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February 25, 2014

Mr. David Brandt, City Manager
City of Cupertino
10300 Torre Avenue
Cupertino, California 95014

Subject: ***State Route 85 Express Lanes Project***
Initial Study with Proposed Negative Declaration/Environmental Assessment
Traffic and Transportation/Pedestrian and Bicycle Facilities Analysis

Dear Mr. Brandt:

As requested, MRO Engineers, Inc., has completed a review of the "Traffic and Transportation/Pedestrian and Bicycle Facilities" analysis completed with respect to the proposed State Route 85 Express Lanes Project in Santa Clara County, California. The proposed project is the subject of an *Initial Study with Proposed Negative Declaration/Environmental Assessment* (IS/EA), which was prepared by the State of California Department of Transportation (Caltrans) in cooperation with the Santa Clara Valley Transportation Authority (VTA) in December 2013. The IS/EA incorporates the results of the final *Traffic Operations Analysis Report* completed by DKS in association with URS in November 2013.

This letter report documents the results of our detailed review of the traffic and transportation analysis presented in the IS/EA.

PROJECT DESCRIPTION

The proposed project extends the entire length of State Route 85 (SR 85), as well as including short segments of US 101 at the north and south ends of SR 85. Along the 24.1-mile length of SR 85, the proposed project would convert the existing high-occupancy vehicle (HOV) lanes (one in each direction) to express lanes, which would accommodate toll-paying single-occupant vehicles (SOV) in addition to HOVs. A second express lane would be added in each direction between SR 87 and I-280, including almost the entire stretch of SR 85 through the City of Cupertino. The precise locations where the widening to provide the second express lane would begin and end are not known, as this information is not provided in the IS/EA. The entire project would be constructed within the existing freeway right-of-way.

The project includes provision of a 2-foot buffer between the general purpose lanes and the express lanes. In areas where a single express lane would be located, that buffer zone would be provided by narrowing the adjacent lanes (i.e., one general purpose lane and one HOV lane) to 11 feet (from the typical 12 feet). Thus, no median width reduction would occur in the SR 85 segments with a single express lane. The IS/EA is not clear as to whether the same approach would be used in the areas with two express lanes, or if an additional two feet of widening would be undertaken to provide the buffer.

The express lanes would be located in the freeway median, which would become narrower where a second express lane is provided. (No change in median width would occur where a single express lane is provided.) Assuming the added express lanes are 12-feet wide, the existing 46-foot median

would be reduced to 22 feet in the section with two express lanes each way, assuming the two-foot buffer is provided through narrowing of the adjacent lanes, as described above. If that narrowing does not occur (i.e., a two-foot buffer strip is constructed), the median width would be reduced even further, to about 20 feet.

In addition, an auxiliary lane (1.1 miles long) would be constructed along northbound SR 85 within the City of Cupertino. It would connect the existing South De Anza Boulevard on-ramp and the Stevens Creek Boulevard off-ramp. That lane would be constructed along the outer (i.e., right-hand) edge of the road, including widening of up to 14 feet. No auxiliary lanes are proposed in the southbound direction.

Attachment A contains a schematic diagram of the proposed project, illustrating the number of express lanes and the locations of the access zones serving those lanes.

REVIEW OF TRAFFIC AND TRANSPORTATION / PEDESTRIAN AND BICYCLE FACILITIES ANALYSIS

The traffic and transportation system impacts associated with the proposed State Route 85 Express Lanes project are addressed in "Section 2.1.3 Traffic and Transportation/Pedestrian and Bicycle Facilities" of the IS/EA. Our review of that analysis revealed several issues that must be addressed prior to approval by Caltrans of the proposed project and its environmental documentation. These issues are presented below.

1. ***Failure to Identify Significant Impacts –*** Review of the level of service tables presented in the IS/EA revealed multiple examples of significant impacts that were ignored. In each case, the freeway segment level of service is shown to degrade from an acceptable level of service (i.e., LOS D or better) to LOS E or F, or from LOS E to LOS F. Specific examples include the following:

   Table 2.1.3-5 – 2015 Northbound

   - AM Peak Hour – General Purpose Lanes
     - Between Blossom Hill Eastbound On-ramp and Westbound On-ramp: LOS D (No Build) to LOS E (Build)
     - Between I-280 Northbound On-ramp and Homestead On-ramp: LOS E (No Build) to LOS F (Build)
   - PM Peak Hour – General Purpose Lanes
     - Between Blossom Hill Eastbound On-ramp and Westbound On-ramp: LOS D (No Build) to LOS E (Build)
     - Between Almaden Expressway Northbound and Southbound On-ramps: LOS E (No Build) to LOS F (Build)
     - Between Southbound Almaden Expressway On-ramp and Camden Off-ramp: LOS D (No Build) to LOS E (Build)
     - Between Winchester On-ramp and Lane Drop: LOS D (No Build) to LOS F (Build)
     - Between Lane Drop and Saratoga Off-ramp: LOS D (No Build) to LOS E (Build)

Table 2.1.3-6 – 2015 Southbound

- PM Peak Hour – General Purpose Lanes
  - Between Saratoga On-ramp and Winchester Off-ramp: LOS E (No Build) to LOS F (Build)

Table 2.1.3-9 – 2035 Northbound

- AM Peak Hour – General Purpose Lanes
  - Between Santa Teresa On-ramp and SR 87 On-ramp: LOS D (No Build) to LOS E (Build)
- PM Peak Hour – General Purpose Lanes
  - Between Almaden Expressway Northbound and Southbound On-ramps: LOS E (No Build) to LOS F (Build)
  - Between I-280 Northbound On-ramp and Homestead On-ramp: LOS C (No Build) to LOS F (Build)

Table 2.1.3-10 – 2035 Southbound

- AM Peak Hour – General Purpose Lanes
  - Between Blossom Hill Westbound and Eastbound On-ramps: LOS D (No Build) to LOS E (Build)
- PM Peak Hour – General Purpose Lanes
  - Between SR 82 On-ramp and Fremont Off-ramp: LOS E (No Build) to LOS F (Build)
  - Between Blossom Hill Off-ramp and Westbound Blossom Hill On-ramp: LOS D (No Build) to LOS F (Build)
  - Between Blossom Hill Westbound and Eastbound On-ramps: LOS E (No Build) to LOS F (Build)

Mitigation measures for these impacts or a project alternative that would avoid the impacts must be identified. The results of the modified analysis should be documented in an environmental impact report/environmental impact statement (EIR/EIS), which must then be circulated for public review and comment.

2. ***Failure to Analyze Project Impacts on Non-Freeway Roadways*** – The IS/EA and the supporting DKS/URS documentation present an in-depth analysis of traffic operations on SR 85 and the affected segments of US 101. However, absolutely no analysis is presented with respect to the proposed project's impacts on non-freeway facilities. This is clearly insufficient, as review of the travel demand forecasts presented as Tables 5-1 through 5-4 in the DKS/URS document reveals substantial changes in traffic patterns at the many SR 85 access locations. (This traffic volume information is not included in the IS/EA itself. It can only be found by searching through the sizable quantity of ancillary material on the Caltrans District 4 website. We note that the critical DKS/URS traffic operations analysis document is not even attached to the IS/EA as an appendix.)

A number of examples can be cited to demonstrate the substantial effect of the proposed project on local street operations in and near Cupertino, including the following:

- AM peak period – Northbound (IS/EA, Table 5-1)
  - SR 85 off-ramp to Saratoga-Sunnyvale Road: 683 added peak-period vehicles in 2015 and 746 added in 2035; and
  - SR 85 off-ramp to Stevens Creek Boulevard: 171 additional peak-period vehicles in 2015 and 2035.
- PM peak period – Northbound (IS/EA, Table 5-2)
  - SR 85 off-ramp to Saratoga-Sunnyvale Road: 341 added peak-period vehicles in 2015 and 672 added in 2035.
- AM peak period – Southbound (IS/EA, Table 5-3)
  - SR 85 on-ramp from Saratoga-Sunnyvale Road: 55 added peak-period vehicles in 2015 and 139 added in 2035.
- PM peak period – Southbound (IS/EA, Table 5-5)
  - SR 85 on-ramp from Saratoga-Sunnyvale Road: 317 added peak-period vehicles in 2015 and 291 added in 2035; and
  - SR 85 on-ramp from Stevens Creek Boulevard: 149 additional peak-period vehicles in 2015 and 34 added in 2035.

In each of these cases, this added on- or off-ramp traffic represents additional vehicles at the intersections where the freeway ramps meet the local street system, as well as on the nearby local street segments. The IS/EA completely ignores this substantial additional traffic, and the potential for significantly increased congestion and delay.

At a minimum, the environmental document must be amended to included detailed level of service analyses (weekday AM and PM hours) at the following locations in and near Cupertino:

- SR 85 Northbound Ramps/De Anza Boulevard,
- SR 85 Southbound Ramps/De Anza Boulevard,
- De Anza Boulevard/Prospect Road,
- De Anza Boulevard/Stevens Creek Boulevard,
- SR 85 Northbound Ramps/Stevens Creek Boulevard,
- SR 85 Southbound Ramps/Stevens Creek Boulevard,
- SR 85 Northbound On-ramp/Homestead Road, and
- SR 85 Southbound Off-ramp/Homestead Road.

The results of these analyses should be documented in an EIR/EIS, and circulated for further public review and comment.

3. ***Failure to Consider Pedestrian and Bicycle System Impacts*** – As noted above, Section 2.1.3 of the IS/EA is labeled, "Traffic and Transportation/Pedestrian and Bicycle Facilities." However, a

search of the IS/EA for the words "pedestrian" and "bicycle" finds practically no results. Neither of those words appears in Section 2.1.3, which purports to describe the project's impacts on the pedestrian and bicycle transportation systems. Moreover, the words "pedestrian" and "bicycle" do not appear anywhere in the DKS/URS document that provides the basis for the material presented in Section 2.1.3 of the IS/EA.

In fact, other than section headings and Table of Contents listings, the only instances in which these words are used in connection with the transportation analysis is in IS/EA Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures (IS/EA, p. ii), where it states that:

> *The project would not affect any pedestrian or bicycle facilities.*

Unfortunately, there is no basis for this conclusion as, clearly, no analysis of any sort was conducted to establish whether the proposed project would have significant impacts on the pedestrian and bicycle transportation systems. As described above, the travel demand forecasts prepared for the IS/EA indicate that substantial redistribution of traffic will occur on the local street system in the vicinity of SR 85. It is not unreasonable to suggest that additional traffic might occur in locations that represent hazards to pedestrians or bicyclists. The IS/EA completely ignores this possibility.

Such analyses must be conducted and incorporated into an EIR/EIS, which fully addresses the impacts of the proposed project.

4. ***Assembly Bill No. 2032 Level of Service Standard*** – IS/EA page 1-4 states that one of the two purposes of the proposed project is to:

> *Maintain consistency with provisions defined in AB 2032 (2004) and AB 574 (2007) to implement express lanes in an HOV [high-occupancy vehicle] lane system in Santa Clara County.*

AB 2032 established certain operational parameters for the "high-occupancy toll" (HOT) lane system authorized by the bill. In particular, it states:

> *Implementation of the [HOT lanes] program shall ensure that Level of Service C, as measured by the most recent issue of the Highway Capacity Manual, as adopted by the Transportation Research Board, is maintained at all times in the high-occupancy vehicle lanes, except that subject to a written agreement between [Caltrans] and VTA that is based on operating conditions of the high-occupancy vehicle lanes, Level of Service D shall be permitted on the high-occupancy vehicle lanes.*

No evidence is provided in either the IS/EA or the DKS/URS document with respect to whether the written agreement allowing LOS D exists. In lieu of documented proof of the agreement referenced above, it is inappropriate to use LOS D as the significance criterion; LOS C should be used.

The IS/EA text reflects uncertainty with regard to the applicable level of service standard. Several instances can be found where the IS/EA refers to the "statutory requirement of LOS C/D" or similar wording. (IS/EA, pp. 1-13, 2-18, 2-20, 2-22, 2-26, and 2-28) With these

references to "LOS C/D," the authors seem unsure as to whether the standard is LOS C, LOS D, or perhaps the boundary between LOS C and LOS D.

Unfortunately, neither the IS/EA nor the DKS/URS report presents a specific set of significance criteria for traffic operations, although the analysis approach suggests that LOS D has been considered to be the minimum acceptable level of service. Specifically, the level of service tables use bold font to indicate "high vehicle densities and impaired traffic flow," and only locations at LOS E or F are designated as such. Locations operating at LOS D or better are not highlighted using bold font.

For comparison, Attachment B contains copies of the level of service tables for 2015 and 2035 (IS/EA, Table 2.1.3-5, Table 2.1.3-6, Table 2.1.3-9, and Table 2.1.3-10) on which we have manually highlighted locations operating at LOS D. These tables illustrate the substantial number of additional locations that would "have high vehicle densities and impaired traffic flow" if LOS C is the correct level of service standard, rather than LOS D.

In 2015 (Tables 2.1.3-5 and 2.1.3-6), general purpose lanes at numerous locations are projected to operate at LOS D under "Build" conditions, as well as two HOV lane locations in the PM peak hour. Tables 2.1.3-9 and 2.1.3-10 show that LOS D operations are prevalent in both the general purpose and HOV lanes in 2035 under "Build" conditions. Obviously, clarification is required with respect to whether the applicable level of service standard is LOS C or LOS D.

We also note that the AB 2032 LOS C or D standard applies only to the HOV/HOT/express lanes, not to the general purpose/mixed-flow lanes. Despite this, the IS/EA and DKS/URS documents treat all lanes the same, with LOS D as the apparent minimum acceptable operation.

The level of service standard for the general purpose/mixed-flow lanes is presented in the *Guide for the Preparation of Traffic Impact Studies* (Caltrans, December 2002). As presented in that document:

> *Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" . . . on State highway facilities . . .*

This means that LOS C is acceptable and LOS D is not. The approach taken in the IS/EA, where LOS D was considered to be acceptable in the general purpose/mixed-flow lanes, is incorrect.

In summary, the level of service results presented in the IS/EA for both the express lanes and the general purpose lanes are misleading, as they incorrectly indicate that segments operating at LOS D are acceptable under the adopted criteria. At a minimum, proof must be provided that LOS D in the express lanes is acceptable based on a written agreement between Caltrans and VTA. Absent such an agreement, LOS C is the legal standard, and the documents must be revised to reflect this. The revised documents must then be recirculated for additional public review and comment, preferably in the form of an EIR/EIS.

5. ***Invalid Travel Demand Forecasts*** – The travel demand forecasting process employed in the IS/EA is described extensively in that document and the associated DKS/URS documents. One aspect of that process, particularly with regard to the volume of traffic in the express lanes, raises significant questions as to the validity of the traffic projections for the years 2015 and 2035.

Related to this issue are several statements in the DKS/URS traffic operations analysis report. Page 1 of that document says:

> *It is important to note mandated performance requirements that must be taken into consideration when designing an express lane project. At the state level, AB 2032 mandated that express lanes operate at a Level of Service (LOS) of "C" or better (LOS "D" may be used if Caltrans and the operator agree). This corresponds to a target threshold of approximately 1,650 vph [vehicles per hour] per HOV lane.*

Page 28 of the DKS/URS report specifically addresses the travel demand forecasting process. Four tables (Tables 5-1 through 5-4) are presented to show the forecasted No Build and Build traffic volumes throughout the study area for the years 2015 and 2035. As part of that description, the report states:

> *The volumes presented in the following tables [Tables 5-1 through 5-4] assume that the maximum volume will be limited to 1,650 vehicles per hour per lane on the express lanes.*

More detail about the traffic forecasting process is presented in a technical memorandum titled, "SR 85 Express Lanes Travel Demand Forecasts" (Wilbur Smith Associates, January 21, 2011). Figure 1 in that memorandum lays out the "Forecast Modeling Methodology." Step 7 in that process includes a process to "Set tolls to achieve maximum 1,650 vehicles per lane per hour" for both 2015 and 2035. The detailed description of step 7 (page 4 of the technical memorandum) says:

> *The volumes presented in the [traffic forecast] tables in this memo assume that the maximum volume will be limited to 1,650 vehicles per hour per lane on the express lanes.*

All of the above goes to show that the travel demand forecasts, which purport to demonstrate that the express lanes will operate well within the statutory requirement of 1,650 vehicles per hour per lane and at highly-acceptable levels of service, have been skewed to ensure a successful outcome. In fact, the traffic forecasting process was structured so as to preclude the express lanes from carrying more than 1,650 vehicles per hour per lane.

Page 7 of the same technical memorandum describes another way in which the travel demand forecasting process has been biased to ensure that the analysis results will reflect favorable express lane operations. As stated there:

> *A basic assumption of the analysis was that some proportion of express lanes traffic demand will never be eligible to use the express lanes. This is to account for the fact that some motorists will not participate in such a program under any circumstances. They may just be opposed to the technology or simply be infrequent users who are unaware of the express lanes and its [sic] potential benefits. These values typically range from 5 to 20 percent.. The higher the proportion of motorists assumed to be ineligible for express lanes usage, the more conservative the revenue forecasts will be. For this study, we assumed the more conservative 20 percent value.*

While the 20 percent value might be more conservative from a revenue analysis perspective, it serves to artificially reduce the volume of traffic projected to use the express lanes, thereby improving the results of the traffic operations analysis for those lanes.

In summary, the traffic forecasts for the express lanes were artificially constrained to 1,650 vehicles per hour per lane to ensure that the statutory requirements established in AB 2032 appear to be met. The actual volumes that can be realistically expected in the express lanes are unknown, due to the lack of an unconstrained traffic projection. The actual traffic volumes in the express lanes could be substantially higher than the IS/EA indicates, which would lead to levels of service in those lanes that are much worse than the IS/EA states.

Revised traffic volume forecasts are needed that provide a better, more realistic estimation of traffic demand in the express lanes. These should be documented in an EIR/EIS and circulated for public review.

6. ***Failure to Consider A Reasonable Range of Project Alternatives*** – The IS/EA evaluates two project alternatives: Build and No Build. Two additional build alternatives are briefly addressed (IS/EA, pp. 1-14 – 1-15), both of which were rejected because they included only a single HOV/express lane. The DKS/URS report (page 24) states that three build alternatives were discussed in a project study report (PSR) that was approved by Caltrans on October 26, 2010, but no description or discussion of those alternatives is provided. It is not clear whether the project alternatives rejected in the Caltrans PSR included a full range of potential solutions, or were simply variations on the express lane configuration included in the proposed project.

   The failure to address a reasonable range of feasible alternatives in the IS/EA is a substantial shortcoming, in that it deprives the reviewing public of the ability to consider and comment on the relative merits of a variety of potential solutions to the traffic congestion issues addressed by the proposed project. At a minimum, the IS/EA should include a substantially more detailed summary of the previously-considered alternatives, including descriptions of their physical characteristics, their advantages and disadvantages, and the specific reasons for rejection.

   Furthermore, we believe it is unacceptable that the IS/EA fails to address a mass transit alternative. A logical alternative would be an extension of the existing VTA light rail system. Other possible alternatives include provision of bus-only lanes or the use of reversible express lanes (which would reflect the high directionality of peak-hour traffic flow on SR 85).

7. ***Proposed Project Effectively Precludes Future Light Rail Transit*** – As noted above, implementation of the proposed project would reduce the median width along a substantial portion of SR 85 to approximately 22 feet. A cursory review of existing VTA light rail lines in freeway medians using Google Earth indicates that the corridor width for those facilities generally ranges from approximately 30-to-50 feet. The narrowest section we found was on an overpass structure, where approximately a 28-foot-wide LRT corridor exists. This suggests that, if the proposed project is completed, the only way to implement LRT would be in an elevated configuration (i.e., on an above-ground structure), which is almost certainly excessively costly. In effect, implementation of the proposed project would preclude the future provision of light rail transit along the SR 85 corridor. This is unacceptable to the City of Cupertino.

8. ***Inconsistent Travel Speed Analysis Results*** – The IS/EA includes several tables addressing travel time and speed through the study area in 2015 and 2035 under both No Build and Build

conditions. When the travel time results are compared to the travel speed results, though, inconsistencies are apparent that raise questions as to the accuracy and validity of the information. The specific IS/EA tables are as follows:

- Table 2.1.3-7: Peak Hour Travel Times (Minutes), 2015 No Build and Build,
- Table 2.1.3-8: 2015 Peak Period Network Performance Measure Comparison,
- Table 2.1.3-11: Peak Hour Travel Times (Minutes), 2035 No Build and Build, and
- Table 2.1.3-12: 2035 Peak Period Network Performance Measure Comparison.

The peak-hour travel times (in minutes) in Table 2.1.3-7 and Table 2.1.3-11 were converted to travel speeds (in miles per hour) and those results were compared to the peak-period results presented in Table 2.1.3-8 and Table 2.1.3-12. Tables 1 and 2 below illustrate the results of this comparison process. The conversion from travel time to travel speed employed a segment length of 23.6 miles, as that resulted in a free-flow speed of 65 MPH, which was specified in the footnotes to Tables 2.1.3-7 and 2.1.3-11. Note that several of the travel times presented in Table 2.1.3-11 resulted in a free-flow speed of 64.7 MPH; this is likely due to round-off error on the part of the DKS/URS analyst.

Because of the manner in which the information is presented in the IS/EA, direct comparison of the travel speed results is difficult. For example, the travel time tables distinguish between the general purpose lanes and HOV lanes, while the travel speed tables do not. Also, the travel time tables reflect peak hour conditions (i.e., 7:00 – 8:00 AM and 5:00 – 6:00 PM), as opposed to the peak period information in the travel speed tables (i.e., 6:00 – 9:00 AM and 3:00 – 7:00 PM) . Peak period travel speeds, though, should be somewhat higher than peak hour speeds, as they include two or three hours of lower traffic volumes (and higher speeds) in addition to the "worst-case" peak hour.

As shown in Table 1, in the AM peak in 2015, the northbound (peak direction) speeds are particularly questionable. Under No Build conditions, the peak hour travel speed is shown as 35.0 MPH in the general purpose lanes and 56.2 MPH in the HOV lanes. In contrast, the peak period speed is shown as 37 MPH, which is approximately the same as the peak-hour general purpose lane value. The same is generally true under Build conditions. As noted above, the overall peak period speed (for both lane types combined) should be higher than the peak-hour general purpose lane value.

A generally similar pattern exists for the PM peak in the southbound (i.e., peak) direction in 2015. Under No Build conditions, the peak period speed (40 MPH) is approximately equal to the peak hour speed in the general purpose lanes (39.8 MPH), while the HOV peak-hour speed (59.7 MPH) is about 50 percent higher. In several cases, the peak-period speed presented in the IS/EA is less than either of the peak-hour values, which defies logic. For example, in the PM peak under Build conditions, the southbound direction has a peak-hour speed of 46.4 MPH for the general purpose lanes and 64.1 MPH for the HOV lanes. The peak-period speed (both lane types combined) is 42 MPH, which is simply not logical.

TABLE 1
2015 Travel Speed Comparison

	Lane Type	Free Flow		No Build			Build		
		Peak Hour		Peak Hour		Peak Period Speed (MPH)[3]	Peak Hour		Peak Period Speed (MPH)[3]
		Travel Time (Min.)[1]	Speed (MPH)[2]	Travel Time (Min.)[1]	Speed (MPH)[2]		Travel Time (Min.)[1]	Speed (MPH)[2]	
AM Peak									
North-bound	GP	21.8	65.0	40.5	35.0	37	26.3	53.8	53
	HOV	21.8	65.0	25.2	56.2		21.8	65.0	
South-bound	GP	21.8	65.0	22.4	63.2	62	22.3	63.5	62
	HOV	21.8	65.0	21.9	64.7		21.9	64.7	
PM Peak									
North-bound	GP	21.8	65.0	23.4	60.5	59	23.5	60.3	60
	HOV	21.8	65.0	21.1	67.1		21.1	67.1	
South-bound	GP	21.8	65.0	35.6	39.8	40	30.5	46.4	42
	HOV	21.8	65.0	23.7	59.7		22.1	64.1	

NOTES:
[1] Source: IS/EA, Table 2.1.3-7: Peak Hour Travel Times (Minutes), 2015 No Build and Build, p. 2-19.
[2] Derived from the travel time values using a segment length of 23.6 miles, which provided a 65.0 MPH free-flow speed.
[3] Source: IS/EA, Table 2.1.3-8: 2015 Peak Period Network Performance Measure Comparison, p. 2-21.

Table 2, which summarizes the year 2035 travel speed comparison, shows that, in every case, the peak-period speed presented in the IS/EA is less than either the general purpose or HOV lane speed in the peak hour. Again, these results are illogical, as the peak-period speed (for both lane types combined) will not be lower than the peak-hour speeds for the two individual lane types. As noted above, the peak-period speeds would generally be expected to be higher than the peak-hour speeds because they include two or three hours of lower traffic volumes (with higher speeds), in addition to the peak-hour volumes.

This demonstrates that the travel speed results documented in the IS/EA are inaccurate and, therefore, misleading. Until the speed estimates can be corrected so that they provide rational results, they are of no value in demonstrating the value of the proposed project. The travel time and speed analyses must be corrected and recirculated for additional public review and comment. The new analyses must include travel speed tables that distinguish between the general purpose lanes and HOV lanes and the travel time tables must be presented for peak period and peak hour.

TABLE 2
2035 Travel Speed Comparison

	Lane Type	Free Flow Peak Hour Travel Time (Min.)[1]	Free Flow Peak Hour Speed (MPH)[2]	No Build Peak Hour Travel Time (Min.)[1]	No Build Peak Hour Speed (MPH)[2]	No Build Peak Period Speed (MPH)[3]	Build Peak Hour Travel Time (Min.)[1]	Build Peak Hour Speed (MPH)[2]	Build Peak Period Speed (MPH)[3]
AM Peak									
North-bound	GP	21.9	64.7	39.7	35.7	30	27.8	50.9	45
	HOV	21.9	64.7	26.5	53.4		22.2	63.8	
South-bound	GP	21.9	64.7	23.1	61.3	58	23.0	61.6	60
	HOV	21.9	64.7	20.4	69.4		21.2	66.8	
PM Peak									
North-bound	GP	21.8	65.0	24.5	57.8	51	24.4	58.0	52
	HOV	21.8	65.0	21.9	64.7		22.6	62.7	
South-bound	GP	21.8	65.0	45.9	30.8	24	36.5	38.8	31
	HOV	21.8	65.0	24.8	57.1		23.3	60.8	

NOTES:
[1] Source: IS/EA, Table 2.1.3-11: Peak Hour Travel Times (Minutes), 2035 No Build and Build, p. 2-25.
[2] Derived from the travel time values using a segment length of 23.6 miles, which provided a 65.0 MPH free-flow speed.
[3] Source: IS/EA, Table 2.1.3-12: 2015 Peak Period Network Performance Measure Comparison, p. 2-27.

9. ***Inaccurate Characterization of Traffic Operations at SR 85/I-280*** – The IS/EA incorrectly characterizes SR 85 traffic operations in the vicinity of I-280 as being at an acceptable level of service. Specifically, IS/EA Tables 2.1.3-2 and 2.1.3-3, which present peak-hour level of service results for the peak travel directions under existing conditions, indicate that both general purpose and HOV lanes in the vicinity of the SR 85/I-280 interchange operate at acceptable levels of service. In addition, the listing of congested bottleneck locations in the DKS/URS report (pages 18 – 20) fails to include this critical area.

   These findings differ from the experience of motorists who drive through this area on a daily basis, which raises questions as to the validity of the traffic operations analysis for existing conditions. The possibility exists that the traffic volumes used in the analysis are artificially low, simply because the slow speeds associated with traffic congestion reduces the number of vehicles passing by the count locations. In short, the existing conditions traffic analysis must be revisited to ensure that it accurately represents operating conditions throughout the study area.

   In addition, the IS/EA fails to address the likelihood that implementation of the proposed project will intensify or relocate this congestion to the segments where the two-lane express lane cross sections terminate, forcing motorists to merge into a single express lane (i.e., northbound in the

vicinity of I-280 and southbound near SR 87). Although the environmental documentation does not illustrate the exact location and configuration of the transition zones between the single-lane and the two-lane express lane segments, Table 2.1.3-9 shows, for example, that the northbound general purpose lanes between the I-280 on-ramp and the Homestead Road on-ramp will decline from LOS C to LOS F in the PM peak hour upon completion of the project. Similarly, Table 2.1.3-10 shows that in the vicinity of SR 87 numerous southbound general purpose lane segments will operate at LOS F under Build conditions in the year 2035 PM peak hour.

10. ***HOV/Express Lane Access*** – The DKS/URS report describes the results of "travel time tach run data and field observations," which were used to identify existing congestion locations in the general purpose and HOV lanes. In both the AM and PM peak hours, that effort revealed the presence of congestion in certain HOV lane segments. According to the report (pp. 19 -20):

    > *Field observations indicated that congestion in the HOV lane is not due to the demand exceeding the capacity in these segments, but is due to traffic exiting the HOV lane trying to merge in the general purpose lanes which are congested.*

    Unfortunately, implementation of the proposed project will not remedy this situation. IS/EA Table 2.1.3-5 (p. 2-16) shows that the following northbound express lane access zones will operate at LOS E or F in the AM peak hour:

    - Between the Union Avenue off-ramp and on-ramp,
    - Between the Winchester Boulevard on-ramp and the Saratoga Avenue off-ramp,
    - Between the Homestead Road on-ramp and the Fremont Avenue off-ramp.

    Deficient express lane access zones in the southbound direction in the year 2015 PM peak hour include:

    - Between the Moffett Boulevard on-ramp and the Central Expressway off-ramp,
    - Between the southbound State Route 82 on-ramp and the Fremont Avenue off-ramp,
    - Between the Saratoga Avenue on-ramp and the Winchester Boulevard off-ramp,
    - Between the Camden Avenue on-ramp and the Almaden Expressway off-ramp, and
    - Between the eastbound Blossom Hill Road on-ramp and the Cottle Road off-ramp.

    The year 2035 results are even worse, with an additional deficient location in the northbound direction in the AM peak hour and two additional problem areas in the northbound PM peak hour. Additional deficiencies were also revealed in the southbound direction in the year 2035.

    The feasibility of providing additional express lane access zones should be investigated, as a means to disperse the demand entering and exiting those zones. One candidate location for additional access in both directions would be between the Saratoga Avenue interchange and the Saratoga-Sunnyvale Road/De Anza Boulevard interchange. Express lane access zones in this segment of SR 85 would reduce the distance that Saratoga residents, for example, would need to travel in the general purpose lanes before entering the northbound express lanes or after exiting the southbound express lanes.

11. ***Questionable Level of Service Analysis Results*** – Review of the level of service tables raised several questions regarding specific analysis results.

    - Table 2.1.3-6 – 2015 Southbound: HOV/express lanes on three segments of southbound SR 85 are shown to have substantially improved levels of service under Build conditions in the PM peak hour, even though they are in the portion of SR 85 that currently has one HOV lane and will continue to have only one express lane. This is illogical, as implementation of the SR 85 express lanes project will allow additional motorists (i.e., toll-paying SOVs) to use this single lane, which should result in higher lane density and, therefore, equal or lower level of service. Specific locations include:
        - Between Moffett On-ramp and Central Expressway Off-ramp: LOS E (No Build) to LOS C (Build)
        - Between Evelyn On-ramp and SR 237 Off-ramp: LOS D (No Build) to LOS C (Build)
        - Between Northbound SR 82 On-ramp and Southbound SR 82 Off-ramp: LOS D (No Build) to LOS C (Build)
    - Table 2.1.3-10 – 2035 Southbound: Again, HOV/express lanes on several segments of southbound SR 85 are shown to have better "Build" level of service results in the PM peak hour, even though they will not have any additional lanes. As noted above, implementation of the proposed project will result in additional motorists using this single express lane. The correct result would reflect higher lane density and equal or lower level of service. Specific locations on this table include:
        - Between Moffett On-ramp and Central Expressway Off-ramp: LOS D (No Build) to LOS C (Build)
        - Between Central Expressway Off-ramp and Evelyn On-ramp: LOS D (No Build) to LOS C (Build)
        - Between Evelyn On-ramp and SR 237 Off-ramp: LOS F (No Build) to LOS C (Build)
        - Between SR 237 On-ramp and SR 82 Off-ramp: LOS E (No Build) to LOS C (Build)

    These illogical results raise questions as to the credibility of all of the level of service analysis results. The inaccuracies could stem from the flawed travel demand forecasts (as addressed above) or from the LOS calculation process. In either event, the results must be reviewed and corrected. The corrected analysis must then be recirculated for further public review.

CONCLUSION

Our review of the "Traffic and Transportation/Pedestrian and Bicycle Facilities" analysis incorporated into the Initial Study/Environmental Assessment for the proposed State Route 85 Express Lanes project revealed several issues potentially affecting the validity of the conclusions and recommendations presented in that document. Of particular concern is the failure to identify a number of significant impacts in the general purpose lanes on SR 85 in both 2015 and 2035.

Also of concern is the failure of the IS/EA to address the impacts of the proposed project on local streets and intersections in Cupertino and throughout the length of the project. The IS/EA's short-sighted approach, in which only freeway operations were evaluated, is unacceptable.

We are also highly concerned about the travel demand forecasts developed as part of the analysis. The documentation of those projections clearly states that the traffic estimates for the HOV/express lanes were artificially constrained in a way that ensured that they would appear to operate at acceptable levels of service and relatively high speeds.

In addition, inconsistencies in the travel time and speed estimates presented in the IS/EA potentially provides a misleading and overly-optimistic view of the impacts of the proposed project. Similarly, we find many of the level of service results to be questionable and potentially distorted, requiring that they be reviewed and corrected.

Furthermore, we believe that the preparation of an environmental impact report/environmental impact statement (EIR/EIS) is called for, including analyses of an appropriate range of reasonable alternatives to the proposed project. Those alternatives should include at least one mass transit option.

These issues and the others described above must be addressed prior to approval by Caltrans of the proposed project and the related environmental documentation.

We hope this information is useful. If you have questions concerning any of the items presented here or would like to discuss them further, please feel free to contact me at (916) 783-3838.

Sincerely,

MRO ENGINEERS, INC.

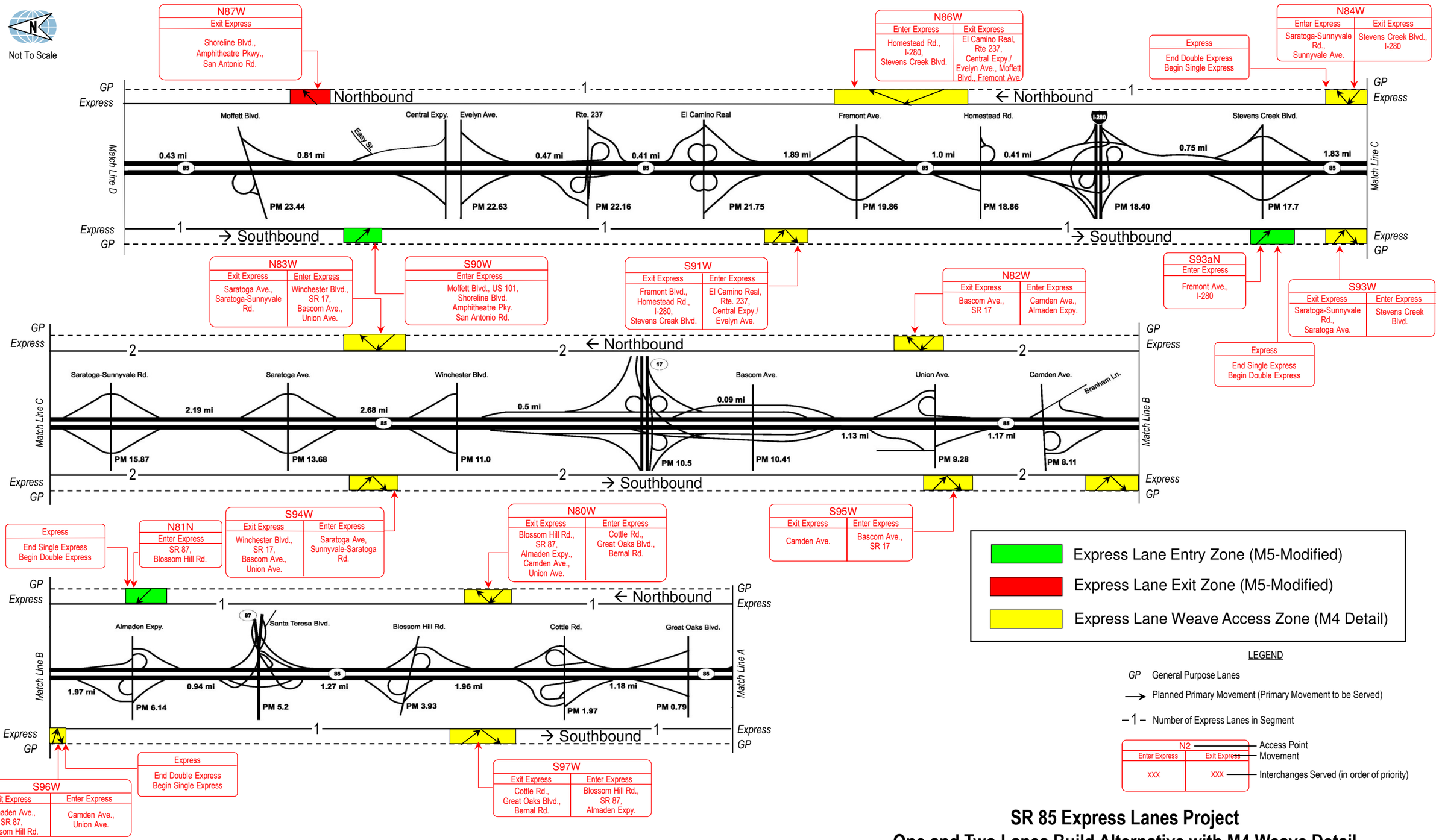
Neal K. Liddicoat, P.E.
Traffic Engineering Manager

ATTACHMENT A

State Route 85 Express Lanes Project Schematic Diagram

SR 85 Express Lanes Project

Not To Scale



SR 85 Express Lanes Project
One and Two Lanes Build Alternative with M4 Weave Detail

Not To Scale

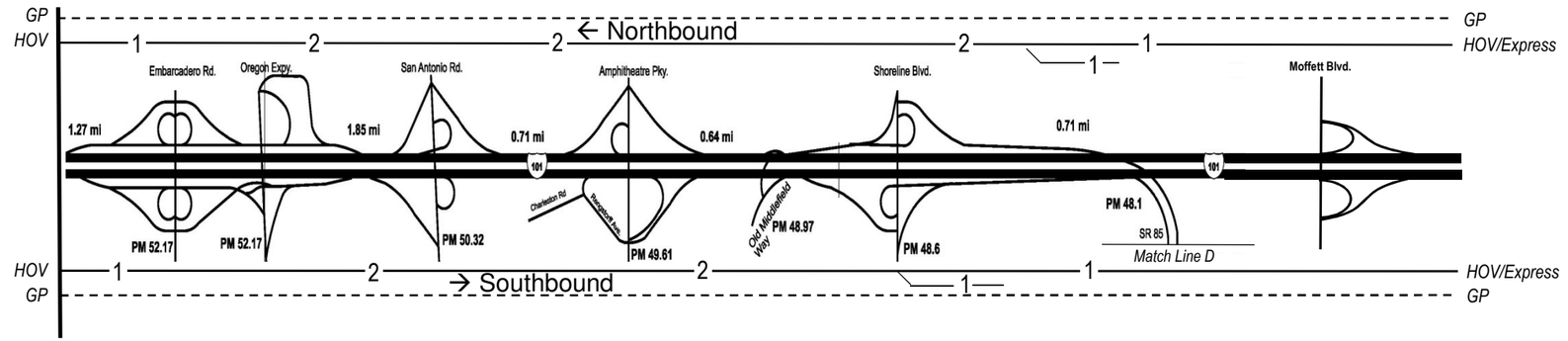
FIGURE 4-1

MAY 2013

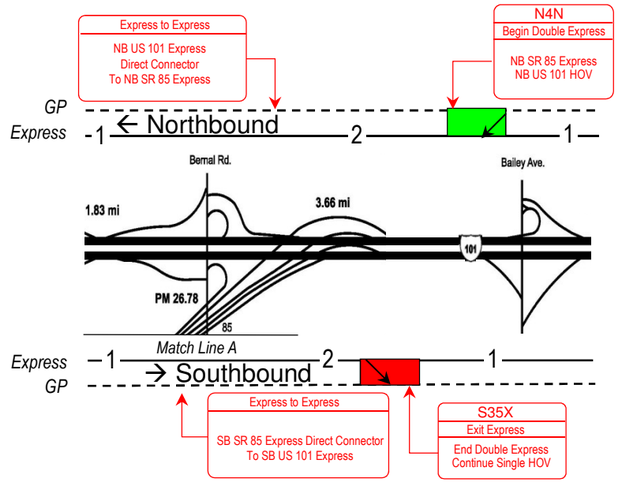
Not To Scale

Santa Clara / San Mateo County Line

US 101 North of SR 85



US 101 South of SR 85



Express Lane Entry Zone (M5-Modified)

Express Lane Exit Zone (M5-Modified)

Express Lane Weave Access Zone (M4 Detail)

LEGEND

GP General Purpose Lanes

→ Planned Primary Movement (Primary Movement to be Served)

–1– Number of Express Lanes in Segment

N2	
Enter Express	Exit Express
XXX	XXX

Access Point Movement

Interchanges Served (in order of priority)

SR 85 Express Lanes Project
One and Two Lanes Build Alternative with M4 Weave Detail

FIGURE 4-1 Con't

MAY 2013

Not To Scale

SANTA CLARA Valley Transportation Authority | URS

ATTACHMENT B

Year 2015 and 2035 Level of Service Tables
With Highlighted LOS D

Table 2.1.3-5: Peak Hour Travel Conditions, 2015 Northbound No Build and Build

Segment	AM peak hour (7 to 8 AM)				PM peak hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]
Segment Group 4 (SR 87 to Southern Limit)								
NB and SB Bernal on-ramp	B	A	A	C	B	B	A	A
SB Bernal on-ramp and US 101 SB on-ramp	B	B	B	C	B	B	A	A
US 101 SB on-ramp and Great Oaks on-ramp	B	B	B	C	B	C	A	A
Great Oaks on-ramp and Cottle off-ramp	C	C	B	C	C	**D**	A	A
Cottle off-ramp and on-ramp	C	B	B	C	C	**D**	A	A
Cottle on-ramp and Blossom Hill off-ramp	C	D (D)	C	C (C)	D	D (D)	B	A (A)
Blossom Hill off-ramp and EB on-ramp	C	C	B	C	C	D	B	A
Blossom Hill EB on-ramp and WB on-ramp	D	E	C	C	D	E	B	A
Blossom Hill WB on-ramp and 87 off-ramp	D	D	B	C	D	D	B	A
SR 87 off-ramp and Santa Teresa off-ramp	C	C	B	C	C	D	B	A
Segment Group 3 (SR 17 to SR 87)								
Santa Teresa off-ramp and on-ramp	C	C	B	C	C	C	B	A
Santa Teresa on-ramp and 87 on-ramp	D	D	B	C	C	D	B	A
SR 87 on-ramp and Almaden Expy off-ramp	C	C	B	C	C	D	B	A
Almaden Expy off-ramp and NB on-ramp	E	B (C)	C	C (C)	C	B (C)	B	A (A)
Almaden Expy NB and SB on-ramp	F	E	D	B	E	F	C	B
SB Almaden Expy on-ramp and Camden off-ramp	E	D	D	B	D	E	B	B
Camden off-ramp and on-ramp	F	D	C	B	C	D	B	B
Camden on-ramp and Union off-ramp	F	E	D	B	C	C	B	B
Union off-ramp and on-ramp	F	F (E)	D	B (C)	D	D (D)	B	B (A)
Union on-ramp and Bascom off-ramp	F	D	E	B	D	D	B	B
Bascom off-ramp and SR 17 off-ramp	F	D	E	B	C	C	A	B
SR 17 off-ramp and Bascom on-ramp	F	C	D	B	B	B	A	B
Segment Group 2 (I-280 to SR 17)								
Bascom on-ramp and SR 17 on-ramp	F	E	C	B	B	C	A	B
SR 17 on-ramp and Winchester on-ramp	F	F	D	B	C	C	B	B
Winchester on-ramp and lane drop	F	F	D	B	D	F	B	B
(Express lane access zone only, between Winchester on-ramp and Saratoga off-ramp)		(F)		(C)		(C)		(A)
Lane drop and Saratoga off-ramp	F	E	D	C	D	E	B	B
Saratoga off-ramp and on-ramp	F	C	C	C	B	C	B	B
Saratoga on-ramp and De Anza off-ramp	F	D	D	C	C	D	B	B
De Anza off-ramp and on-ramp	F	C	D	C	C	C	B	B
De Anza on-ramp and Stevens Creek off-ramp	F	C (C)	F	C (B)	C	B (C)	B	B (A)
Stevens Creek off-ramp and 280 off-ramp	D	C	B	C	C	C	A	A
280 off-ramp and 280 SB loop on-ramp	B	B	B	C	A	B	A	A
Segment Group 1 (Northern Limit to I-280)								
280 SB loop on-ramp and 280 NB on-ramp	C	C	B	C	B	B	A	A
280 NB on-ramp and Homestead on-ramp	E	F	B	C	C	D	A	A
Homestead on-ramp and Fremont off-ramp	F	E (F)	D	C (C)	D	D (C)	B	A (A)
Fremont off-ramp and Fremont on-ramp	F	F	D	C	C	D	B	A
Fremont on-ramp and SR 82 SB off-ramp	F	E	D	C	C	D	B	A
SR 82 SB off-ramp and SR 82 SB on-ramp	E	E	B	C	C	D	A	A
SR 82 SB on-ramp and SR 82 NB off-ramp	E	E	B	C	C	C	A	A
SR 82 NB off-ramp and SR 82 NB on-ramp	E	E	B	C	C	C	A	A
SR 82 NB on-ramp and SR 237 EB off-ramp	E	E	C	C	B	C	A	A
SR 237 EB off-ramp and EB on-ramp	C	C	B	C	B	C	A	A
SR 237 EB on-ramp and Evelyn off-ramp	D	B	B	C	B	B	A	A
Evelyn off-ramp and Central Expy on-ramp	C	C	B	C	B	B	A	A
Central Expy on-ramp and Moffett off-ramp	E	D (C)	B	C (A)	B	C (A)	A	A (A)
Moffett off-ramp and SR 85/US 101 connector	C	B	B	C	B	A	A	A

Notes:

1. For segments that contain access zones where vehicles may enter and/or exit the express lane(s), the LOS in parentheses indicates the level of service for that access movement.

EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

Boldfaced LOS have high vehicle densities and impaired traffic flow, as shown in Table 2.1.3-1.

Table 2.1.3-6: Peak Hour Travel Conditions, 2015 Southbound No Build and Build

Segment	2015 AM peak hour (7 to 8 AM)				2015 PM peak hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]
Segment Group 1 (Northern Limit to I-280)								
SR 85/US 101 connector and Moffett on-ramp	A	A	A	A	F	E	B	C
Moffett on-ramp and Central Expy off-ramp	A	A (A)	A	A (A)	F	F (F)	E	C (C)
Central Expy off-ramp and Evelyn on-ramp	A	A	A	A	F	F	C	C
Evelyn on-ramp and SR 237 off-ramp	B	A	A	A	F	F	D	C
SR 237 off-ramp and on-ramp	A	A	A	A	F	F	C	C
SR 237 on-ramp and NB SR 82 on-ramp	B	B	A	A	F	F	C	C
NB SR 82 on-ramp and SB SR 82 off-ramp	C	B	A	A	F	F	D	C
SB SR 82 off-ramp and SB SR 82 on-ramp	B	B	A	A	F	F	C	C
SB SR 82 on-ramp and Fremont off-ramp	C	C (C)	A	A (A)	F	F (F)	C	C (D)
Fremont off-ramp and on-ramp	B	B	A	A	F	F	C	C
Fremont on-ramp and Homestead off-ramp	C	C	A	A	F	E	C	C
Homestead off-ramp and SR 280 off-ramp	B	B	A	A	D	C	C	C
Segment Group 2 (I-280 to SR 17)								
280 off-ramp and NB 280 on-ramp	A	A	A	A	B	B	B	C
NB 280 on-ramp and SB 280 on-ramp	A	A	A	A	C	C	B	C
SB 280 on-ramp and Stevens Creek off-ramp	A	A	A	A	D	D	B	C
Stevens Creek off-ramp and on-ramp	A	A (A)	A	A (A)	C	C (B)	B	C (C)
Stevens Creek on-ramp and De Anza off-ramp	B	B (B)	A	A (A)	E	D (D)	C	C (C)
De Anza off-ramp and on-ramp	A	A	A	A	D	C	C	C
De Anza on-ramp and Saratoga off-ramp	B	B	A	A	D	D	C	C
Saratoga off-ramp and on-ramp	A	A	A	A	F	D	D	C
Saratoga on-ramp and Winchester off-ramp	B	B (C)	A	A (A)	E	F (F)	D	C (D)
Winchester off-ramp and SR 17 off-ramp	B	A	A	A	E	C	C	B
SR 17 off-ramp and Bascom off-ramp	A	A	A	A	E	C	C	B
Segment Group 3 (SR 17 to SR 87)								
Bascom off-ramp and SR 17 on-ramp	A	A	A	A	F	B	C	B
SR 17 on-ramp and Bascom on-ramp	B	B	A	A	F	C	E	B
Bascom on-ramp and Union/Samaritan off-ramp	C	B	A	A	F	C	E	B
Union/Samaritan off-ramp and Union on-ramp	C	C (C)	A	A (A)	F	D (D)	D	C (C)
Union on-ramp and Camden off-ramp	C	C	A	A	F	E	D	B
Camden off-ramp and on-ramp	B	B	A	A	F	C	C	B
Camden on-ramp and Almaden Expy off-ramp	C	A (C)	A	A (A)	F	C (F)	C	B (B)
Almaden Expy off-ramp and SB Almaden Expy on-ramp	B	B	A	A	F	D	B	C
SB and NB Almaden Expy on-ramps	B	B	A	A	F	C	B	C
NB Almaden Expy on-ramp and SR 87 off-ramp	B	C	A	A	F	C	C	C
SR 87 off-ramp and Santa Teresa off-ramp	B	B	A	A	F	E	D	C
Segment Group 4 (SR 87 to Southern Limit)								
Santa Teresa off-ramp and on-ramp	C	C	A	A	F	D	B	C
Santa Teresa on-ramp and SR 87 on-ramp	C	C	A	A	F	E	B	C
SR 87 on-ramp and Blossom Hill off-ramp	D	C	A	A	F	D	C	C
Blossom Hill off-ramp and WB Blossom Hill on-ramp	D	D	A	A	D	D	B	C
WB Blossom Hill on-ramp and EB Blossom Hill on-ramp	D	D	A	A	E	D	B	C
EB Blossom Hill on-ramp and Cottle off-ramp	D	B (D)	A	A (A)	E	C (E)	A	C (C)
Cottle off-ramp and SB Cottle on-ramp	C	C	A	A	C	C	A	C
SB Cottle on-ramp and NB Cottle on-ramp	C	C	A	A	C	C	A	C
NB Cottle on-ramp and Great Oaks off-ramp	D	D	A	A	D	C	A	C
Great Oaks off-ramp and Bernal off-ramp	C	C	A	A	C	C	A	C
Bernal off-ramp and SR 85/US 101 connector	C	C	A	A	B	B	A	C

Notes:

1. For segments that contain access zones where vehicles may enter and/or exit the express lane(s), the LOS in parentheses indicates the level of service for that access movement.

EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

Boldfaced LOS have high vehicle densities and impaired traffic flow, as shown in Table 2.1.3-1.

Table 2.1.3-9: Peak Hour Travel Conditions, 2035 Northbound No Build and Build

Segment	2035 AM peak hour (7 to 8 AM)				2035 PM peak hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]
Segment Group 4 (SR 87 to Southern Limit)								
NB and SB Bernal on-ramp	B	A	B	C	B	B	A	B
SB Bernal on-ramp and US 101 SB on-ramp	B	B	B	C	B	C	A	B
US 101 SB on-ramp and Great Oaks on-ramp	C	B	B	C	C	C	A	B
Great Oaks on-ramp and Cottle off-ramp	C	C	B	C	D	D	B	B
Cottle off-ramp and on-ramp	C	C	B	C	C	B	B	B
Cottle on-ramp and Blossom Hill off-ramp	D	D (D)	C	D (C)	D	D (D)	C	B (B)
Blossom Hill off-ramp and EB on-ramp	D	D	C	D	D	D	B	B
Blossom Hill EB on-ramp and WB on-ramp	E	E	D	D	D	D	B	B
Blossom Hill WB on-ramp and 87 off-ramp	D	D	C	D	C	D	B	B
SR 87 off-ramp and Santa Teresa off-ramp	C	C	C	D	D	D	B	B
Segment Group 3 (SR 17 to SR 87)								
Santa Teresa off-ramp and on-ramp	C	C	C	D	C	C	B	B
Santa Teresa on-ramp and 87 on-ramp	D	E	C	D	B	D	C	B
87 on-ramp and Almaden Expy off-ramp	D	C	C	D	C	D	B	B
Almaden Expy off-ramp and NB on-ramp	F	D (E)	D	D (D)	D	B (C)	B	B (B)
Almaden Expy NB and SB on-ramp	F	F	E	C	E	F	C	B
SB Almaden Expy on-ramp and Camden off-ramp	F	F	E	C	E	D	C	B
Camden off-ramp and on-ramp	F	F	D	C	D	C	C	B
Camden on-ramp and Union off-ramp	F	F	E	C	C	C	B	B
Union off-ramp and on-ramp	F	F (F)	E	B (C)	D	D (D)	C	A (B)
Union on-ramp and Bascom off-ramp	F	D	F	B	D	C	B	A
Bascom off-ramp and SR 17 off-ramp	F	D	F	B	C	C	A	A
SR 17 off-ramp and Bascom on-ramp	F	D	D	B	B	B	A	A
Segment Group 2 (I-280 to SR 17)								
Bascom on-ramp and SR 17 on-ramp	F	F	D	B	C	C	B	A
SR 17 on-ramp and Winchester on-ramp	F	F	D	B	C	C	B	A
Winchester on-ramp and lane drop	F	F	D	C	F	F	C	A
(Express lane access zone only, between Winchester on-ramp and Saratoga off-ramp)		(F)		(C)		(F)		(C)
Lane drop and Saratoga off-ramp	F	E	D	C	F	D	C	B
Saratoga on-ramp and off-ramp	F	C	D	C	C	C	B	B
Saratoga on-ramp and De Anza off-ramp	F	D	E	C	D	C	B	B
De Anza off-ramp and on-ramp	F	C	D	C	C	C	B	B
De Anza on-ramp and Stevens Creek off-ramp	D	C (C)	C	B (B)	D	B (C)	B	B (A)
Stevens Creek off-ramp and 280 off-ramp	C	C	B	C	B	C	A	B
280 off-ramp and 280 SB loop on-ramp	B	B	B	C	B	B	A	B
Segment Group 1 (Northern Limit to I-280)								
280 SB loop on-ramp and 280 NB on-ramp	D	C	B	C	B	C	A	B
280 NB on-ramp and Homestead on-ramp	F	F	D	C	C	F	B	B
Homestead on-ramp and Fremont off-ramp	F	F (F)	D	C (C)	D	D (E)	C	B (B)
Fremont off-ramp and Fremont on-ramp	F	F	D	C	C	D	B	B
Fremont on-ramp and SR 82 SB off-ramp	F	E	C	C	C	D	B	B
SR 82 SB off-ramp and SR 82 SB on-ramp	D	D	B	C	C	C	A	B
SR 82 SB/NB on-ramp and SR 237 EB off-ramp	C	D	B	C	B	C	A	B
SR 237 EB off-ramp and EB on-ramp	C	C	B	C	B	C	A	B
SR 237 EB on-ramp and Evelyn off-ramp	C	B	B	C	A	B	A	B
Evelyn off-ramp and Central Expy on-ramp	C	C	B	C	B	B	A	B
Central Expy on-ramp and Moffett off-ramp	E	D (C)	C	C (C)	C	D (A)	A	B (B)
Moffett off-ramp and SR 85/US 101 connector	B	B	B	B	B	B	A	C

Notes:

1. For segments that contain access zones where vehicles may enter and/or exit the express lane(s), the LOS in parentheses indicates the level of service for that access movement.

EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

Boldfaced LOS have high vehicle densities and impaired traffic flow, as shown in Table 2.1.3-1.

Table 2.1.3-10: Peak Hour Travel Conditions, 2035 Southbound No Build and Build

Segment	2035 AM peak hour (7 to 8 AM)				2035 PM peak hour (5 to 6 PM)			
	General Purpose		HOV/Express		General Purpose		HOV/Express	
	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]	No Build	Build[1]
Segment Group 1 (Northern Limit to I-280)								
SR 85/US 101 connector and Moffett on-ramp	A	A	A	A	F	F	D	C
Moffett on-ramp and Central Expy off-ramp	B	B (A)	A	A (A)	F	F (F)	D	C (C)
Central Expy off-ramp and Evelyn on-ramp	B	A	A	A	F	F	D	C
Evelyn on-ramp and 237 off-ramp	B	B	A	A	F	F	F	C
SR 237 off-ramp and SR 237 on-ramp	B	B	A	A	F	F	C	C
SR 237 on-ramp and SR 82 off-ramp	B	C	A	A	F	F	E	C
SR 82 off-ramp and on-ramp	C	B	A	A	F	F	C	C
SR 82 on-ramp and Fremont off-ramp	D	C (C)	B	A (A)	E	F (F)	C	C (E)
Fremont off-ramp and on-ramp	C	C	A	B	F	F	C	C
Fremont on-ramp and Homestead off-ramp	D	D	A	B	F	E	C	C
Homestead off-ramp and 280 off-ramp	C	B	A	B	D	C	A	C
Segment Group 2 (I-280 to SR 17)								
280 SB off-ramp and 280 NB on-ramp	A	A	A	B	C	B	A	C
280 NB and 280 SB on-ramp	B	B	B	B	C	C	B	C
280 SB on-ramp and Stevens Creek off-ramp	B	B	A	B	D	D	A	C
Stevens Creek off-ramp and on-ramp	B	B (B)	A	A (A)	D	C (B)	B	C (C)
Stevens Creek on-ramp and lane drop	B	B	A	A	F	D	C	D
(Express lane access zone only, between Stevens Creek on-ramp and De Anza off-ramp)		(B)		(A)		(D)		(C)
Lane drop and De Anza off-ramp	C	B	A	A	F	F	C	C
De Anza off-ramp and on-ramp	B	B	A	A	F	C	B	C
De Anza on-ramp and Saratoga off-ramp	C	B	A	A	F	E	C	C
Saratoga off-ramp and on-ramp	B	B	A	A	F	F	C	C
Saratoga on-ramp and Winchester off-ramp	C	C (B)	A	A (B)	F	F (F)	C	C (F)
Winchester off-ramp and SR 17 off-ramp	B	B	A	A	F	F	D	B
SR 17 off-ramp and Bascom off-ramp	B	B	A	A	F	F	E	B
Segment Group 3 (SR 17 to SR 87)								
Bascom off-ramp and SR 17 on-ramp	B	A	A	A	F	F	B	B
SR 17 on-ramp and Bascom on-ramp	B	B	A	A	F	F	B	B
Bascom on-ramp and Union off-ramp	C	B	A	A	F	F	C	B
Union off-ramp and Union on-ramp	C	B (C)	A	A (A)	F	F (F)	B	B (D)
Union on-ramp and Camden off-ramp	D	D	A	A	F	F	B	B
Camden off-ramp and on-ramp	C	B	A	A	F	F	B	B
Camden on-ramp and Almaden Expy off-ramp	D	D (C)	A	A (A)	F	F (F)	B	C (C)
Almaden Expy NB and SB off-ramps	C	C	A	B	F	F	B	C
SB Almaden Expy on-ramp and NB on-ramp	C	B	A	B	F	F	B	C
Almaden Expy NB on-ramp and SR 87 Off	C	C	A	B	F	F	C	C
SR 87 Off and Santa Teresa off-ramp	C	B	A	B	F	F	C	C
Segment Group 4 (SR 87 to Southern Limit)								
Santa Teresa off-ramp and on-ramp	C	C	A	B	F	F	B	C
Santa Teresa on-ramp and SR87 on-ramp	D	C	A	B	F	F	B	C
SR 87 on-ramp and Blossom Hill off-ramp	E	D	A	B	F	F	B	C
Blossom Hill off-ramp and WB Blossom Hill on-ramp	D	D	A	B	D	F	B	C
Blossom Hill WB and EB on-ramps	D	E	A	B	E	F	B	C
Blossom Hill EB on-ramp and Cottle off-ramp	E	D (E)	A	B (B)	F	F (F)	B	C (F)
Cottle off-ramp and SB on-ramp	D	D	A	B	C	C	A	B
Cottle SB on-ramp and NB Cottle on-ramp	D	D	A	B	D	C	A	B
NB Cottle on-ramp and Great Oaks off-ramp	E	D	A	B	D	D	A	B
Great Oaks and Bernal off-ramp	D	D	A	B	D	C	A	B
South of Bernal off-ramp	C	C	A	B	C	B	A	B

Notes:

1. For segments that contain access zones where vehicles may enter and/or exit the express lane(s), the LOS in parentheses indicates the level of service for that access movement.

EB = eastbound, Expy = Expressway; NB = northbound, SB = southbound, WB = westbound

Boldfaced LOS have high vehicle densities and impaired traffic flow, as shown in Table 2.1.3-1.