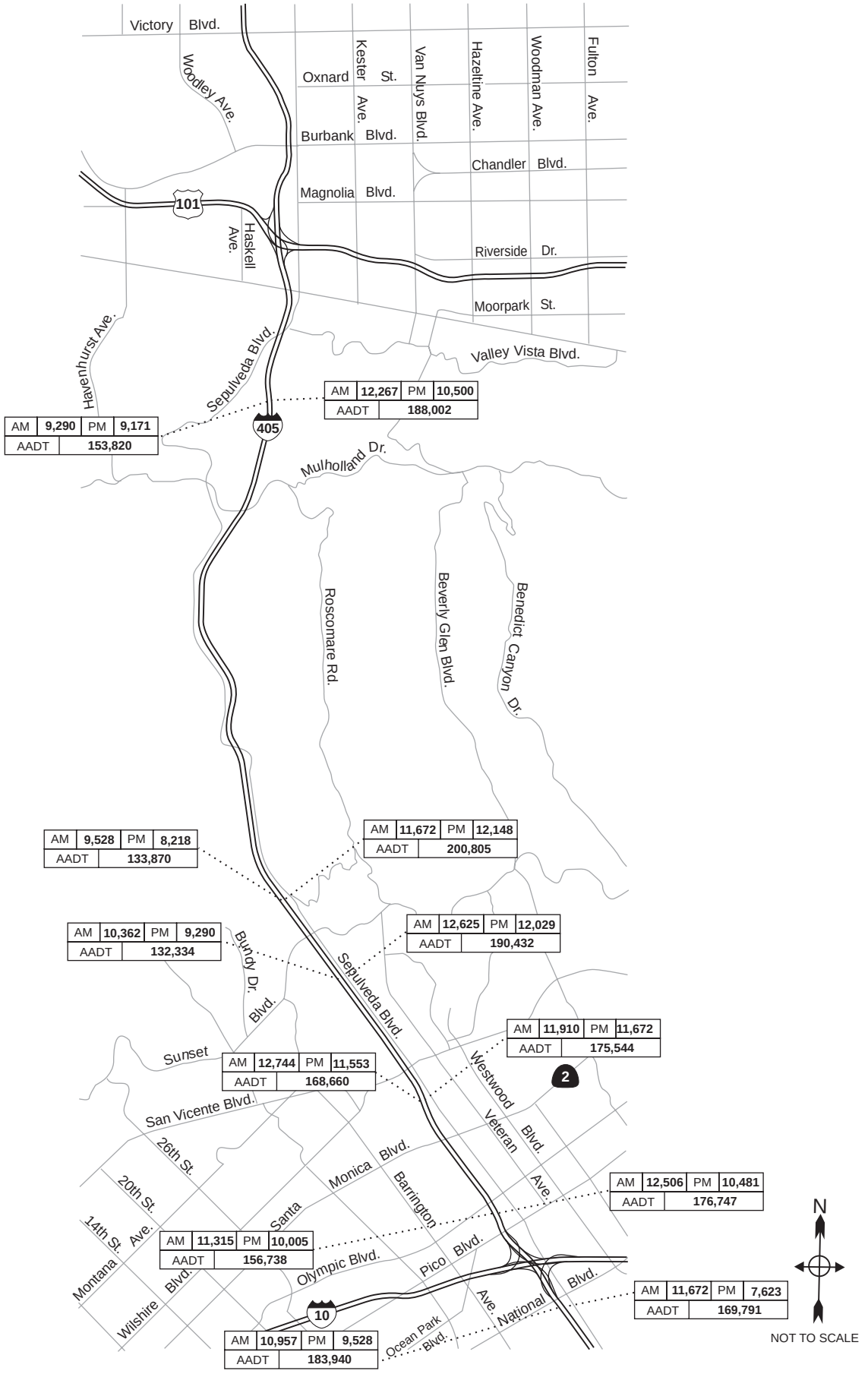
A. Freeways

The number of travel lanes along the I-405 freeway remains the same as existing in the Alternative 1 condition, as described in the Existing Conditions section. Traffic volumes are forecast to increase by 1.47% per year, or 15.7% from the base year of 2005 to year 2015, and 46.1% from 2005 to year 2031. Forecast volumes on the I-405 for the horizon years of 2015 and 2031 are shown in Figures 9 and 10. Without additional capacity, the increase in volume due to ambient growth alone is expected to extend the congested period in both directions, to begin earlier in the day and extend later in the evening. Vehicles traveling during the congested period will experience increased delay, and with longer travel times between the same origin and destination, travelers will use more gasoline and produce higher emissions. Without measures to increase freeway capacity or reduce vehicle trips, conditions throughout the corridor will continue to deteriorate in the future.

The methodology described in Section III.A of this report was used to estimate the daily increase in vehicular delay that would be experienced in the horizon years due to ambient growth. These values, which are summarized in Table V.1, serve as a baseline from which to compare the build alternatives, and are not meant to represent actual delay.

Table V.1 – Alternative 1 (No Build) Horizon Year Increase in Vehicular Delay

I-405 Freeway Segment	Increase in Daily Vehicular Delay Over Year 2005 Values (veh-hours)	
	Year 2015	Year 2031
Northbound Mainline	6,330	18,800
Southbound Mainline	5,170	24,120
Southbound HOV Lane	128	338



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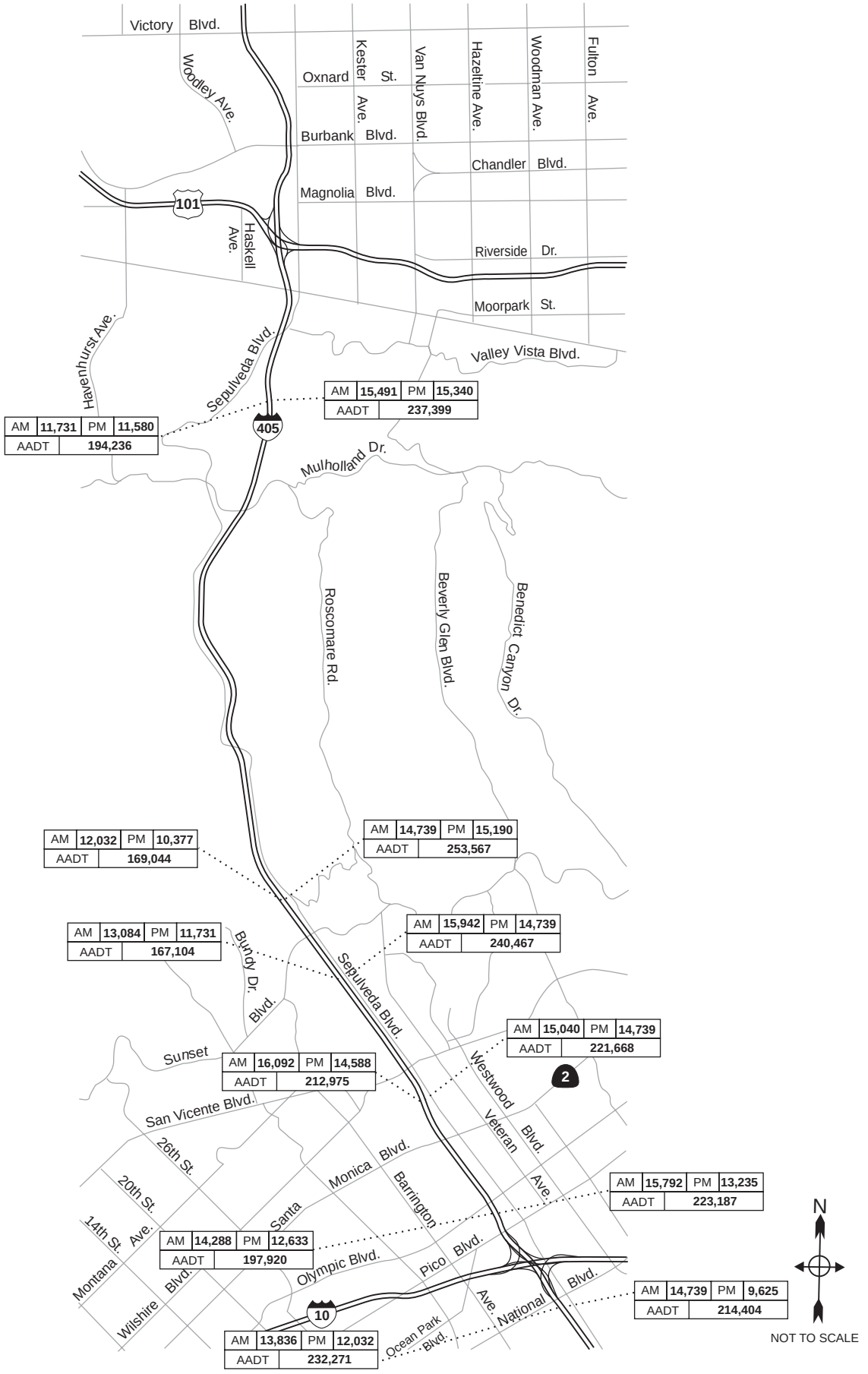
I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project

Year 2015 I-405 Mainline Forecast Traffic Volumes

Figure 9



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I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project

Year 2031 I-405 Mainline Forecast Traffic Volumes

Figure 10

B. Access Ramps

Northbound and southbound AM and PM peak hour ramp volumes forecast for year 2015 are listed in Tables V.2 and V.3, respectively. These volumes are also shown in Figures 11A and 11B. The northbound on-ramp from eastbound Sunset Boulevard, southbound on-ramp at Santa Monica Boulevard, and southbound on-ramp from eastbound Wilshire Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods.

In a queuing analysis of the existing ramps, all locations were found to have adequate storage for the forecast year 2015 conditions.

Table V.2 – Alternative 1 Year 2015 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	918	812
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,165	1,141
30.68	NB Off To Santa Monica Blvd.	2	3,000	2,462	2,018
31.01	NB On From Santa Monica Blvd.	2	1,800	920	1,316
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	1,945	1,179
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	990	724
31.63	SEG NB On From EB Wilshire Blvd.	1	900	675	703
31.64	SEG NB On From WB Wilshire Blvd.	1	900	761	833
32.38	NB Off To Montana Ave.	1	1,500	637	352
32.81	NB Off To Sunset Blvd.	2	3,000	1,325	432
32.99	**NB On From EB Sunset Blvd.**	1	900	**1,173**	**1,012**
33.30	NB Off To Moraga Drive	2	3,000	358	113
33.47	NB On From Moraga Drive	2	1,800	363	907
34.55	NB Off To Getty Center Drive	1	1,500	108	74
34.73	NB On From Getty Center Drive	2	1,800	551	645
36.69	NB Off to Mulholland/Rimerton	1	1,500	583	543
36.99	NB On from Mulholland/Rimerton	2	1,800	285	469
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	488	562
38.77	NB On From Greenleaf St	2	1,800	647	1,188
	US-101 NB Off to Sepulveda Blvd	1	1,500	778	496

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** type indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

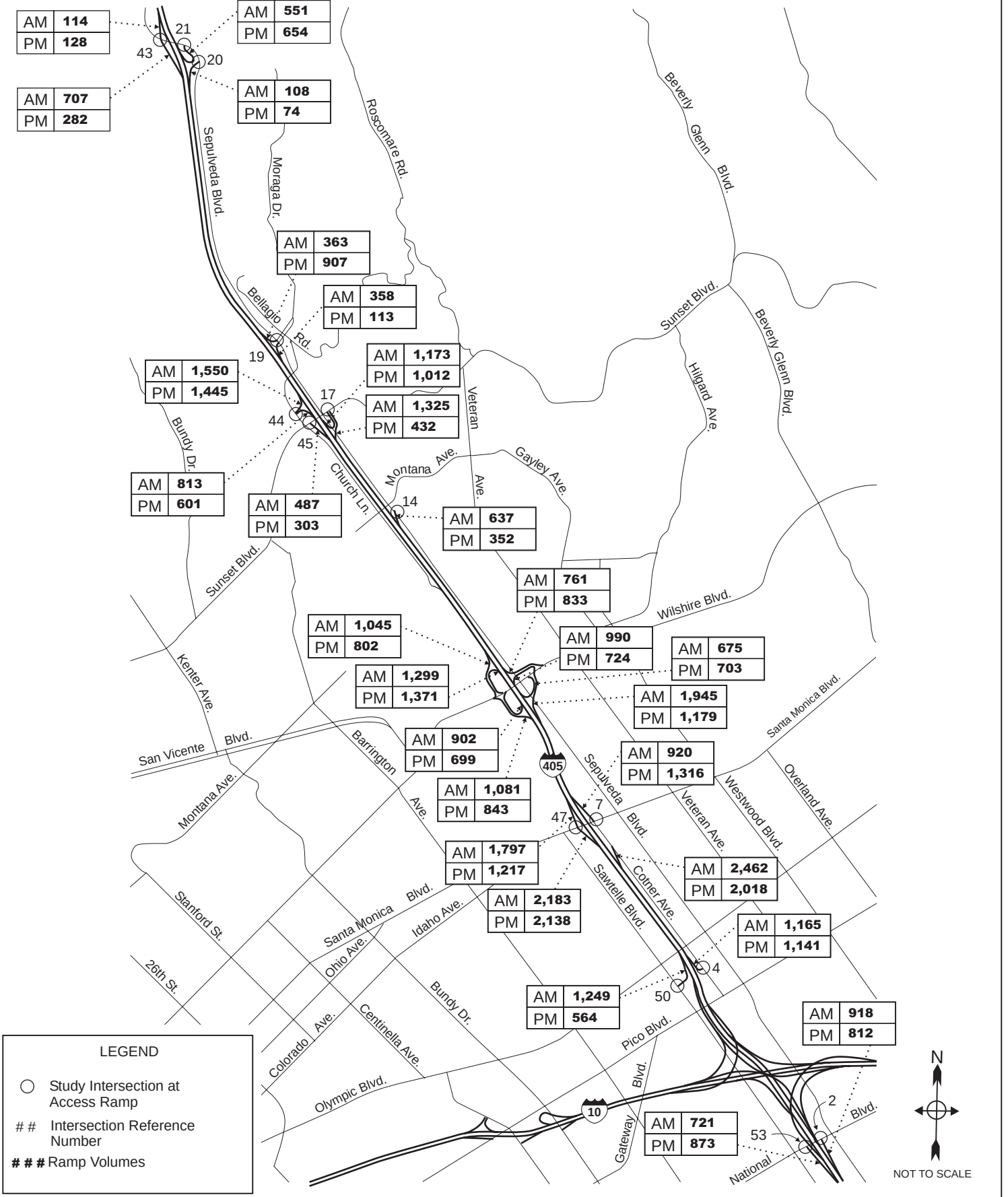
Table V.3 – Alternative 1 Year 2015 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	721	873
30.14	SB Off to Olympic/Pico	1	1,500	1,249	564
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,183**	**2,138**
31.03	SB Off to Santa Monica Blvd	2	3,000	1,797	1,217
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,081**	843
31.48	SB Off to EB Wilshire Blvd	1	1,500	902	699
31.65	SB On from WB Wilshire Blvd	2	1,800	1,299	1,371
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,045	802
32.90	SB On from EB Sunset Blvd	2	1,800	487	303
33.04	SB On from Church/Sunset Blvd	2	1,800	813	601
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,550	1,445
34.65	SB On from Getty Center Dr	2	1,800	707	282
35.00	SB Off to Getty Center Dr	1	1,500	114	128
36.50	SB On from Skirball Center Dr	2	1,800	1,294	390
36.86	SB Off to Skirball Center Dr	1	1,500	391	599
38.22	SB On from Valley Vista/Sepulveda Blvd	2	1,800	1,688	510
38.61	SB Off to Valley Vista Blvd	1	1,500	185	385
39.09	SB On from Ventura Blvd	2	1,800	931	403
39.09	US-101 SB Off to Ventura Blvd	1	1,500	204	464
	SB Off to Burbank Blvd	1	1,500	1,480	1,072

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** type indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

Peak hour ramp volumes forecast for the no build condition for year 2031 are listed in Tables V.4 and V.5, and these volumes are also shown in Figures 12A and 12B. If no changes are made to the current system, the northbound off-ramp to Santa Monica Boulevard, northbound on-ramp from westbound Wilshire Boulevard, northbound on-ramp from eastbound Sunset Boulevard, southbound off-ramp to Olympic/Pico Boulevard, southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, southbound on-ramp at Valley Vista/Sepulveda Boulevard, and the southbound off-ramp to Burbank Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods. Additional capacity may be required at these locations in the future if queuing issues arise due to ambient traffic growth.

A preliminary queuing analysis of the year 2031 conditions for this scenario found the northbound off-ramp to eastbound Wilshire Boulevard to be a potential location for capacity issues.



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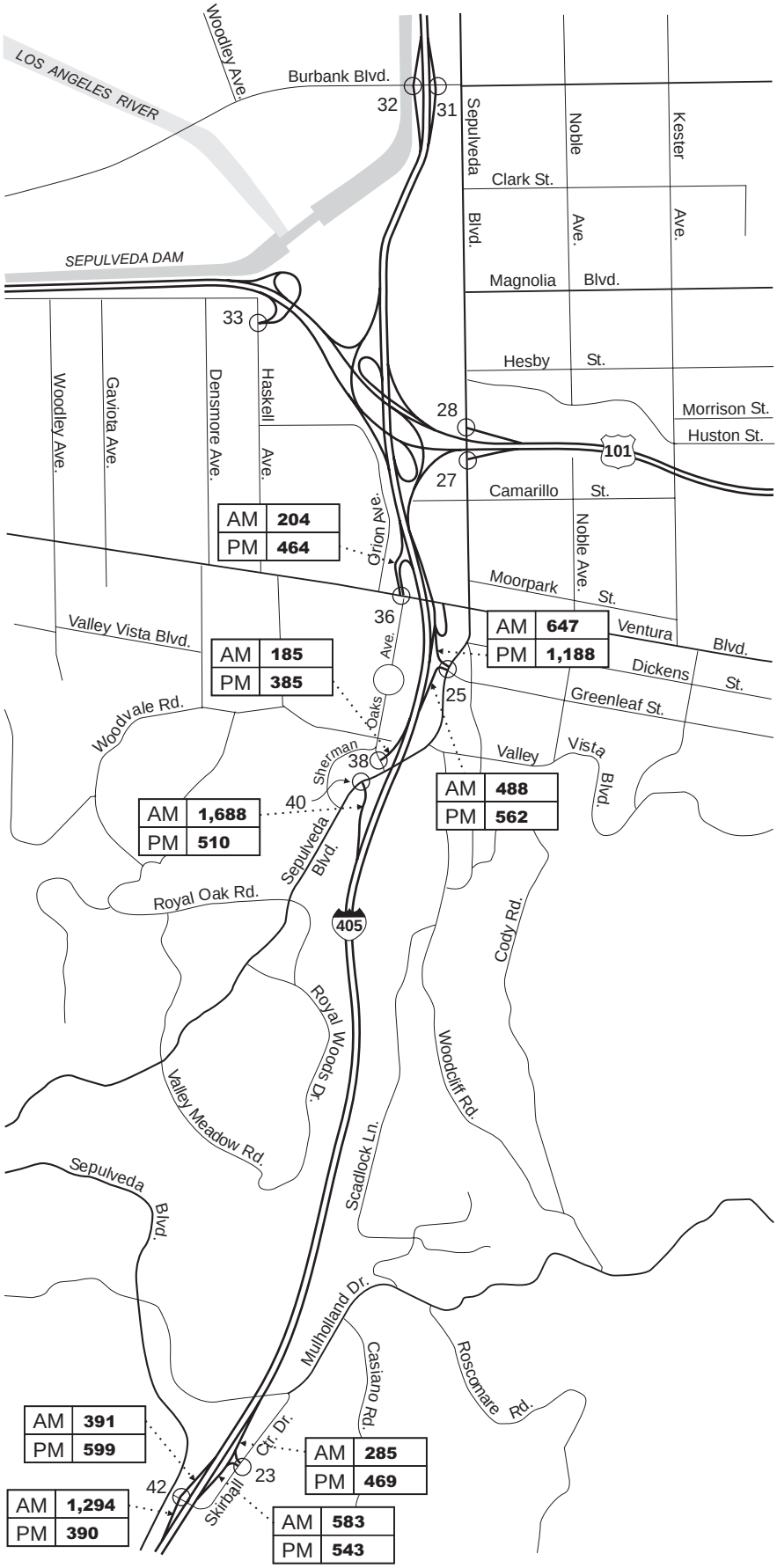
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 Year 2015 Access Ramp Volumes - Southern Area

Figure 11A



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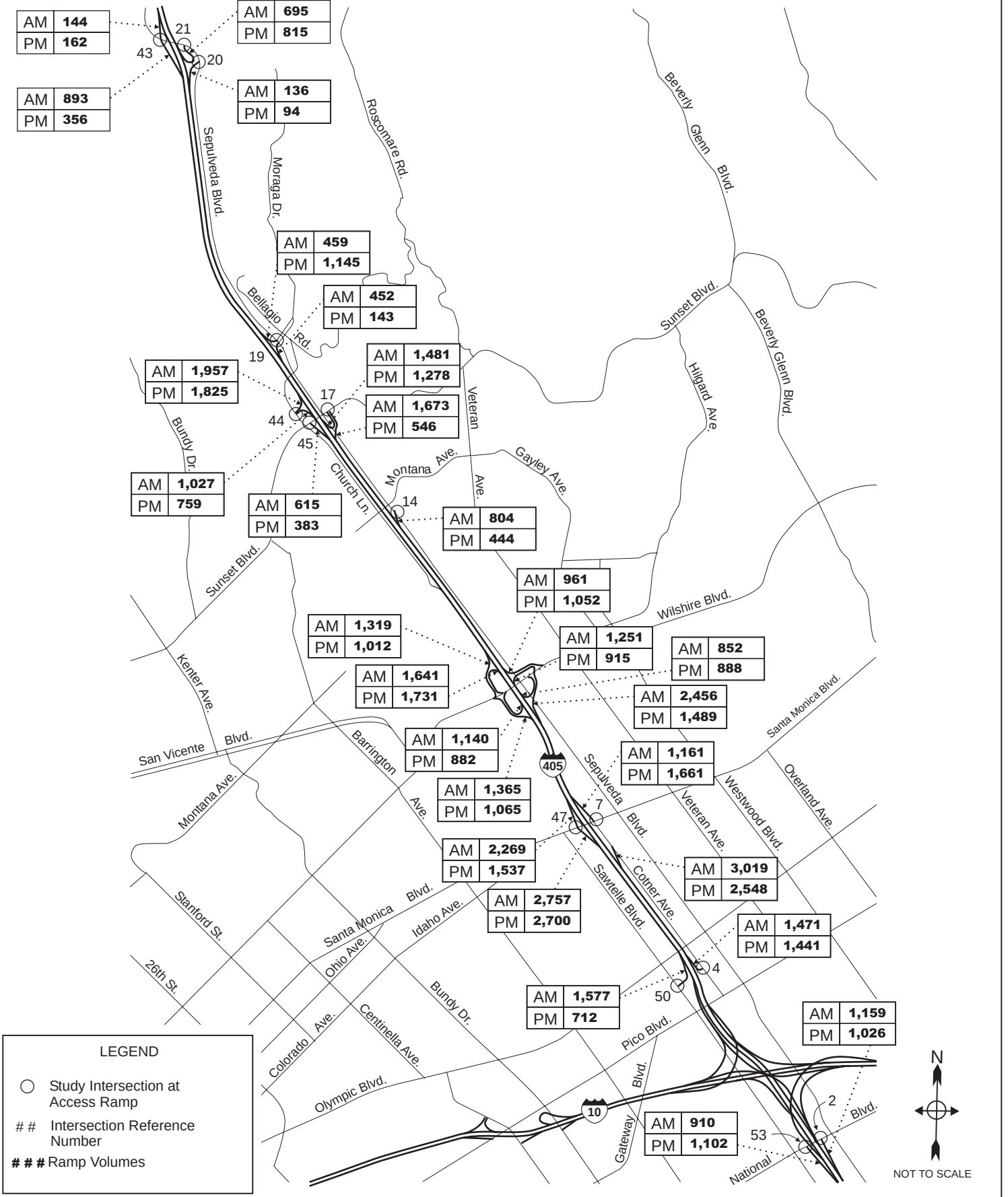
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 Year 2015 Peak Hour Access Ramp Volumes - Northern Area

Figure 11B



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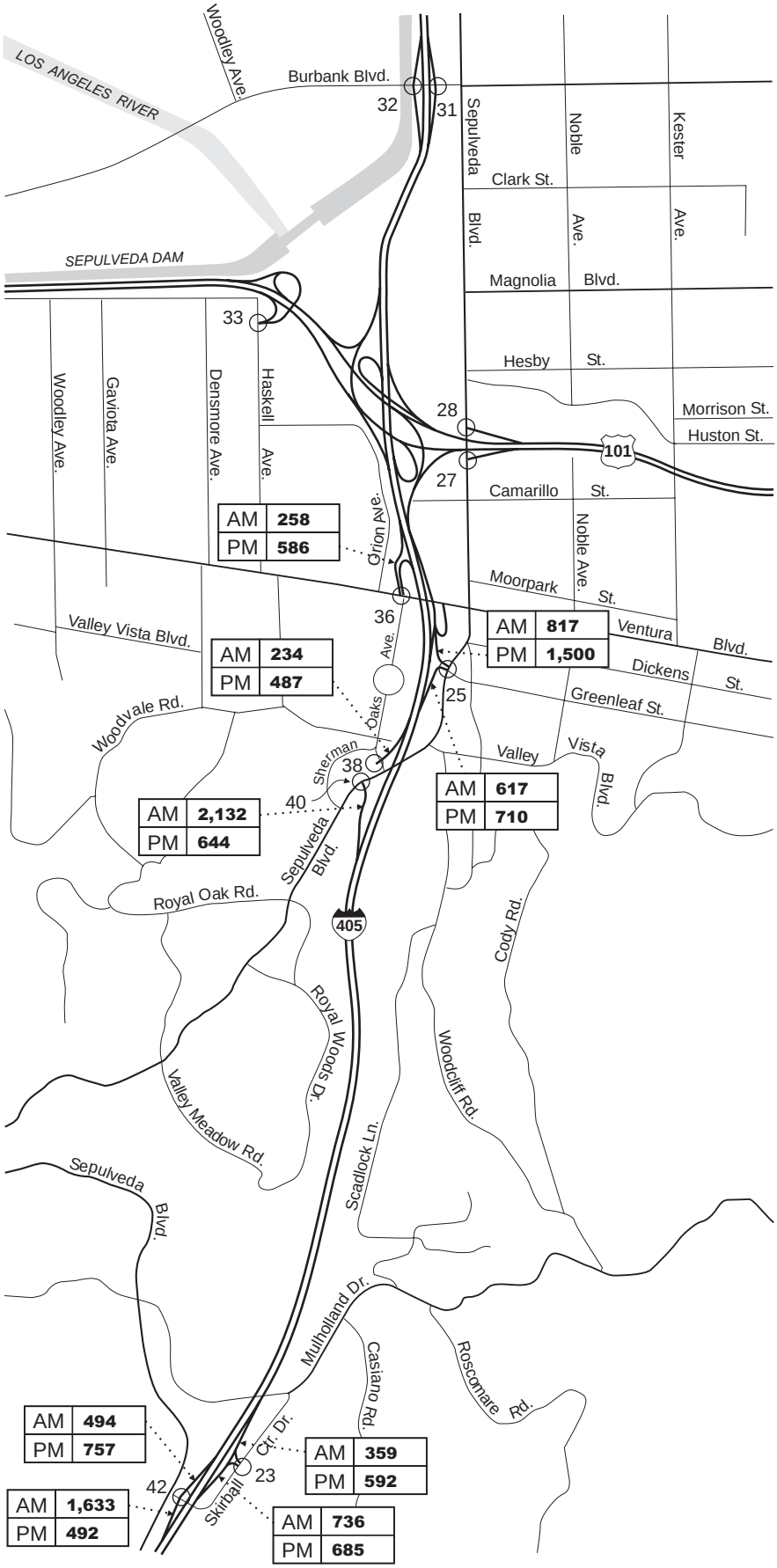
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 Year 2031 Peak Hour Access Ramp Volumes - Southern Area

Figure 12A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1Year 2031 Peak Hour Access Ramp Volumes - Northern Area

Figure 12B

Table V.4 – Alternative 1 Year 2031 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	1,159	1,026
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,471	1,441
30.68	**NB Off To Santa Monica Blvd.**	2	3,000	**3,109**	2,548
31.01	NB On From Santa Monica Blvd.	2	1,800	1,161	1,661
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,456	1,489
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	1,251	915
31.63	SEG NB On From EB Wilshire Blvd.	1	900	852	888
31.64	**SEG NB On From WB Wilshire Blvd.**	1	900	**961**	**1,052**
32.38	NB Off To Montana Ave.	1	1,500	804	444
32.81	NB Off To Sunset Blvd.	2	3,000	1,673	546
32.99	**NB On From EB Sunset Blvd.**	1	900	**1,481**	**1,278**
33.30	NB Off To Moraga Drive	2	3,000	452	143
33.47	NB On From Moraga Drive	2	1,800	459	1,145
34.55	NB Off To Getty Center Drive	1	1,500	136	94
34.73	NB On From Getty Center Drive	2	1,800	695	815
36.69	NB Off to Mulholland/Rimerton	1	1,500	736	685
36.99	NB On from Mulholland/Rimerton	2	1,800	359	592
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	617	710
38.77	NB On From Greenleaf St	2	1,800	817	1,500
	US-101 NB Off to Sepulveda Blvd	1	1,500	672	429

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** type indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

Table V.5 – Alternative 1 Year 2031 Southbound Ramp Peak Hour Volumes

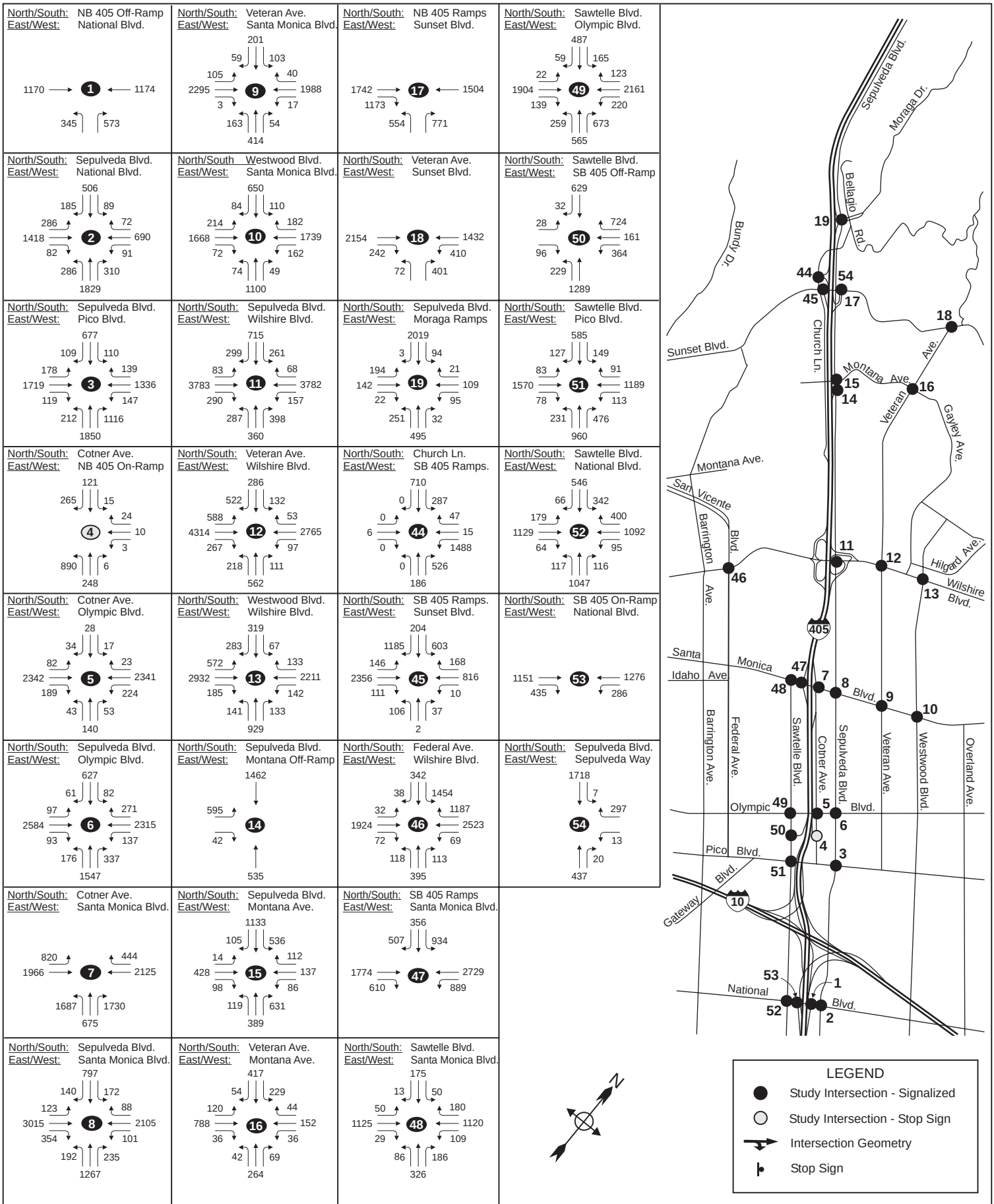
P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	910	1,102
30.14	**SB Off to Olympic/Pico**	1	1,500	**1,577**	712
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,757**	**2,700**
31.03	SB Off to Santa Monica Blvd	2	3,000	2,269	1,537
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,365**	**1,065**
31.48	SB Off to EB Wilshire Blvd	1	1,500	1,140	882
31.65	SB On from WB Wilshire Blvd	2	1,800	1,641	1,731
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,319	1,012
32.90	SB On from EB Sunset Blvd	2	1,800	615	383
33.04	SB On from Church/Sunset Blvd	2	1,800	1,027	759

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,957	1,825
34.65	SB On from Getty Center Dr	2	1,800	893	356
35.00	SB Off to Getty Center Dr	1	1,500	144	162
36.50	SB On from Skirball Center Dr	2	1,800	1,633	492
36.86	SB Off to Skirball Center Dr	1	1,500	494	757
38.22	**SB On from Valley Vista/Sepulveda Blvd**	2	1,800	**2,132**	644
38.61	SB Off to Valley Vista Blvd	1	1,500	234	487
39.09	SB On from Ventura Blvd	2	1,800	1,176	508
39.09	US-101 SB Off to Ventura Blvd	1	1,500	258	586
	SB Off to Burbank Blvd	1	1,500	**1,615**	1,171

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** type indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

C. Intersections

A level of service (LOS) analysis at the project intersections was performed using forecast year 2015 and 2031 turning movement volumes. Year 2015 AM peak hour intersection volumes are shown in Figures 13A and 13B, and PM peak hour volumes are shown in Figures 14A and 14B. Figures 15A and 15B contain year 2031 AM peak hour intersection volumes, and Figures 16A and 16B show year 2031 PM peak volumes.



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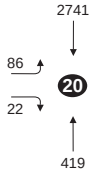
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

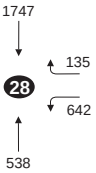
Alternative 1 (Year 2015) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 13A

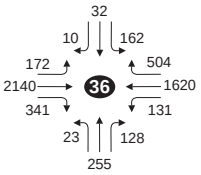
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp



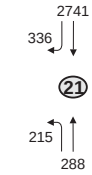
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



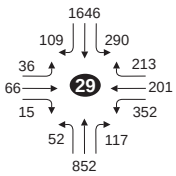
North/South: SB 405 Ramps
East/West: Ventura Blvd.



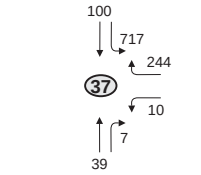
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

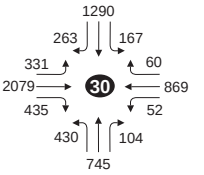


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

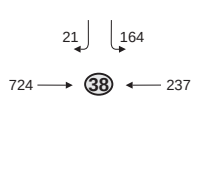
NO DATA AVAILABLE

22

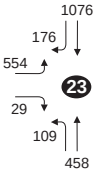
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



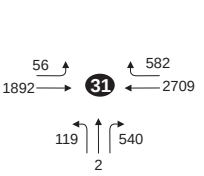
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



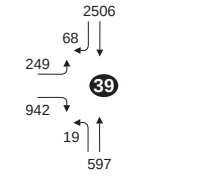
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



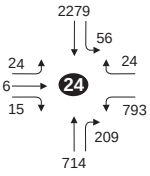
North/South: NB 405 Ramps
East/West: Burbank Blvd.



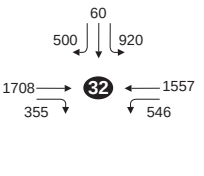
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



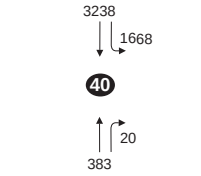
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



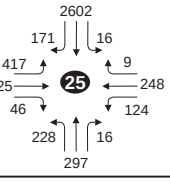
North/South: SB 405 Ramps
East/West: Burbank Blvd.



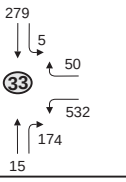
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



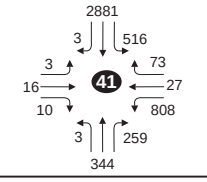
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



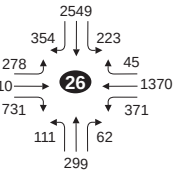
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



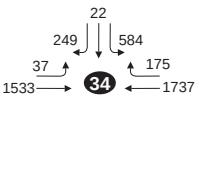
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



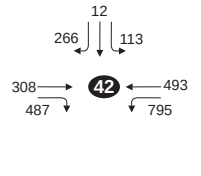
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



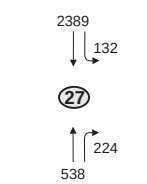
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

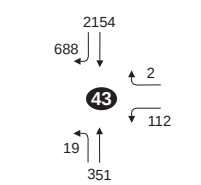


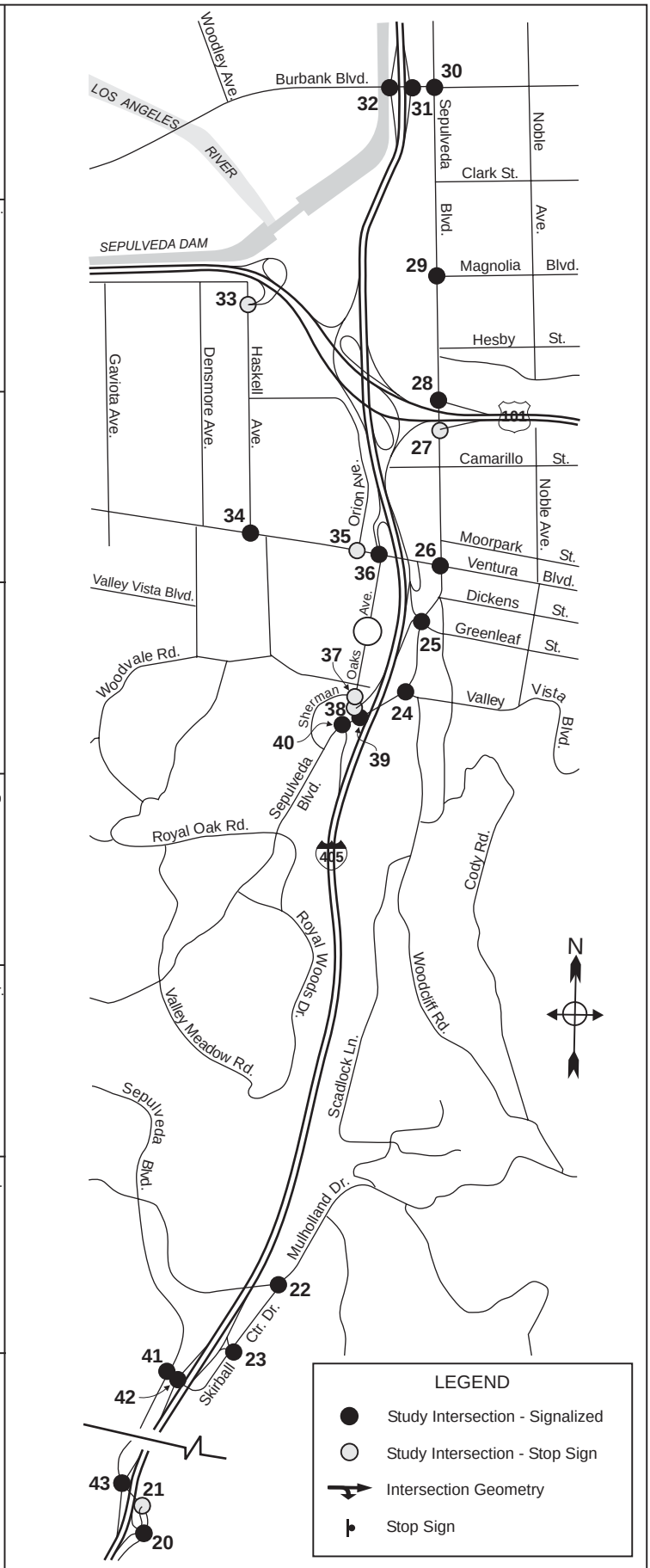
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



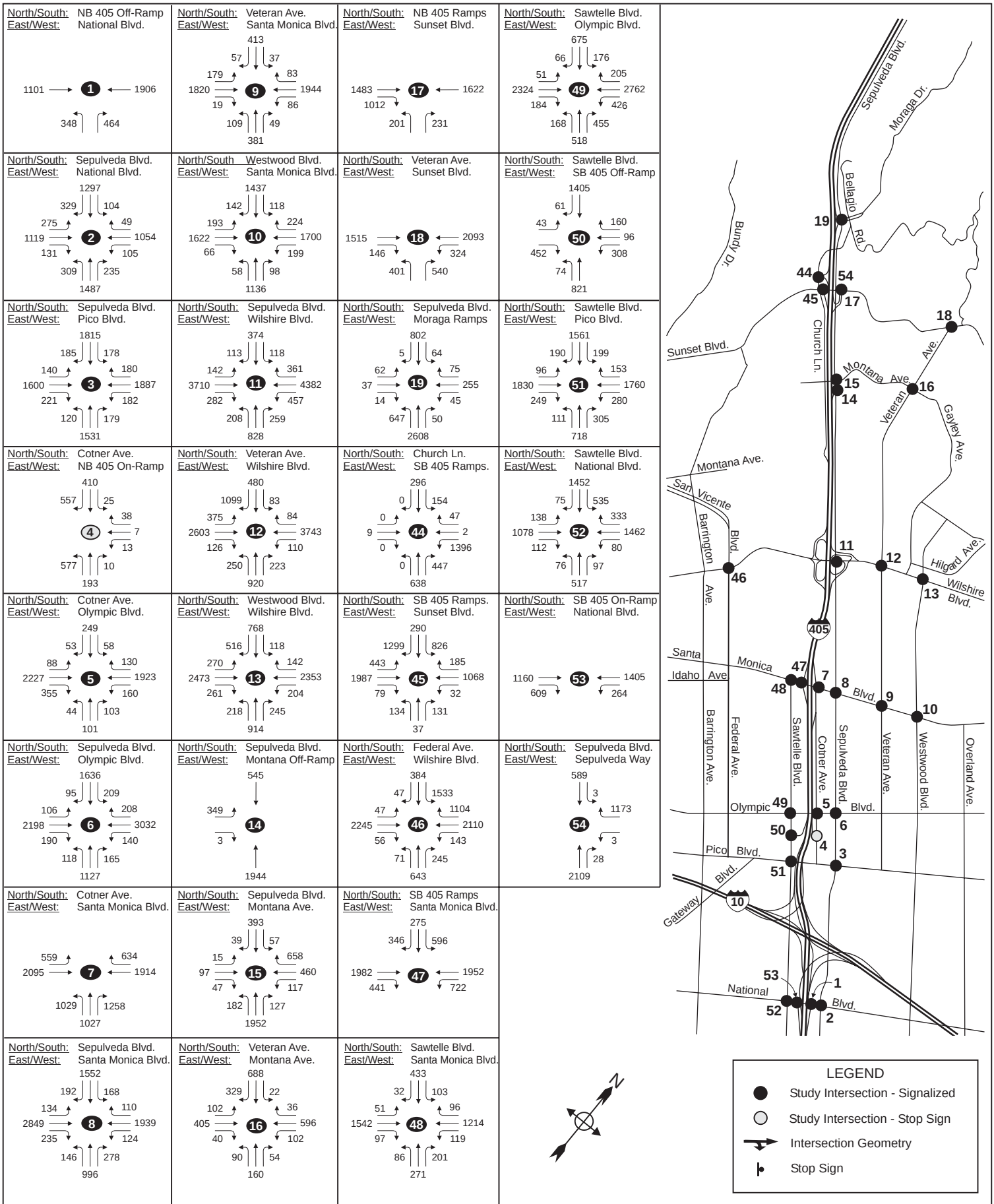


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 (Year 2015) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 13B



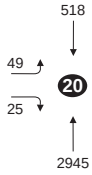
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

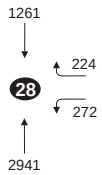
Alternative 1 (Year 2015) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 14A

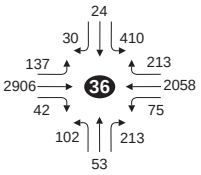
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp



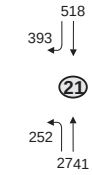
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



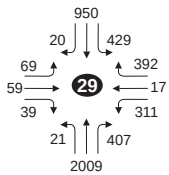
North/South: SB 405 Ramps
East/West: Ventura Blvd.



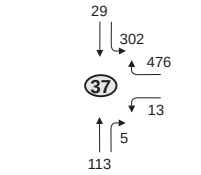
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

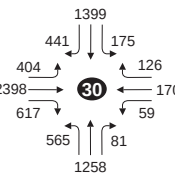


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

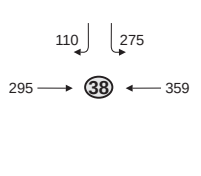
NO DATA AVAILABLE

22

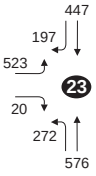
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



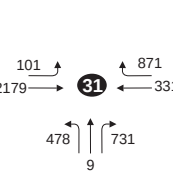
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



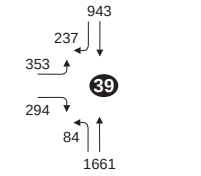
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



North/South: NB 405 Ramps
East/West: Burbank Blvd.

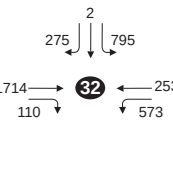


North/South: Sepulveda Blvd.
East/West: Fiume Wlk.

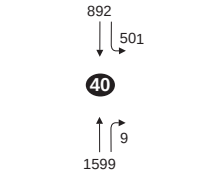


North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.

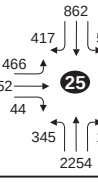
North/South: SB 405 Ramps
East/West: Burbank Blvd.



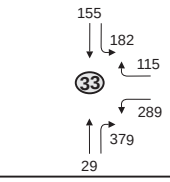
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



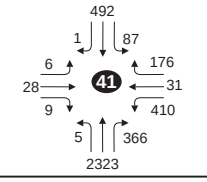
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



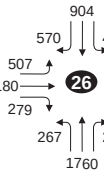
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



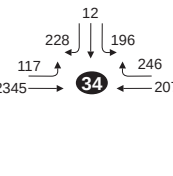
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



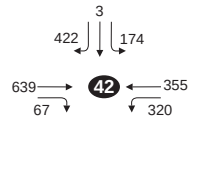
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



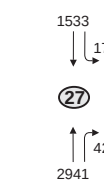
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

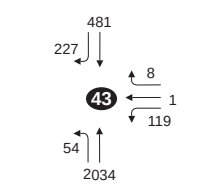


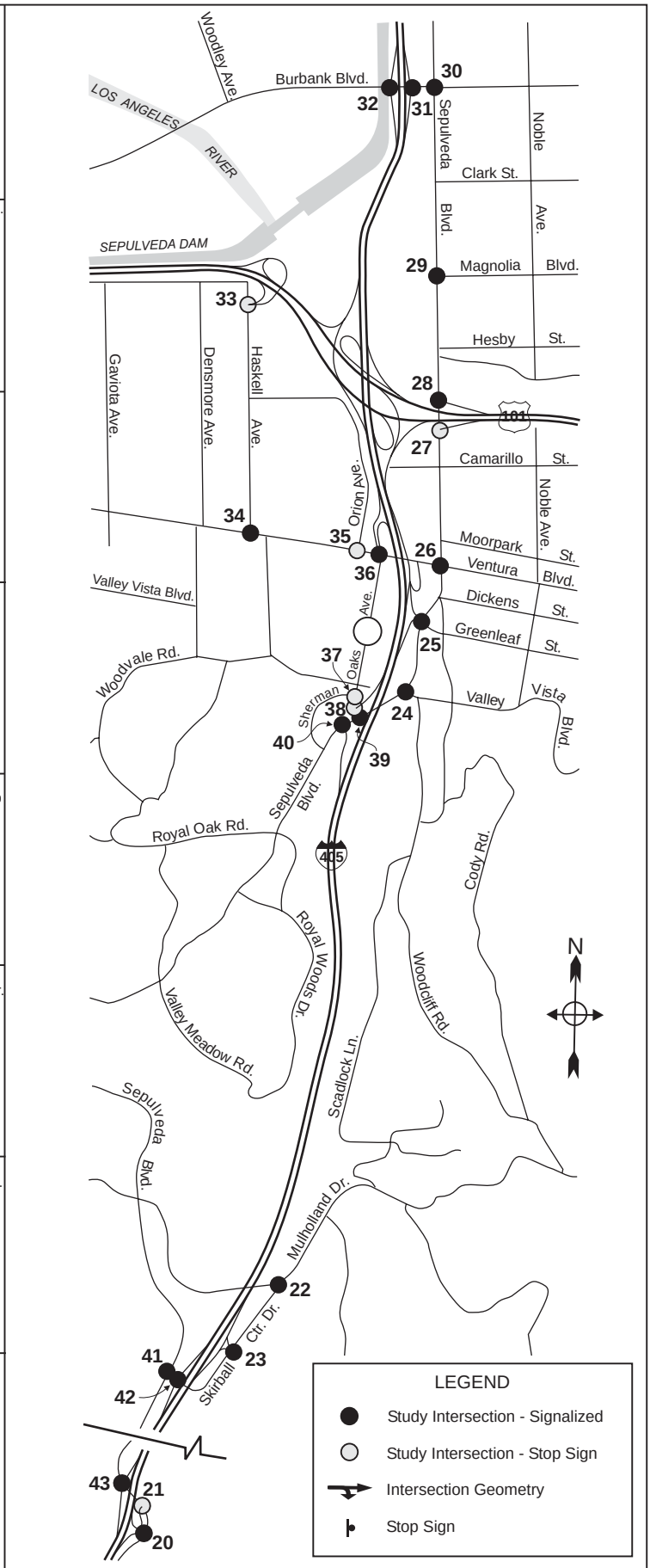
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 (Year 2015) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 14B

1. Alternative 1 Level of Service Analysis – Year 2015

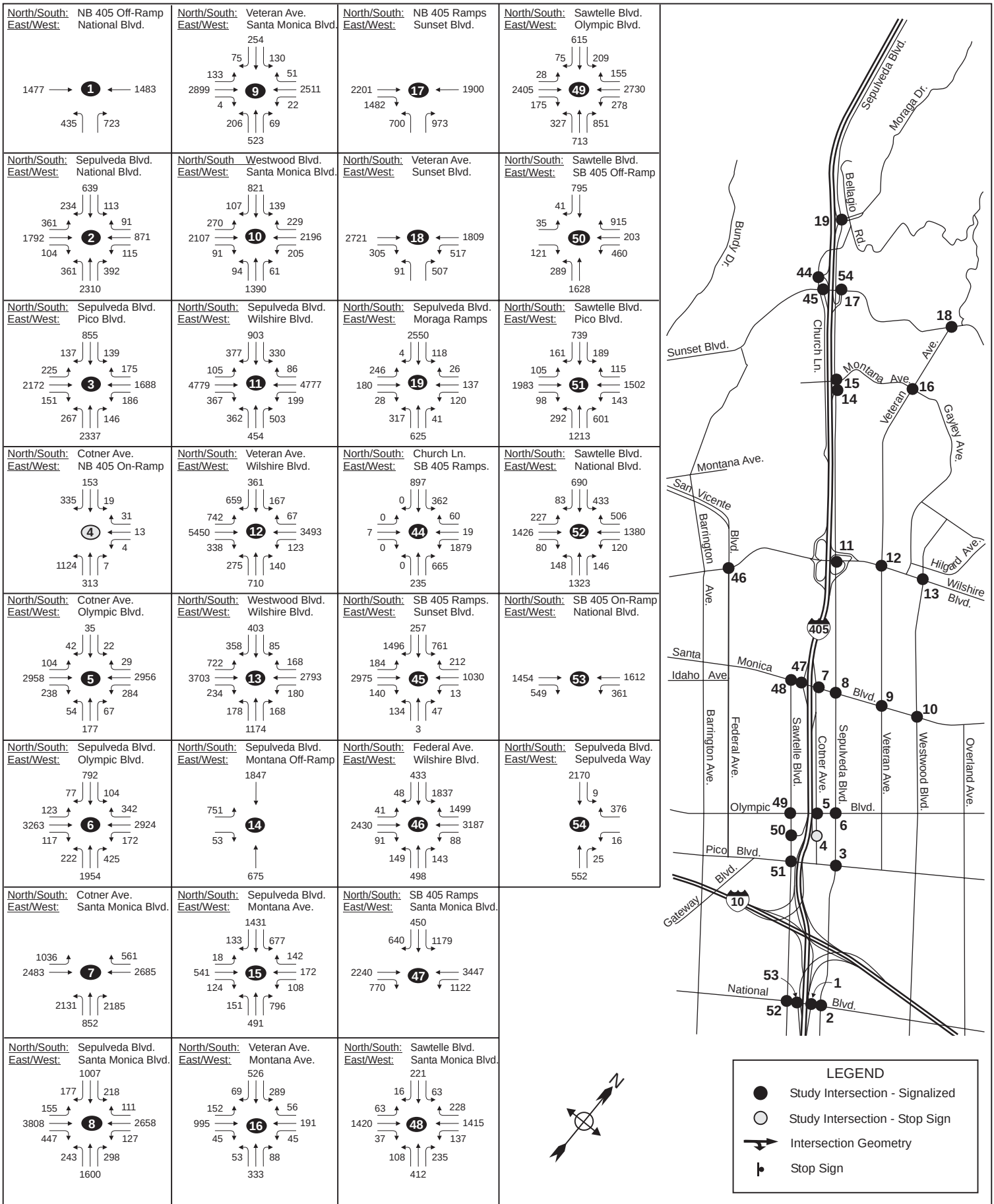
The results of the level of service analysis for the year 2015 volumes are summarized in Table V.6. Twenty-two locations are forecast to perform at LOS F during one or both peak periods.

Table V.6 – Alternative 1 Year 2015 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	19.7	B	18.0	B
2	National Blvd & Sepulveda Blvd	Signalized	58.8	E	70.7	E
3	Pico Blvd & Sepulveda Blvd	Signalized	93.6	F	201.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	111.1	F	33.9	D
5	Olympic Blvd & Cotner Ave	Signalized	14.5	B	22.9	C
6	Olympic Blvd & Sepulveda Blvd	Signalized	91.9	F	158.9	F
7	Santa Monica Blvd & Cotner Ave	Signalized	150.1	F	84.2	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	155.1	F	163.9	F
9	Santa Monica Blvd & Veteran Ave	Signalized	28.9	C	34.4	C
10	Santa Monica Blvd & Westwood Blvd	Signalized	45.0	D	54.8	D
11	Wilshire Blvd & Sepulveda Blvd	Signalized	220.0	F	205.8	F
12	Wilshire Blvd & Veteran Ave	Signalized	111.9	F	163.0	F
13	Wilshire Blvd & Westwood Blvd	Signalized	51.5	D	73.4	E
14	Montana Off-ramp & Sepulveda Blvd	Signalized	38.5	D	120.6	F
15	Montana Ave & Sepulveda Blvd	Signalized	49.0	D	70.3	E
16	Montana Ave & Veteran Ave	Signalized	36.0	D	34.2	C
17	Sunset Blvd & NB 405 Off-ramp	Signalized	44.7	D	11.1	B
18	Sunset Blvd & Veteran Ave	Signalized	103.8	F	48.1	D
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	123.0	F	50.8	D
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	7.3	A	8.0	A
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	Unsignalized	600.5	F	0.8	A
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	10.5	B	10.2	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	78.0	E	74.0	E
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	135.3	F	85.3	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	189.0	F	100.2	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.4	A	23.5	C
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	22.7	C	28.2	C
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	19.6	B	125.2	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	225.6	F	383.8	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	21.0	C	101.6	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	103.7	F	77.8	E
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	25.3	D	17.3	C
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	9.4	A	8.1	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	18.4	B	16.3	B

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	12.9	B	4.9	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	44.3	D	30.3	C
37	Fiume Walk & Sherman Oak Ave	Unsignalized	68.9	F	14.1	B
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	3.4	A	5.7	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	51.2	D	11.8	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	58.2	E	17.7	B
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	229.3	F	151.0	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	25.5	C	65.6	E
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	16.3	B	16.5	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	48.6	D	49.2	D
45	Sunset Blvd & Church Lane	Signalized	33.8	C	50.8	D
46	Wilshire Blvd & Federal Ave	Signalized	184.8	F	215.5	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	71.7	E	46.5	D
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	89.1	F	739.1	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	49.3	D	116.3	F
50	SB 405 Tennessee Off-ramp & Sawtelle Blvd	Signalized	35.7	D	73.7	E
51	Pico Blvd & Sawtelle Blvd	Signalized	46.0	D	105.0	F
52	National Blvd & Sawtelle Blvd	Signalized	110.6	F	94.3	F
53	National Blvd & SB 405 On-ramp	Signalized	8.2	A	8.6	A
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	1.7	A	9.0	A

N/A – Intersection screened from analysis, no impact.
Level of service (LOS) values based on HCM 2000 methodology.



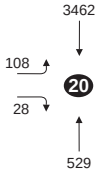
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

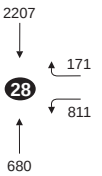
Alternative 1 (Year 2031) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 15A

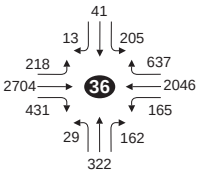
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp



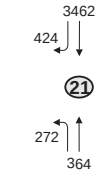
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



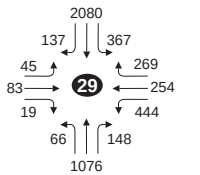
North/South: SB 405 Ramps
East/West: Ventura Blvd.



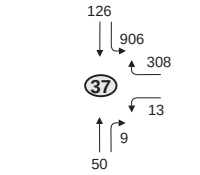
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

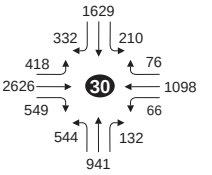


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

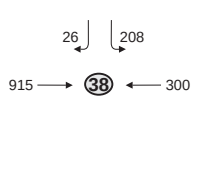
NO DATA AVAILABLE

22

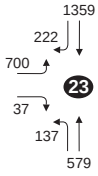
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



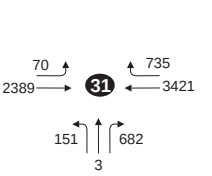
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



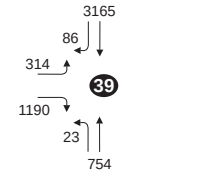
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



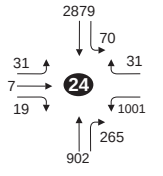
North/South: NB 405 Ramps
East/West: Burbank Blvd.



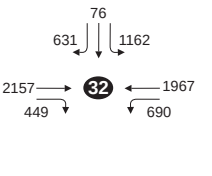
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



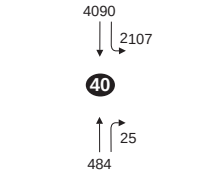
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



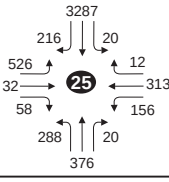
North/South: SB 405 Ramps
East/West: Burbank Blvd.



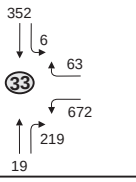
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



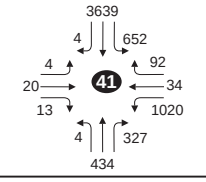
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



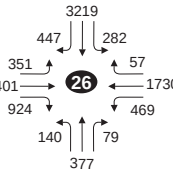
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



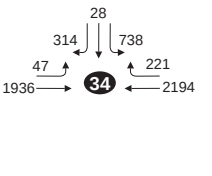
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



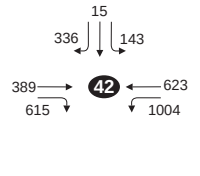
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



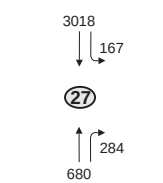
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

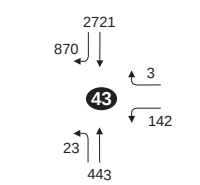


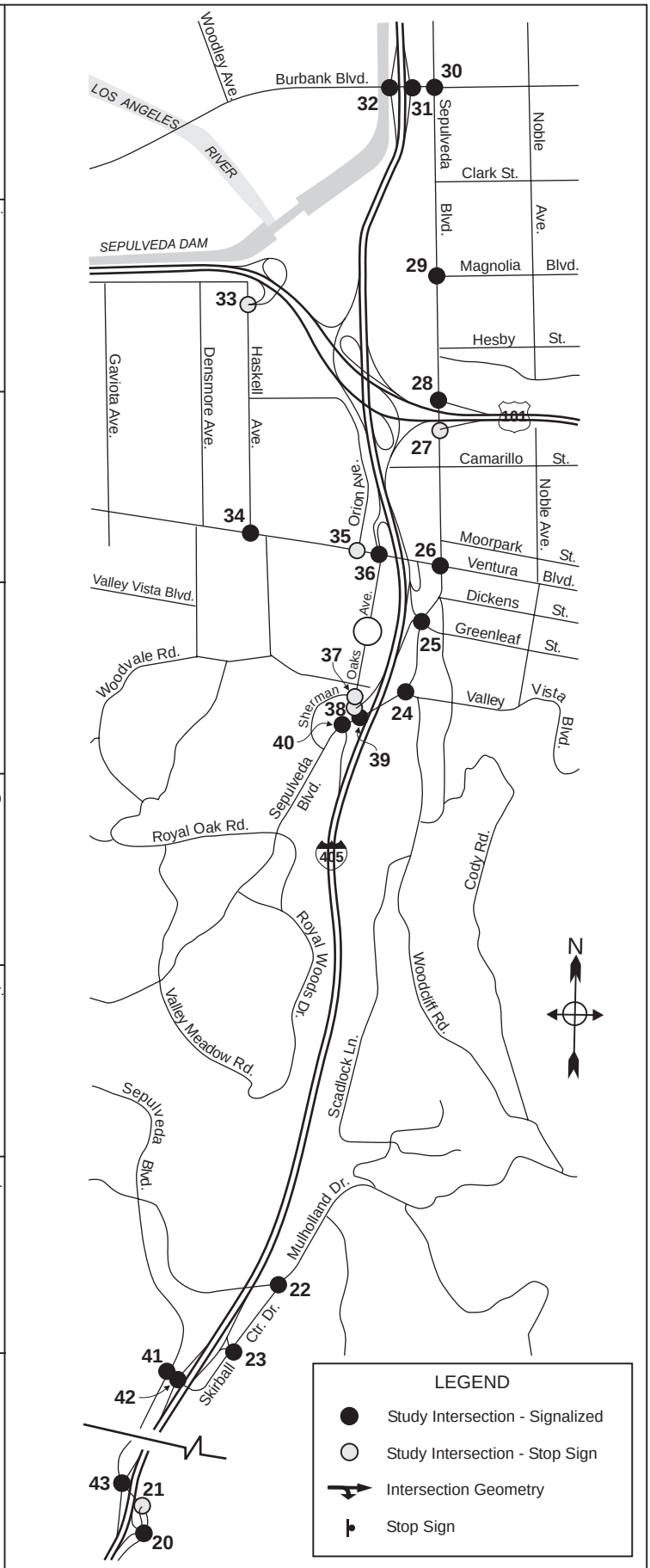
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

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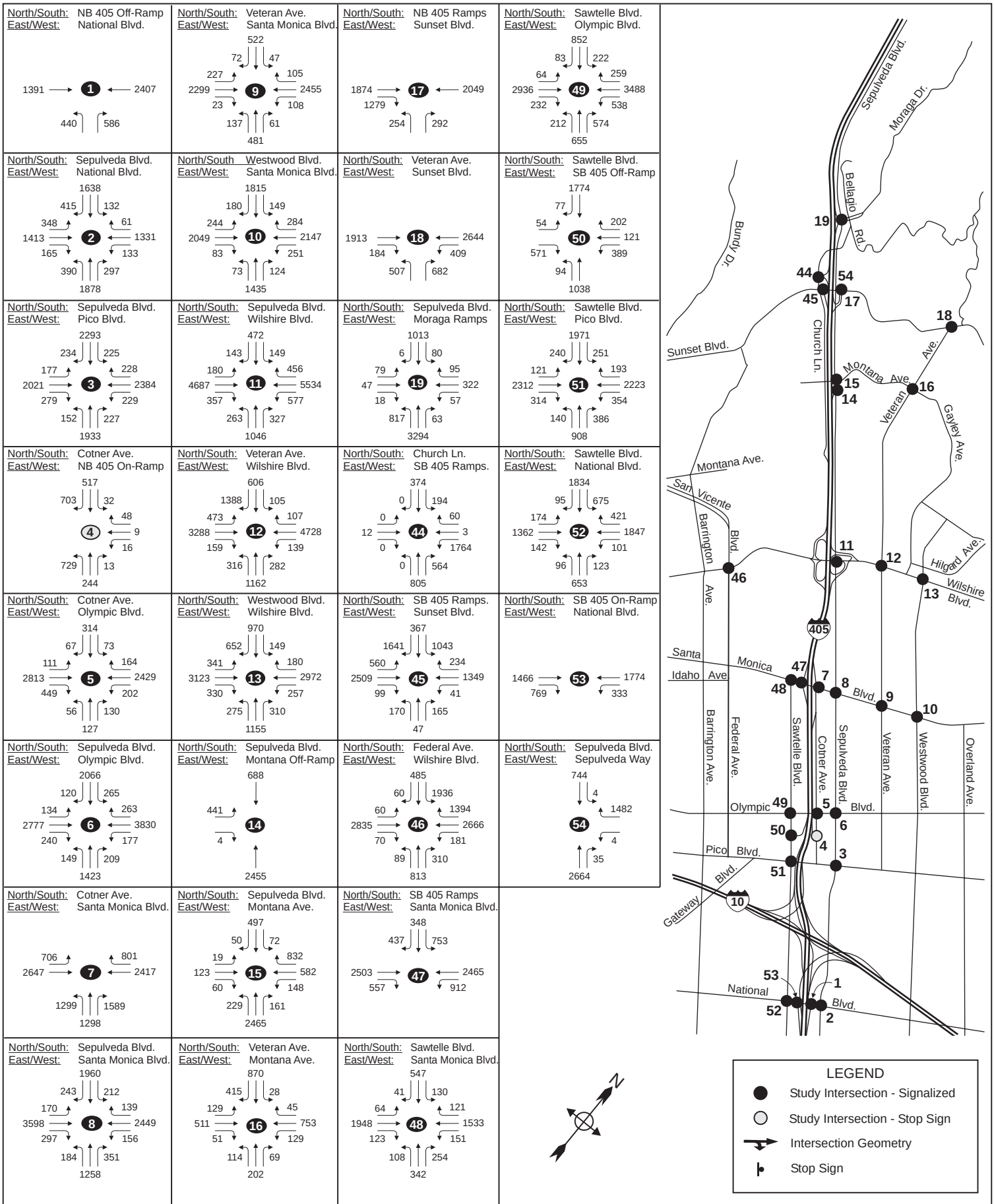
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 (Year 2031) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 15B



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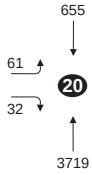
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

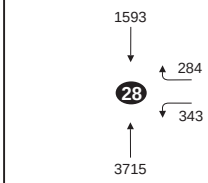
Alternative 1 (Year 2031) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 16A

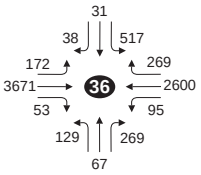
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp



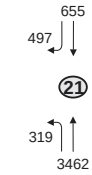
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



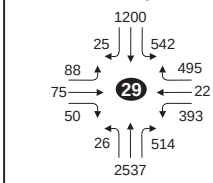
North/South: SB 405 Ramps
East/West: Ventura Blvd.



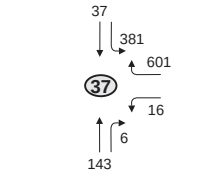
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

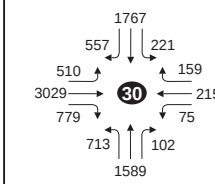


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

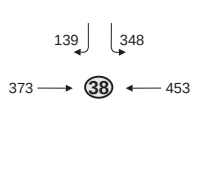
NO DATA AVAILABLE

22

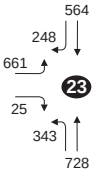
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



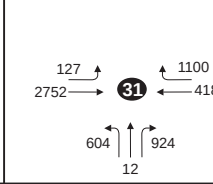
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



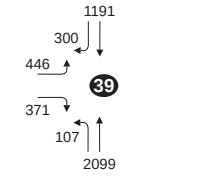
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



North/South: NB 405 Ramps
East/West: Burbank Blvd.

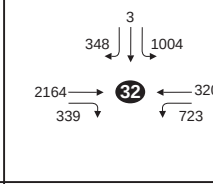


North/South: Sepulveda Blvd.
East/West: Fiume Wlk.

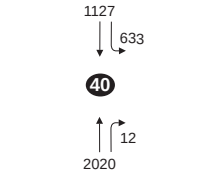


North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.

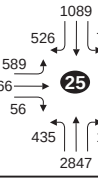
North/South: SB 405 Ramps
East/West: Burbank Blvd.



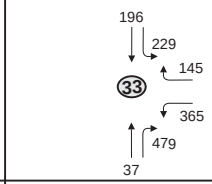
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



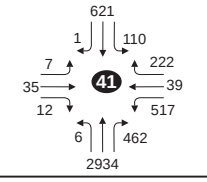
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



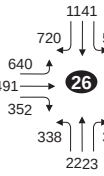
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



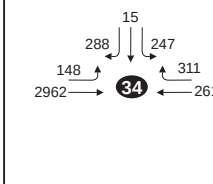
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



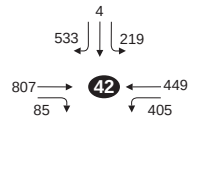
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



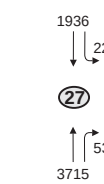
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

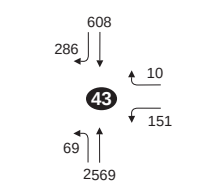


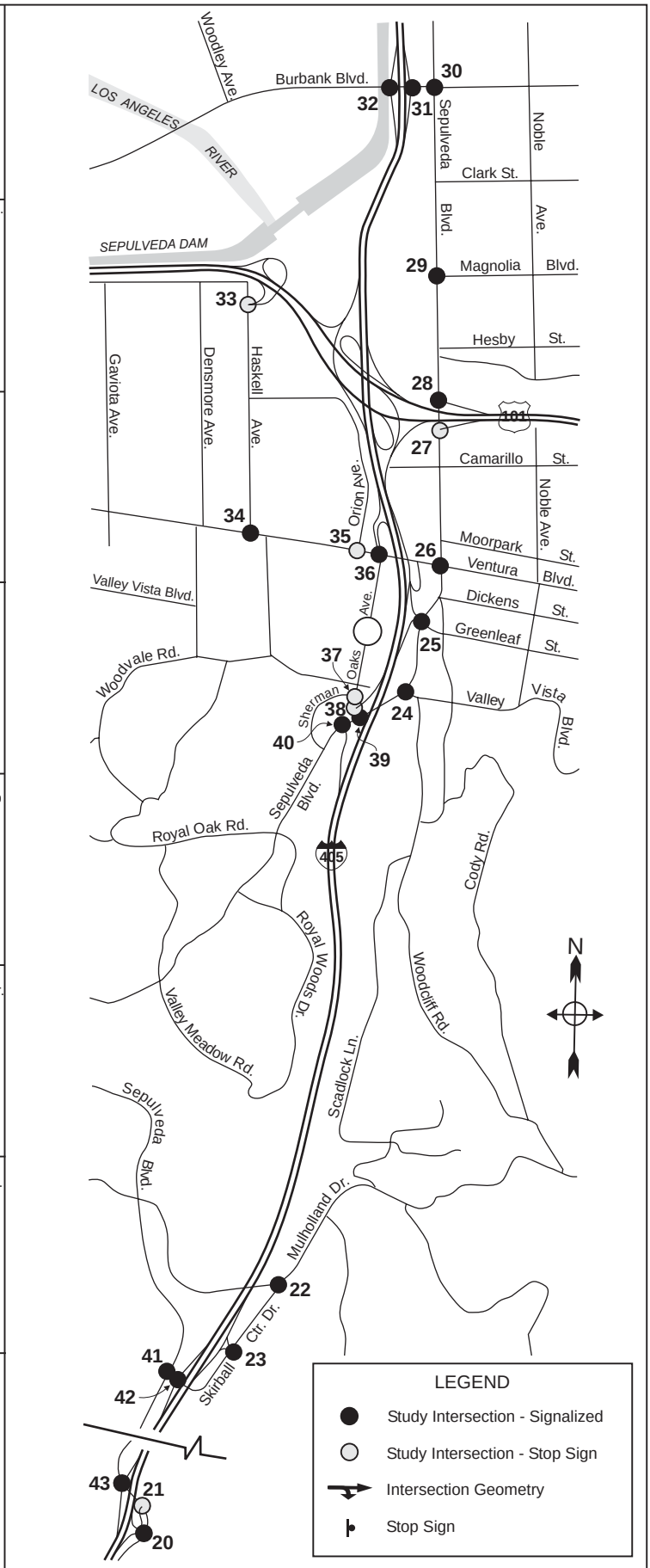
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 1 (Year 2031) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 16B

2. Alternative 1 Level of Service Analysis – Year 2031

The results of the level of service analysis for the year 2031 are summarized in Table V.7. Forty-one locations are forecast to perform at LOS F during one or both peak periods due to ambient growth.

Table V.7 – Alternative 1 Year 2031 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	24.5	C	46.1	D
2	National Blvd & Sepulveda Blvd	Signalized	151.2	F	152.5	F
3	Pico Blvd & Sepulveda Blvd	Signalized	189.2	F	349.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	213.4	F	93.0	F
5	Olympic Blvd & Cotner Ave	Signalized	45.7	D	75.3	E
6	Olympic Blvd & Sepulveda Blvd	Signalized	205.6	F	306.0	F
7	Santa Monica Blvd & Cotner Ave	Signalized	282.6	F	181.7	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	302.1	F	300.7	F
9	Santa Monica Blvd & Veteran Ave	Signalized	57.6	E	75.3	E
10	Santa Monica Blvd & Westwood Blvd	Signalized	153.1	F	148.4	F
11	Wilshire Blvd & Sepulveda Blvd	Signalized	350.4	F	381.6	F
12	Wilshire Blvd & Veteran Ave	Signalized	275.8	F	326.6	F
13	Wilshire Blvd & Westwood Blvd	Signalized	181.6	F	225.1	F
14	Montana Off-ramp & Sepulveda Blvd	Signalized	83.7	F	255.7	F
15	Montana Ave & Sepulveda Blvd	Signalized	92.1	F	179.0	F
16	Montana Ave & Veteran Ave	Signalized	121.1	F	112.6	F
17	Sunset Blvd & NB 405 Off-ramp	Signalized	103.5	F	13.0	B
18	Sunset Blvd & Veteran Ave	Signalized	195.8	F	126.3	F
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	232.8	F	84.1	F
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	51.5	D	68.0	E
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	Unsignalized	601.4	F	1.2	A
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	18.3	B	19.5	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	163.5	F	164.6	F
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	264.7	F	185.2	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	321.0	F	204.2	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.5	A	95.3	F
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	68.3	E	94.7	F
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	32.0	C	255.8	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	392.2	F	598.6	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	85.3	F	234.1	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	197.4	F	203.1	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	77.0	F	43.8	E
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	10.6	B	8.5	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	35.8	D	25.1	C
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	27.8	C	8.4	A

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	73.4	E	95.8	F
37	Fiume Walk & Sherman Oak Ave	Unsignalized	176.5	F	26.5	D
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	6.1	A	8.2	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	115.1	F	16.2	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	107.7	F	22.8	C
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	412.0	F	312.9	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	26.5	C	71.8	E
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	36.3	D	18.2	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	105.9	F	134.1	F
45	Sunset Blvd & Church Lane	Signalized	53.6	D	111.9	F
46	Wilshire Blvd & Federal Ave	Signalized	354.8	F	372.6	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	182.9	F	106.5	F
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	188.1	F	994.6	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	122.3	F	223.8	F
50	SB 405 Off-ramp & Sawtelle Blvd	Signalized	100.0	F	142.2	F
51	Pico Blvd & Sawtelle Blvd	Signalized	117.5	F	212.2	F
52	National Blvd & Sawtelle Blvd	Signalized	155.9	F	172.0	F
53	National Blvd & SB 405 On-ramp	Signalized	16.7	B	34.3	C
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	2.2	A	27.0	D

N/A – Intersection screened from analysis, no impact.
Level of service (LOS) values based on HCM 2000 methodology.

VI. ALTERNATIVE 2A – NORTHBOUND HOV LANE

A. Freeways

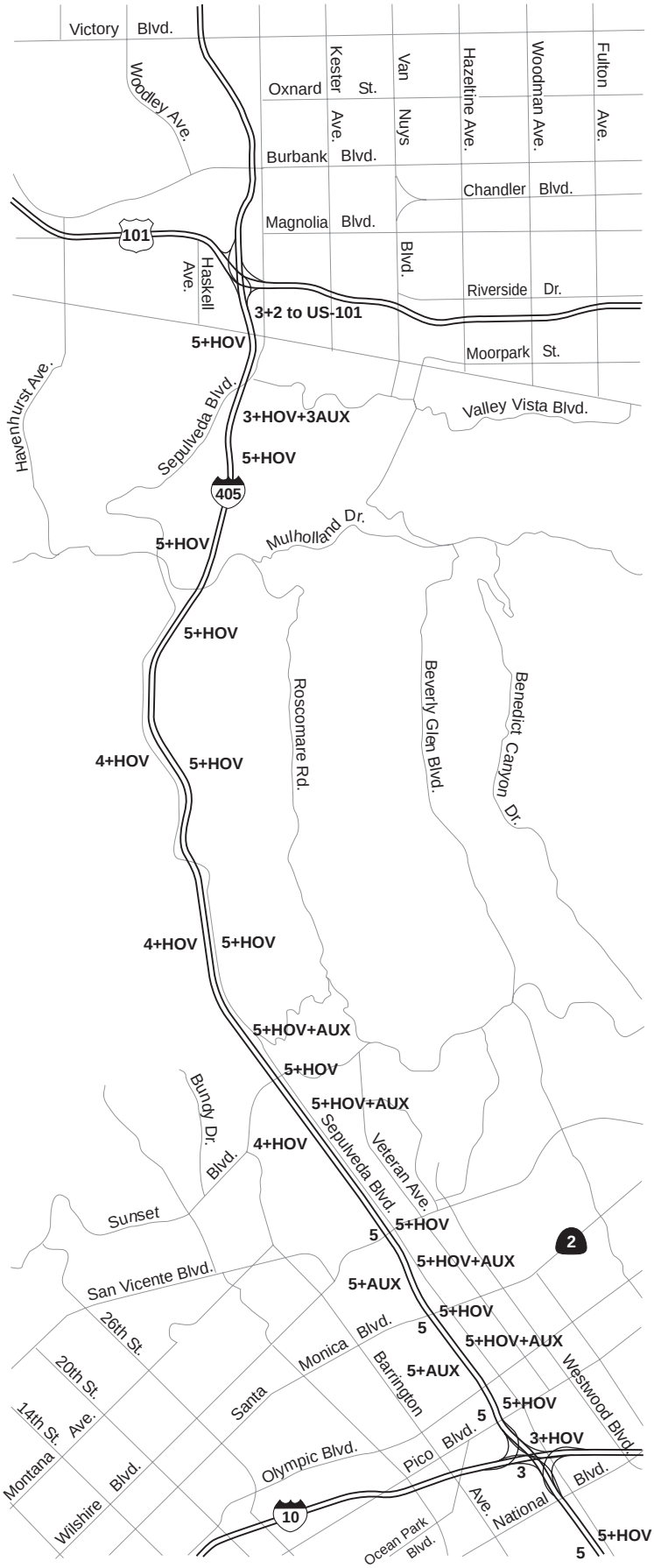
In Alternative 2A, the existing facility is widened to add one standard northbound HOV lane. The number of lanes in each freeway segment for this alternative is noted in Figure 17. Standard freeway cross-sections are maintained for the northbound Interstate 405 within the project limits except through the I-405/I-10 interchange. Most of the freeway widening occurs along the east side of Interstate 405, with some segment widening along the west side of the freeway.

For this analysis, it is assumed that construction of the HOV lane does not affect forecast mainline volumes, and the volumes shown in Figures 9 and 10 apply for all of the build alternatives. A freeway facility is neither an origin nor a destination, as it does not produce or attract trips. The freeway provides a route from one location to another, but it does not change the number of daily trips that need to be made from point A to point B. If it is assumed that trips are pulled off of adjacent routes, the analysis would require regional modeling that is beyond the scope of this study. For the purpose of this analysis, it is assumed that the travel demand is independent of the freeway capacity.

The HOV lane is expected to carry volumes proportional to the adjacent general lanes, with a maximum capacity of 1,700 vehicles per hour. The reduction in vehicular delay compared to the Alternative 1 (No Build) condition is summarized in Table VI.1. The Alternative 2A improvements increase capacity in the northbound direction only, and do not affect the southbound facility, so there is no change in vehicular delay between Alternative 1 and Alternative 2A for the southbound mainline and southbound HOV lane.

Table VI.1 – Alternative 2A: Year 2015 Northbound I-405 Mainline Flow Conditions

I-405 Freeway Segment	Decrease in Daily Vehicular Delay Compared to Alternative 1 (veh-hours)	
	Year 2015	Year 2031
Northbound Mainline	14,860	16,060
Southbound Mainline	0	0
Southbound HOV Lane	0	0



LEGEND

#	I-405 Main Line Travel Lanes
AUX	Auxiliary Lane
HOV	High-Occupancy Vehicle Lane

N

NOT TO SCALE

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I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project

Alternative 2 I-405 Mainline Travel Lanes

Figure 17

B. Ramps and Connectors

To accommodate the freeway widening and geometrical improvements included in the Alternative 2A design, some of the access ramps within the study corridor would need to be relocated or removed. The ramp modifications have been grouped into two sub-alternatives: 2A.1 and 2A.2. Features that are common to both sub-alternatives include:

1. Wilshire Boulevard Interchange Improvements

The Wilshire Boulevard Interchange will be improved in both directions of Interstate 405 to provide full movements and eliminate freeway weaving. The northbound on-ramp from eastbound Wilshire Boulevard will be grade-separated from Sepulveda Boulevard and from the northbound off-ramp to westbound Wilshire Boulevard. In addition, the southbound off-ramp to eastbound Wilshire Boulevard will be grade separated from the southbound on-ramp from westbound Wilshire Boulevard.

2. Closure of the Northbound I-405 Exit at Montana Avenue

The northbound I-405 exit to Montana Avenue will be removed to allow for the freeway widening in this area. Vehicles that currently use this ramp are redistributed to the Wilshire Boulevard and Sunset Boulevard off-ramps in the ramp analysis.

3. Sunset Boulevard Northbound Ramp Improvements

The northbound Sunset Boulevard interchange will be modified to maintain standard freeway and ramp shoulder widths and to accommodate widening of northbound 405 mainline. The new Sunset Boulevard Overcrossing will have two exclusive lanes for the northbound on-ramp from eastbound Sunset Boulevard.

4. Getty Center Drive Northbound Ramp Improvements

The northbound off- and on-ramps to Getty Center will be realigned to form a complete diamond interchange at Sepulveda Boulevard. The two existing separate 3-legged ramp intersections will be replaced with a single 4-legged ramp intersection.

5. Relocation of the Southbound Interchange at Skirball Center Drive

The southbound Skirball Center Drive Interchange will be relocated approximately 1,900 feet to the south. The proposed new hook ramps will form a ‘T’ intersection with Sepulveda Boulevard. This relocation will eliminate the existing ramp intersection that is located 65-feet east of the Skirball Center Drive/ Sepulveda Boulevard Intersection.

1. Alternative 2A.1

In addition to the improvements that are common to both sub-alternatives, Alternative 2A.1 includes a new northbound I-405 on-ramp from westbound Sunset Boulevard. The design includes the removal of the Moraga Drive on- and off-ramps to provide adequate merge length for the new on-ramp. Vehicles that currently utilize the Moraga Drive ramps would be redistributed to the Sunset Boulevard ramps and the Getty Center Drive ramps.

Sepulveda Way is a short two-lane street segment that connects Sepulveda Boulevard and Sunset Boulevard, which are grade separated. The new northbound on-ramp at Sunset Boulevard would also conflict with Sepulveda Way, and require the street to be permanently closed. Vehicles that currently use Sepulveda Way would need to take an alternate route, such as Church Lane.

Northbound and southbound AM and PM peak hour ramp volumes forecast for year 2015 for the Alternative 2A.1 case are listed in Tables VI.2 and VI.3, respectively. These volumes are also shown in Figures 18A and 18B. The southbound on-ramp at Santa Monica Boulevard and southbound on-ramp from eastbound

Wilshire Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods, but the ramp volumes at these locations are the same as in Alternative 1 (the no build condition) and the capacity issues are not related to the HOV Lane project.

In a queuing analysis for this scenario, all ramp facilities were found to be adequate for the forecast year 2015 conditions.

Table VI.2 – Alternative 2A.1 Year 2015 Northbound Ramp Peak Hour Volumes

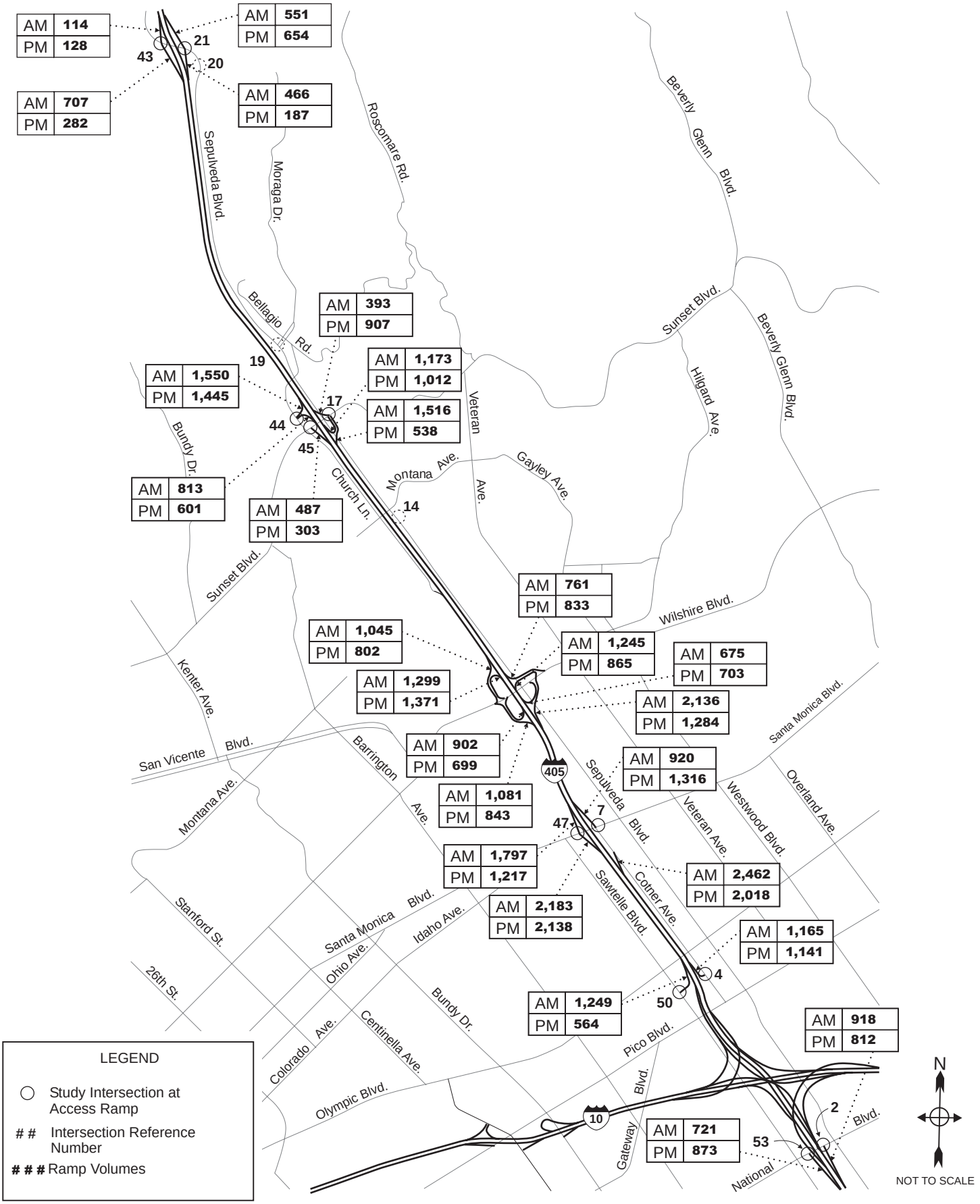
P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	918	812
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,165	1,141
30.68	NB Off To Santa Monica Blvd.	2	3,000	2,462	2,018
31.01	NB On From Santa Monica Blvd.	3	2,700	920	1,316
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,136	1,284
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	1,245	865
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	675	703
31.64	SEG NB On From WB Wilshire Blvd.	1	900	761	833
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,516	538
32.99	NB On From EB Sunset Blvd.	2	1,800	1,173	1,012
32.99	NB On From WB Sunset Blvd.	2	1,800	363	907
33.3	NB Off To Moraga Drive	N/A	N/A	0	0
33.47	NB On From Moraga Drive	N/A	N/A	0	0
34.73	NB On From Getty Center Drive	2	1,800	551	654
34.73	NB Off to Getty Center Drive	2	3,000	466	187
36.69	NB Off to Mulholland/Rimerton	1	1,500	583	543
36.99	NB On from Mulholland/Rimerton	2	1,800	285	469
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1500	488	562
38.77	NB On From Greenleaf St	2	1,800	647	1,188
	US-101 NB Off to Sepulveda Blvd	1	1,500	970	662

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

Table VI.3 – Alternative 2A.1 Year 2015 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	721	873
30.14	SB Off to Olympic/Pico	1	1,500	1,249	564
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,183**	**2,138**
31.03	SB Off to Santa Monica Blvd	2	3,000	1,797	1,217
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,081**	843
31.48	SB Off to EB Wilshire Blvd	1	1,500	902	699
31.65	SB On from WB Wilshire Blvd	2	1,800	1,299	1,371
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,045	802
32.90	SB On from EB Sunset Blvd	2	1,800	487	303
33.04	SB On from Church/Sunset Blvd	2	1,800	813	601
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,550	1,445
34.65	SB On from Getty Center Dr	2	1,800	707	282
35.00	SB Off to Getty Center Dr	1	1,500	114	128
36.50	SB On from Skirball Center Dr	2	1,800	1,294	390
36.86	SB Off to Skirball Center Dr	1	1,500	391	599
38.22	SB On from Valley Vista/Sepulveda Blvd	2	1,800	1,688	510
38.61	SB Off to Valley Vista Blvd	1	1,500	185	385
39.09	SB On from Ventura Blvd	2	1,800	931	403
39.09	US-101 SB Off to Ventura Blvd	1	1,500	204	464
40.50	SB Off to Burbank Blvd	1	1,500	1,480	1,072

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.



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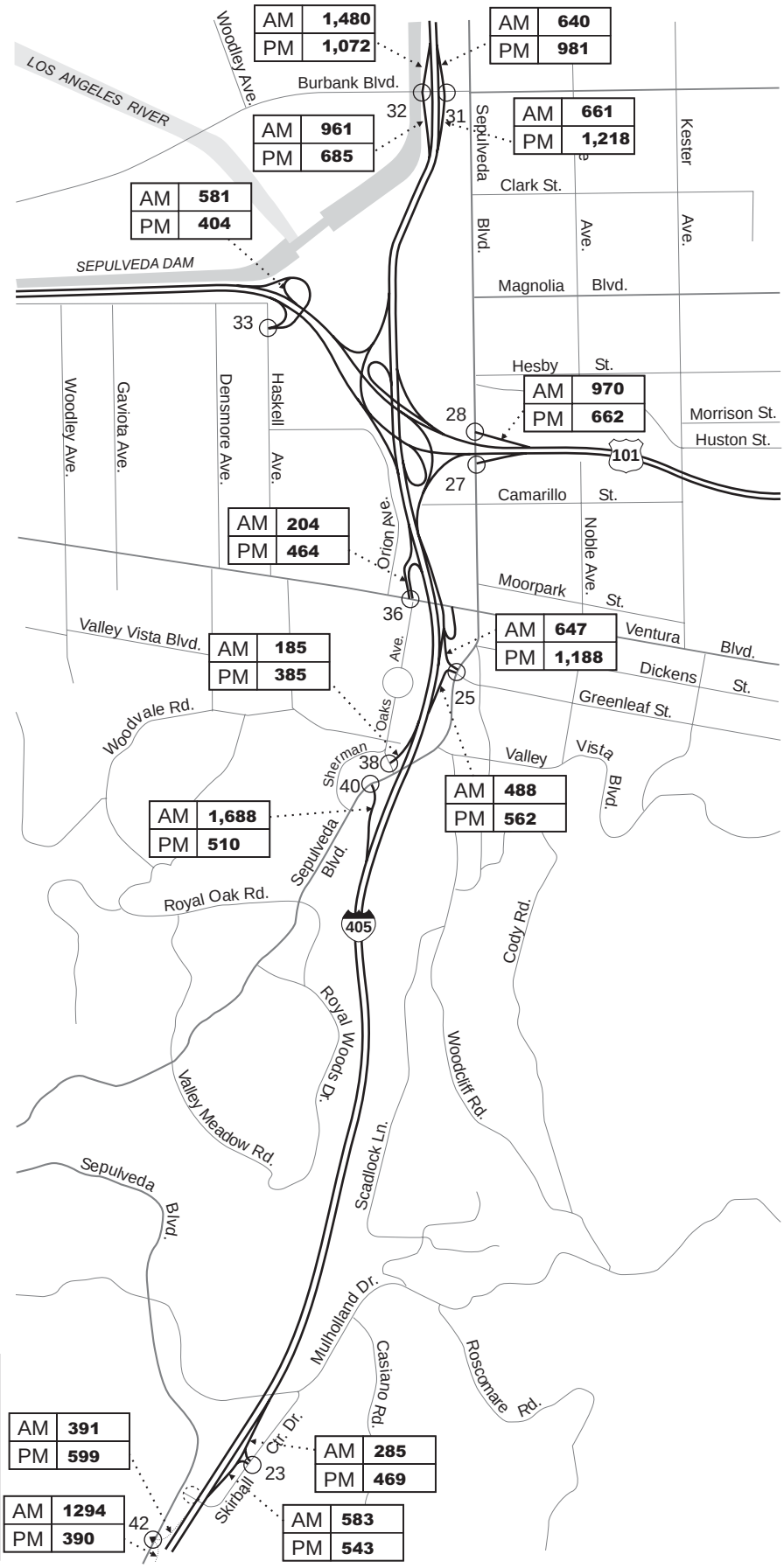
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 Year 2015 Peak Hour Access Ramp Volumes - Southern Area

Figure 18A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 Year 2015 Peak Hour Access Ramp Volumes - Northern Area

Figure 18B

Peak hour ramp volumes forecast for year 2031 for Alternative 2A.1 are listed in Tables VI.4 and VI.5, and these volumes are also shown in Figures 19A and 19B. The northbound off-ramp to Santa Monica Boulevard, northbound off-ramp to westbound Wilshire Boulevard, northbound on-ramp from westbound Wilshire Boulevard, southbound off-ramp to Olympic/Pico Boulevard, southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, southbound on-ramp from Valley Vista/Sepulveda Boulevard, and the southbound on-ramp from Burbank Boulevard are forecast to carry volumes that exceed the capacity during one or both peak periods. However, only the northbound off-ramp to westbound Wilshire Boulevard and the southbound off-ramp to Burbank Boulevard experience increased volumes due to ramp closures associated with this alternative. The ramp volumes at all other locations are the same as in Alternative 1 (the no build condition) and the capacity issues are not related to the HOV Lane project.

Table VI.4 – Alternative 2A.1 Year 2031 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	1,159	1,026
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,471	1,441
30.68	**NB Off To Santa Monica Blvd.**	2	3,000	**3,109**	2,548
31.01	NB On From Santa Monica Blvd.	3	2,700	1,161	1,661
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,697	1,622
31.43	**SEG NB Off To WB Wilshire Blvd.**	1	1,500	**1,573**	1,093
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	852	888
31.64	**SEG NB On From WB Wilshire Blvd.**	1	900	**961**	**1,052**
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,914	679
32.99	NB On From EB Sunset Blvd.	2	1,800	1,481	1,278
32.99	NB On From WB Sunset Blvd.	2	1,800	459	1,145
33.3	NB Off To Moraga Drive	N/A	N/A	0	0
33.47	NB On From Moraga Drive	N/A	N/A	0	0
34.73	NB On From Getty Center Drive	2	1,800	695	815
34.73	NB Off to Getty Center Drive	2	3,000	588	237
36.69	NB Off to Mulholland/Rimerton	1	1,500	617	710
36.99	NB On from Mulholland/Rimerton	2	1,800	817	1,500
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	616	**710**
38.77	NB On From Greenleaf St	2	1,800	817	1,500
	US-101 NB Off to Sepulveda Blvd	1	1,500	1,225	836

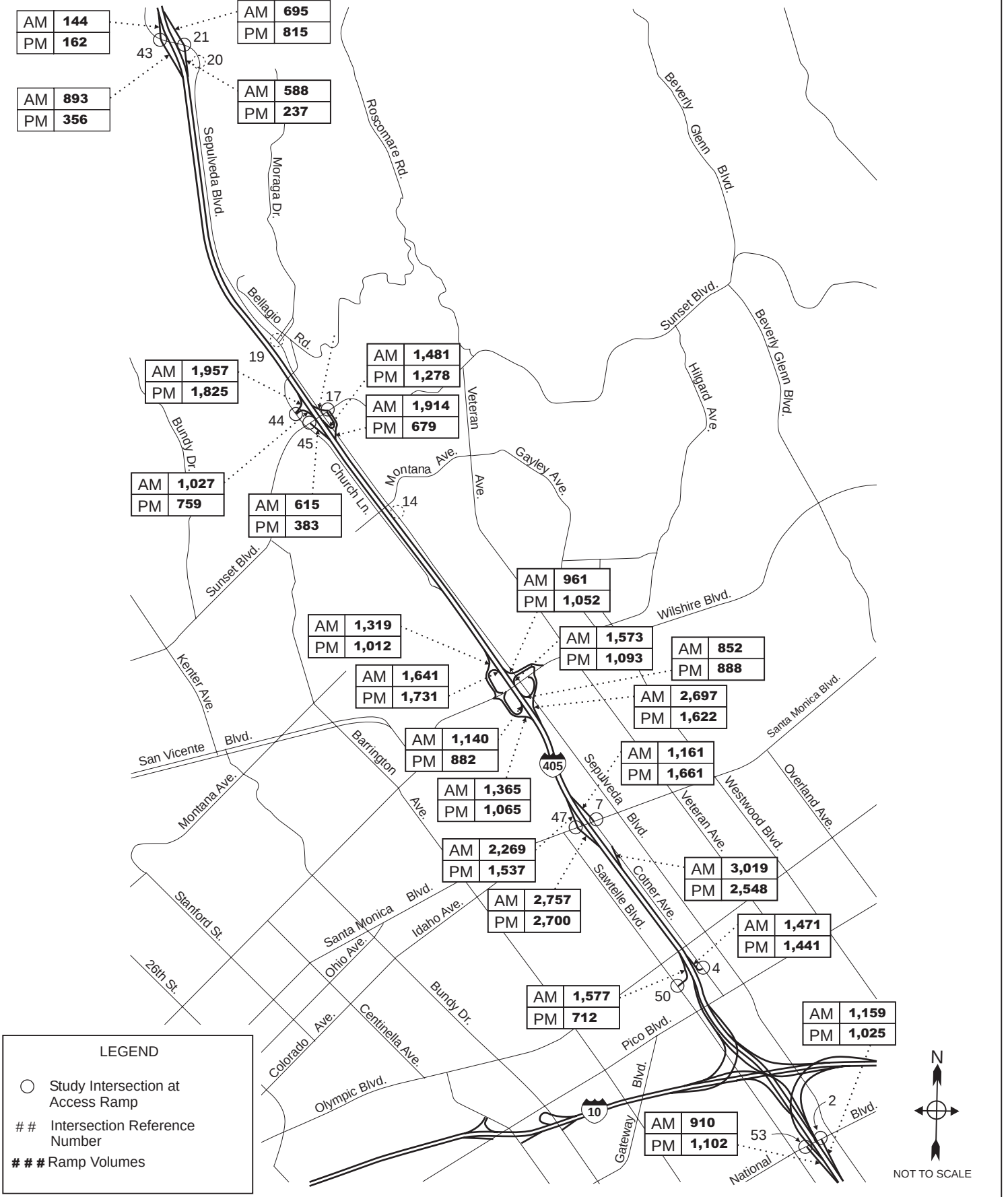
Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

Table VI.5 – Alternative 2A.1 Year 2031 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	910	1,102
30.14	**SB Off to Olympic/Pico**	1	1,500	**1,577**	712
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,757**	**2,700**
31.03	SB Off to Santa Monica Blvd	2	3,000	2,269	1,537
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,365**	**1,065**
31.48	SB Off to EB Wilshire Blvd	1	1,500	1,140	882
31.65	SB On from WB Wilshire Blvd	2	1,800	1,641	1,731
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,319	1,012
32.90	SB On from EB Sunset Blvd	2	1,800	615	383
33.04	SB On from Church/Sunset Blvd	2	1,800	1,027	759
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,957	1,825
34.65	SB On from Getty Center Dr	2	1,800	893	356
35.00	SB Off to Getty Center Dr	1	1,500	144	162
36.50	SB On from Skirball Center Dr	2	1,800	1,633	492
36.86	SB Off to Skirball Center Dr	1	1,500	494	757
38.22	**SB On from Valley Vista/Sepulveda Blvd**	2	1,800	**2,132**	644
38.61	SB Off to Valley Vista Blvd	1	1,500	234	487
39.09	SB On from Ventura Blvd	2	1,800	1,176	508
	US-101 SB Off to Ventura Blvd	1	1,500	258	586
40.50	**SB Off to Burbank Blvd**	1	1,500	**1,869**	1,354

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

In a queuing analysis for this scenario, the northbound off-ramp to eastbound Wilshire Boulevard and the northbound on-ramp from Greenleaf Street were found to be potential locations for capacity issues in the year 2031. These capacity issues are due to ambient traffic growth alone, and are not affected by the HOV Lane project.



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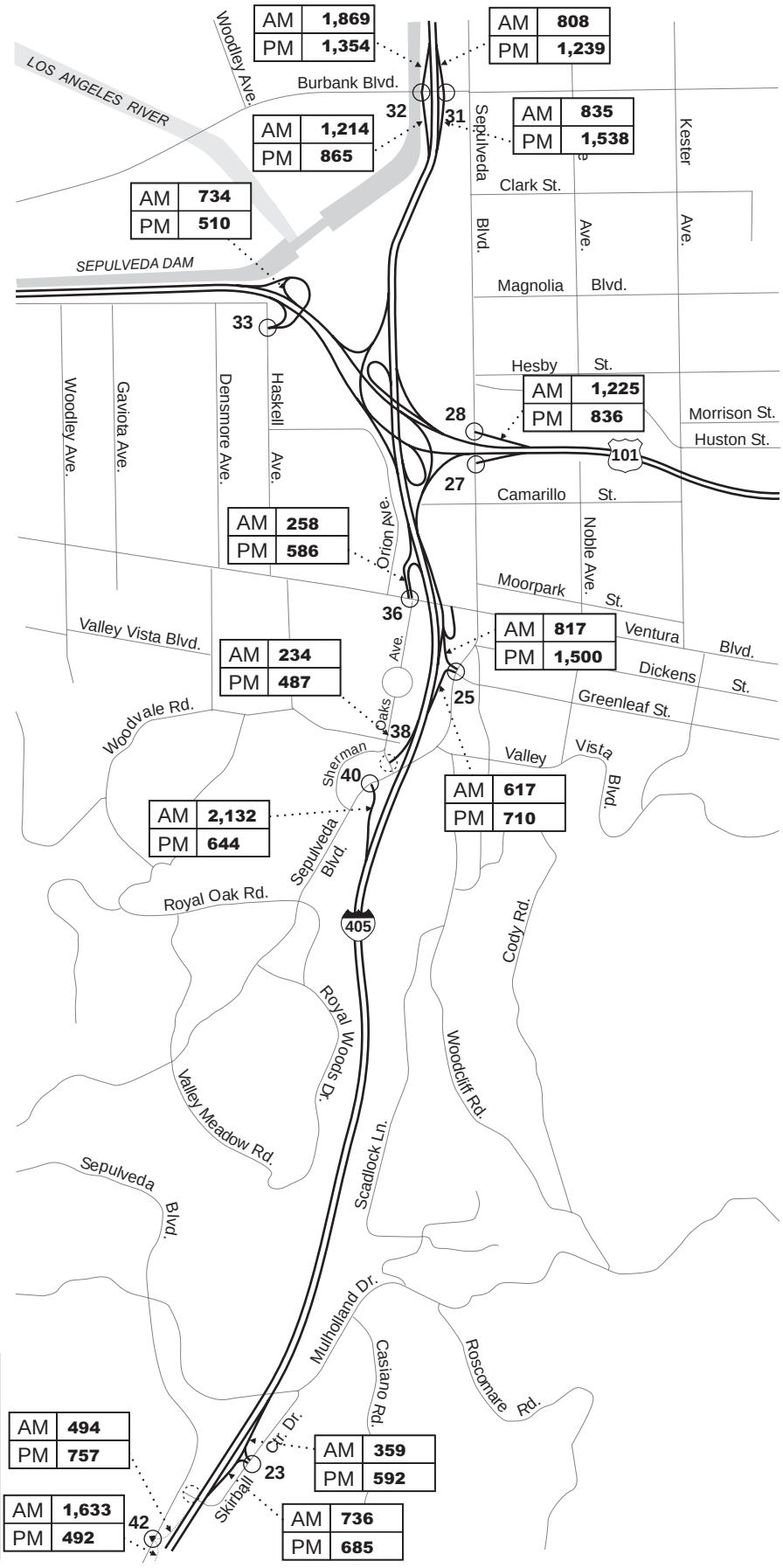
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 Year 2031 Peak Hour Access Ramp Volumes - Southern Area

Figure 19A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 Year 2031 Peak Hour Access Ramp Volumes - Northern Area

Figure 19B

2. Alternative 2A.2

The southbound I-405 exit to Valley Vista Boulevard may be closed as part of another project. This off-ramp forms a T-intersection with Fiume Walk, and provides access to Sepulveda Boulevard and Sherman Oaks Avenue. The impacts of this ramp closure are analyzed in Alternative 2A.2.

Vehicles that currently use the Valley Vista exit may come from the southbound I-405, southbound US-101, or northbound US-101. It is assumed that vehicles from the southbound I-405 will use Burbank Boulevard as an alternate exit, vehicles from the southbound US-101 will take the Ventura Boulevard exit, and vehicles from the northbound US-101 will exit at Sepulveda Boulevard.

Northbound and Southbound AM and PM peak hour ramp volumes forecast for year 2015 for the Alternative 2A.2 case are listed in Tables VI.6 and VI.7, respectively. These volumes are also shown in Figures 20A and 20B. The southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, and the southbound off-ramp to Burbank Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods. Of these, only the southbound off-ramp at Burbank Boulevard experiences increased volume due to redistribution associated with Alternative 2A.2.

In a queuing analysis for this scenario, all ramp facilities were found to be adequate for the forecast year 2015 conditions.

Table VI.6 – Alternative 2A.2 Year 2015 Northbound Ramp Peak Hour Volumes

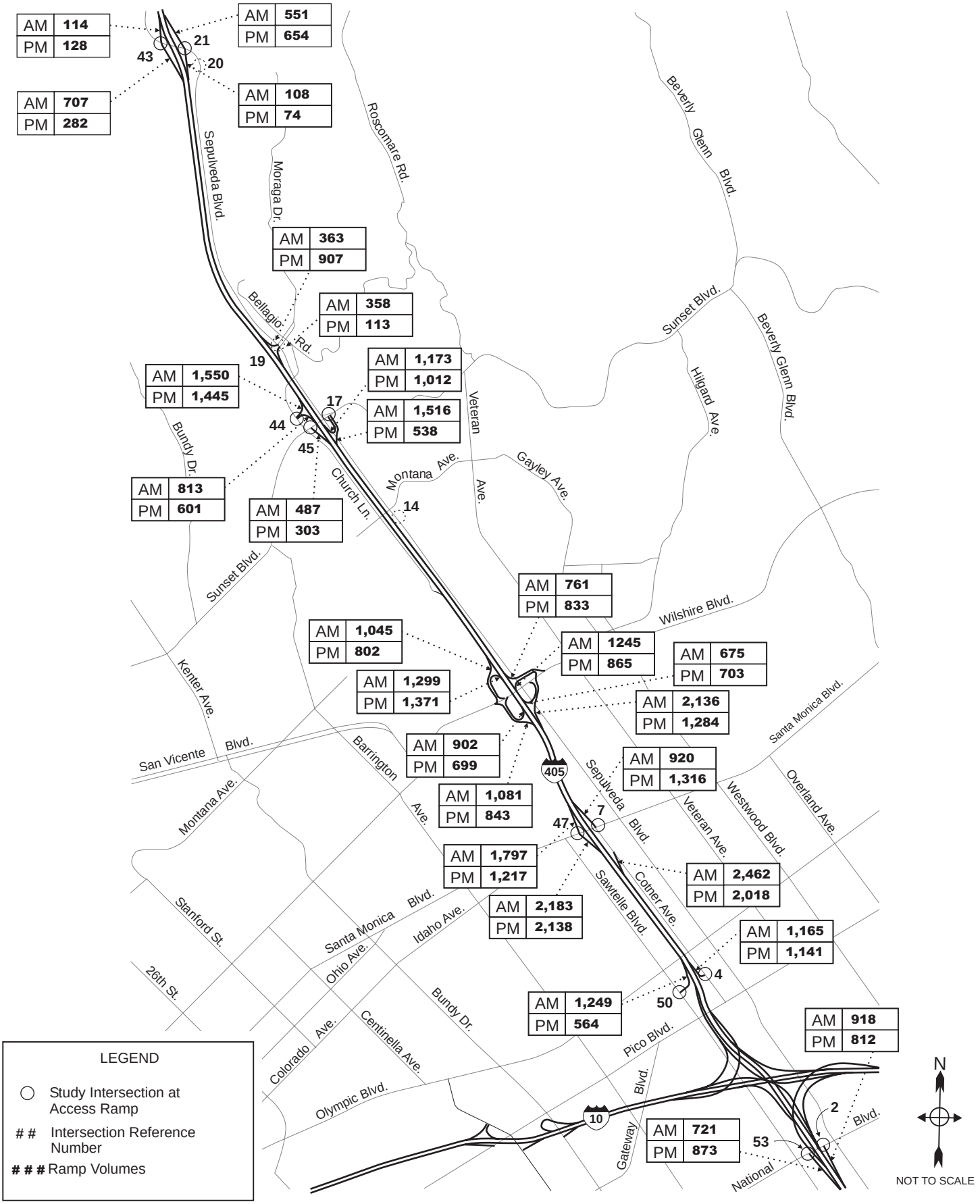
P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	918	812
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,165	1,141
30.68	NB Off To Santa Monica Blvd.	2	3,000	2,462	2,018
31.01	NB On From Santa Monica Blvd.	3	2,700	920	1,316
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,136	1,284
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	1,245	865
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	675	703
31.64	SEG NB On From WB Wilshire Blvd.	1	900	761	833
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,516	538
32.99	NB On From EB Sunset Blvd.	2	1,800	1,173	1,012
33.3	NB Off To Moraga Drive	2	3,000	358	113
33.47	NB On From Moraga Drive	2	1,800	363	907
34.73	NB On From Getty Center Drive	2	1,800	551	645
34.73	NB Off to Getty Center Drive	2	3,000	108	74
36.69	NB Off to Mulholland/Rimerton	1	1,500	583	543
36.99	NB On from Mulholland/Rimerton	2	1,800	285	469
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1500	488	562
38.77	NB On From Greenleaf St	2	1,800	647	1,188
	US-101 NB Off to Sepulveda Blvd	1	1,500	1,032	791

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment

Table VI.7 – Alternative 1 Year 2015 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	721	873
30.14	SB Off to Olympic/Pico	1	1,500	1,249	564
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,183**	**2,138**
31.03	SB Off to Santa Monica Blvd	2	3,000	1,797	1,217
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,081**	843
31.48	SB Off to EB Wilshire Blvd	1	1,500	902	699
31.65	SB On from WB Wilshire Blvd	2	1,800	1,299	1,371
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,045	802
32.90	SB On from EB Sunset Blvd	2	1,800	487	303
33.04	SB On from Church/Sunset Blvd	2	1,800	813	601
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,550	1,445
34.65	SB On from Getty Center Dr	2	1,800	707	282
35.00	SB Off to Getty Center Dr	1	1,500	114	128
36.50	SB On from Skirball Center Dr	2	1,800	1,294	390
36.86	SB Off to Skirball Center Dr	1	1,500	391	599
38.22	SB On from Valley Vista/Sepulveda Blvd	2	1,800	1,688	510
38.61	SB Off to Valley Vista Blvd	N/A	N/A	0	0
39.09	SB On from Ventura Blvd	2	1,800	931	403
39.09	US-101 SB Off to Ventura Blvd	1	1,500	266	593
40.50	**SB Off to Burbank Blvd**	1	1,500	**1,541**	1,200

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.



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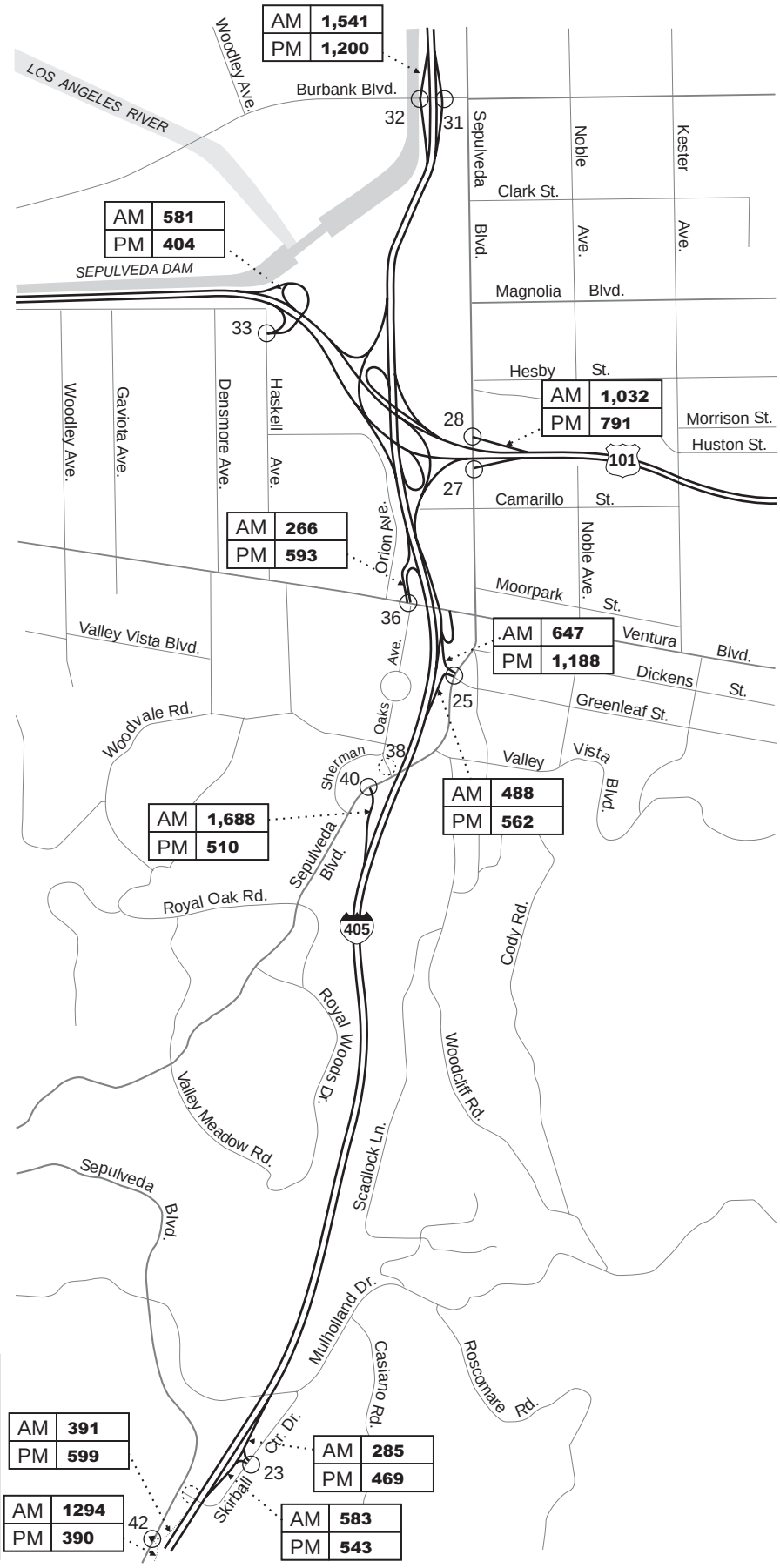
Alternative 2.2 Year 2015 Peak Hour Access Ramp Volumes - Southern Area

Figure 20A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 Year 2015 Peak Hour Access Ramp Volumes - Northern Area

Figure 20B

Peak hour ramp volumes forecast for year 2031 are listed in Tables VI.8 and VI.9, and these volumes are also shown in Figures 19A and 19B. The northbound off-ramp to Santa Monica Boulevard, northbound off-ramp to westbound Wilshire Boulevard, northbound on-ramp from westbound Wilshire Boulevard, southbound off-ramp to Olympic/Pico Boulevard, southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, southbound on-ramp from Valley Vista/Sepulveda Boulevard, and southbound on-ramp from Burbank Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods. Only the northbound off-ramp to westbound Wilshire Boulevard and the southbound off-ramp to Burbank Boulevard experience increased volumes due to redistribution associated with Alternative 2A.2. The ramp volumes at the rest of these locations are the same as in Alternative 1 (the no build condition) and the capacity issues are not related to the HOV Lane project.

Table VI.8 – Alternative 2A.2 Year 2031 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	1,159	1,026
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,471	1,441
30.68	**NB Off To Santa Monica Blvd.**	2	3,000	**3,109**	2,548
31.01	NB On From Santa Monica Blvd.	3	2,700	1,161	1,661
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,697	1,622
31.43	**SEG NB Off To WB Wilshire Blvd.**	1	1,500	**1,573**	1,093
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	852	888
31.64	**SEG NB On From WB Wilshire Blvd.**	1	900	**961**	**1,052**
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,914	679
32.99	NB On From EB Sunset Blvd.	2	1,800	1,481	1,278
33.3	NB Off To Moraga Drive	2	3,000	452	143
33.47	NB On From Moraga Drive	2	1,800	459	1,145
34.55	NB Off To Getty Center Drive	2	3,000	0	0
34.73	NB On From Getty Center Drive	2	1,800	695	815
34.73	NB Off to Getty Center Drive	2	3,000	136	94
36.69	NB Off to Mulholland/Rimerton	1	1,500	736	685
36.99	NB On from Mulholland/Rimerton	2	1,800	359	592
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	617	710
38.77	NB On From Greenleaf St	2	1,800	817	1,500
	US-101 NB Off to Sepulveda Blvd	1	1,500	1,303	999

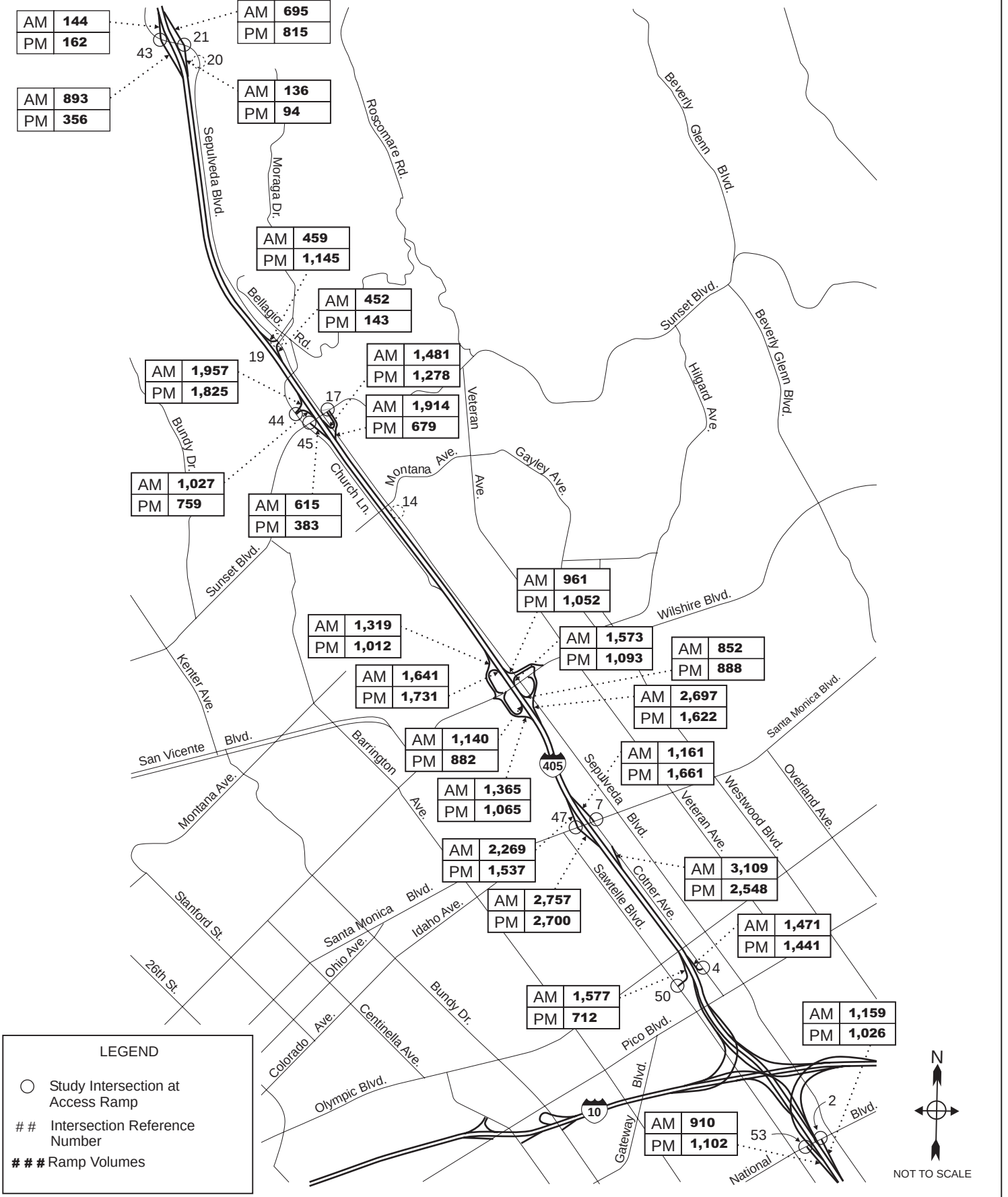
Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

Table VI.9 – Alternative 2A.2 Year 2031 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	910	1,102
30.14	**SB Off to Olympic/Pico**	1	1,500	**1,577**	712
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,757**	**2,700**
31.03	SB Off to Santa Monica Blvd	2	3,000	2,269	1,537
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,365**	**1,065**
31.48	SB Off to EB Wilshire Blvd	1	1,500	1,140	882
31.65	SB On from WB Wilshire Blvd	2	1,800	1,641	1,731
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,319	1,012
32.90	SB On from EB Sunset Blvd	2	1,800	615	383
33.04	SB On from Church/Sunset Blvd	2	1,800	1,027	759
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,957	1,825
34.65	SB On from Getty Center Dr	2	1,800	893	356
35.00	SB Off to Getty Center Dr	1	1,500	144	162
36.50	SB On from Skirball Center Dr	2	1,800	1,633	492
36.86	SB Off to Skirball Center Dr	1	1,500	494	757
38.22	**SB On from Valley Vista/Sepulveda Blvd**	2	1,800	**2,132**	644
38.61	SB Off to Valley Vista Blvd	N/A	N/A	0	0
39.09	SB On from Ventura Blvd	2	1,800	1,176	508
	US-101 SB Off to Ventura Blvd	1	1,500	336	749
	SB Off to Burbank Blvd	1	1,500	**1,946**	**1,516**

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

In a queuing analysis for this scenario, the northbound off-ramp to eastbound Wilshire Boulevard and the northbound on-ramp from Greenleaf Street were found to be potential locations for capacity issues in the year 2031.

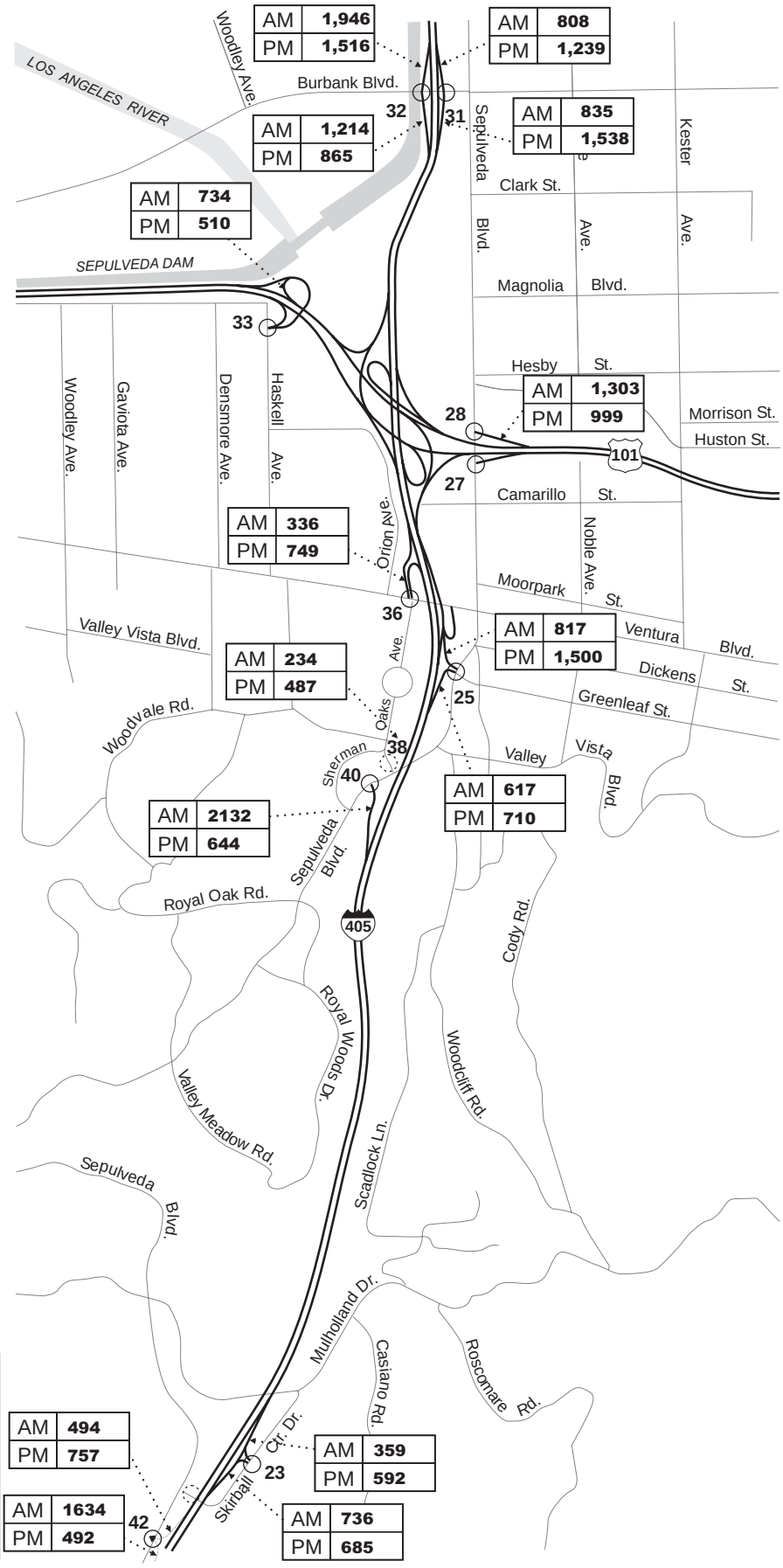


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 Year 2031 Peak Hour Access Ramp Volumes - Southern Area

Figure 21A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 Year 2031 Peak Hour Access Ramp Volumes - Northern Area

Figure 21B

C. Intersections

The ramp closures and modifications associated with Alternative 2 result in changes to intersection geometry at various locations. The intersection geometry for this alternative is illustrated in Figures 22A and 22B. Modifications that are common to both sub-alternatives are listed in Table VI.10, and changes that are unique to Alternative 2A.1 or 2A.2 are described in subsequent sections.

Table VI.10 – Alternative 2 Modifications to Intersection Geometry

Ramp Modification	Int #	Corresponding Study Intersection Modification
Northbound I-405 off-ramp to Montana Avenue removed	14	With the off-ramp removed, there is no longer an intersection at this location. Only the northbound and southbound through lanes on Sepulveda Boulevard remain.
Northbound interchange improvements at Sunset Boulevard	17	The interchange improvements at this location include the addition of a second northbound right turn lane, a third eastbound through lane, and a second eastbound right turn lane.
Northbound interchange improvements at Getty Center Drive	20, 21	The T-intersections formed by the northbound off-ramp and on-ramp with Sepulveda Boulevard are replaced with a standard diamond interchange to form a single four-legged intersection. Intersection 20 is removed, and intersection 21 is signalized and reconfigured with one northbound through lane, one northbound through-right lane, one southbound left turn lane, two southbound through lanes, one eastbound left turn lane, and one eastbound right turn lane. (Sepulveda Boulevard is considered to be north and south legs, and the northbound off-ramp is the west leg.)
Southbound Skirball Center Drive interchange improvements	42	The southbound on- and off-ramps to Skirball/Mulholland are removed and replaced with hook ramps that connect directly to Sepulveda Boulevard. Intersection #42 becomes the intersection of the new ramps with Sepulveda Boulevard, and consists of one northbound through lane, one northbound through-right lane, one southbound left turn lane, two southbound through lanes, one westbound left turn lane, and one westbound right turn lane. (Sepulveda Boulevard is the north and south legs, and the southbound off-ramp is the east leg.)

1. Alternative 2A.1

In Alternative 2A.1, a new northbound on-ramp from westbound Sunset Boulevard is installed and the Sepulveda Way street segment is closed. At intersection #17, the new on-ramp creates a north leg, and the westbound lanes change from three through lanes to two through lanes and one through-right lane. The T-intersection formed by Sepulveda Way and Sepulveda Boulevard (#54) no longer exists when Sepulveda Way is closed.

Year 2015 AM peak hour intersection volumes are shown in Figures 21A and 21B, and PM peak hour volumes are shown in Figures 22A and 22B. Figures 23A and 23B contain year 2031 AM peak hour intersection volumes, and Figures 24A and 24B show year 2031 PM peak volumes.

Alternative 2A.1 Level of Service Analysis – Year 2015

A level of service (LOS) analysis at the project intersections was performed using forecast year 2015 and 2031 turning movement volumes. The results of the level of service analysis are summarized in Table VI.11. Twenty-four locations are forecast to perform at LOS F during one or both peak periods.

Table VI.11 – Alternative 2A.1 Year 2015 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	19.7	B	18.0	B
2	National Blvd & Sepulveda Blvd	Signalized	58.8	E	70.7	E
3	Pico Blvd & Sepulveda Blvd	Signalized	93.6	F	201.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	111.1	F	33.9	D
5	Olympic Blvd & Cotner Ave	Signalized	14.5	B	22.9	C
6	Olympic Blvd & Sepulveda Blvd	Signalized	91.9	F	158.9	F
7	Santa Monica Blvd & Cotner Ave	Signalized	150.1	F	84.2	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	155.1	F	163.9	F
9	Santa Monica Blvd & Veteran Ave	Signalized	28.9	C	34.4	C
10	Santa Monica Blvd & Westwood Blvd	Signalized	45.0	D	54.8	D
11	Wilshire Blvd & Sepulveda Blvd	Signalized	215.4	F	203.7	F
12	Wilshire Blvd & Veteran Ave	Signalized	122.5	F	163.5	F
13	Wilshire Blvd & Westwood Blvd	Signalized	51.5	D	73.4	E
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	24.4	C	64.4	E
16	Montana Ave & Veteran Ave	Signalized	38.6	D	36.1	D
17	Sunset Blvd & NB 405 Off-ramp	Signalized	18.2	B	9.8	A
18	Sunset Blvd & Veteran Ave	Signalized	124.5	F	51.3	D
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	8.4	A	23.8	C
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	49.0	E	163.0	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	10.5	B	10.2	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	78.0	E	74.0	E
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	135.3	F	85.3	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	189.0	F	100.2	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.4	A	23.5	C
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	22.7	C	28.2	C
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	19.6	B	125.2	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	225.6	F	383.8	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	21.0	C	101.6	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	103.7	F	77.8	E
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	25.3	D	17.3	C
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	9.4	A	8.1	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	18.8	B	16.3	B
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	12.3	B	4.9	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	44.3	D	30.3	C
37	Fiume Walk & Sherman Oak Ave	Unsignalized	68.9	F	14.1	B

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	3.4	A	5.7	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	51.2	D	11.8	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	58.2	E	17.7	B
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	452.5	F	147.5	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	169.0	F	245.1	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	16.3	B	16.5	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	50.0	D	114.7	F
45	Sunset Blvd & Church Lane	Signalized	33.5	C	48.1	D
46	Wilshire Blvd & Federal Ave	Signalized	184.8	F	215.5	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	71.7	E	46.5	D
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	89.1	F	739.1	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	49.3	D	116.3	F
50	SB 405 Tennessee Off-ramp & Sawtelle Blvd	Signalized	35.7	D	73.7	E
51	Pico Blvd & Sawtelle Blvd	Signalized	46.0	D	105.0	F
52	National Blvd & Sawtelle Blvd	Signalized	110.6	F	94.3	F
53	National Blvd & SB 405 On-ramp	Signalized	8.2	A	8.6	A
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	DNE	DNE	DNE	DNE

N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

Locations where the average delay per vehicle for the Alternative 2A.1 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VI.12 and VI.13. Nine intersections adjacent to ramps that are closed in this alternative experience a reduction in control delay, while six study intersections that carry the redistributed volumes have higher delays.

Table VI.12 – Comparison of Alt. 1 (No Build) and Alt. 2A.1 Year 2015 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 2A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	220.0	F	215.4	F	-4.6
12	**Wilshire Blvd & Veteran Ave**	S	111.9	F	122.5	F	10.6
14	Montana Off-ramp & Sepulveda Blvd	S	38.5	D	DNE	DNE	-38.5
15	Montana Ave & Sepulveda Blvd	S	49.0	D	24.4	C	-24.6
16	Montana Ave & Veteran Ave	S	36.0	D	38.6	D	2.6
17	Sunset Blvd & NB 405 Off-ramp	S	44.7	D	18.2	B	-26.5
18	**Sunset Blvd & Veteran Ave**	S	103.8	F	124.5	F	20.7
19	Moraga On/Off-ramps & Sepulveda Blvd	S	123.0	F	8.4	A	-114.6
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	7.3	A	DNE	DNE	-7.3
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	600.5	F	49.0	E	-551.5
41	**Skirball Center Dr & N Sepulveda Blvd**	S	229.3	F	452.5	F	223.2
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	25.5	C	169.0	F	143.5
44	SB 405 On/Off-ramps & Church Lane	S	48.6	D	50.0	D	1.4
45	SB 405 On/Off-ramps & Church Lane	S	33.8	C	33.5	C	-0.3
54	Sepulveda Way & Sepulveda Blvd	S	1.7	A	DNE	DNE	-1.7

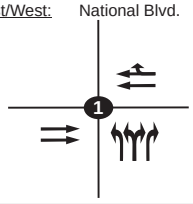
S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VI.13 – Comparison of Alt. 1 (No Build) and Alt. 2A.1 Year 2015 PM Peak Hour LOS

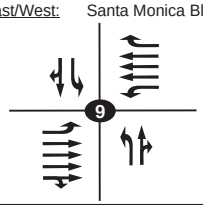
Intersection		Control	ALT 1		ALT 2A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	205.8	F	203.7	F	-2.1
12	**Wilshire Blvd & Veteran Ave**	S	163.0	F	163.5	F	3.5
14	Montana Off-ramp & Sepulveda Blvd	S	120.6	F	DNE	DNE	-120.6
15	Montana Ave & Sepulveda Blvd	S	70.3	D	64.4	C	-5.9
16	Montana Ave & Veteran Ave	S	34.2	C	36.1	D	1.9
17	Sunset Blvd & NB 405 Off-ramp	S	11.1	B	9.8	A	-1.3
18	**Sunset Blvd & Veteran Ave**	S	48.1	D	51.3	D	3.2
19	Moraga On/Off-ramps & Sepulveda Blvd	S	50.8	D	23.8	C	-27.0
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	8.0	A	DNE	DNE	-8.0
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	0.8	A	163.0	F	162.2
41	**Skirball Center Dr & N Sepulveda Blvd**	S	151.0	F	147.5	F	-3.5
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	65.6	E	245.1	F	179.5
44	SB 405 On/Off-ramps & Church Lane	S	49.2	D	114.7	F	65.5
45	SB 405 On/Off-ramps & Church Lane	S	50.8	D	48.1	D	-2.7
54	Sepulveda Way & Sepulveda Blvd	S	9.0	A	DNE	DNE	-9.0

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

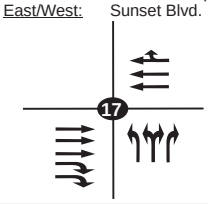
North/South: NB 405 Off-Ramp
East/West: National Blvd.



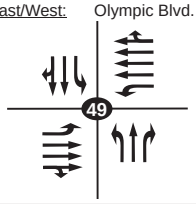
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



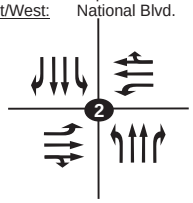
North/South: NB 405 Ramps
East/West: Sunset Blvd.



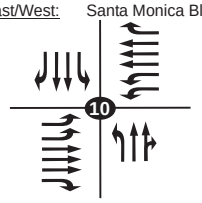
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



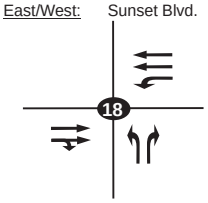
North/South: Sepulveda Blvd.
East/West: National Blvd.



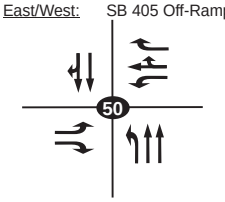
North/South: Westwood Blvd.
East/West: Santa Monica Blvd.



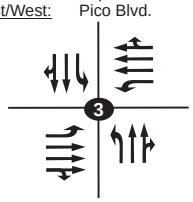
North/South: Veteran Ave.
East/West: Sunset Blvd.



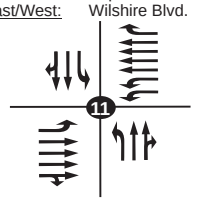
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



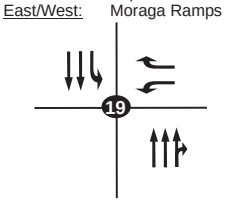
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



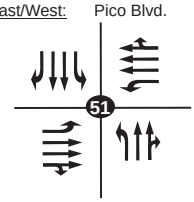
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



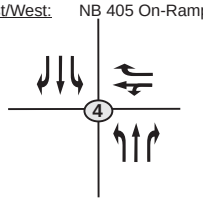
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



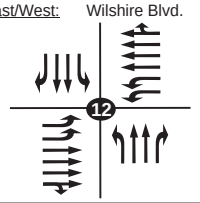
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



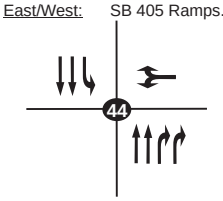
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



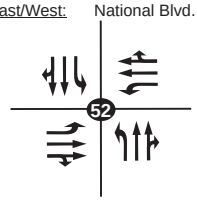
North/South: Veteran Ave.
East/West: Wilshire Blvd.



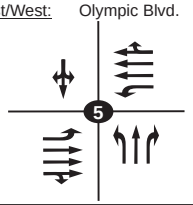
North/South: Church Ln.
East/West: SB 405 Ramps.



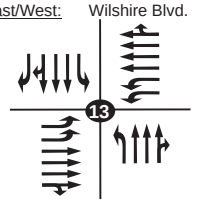
North/South: Sawtelle Blvd.
East/West: National Blvd.



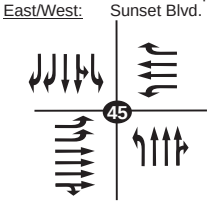
North/South: Cotner Ave.
East/West: Olympic Blvd.



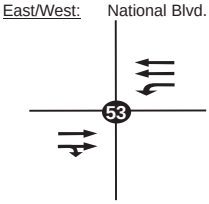
North/South: Westwood Blvd.
East/West: Wilshire Blvd.



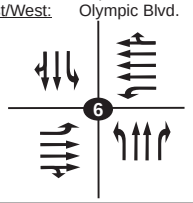
North/South: SB 405 Ramps.
East/West: Sunset Blvd.



North/South: SB 405 On-Ramp
East/West: National Blvd.



North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



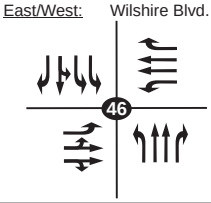
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp

INTERSECTION

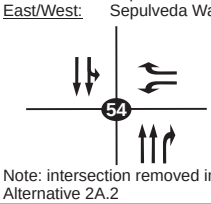
14

REMOVED

North/South: Federal Ave.
East/West: Wilshire Blvd.

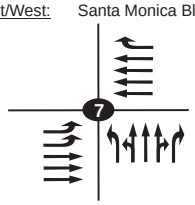


North/South: Sepulveda Blvd.
East/West: Sepulveda Way

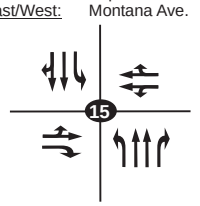


Note: intersection removed in Alternative 2A.2

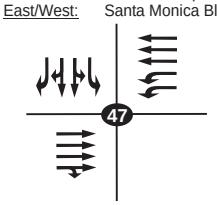
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



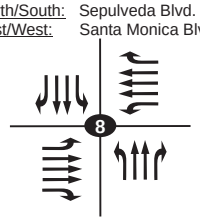
North/South: Sepulveda Blvd.
East/West: Montana Ave.



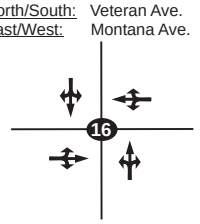
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



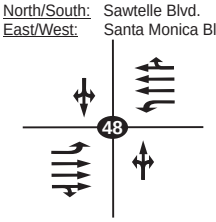
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

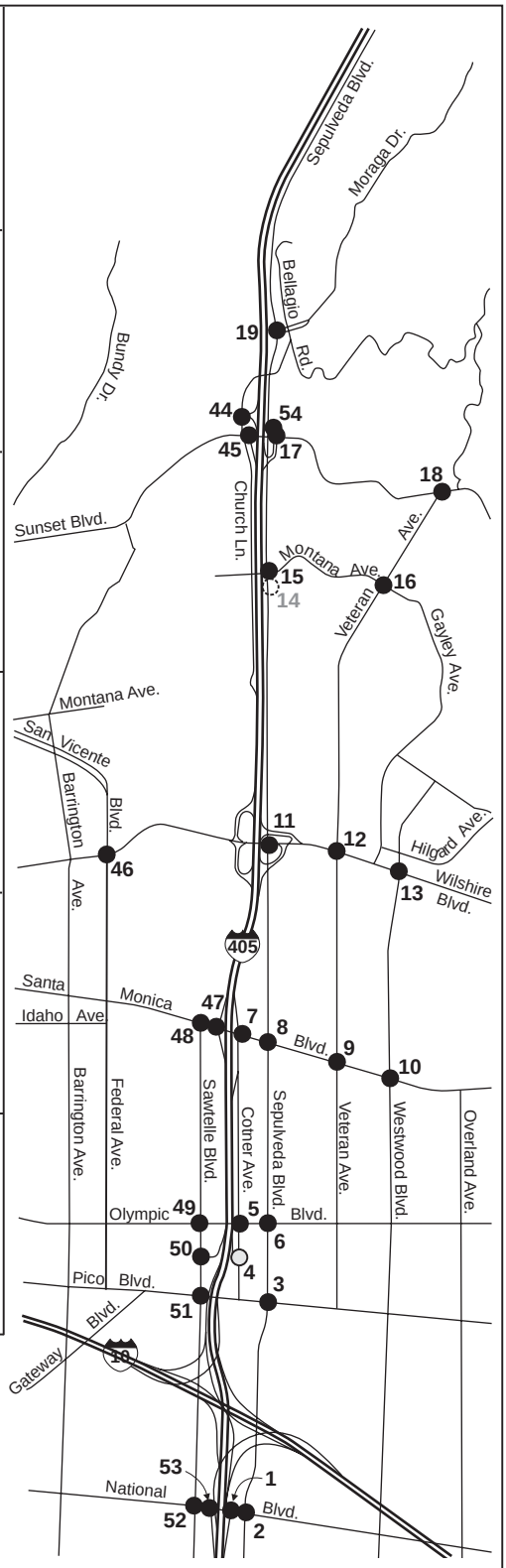


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2 Study Intersection Geometry (Southern Area)

Figure 22A

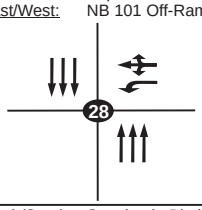
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

INTERSECTION

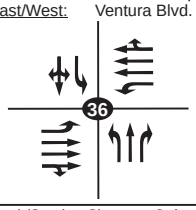
20

REMOVED

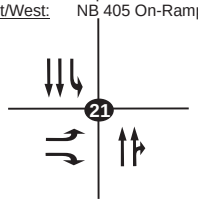
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



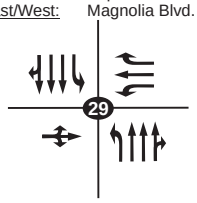
North/South: SB 405 Ramps
East/West: Ventura Blvd.



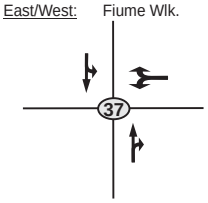
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



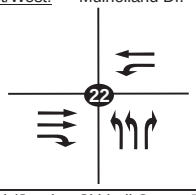
North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



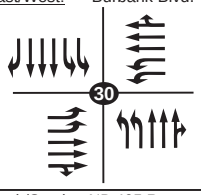
North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.



North/South: Skirball Center Dr.
East/West: Mulholland Dr.



North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



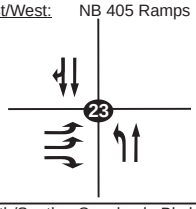
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

INTERSECTION

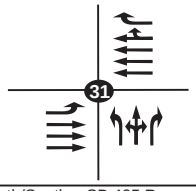
38

REMOVED

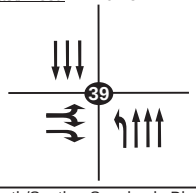
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



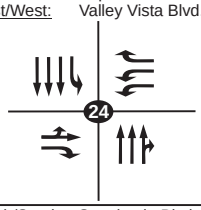
North/South: NB 405 Ramps
East/West: Burbank Blvd.



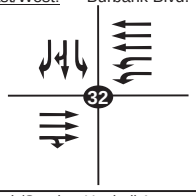
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



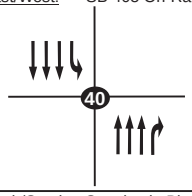
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



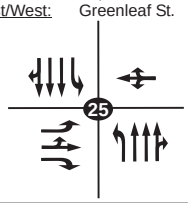
North/South: SB 405 Ramps
East/West: Burbank Blvd.



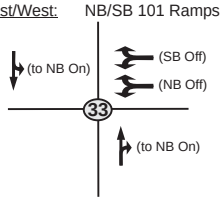
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



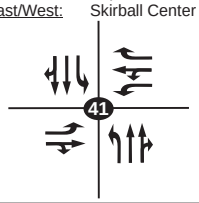
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



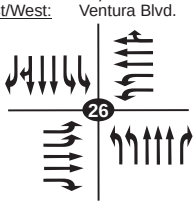
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



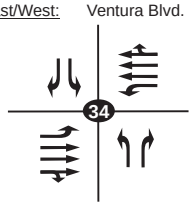
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



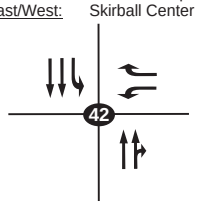
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



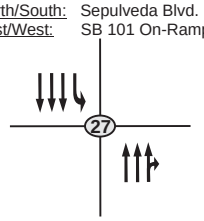
North/South: Haskell Ave.
East/West: Ventura Blvd.



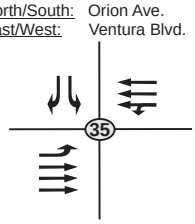
North/South: SB 405 Ramps
East/West: Skirball Center Dr.



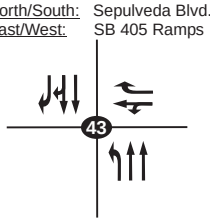
North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

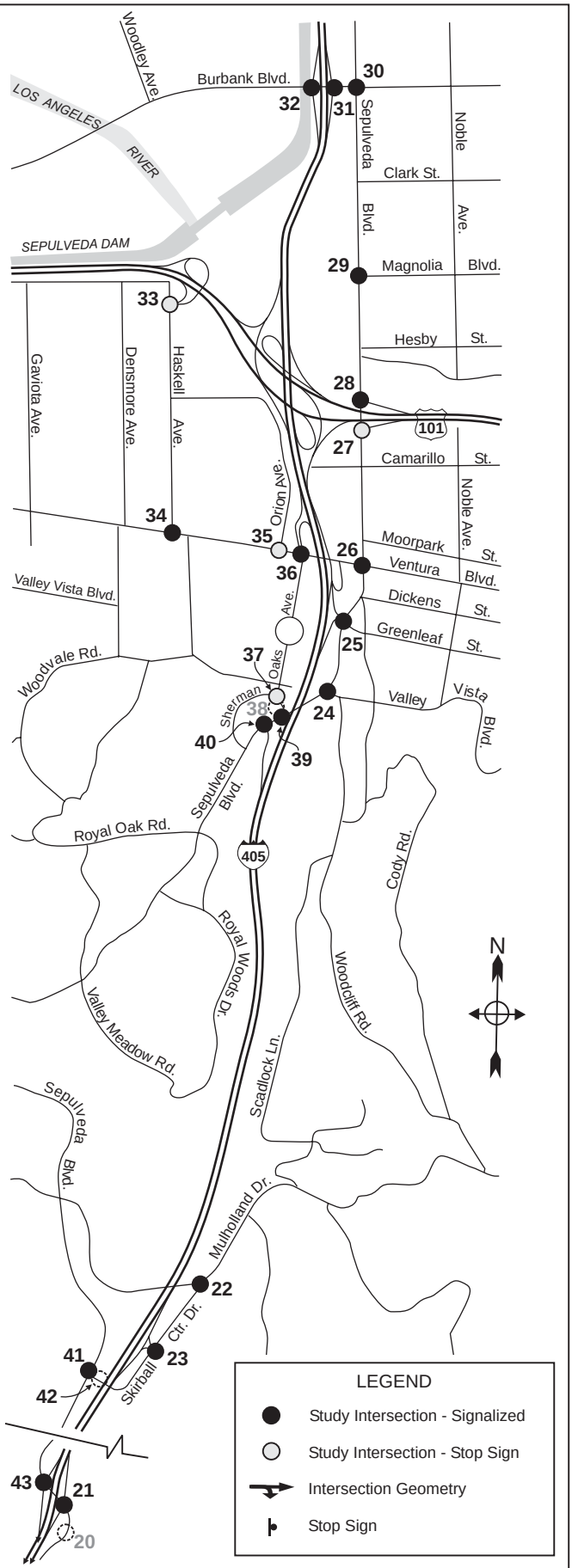


North/South: Orion Ave.
East/West: Ventura Blvd.



North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



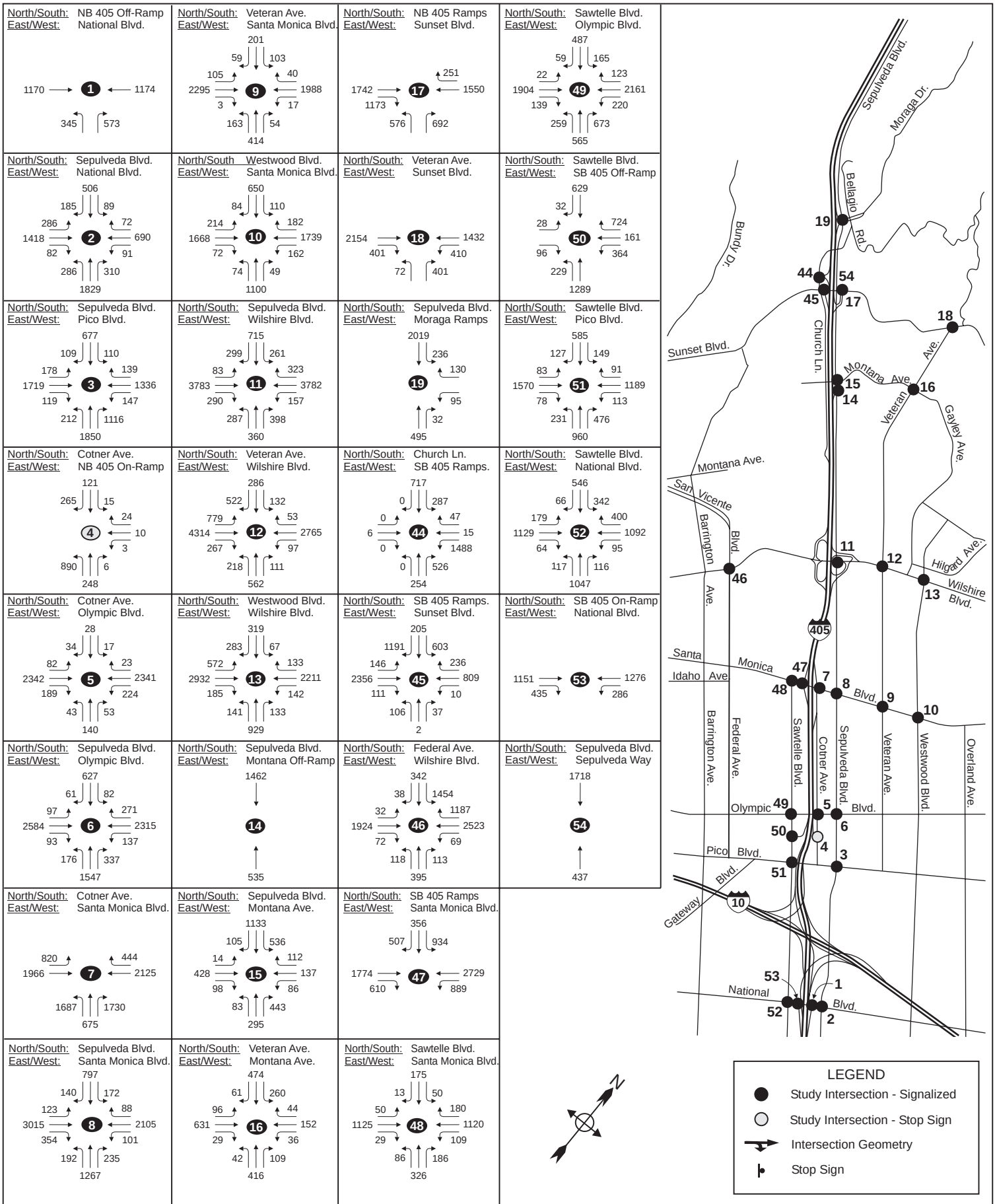


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2 Study Intersection Geometry (Northern Area)

Figure 22B



IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

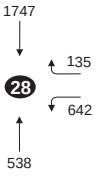
Alternative 2.1 (Year 2015) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 23A

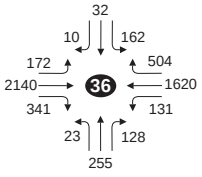
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

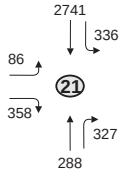
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



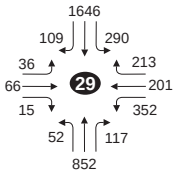
North/South: SB 405 Ramps
East/West: Ventura Blvd.



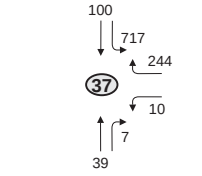
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

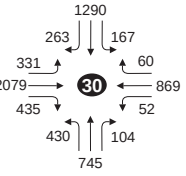


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

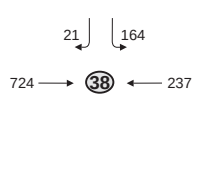
NO DATA AVAILABLE

22

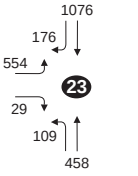
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



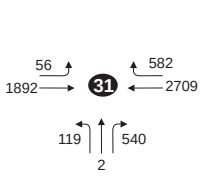
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



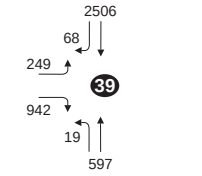
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



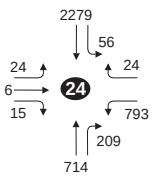
North/South: NB 405 Ramps
East/West: Burbank Blvd.



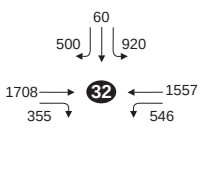
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



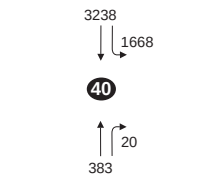
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



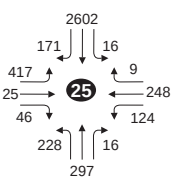
North/South: SB 405 Ramps
East/West: Burbank Blvd.



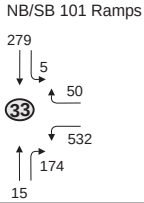
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



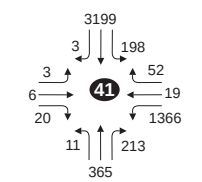
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



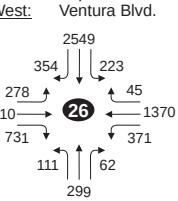
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



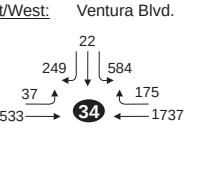
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



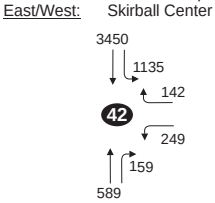
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



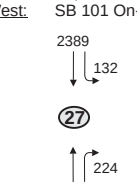
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

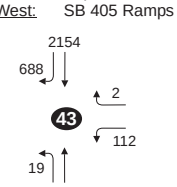


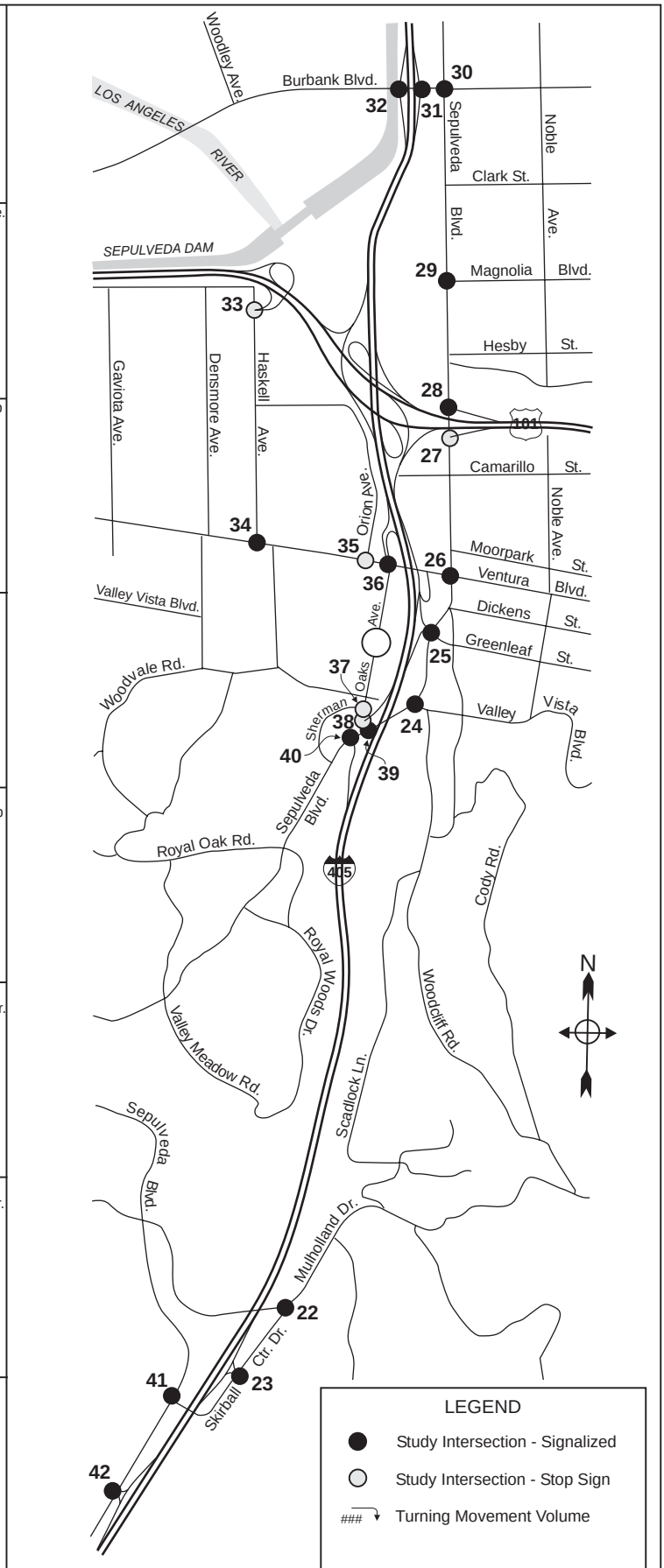
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





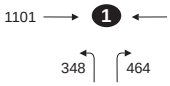
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

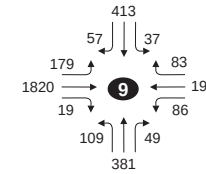
Alternative 2.1 (Year 2015) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 23B

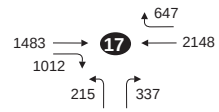
North/South: NB 405 Off-Ramp
East/West: National Blvd.



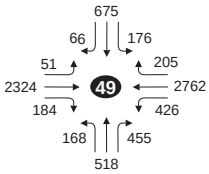
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



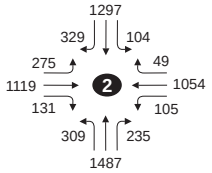
North/South: NB 405 Ramps
East/West: Sunset Blvd.



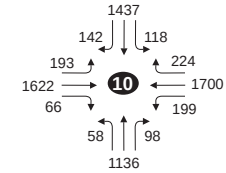
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



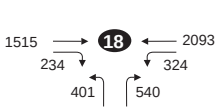
North/South: Sepulveda Blvd.
East/West: National Blvd.



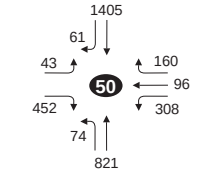
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



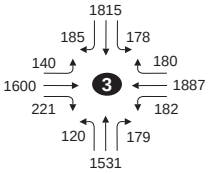
North/South: Veteran Ave.
East/West: Sunset Blvd.



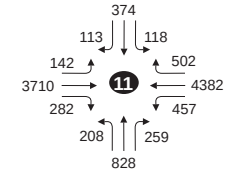
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



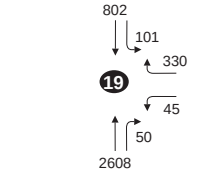
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



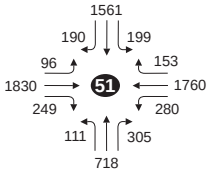
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



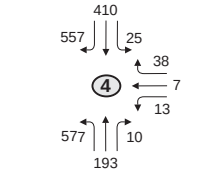
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



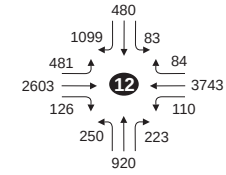
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



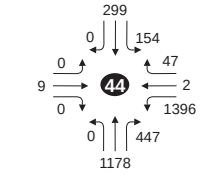
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



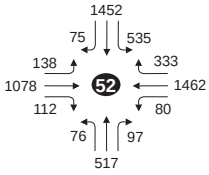
North/South: Veteran Ave.
East/West: Wilshire Blvd.



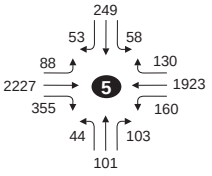
North/South: Church Ln.
East/West: SB 405 Ramps.



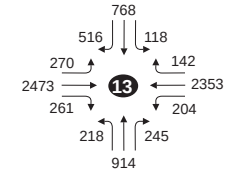
North/South: Sawtelle Blvd.
East/West: National Blvd.



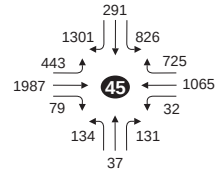
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

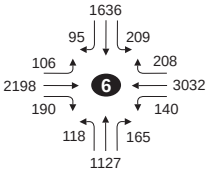


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

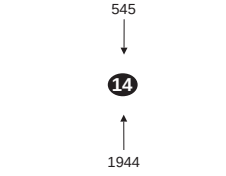


North/South: SB 405 On-Ramp
East/West: National Blvd.

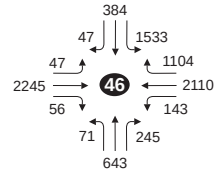
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



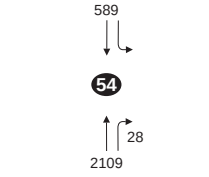
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



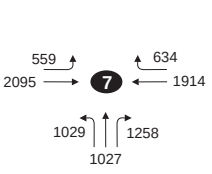
North/South: Federal Ave.
East/West: Wilshire Blvd.



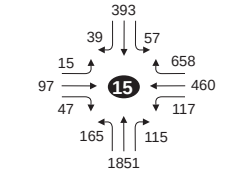
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



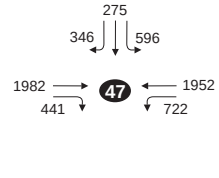
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



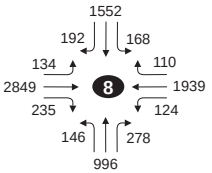
North/South: Sepulveda Blvd.
East/West: Montana Ave.



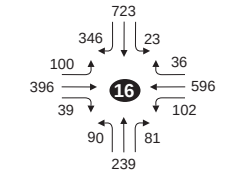
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



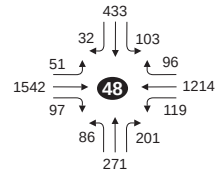
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

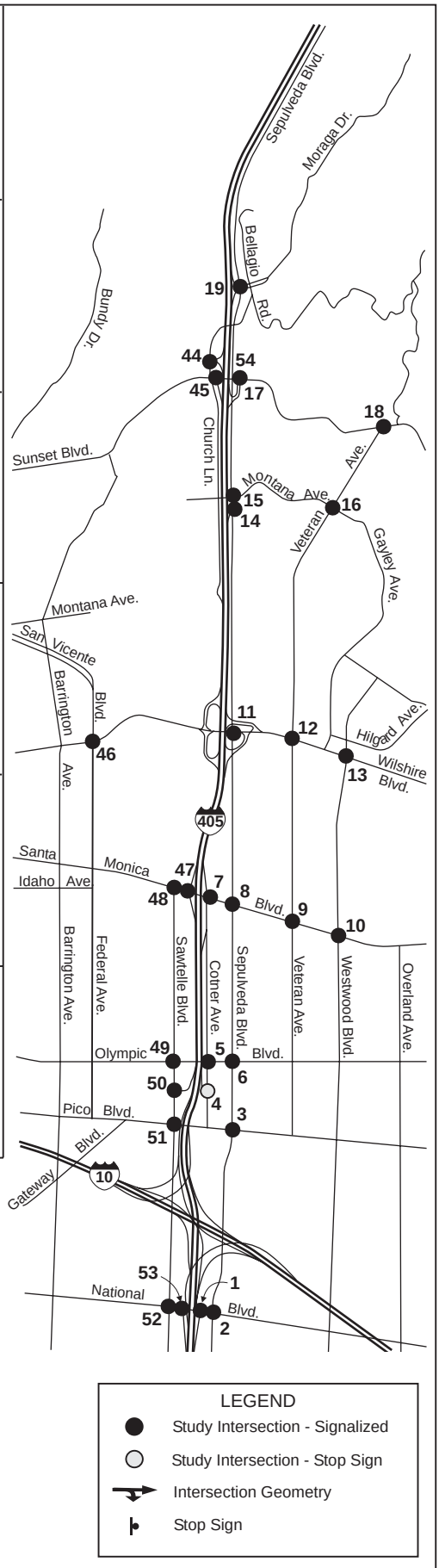


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

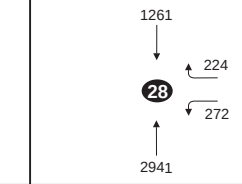
Alternative 2.1 (Year 2015) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 24A

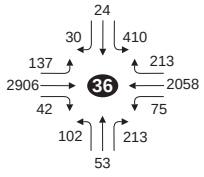
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

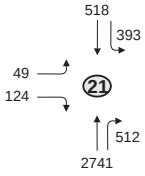
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



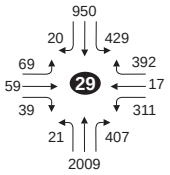
North/South: SB 405 Ramps
East/West: Ventura Blvd.



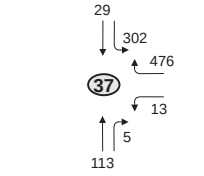
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

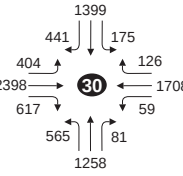


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

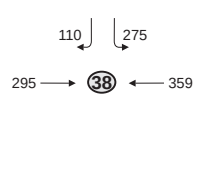
NO DATA AVAILABLE

22

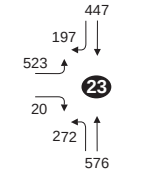
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



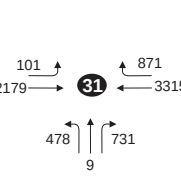
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



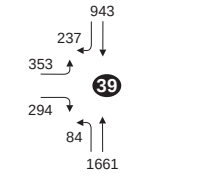
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



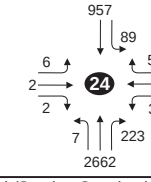
North/South: NB 405 Ramps
East/West: Burbank Blvd.



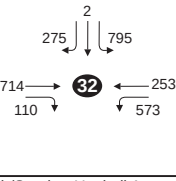
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



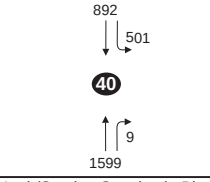
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



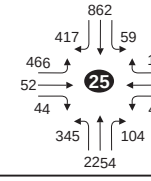
North/South: SB 405 Ramps
East/West: Burbank Blvd.



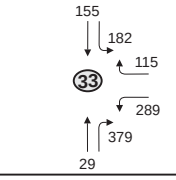
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



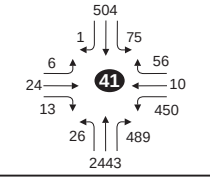
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



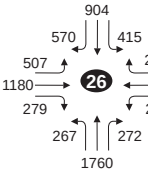
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



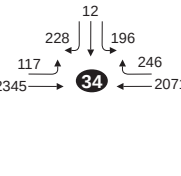
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



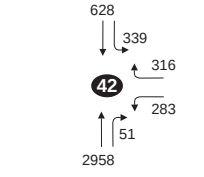
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



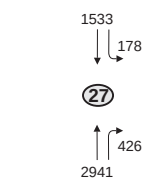
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

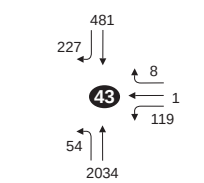


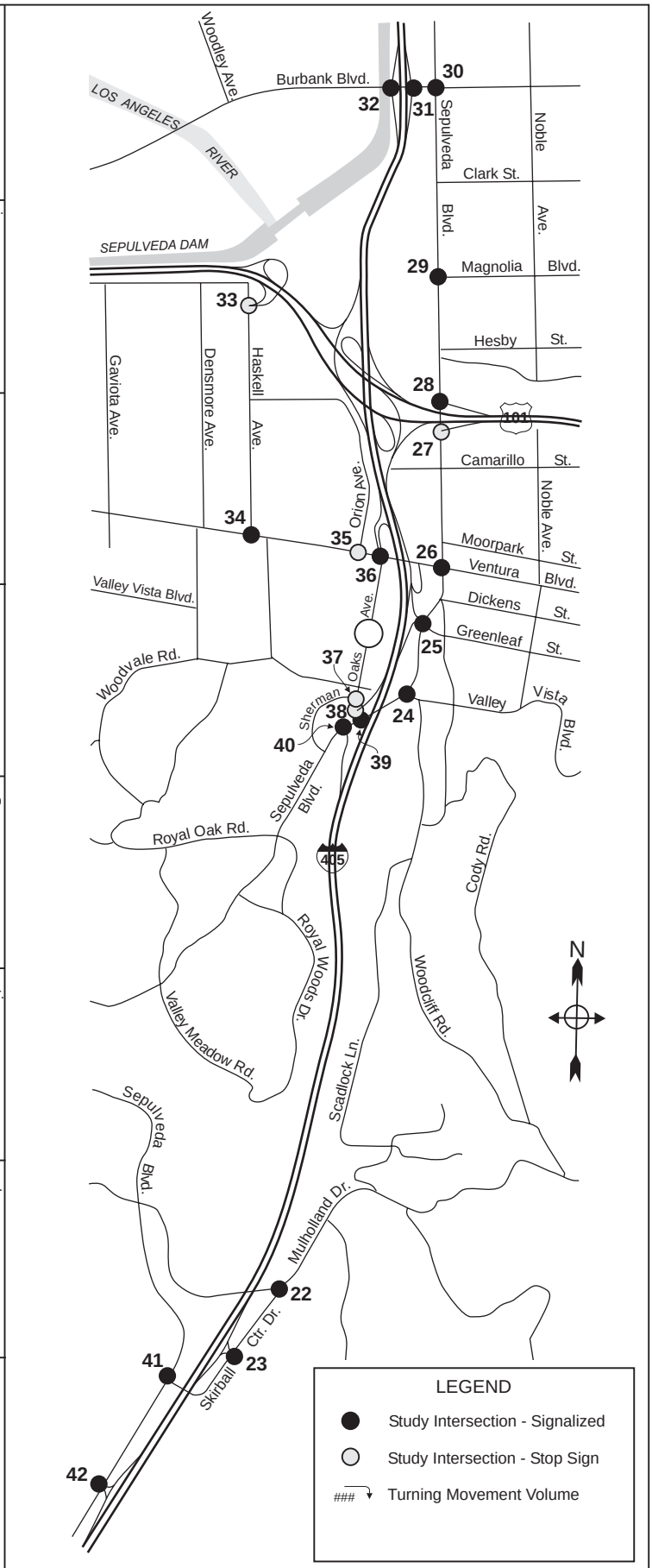
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





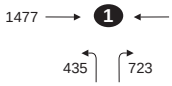
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

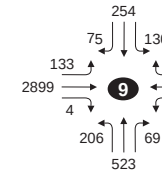
Alternative 2.1 (Year 2015) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 24B

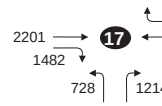
North/South: NB 405 Off-Ramp
East/West: National Blvd.



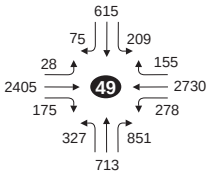
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



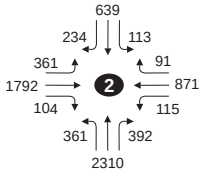
North/South: NB 405 Ramps
East/West: Sunset Blvd.



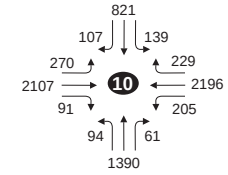
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



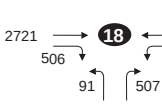
North/South: Sepulveda Blvd.
East/West: National Blvd.



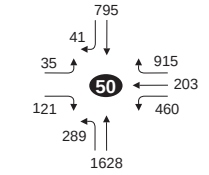
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



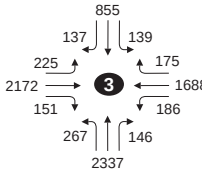
North/South: Veteran Ave.
East/West: Sunset Blvd.



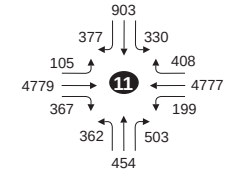
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



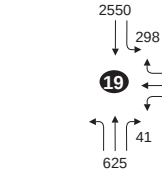
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



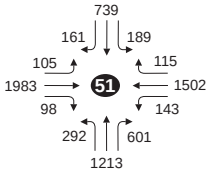
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



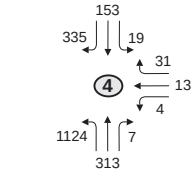
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



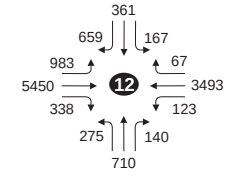
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



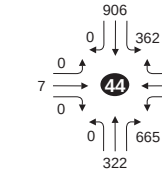
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



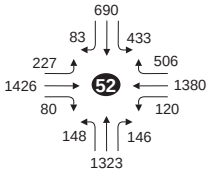
North/South: Veteran Ave.
East/West: Wilshire Blvd.



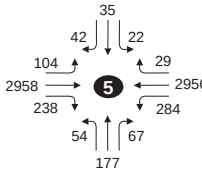
North/South: Church Ln.
East/West: SB 405 Ramps.



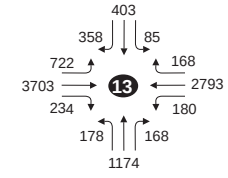
North/South: Sawtelle Blvd.
East/West: National Blvd.



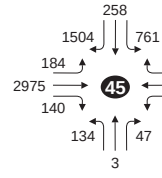
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

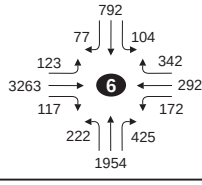


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

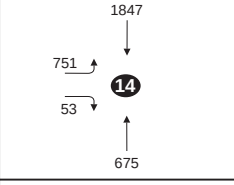


North/South: SB 405 On-Ramp
East/West: National Blvd.

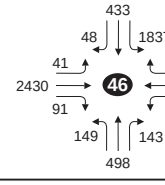
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



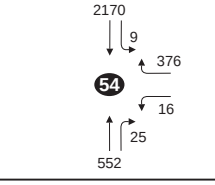
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



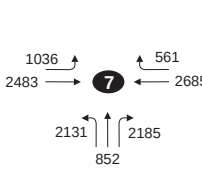
North/South: Federal Ave.
East/West: Wilshire Blvd.



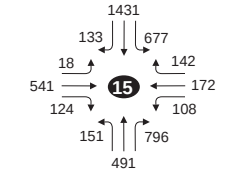
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



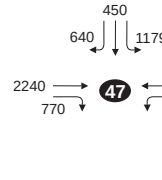
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



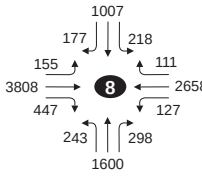
North/South: Sepulveda Blvd.
East/West: Montana Ave.



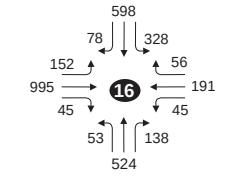
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



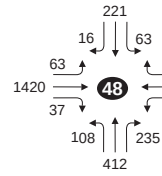
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

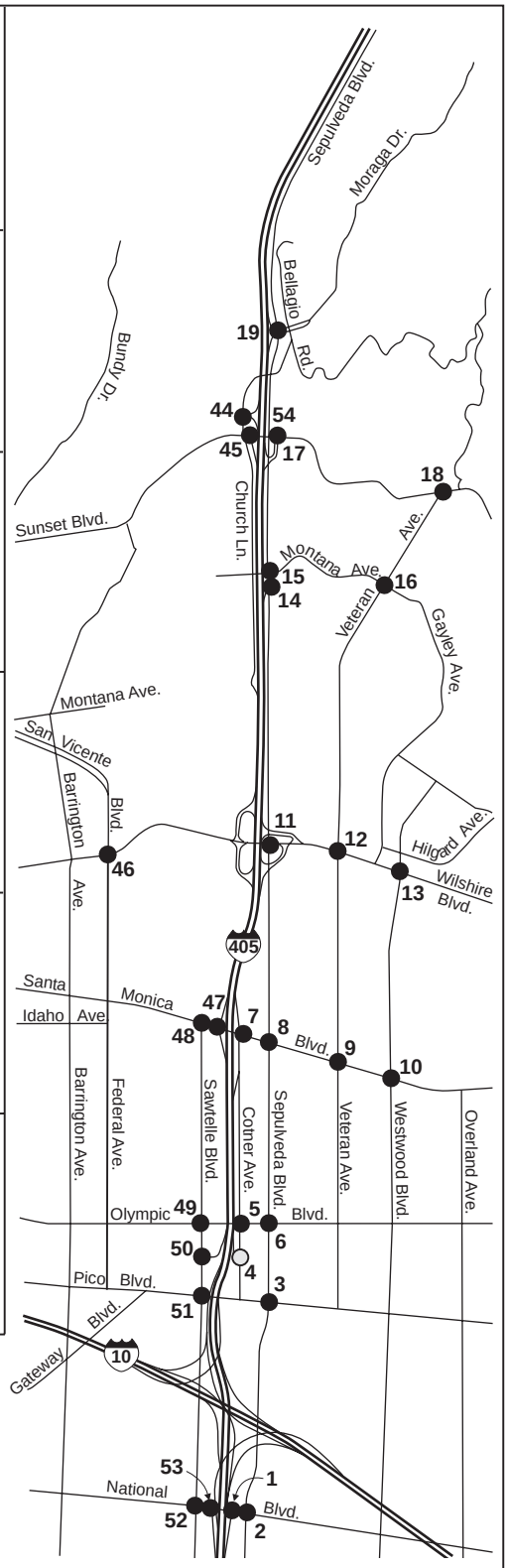


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

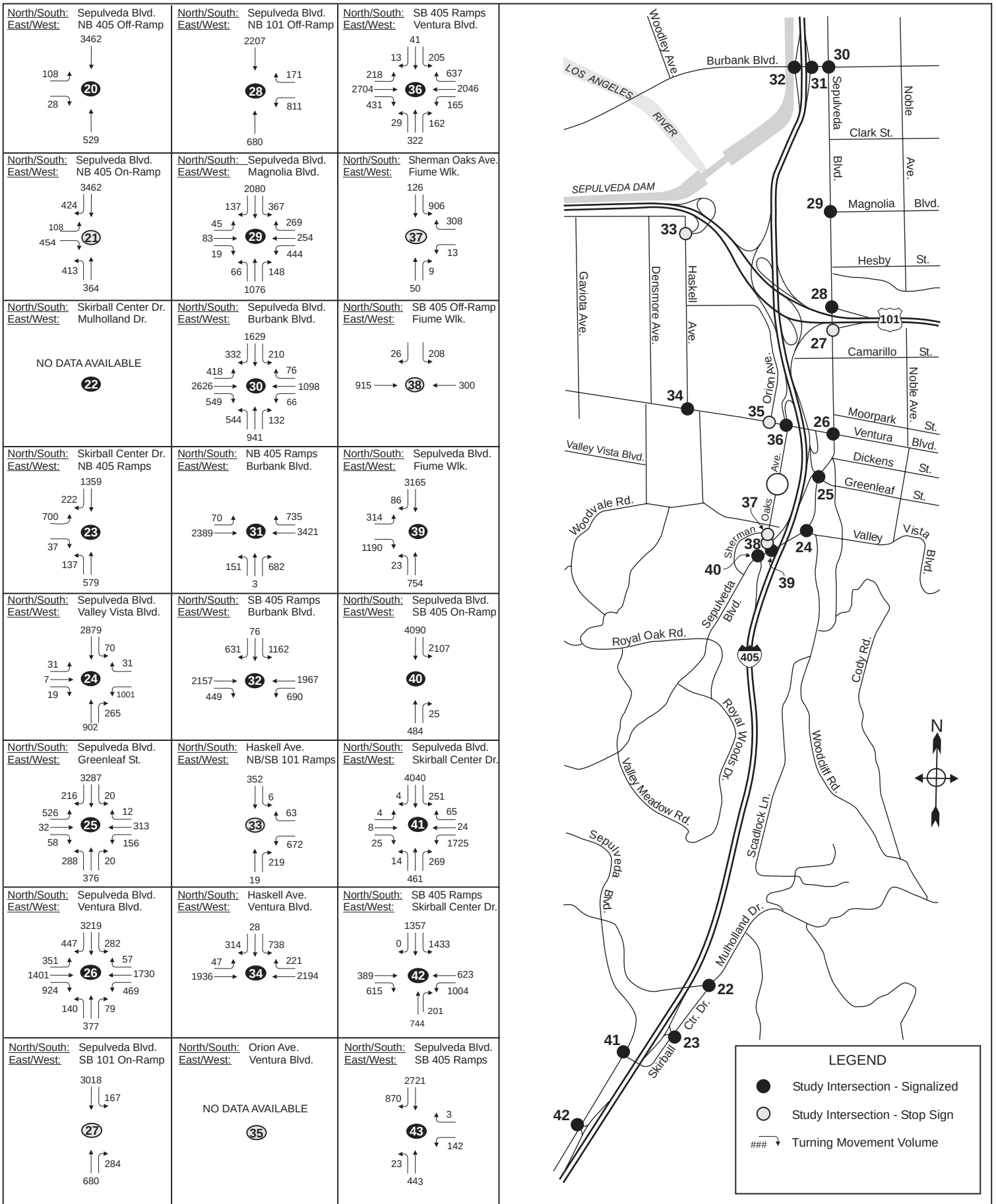
- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 (Year 2031) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 25A

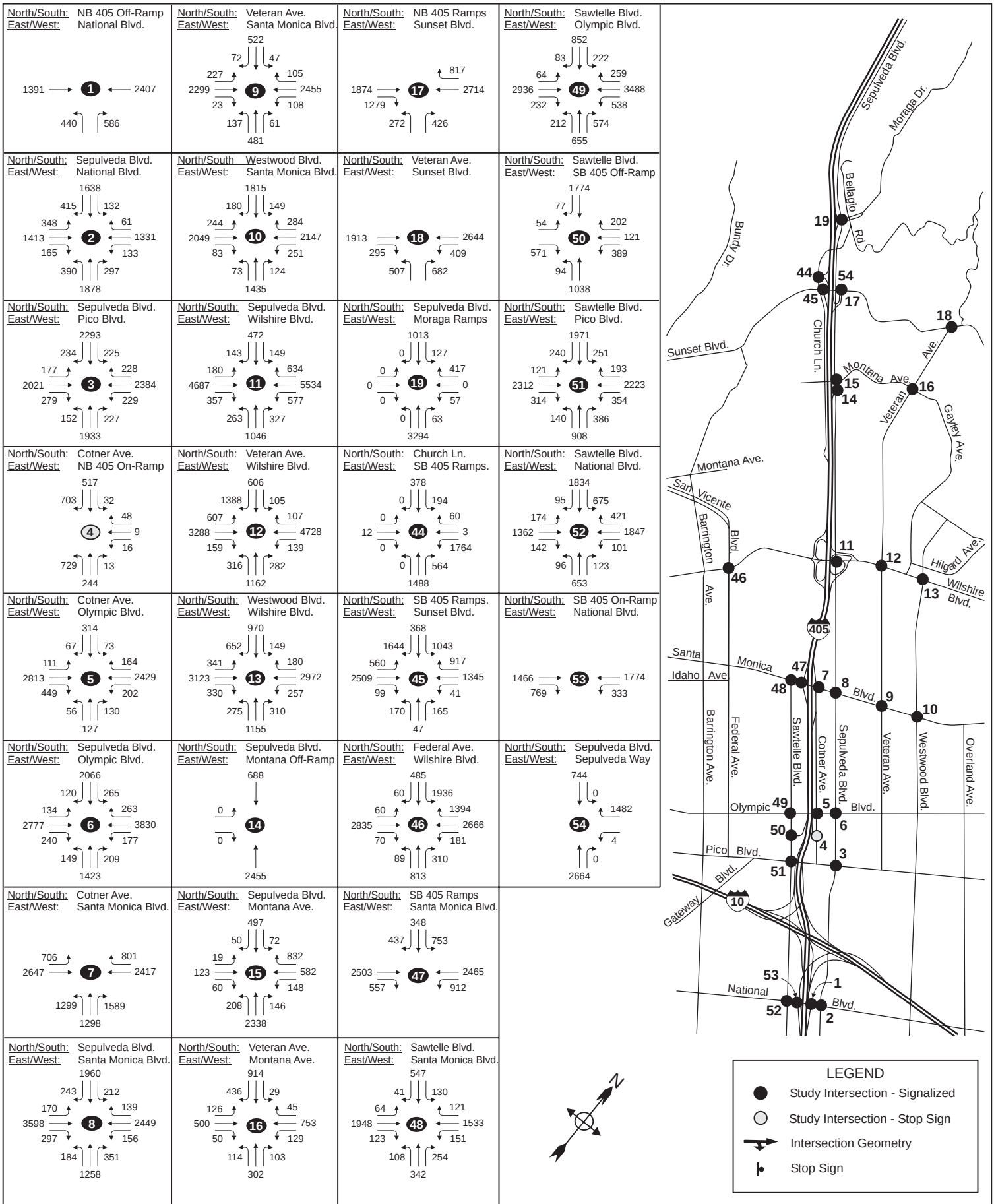


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 (Year 2031) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 25B



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

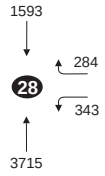
Alternative 2.1 (Year 2031) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 26A

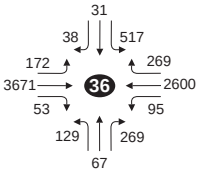
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

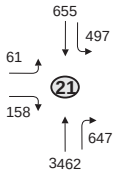
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



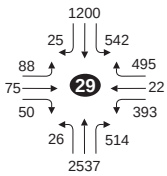
North/South: SB 405 Ramps
East/West: Ventura Blvd.



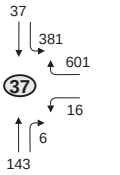
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

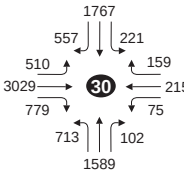


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

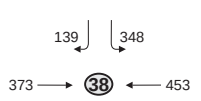
NO DATA AVAILABLE

22

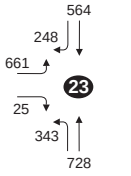
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



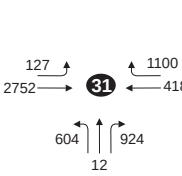
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



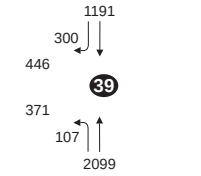
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



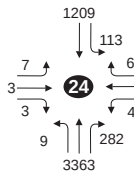
North/South: NB 405 Ramps
East/West: Burbank Blvd.



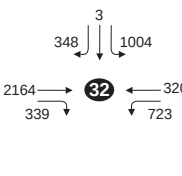
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



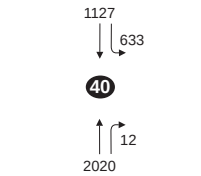
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



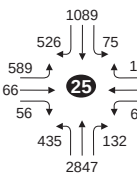
North/South: SB 405 Ramps
East/West: Burbank Blvd.



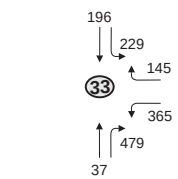
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



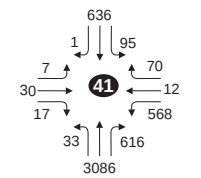
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



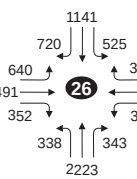
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



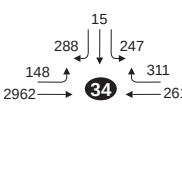
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



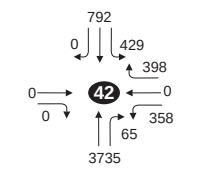
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



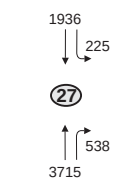
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

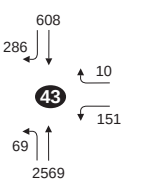


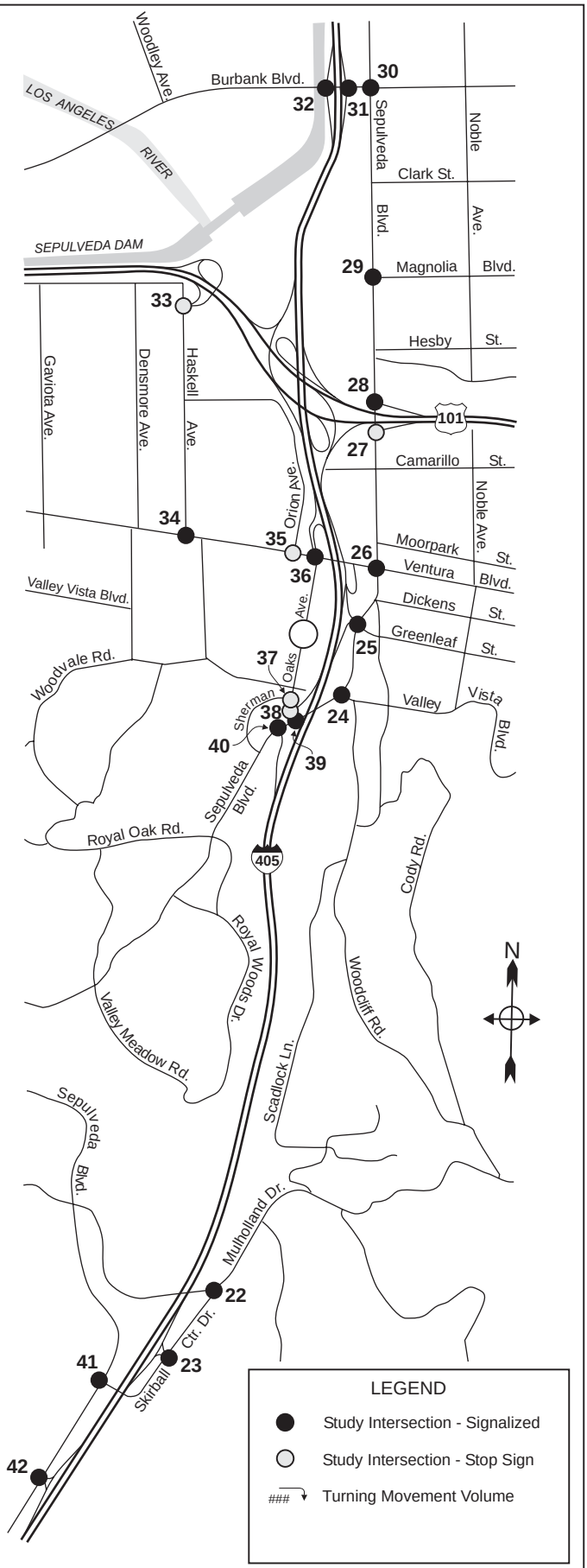
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.1 (Year 2031) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure26B

Alternative 2A.1 Level of Service Analysis – Year 2031

The results of the level of service analysis for the year 2031 are summarized in Table VI.14. Thirty-nine of the forty-nine remaining analysis locations are forecast to perform at LOS F during one or both peak periods.

Table VI.14 – Alternative 2A.1 Year 2031 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	24.5	C	46.1	D
2	National Blvd & Sepulveda Blvd	Signalized	151.2	F	152.5	F
3	Pico Blvd & Sepulveda Blvd	Signalized	189.2	F	349.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	213.4	F	93.0	F
5	Olympic Blvd & Cotner Ave	Signalized	45.7	D	75.3	E
6	Olympic Blvd & Sepulveda Blvd	Signalized	205.6	F	306.0	F
7	Santa Monica Blvd & Cotner Ave	Signalized	282.6	F	181.7	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	302.1	F	300.7	F
9	Santa Monica Blvd & Veteran Ave	Signalized	57.6	E	75.3	E
10	Santa Monica Blvd & Westwood Blvd	Signalized	153.1	F	148.4	F
11	Wilshire Blvd & Sepulveda Blvd	Signalized	342.8	F	377.6	F
12	Wilshire Blvd & Veteran Ave	Signalized	294.0	F	336.1	F
13	Wilshire Blvd & Westwood Blvd	Signalized	181.6	F	225.1	F
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	51.3	D	172.3	F
16	Montana Ave & Veteran Ave	Signalized	132.4	F	126.5	F
17	Sunset Blvd & NB 405 Off-ramp	Signalized	33.2	C	24.8	C
18	Sunset Blvd & Veteran Ave	Signalized	224.5	F	137.3	F
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	12.3	B	37.6	D
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Signalized	140.5	F	297.9	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	18.3	B	19.5	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	163.5	F	164.6	F
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	264.7	F	185.2	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	321.0	F	204.2	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.5	A	95.3	F
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	68.3	E	94.7	F
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	32.0	C	255.8	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	392.2	F	598.6	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	85.3	F	234.1	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	197.4	F	203.1	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	77.0	F	43.8	E
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	10.6	B	8.5	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	35.8	D	25.1	C
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	27.8	C	8.4	A

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	73.4	E	95.8	F
37	Fiume Walk & Sherman Oak Ave	Unsignalized	176.5	F	26.5	D
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	6.1	A	8.2	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	115.1	F	16.2	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	107.7	F	22.8	C
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	556.8	F	299.6	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	389.0	F	405.8	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	36.3	D	18.2	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	115.4	F	228.3	F
45	Sunset Blvd & Church Lane	Signalized	53.3	D	105.1	F
46	Wilshire Blvd & Federal Ave	Signalized	354.8	F	372.6	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	182.9	F	106.5	F
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	188.1	F	994.6	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	122.3	F	223.8	F
50	SB 405 Off-ramp & Sawtelle Blvd	Signalized	100.0	F	142.2	F
51	Pico Blvd & Sawtelle Blvd	Signalized	117.5	F	212.2	F
52	National Blvd & Sawtelle Blvd	Signalized	155.9	F	172.0	F
53	National Blvd & SB 405 On-ramp	Signalized	16.7	B	34.3	C
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	DNE	DNE	DNE	DNE

N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp or street segment, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

Locations where the average delay per vehicle for the Alternative 2A.1 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VI.15 and VI.16. Nine intersections near the ramps that are closed in this alternative experience a reduction in control delay, while six study intersections that carry the redistributed volumes have higher delays.

Table VI.15 – Comparison of Alt. 1 (No Build) and Alt. 2A.1 Year 2031 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 2A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	350.4	F	342.8	F	-7.6
12	**Wilshire Blvd & Veteran Ave**	S	275.8	F	294.0	F	18.2
14	Montana Off-ramp & Sepulveda Blvd	S	83.7	F	DNE	DNE	-83.7
15	Montana Ave & Sepulveda Blvd	S	92.1	F	51.3	D	-40.8
16	Montana Ave & Veteran Ave	S	121.1	F	132.4	F	11.3
17	Sunset Blvd & NB 405 Off-ramp	S	103.5	F	33.2	C	-70.3
18	**Sunset Blvd & Veteran Ave**	S	195.8	F	224.5	F	28.7
19	Moraga On/Off-ramps & Sepulveda Blvd	S	232.8	F	12.3	B	-220.5
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	51.5	D	DNE	DNE	-51.5

Intersection		Control	ALT 1		ALT 2A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	601.4	F	140.5	F	-460.9
41	**Skirball Center Dr & N Sepulveda Blvd**	S	412.0	F	556.8	F	144.8
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	26.5	C	389.0	F	362.5
44	SB 405 On/Off-ramps & Church Lane	S	105.9	F	115.4	F	9.5
45	SB 405 On/Off-ramps & Church Lane	S	53.6	D	53.3	D	-0.3
54	Sepulveda Way & Sepulveda Blvd	S	2.2	A	DNE	DNE	-2.2

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VI.16 – Comparison Alt. 1 (No Build) and Alt. 2A.1 Year 2031 PM Peak Hour LOS

Intersection		Control	ALT 1		ALT 2A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	381.6	F	377.6	F	-4.0
12	**Wilshire Blvd & Veteran Ave**	S	326.6	F	336.1	F	9.5
14	Montana Off-ramp & Sepulveda Blvd	S	255.7	F	DNE	DNE	-255.7
15	Montana Ave & Sepulveda Blvd	S	179.0	F	172.3	F	-6.7
16	**Montana Ave & Veteran Ave**	S	112.6	F	126.5	F	13.9
17	Sunset Blvd & NB 405 Off-ramp	S	12.6	B	24.8	B	12.2
18	**Sunset Blvd & Veteran Ave**	S	126.3	F	137.3	F	11.0
19	Moraga On/Off-ramps & Sepulveda Blvd	S	84.1	F	37.6	D	-46.5
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	68.0	E	DNE	DNE	-68.0
21	**NB 405 Getty On-ramp & Sepulveda Blvd**	U	1.2	A	297.9	F	296.7
41	Skirball Center Dr & N Sepulveda Blvd	S	312.9	F	299.6	F	-13.3
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	71.8	E	405.8	F	334.0
44	**SB 405 On/Off-ramps & Church Lane**	S	134.1	F	228.3	F	94.2
45	SB 405 On/Off-ramps & Church Lane	S	111.9	F	105.1	F	-6.8
54	Sepulveda Way & Sepulveda Blvd	S	27.0	D	DNE	DNE	-27.0

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

2. Alternative 2A.2

In Alternative 2A.2, the southbound off-ramp to Valley Vista Boulevard is removed, and the T-intersection formed by the off-ramp with Fiume Walk is also removed. It is assumed that vehicles from the southbound I-405 will use the Burbank Boulevard off-ramp, vehicles from the southbound US-101 will use the Ventura Boulevard off-ramp, and vehicles from the northbound US-101 will use the Sepulveda Boulevard off-ramp as alternate routes. There are no other intersection geometry changes associated with this alternative besides the changes that are common to both Alternative 2A.1 and 2A.2.

Year 2015 AM peak hour intersection volumes are shown in Figures 27A and 27B, and PM peak hour volumes are shown in Figures 28A and 28B. Figures 29A and 29B contain year 2031 AM peak hour intersection volumes, and Figures 30A and 30B show year 2031 PM peak volumes.

Alternative 2A.2 Level of Service Analysis – Year 2015

A level of service (LOS) analysis at the project intersections was performed using forecast year 2015 turning movement volumes. The results of the level of service analysis are summarized in Table VI.17. Twenty-five of the forty-nine open analysis locations are forecast to perform at LOS F during one or both peak periods.

Table VI.17 – Alternative 2A.2 Year 2015 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	19.7	B	18.0	B
2	National Blvd & Sepulveda Blvd	Signalized	58.8	E	70.7	E
3	Pico Blvd & Sepulveda Blvd	Signalized	93.6	F	201.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	111.1	F	33.9	D
5	Olympic Blvd & Cotner Ave	Signalized	14.5	B	22.9	C
6	Olympic Blvd & Sepulveda Blvd	Signalized	91.9	F	158.9	F
7	Santa Monica Blvd & Cotner Ave	Signalized	150.1	F	84.2	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	155.1	F	163.9	F
9	Santa Monica Blvd & Veteran Ave	Signalized	28.9	C	34.4	C
10	Santa Monica Blvd & Westwood Blvd	Signalized	45.0	D	54.8	D
11	Wilshire Blvd & Sepulveda Blvd	Signalized	215.4	F	203.7	F
12	Wilshire Blvd & Veteran Ave	Signalized	122.5	F	163.5	F
13	Wilshire Blvd & Westwood Blvd	Signalized	51.5	D	73.4	E
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	24.4	C	70.6	E
16	Montana Ave & Veteran Ave	Signalized	38.6	D	36.1	D
17	Sunset Blvd & NB 405 Off-ramp	Signalized	17.4	B	11.0	B
18	Sunset Blvd & Veteran Ave	Signalized	124.5	F	51.3	D
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	123.0	F	50.8	D
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	9.8	A	276.9	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	10.5	B	10.2	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	82.0	F	55.7	E

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	149.1	F	80.1	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	208.1	F	94.5	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.4	A	22.4	C
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	28.3	C	48.4	D
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	19.6	B	122.2	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	233.2	F	396.1	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	21.2	C	100.9	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	105.3	F	84.8	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	25.3	D	17.3	C
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	9.4	A	8.1	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	18.4	B	16.3	B
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	12.9	B	4.9	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	45.9	D	34.5	C
37	Fiume Walk & Sherman Oak Ave	Unsignalized	66.0	F	11.9	B
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	DNE	DNE	DNE	DNE
39	Fiume Walk & N Sepulveda Blvd	Signalized	41.5	D	8.3	A
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	58.3	E	17.3	B
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	452.5	F	147.5	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	169.0	F	245.1	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	16.3	B	16.5	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	46.8	D	48.4	D
45	Sunset Blvd & Church Lane	Signalized	33.8	C	50.8	D
46	Wilshire Blvd & Federal Ave	Signalized	184.8	F	215.5	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	71.7	E	46.5	D
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	89.1	F	739.1	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	49.3	D	116.3	F
50	SB 405 Tennessee Off-ramp & Sawtelle Blvd	Signalized	35.7	D	73.7	E
51	Pico Blvd & Sawtelle Blvd	Signalized	46.0	D	105.0	F
52	National Blvd & Sawtelle Blvd	Signalized	110.6	F	94.3	F
53	National Blvd & SB 405 On-ramp	Signalized	8.2	A	8.6	A
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	1.7	A	9.0	A

N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

Locations where the average delay per vehicle for the Alternative 2A.2 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VI.18 and VI.19. The removal of the southbound I-405 exit to Valley Vista/Sepulveda Boulevard, which is not necessarily associated with this project, causes traffic to be redistributed through a highly congested area, and creates the impacts at intersection #24, #25, #26, #28, #29, #30, #31, #32, and #36.

Table VI.18 – Comparison of Alt. 1 (No Build) and Alt. 2A.2 Year 2015 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 2A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	220.0	F	215.4	F	-4.6
12	**Wilshire Blvd & Veteran Ave**	S	111.9	F	122.5	F	10.6
14	Montana Off-ramp & Sepulveda Blvd	S	38.5	D	DNE	DNE	-38.5
15	Montana Ave & Sepulveda Blvd	S	49.0	D	31.7	C	-17.3
16	Montana Ave & Veteran Ave	S	36.0	D	38.6	D	2.6
17	Sunset Blvd & NB 405 Off-ramp	S	44.7	D	17.4	B	-27.3
18	**Sunset Blvd & Veteran Ave**	S	103.8	F	124.5	F	20.7
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	7.3	A	DNE	DNE	-7.3
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	600.5	F	9.8	A	-590.7
24	**Valley Vista Blvd & Sepulveda Blvd**	S	78.0	E	82.0	F	4.0
25	**Greenleaf On/Off-ramps & Sepulveda Blvd**	S	135.3	F	149.1	F	13.8
26	**Ventura Blvd & Sepulveda Blvd**	S	189.0	F	208.1	F	19.1
28	**NB 101 Off-ramp & N Sepulveda Blvd**	S	22.7	C	83.0	F	60.3
29	Magnolia Blvd & N Sepulveda Blvd	S	19.6	B	32.3	C	12.7
30	**Burbank Blvd & N Sepulveda Blvd**	S	225.6	F	399.3	F	173.7
31	**Burbank Blvd & NB 405 On/Off-ramps**	S	21.0	C	85.1	F	64.1
32	**Burbank Blvd & SB 405 On/Off-ramps**	S	103.7	F	201.1	F	97.4
36	Ventura Blvd & SB 405 On/Off-ramps	S	44.3	D	45.9	D	1.6
37	Fiume Walk & Sherman Oak Ave	U	68.9	F	66.0	F	-2.9
38	Fiume Walk & SB 405 Off-ramp	U	3.4	A	DNE	DNE	-3.4
39	Fiume Walk & N Sepulveda Blvd	S	51.2	D	41.5	D	-9.7
40	SB 405 On-ramp & N Sepulveda Blvd	S	58.2	E	58.3	E	0.1
41	**Skirball Center Dr & N Sepulveda Blvd**	S	229.3	F	452.5	F	223.2
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	25.5	C	169.0	F	143.5
44	SB 405 On/Off-ramps & Church Lane	S	48.6	D	50.0	D	1.4

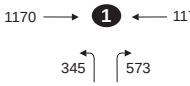
S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VI.19 – Comparison of Alt. 1 (No Build) and Alt. 2A.2 Year 2015 PM Peak Hour LOS

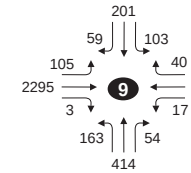
Intersection		Control	ALT 1		ALT 2A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	205.8	F	203.7	F	-2.1
12	**Wilshire Blvd & Veteran Ave**	S	163.0	F	163.5	F	0.5
14	Montana Off-ramp & Sepulveda Blvd	S	120.6	F	DNE	DNE	-120.6
15	Montana Ave & Sepulveda Blvd	S	70.3	E	70.6	E	0.3
16	Montana Ave & Veteran Ave	S	34.2	C	36.1	D	1.9
17	Sunset Blvd & NB 405 Off-ramp	S	11.1	B	11.0	B	-0.1
18	Sunset Blvd & Veteran Ave	S	48.1	D	51.3	D	3.2
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	8.0	A	DNE	DNE	-8.0
21	**NB 405 Getty On-ramp & Sepulveda Blvd**	U	0.8	A	276.9	F	276.1
24	Valley Vista Blvd & Sepulveda Blvd	S	74.0	E	55.7	E	-18.3
25	Greenleaf On/Off-ramps & Sepulveda Blvd	S	85.3	F	80.1	F	-5.2
26	Ventura Blvd & Sepulveda Blvd	S	100.2	F	94.5	F	-5.7
27	NB 101 On-ramp & Sepulveda Blvd	U	23.5	C	22.4	C	-1.1
28	NB 101 Off-ramp & N Sepulveda Blvd	S	28.2	C	48.4	D	20.2
29	Magnolia Blvd & N Sepulveda Blvd	S	125.2	F	122.2	F	-3.0
30	**Burbank Blvd & N Sepulveda Blvd**	S	383.8	F	396.1	F	12.3
31	Burbank Blvd & NB 405 On/Off-ramps	S	101.6	F	100.9	F	-0.7
32	**Burbank Blvd & SB 405 On/Off-ramps**	S	77.8	E	84.8	F	7.0
36	Ventura Blvd & SB 405 On/Off-ramps	S	30.3	C	34.5	C	4.2
37	Fiume Walk & Sherman Oak Ave	U	14.1	B	11.9	B	-2.2
38	Fiume Walk & SB 405 Off-ramp	U	5.7	A	DNE	DNE	-5.7
39	Fiume Walk & N Sepulveda Blvd	S	11.8	B	8.3	A	-3.5
40	SB 405 On-ramp & N Sepulveda Blvd	S	17.7	B	17.3	B	-0.4
41	Skirball Center Dr & N Sepulveda Blvd	S	151.0	F	147.5	F	-3.5
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	65.6	E	245.1	F	179.5
44	SB 405 On/Off-ramps & Church Lane	S	49.2	D	48.4	D	-0.8

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

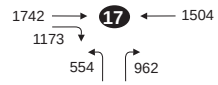
North/South: NB 405 Off-Ramp
East/West: National Blvd.



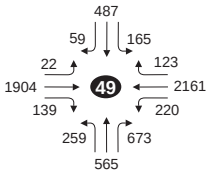
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



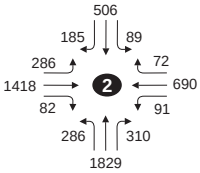
North/South: NB 405 Ramps
East/West: Sunset Blvd.



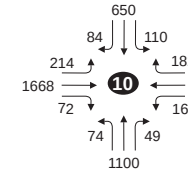
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



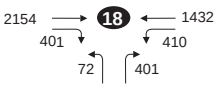
North/South: Sepulveda Blvd.
East/West: National Blvd.



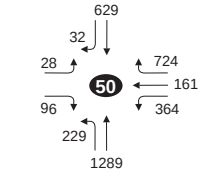
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



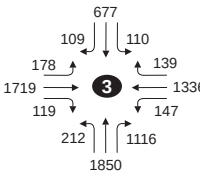
North/South: Veteran Ave.
East/West: Sunset Blvd.



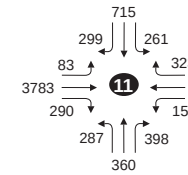
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



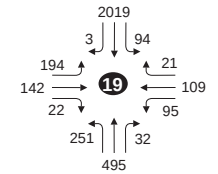
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



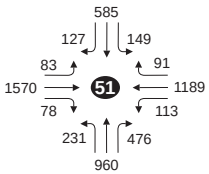
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



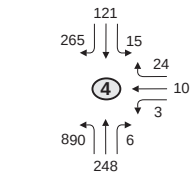
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



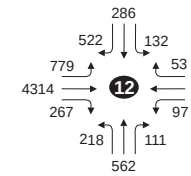
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



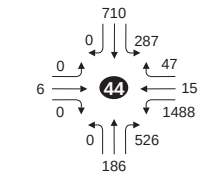
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



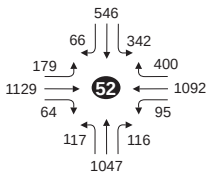
North/South: Veteran Ave.
East/West: Wilshire Blvd.



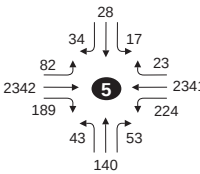
North/South: Church Ln.
East/West: SB 405 Ramps.



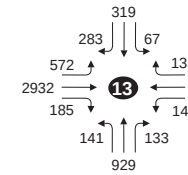
North/South: Sawtelle Blvd.
East/West: National Blvd.



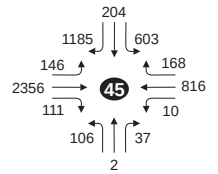
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

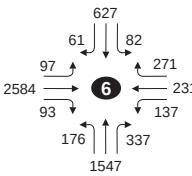


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

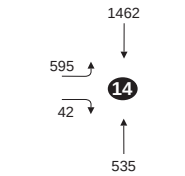


North/South: SB 405 On-Ramp
East/West: National Blvd.

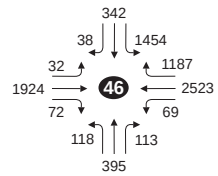
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



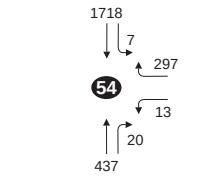
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



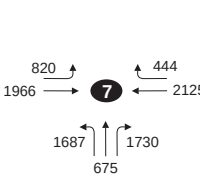
North/South: Federal Ave.
East/West: Wilshire Blvd.



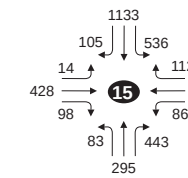
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



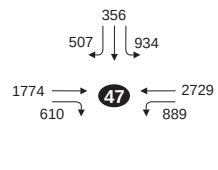
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



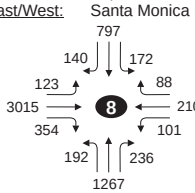
North/South: Sepulveda Blvd.
East/West: Montana Ave.



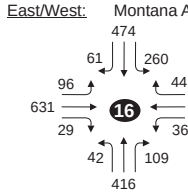
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



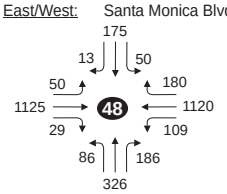
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

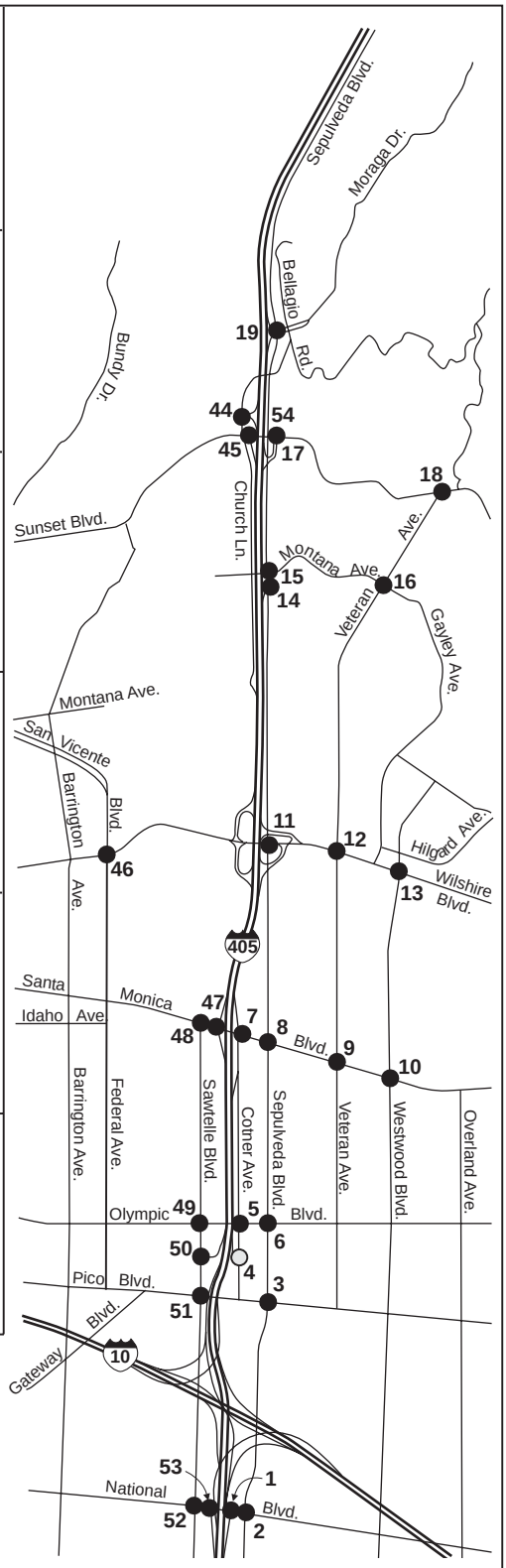


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

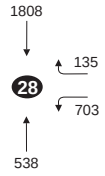
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 (Year 2015) Study Intersection Volumes (Southern Area) - AM Peak Hour

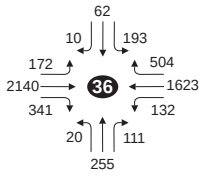
Figure 27A

North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

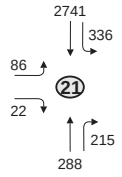
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



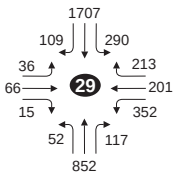
North/South: SB 405 Ramps
East/West: Ventura Blvd.



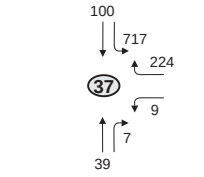
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



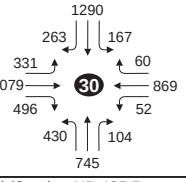
North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.



North/South: Skirball Center Dr.
East/West: Mulholland Dr.

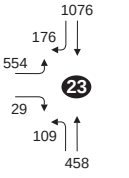
NO DATA AVAILABLE

North/South: Sepulveda Blvd.
East/West: Burbank Blvd.

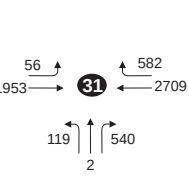


North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

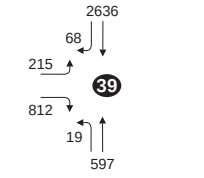
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



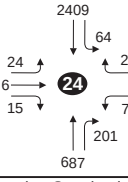
North/South: NB 405 Ramps
East/West: Burbank Blvd.



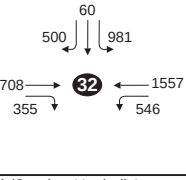
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



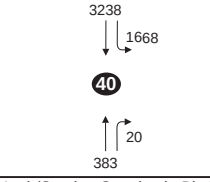
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



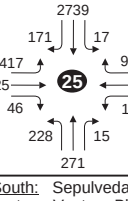
North/South: SB 405 Ramps
East/West: Burbank Blvd.



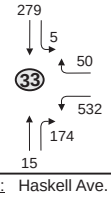
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



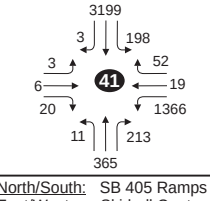
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



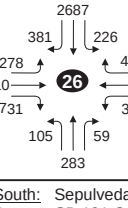
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



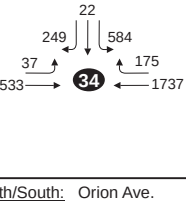
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



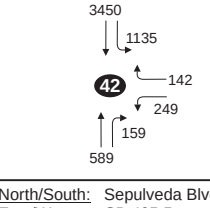
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



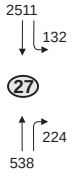
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



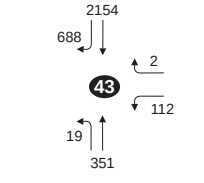
North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

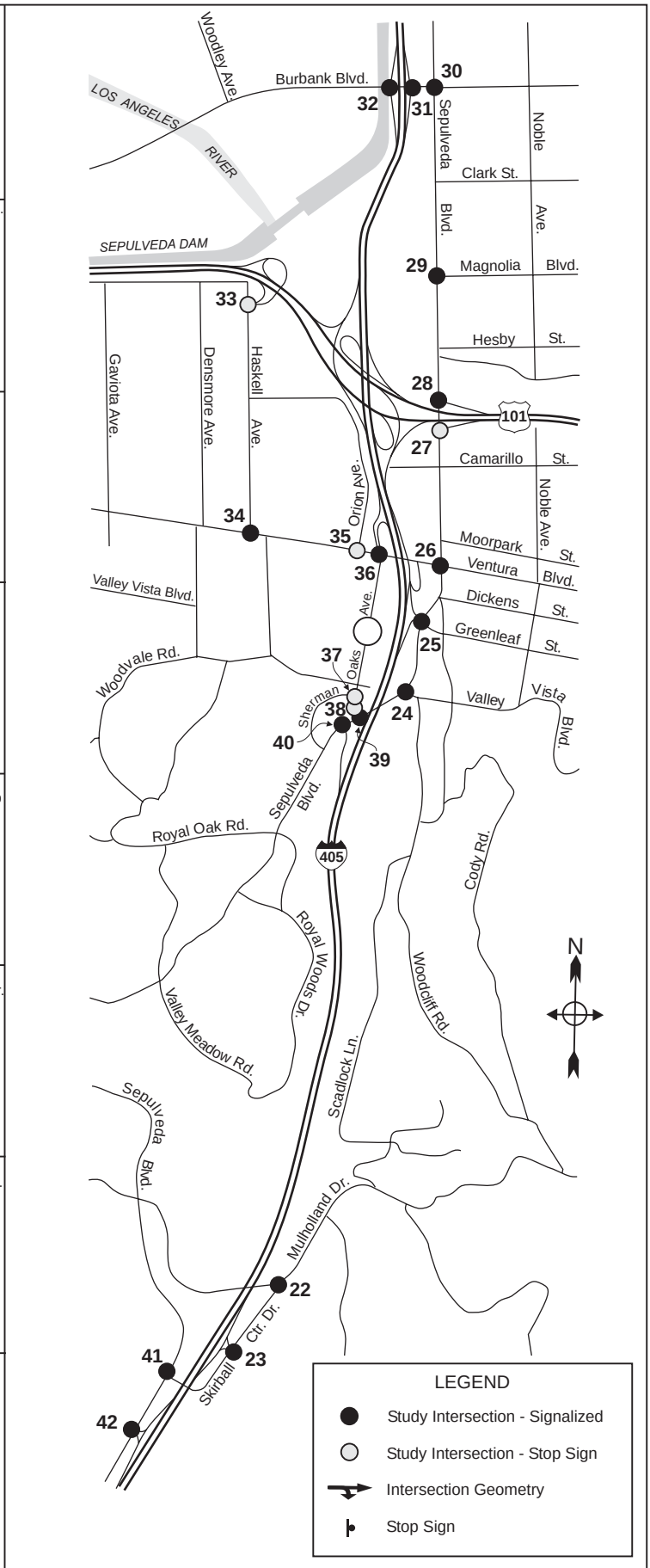


North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





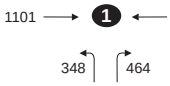
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

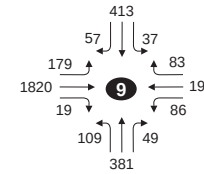
Alternative 2.2 (Year 2015) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 27B

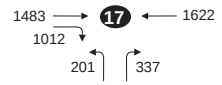
North/South: NB 405 Off-Ramp
East/West: National Blvd.



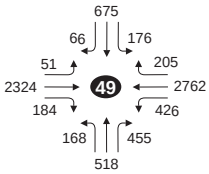
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



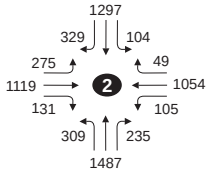
North/South: NB 405 Ramps
East/West: Sunset Blvd.



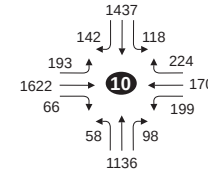
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



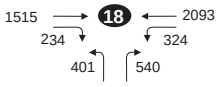
North/South: Sepulveda Blvd.
East/West: National Blvd.



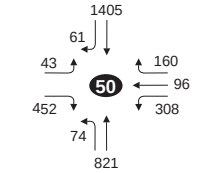
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



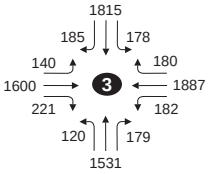
North/South: Veteran Ave.
East/West: Sunset Blvd.



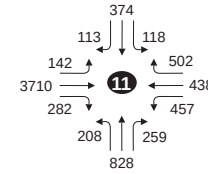
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



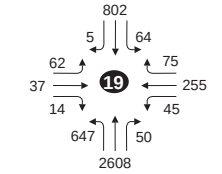
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



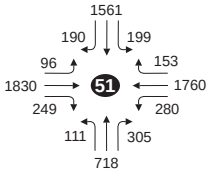
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



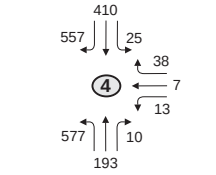
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



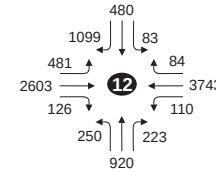
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



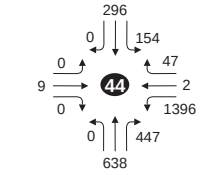
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



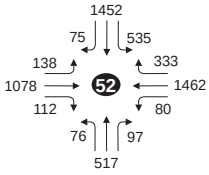
North/South: Veteran Ave.
East/West: Wilshire Blvd.



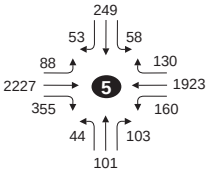
North/South: Church Ln.
East/West: SB 405 Ramps.



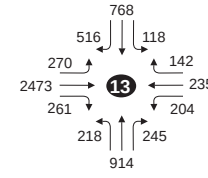
North/South: Sawtelle Blvd.
East/West: National Blvd.



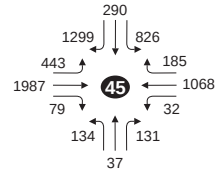
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

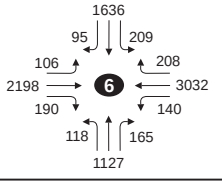


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

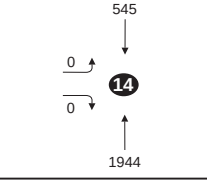


North/South: SB 405 On-Ramp
East/West: National Blvd.

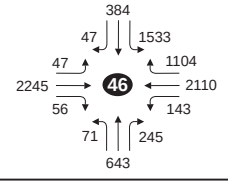
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



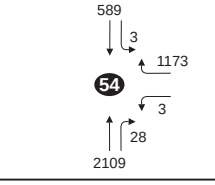
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



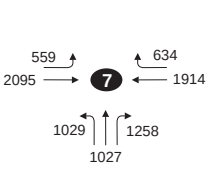
North/South: Federal Ave.
East/West: Wilshire Blvd.



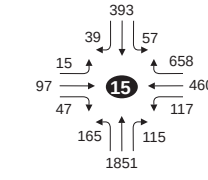
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



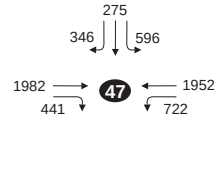
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



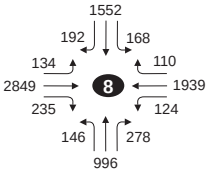
North/South: Sepulveda Blvd.
East/West: Montana Ave.



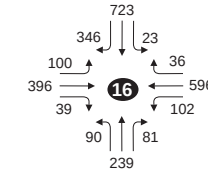
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



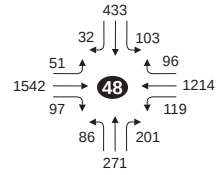
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

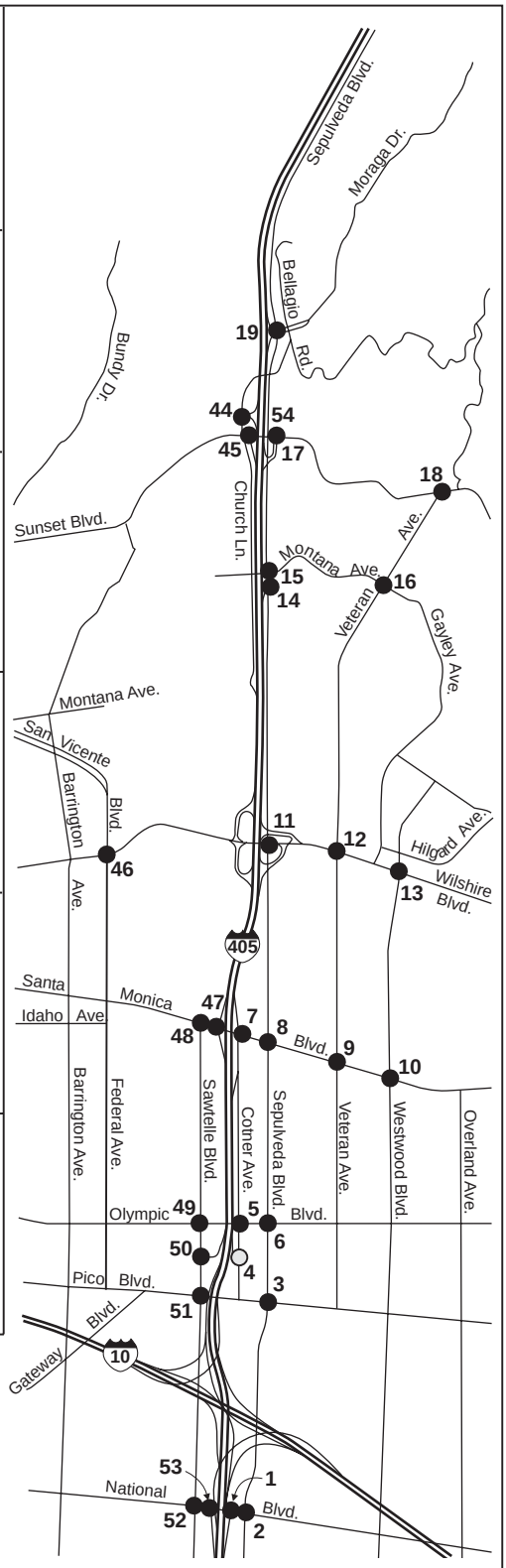


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

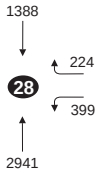
Alternative 2.2 (Year 2015) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 28A

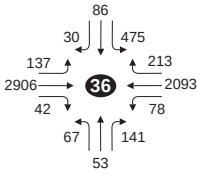
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

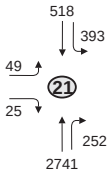
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



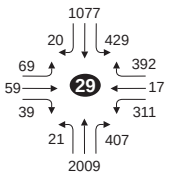
North/South: SB 405 Ramps
East/West: Ventura Blvd.



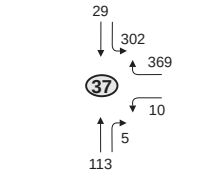
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

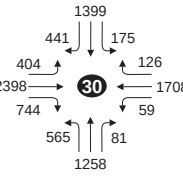


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

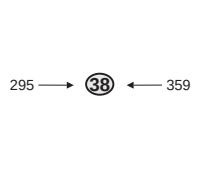
NO DATA AVAILABLE

22

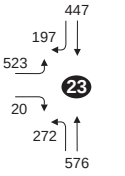
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



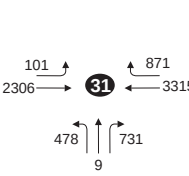
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



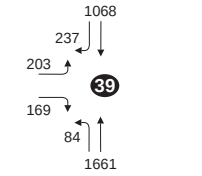
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



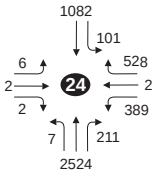
North/South: NB 405 Ramps
East/West: Burbank Blvd.



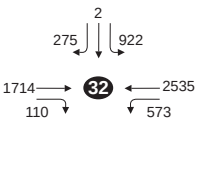
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



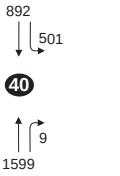
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



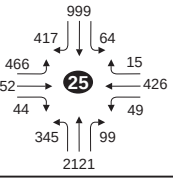
North/South: SB 405 Ramps
East/West: Burbank Blvd.



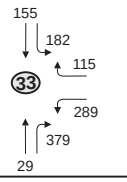
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



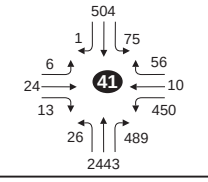
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



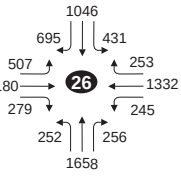
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



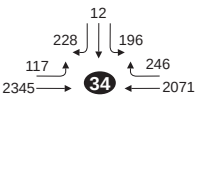
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



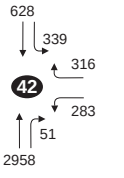
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



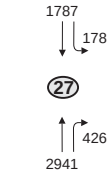
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

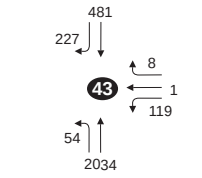


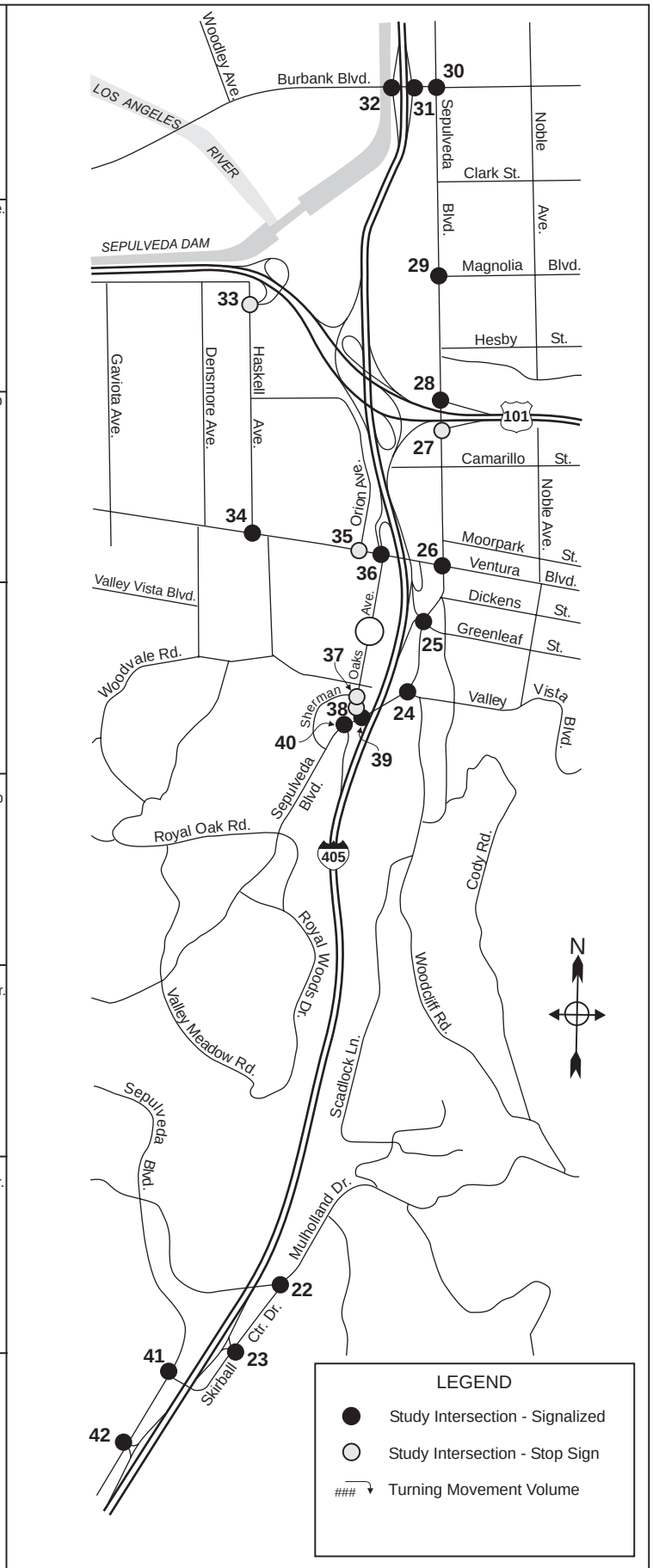
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





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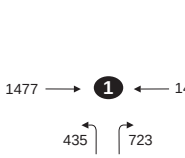
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

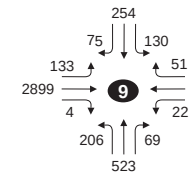
Alternative 2.2 (Year 2015) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 28B

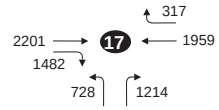
North/South: NB 405 Off-Ramp
East/West: National Blvd.



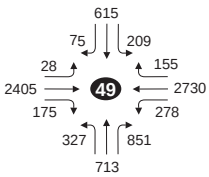
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



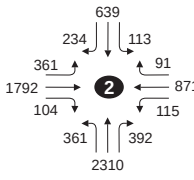
North/South: NB 405 Ramps
East/West: Sunset Blvd.



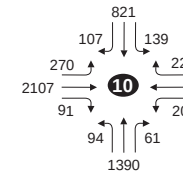
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



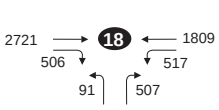
North/South: Sepulveda Blvd.
East/West: National Blvd.



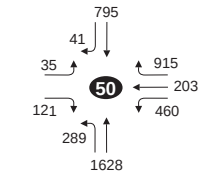
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



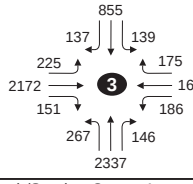
North/South: Veteran Ave.
East/West: Sunset Blvd.



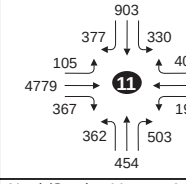
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



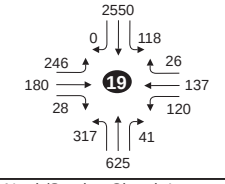
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



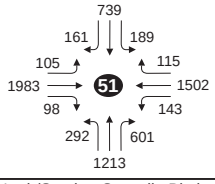
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



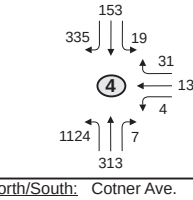
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



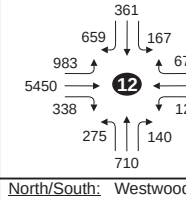
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



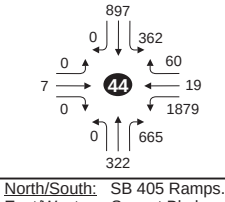
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



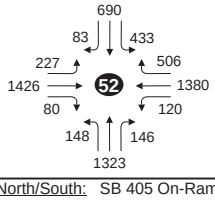
North/South: Veteran Ave.
East/West: Wilshire Blvd.



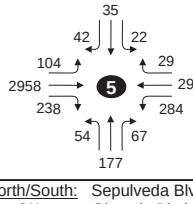
North/South: Church Ln.
East/West: SB 405 Ramps.



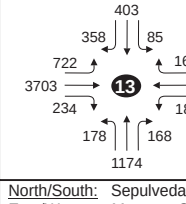
North/South: Sawtelle Blvd.
East/West: National Blvd.



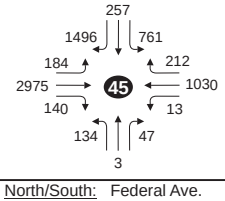
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

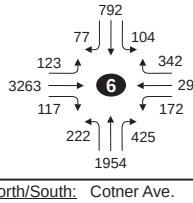


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

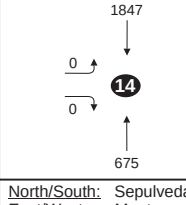


North/South: SB 405 On-Ramp
East/West: National Blvd.

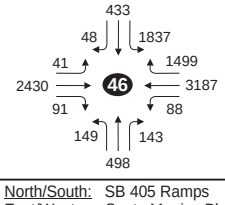
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



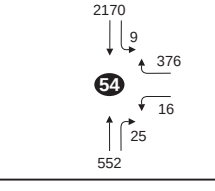
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



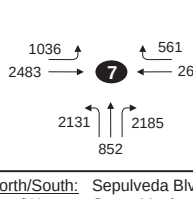
North/South: Federal Ave.
East/West: Wilshire Blvd.



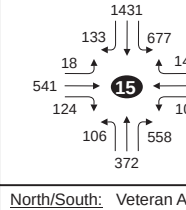
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



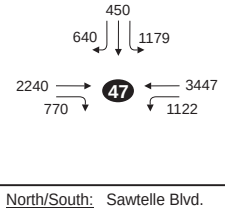
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



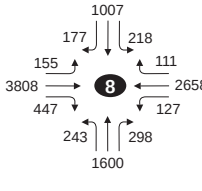
North/South: Sepulveda Blvd.
East/West: Montana Ave.



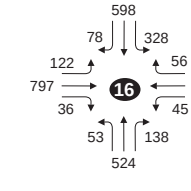
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



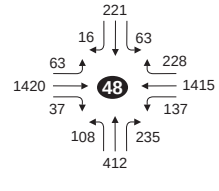
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

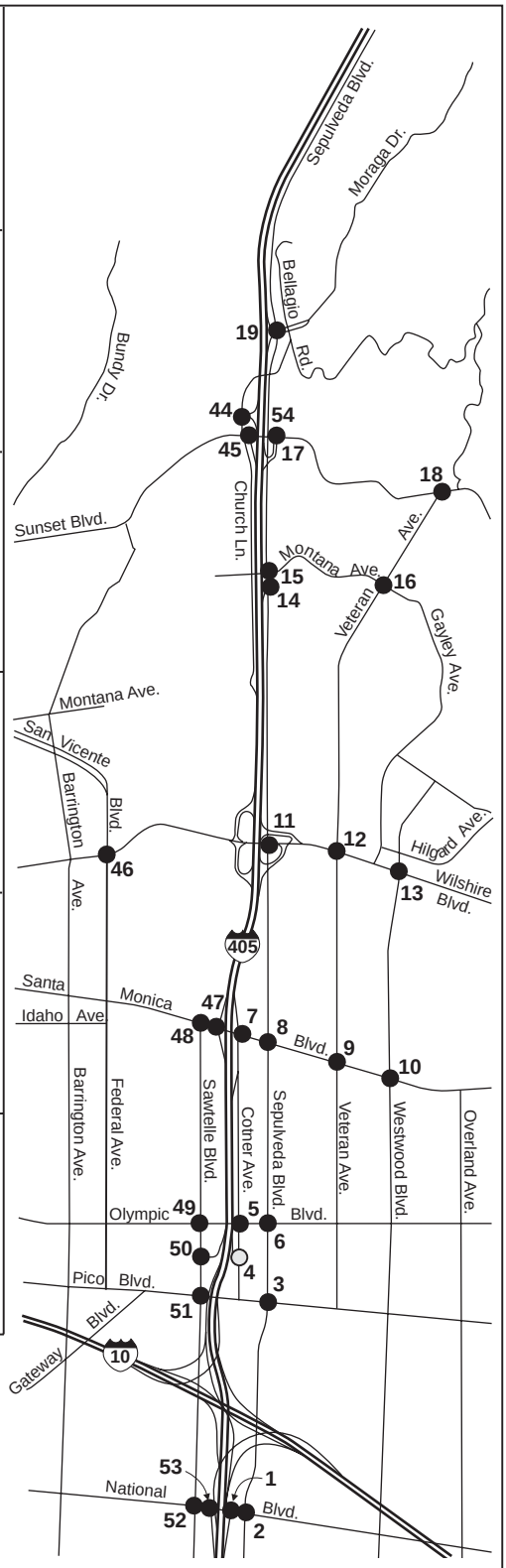


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

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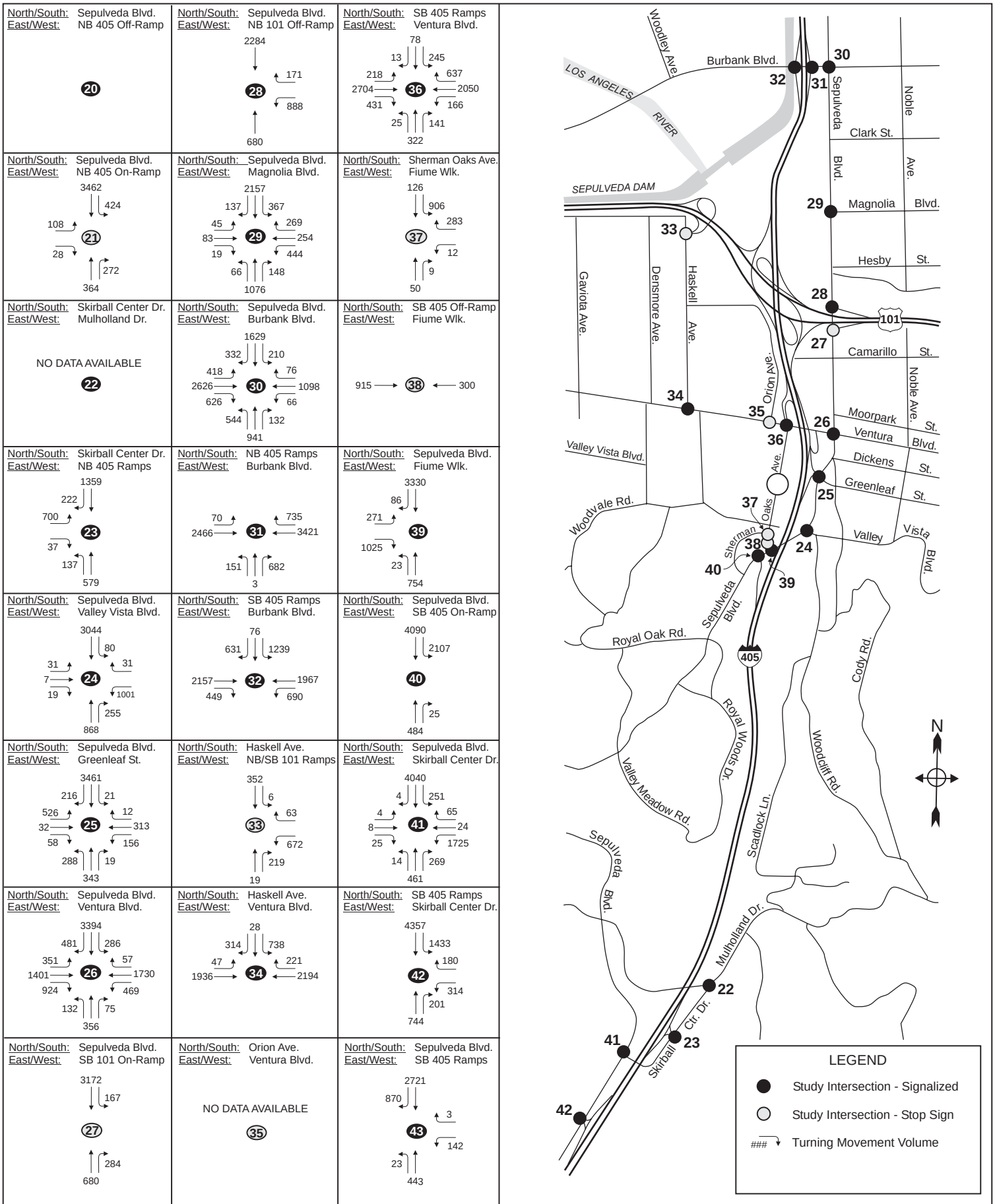
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 (Year 2031) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 29A



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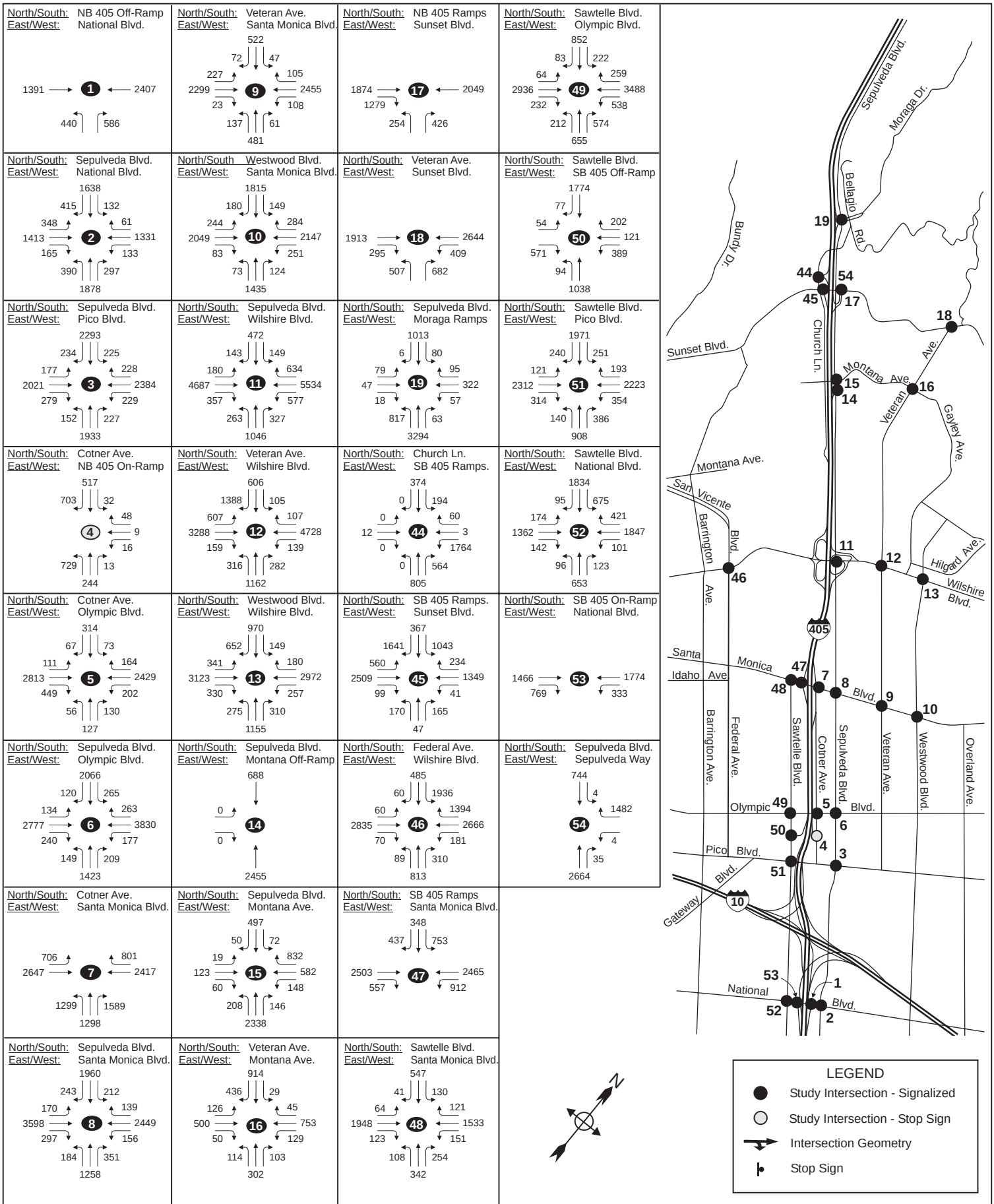
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 (Year 2031) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 29B



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 (Year 2031) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 30A

North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp

1754
284
28
504
3715

North/South: SB 405 Ramps
East/West: Ventura Blvd.

109
38 600
172 269
3671 36 2644
53 99
85 177
67

North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp

655
497
61 21
32 319
3462

North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.

1361
25 542
88 495
75 29 22
50 393
26 514
2537

North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

37
381
466
37
12
6
143

North/South: Skirball Center Dr.
East/West: Mulholland Dr.

NO DATA AVAILABLE

22

North/South: Sepulveda Blvd.
East/West: Burbank Blvd.

1767
557 221
510 159
3029 30 2157
940 75
713 102
1589

North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

373 38 453

North/South: Skirball Center Dr.
East/West: NB 405 Ramps

564
248
661 23
25
343 728

North/South: NB 405 Ramps
East/West: Burbank Blvd.

127 1100
2913 31 4187
604 924
12

North/South: Sepulveda Blvd.
East/West: Fiume Wlk.

1349
300
256 39
213
107 2099

North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.

1367
128
7 666
3 24 3
3 491
9 267
3188

North/South: SB 405 Ramps
East/West: Burbank Blvd.

3
348 1165
2164 32 3202
339 723

North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp

1127
633
40
12
2020

North/South: Sepulveda Blvd.
East/West: Greenleaf St.

1262
526 82
589 19
66 25 538
56 61
435 125
2679

North/South: Haskell Ave.
East/West: NB/SB 101 Ramps

196
229
33 145
365
479
37

North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.

636
1 95
7 70
30 41 12
17 568
33 616
3086

North/South: Sepulveda Blvd.
East/West: Ventura Blvd.

1321
879 545
640 320
1491 26 1682
352 310
318 323
2094

North/South: Haskell Ave.
East/West: Ventura Blvd.

15
288 247
148 311
2962 34 2616

North/South: SB 405 Ramps
East/West: Skirball Center Dr.

792
429
398
42
358
65
3735

North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

2257
225
27
538
3715

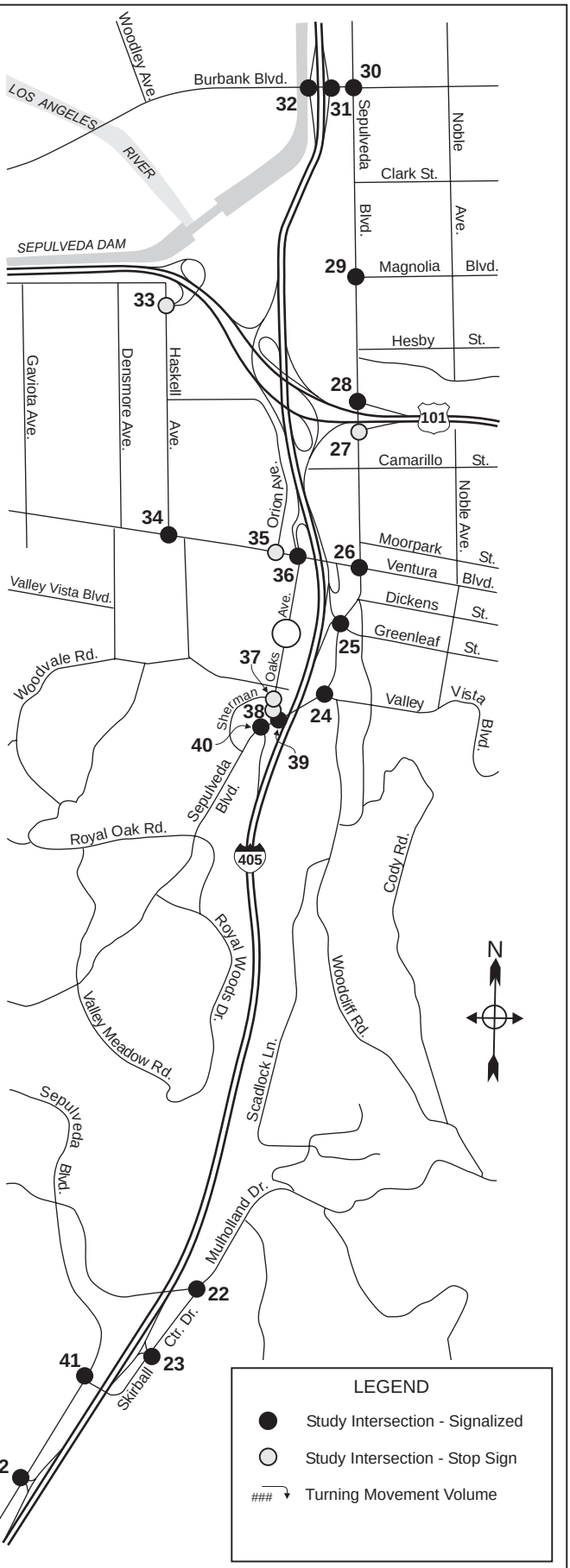
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps

608
286
10
43 1
151
69
2569



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 2.2 (Year 2031) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 30B

Alternative 2A.2 Level of Service Analysis – Year 2031

The results of the level of service analysis for the year 2031 are summarized in Table VI.20. Forty locations are forecast to perform at LOS F during one or both peak periods.

Table VI.20 – Alternative 2A.2 Year 2031 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	24.5	C	46.1	D
2	National Blvd & Sepulveda Blvd	Signalized	151.2	F	152.5	F
3	Pico Blvd & Sepulveda Blvd	Signalized	189.2	F	349.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	213.4	F	93.0	F
5	Olympic Blvd & Cotner Ave	Signalized	45.7	D	75.3	E
6	Olympic Blvd & Sepulveda Blvd	Signalized	205.6	F	306.0	F
7	Santa Monica Blvd & Cotner Ave	Signalized	282.6	F	181.7	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	302.1	F	300.7	F
9	Santa Monica Blvd & Veteran Ave	Signalized	57.6	E	75.3	E
10	Santa Monica Blvd & Westwood Blvd	Signalized	153.1	F	148.4	F
11	Wilshire Blvd & Sepulveda Blvd	Signalized	342.8	F	377.6	F
12	Wilshire Blvd & Veteran Ave	Signalized	294.0	F	336.1	F
13	Wilshire Blvd & Westwood Blvd	Signalized	181.6	F	225.1	F
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	51.3	D	172.3	F
16	Montana Ave & Veteran Ave	Signalized	132.4	F	126.5	F
17	Sunset Blvd & NB 405 Off-ramp	Signalized	28.6	C	12.0	B
18	Sunset Blvd & Veteran Ave	Signalized	224.5	F	137.3	F
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	232.8	F	84.1	F
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	50.6	F	422.5	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	18.3	B	19.5	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	179.8	F	137.8	F
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	283.9	F	176.1	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	346.8	F	205.6	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.5	A	90.7	F
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	83.0	F	123.2	F
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	32.3	C	249.6	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	399.3	F	619.9	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	85.1	F	239.0	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	201.1	F	210.6	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	77.0	F	43.8	E
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	10.6	B	8.5	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	35.8	D	25.1	C
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	27.8	C	8.4	A

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	82.0	F	85.7	F
37	Fiume Walk & Sherman Oak Ave	Unsignalized	171.9	F	17.0	C
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	DNE	DNE	DNE	DNE
39	Fiume Walk & N Sepulveda Blvd	Signalized	101.1	F	10.2	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	107.8	F	21.5	C
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	556.8	F	299.6	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	389.0	F	405.8	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	36.3	D	18.2	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	103.6	F	130.6	F
45	Sunset Blvd & Church Lane	Signalized	53.6	D	111.9	F
46	Wilshire Blvd & Federal Ave	Signalized	354.8	F	372.6	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	182.9	F	106.5	F
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	188.1	F	994.6	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	122.3	F	223.8	F
50	SB 405 Off-ramp & Sawtelle Blvd	Signalized	100.0	F	142.2	F
51	Pico Blvd & Sawtelle Blvd	Signalized	117.5	F	212.2	F
52	National Blvd & Sawtelle Blvd	Signalized	155.9	F	172.0	F
53	National Blvd & SB 405 On-ramp	Signalized	16.7	B	34.3	C
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	2.2	A	27.0	D

N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.
Intersections highlighted in **bold** type indicate locations that are forecast to operate at LOS F in the forecast year in the Alternative 2Abuild condition.

Locations where the average delay per vehicle for the Alternative 2A.2 peak hour in the year 2031 changes from the Alternative 1 (no build) condition are summarized in Tables VI.21 and VI.22. Fourteen intersections adjacent to ramps that are closed in this alternative experience a reduction in control delay, while eight study intersections that carry the redistributed volumes experience higher average delays. The removal of the southbound I-405 exit to Valley Vista/Sepulveda Boulevard, which is not necessarily associated with this project, causes traffic to be redistributed through a highly congested area, and creates the impacts at intersection #24, #25, #26, #28, #29, #30, #31, #32, and #36.

Table VI.21 – Comparison of Alt. 1 (No Build) and Alt. 2A.2 Year 2031 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 2A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	350.4	F	342.8	F	-7.6
12	**Wilshire Blvd & Veteran Ave**	S	275.8	F	294.0	F	18.2
14	Montana Off-ramp & Sepulveda Blvd	S	83.7	F	DNE	DNE	-83.7
15	Montana Ave & Sepulveda Blvd	S	92.1	F	51.3	D	-40.8
16	**Montana Ave & Veteran Ave**	S	121.1	F	132.4	F	11.3
17	Sunset Blvd & NB 405 Off-ramp	S	103.5	F	28.6	C	-74.9
18	**Sunset Blvd & Veteran Ave**	S	195.8	F	224.5	F	28.7
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	51.5	D	DNE	DNE	-51.5
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	601.4	F	50.6	F	-550.8
24	**Valley Vista Blvd & Sepulveda Blvd**	S	163.5	F	179.8	F	16.3
25	**Greenleaf On/Off-ramps & Sepulveda Blvd**	S	264.7	F	283.9	F	19.2
26	**Ventura Blvd & Sepulveda Blvd**	S	321.0	F	346.8	F	25.8
28	**NB 101 Off-ramp & N Sepulveda Blvd**	S	68.3	E	83.0	F	14.7
29	Magnolia Blvd & N Sepulveda Blvd	S	32.0	C	32.3	C	0.3
30	**Burbank Blvd & N Sepulveda Blvd**	S	392.2	F	399.3	F	7.1
31	Burbank Blvd & NB 405 On/Off-ramps	S	85.3	F	85.1	F	-0.2
32	**Burbank Blvd & SB 405 On/Off-ramps**	S	197.4	F	201.1	F	3.7
36	**Ventura Blvd & SB 405 On/Off-ramps**	S	74.4	E	82.0	F	7.6
37	Fiume Walk & Sherman Oak Ave	U	176.5	F	171.9	F	-4.6
38	Fiume Walk & SB 405 Off-ramp	U	6.1	A	DNE	DNE	-6.1
39	Fiume Walk & N Sepulveda Blvd	S	115.1	F	101.1	F	-14.0
40	SB 405 On-ramp & N Sepulveda Blvd	S	107.7	F	107.8	F	0.1
41	**Skirball Center Dr & N Sepulveda Blvd**	S	412.0	F	556.8	F	144.8
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	26.5	C	389.0	F	362.5
44	SB 405 On/Off-ramps & Church Lane	S	105.9	F	103.6	F	-2.3

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VI.22 – Comparison of Alt. 1 (No Build) and Alt. 2A.2 Year 2031 PM Peak Hour LOS

Intersection		Control	ALT 1		ALT 2A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	381.6	F	377.6	F	-4.0
12	**Wilshire Blvd & Veteran Ave**	S	326.6	F	336.1	F	9.5
14	Montana Off-ramp & Sepulveda Blvd	S	255.7	F	DNE	DNE	-255.7
15	Montana Ave & Sepulveda Blvd	S	179.0	F	172.3	F	-6.7
16	**Montana Ave & Veteran Ave**	S	112.6	F	126.5	F	13.9
17	Sunset Blvd & NB 405 Off-ramp	S	13.0	B	12.0	B	-1.0
18	**Sunset Blvd & Veteran Ave**	S	126.3	F	137.3	F	11.0
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	68.0	E	DNE	DNE	-68.0
21	**NB 405 Getty On-ramp & Sepulveda Blvd**	U	1.2	A	422.5	DNE	421.3
24	Valley Vista Blvd & Sepulveda Blvd	S	164.6	F	137.8	F	-26.8
25	Greenleaf On/Off-ramps & Sepulveda Blvd	S	185.2	F	176.1	F	-9.1
26	**Ventura Blvd & Sepulveda Blvd**	S	204.2	F	205.6	F	1.4
27	NB 101 On-ramp & Sepulveda Blvd	S	95.3	F	90.7	F	-4.6
28	**NB 101 Off-ramp & N Sepulveda Blvd**	S	94.7	F	123.2	F	28.5
29	Magnolia Blvd & N Sepulveda Blvd	S	255.8	F	249.6	F	-6.2
30	**Burbank Blvd & N Sepulveda Blvd**	S	598.6	F	619.9	F	21.3
31	**Burbank Blvd & NB 405 On/Off-ramps**	S	234.1	F	239.0	F	4.9
32	**Burbank Blvd & SB 405 On/Off-ramps**	S	203.1	F	210.6	F	7.5
36	Ventura Blvd & SB 405 On/Off-ramps	S	95.8	F	85.7	F	-10.1
37	Fiume Walk & Sherman Oak Ave	U	26.5	D	17.0	C	-9.5
38	Fiume Walk & SB 405 Off-ramp	U	8.2	A	DNE	DNE	-8.2
39	Fiume Walk & N Sepulveda Blvd	S	16.2	B	10.2	B	-6.0
40	SB 405 On-ramp & N Sepulveda Blvd	S	22.8	C	21.5	C	-1.3
41	Skirball Center Dr & N Sepulveda Blvd	S	312.9	F	299.6	F	-13.3
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	71.8	E	405.8	F	334.0
44	SB 405 On/Off-ramps & Church Lane	S	134.1	F	130.6	F	-3.5

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

VII. ALTERNATIVE 2B – NORTHBOUND HOV LANE PLUS NB HOV DROP RAMP AT SANTA MONICA BOULEVARD

This alternative incorporates all of the improvements included in Alternative 2A, along with a northbound HOV drop-ramp to Santa Monica Boulevard. The off-ramp would diverge from the left side of the HOV lane, drop down below (in a tunnel under) the northbound side of the freeway, and exit onto Cotner Avenue just south of the merge between the mainline off-ramp and Cotner Avenue. This merge between the HOV drop-ramp, the freeway off-ramp, and Cotner Avenue will occur approximately 500 feet south of the intersection of Santa Monica Boulevard and Cotner Avenue. The drop-ramp will be available for use by high-occupancy vehicles as well as transit buses.

In order to facilitate the installation of the HOV drop-ramp, additional widening is required along the east side of Interstate 405, along with the realignment of the northbound traffic lanes. Minor realignment of Cotner Avenue between Missouri Avenue and Nebraska Avenue is also necessary, as well as realignment of the northbound Olympic/Pico on-ramp and the northbound Santa Monica Boulevard off-ramp from Interstate 405.

A. Freeways

The Alternative 2B freeway mainline conditions are the same as the Alternative 2A conditions. Refer to the Alternative 2A section on Freeways for the estimated congestion period and vehicular delay.

B. Access Ramps

The Alternative 2B ramp conditions are the same as the Alternative 2A conditions, with the addition of a northbound HOV drop-ramp at Santa Monica Boulevard. Vehicles traveling in the HOV lane that wish to go to Santa Monica Boulevard will be able to exit directly from the carpool lane, which will reduce the volume on the general off-ramp lanes. This will also improve safety on the mainline by removing the weave movements made by vehicles that would move out of the carpool lane and merge across lanes to exit the freeway. Overall conditions on the mainline in the vicinity of Santa Monica Boulevard and on the off-ramps are expected to improve from the Alternative 1 condition. Refer to the Alternative 2A section on Access Ramps for forecast conditions at all other locations.

C. Intersections

Intersection geometry and volumes for Alternative 2B are the same as the Alternative 2A condition. Vehicles that are expected to utilize the HOV drop-ramp are assumed to exit from the general Santa Monica Boulevard off-ramp in Alternative 2A, so the net volume and turning movement splits at the intersection of Santa Monica Boulevard and Cotner Avenue (#7) remain the same. Refer to the Alternative 2A section on Intersections for the forecast level of service values.

VIII. ALTERNATIVE 3A – NORTHBOUND HOV LANE PLUS SOUTHBOUND HOV LANE WIDENING

A. Freeways

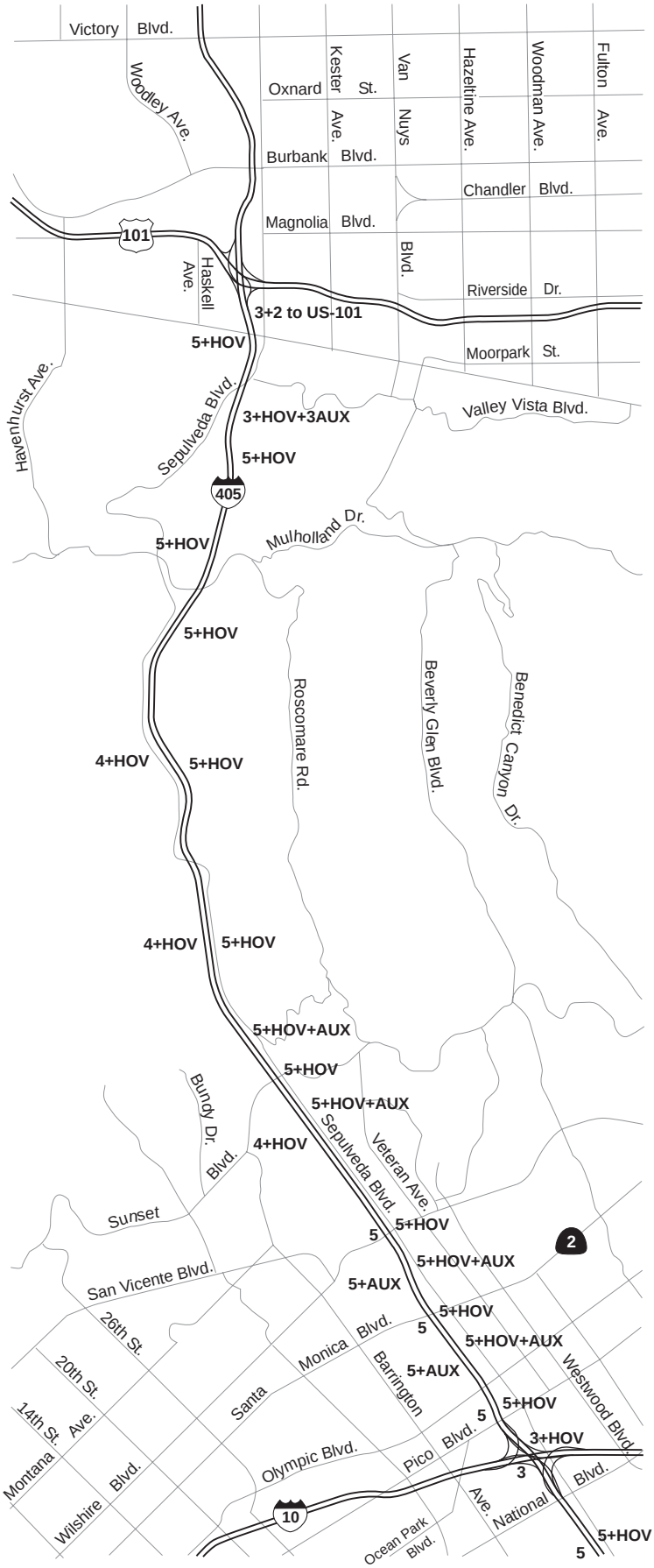
In this alternative, the existing facility is widened to add one standard northbound HOV lane and to standardize the non-standard southbound HOV lane, five mix flow lanes, median, and shoulder. It installs standard freeway cross-sections for the northbound and southbound Interstate 405 within the project limits, except through the Interstate 405/10 interchange. It provides for a 12-foot half median, 12-foot HOV lane, 4-foot HOV buffer, five 12-foot mixed flow lanes, and a 10-foot outside shoulder in each direction of travel. Interstate 405 will be widened along the east side similar to Alternative 2A, and along most of the west side throughout the project limits. Other changes associated with this alternative that are not part of Alternative 2 include:

- Close the southbound on-ramp from eastbound Sunset Boulevard. In conjunction with this ramp closure, the ramp intersection located immediately north of the Sunset Boulevard/Church Lane Intersection will be reconfigured so that the existing "pork chop" island is eliminated and the middle lane at the northbound approach will be changed from a through lane to a shared through/right-turn lane.
- Approximately 2,300 feet of Sepulveda Boulevard will be realigned along the west side of Interstate 405 north of the Getty Center/Interstate 405 Interchange due to the widening planned along the west side of Interstate 405.
- Most of Church Lane between approximately Chenault Street and Kiel Street will be realigned to the west to facilitate the Interstate 405 widening.

The proposed improvements associated with Alternative 3A do not affect forecast mainline volumes, and the volumes shown in Figures 9 and 10 apply for this alternative as well. The reduction in vehicular delay compared to the Alternative 1 (No Build) condition is summarized in Table VIII.1.

Table VIII.1 – Alternative 3A: Decrease in Daily Vehicular Delay Compared to Alternative 1

I-405 Freeway Segment	Decrease in Daily Vehicular Delay Compared to Alternative 1 (veh-hours)	
	Year 2015	Year 2031
Northbound Mainline	14,860	16,060
Southbound Mainline	420	80
Southbound HOV Lane	40	50



LEGEND

#	I-405 Main Line Travel Lanes
AUX	Auxiliary Lane
HOV	High-Occupancy Vehicle Lane

N

NOT TO SCALE

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I-405 HOV Lane Over Sepulveda Pass (I-10 TO US-101) Project

Alternative 3 I-405 Mainline Travel Lanes

Figure 31

B. Ramps and Connectors

As in Alternative 2A, there are two sub-alternatives for ramp configuration. Features that are common to both sub-alternatives include:

1. Wilshire Boulevard Interchange Improvements

The Wilshire Boulevard Interchange will be improved in both directions of Interstate 405 to provide full movements and eliminate freeway weaving. The northbound on-ramp from eastbound Wilshire Boulevard will be grade-separated from Sepulveda Boulevard and from the northbound off-ramp to westbound Wilshire Boulevard. In addition, the southbound off-ramp to eastbound Wilshire Boulevard will be grade separated from the southbound on-ramp from westbound Wilshire Boulevard.

2. Closure of the Northbound I-405 Exit at Montana Avenue

The northbound I-405 exit to Montana Avenue will be removed to allow for the freeway widening in this area. Vehicles that currently use this ramp are redistributed to the Wilshire Boulevard and Sunset Boulevard off-ramps in the ramp analysis.

3. Sunset Boulevard Northbound Ramp Improvements

The northbound Sunset Boulevard interchange will be modified to maintain standard freeway and ramp shoulder widths and to accommodate widening of northbound 405 mainline. The new Sunset Boulevard Overcrossing will have two exclusive lanes for the northbound on-ramp from eastbound Sunset Boulevard.

4. Getty Center Drive Northbound Ramp Improvements

The northbound off- and on-ramps to Getty Center will be realigned to form a complete diamond interchange at Sepulveda Boulevard. The two existing separate 3-legged ramp intersections will be replaced with a single 4-legged ramp intersection.

5. Relocation of the Southbound Interchange at Skirball Center Drive

The southbound Skirball Center Drive Interchange will be relocated approximately 1,900 feet to the south. The proposed new hook ramps will form a ‘T’ intersection with Sepulveda Boulevard. This relocation will eliminate the existing ramp intersection that is located 65-feet east of the Skirball Center Drive/ Sepulveda Boulevard Intersection.

1. Alternative 3A.1

In addition to the improvements that are common to both sub-alternatives, Alternative 3A.1 includes a new northbound I-405 on-ramp from westbound Sunset Boulevard. There is not enough room between the Sunset Boulevard interchange and the Moraga Drive interchange to maintain both sets of ramps, so construction of the on-ramp at Sunset Boulevard would require the Moraga Drive on- and off-ramps to be removed. Vehicles that currently utilize the Moraga Drive ramps would be redistributed to the Sunset Boulevard ramps and the Getty Center Drive ramps.

Sepulveda Way is a short two-lane street segment that connects Sepulveda Boulevard and Sunset Boulevard, which are grade separated. The design for the new northbound on-ramp at Sunset Boulevard would also require Sepulveda Way to be closed. Vehicles that currently use Sepulveda Way would need to take an alternate route, such as Church Lane.

Northbound and Southbound AM and PM peak hour ramp volumes forecast for year 2015 for the Alternative 3A.1 case are listed in Tables VIII.2 and VIII.3, respectively. These volumes are also shown in Figures 32A and 32B. The southbound on-ramp at Santa Monica Boulevard and southbound on-ramp from eastbound Wilshire Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods, but

the ramp volumes at these locations are the same as in Alternative 1 (the no build condition) and the capacity issues are not related to the HOV Lane project.

In a queuing analysis for this scenario, all ramp facilities were found to be adequate for the forecast year 2015 conditions.

Table VIII.2 – Alternative 3A.1 Year 2015 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	918	812
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,165	1,141
30.68	NB Off To Santa Monica Blvd.	2	3,000	2,462	2,018
31.01	NB On From Santa Monica Blvd.	3	2,700	920	1,316
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,136	1,284
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	1,245	865
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	675	703
31.64	SEG NB On From WB Wilshire Blvd.	1	900	761	833
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,516	538
32.99	NB On From EB Sunset Blvd.	2	1,800	1,173	1,012
32.99	NB On From WB Sunset Blvd.	2	1,800	363	907
33.3	NB Off To Moraga Drive	N/A	N/A	0	0
33.47	NB On From Moraga Drive	N/A	N/A	0	0
34.73	NB On From Getty Center Drive	2	1,800	551	654
34.73	NB Off to Getty Center Drive	2	3,000	466	187
36.69	NB Off to Mulholland/Rimerton	1	1,500	583	543
36.99	NB On from Mulholland/Rimerton	2	1,800	285	469
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1500	488	562
38.77	NB On From Greenleaf St	2	1,800	647	1,188
	US-101 NB Off to Sepulveda Blvd	1	1,500	970	662

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

Table VIII.3 – Alternative 3A.1 Year 2015 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	721	873
30.14	SB Off to Olympic/Pico	1	1,500	1,249	564
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,183**	**2,138**
31.03	SB Off to Santa Monica Blvd	2	3,000	1,797	1,217
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,081**	843
31.48	SB Off to EB Wilshire Blvd	1	1,500	902	699
31.65	SB On from WB Wilshire Blvd	2	1,800	1,299	1,371
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,045	802
32.90	SB On from EB Sunset Blvd	N/A	N/A	0	0
33.04	SB On from Church/Sunset Blvd	2	1,800	1,300	904
33.11	SB Off to Church/Sunset Blvd	2	3,000	1,550	1,445
34.65	SB On from Getty Center Dr	2	1,800	707	282
35.00	SB Off to Getty Center Dr	1	1,500	114	128
36.50	SB On from Skirball Center Dr	2	1,800	1,294	390
36.86	SB Off to Skirball Center Dr	1	1,500	391	599
38.22	SB On from Valley Vista/Sepulveda Blvd	2	1,800	1,688	510
38.61	SB Off to Valley Vista Blvd	1	1,500	185	385
39.09	SB On from Ventura Blvd	2	1,800	931	403
39.09	US-101 SB Off to Ventura Blvd	1	1,500	204	464
40.50	SB Off to Burbank Blvd	1	1,500	1,480	1,072

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

Peak hour ramp volumes forecast for year 2031 are listed in Tables VIII.9 and VIII.10, and these volumes are also shown in Figures 33A and 33B. The northbound off-ramp to Santa Monica Boulevard, northbound off-ramp to westbound Wilshire Boulevard, northbound on-ramp from westbound Wilshire Boulevard, southbound off-ramp to Olympic/Pico Boulevard, southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, southbound on-ramp from Valley Vista/Sepulveda Boulevard, and the southbound on-ramp from Burbank Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods. However, only the northbound off-ramp to westbound Wilshire Boulevard and the southbound off-ramp to Burbank Boulevard experience increased volumes due to ramp closures associated with this alternative. The ramp volumes at all other locations are the same as in Alternative 1 (the no build condition) and the capacity issues are not related to the HOV Lane project.

Table VIII.4 – Alternative 3A.1 Year 2031 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	1,159	1,026
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,471	1,441
30.68	**NB Off To Santa Monica Blvd.**	2	3,000	**3,109**	2,548
31.01	NB On From Santa Monica Blvd.	3	2,700	1,161	1,661
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,697	1,622
31.43	**SEG NB Off To WB Wilshire Blvd.**	1	1,500	**1,573**	1,093
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	852	888
31.64	**SEG NB On From WB Wilshire Blvd.**	1	900	**961**	**1,052**
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,914	679
32.99	NB On From EB Sunset Blvd.	2	1,800	1,481	1,278
32.99	NB On From WB Sunset Blvd.	2	1,800	459	1,145
33.3	NB Off To Moraga Drive	N/A	N/A	0	0
33.47	NB On From Moraga Drive	N/A	N/A	0	0
34.73	NB On From Getty Center Drive	2	1,800	695	815
34.73	NB Off to Getty Center Drive	2	3,000	588	237
36.69	NB Off to Mulholland/Rimerton	1	1,500	617	710
36.99	NB On from Mulholland/Rimerton	2	1,800	817	1,500
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	616	**710**
38.77	NB On From Greenleaf St	2	1,800	817	1,500
	US-101 NB Off to Sepulveda Blvd	1	1,500	1,225	836

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

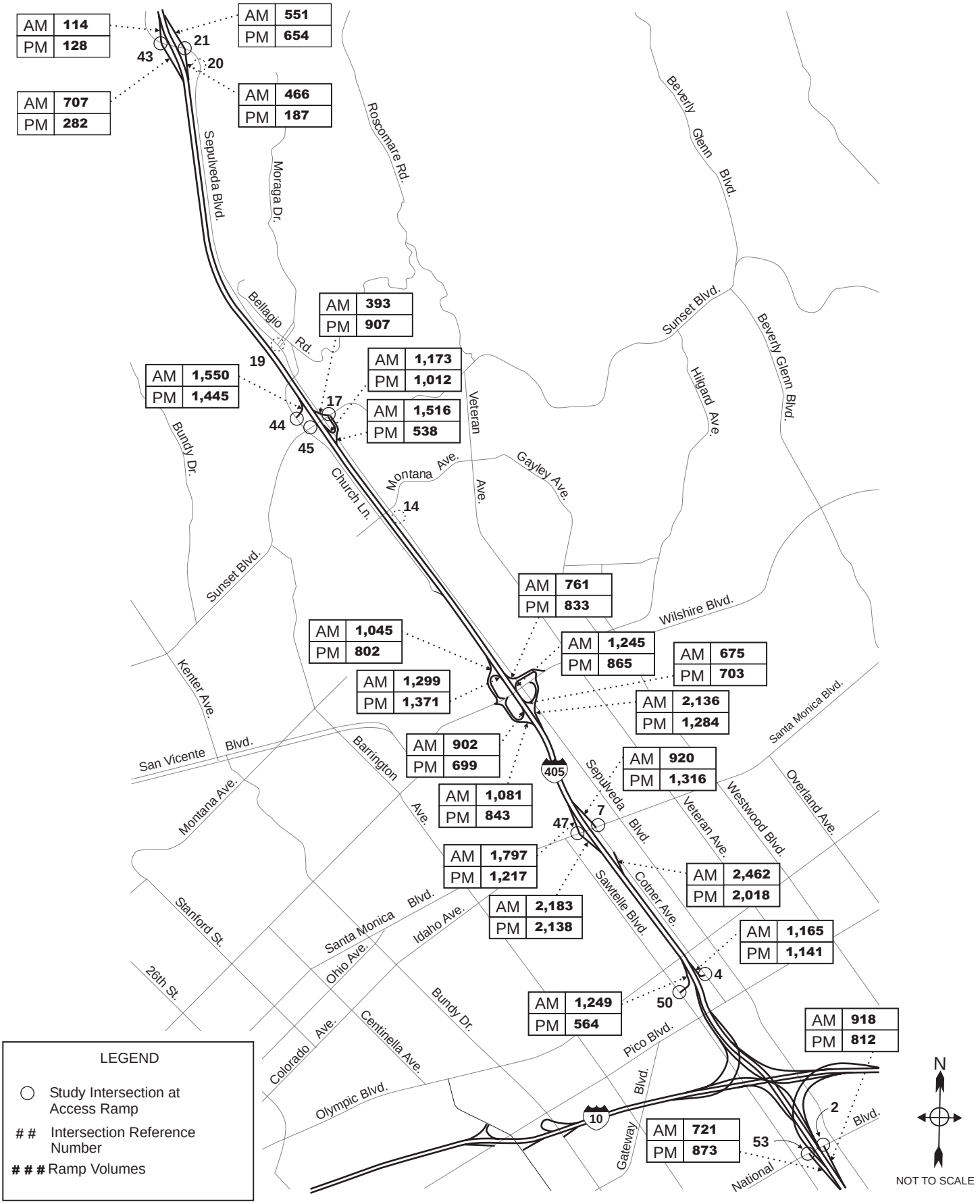
Table VIII.5 – Alternative 3A.1 Year 2031 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	910	1,102
30.14	**SB Off to Olympic/Pico**	1	1,500	**1,577**	712
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,757**	**2,700**
31.03	SB Off to Santa Monica Blvd	2	3,000	2,269	1,537
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,365**	**1,065**
31.48	SB Off to EB Wilshire Blvd	1	1,500	1,140	882
31.65	SB On from WB Wilshire Blvd	2	1,800	1,641	1,731
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,319	1,012
32.90	SB On from EB Sunset Blvd	N/A	N/A	0	0
33.04	SB On from Church/Sunset Blvd	2	1,800	1,642	1,142

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
33.11	**SB Off to Church/Sunset Blvd**	1	1,500	**1,957**	**1,825**
34.65	SB On from Getty Center Dr	2	1,800	893	356
35.00	SB Off to Getty Center Dr	1	1,500	144	162
36.50	SB On from Skirball Center Dr	2	1,800	1,633	492
36.86	SB Off to Skirball Center Dr	1	1,500	494	757
38.22	**SB On from Valley Vista/Sepulveda Blvd**	2	1,800	**2,132**	644
38.61	SB Off to Valley Vista Blvd	1	1,500	234	487
39.09	SB On from Ventura Blvd	2	1,800	1,176	508
	US-101 SB Off to Ventura Blvd	1	1,500	258	586
40.50	**SB Off to Burbank Blvd**	1	1,500	**1,869**	1,354

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

In a queuing analysis for this scenario, the northbound off-ramp to eastbound Wilshire Boulevard and the northbound on-ramp from Greenleaf Street were found to be potential locations for capacity issues in the year 2031. These capacity issues are due to ambient traffic growth alone, and are not affected by the HOV Lane project.



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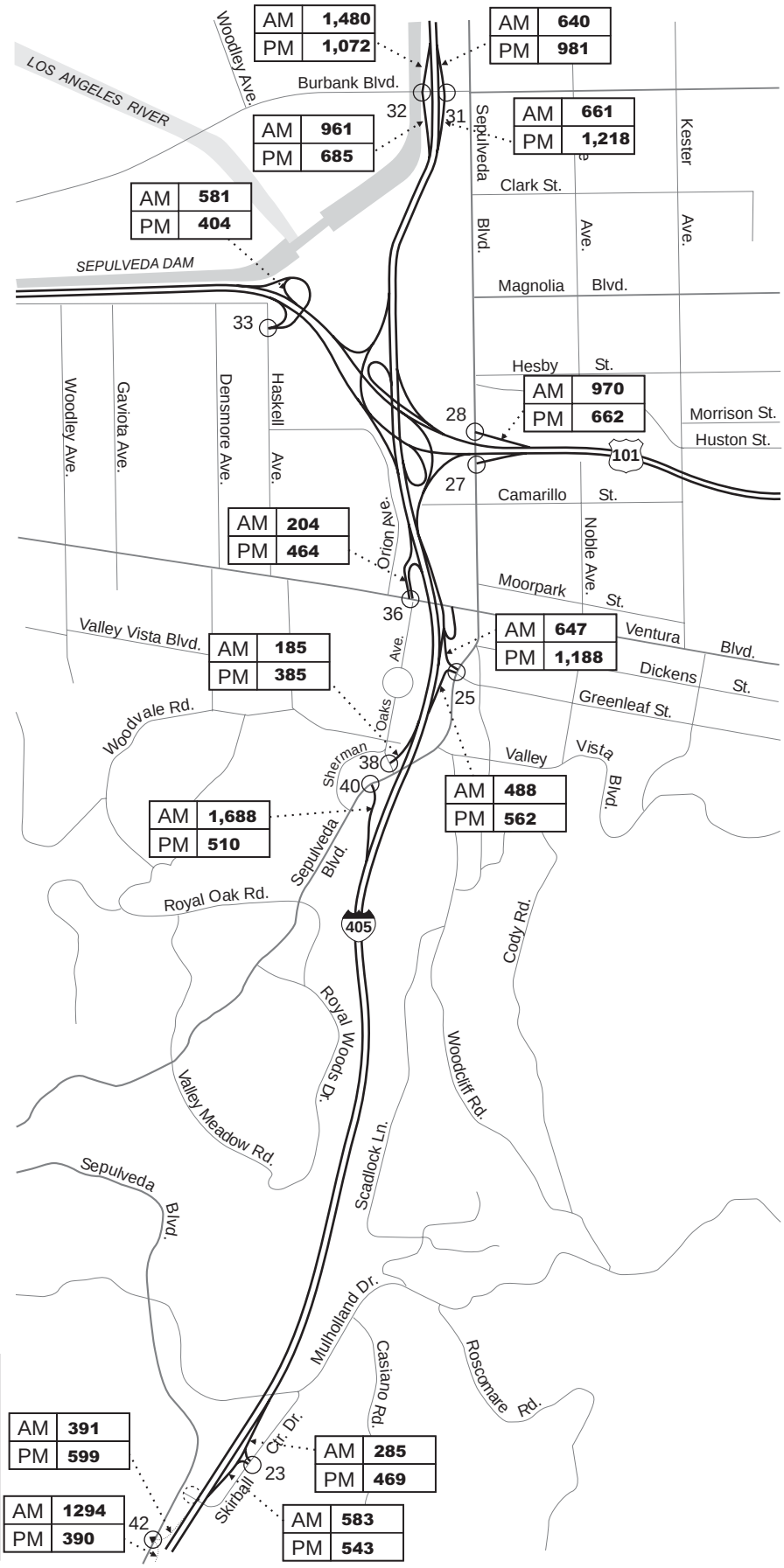
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 Year 2015 Peak Hour Access Ramp Volumes - Southern Area

Figure 32A



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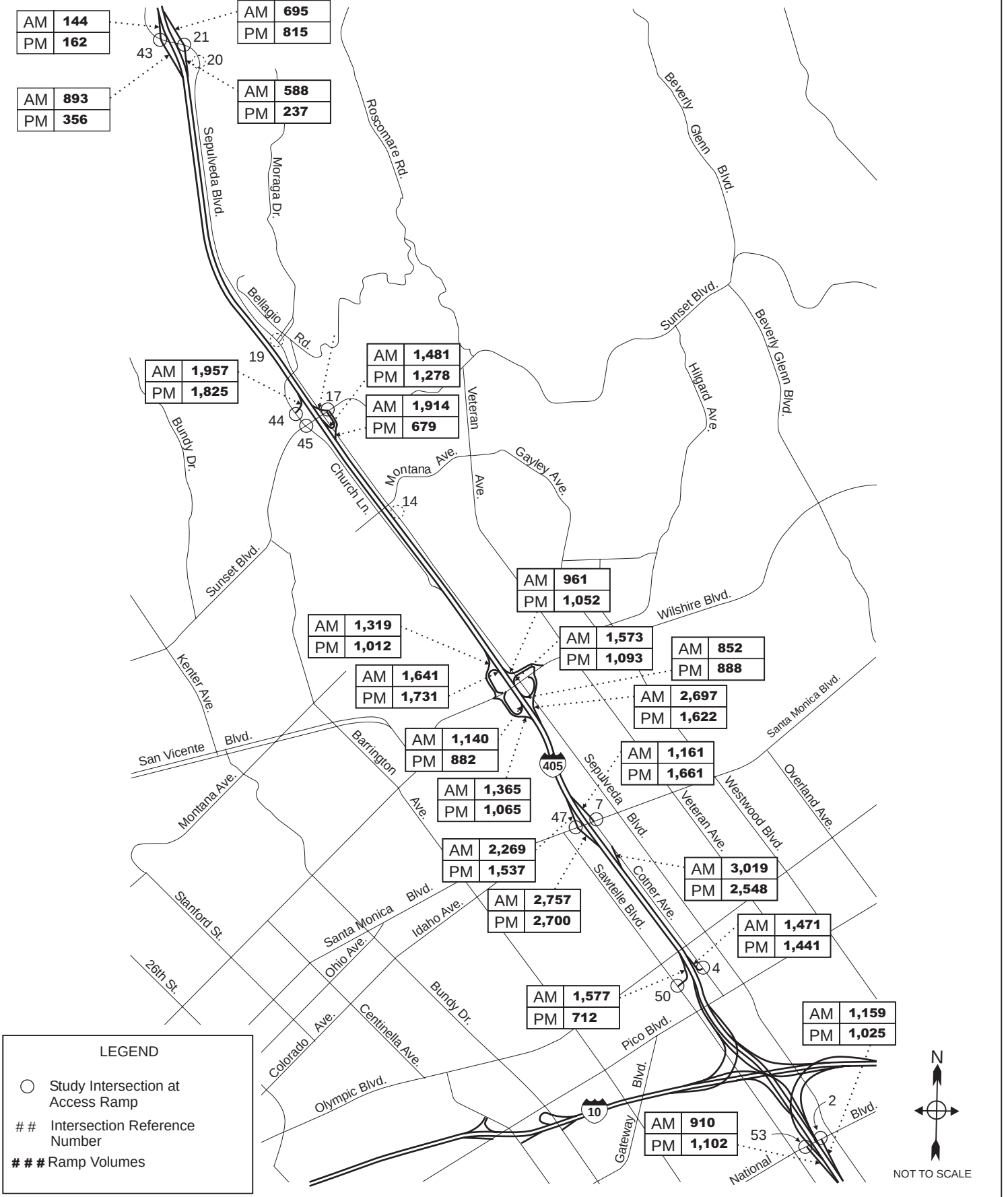
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 Year 2015 Peak Hour Access Ramp Volumes - Northern Area

Figure 32B



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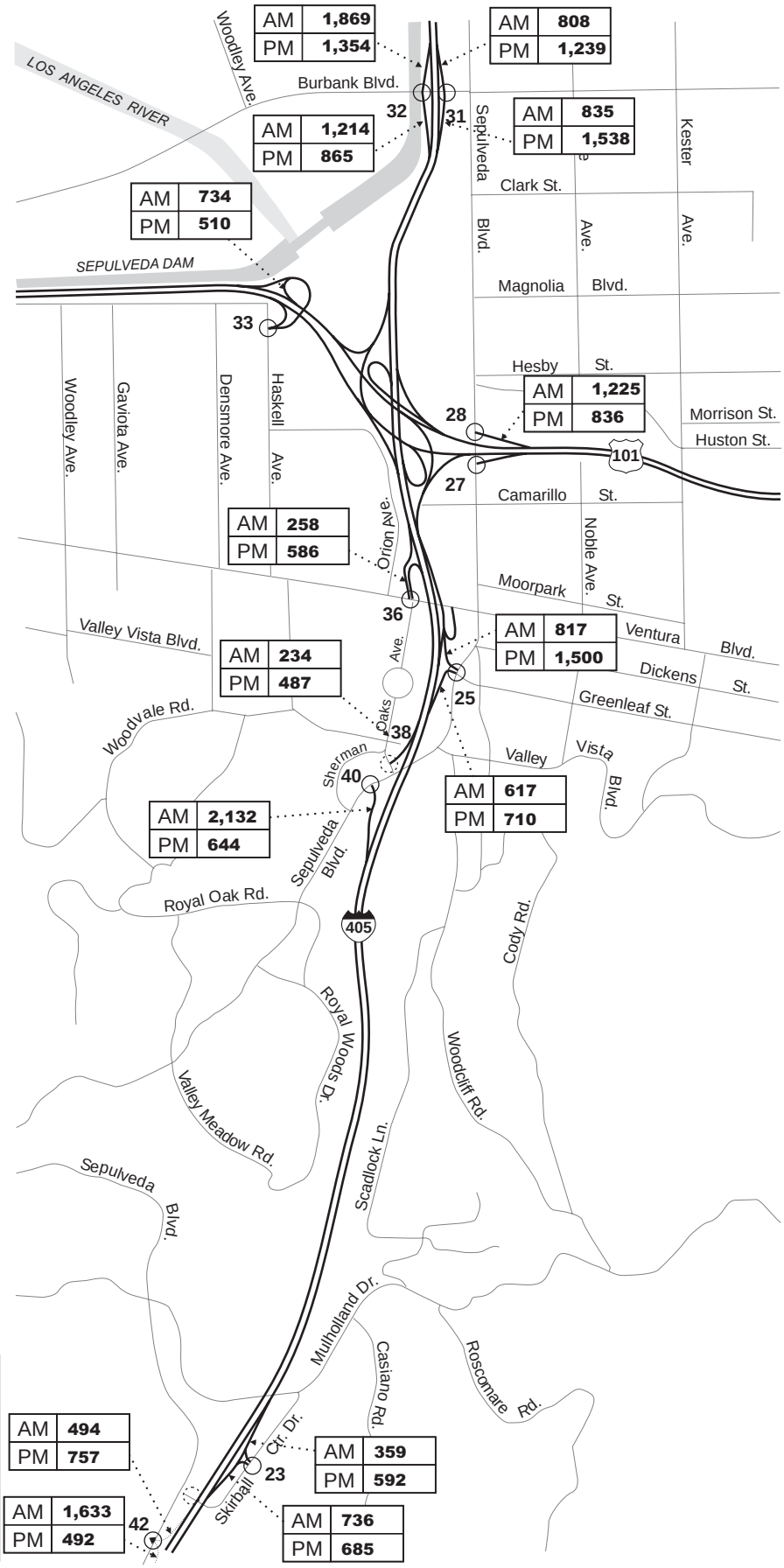
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 Year 2031 Peak Hour Access Ramp Volumes - Southern Area

Figure 33A



LEGEND

- ○ Study Intersection at Ramp Location
- # # Intersection Reference Number
- # # # Ramp Volumes

N

NOT TO SCALE

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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 Year 2031 Peak Hour Access Ramp Volumes - Northern Area

Figure 33B

2. Alternative 3A.2

The southbound I-405 exit to Valley Vista Boulevard may be closed as part of another project. This off-ramp forms a T-intersection with Fiume Walk, and provides access to Sepulveda Boulevard and Sherman Oaks Avenue. The impacts of this ramp closure are analyzed in Alternative 3A.2.

Vehicles that currently use the Valley Vista exit may come from the southbound I-405, southbound US-101, or northbound US-101. It is assumed that vehicles from the southbound I-405 will use Burbank Boulevard as an alternate exit, vehicles from the southbound US-101 will take the Ventura Boulevard exit, and vehicles from the northbound US-101 will exit at Sepulveda Boulevard.

Northbound and Southbound AM and PM peak hour ramp volumes forecast for year 2015 for the Alternative 2A.2 case are listed in Tables VIII.6 and VIII.7, respectively. These volumes are also shown in Figures 34A and 34B. The southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, and the southbound off-ramp to Burbank Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods. Of these, only the southbound off-ramp at Burbank Boulevard experiences increased volume due to redistribution associated with Alternative 3A.2.

In a queuing analysis for this scenario, all ramp facilities were found to be adequate for the forecast year 2015 conditions.

Table VIII.6 – Alternative 3A.2 Year 2015 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	918	812
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,165	1,141
30.68	NB Off To Santa Monica Blvd.	2	3,000	2,462	2,018
31.01	NB On From Santa Monica Blvd.	3	2,700	920	1,316
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,136	1,284
31.43	SEG NB Off To WB Wilshire Blvd.	1	1,500	1,245	865
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	675	703
31.64	SEG NB On From WB Wilshire Blvd.	1	900	761	833
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,516	538
32.99	NB On From EB Sunset Blvd.	2	1,800	1,173	1,012
33.3	NB Off To Moraga Drive	2	3,000	358	113
33.47	NB On From Moraga Drive	2	1,800	363	907
34.73	NB On From Getty Center Drive	2	1,800	551	645
34.73	NB Off to Getty Center Drive	2	3,000	108	74
36.69	NB Off to Mulholland/Rimerton	1	1,500	583	543
36.99	NB On from Mulholland/Rimerton	2	1,800	285	469
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1500	488	562
38.77	NB On From Greenleaf St	2	1,800	647	1,188
	US-101 NB Off to Sepulveda Blvd	1	1,500	1,032	791

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment

Table VIII.7 – Alternative 3A.2 Year 2015 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Ramp Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	721	873
30.14	SB Off to Olympic/Pico	1	1,500	1,249	564
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,183**	**2,138**
31.03	SB Off to Santa Monica Blvd	2	3,000	1,797	1,217
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,081**	843
31.48	SB Off to EB Wilshire Blvd	1	1,500	902	699
31.65	SB On from WB Wilshire Blvd	2	1,800	1,299	1,371
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,045	802
32.90	SB On from EB Sunset Blvd	N/A	N/A	0	0
33.04	SB On from Church/Sunset Blvd	2	1,800	1,300	904
33.11	**SB Off to Church/Sunset Blvd**	1	1,500	**1,550**	1,445
34.65	SB On from Getty Center Dr	2	1,800	707	282
35.00	SB Off to Getty Center Dr	1	1,500	114	128
36.50	SB On from Skirball Center Dr	2	1,800	1,294	390
36.86	SB Off to Skirball Center Dr	1	1,500	391	599
38.22	SB On from Valley Vista/Sepulveda Blvd	2	1,800	1,688	510
38.61	SB Off to Valley Vista Blvd	N/A	N/A	0	0
39.09	SB On from Ventura Blvd	2	1,800	931	403
39.09	US-101 SB Off to Ventura Blvd	1	1,500	266	593
40.50	**SB Off to Burbank Blvd**	1	1,500	**1,541**	1,200

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single exit ramp lane is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided. A theoretical capacity of 900 vehicles per lane per hour is used for on-ramps, based on ramp metering parameters.

Peak hour ramp volumes forecast for year 2031 are listed in Tables VIII.8 and VIII.9, and these volumes are also shown in Figures 35A and 35B. The northbound off-ramp to Santa Monica Boulevard, northbound off-ramp to westbound Wilshire Boulevard, northbound on-ramp from westbound Wilshire Boulevard, southbound off-ramp to Olympic/Pico Boulevard, southbound on-ramp from Santa Monica Boulevard, southbound on-ramp from eastbound Wilshire Boulevard, southbound on-ramp from Valley Vista/Sepulveda Boulevard, and southbound on-ramp from Burbank Boulevard are forecast to carry volumes that exceed capacity during one or both peak periods. Only the northbound off-ramp to westbound Wilshire Boulevard and the southbound off-ramp to Burbank Boulevard experience increased volumes due to redistribution associated with Alternative 3A.2.

Table VIII.8 – Alternative 3A.2 Year 2031 Northbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.90	NB Off To National Blvd.	1	1,500	1,159	1,026
30.17	NB On From Olympic Blvd/Tennessee	2	1,800	1,471	1,441
30.68	**NB Off To Santa Monica Blvd.**	2	3,000	**3,109**	2,548
31.01	NB On From Santa Monica Blvd.	3	2,700	1,161	1,661
31.43	SEG NB Off To EB Wilshire Blvd.	2	3,000	2,697	1,622
31.43	**SEG NB Off To WB Wilshire Blvd.**	1	1,500	**1,573**	1,093
31.63	SEG NB On From EB Wilshire Blvd.	2	1,800	852	888
31.64	**SEG NB On From WB Wilshire Blvd.**	1	900	**961**	**1,052**
32.38	NB Off To Montana Ave.	N/A	N/A	0	0
32.81	NB Off To Sunset Blvd.	2	3,000	1,914	679
32.99	NB On From EB Sunset Blvd.	2	1,800	1,481	1,278
33.3	NB Off To Moraga Drive	2	3,000	452	143
33.47	NB On From Moraga Drive	2	1,800	459	1,145
34.55	NB Off To Getty Center Drive	2	3,000	0	0
34.73	NB On From Getty Center Drive	2	1,800	695	815
34.73	NB Off to Getty Center Drive	2	3,000	136	94
36.69	NB Off to Mulholland/Rimerton	1	1,500	736	685
36.99	NB On from Mulholland/Rimerton	2	1,800	359	592
38.63	NB Off To Ventura Blvd/Greenleaf St	1	1,500	617	710
38.77	NB On From Greenleaf St	2	1,800	817	1,500
	US-101 NB Off to Sepulveda Blvd	1	1,500	1,303	999

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

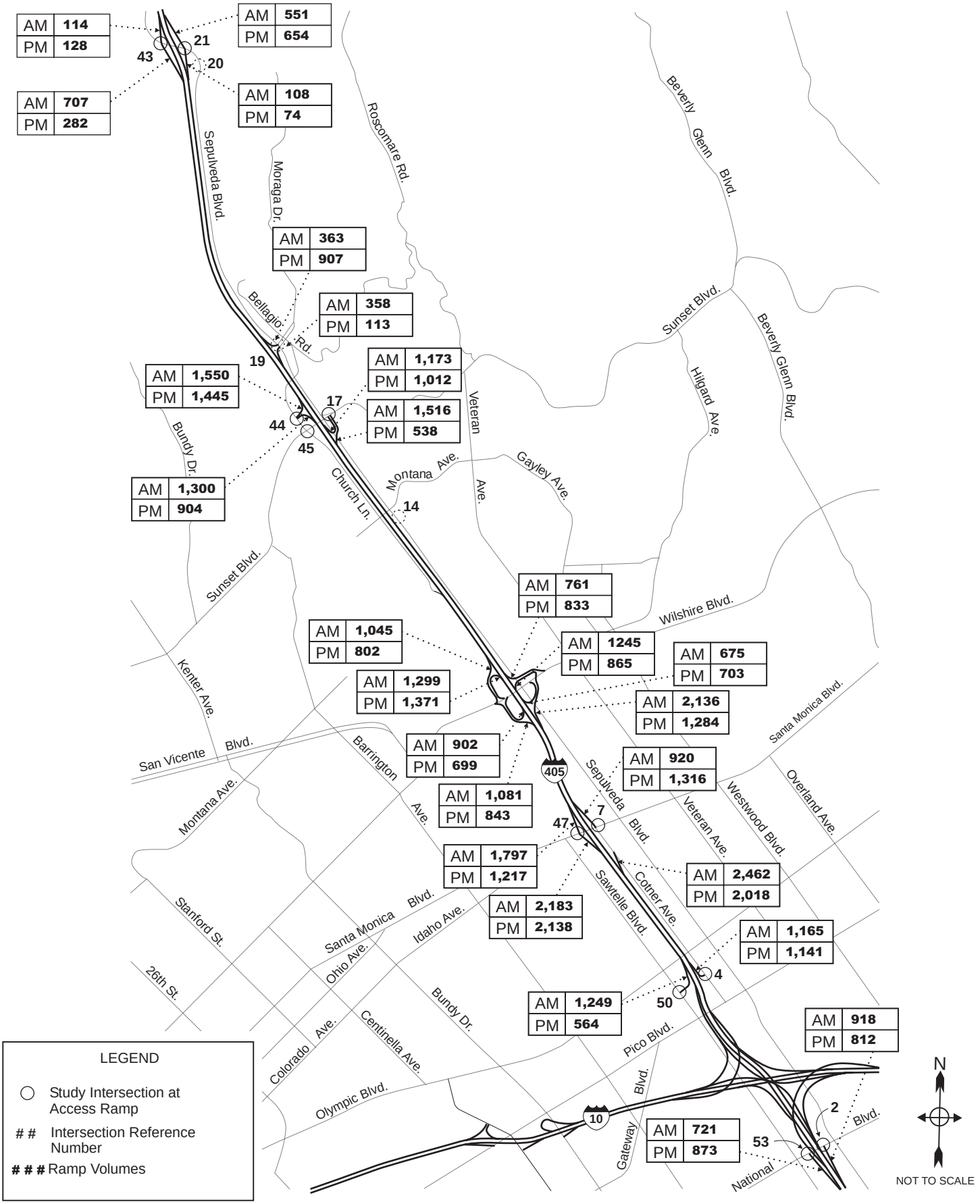
Table VIII.9 – Alternative 3A.2 Year 2031 Southbound Ramp Peak Hour Volumes

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
28.89	SB On from National Blvd	2	1,800	910	1,102
30.14	**SB Off to Olympic/Pico**	1	1,500	**1,577**	712
30.74	**SB On from Santa Monica Blvd**	2	1,800	**2,757**	**2,700**
31.03	SB Off to Santa Monica Blvd	2	3,000	2,269	1,537
31.38	**SB On from EB Wilshire Blvd**	1	900	**1,365**	**1,065**
31.48	SB Off to EB Wilshire Blvd	1	1,500	1,140	882
31.65	SB On from WB Wilshire Blvd	2	1,800	1,641	1,731
31.73	SB Off to WB Wilshire Blvd	1	1,500	1,319	1,012
32.90	SB On from EB Sunset Blvd	N/A	N/A	0	0

P.M.	Ramp Description	Merge Lanes	Capacity (veh/hr)	AM Volume	PM Volume
33.04	SB On from Church/Sunset Blvd	2	1,800	1,642	1,142
33.11	**SB Off to Church/Sunset Blvd**	1	1,500	**1,957**	1,825
34.65	SB On from Getty Center Dr	2	1,800	893	356
35.00	SB Off to Getty Center Dr	1	1,500	144	162
36.50	SB On from Skirball Center Dr	2	1,800	1,633	492
36.86	SB Off to Skirball Center Dr	1	1,500	494	757
38.22	**SB On from Valley Vista/Sepulveda Blvd**	2	1,800	**2,132**	644
38.61	SB Off to Valley Vista Blvd	N/A	N/A	0	0
39.09	SB On from Ventura Blvd	2	1,800	1,176	508
	US-101 SB Off to Ventura Blvd	1	1,500	336	749
	SB Off to Burbank Blvd	1	1,500	**1,946**	**1,516**

Note:
P.M. – post mile; NB – northbound; SB – southbound; SEG – segment
Locations and volumes highlighted in **bold** font indicate ramps where demand exceeds theoretical capacity.
The theoretical capacity of a single entrance or exit ramp is 1,500 vehicles per hour, based on Highway Design Manual Chapter 500 Section 6 & 7. For new construction, where design year estimated volumes exceed 1,500 vehicles per hour, a two-lane ramp should be provided.

In a queuing analysis for this scenario, the northbound off-ramp to eastbound Wilshire Boulevard and the northbound on-ramp from Greenleaf Street were found to be potential locations for capacity issues in the year 2031. These capacity issues are due to ambient traffic growth alone, and are not affected by the HOV Lane project.



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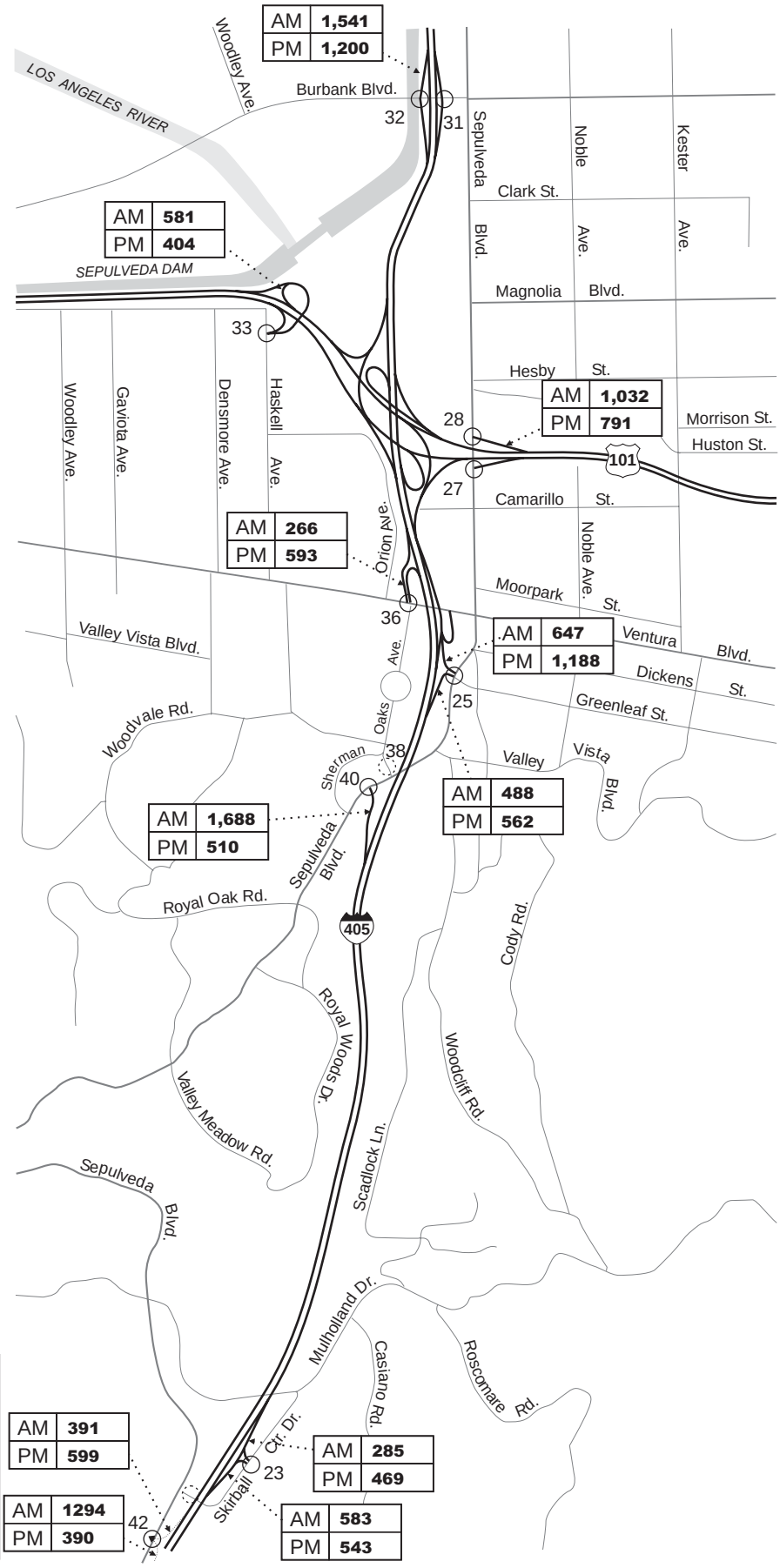
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 Year 2015 Peak Hour Access Ramp Volumes - Southern Area

Figure 34A



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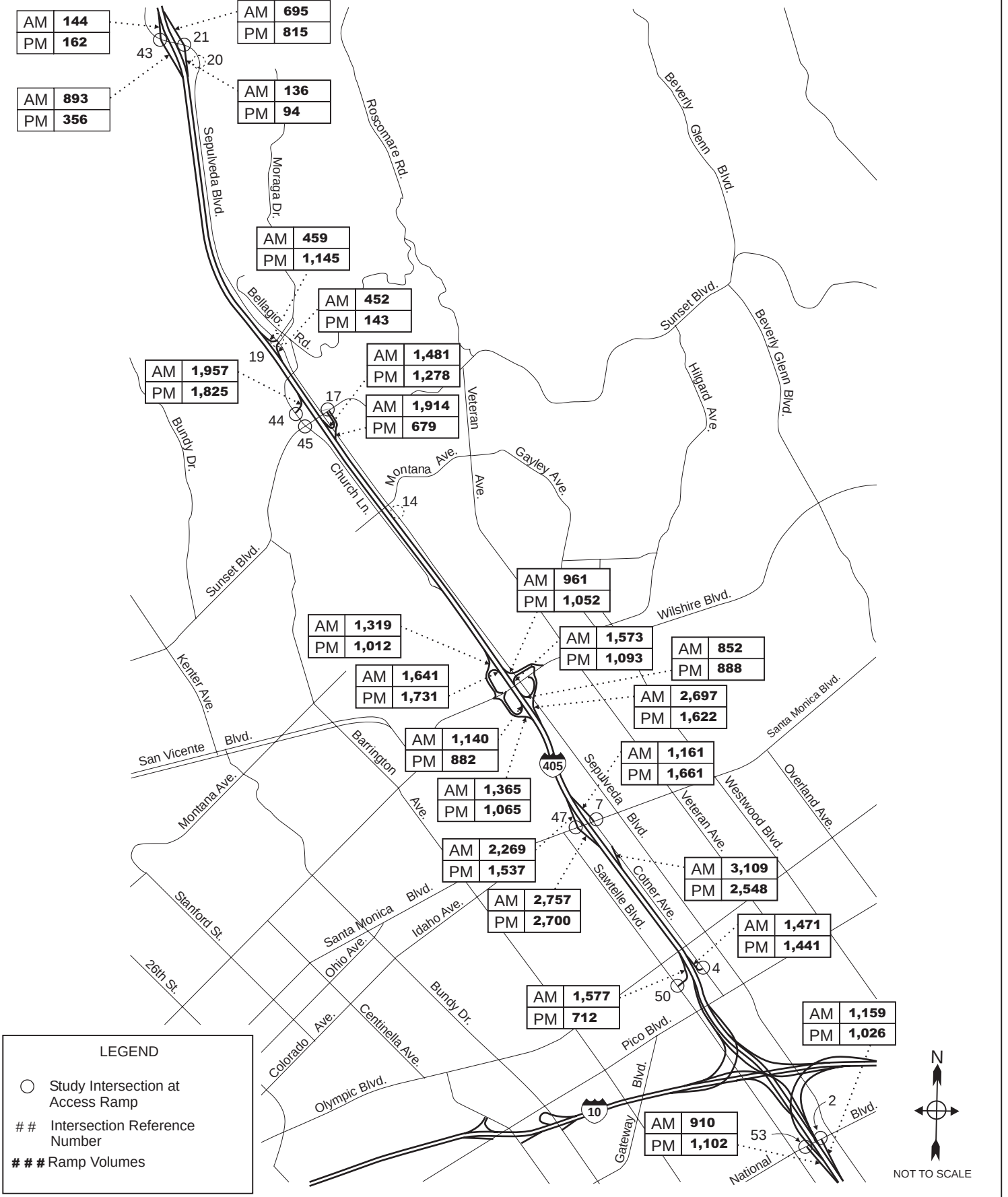
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 Year 2015 Peak Hour Access Ramp Volumes - Northern Area

Figure 34B



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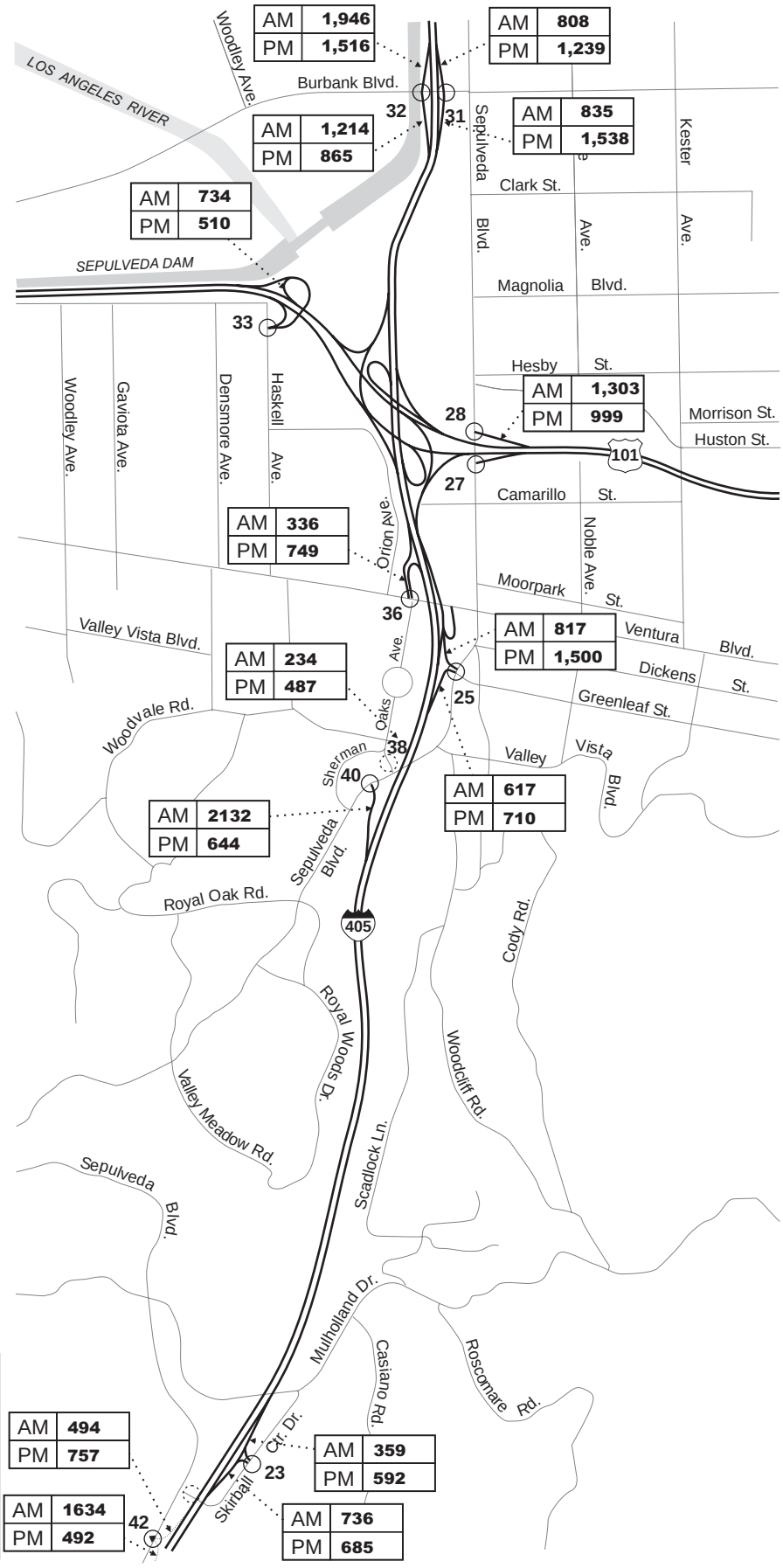
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 Year 2031 Peak Hour Access Ramp Volumes - Southern Area

Figure 35A



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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 Year 2031 Peak Hour Access Ramp Volumes - Northern Area

Figure 35B

C. Intersections

The ramp closures and modifications associated with Alternative 3 result in changes to intersection geometry at various locations. The intersection geometry for this alternative is illustrated in Figures 36A and 36B. Modifications that are common to both sub-alternatives are listed in Table VIII.10, and changes that are unique to Alternative 3A.1 or 3A.2 are described in subsequent sections.

Table VIII.10 – Alternative 2 Modifications to Intersection Geometry

Ramp Modification	Int #	Corresponding Study Intersection Modification
Northbound I-405 off-ramp to Montana Avenue removed	14	With the off-ramp removed, there is no longer an intersection at this location. Only the northbound and southbound through lanes on Sepulveda Boulevard remain.
Northbound interchange improvements at Sunset Boulevard	17	The interchange improvements at this location include the addition of a second northbound right turn lane, a third eastbound through lane, and a second eastbound right turn lane.
Northbound interchange improvements at Getty Center Drive	20, 21	The T-intersections formed by the northbound off-ramp and on-ramp with Sepulveda Boulevard are replaced with a standard diamond interchange to form a single four-legged intersection. Intersection 20 is removed, and intersection 21 is signalized and reconfigured with one northbound through lane, one northbound through-right lane, one southbound left turn lane, two southbound through lanes, one eastbound left turn lane, and one eastbound right turn lane. (Sepulveda Boulevard is considered to be north and south legs, and the northbound off-ramp is the west leg.)
Southbound Skirball Center Drive interchange improvements	42	The southbound on- and off-ramps to Skirball/Mulholland are removed and replaced with hook ramps that connect directly to Sepulveda Boulevard. Intersection #42 becomes the intersection of the new ramps with Sepulveda Boulevard, and consists of one northbound through lane, one northbound through-right lane, one southbound left turn lane, two southbound through lanes, one westbound left turn lane, and one westbound right turn lane. (Sepulveda Boulevard is the north and south legs, and the southbound off-ramp is the east leg.)

1. Alternative 3A.1

In Alternative 3A.1, a new northbound on-ramp from westbound Sunset Boulevard is installed and the Sepulveda Way street segment is closed. At intersection #17, the new on-ramp creates a north leg, and the westbound lanes change from three through lanes to two through lanes and one through-right lane. The T-intersection formed by Sepulveda Way and Sepulveda Boulevard (#54) no longer exists when Sepulveda Way is closed.

Year 2015 AM peak hour intersection volumes are shown in Figures 37A and 37B, and PM peak hour volumes are shown in Figures 38A and 38B. Figures 39A and 39B contain year 2031 AM peak hour intersection volumes, and Figures 40A and 40B show year 2031 PM peak volumes.

Alternative 3A.1 Level of Service Analysis – Year 2015

A level of service (LOS) analysis at the project intersections was performed using forecast year 2015 and 2031 turning movement volumes. The results of the level of service analysis are summarized in Table VIII.11. Twenty-four locations are forecast to perform at LOS F during one or both peak periods.

Table VIII.11 – Alternative 3A.1 Year 2015 Level of Service Summary

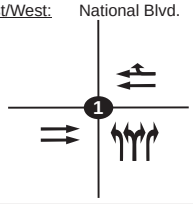
Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	19.7	B	18.0	B
2	National Blvd & Sepulveda Blvd	Signalized	58.8	E	70.7	E
3	Pico Blvd & Sepulveda Blvd	Signalized	93.6	F	201.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	111.1	F	33.9	D
5	Olympic Blvd & Cotner Ave	Signalized	14.5	B	22.9	C
6	Olympic Blvd & Sepulveda Blvd	Signalized	91.9	F	158.9	F
7	Santa Monica Blvd & Cotner Ave	Signalized	150.1	F	84.2	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	155.1	F	163.9	F
9	Santa Monica Blvd & Veteran Ave	Signalized	28.9	C	34.4	C
10	Santa Monica Blvd & Westwood Blvd	Signalized	45.0	D	54.8	D
11	Wilshire Blvd & Sepulveda Blvd	Signalized	215.4	F	203.7	F
12	Wilshire Blvd & Veteran Ave	Signalized	122.5	F	163.5	F
13	Wilshire Blvd & Westwood Blvd	Signalized	51.5	D	73.4	E
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	24.4	C	70.6	E
16	Montana Ave & Veteran Ave	Signalized	38.6	D	36.1	D
17	Sunset Blvd & NB 405 Off-ramp	Signalized	18.2	B	9.8	A
18	Sunset Blvd & Veteran Ave	Signalized	124.5	F	51.3	D
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	8.4	A	23.8	C
20	NB 405 Getty Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	49.0	E	271.4	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	10.5	B	10.2	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	78.0	E	74.0	E
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	135.3	F	85.3	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	189.0	F	100.2	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.4	A	23.5	C
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	22.7	C	28.2	C
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	19.6	B	125.2	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	225.6	F	383.8	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	21.0	C	101.6	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	103.7	F	77.8	E
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	25.3	D	17.3	C
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	9.4	A	8.1	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	18.8	B	16.3	B
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	12.3	B	4.9	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	44.3	D	30.3	C

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
37	Fiume Walk & Sherman Oak Ave	Unsignalized	68.9	F	14.1	B
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	3.4	A	5.7	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	51.2	D	11.8	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	58.2	E	17.7	B
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	452.5	F	147.5	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	169.0	F	245.1	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	16.3	B	16.5	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	50.0	D	114.7	F
45	Sunset Blvd & Church Lane	Signalized	35.5	D	48.1	D
46	Wilshire Blvd & Federal Ave	Signalized	184.8	F	215.5	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	71.7	E	46.5	D
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	89.1	F	739.1	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	49.3	D	116.3	F
50	SB 405 Tennessee Off-ramp & Sawtelle Blvd	Signalized	35.7	D	73.7	E
51	Pico Blvd & Sawtelle Blvd	Signalized	46.0	D	105.0	F
52	National Blvd & Sawtelle Blvd	Signalized	110.6	F	94.3	F
53	National Blvd & SB 405 On-ramp	Signalized	8.2	A	8.6	A
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	DNE	DNE	DNE	DNE

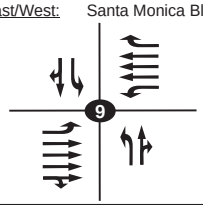
N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

Locations where the average delay per vehicle for the Alternative 3A.1 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VIII.12 and VIII.13. Nine intersections adjacent to ramps that are closed in this alternative experience a reduction in control delay, while six study intersections that carry the redistributed volumes have higher delays.

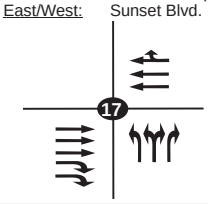
North/South: NB 405 Off-Ramp
East/West: National Blvd.



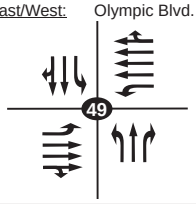
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



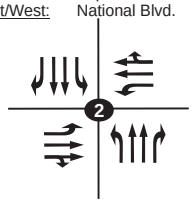
North/South: NB 405 Ramps
East/West: Sunset Blvd.



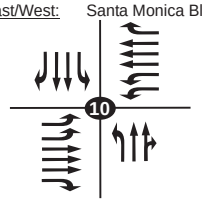
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



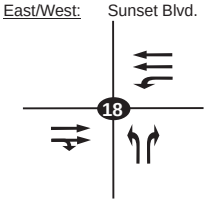
North/South: Sepulveda Blvd.
East/West: National Blvd.



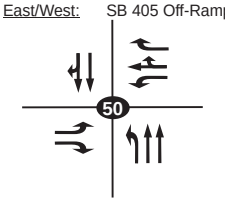
North/South: Westwood Blvd.
East/West: Santa Monica Blvd.



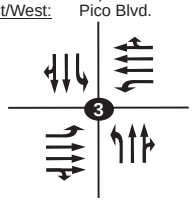
North/South: Veteran Ave.
East/West: Sunset Blvd.



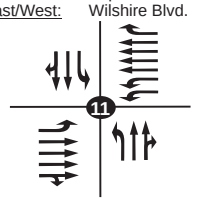
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



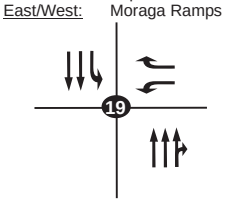
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



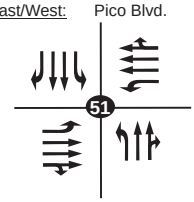
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



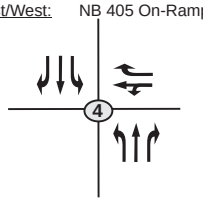
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



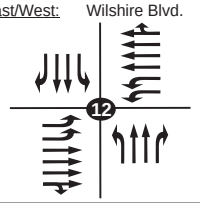
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



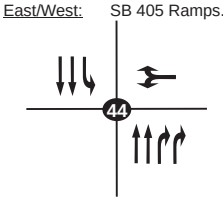
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



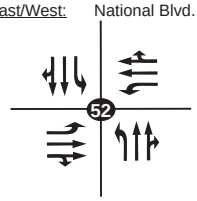
North/South: Veteran Ave.
East/West: Wilshire Blvd.



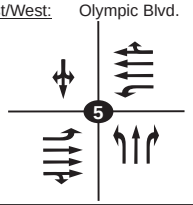
North/South: Church Ln.
East/West: SB 405 Ramps.



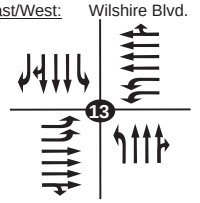
North/South: Sawtelle Blvd.
East/West: National Blvd.



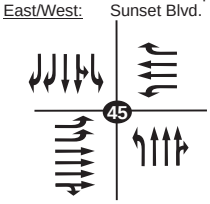
North/South: Cotner Ave.
East/West: Olympic Blvd.



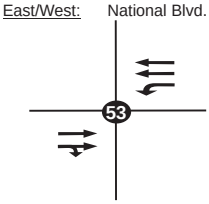
North/South: Westwood Blvd.
East/West: Wilshire Blvd.



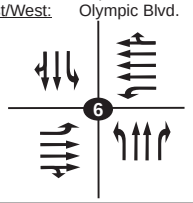
North/South: SB 405 Ramps.
East/West: Sunset Blvd.



North/South: SB 405 On-Ramp
East/West: National Blvd.



North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



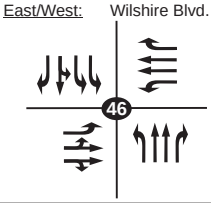
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp

INTERSECTION

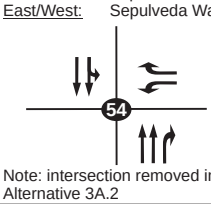
14

REMOVED

North/South: Federal Ave.
East/West: Wilshire Blvd.

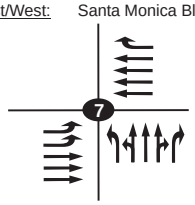


North/South: Sepulveda Blvd.
East/West: Sepulveda Way

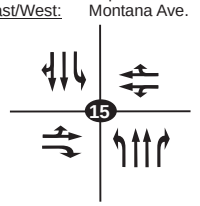


Note: intersection removed in Alternative 3A.2

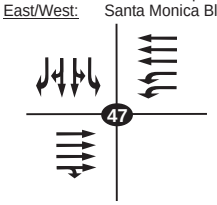
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



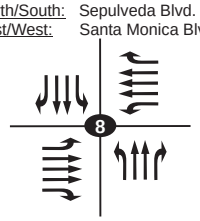
North/South: Sepulveda Blvd.
East/West: Montana Ave.



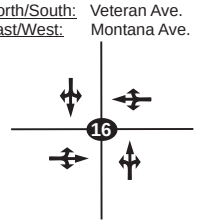
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



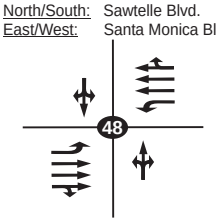
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

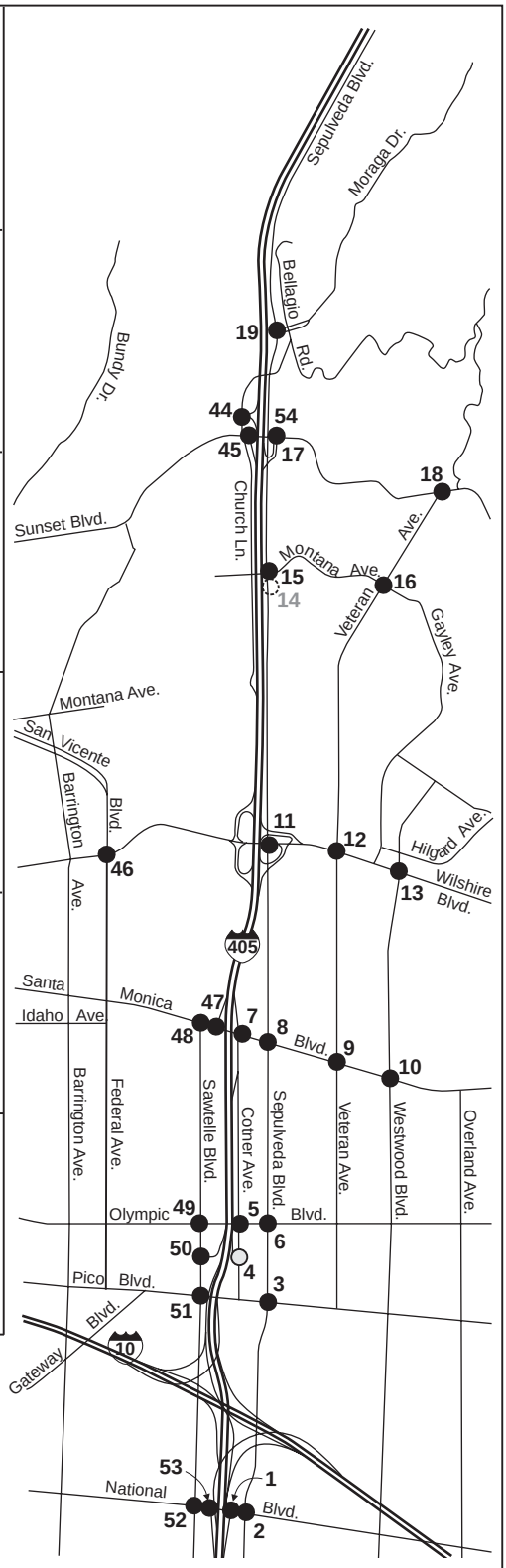


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3 Study Intersection Geometry (Southern Area)

Figure 36A

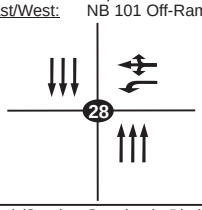
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

INTERSECTION

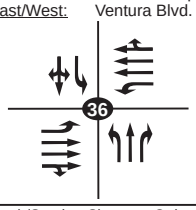
20

REMOVED

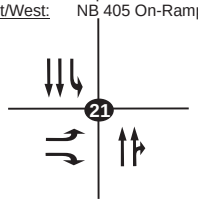
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



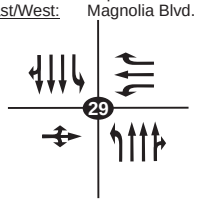
North/South: SB 405 Ramps
East/West: Ventura Blvd.



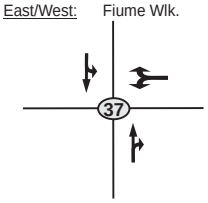
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



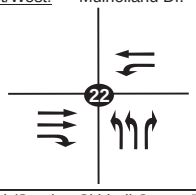
North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



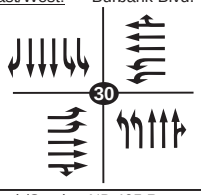
North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.



North/South: Skirball Center Dr.
East/West: Mulholland Dr.



North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



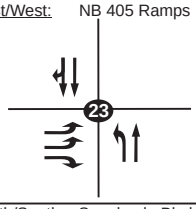
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

INTERSECTION

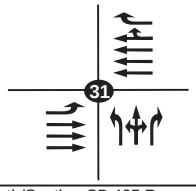
38

REMOVED

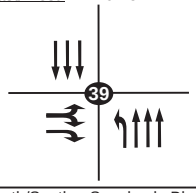
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



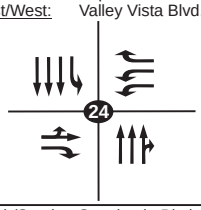
North/South: NB 405 Ramps
East/West: Burbank Blvd.



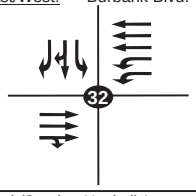
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



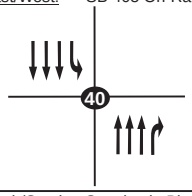
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



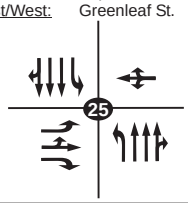
North/South: SB 405 Ramps
East/West: Burbank Blvd.



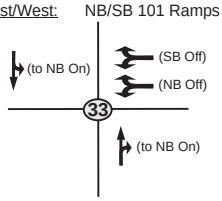
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



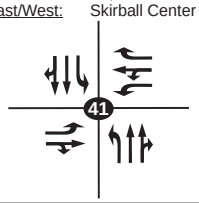
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



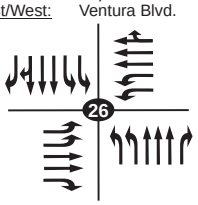
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



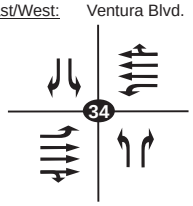
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



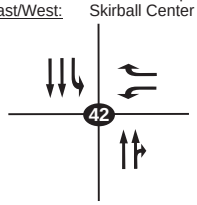
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



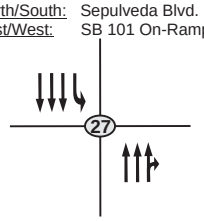
North/South: Haskell Ave.
East/West: Ventura Blvd.



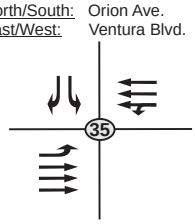
North/South: SB 405 Ramps
East/West: Skirball Center Dr.



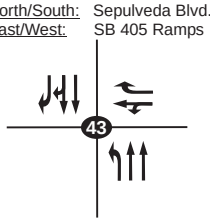
North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

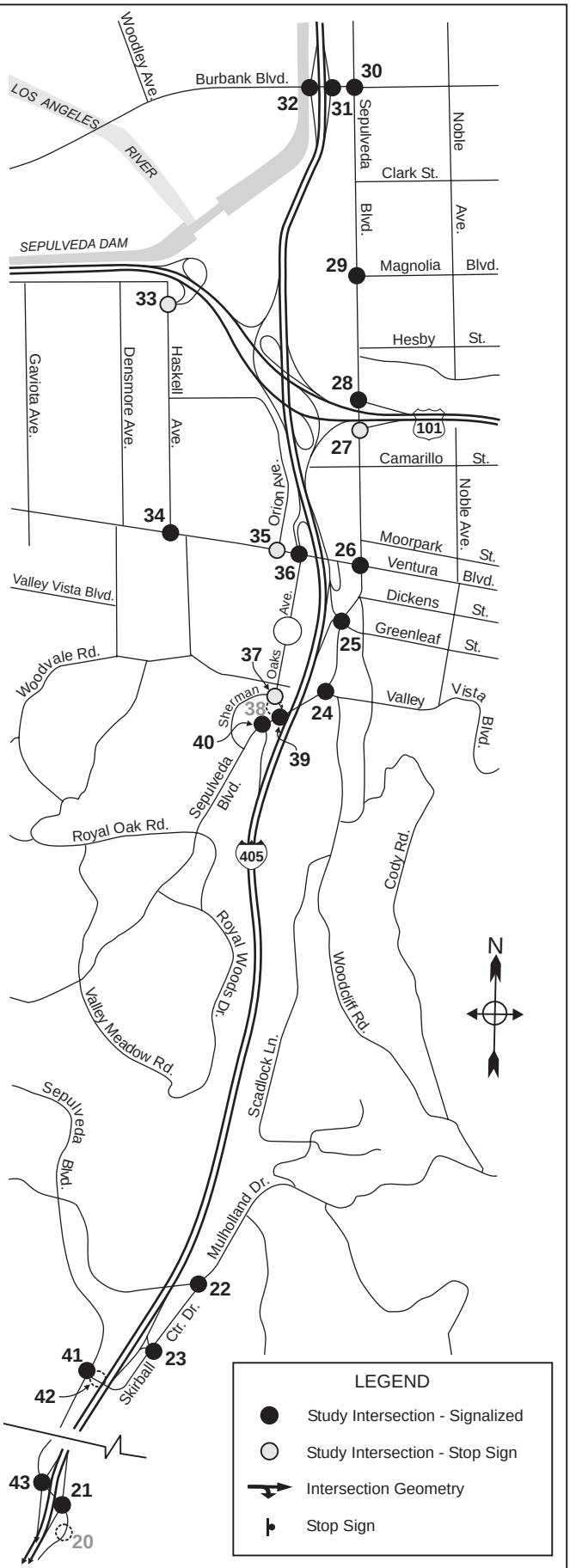


North/South: Orion Ave.
East/West: Ventura Blvd.



North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



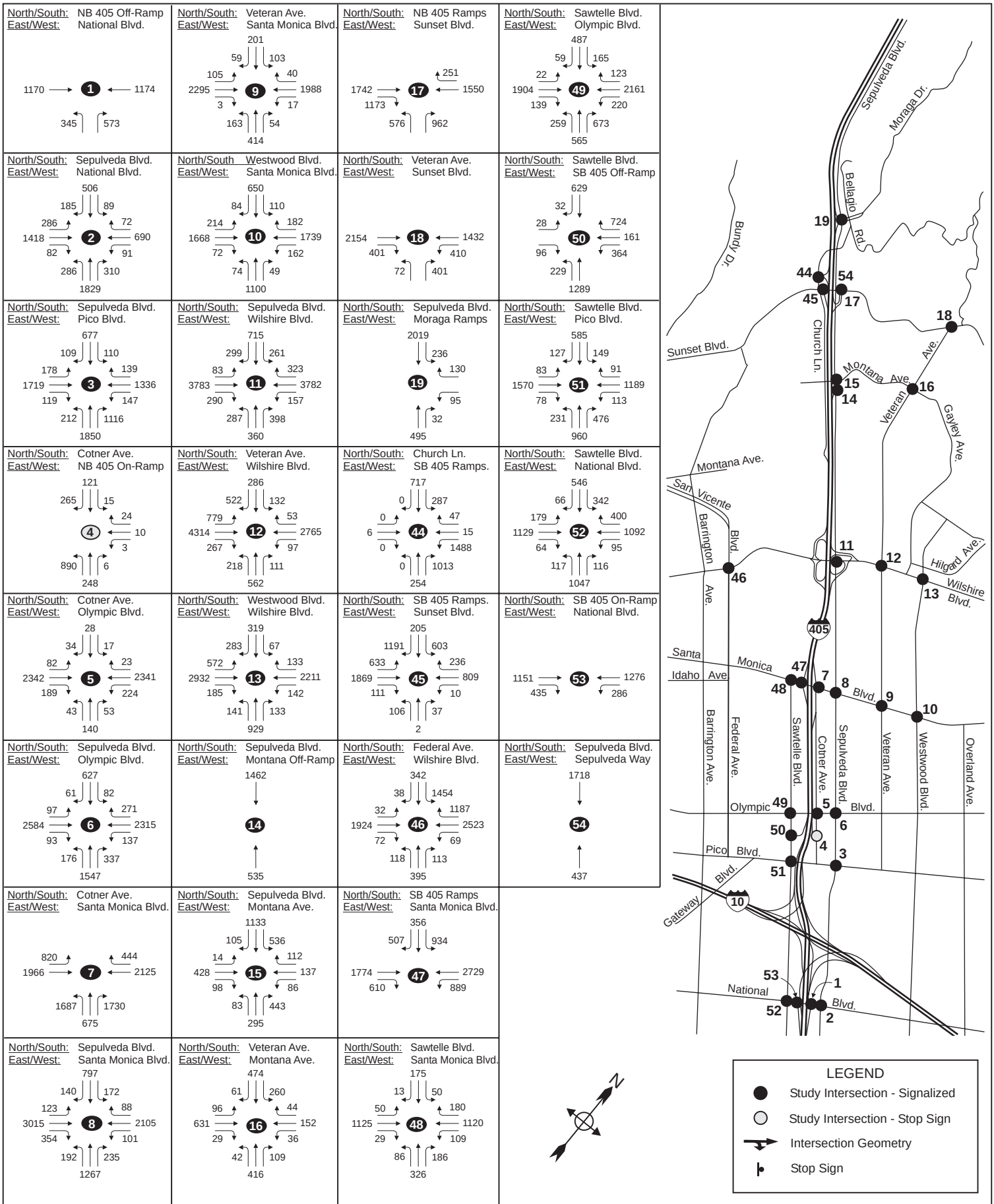


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3 Study Intersection Geometry (Northern Area)

Figure 36B



IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

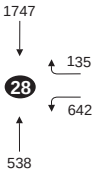
Alternative 3.1 (Year 2015) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 37A

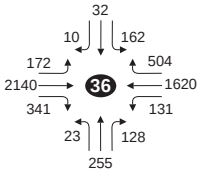
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

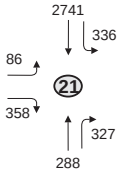
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



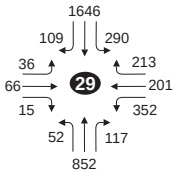
North/South: SB 405 Ramps
East/West: Ventura Blvd.



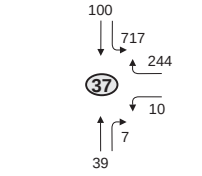
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

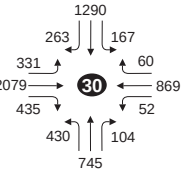


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

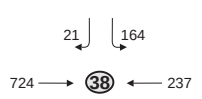
NO DATA AVAILABLE

22

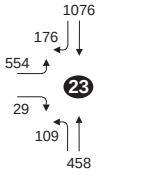
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



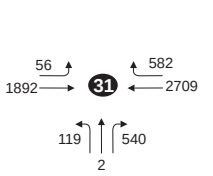
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



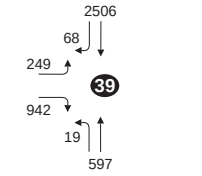
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



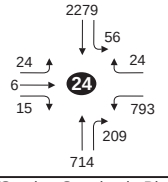
North/South: NB 405 Ramps
East/West: Burbank Blvd.



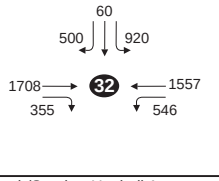
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



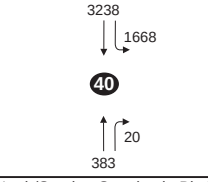
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



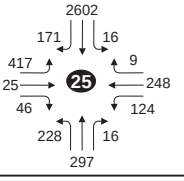
North/South: SB 405 Ramps
East/West: Burbank Blvd.



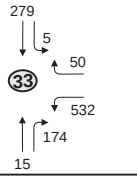
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



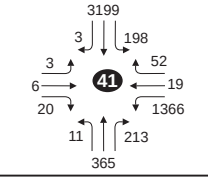
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



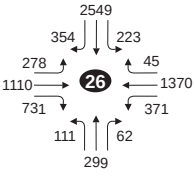
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



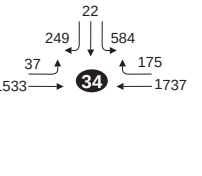
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



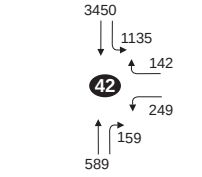
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



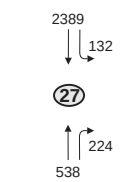
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

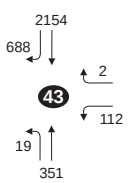


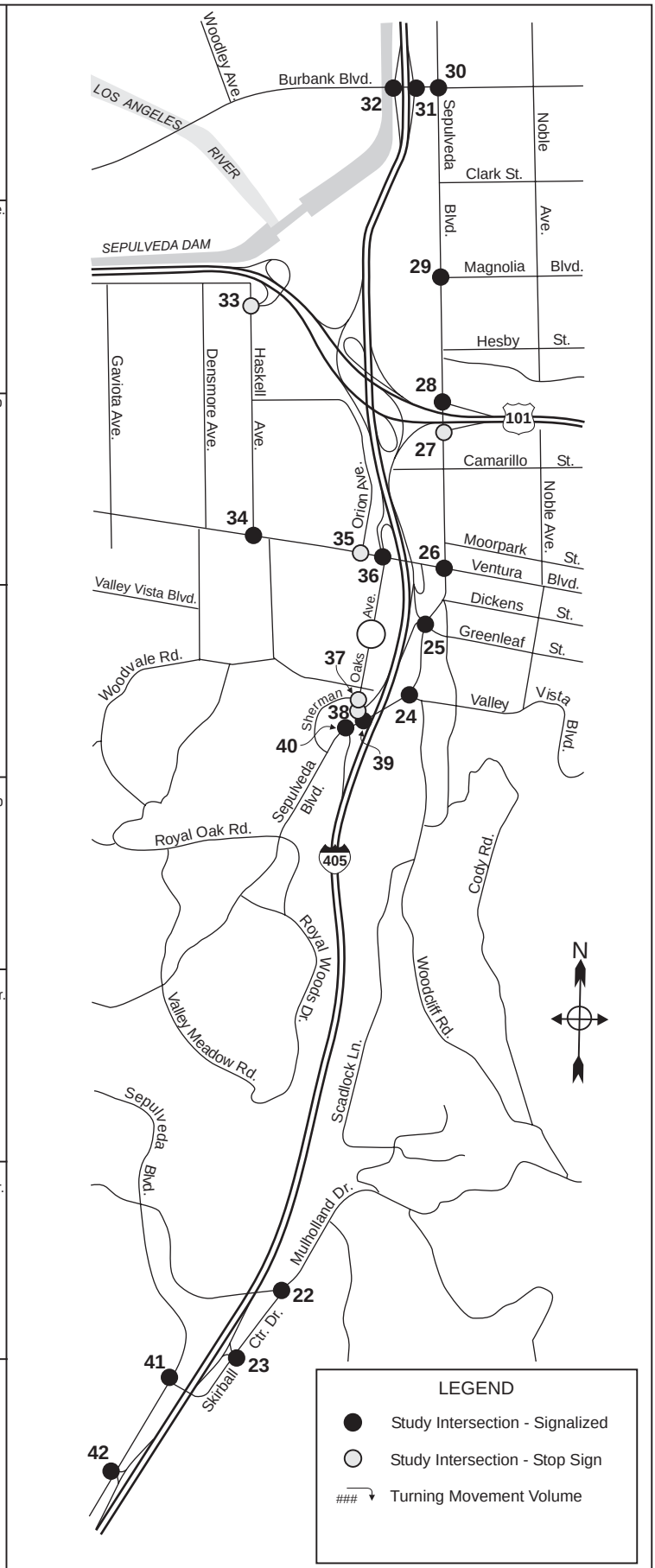
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



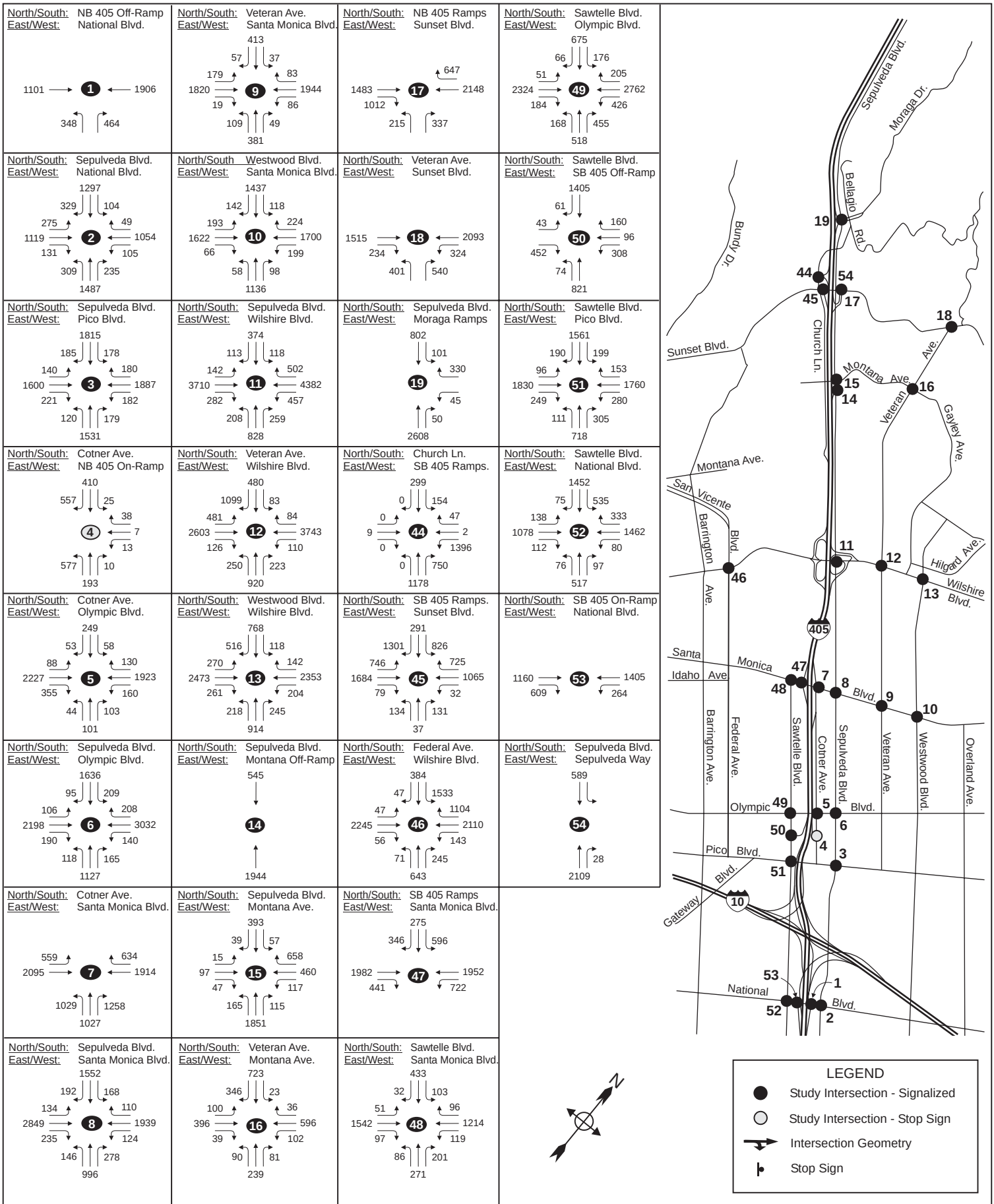


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 (Year 2015) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 37B



IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

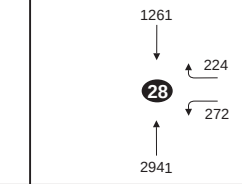
Alternative 3.1 (Year 2015) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 38A

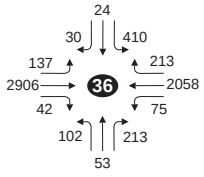
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

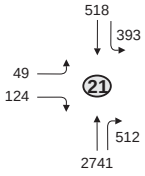
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



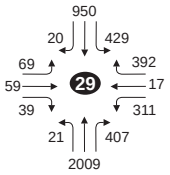
North/South: SB 405 Ramps
East/West: Ventura Blvd.



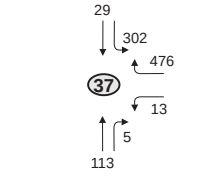
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

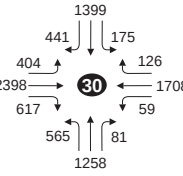


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

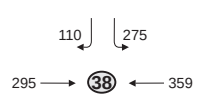
NO DATA AVAILABLE

22

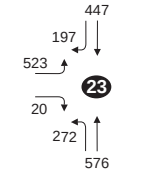
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



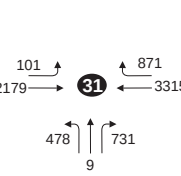
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



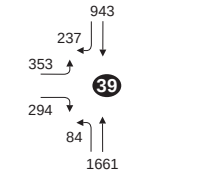
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



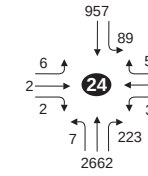
North/South: NB 405 Ramps
East/West: Burbank Blvd.



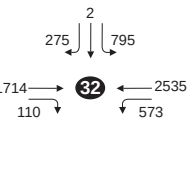
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



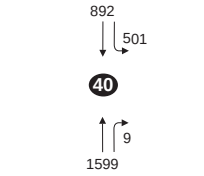
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



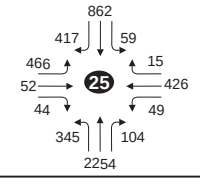
North/South: SB 405 Ramps
East/West: Burbank Blvd.



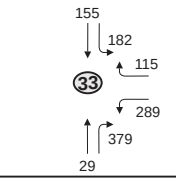
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



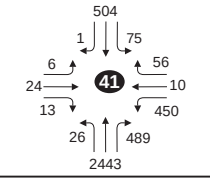
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



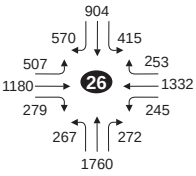
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



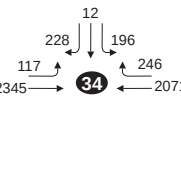
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



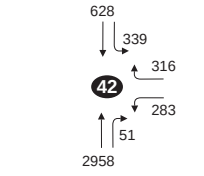
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



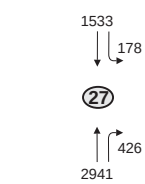
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

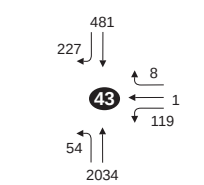


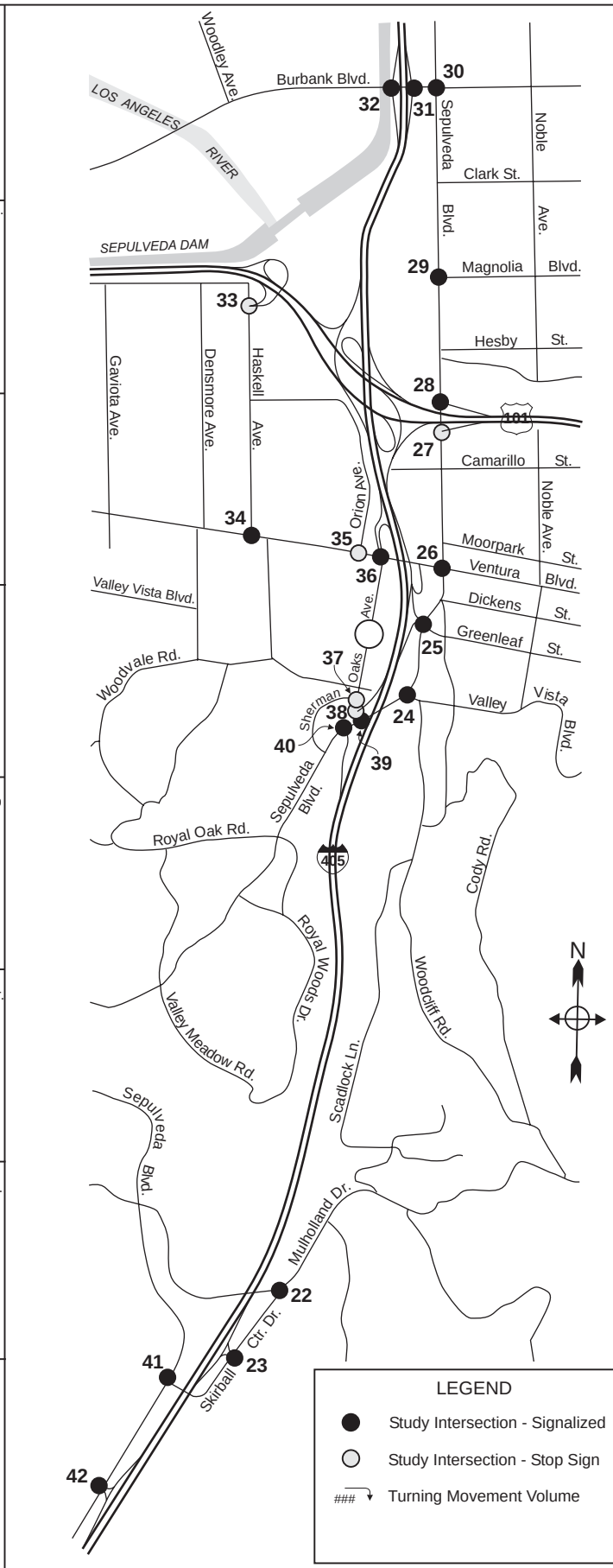
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





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I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 (Year 2015) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 38B

Table VIII.12 – Comparison of Alt. 1 (No Build) and Alt. 3A.1 Year 2015 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	220.0	F	215.4	F	-4.6
12	**Wilshire Blvd & Veteran Ave**	S	111.9	F	122.5	F	10.6
14	Montana Off-ramp & Sepulveda Blvd	S	38.5	D	DNE	DNE	-38.5
15	Montana Ave & Sepulveda Blvd	S	49.0	D	24.4	C	-24.6
16	Montana Ave & Veteran Ave	S	36.0	D	38.6	D	2.6
17	Sunset Blvd & NB 405 Off-ramp	S	44.7	D	18.2	B	-26.5
18	**Sunset Blvd & Veteran Ave**	S	103.8	F	124.5	F	20.7
19	Moraga On/Off-ramps & Sepulveda Blvd	S	123.0	F	8.4	A	-114.6
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	7.3	A	DNE	DNE	-7.3
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	600.5	F	49.0	E	-551.5
41	**Skirball Center Dr & N Sepulveda Blvd**	S	229.3	F	452.5	F	223.2
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	25.5	C	169.0	F	143.5
44	SB 405 On/Off-ramps & Church Lane	S	48.6	D	50.0	D	1.4
45	SB 405 On/Off-ramps & Church Lane	S	33.8	C	35.5	C	1.7
54	Sepulveda Way & Sepulveda Blvd	S	1.7	A	DNE	DNE	-1.7

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VIII.13 – Comparison of Alt. 1 (No Build) and Alt. 3A.1 Year 2015 PM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	205.8	F	203.7	F	-2.1
12	**Wilshire Blvd & Veteran Ave**	S	163.0	F	163.5	F	3.5
14	Montana Off-ramp & Sepulveda Blvd	S	120.6	F	DNE	DNE	-120.6
15	Montana Ave & Sepulveda Blvd	S	70.3	D	64.4	C	-5.9
16	Montana Ave & Veteran Ave	S	34.2	C	36.1	D	1.9
17	Sunset Blvd & NB 405 Off-ramp	S	11.1	B	9.8	A	-1.3
18	**Sunset Blvd & Veteran Ave**	S	48.1	D	51.3	D	3.2
19	Moraga On/Off-ramps & Sepulveda Blvd	S	50.8	D	23.8	C	-27.0
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	8.0	A	DNE	DNE	-8.0
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	0.8	A	163.0	F	162.2
41	**Skirball Center Dr & N Sepulveda Blvd**	S	151.0	F	147.5	F	-3.5
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	65.6	E	245.1	F	179.5
44	SB 405 On/Off-ramps & Church Lane	S	49.2	D	114.7	F	65.5
45	SB 405 On/Off-ramps & Church Lane	S	50.8	D	48.1	D	-2.7
54	Sepulveda Way & Sepulveda Blvd	S	9.0	A	DNE	DNE	-9.0

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Alternative 3A.1 Level of Service Analysis – Year 2031

The results of the level of service analysis for the year 2031 are summarized in Table VIII.18. Thirty-nine locations are forecast to perform at LOS F during one or both peak periods due to ambient growth.

Table VIII.14 – Alternative 3A.1 Year 2031 Level of Service Summary

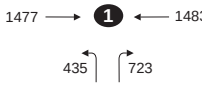
Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	24.5	C	46.1	D
2	National Blvd & Sepulveda Blvd	Signalized	151.2	F	152.5	F
3	Pico Blvd & Sepulveda Blvd	Signalized	189.2	F	349.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	213.4	F	93.0	F
5	Olympic Blvd & Cotner Ave	Signalized	45.7	D	75.3	E
6	Olympic Blvd & Sepulveda Blvd	Signalized	205.6	F	306.0	F
7	Santa Monica Blvd & Cotner Ave	Signalized	282.6	F	181.7	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	302.1	F	300.7	F
9	Santa Monica Blvd & Veteran Ave	Signalized	57.6	E	75.3	E
10	Santa Monica Blvd & Westwood Blvd	Signalized	153.1	F	148.4	F
11	Wilshire Blvd & Sepulveda Blvd	Signalized	342.8	F	377.6	F
12	Wilshire Blvd & Veteran Ave	Signalized	294.0	F	336.1	F
13	Wilshire Blvd & Westwood Blvd	Signalized	181.6	F	225.1	F
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	51.3	D	172.3	F
16	Montana Ave & Veteran Ave	Signalized	132.4	F	126.5	F
17	Sunset Blvd & NB 405 Off-ramp	Signalized	33.2	C	24.8	C
18	Sunset Blvd & Veteran Ave	Signalized	224.5	F	137.3	F
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	12.3	B	37.6	D
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	140.5	F	432.8	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	18.3	B	19.5	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	163.5	F	164.6	F
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	264.7	F	185.2	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	321.0	F	204.2	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.5	A	95.3	F
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	68.3	E	94.7	F
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	32.0	C	255.8	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	392.2	F	598.6	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	85.3	F	234.1	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	197.4	F	203.1	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	77.0	F	43.8	E
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	10.6	B	8.5	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	35.8	D	25.1	C

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	27.8	C	8.4	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	73.4	E	95.8	F
37	Fiume Walk & Sherman Oak Ave	Unsignalized	176.5	F	26.5	D
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	6.1	A	8.2	A
39	Fiume Walk & N Sepulveda Blvd	Signalized	115.1	F	16.2	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	107.7	F	22.8	C
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	556.8	F	299.6	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	389.0	F	405.8	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	36.3	D	18.2	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	105.4	F	212.2	F
45	Sunset Blvd & Church Lane	Signalized	62.3	E	140.1	F
46	Wilshire Blvd & Federal Ave	Signalized	354.8	F	372.6	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	182.9	F	106.5	F
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	188.1	F	994.6	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	122.3	F	223.8	F
50	SB 405 Off-ramp & Sawtelle Blvd	Signalized	100.0	F	142.2	F
51	Pico Blvd & Sawtelle Blvd	Signalized	117.5	F	212.2	F
52	National Blvd & Sawtelle Blvd	Signalized	155.9	F	172.0	F
53	National Blvd & SB 405 On-ramp	Signalized	16.7	B	34.3	C
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	DNE	DNE	DNE	DNE

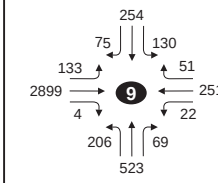
N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

Locations where the average delay per vehicle for the Alternative 3A.1 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VIII.15 and VIII.16. Nine intersections near the ramps that are closed in this alternative experience a reduction in control delay, while six study intersections that carry the redistributed volumes have higher delays.

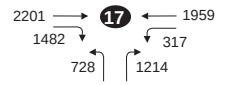
North/South: NB 405 Off-Ramp
East/West: National Blvd.



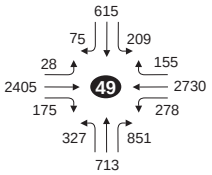
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



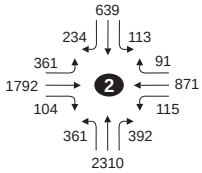
North/South: NB 405 Ramps
East/West: Sunset Blvd.



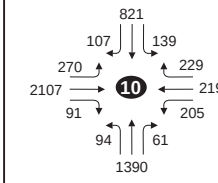
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



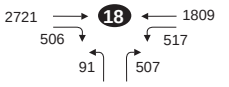
North/South: Sepulveda Blvd.
East/West: National Blvd.



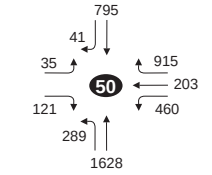
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



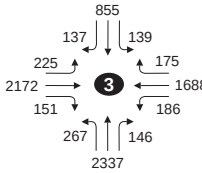
North/South: Veteran Ave.
East/West: Sunset Blvd.



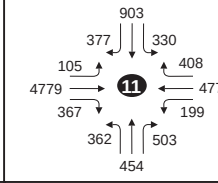
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



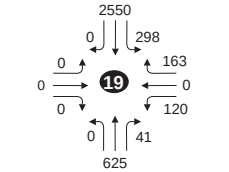
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



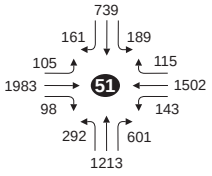
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



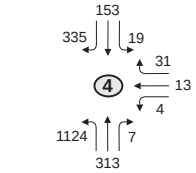
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



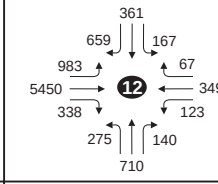
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



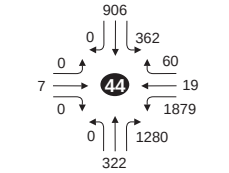
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



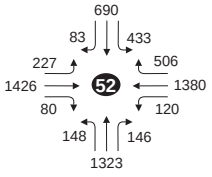
North/South: Veteran Ave.
East/West: Wilshire Blvd.



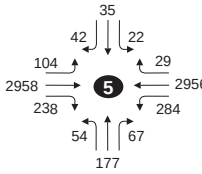
North/South: Church Ln.
East/West: SB 405 Ramps.



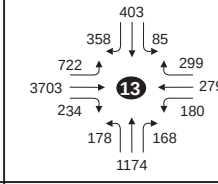
North/South: Sawtelle Blvd.
East/West: National Blvd.



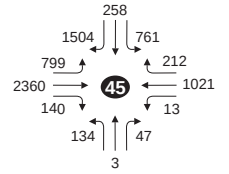
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

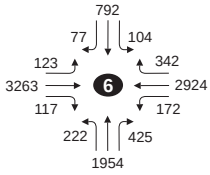


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

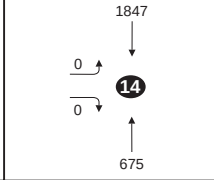


North/South: SB 405 On-Ramp
East/West: National Blvd.

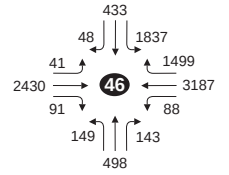
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



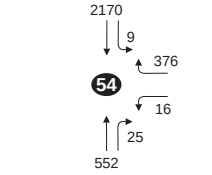
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



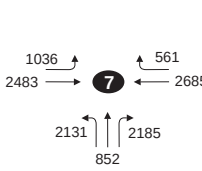
North/South: Federal Ave.
East/West: Wilshire Blvd.



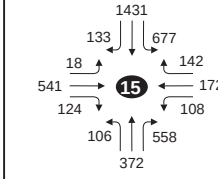
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



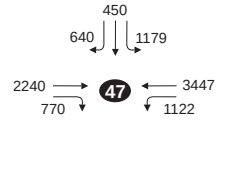
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



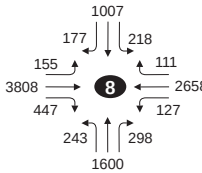
North/South: Sepulveda Blvd.
East/West: Montana Ave.



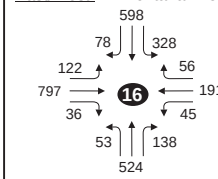
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



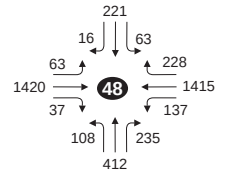
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

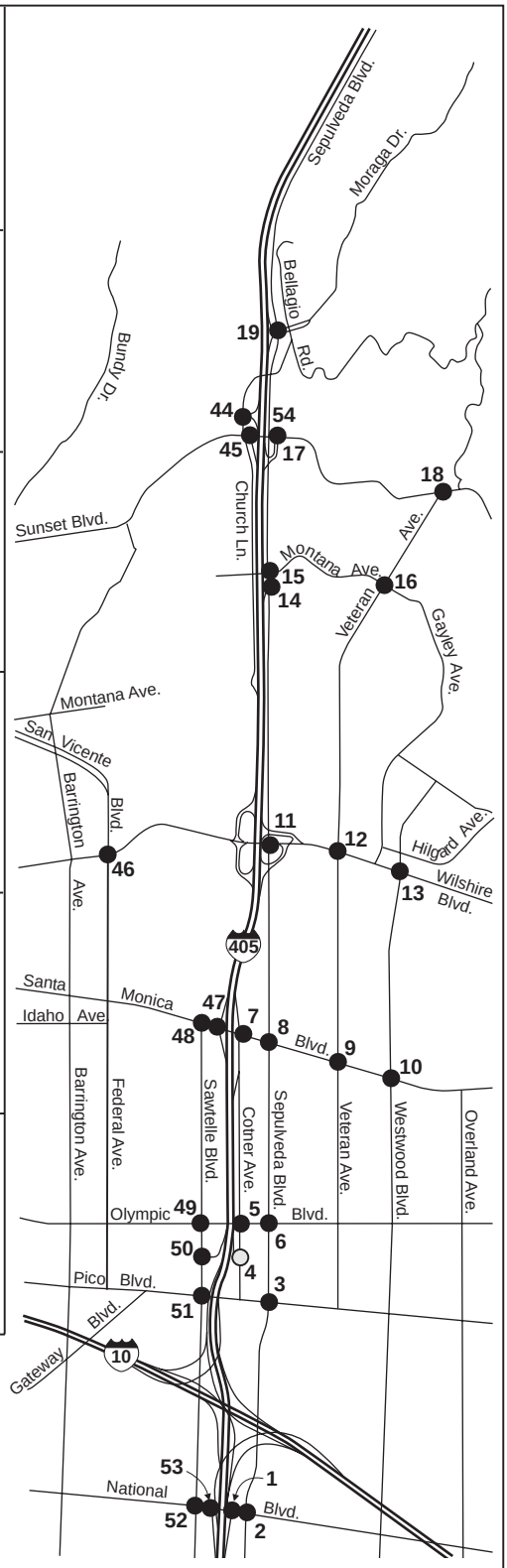


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

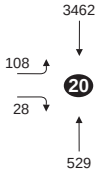
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

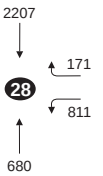
Alternative 3.1 (Year 2031) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 39A

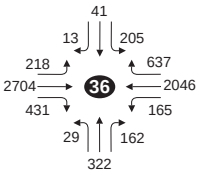
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp



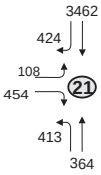
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



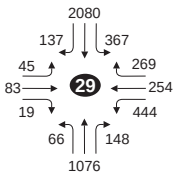
North/South: SB 405 Ramps
East/West: Ventura Blvd.



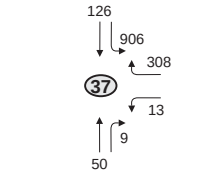
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

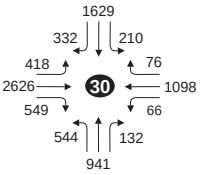


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

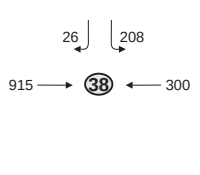
NO DATA AVAILABLE

22

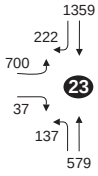
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



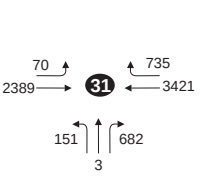
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



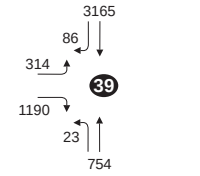
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



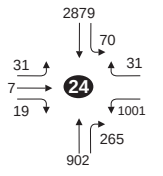
North/South: NB 405 Ramps
East/West: Burbank Blvd.



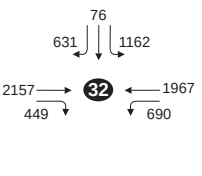
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



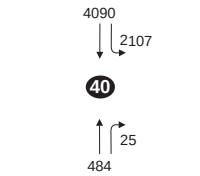
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



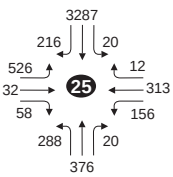
North/South: SB 405 Ramps
East/West: Burbank Blvd.



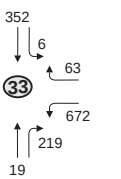
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



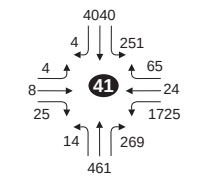
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



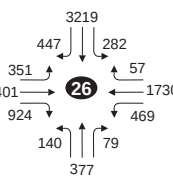
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



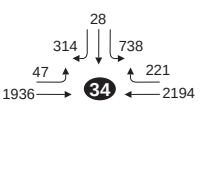
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



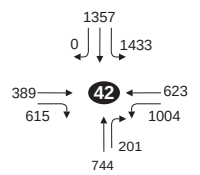
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



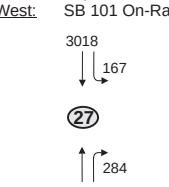
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

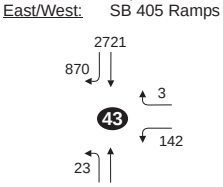


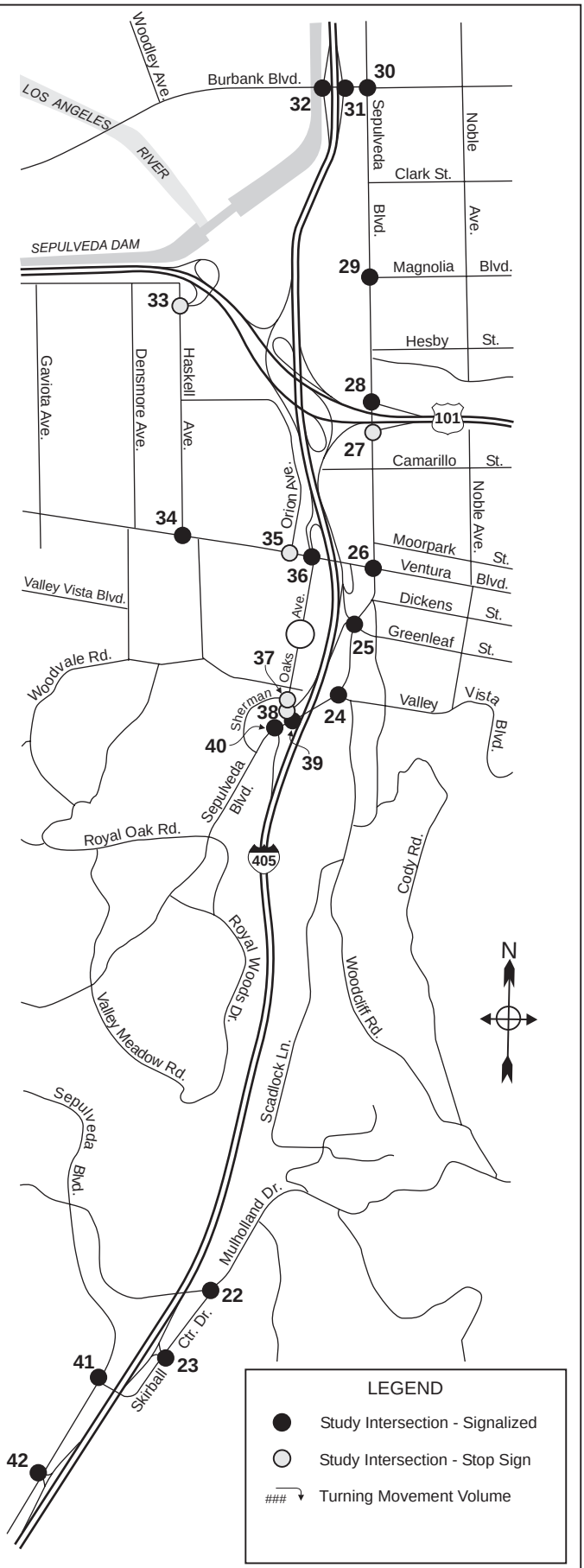
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



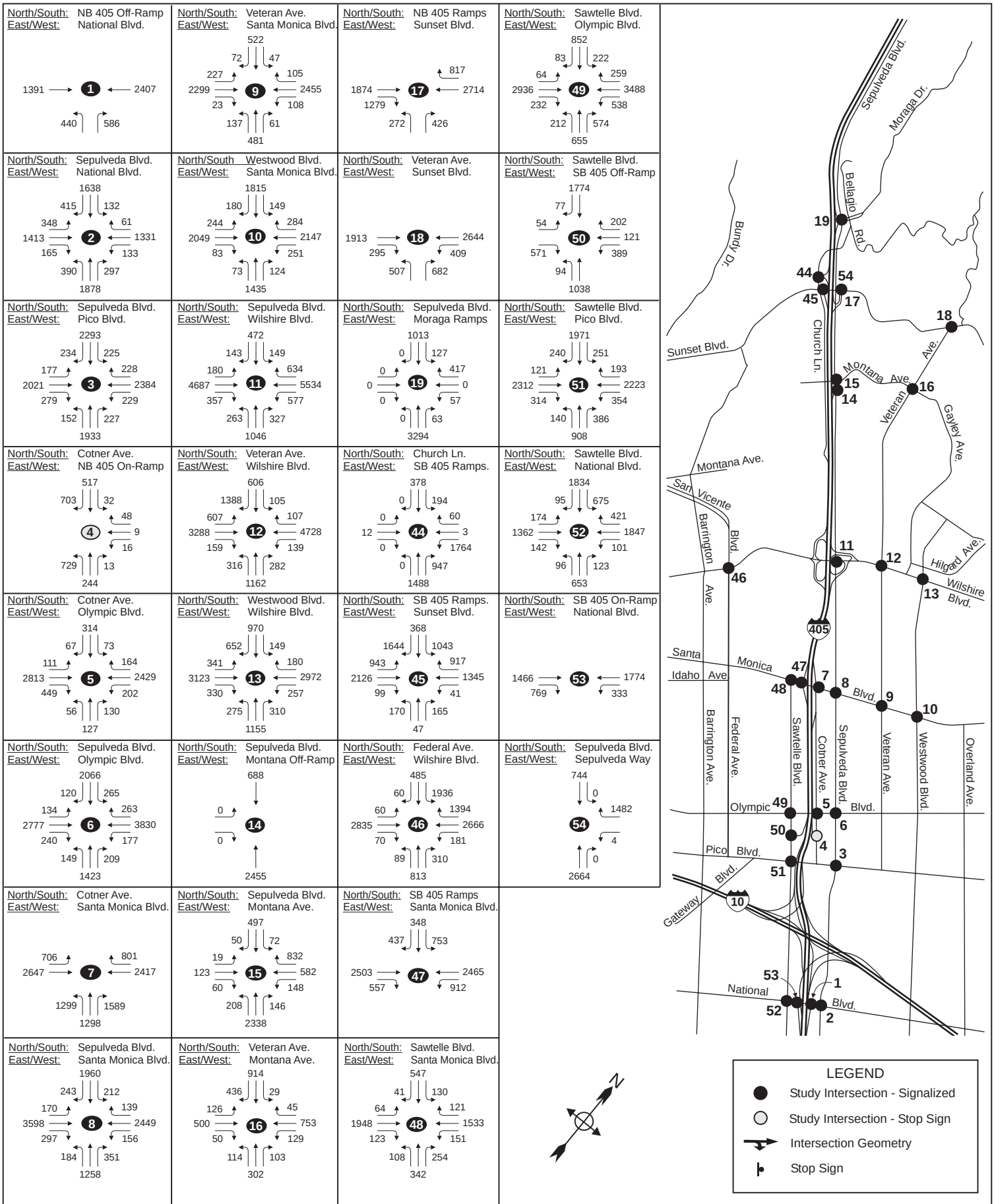


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 (Year 2031) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 39B



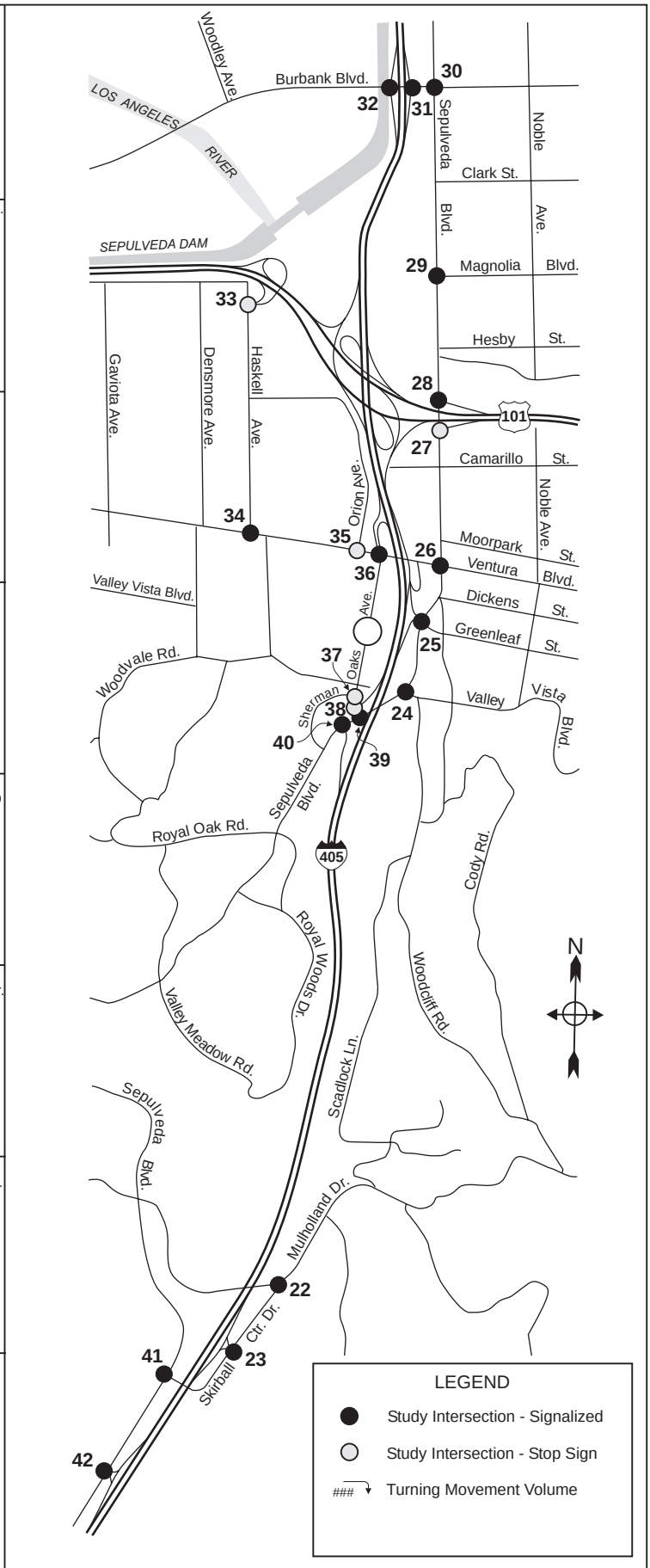
IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.1 (Year 2031) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 40A

North/South: Sepulveda Blvd. East/West: NB 405 Off-Ramp 20	North/South: Sepulveda Blvd. East/West: NB 101 Off-Ramp 1593 / 284 / 28 / 343 / 3715	North/South: SB 405 Ramps East/West: Ventura Blvd. 31 / 38 / 517 / 172 / 269 / 3671 / 36 / 2600 / 53 / 95 / 129 / 269 / 67
North/South: Sepulveda Blvd. East/West: NB 405 On-Ramp 655 / 497 / 61 / 21 / 158 / 647 / 3462	North/South: Sepulveda Blvd. East/West: Magnolia Blvd. 1200 / 25 / 542 / 88 / 495 / 75 / 29 / 22 / 50 / 393 / 26 / 514 / 2537	North/South: Sherman Oaks Ave. East/West: Fiume Wlk. 37 / 381 / 601 / 37 / 16 / 6 / 143
North/South: Skirball Center Dr. East/West: Mulholland Dr. NO DATA AVAILABLE 22	North/South: Sepulveda Blvd. East/West: Burbank Blvd. 1767 / 557 / 221 / 510 / 159 / 3029 / 30 / 2157 / 779 / 75 / 713 / 102 / 1589	North/South: SB 405 Off-Ramp East/West: Fiume Wlk. 139 / 348 / 373 / 38 / 453
North/South: Skirball Center Dr. East/West: NB 405 Ramps 564 / 248 / 661 / 23 / 25 / 343 / 728	North/South: NB 405 Ramps East/West: Burbank Blvd. 127 / 1100 / 2752 / 31 / 4187 / 604 / 924 / 12	North/South: Sepulveda Blvd. East/West: Fiume Wlk. 1191 / 300 / 446 / 39 / 371 / 107 / 2099
North/South: Sepulveda Blvd. East/West: Valley Vista Blvd. 1209 / 113 / 7 / 666 / 3 / 24 / 3 / 491 / 9 / 282 / 3363	North/South: SB 405 Ramps East/West: Burbank Blvd. 3 / 348 / 1004 / 2164 / 32 / 3202 / 339 / 723	North/South: Sepulveda Blvd. East/West: SB 405 On-Ramp 1127 / 633 / 40 / 12 / 2020
North/South: Sepulveda Blvd. East/West: Greenleaf St. 1089 / 526 / 75 / 589 / 19 / 66 / 25 / 538 / 56 / 61 / 435 / 132 / 2847	North/South: Haskell Ave. East/West: NB/SB 101 Ramps 196 / 229 / 33 / 145 / 365 / 479 / 37	North/South: Sepulveda Blvd. East/West: Skirball Center Dr. 636 / 1 / 95 / 7 / 70 / 30 / 41 / 12 / 17 / 568 / 33 / 616 / 3086
North/South: Sepulveda Blvd. East/West: Ventura Blvd. 1141 / 720 / 525 / 640 / 320 / 1491 / 26 / 1682 / 352 / 310 / 338 / 343 / 2223	North/South: Haskell Ave. East/West: Ventura Blvd. 15 / 288 / 247 / 148 / 311 / 2962 / 34 / 2616	North/South: SB 405 Ramps East/West: Skirball Center Dr. 792 / 0 / 429 / 398 / 0 / 42 / 0 / 0 / 358 / 65 / 3735
North/South: Sepulveda Blvd. East/West: SB 101 On-Ramp 1936 / 225 / 27 / 538 / 3715	North/South: Orion Ave. East/West: Ventura Blvd. NO DATA AVAILABLE 35	North/South: Sepulveda Blvd. East/West: SB 405 Ramps 608 / 286 / 10 / 43 / 151 / 69 / 2569



IBI GROUP	I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project Alternative 3.1 (Year 2031) Study Intersection Volumes (Northern Area) - PM Peak Hour	Figure 40B

Table VIII.15 – Comparison of Alt. 1 (No Build) and Alt. 3A.1 Year 2031 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	350.4	F	342.8	F	-7.6
12	**Wilshire Blvd & Veteran Ave**	S	275.8	F	294.0	F	18.2
14	Montana Off-ramp & Sepulveda Blvd	S	83.7	F	DNE	DNE	-83.7
15	Montana Ave & Sepulveda Blvd	S	92.1	F	51.3	D	-40.8
16	Montana Ave & Veteran Ave	S	121.1	F	132.4	F	11.3
17	Sunset Blvd & NB 405 Off-ramp	S	103.5	F	33.2	C	-70.3
18	**Sunset Blvd & Veteran Ave**	S	195.8	F	224.5	F	28.7
19	Moraga On/Off-ramps & Sepulveda Blvd	S	232.8	F	12.3	B	-220.5
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	51.5	D	DNE	DNE	-51.5
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	601.4	F	140.5	F	-460.9
41	**Skirball Center Dr & N Sepulveda Blvd**	S	412.0	F	556.8	F	144.8
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	26.5	C	389.0	F	362.5
44	SB 405 On/Off-ramps & Church Lane	S	105.9	F	105.4	F	-0.5
45	SB 405 On/Off-ramps & Church Lane	S	53.6	D	62.3	E	8.7
54	Sepulveda Way & Sepulveda Blvd	S	2.2	A	DNE	DNE	-2.2

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VIII.16 – Comparison Alt. 1 (No Build) and Alt. 3A.1 Year 2031 PM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.1		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	381.6	F	377.6	F	-4.0
12	**Wilshire Blvd & Veteran Ave**	S	326.6	F	336.1	F	9.5
14	Montana Off-ramp & Sepulveda Blvd	S	255.7	F	DNE	DNE	-255.7
15	Montana Ave & Sepulveda Blvd	S	179.0	F	172.3	F	-6.7
16	**Montana Ave & Veteran Ave**	S	112.6	F	126.5	F	13.9
17	Sunset Blvd & NB 405 Off-ramp	S	12.6	B	24.8	B	12.2
18	**Sunset Blvd & Veteran Ave**	S	126.3	F	137.3	F	11.0
19	Moraga On/Off-ramps & Sepulveda Blvd	S	84.1	F	37.6	D	-46.5
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	68.0	E	DNE	DNE	-68.0
21	**NB 405 Getty On-ramp & Sepulveda Blvd**	U	1.2	A	297.9	F	296.7
41	Skirball Center Dr & N Sepulveda Blvd	S	312.9	F	299.6	F	-13.3
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	71.8	E	405.8	F	334.0
44	**SB 405 On/Off-ramps & Church Lane**	S	134.1	F	212.2	F	78.1
45	SB 405 On/Off-ramps & Church Lane	S	111.9	F	140.1	F	28.2
54	Sepulveda Way & Sepulveda Blvd	S	27.0	D	DNE	DNE	-27.0

S – Signalized; U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

2. Alternative 3A.2

In Alternative 3A.2, the southbound off-ramp to Valley Vista Boulevard is removed, and the T-intersection formed by the off-ramp with Fiume Walk is also removed. There are no other intersection geometry changes associated with this alternative besides the changes that are common to both Alternative 3A.1 and 3A.2.

Year 2015 AM peak hour intersection volumes are shown in Figures 41A and 41B, and PM peak hour volumes are shown in Figures 42A and 42B. Figures 43A and 43B contain year 2031 AM peak hour intersection volumes, and Figures 44A and 44B show year 2031 PM peak volumes.

Alternative 3A.2 Level of Service Analysis – Year 2015

A level of service (LOS) analysis at the project intersections was performed using forecast year 2015 and 2031 turning movement volumes. The results of the level of service analysis are summarized in Table VIII.17. Twenty-five locations are forecast to perform at LOS F during one or both peak periods.

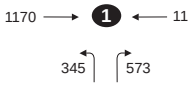
Table VIII.17 – Alternative 3A.2 Year 2015 Level of Service Summary

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	19.7	B	18.0	B
2	National Blvd & Sepulveda Blvd	Signalized	58.8	E	70.7	E
3	Pico Blvd & Sepulveda Blvd	Signalized	93.6	F	201.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	111.1	F	33.9	D
5	Olympic Blvd & Cotner Ave	Signalized	14.5	B	22.9	C
6	Olympic Blvd & Sepulveda Blvd	Signalized	91.9	F	158.9	F
7	Santa Monica Blvd & Cotner Ave	Signalized	150.1	F	84.2	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	155.1	F	163.9	F
9	Santa Monica Blvd & Veteran Ave	Signalized	28.9	C	34.4	C
10	Santa Monica Blvd & Westwood Blvd	Signalized	45.0	D	54.8	D
11	Wilshire Blvd & Sepulveda Blvd	Signalized	215.4	F	203.7	F
12	Wilshire Blvd & Veteran Ave	Signalized	122.5	F	163.5	F
13	Wilshire Blvd & Westwood Blvd	Signalized	51.5	D	73.4	E
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	31.7	C	70.6	E
16	Montana Ave & Veteran Ave	Signalized	38.6	D	36.1	D
17	Sunset Blvd & NB 405 Off-ramp	Signalized	17.4	B	11.0	B
18	Sunset Blvd & Veteran Ave	Signalized	124.5	F	51.3	D
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	123.0	F	50.8	D
20	NB 405 Getty Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	9.8	A	276.9	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	10.5	B	10.2	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	82.0	F	55.7	E
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	149.1	F	80.1	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	208.1	F	94.5	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.4	A	22.4	C
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	28.3	C	48.4	D

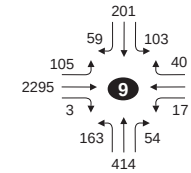
Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	19.6	B	122.2	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	233.2	F	396.1	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	21.2	C	100.9	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	105.3	F	84.8	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	25.3	D	17.3	C
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	9.4	A	8.1	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	18.4	B	16.3	B
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	12.9	B	4.9	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	45.9	D	34.5	C
37	Fiume Walk & Sherman Oak Ave	Unsignalized	66.0	F	11.9	B
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	DNE	DNE	DNE	DNE
39	Fiume Walk & N Sepulveda Blvd	Signalized	41.5	D	8.3	A
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	58.3	E	17.3	B
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	452.5	F	147.5	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	169.0	F	245.1	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	16.3	B	16.5	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	45.2	D	46.8	D
45	Sunset Blvd & Church Lane	Signalized	35.7	D	68.2	E
46	Wilshire Blvd & Federal Ave	Signalized	184.8	F	215.5	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	71.7	E	46.5	D
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	89.1	F	739.1	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	49.3	D	116.3	F
50	SB 405 Tennessee Off-ramp & Sawtelle Blvd	Signalized	35.7	D	73.7	E
51	Pico Blvd & Sawtelle Blvd	Signalized	46.0	D	105.0	F
52	National Blvd & Sawtelle Blvd	Signalized	110.6	F	94.3	F
53	National Blvd & SB 405 On-ramp	Signalized	8.2	A	8.6	A
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	1.7	A	9.0	A

N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

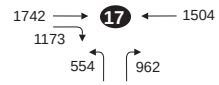
North/South: NB 405 Off-Ramp
East/West: National Blvd.



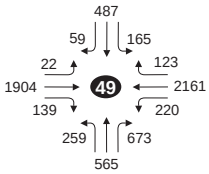
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



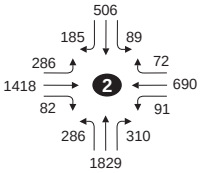
North/South: NB 405 Ramps
East/West: Sunset Blvd.



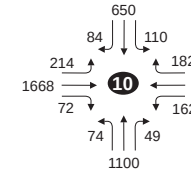
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



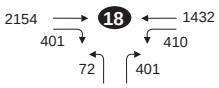
North/South: Sepulveda Blvd.
East/West: National Blvd.



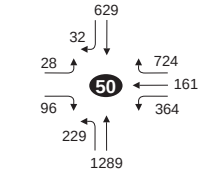
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



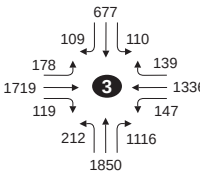
North/South: Veteran Ave.
East/West: Sunset Blvd.



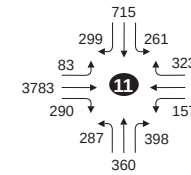
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



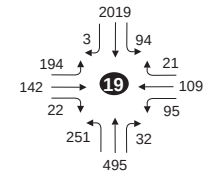
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



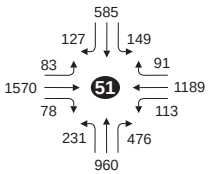
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



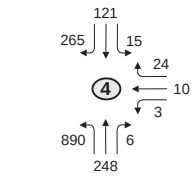
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



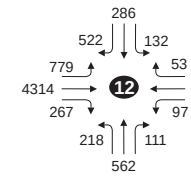
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



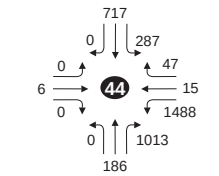
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



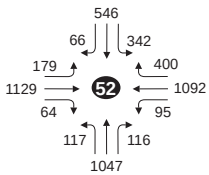
North/South: Veteran Ave.
East/West: Wilshire Blvd.



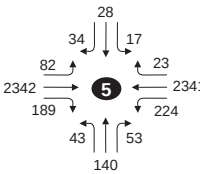
North/South: Church Ln.
East/West: SB 405 Ramps.



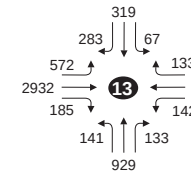
North/South: Sawtelle Blvd.
East/West: National Blvd.



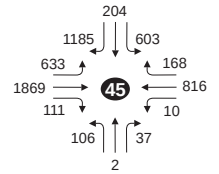
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

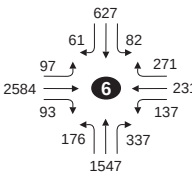


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

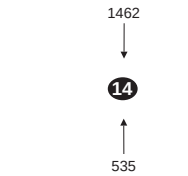


North/South: SB 405 On-Ramp
East/West: National Blvd.

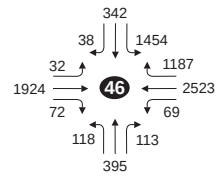
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



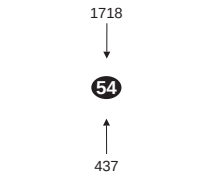
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



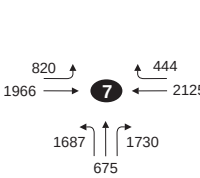
North/South: Federal Ave.
East/West: Wilshire Blvd.



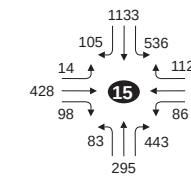
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



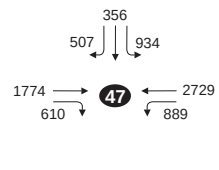
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



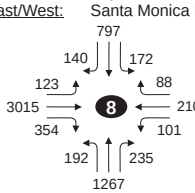
North/South: Sepulveda Blvd.
East/West: Montana Ave.



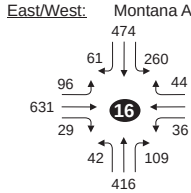
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



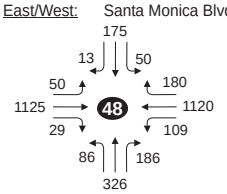
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

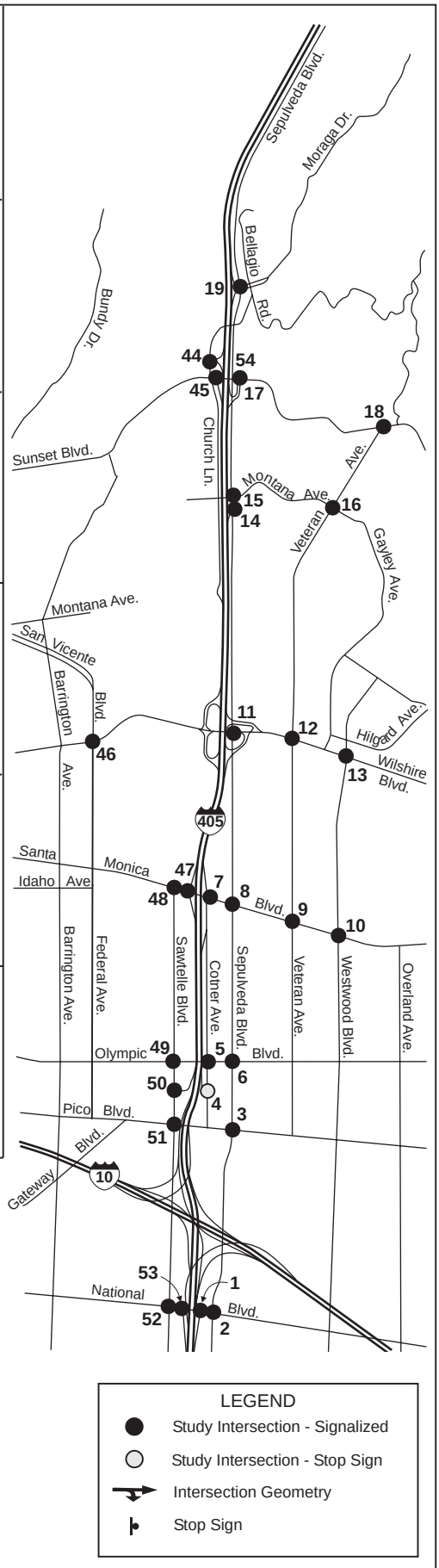


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

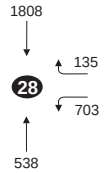
I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 (Year 2015) Study Intersection Volumes (Southern Area) - AM Peak Hour

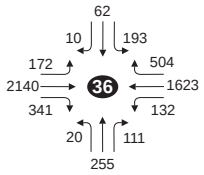
Figure 41A

North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

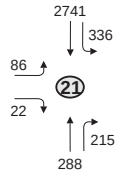
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



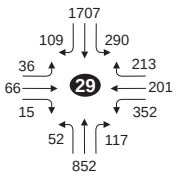
North/South: SB 405 Ramps
East/West: Ventura Blvd.



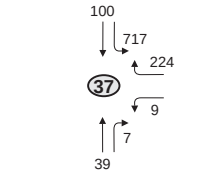
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



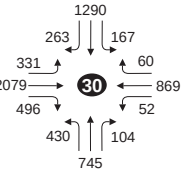
North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.



North/South: Skirball Center Dr.
East/West: Mulholland Dr.

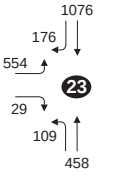
NO DATA AVAILABLE

North/South: Sepulveda Blvd.
East/West: Burbank Blvd.

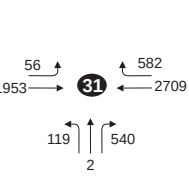


North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

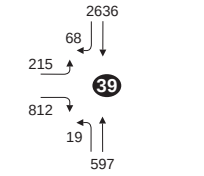
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



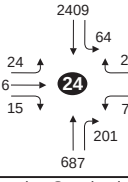
North/South: NB 405 Ramps
East/West: Burbank Blvd.



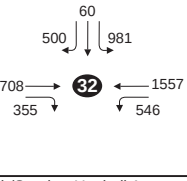
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



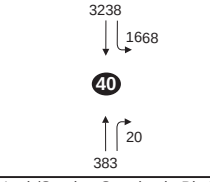
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



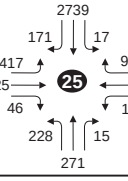
North/South: SB 405 Ramps
East/West: Burbank Blvd.



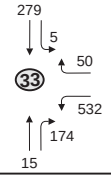
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



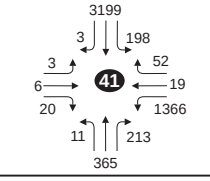
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



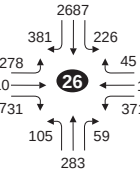
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



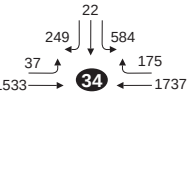
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



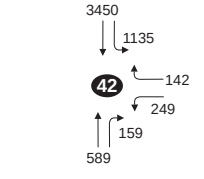
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



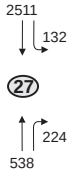
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



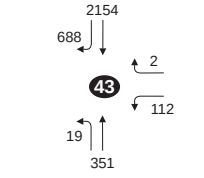
North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

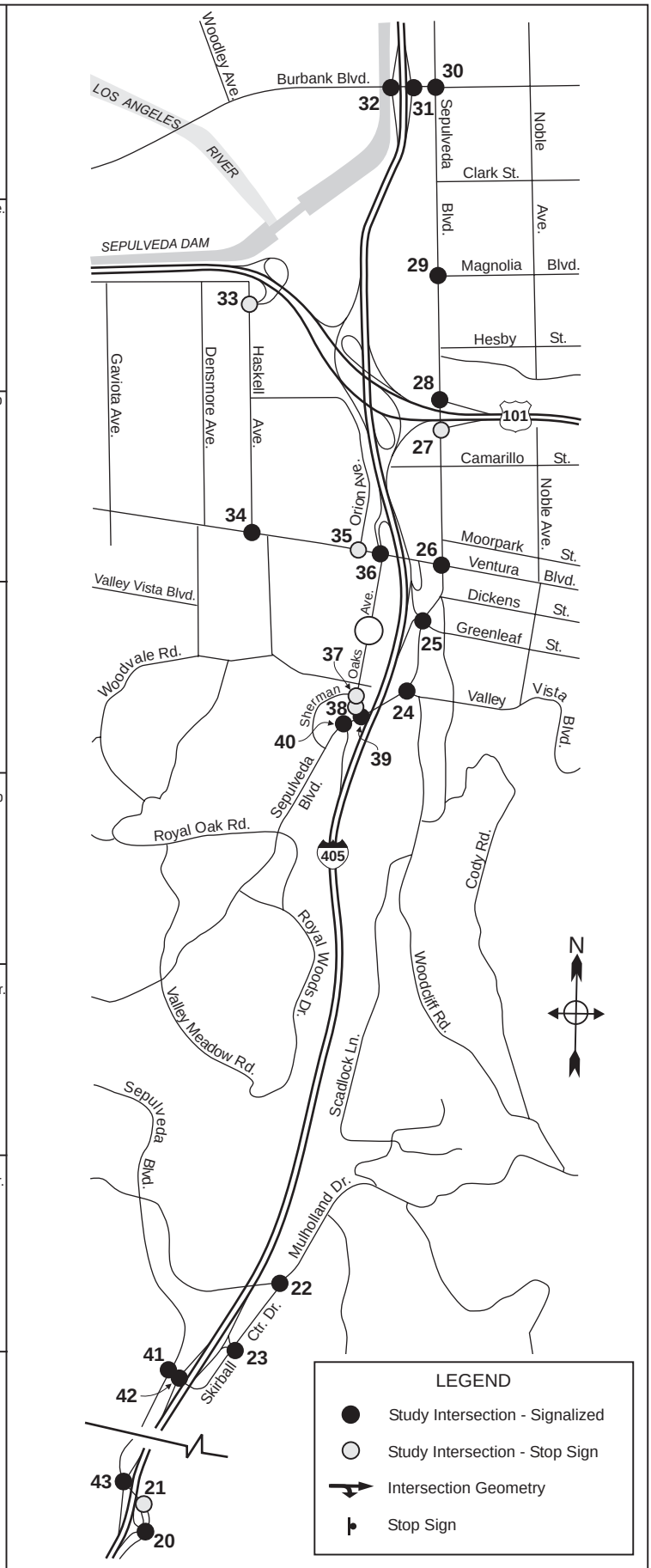


North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



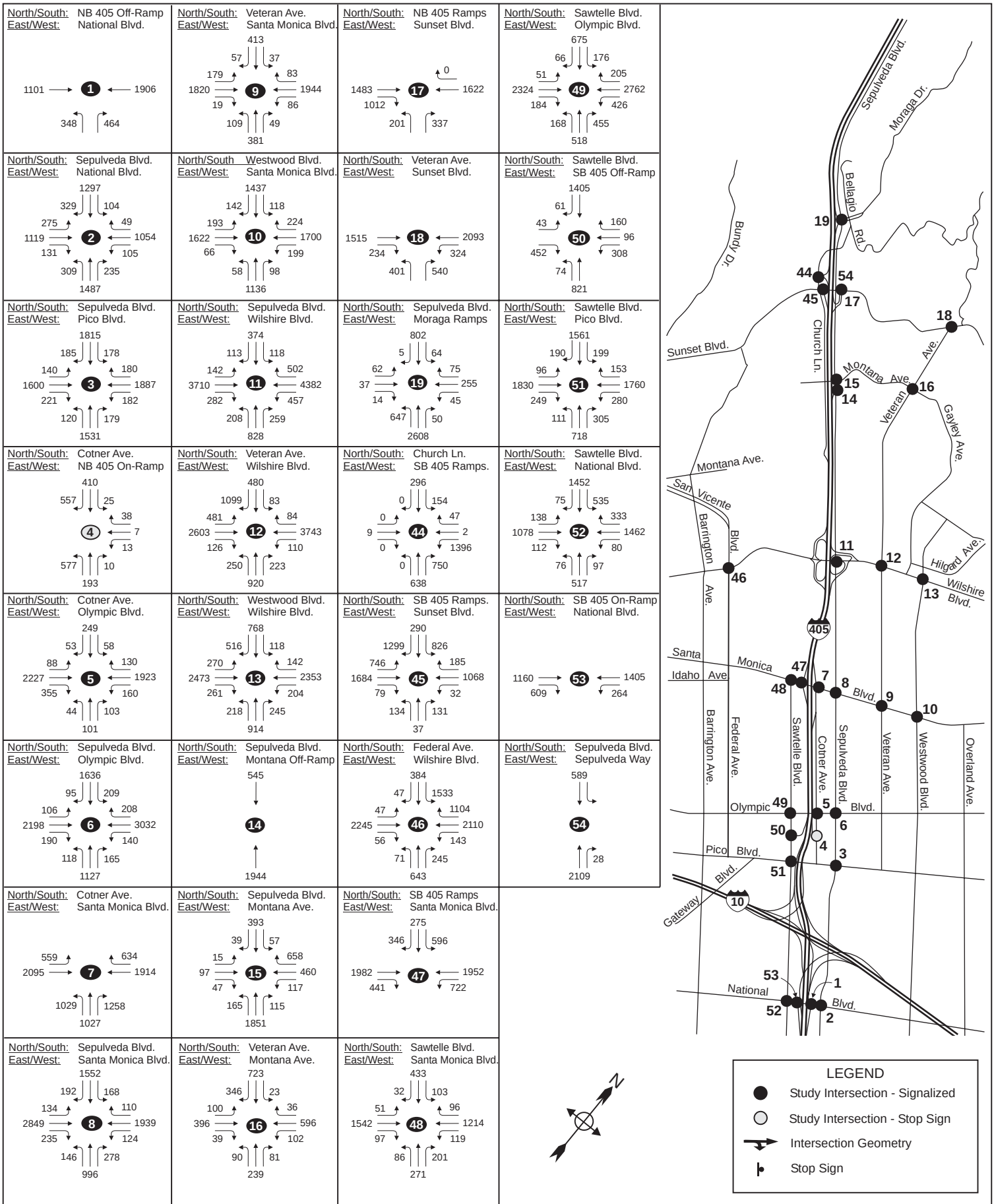


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 (Year 2015) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 41B



IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

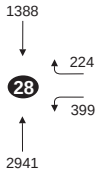
Alternative 3.2 (Year 2015) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 42A

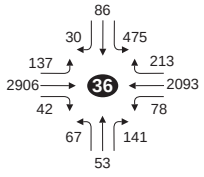
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

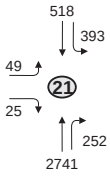
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



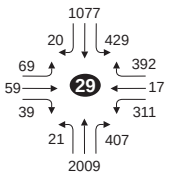
North/South: SB 405 Ramps
East/West: Ventura Blvd.



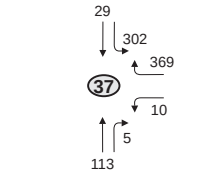
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

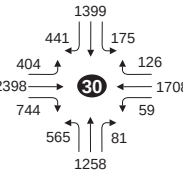


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

NO DATA AVAILABLE

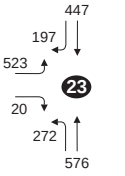
22

North/South: Sepulveda Blvd.
East/West: Burbank Blvd.

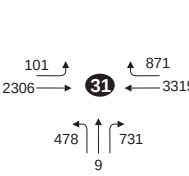


North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

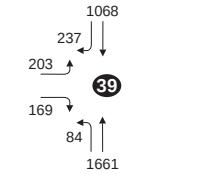
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



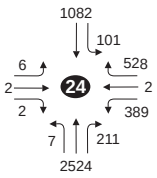
North/South: NB 405 Ramps
East/West: Burbank Blvd.



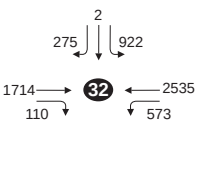
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



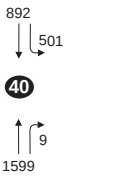
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



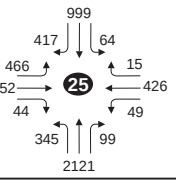
North/South: SB 405 Ramps
East/West: Burbank Blvd.



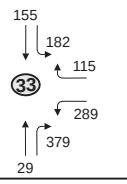
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



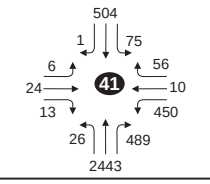
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



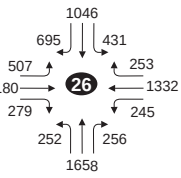
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



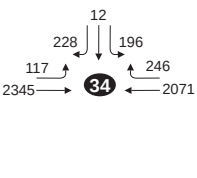
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



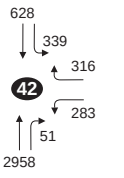
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



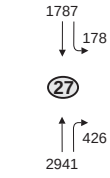
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

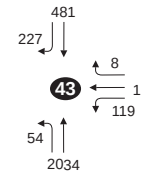


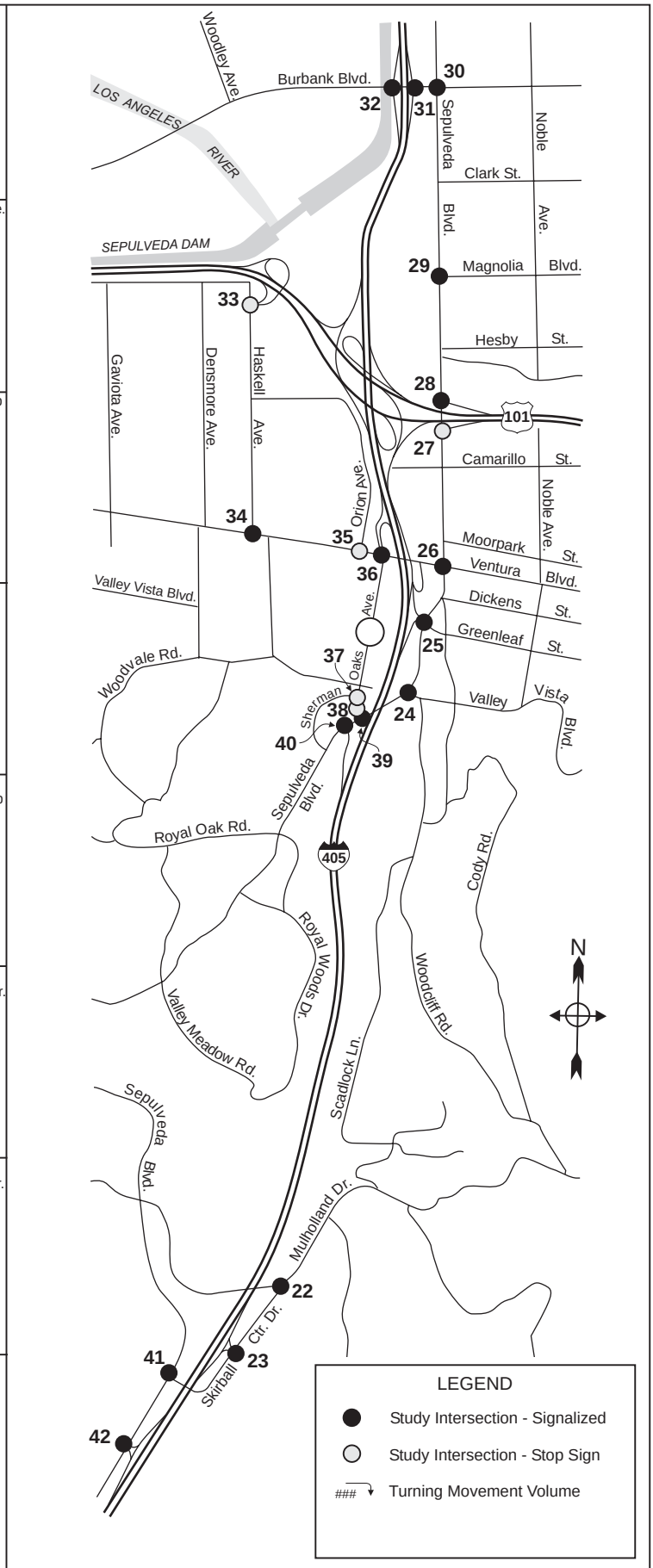
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 (Year 2015) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 42B

Locations where the average delay per vehicle for the Alternative 3A.2 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VIII.18 and VIII.19. Intersections adjacent to ramps that are closed in this alternative experience a reduction in control delay, while study intersections that carry the redistributed volumes have higher delays. The removal of the southbound I-405 exit to Valley Vista/Sepulveda Boulevard, which is not necessarily associated with this project, causes traffic to be redistributed through a highly congested area, and creates the impacts at intersection #24, #25, #26, #28, #29, #30, #31, #32, and #36.

Table VIII.18 – Comparison of Alt. 1 (No Build) and Alt. 3A.2 Year 2015 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	220.0	F	215.4	F	-4.6
12	**Wilshire Blvd & Veteran Ave**	S	111.9	F	122.5	F	10.6
14	Montana Off-ramp & Sepulveda Blvd	S	38.5	D	DNE	DNE	-38.5
15	Montana Ave & Sepulveda Blvd	S	49.0	D	31.7	C	-17.3
16	Montana Ave & Veteran Ave	S	36.0	D	38.6	D	2.6
17	Sunset Blvd & NB 405 Off-ramp	S	44.7	D	17.4	B	-27.3
18	**Sunset Blvd & Veteran Ave**	S	103.8	F	124.5	F	20.7
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	7.3	A	DNE	DNE	-7.3
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	600.5	F	9.8	A	-590.7
24	**Valley Vista Blvd & Sepulveda Blvd**	S	78.0	E	82.0	F	4.0
25	**Greenleaf On/Off-ramps & Sepulveda Blvd**	S	135.3	F	149.1	F	13.8
26	**Ventura Blvd & Sepulveda Blvd**	S	189.0	F	208.1	F	19.1
28	**NB 101 Off-ramp & N Sepulveda Blvd**	S	22.7	C	83.0	F	60.3
29	Magnolia Blvd & N Sepulveda Blvd	S	19.6	B	32.3	C	12.7
30	**Burbank Blvd & N Sepulveda Blvd**	S	225.6	F	399.3	F	173.7
31	**Burbank Blvd & NB 405 On/Off-ramps**	S	21.0	C	85.1	F	64.1
32	**Burbank Blvd & SB 405 On/Off-ramps**	S	103.7	F	201.1	F	97.4
36	Ventura Blvd & SB 405 On/Off-ramps	S	44.3	D	45.9	D	1.6
37	Fiume Walk & Sherman Oak Ave	U	68.9	F	66.0	F	-2.9
38	Fiume Walk & SB 405 Off-ramp	U	3.4	A	DNE	DNE	-3.4
39	Fiume Walk & N Sepulveda Blvd	S	51.2	D	41.5	D	-9.7
40	SB 405 On-ramp & N Sepulveda Blvd	S	58.2	E	58.3	E	0.1
41	**Skirball Center Dr & N Sepulveda Blvd**	S	229.3	F	452.5	F	223.2
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	25.5	C	169.0	F	143.5
44	SB 405 On/Off-ramps & Church Lane	S	48.6	D	45.2	D	-3.4
45	Sunset Blvd & Church Lane	S	33.8	C	35.7	D	1.9

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VIII.19 – Comparison of Alt. 1 (No Build) and Alt. 3A.2 Year 2015 PM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	205.8	F	203.7	F	-2.1
12	**Wilshire Blvd & Veteran Ave**	S	163.0	F	163.5	F	0.5
14	Montana Off-ramp & Sepulveda Blvd	S	120.6	F	DNE	DNE	-120.6
15	Montana Ave & Sepulveda Blvd	S	70.3	E	70.6	E	0.3
16	Montana Ave & Veteran Ave	S	34.2	C	36.1	D	1.9
17	Sunset Blvd & NB 405 Off-ramp	S	11.1	B	11.0	B	-0.1
18	Sunset Blvd & Veteran Ave	S	48.1	D	51.3	D	3.2
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	8.0	A	DNE	DNE	-8.0
21	**NB 405 Getty On-ramp & Sepulveda Blvd**	U	0.8	A	276.9	F	276.1
24	Valley Vista Blvd & Sepulveda Blvd	S	74.0	E	55.7	E	-18.3
25	Greenleaf On/Off-ramps & Sepulveda Blvd	S	85.3	F	80.1	F	-5.2
26	Ventura Blvd & Sepulveda Blvd	S	100.2	F	94.5	F	-5.7
27	NB 101 On-ramp & Sepulveda Blvd	U	23.5	C	22.4	C	-1.1
28	NB 101 Off-ramp & N Sepulveda Blvd	S	28.2	C	48.4	D	20.2
29	Magnolia Blvd & N Sepulveda Blvd	S	125.2	F	122.2	F	-3.0
30	**Burbank Blvd & N Sepulveda Blvd**	S	383.8	F	396.1	F	12.3
31	Burbank Blvd & NB 405 On/Off-ramps	S	101.6	F	100.9	F	-0.7
32	**Burbank Blvd & SB 405 On/Off-ramps**	S	77.8	E	84.8	F	7.0
36	Ventura Blvd & SB 405 On/Off-ramps	S	30.3	C	34.5	C	4.2
37	Fiume Walk & Sherman Oak Ave	U	14.1	B	11.9	B	-2.2
38	Fiume Walk & SB 405 Off-ramp	U	5.7	A	DNE	DNE	-5.7
39	Fiume Walk & N Sepulveda Blvd	S	11.8	B	8.3	A	-3.5
40	SB 405 On-ramp & N Sepulveda Blvd	S	17.7	B	17.3	B	-0.4
41	Skirball Center Dr & N Sepulveda Blvd	S	151.0	F	147.5	F	-3.5
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	65.6	E	245.1	F	179.5
44	SB 405 On/Off-ramps & Church Lane	S	49.2	D	46.8	D	-2.4
45	Sunset Blvd & Church Lane	S	50.8	D	68.2	E	17.4

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Alternative 3A.2 Level of Service Analysis – Year 2031

The results of the level of service analysis for the year 2031 are summarized in Table VIII.20. Forty locations are forecast to perform at LOS F during one or both peak periods.

Table VIII.20 – Alternative 3A.2 Year 2031 Level of Service Summary

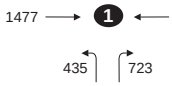
Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	National Blvd & NB 405 Off-ramp	Signalized	24.5	C	46.1	D
2	National Blvd & Sepulveda Blvd	Signalized	151.2	F	152.5	F
3	Pico Blvd & Sepulveda Blvd	Signalized	189.2	F	349.0	F
4	NB 405 Tennessee On-Ramp & Cotner Ave	Unsignalized	213.4	F	93.0	F
5	Olympic Blvd & Cotner Ave	Signalized	45.7	D	75.3	E
6	Olympic Blvd & Sepulveda Blvd	Signalized	205.6	F	306.0	F
7	Santa Monica Blvd & Cotner Ave	Signalized	282.6	F	181.7	F
8	Santa Monica Blvd & Sepulveda Blvd	Signalized	302.1	F	300.7	F
9	Santa Monica Blvd & Veteran Ave	Signalized	57.6	E	75.3	E
10	Santa Monica Blvd & Westwood Blvd	Signalized	153.1	F	148.4	F
11	Wilshire Blvd & Sepulveda Blvd	Signalized	342.8	F	377.6	F
12	Wilshire Blvd & Veteran Ave	Signalized	294.0	F	336.1	F
13	Wilshire Blvd & Westwood Blvd	Signalized	181.6	F	225.1	F
14	Montana Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
15	Montana Ave & Sepulveda Blvd	Signalized	51.3	D	172.3	F
16	Montana Ave & Veteran Ave	Signalized	132.4	F	126.5	F
17	Sunset Blvd & NB 405 Off-ramp	Signalized	28.6	C	12.0	B
18	Sunset Blvd & Veteran Ave	Signalized	224.5	F	137.3	F
19	Moraga On/Off-ramps & Sepulveda Blvd	Signalized	232.8	F	84.1	F
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	Signalized	DNE	DNE	DNE	DNE
21	NB 405 Getty On-ramp & Sepulveda Blvd	Unsignalized	50.6	F	422.5	F
22	Skirball Center Dr & Mulholland Dr	Signalized	N/A	N/A	N/A	N/A
23	Skirball Center Dr & NB 405 On/Off-ramps	Signalized	18.3	B	19.5	B
24	Valley Vista Blvd & Sepulveda Blvd	Signalized	179.8	F	137.8	F
25	Greenleaf On/Off-ramps & Sepulveda Blvd	Signalized	283.9	F	176.1	F
26	Ventura Blvd & Sepulveda Blvd	Signalized	346.8	F	205.6	F
27	NB 101 On-ramp & Sepulveda Blvd	Unsignalized	0.5	A	95.3	F
28	NB 101 Off-ramp & N Sepulveda Blvd	Signalized	68.3	E	94.7	F
29	Magnolia Blvd & N Sepulveda Blvd	Signalized	32.0	C	255.8	F
30	Burbank Blvd & N Sepulveda Blvd	Signalized	392.2	F	598.6	F
31	Burbank Blvd & NB 405 On/Off-ramps	Signalized	85.3	F	234.1	F
32	Burbank Blvd & SB 405 On/Off-ramps	Signalized	197.4	F	203.1	F
33(a)	NB 101 On/Off-ramps & Haskell Ave	Unsignalized	77.0	F	43.8	E
33(b)	SB 101 Off-ramp & Haskell Ave	Unsignalized	10.6	B	8.5	A
34(a)	Ventura Blvd & Haskell Ave (North)	Signalized	35.8	D	25.1	C

Intersection		Control	AM Peak		PM Peak	
			Delay (s/veh)	LOS	Delay (s/veh)	LOS
34(b)	Ventura Blvd & Haskell Ave (South)	Signalized	27.8	C	8.4	A
35	Ventura Blvd & Orion Ave	Unsignalized	N/A	N/A	N/A	N/A
36	Ventura Blvd & SB 405 On/Off-ramps	Signalized	73.8	E	72.8	E
37	Fiume Walk & Sherman Oak Ave	Unsignalized	171.9	F	17.0	C
38	Fiume Walk & SB 405 Off-ramp	Unsignalized	DNE	DNE	DNE	DNE
39	Fiume Walk & N Sepulveda Blvd	Signalized	101.1	F	10.2	B
40	SB 405 On-ramp & N Sepulveda Blvd	Signalized	107.8	F	21.5	C
41	Skirball Center Dr & N Sepulveda Blvd	Signalized	556.8	F	299.6	F
42	Skirball Center Dr & SB 405 On/Off-ramps	Signalized	389.0	F	405.8	F
43	SB 405 Getty On/Off-ramps & Sepulveda Blvd	Signalized	36.3	D	18.2	B
44	SB 405 On/Off-ramps & Church Lane	Signalized	95.2	F	121.4	F
45	Sunset Blvd & Church Lane	Signalized	62.8	E	149.2	F
46	Wilshire Blvd & Federal Ave	Signalized	354.8	F	372.6	F
47	Santa Monica Blvd & SB 405 On/Off-ramps	Signalized	182.9	F	106.5	F
48	Santa Monica Blvd & Sawtelle Blvd	Signalized	188.1	F	994.6	F
49	Olympic Blvd & Sawtelle Blvd	Signalized	122.3	F	223.8	F
50	SB 405 Off-ramp & Sawtelle Blvd	Signalized	100.0	F	142.2	F
51	Pico Blvd & Sawtelle Blvd	Signalized	117.5	F	212.2	F
52	National Blvd & Sawtelle Blvd	Signalized	155.9	F	172.0	F
53	National Blvd & SB 405 On-ramp	Signalized	16.7	B	34.3	C
54	Sepulveda Way & Sepulveda Blvd	Unsignalized	2.2	A	27.0	D

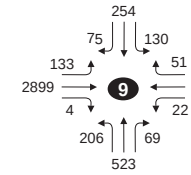
N/A – Intersection screened from analysis, no impact.
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.
Level of service (LOS) values based on HCM 2000 methodology.

Locations where the average delay per vehicle for the Alternative 3A.2 peak hour changes from the Alternative 1 (no build) condition are summarized in Tables VIII.21 and VIII.22. Intersections adjacent to ramps that are closed in this alternative experience a reduction in control delay, while study intersections that carry the redistributed volumes have higher delays.

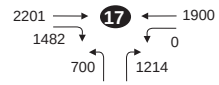
North/South: NB 405 Off-Ramp
East/West: National Blvd.



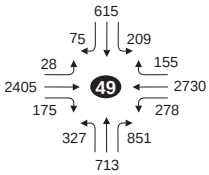
North/South: Veteran Ave.
East/West: Santa Monica Blvd.



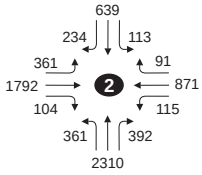
North/South: NB 405 Ramps
East/West: Sunset Blvd.



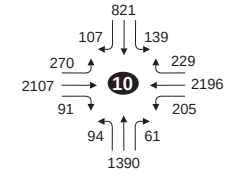
North/South: Sawtelle Blvd.
East/West: Olympic Blvd.



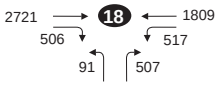
North/South: Sepulveda Blvd.
East/West: National Blvd.



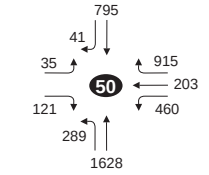
North/South Westwood Blvd.
East/West: Santa Monica Blvd.



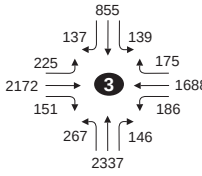
North/South: Veteran Ave.
East/West: Sunset Blvd.



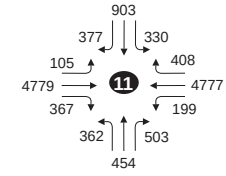
North/South: Sawtelle Blvd.
East/West: SB 405 Off-Ramp



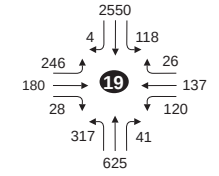
North/South: Sepulveda Blvd.
East/West: Pico Blvd.



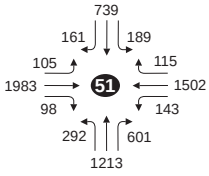
North/South: Sepulveda Blvd.
East/West: Wilshire Blvd.



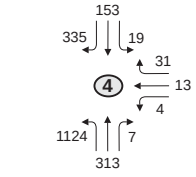
North/South: Sepulveda Blvd.
East/West: Moraga Ramps



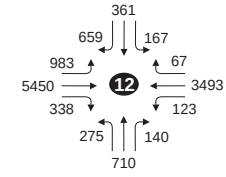
North/South: Sawtelle Blvd.
East/West: Pico Blvd.



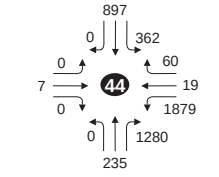
North/South: Cotner Ave.
East/West: NB 405 On-Ramp



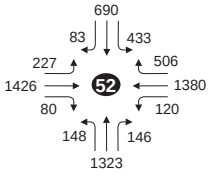
North/South: Veteran Ave.
East/West: Wilshire Blvd.



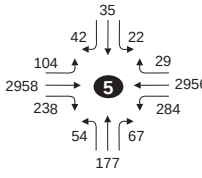
North/South: Church Ln.
East/West: SB 405 Ramps.



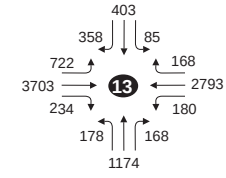
North/South: Sawtelle Blvd.
East/West: National Blvd.



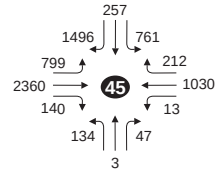
North/South: Cotner Ave.
East/West: Olympic Blvd.



North/South: Westwood Blvd.
East/West: Wilshire Blvd.

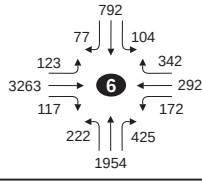


North/South: SB 405 Ramps.
East/West: Sunset Blvd.

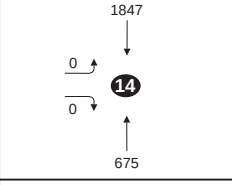


North/South: SB 405 On-Ramp
East/West: National Blvd.

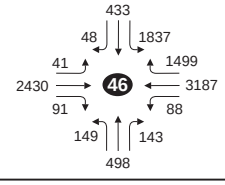
North/South: Sepulveda Blvd.
East/West: Olympic Blvd.



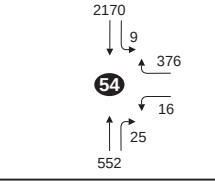
North/South: Sepulveda Blvd.
East/West: Montana Off-Ramp



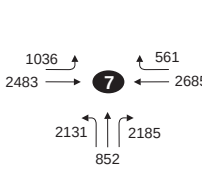
North/South: Federal Ave.
East/West: Wilshire Blvd.



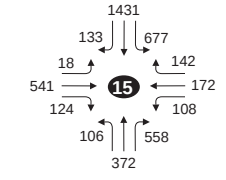
North/South: Sepulveda Blvd.
East/West: Sepulveda Way



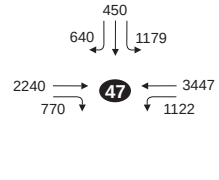
North/South: Cotner Ave.
East/West: Santa Monica Blvd.



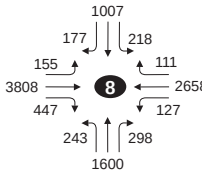
North/South: Sepulveda Blvd.
East/West: Montana Ave.



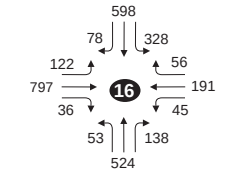
North/South: SB 405 Ramps
East/West: Santa Monica Blvd.



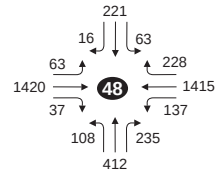
North/South: Sepulveda Blvd.
East/West: Santa Monica Blvd.

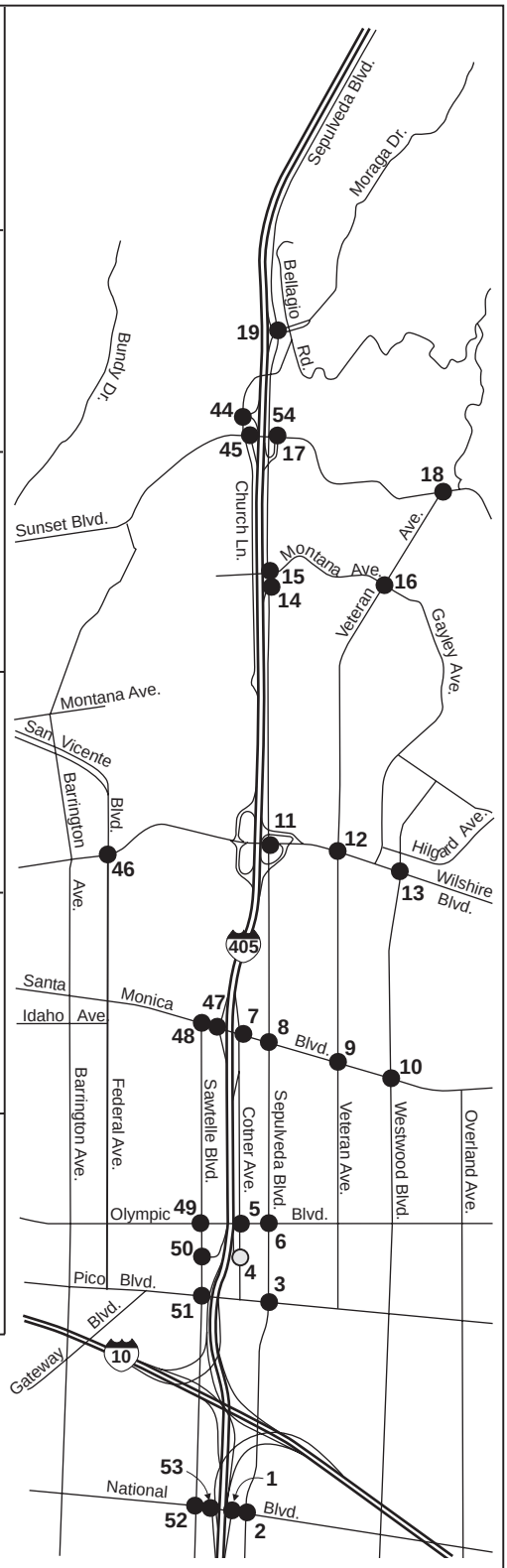


North/South: Veteran Ave.
East/West: Montana Ave.



North/South: Sawtelle Blvd.
East/West: Santa Monica Blvd.





LEGEND

- Study Intersection - Signalized
- Study Intersection - Stop Sign
- Intersection Geometry
- Stop Sign

IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

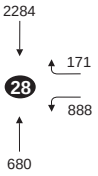
Alternative 3.2 (Year 2031) Study Intersection Volumes (Southern Area) - AM Peak Hour

Figure 43A

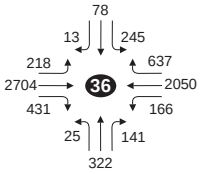
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

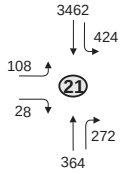
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



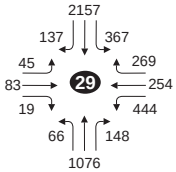
North/South: SB 405 Ramps
East/West: Ventura Blvd.



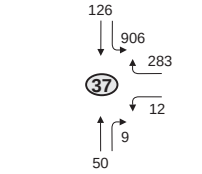
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

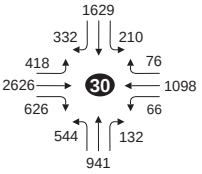


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

NO DATA AVAILABLE

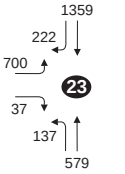
22

North/South: Sepulveda Blvd.
East/West: Burbank Blvd.

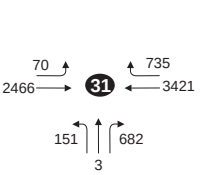


North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.

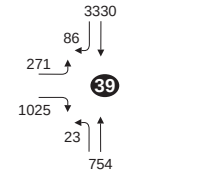
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



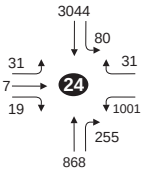
North/South: NB 405 Ramps
East/West: Burbank Blvd.



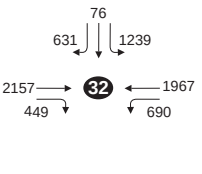
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



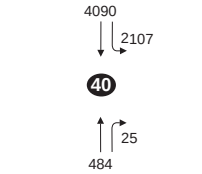
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



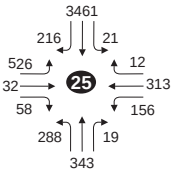
North/South: SB 405 Ramps
East/West: Burbank Blvd.



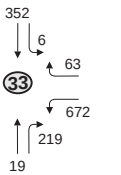
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



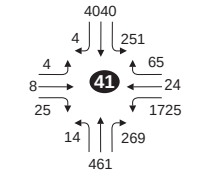
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



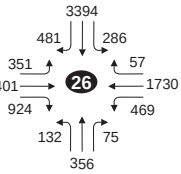
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



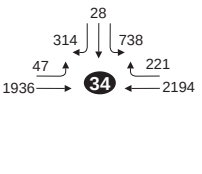
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



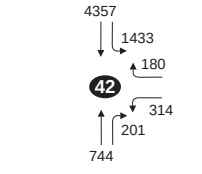
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



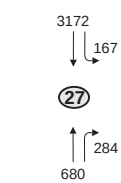
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

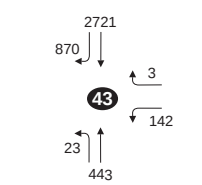


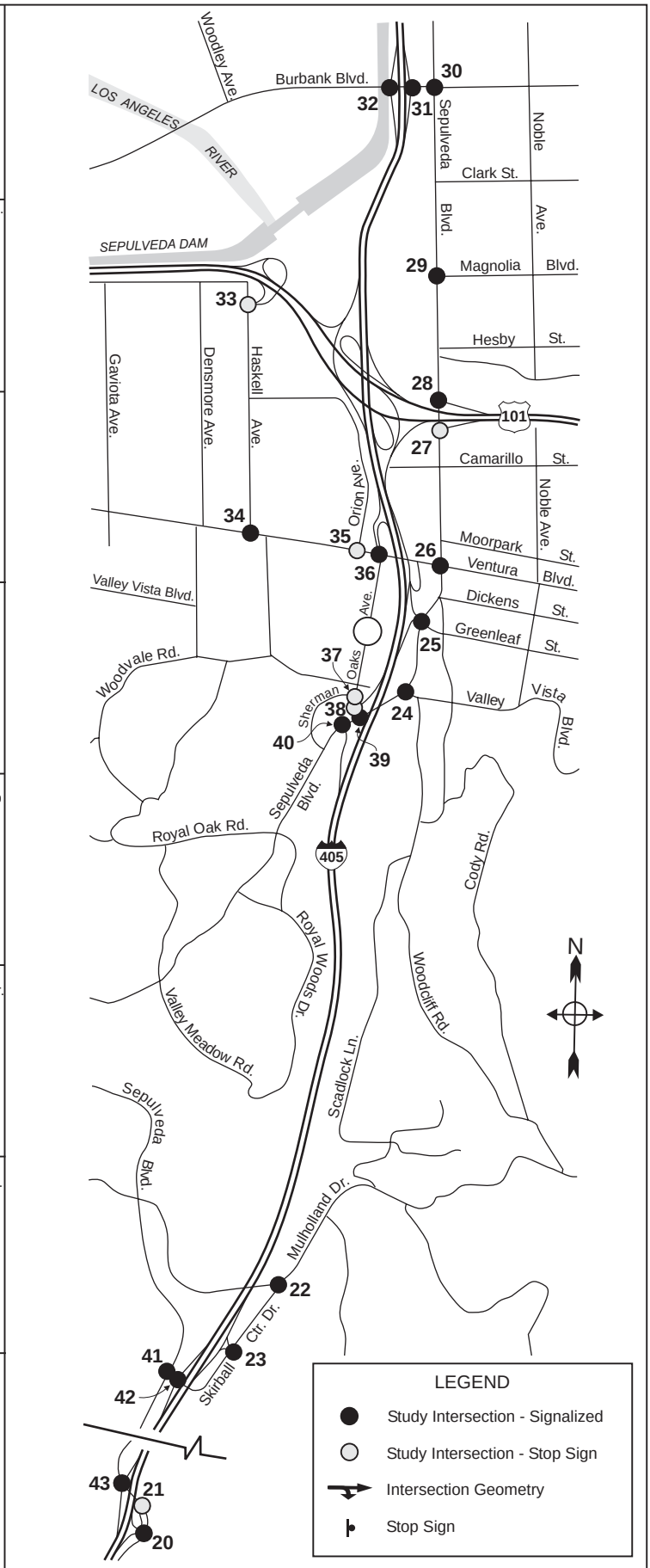
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps



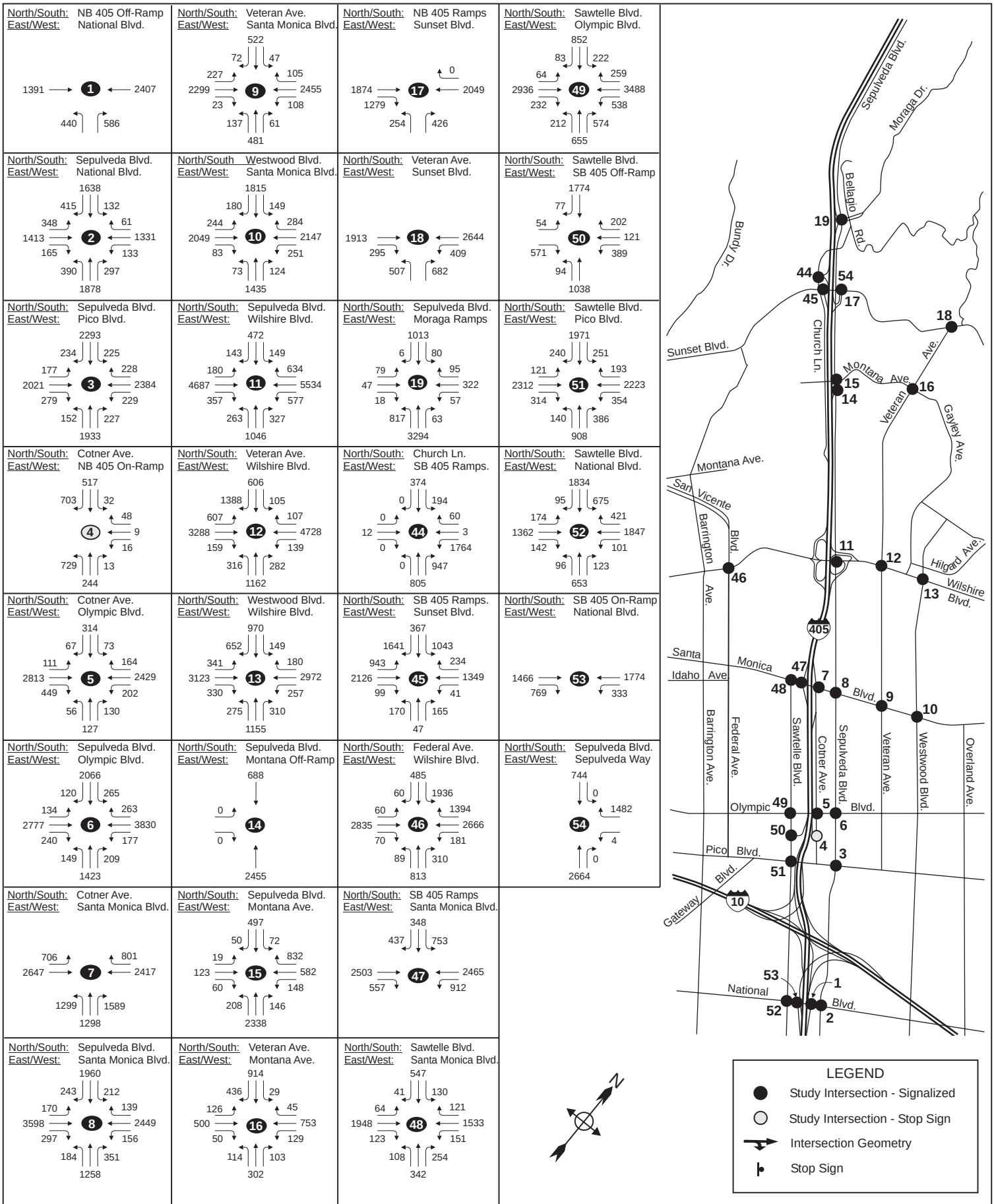


IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 (Year 2031) Study Intersection Volumes (Northern Area) - AM Peak Hour

Figure 43B



IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

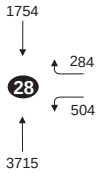
Alternative 3.2 (Year 2031) Study Intersection Volumes (Southern Area) - PM Peak Hour

Figure 44A

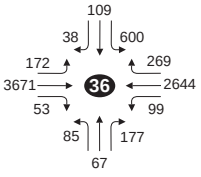
North/South: Sepulveda Blvd.
East/West: NB 405 Off-Ramp

20

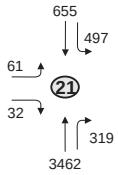
North/South: Sepulveda Blvd.
East/West: NB 101 Off-Ramp



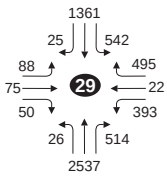
North/South: SB 405 Ramps
East/West: Ventura Blvd.



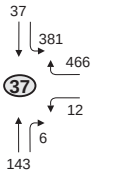
North/South: Sepulveda Blvd.
East/West: NB 405 On-Ramp



North/South: Sepulveda Blvd.
East/West: Magnolia Blvd.



North/South: Sherman Oaks Ave.
East/West: Fiume Wlk.

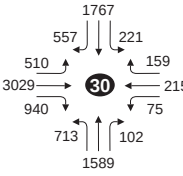


North/South: Skirball Center Dr.
East/West: Mulholland Dr.

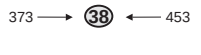
NO DATA AVAILABLE

22

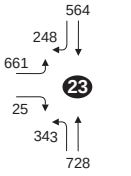
North/South: Sepulveda Blvd.
East/West: Burbank Blvd.



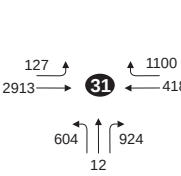
North/South: SB 405 Off-Ramp
East/West: Fiume Wlk.



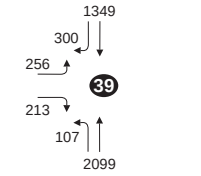
North/South: Skirball Center Dr.
East/West: NB 405 Ramps



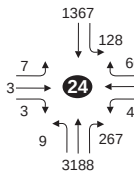
North/South: NB 405 Ramps
East/West: Burbank Blvd.



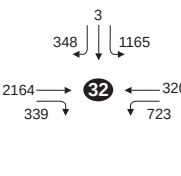
North/South: Sepulveda Blvd.
East/West: Fiume Wlk.



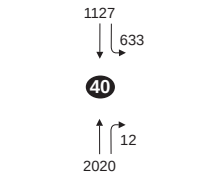
North/South: Sepulveda Blvd.
East/West: Valley Vista Blvd.



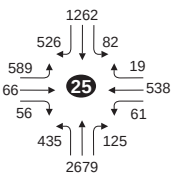
North/South: SB 405 Ramps
East/West: Burbank Blvd.



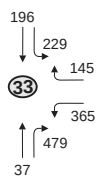
North/South: Sepulveda Blvd.
East/West: SB 405 On-Ramp



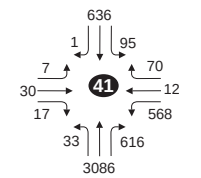
North/South: Sepulveda Blvd.
East/West: Greenleaf St.



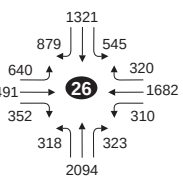
North/South: Haskell Ave.
East/West: NB/SB 101 Ramps



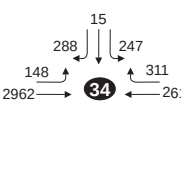
North/South: Sepulveda Blvd.
East/West: Skirball Center Dr.



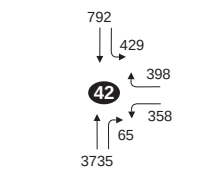
North/South: Sepulveda Blvd.
East/West: Ventura Blvd.



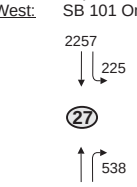
North/South: Haskell Ave.
East/West: Ventura Blvd.



North/South: SB 405 Ramps
East/West: Skirball Center Dr.



North/South: Sepulveda Blvd.
East/West: SB 101 On-Ramp

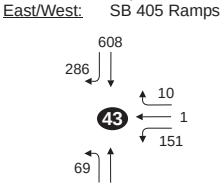


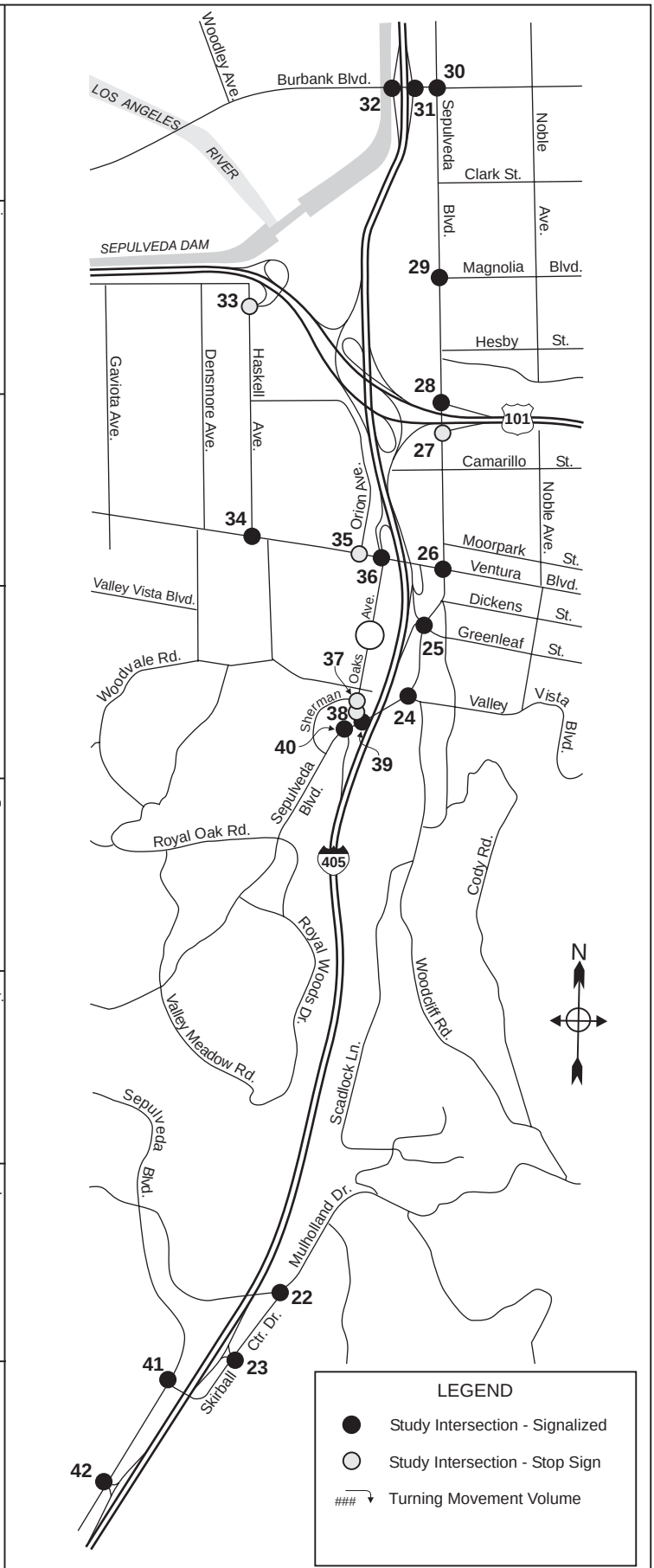
North/South: Orion Ave.
East/West: Ventura Blvd.

NO DATA AVAILABLE

35

North/South: Sepulveda Blvd.
East/West: SB 405 Ramps





IBI GROUP

I-405 HOV Lane Over Sepulveda Pass (I-10 to US-101) Project

Alternative 3.2 (Year 2031) Study Intersection Volumes (Northern Area) - PM Peak Hour

Figure 44B

Table VIII.21 – Comparison of Alt. 1 (No Build) and Alt. 3A.2 Year 2031 AM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	350.4	F	342.8	F	-7.6
12	**Wilshire Blvd & Veteran Ave**	S	275.8	F	294.0	F	18.2
14	Montana Off-ramp & Sepulveda Blvd	S	83.7	F	DNE	DNE	-83.7
15	Montana Ave & Sepulveda Blvd	S	92.1	F	51.3	D	-40.8
16	**Montana Ave & Veteran Ave**	S	121.1	F	132.4	F	11.3
17	Sunset Blvd & NB 405 Off-ramp	S	103.5	F	28.6	C	-74.9
18	**Sunset Blvd & Veteran Ave**	S	195.8	F	224.5	F	28.7
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	51.5	D	DNE	DNE	-51.5
21	NB 405 Getty Ctr On-ramp & Sepulveda Blvd	U	601.4	F	50.6	F	-550.8
24	**Valley Vista Blvd & Sepulveda Blvd**	S	163.5	F	179.8	F	16.3
25	**Greenleaf On/Off-ramps & Sepulveda Blvd**	S	264.7	F	283.9	F	19.2
26	**Ventura Blvd & Sepulveda Blvd**	S	321.0	F	346.8	F	25.8
36	Ventura Blvd & SB 405 On/Off-ramps	S	74.4	E	73.8	E	-0.6
37	Fiume Walk & Sherman Oak Ave	U	176.5	F	171.9	F	-4.6
38	Fiume Walk & SB 405 Off-ramp	U	6.1	A	DNE	DNE	-6.1
39	Fiume Walk & N Sepulveda Blvd	S	115.1	F	101.1	F	-14.0
40	SB 405 On-ramp & N Sepulveda Blvd	S	107.7	F	107.8	F	0.1
41	**Skirball Center Dr & N Sepulveda Blvd**	S	412.0	F	556.8	F	144.8
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	26.5	C	389.0	F	362.5
44	SB 405 On/Off-ramps & Church Lane	S	105.9	F	95.2	F	-10.7
45	Sunset Blvd & Church Lane	S	53.6	D	62.8	E	9.2

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

Table VIII.22 – Comparison of Alt. 1 (No Build) and Alt. 3A.2 Year 2031 PM Peak Hour LOS

Intersection		Control	ALT 1		ALT 3A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
11	Wilshire Blvd & Sepulveda Blvd	S	381.6	F	377.6	F	-4.0
12	**Wilshire Blvd & Veteran Ave**	S	326.6	F	336.1	F	9.5
14	Montana Off-ramp & Sepulveda Blvd	S	255.7	F	DNE	DNE	-255.7
15	Montana Ave & Sepulveda Blvd	S	179.0	F	172.3	F	-6.7
16	**Montana Ave & Veteran Ave**	S	112.6	F	126.5	F	13.9
17	Sunset Blvd & NB 405 Off-ramp	S	13.0	B	12.0	B	-1.0
18	**Sunset Blvd & Veteran Ave**	S	126.3	F	137.3	F	11.0
20	NB 405 Getty Ctr Off-ramp & Sepulveda Blvd	S	68.0	E	DNE	DNE	-68.0
21	**NB 405 Getty On-ramp & Sepulveda Blvd**	U	1.2	A	422.5	DNE	421.3

Intersection		Control	ALT 1		ALT 3A.2		Change in Delay
			Delay (s/veh)	LOS	Delay (s/veh)	LOS	
24	Valley Vista Blvd & Sepulveda Blvd	S	164.6	F	137.8	F	-26.8
25	Greenleaf On/Off-ramps & Sepulveda Blvd	S	185.2	F	176.1	F	-9.1
26	**Ventura Blvd & Sepulveda Blvd**	S	204.2	F	205.6	F	1.4
36	Ventura Blvd & SB 405 On/Off-ramps	S	95.8	F	72.8	E	-23.0
37	Fiume Walk & Sherman Oak Ave	U	26.5	D	17.0	C	-9.5
38	Fiume Walk & SB 405 Off-ramp	U	8.2	A	DNE	DNE	-8.2
39	Fiume Walk & N Sepulveda Blvd	S	16.2	B	10.2	B	-6.0
40	SB 405 On-ramp & N Sepulveda Blvd	S	22.8	C	21.5	C	-1.3
41	Skirball Center Dr & N Sepulveda Blvd	S	312.9	F	299.6	F	-13.3
42	**Skirball Center Dr & SB 405 On/Off-ramps**	S	71.8	E	405.8	F	334.0
44	SB 405 On/Off-ramps & Church Lane	S	134.1	F	121.4	F	-12.7
45	Sunset Blvd & Church Lane	S	111.9	F	149.2	F	37.3

S – Signalized
U – Unsignalized
DNE – Due to the removal of a freeway ramp, there is no longer an intersection at this location.

IX. ALTERNATIVE 3B – NORTH AND SOUTHBOUND HOV LANE IMPROVEMENTS PLUS NORTH AND SOUTHBOUND HOV DROP-RAMPS AT SANTA MONICA BOULEVARD

Alternative 3B incorporates all of the improvements included in Alternative 3A, along with a northbound HOV drop-ramp to Santa Monica Boulevard and a southbound HOV on-ramp from Santa Monica Boulevard. The northbound off-ramp is the same as described in Alternative 2B. The southbound HOV on-ramp from Santa Monica Boulevard would be aligned adjacent to, and east of, the mainline on-ramp. The HOV on-ramp drops down into a tunnel below the southbound side of the freeway, rises up to freeway grade along the median, and then merges with the southbound HOV lane approximately 850 feet north of Olympic Boulevard.

In order to facilitate the installation of the HOV drop-ramp, additional widening is required along the west side of Interstate 405, along with the realignment of the southbound Santa Monica Boulevard on-ramp to Interstate 405 and a retaining wall along the east side of Beloit Avenue.

A. Freeways

The Alternative 3B freeway mainline conditions are the same as the Alternative 3A conditions. Refer to the Alternative 3A section on Freeways for the estimated congestion period and vehicular delay.

B. Access Ramps

The Alternative 3B ramp conditions are the same as the Alternative 3A conditions, with the addition of a northbound HOV drop-ramp at Santa Monica Boulevard. Vehicles traveling in the HOV lane that wish to go to Santa Monica Boulevard will be able to exit directly from the carpool lane, which will reduce the volume on the general off-ramp lanes. This will also improve safety on the mainline by removing the weave movements made by vehicles that would move out of the carpool lane and merge across lanes to exit the freeway. Overall conditions on the mainline in the vicinity of Santa Monica Boulevard and on the off-ramps are expected to improve from the Alternative 1 condition. Refer to the Alternative 2A section on Access Ramps for forecast conditions at all other locations.

C. Intersections

Intersection geometry and volumes for Alternative 3B are the same as the Alternative 3A condition. Vehicles that are expected to utilize the northbound HOV drop-ramp are assumed to exit from the general Santa Monica Boulevard off-ramp in Alternative 3A, so the net volume and turning movement splits at the intersection of Santa Monica Boulevard and Cotner Avenue (#7) remain the same. Vehicles that are expected to utilize the southbound HOV on-ramp are assumed to enter from the general Santa Monica Boulevard on-ramp in Alternative 3A, so the net volume and turning movement splits at intersection #47 also remain the same. Refer to the Alternative 3A section on Intersections for the forecast level of service values.

X. TRAFFIC IMPACTS RELATED TO CONSTRUCTION ACTIVITIES

It is expected that detailed construction staging plans will be completed for the project. It is expected that detailed analysis of how traffic will be impacted during the construction phase of the various build alternatives will be provided by Caltrans once these plans are available. The purpose of this discussion is to provide an overview discussion of the expected traffic impacts related to construction activities. Similar projects have been constructed along Interstate 405 and other freeways with the Los Angeles metropolitan area in the recent past and it is believed that this project will have similar impacts.

The construction of Alternatives 2A and 2B will primarily affect the northbound 405, except where significant improvements will be made along both sides of the 405, such as in the vicinity of the Wilshire Boulevard and Sunset Boulevard Interchanges. The construction of Alternatives 3A and 3B are expected to have a significant affect on both directions of travel.

Construction of the planned improvements will probably require the narrowing of traffic lanes and a loss of shoulder areas for a prolonged period, thereby reducing the effective capacity of the freeway segments and/or ramps where construction is taking place. This can result in overall traffic delays increasing by as much as 10 percent of more during peak traffic periods. The impact on traffic delays is particularly significant when construction first starts, due to gawking and the need for the average driver to adjust to changes in the roadway. However, within one to two weeks after construction starts, regular commuters usually become accustomed to driving through a construction zone so the amount of traffic delays caused by construction decreases accordingly.

Measures that should be used to reduce the potential for traffic delays caused by construction activities include:

- Implement an effective Traffic Management Plan.
- Make sure the construction phasing plans emphasize traffic operations and traffic safety.
- Expedite construction of the planned improvements to the extent possible.
- Maintain the number of existing traffic lanes on the freeway and busy ramps during peak traffic periods.
- Construct the improvements at the Wilshire Boulevard, Sunset Boulevard, and Getty Center Drive interchanges prior to closing the Montana Avenue Off-ramp and the Moraga Drive Off- and On-ramps.
- Construct the new southbound Skirball Center Drive/Sepulveda Boulevard Off- and On-ramps prior to closing the existing ramps.

XI. CONCLUSIONS

The purpose of this section is to highlight the results of the analysis and provide a summary of the potential benefits associated with each project alternative relative to a no build condition. Results are summarized by main components of the roadway network: freeway segments, connector ramps and study intersections. A summary of the analysis results and issues related to each alternative are provided in this section.

A. Freeways

The total vehicular delays associated with each alternative for the horizon years of 2015 and 2031 are used as a point of comparison. As discussed in the methodology section of this report, a dollar benefit per day of the proposed build alternatives can be developed to help quantify the benefits of the improvements. This assessment is provided using a factor of $10 per vehicle-hour applied to each scenario to represent the costs associated with congestion, such as gasoline, vehicle maintenance, wear and tear on the roadway, and other costs related to lost time. These costs are meant for the purposes of comparison only to help quantify the relative value of each alternative.

1. Alternative 1

Interstate 405 currently operates at a deficient level of service for a large portion of the day within the project limits. If no capacity improvements are made, conditions will continue to deteriorate in the future due to ambient growth alone. The daily vehicular delay is estimated to increase by 6,330 vehicle-hours in the year 2015 over the existing condition, and to increase by 18,800 hours in the year 2031.

2. Alternative 2

The northbound capacity increase provided through Alternative 2 is associated with a decrease in daily vehicular delay of 14,860 hours over the Alternative 1 (no build) condition in the year 2015, and a decrease of 16,060 hours in the year 2031. Increased capacity is associated with higher average speeds, shorter travel times, and decreased emissions.

There are a number of safety benefits attributable to HOV lanes, and it is expected that the northbound HOV lane will reduce the number of accidents in the study area caused by improper lane changes. From a traffic perspective, there are no negative impacts to the freeway caused by Alternative 2.

3. Alternative 3

The northbound and southbound capacity increase provided through Alternative 3 is associated with a decrease in daily vehicular delay of 15,320 hours over the Alternative 1 (no build) condition in the year 2015, and a decrease of 16,190 hours in the year 2031.

The Alternative 3 improvements to the southbound mainline and HOV lane to provide standard 12-foot lanes are expected to provide safer conditions, by allowing motorists more room to react to adjacent vehicles and to correct for driver error before a collision occurs. High Occupancy Vehicle lanes have been shown to improve safety along a corridor, and it is expected that the northbound HOV lane will reduce the number of accidents in the study area.

B. Access Ramps

The results of the operational analysis of the ramp modifications associated with each alternative are summarized in this section.

1. Alternative 1

The existing I-405 freeway on and off-ramps currently operate at an acceptable level of service. No capacity or queuing issues are identified for the year 2005, however the northbound off-ramp to eastbound Wilshire Boulevard may not have adequate storage for the volumes forecast to utilize the facility in the year 2031.

Of the 41 existing on- and off-ramps within the study area, three locations carry volumes that exceed capacity during one or both peak periods, and may have capacity issues in the future. Three ramps in the year 2015 and eight ramps in the year 2031 are forecast to have demand that exceeds capacity during the peak period.

2. Alternative 2

Closure of the Montana off-ramp will result in improved operation on the mainline in that area. A reduction in the number of access points along a freeway facility can attribute to increased free flow speed and a lower accident rate. The volumes from the closed ramp are distributed to adjacent ramps, which will affect the adjacent intersections, but are not expected to have a significant impact on ramp operations.

The four-quadrant cloverleaf interchange at Wilshire Boulevard is improved as part of Alternative 2, without impact to ramp merge areas on Wilshire Boulevard. The northbound off-ramp to eastbound Wilshire, southbound off-ramp to westbound Wilshire, and southbound on-ramp from eastbound Wilshire are reconstructed with longer ramp lengths and reduced curvature. The northbound on-ramp from eastbound Wilshire is also realigned to remove the existing compound curves. These improvements alleviate the capacity issues on the northbound off-ramp to eastbound Wilshire, and enhance ramp operations and safety.

At two locations, existing on- and off-ramps will be removed and replaced with upgraded interchanges. The northbound on- and off-ramps at Getty Center Drive will be replaced with standard diamond interchange ramps. The southbound on- and off-ramps at Skirball Center Drive will also be removed, and new “hook” on- and off-ramps that connect to Sepulveda Boulevard will be constructed about 1800 feet south of Skirball Center Drive. All traffic that currently travels on the existing ramps is expected to utilize the replacement ramps. The new ramps provide increased storage capacity, and should enhance operations at these locations.

Of the 37 on- and off-ramps in the study area associated with Alternative 2, three locations are forecast to carry volumes that exceed capacity during the peak period in the year 2015, and eight ramps are forecast to experience demand that exceeds capacity in the year 2031. Despite spot locations of increased volume due to ramp closures, overall operation is expected to improve with the Alternative 2 changes above the no-build case.

3. Alternative 3

Ramp modifications and corresponding operations for Alternative 3 are the same as Alternative 2, with the exception of one location. In order to accommodate the west side widening of the freeway for Alternative 3, the southbound on-ramp from eastbound Sunset Boulevard must be closed and removed. Traffic from this ramp is redirected to the southbound on-ramp at Church and Sunset. This ramp should handle the additional volumes without storage or queuing issues.

C. Intersections

The need for this project is based on the high traffic volumes within the study area, on the freeway facilities and adjacent arterial streets. Many of the study intersections carry volumes that exceed theoretical capacity, and run through corridors where right of way is limited and geometrical improvements are not feasible. While the project does not generate trips, ramp closures and modifications associated with the build alternatives cause traffic to be redistributed through local intersections, which may have positive or negative effects at certain locations. The results of the intersection analysis for each alternative are summarized in this section.

1. Alternative 1

In the existing condition, 13 of the 54 study intersections operate at LOS F. For the Alternative 1 (no build) case, 22 intersections are forecast to operate at LOS F in the year 2015, and 41 will be at LOS F in the year 2031.

2. Alternative 2

For Alternative 2A.1, there are 15 intersections with volume changes due to ramp modifications. For the year 2015 forecast conditions, nine of these locations experience a reduction in average delay per vehicle, and six locations experience increased delay. In the year 2031, eight intersections experience reduced delay per vehicle and seven intersections have increased delay. For Alternative 2A.2, twenty-six intersections experience volume changes due to ramp modifications. Ten locations have reduced average delay during the AM peak hour in the year 2015, and sixteen locations have an increase in average delay. Sixteen locations have reduced average delay during the PM peak hour in the year 2015, and ten locations have an increase in delay. In the year 2031, eleven intersections have a reduction in average delay and fifteen intersections experience an increase in delay.

3. Alternative 3

For Alternative 3A.1, there are 15 intersections with volume changes due to ramp modifications. For the year 2015 forecast conditions, eight of these locations experience a reduction in average delay per vehicle, and seven locations experience increased delay. In the year 2031, eight intersections experience reduced delay per vehicle and seven intersections have increased delay. For Alternative 3A.2, twenty-two intersections experience volume changes due to ramp modifications. Nine locations have reduced average delay during the AM peak hour in the year 2015, and thirteen locations have an increase in average delay. Fourteen locations have reduced average delay during the PM peak hour in the year 2015, and eight locations have an increase in delay. In the year 2031, eleven intersections have a reduction in average delay and eleven intersections experience an increase in delay.

Overall, safety and operations are improved in Alternatives 2 and 3. The improvements associated with the build alternatives do not generate trips, so trip reduction is not applicable as a mitigation measure. For intersection locations that are impacted by trip redistribution due to ramp closures, geometrical improvements are not feasible due to excessive right-of-way cost. The increase in delay at select intersections is balanced by decrease in delay at other intersections and decreased delays on the freeway.

In general, both Alternative 2 and Alternative 3 provide reduced congestion, smoother operations, a decrease in weaving, and improved safety over the no-build alternative. Although volumes on certain ramps and through adjacent intersections will increase due to ramp closures and traffic redistribution, the total traffic volume remains the same with or without the project. Concerning traffic, the sum of the benefits for both build alternatives exceeds the cost.

Mitigation measures to alleviate impacts from the ramp closures in Alternatives 2 and 3 are not feasible due to right-of-way costs.

XII. APPENDICES

(Under separate cover.)