HEXAGON TRANSPORTATION CONSULTANTS, INC.

April 2, 2018

Ms. Lillian Tsang
City of Sunnyvale
465 W. Olive Avenue, PO Box 3707
Sunnyvale, CA 94088

***Re: Proposal to Prepare a Transportation Impact Analysis for the Proposed Lawrence Station Area Plan Update in Sunnyvale, CA***

Dear Ms. Tsang:

Hexagon Transportation Consultants, Inc. is pleased to submit this proposal to prepare a Transportation Impact Analysis for the proposed Lawrence Station Area Plan (LSAP) update in Sunnyvale, California. The LSAP was approved by the Sunnyvale City Council on December 6, 2016. It is our understanding that the City of Sunnyvale is interested in increasing housing in the LSAP area. The traffic study will study three project alternatives:

- **Option A:** Increase the maximum allowable densities on MXD-1 and MXD-II properties within the LSAP to allow for 1,764 net new residential units. The updated LSAP under Option A would include a total of 4,087 residential units.

- **Option B:** Allow residential development in areas not currently zoned for residential within the LSAP to allow for 1,075 net new residential units. The updated LSAP under Option B would include a total of 3,398 residential units.

- **Option C:** Combine Option A and Option B to allow for 2,839 net new residential units. The updated LSAP under Option C would include a total of 5,162 residential units.

## Scope of Services

The purpose of the traffic analysis is to determine the traffic impacts of the proposed LSAP Update on the key intersections and freeway segments in the study area during the weekday AM (7-9 AM) and PM (4-6 PM) peak commute hours. The traffic analysis will satisfy the requirements of the California Environmental Quality Act (CEQA), City of Sunnyvale, and the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP). The traffic analysis proposes to study 50 intersections and up to eight freeway segments. The proposed study intersections are listed below and shown on Figure 1.

### Study Intersections

1. Sunnyvale Avenue & Evelyn Avenue
2. Fair Oaks Avenue & Tasman Drive
3. Fair Oaks Avenue & US 101 Northbound Ramps
4. Fair Oaks Avenue & Duane Avenue
5. Fair Oaks Avenue & Evelyn Avenue
6. Fair Oaks Avenue & Old San Francisco Road
7. Wolfe Road & Stewart Drive
8. Wolfe Road & Arques Avenue

9. Wolfe Road & Kifer Road
10. Wolfe Road & Evelyn Avenue
11. Wolfe Road & Reed Avenue
12. Wolfe Road & El Camino Real *
13. Wolfe Road & Fremont Avenue
14. Wolfe Road & Homestead Road
15. Wolfe Road & I-280 Northbound Ramps (Cupertino) *
16. Wolfe Road & I-280 Southbound Ramps (Cupertino) *
17. Evelyn Avenue & Reed Avenue
18. Lawrence Expressway & Tasman Drive *
19. Lawrence Expressway & Lakehaven Drive
20. Lawrence Expressway & US 101 Northbound Ramps
21. Lawrence Expressway & US 101 Southbound Ramps
22. Lawrence Expressway & Oakmead Parkway
23. Lawrence Expressway & Arques Avenue *
24. Lawrence Expressway & Kifer Road
25. Lawrence Expressway & Reed Avenue/Monroe Street *
26. Lawrence Expressway & Cabrillo Avenue (Santa Clara)
27. Lawrence Expressway & El Camino Real Ramps (Santa Clara) *
28. Lawrence Expressway & Benton Street (Santa Clara)
29. Lawrence Expressway & Homestead Road (Santa Clara) *
30. Lawrence Expressway & Pruneridge Avenue (Santa Clara)
31. I-280 Southbound Off-Ramp & Stevens Creek Boulevard (Santa Clara) *
32. Lawrence Expressway Southbound Ramps & Stevens Creek Boulevard (Santa Clara) *
33. Lawrence Expressway Northbound Ramps & Stevens Creek Boulevard (Santa Clara) *
34. Lawrence Expressway & I-280 Southbound On-Ramp (San Jose) *
35. Oakmead Parkway & Arques Avenue
36. Oakmead Parkway & Central Expressway (Santa Clara) *
37. Corvin Drive & Kifer Road (Santa Clara)
38. Calabazas Boulevard & Monroe Street (Santa Clara)
39. Great America Parkway & Tasman Drive (Santa Clara) *
40. Great America Parkway & US 101 Northbound Ramps (Santa Clara) *
41. Bowers Avenue & US 101 Southbound Ramps (Santa Clara) *
42. Bowers Avenue & Scott Boulevard (Santa Clara) *
43. Bowers Avenue & Central Expressway (Santa Clara) *
44. Bowers Avenue & Kifer Road/Walsh Avenue (Santa Clara)
45. Bowers Avenue & Monroe Street (Santa Clara)
46. Bowers Avenue/Kiely Boulevard & El Camino Real (Santa Clara) *
47. San Tomas Expressway & Scott Boulevard (Santa Clara) *
48. San Tomas Expressway & Walsh Avenue (Santa Clara)
49. San Tomas Expressway & Monroe Street (Santa Clara) *
50. San Tomas Expressway & El Camino Real (Santa Clara) *

* Denotes CMP intersections

The tasks to be included in this work scope are discussed below.

1. ***Field-Measure Approach Delays and Queue Lengths.*** Sixteen of the 50 proposed study intersections are located within City jurisdiction (see Table 1). As requested, Hexagon will field-measure approach delays for up to two peak approaches at each of the 16 intersections during both the AM and PM peak hours. Table 1 outlines the proposed approach delays to be field-measured. Hexagon will also conduct field observations to measure queue lengths for all movements for the 16 intersections during both the AM and PM peak hours. Hexagon will measure queue lengths at each intersection for five cycles.

2. ***Synchro Network.*** Hexagon will prepare a Synchro network for these 16 study intersections. Hexagon will conduct field observations to measure necessary signal timing parameters. It is assumed that the City will provide the signal timing plans as well as any coordination timing plans for preparation of the Synchro network. Hexagon will adjust the existing intersection level of service calculations to reflect field-measured approach delays and queue lengths. The Synchro networks will be submitted to the City for review.

3. ***Evaluation of Existing Conditions.*** Existing traffic conditions will be evaluated based on existing traffic volumes at the study intersections. The existing traffic conditions at the study intersections will be evaluated using the TRAFFIX software, which employs the *2000 Highway Capacity Manual (HCM)* methodology for intersection analyses and is the designated level of service methodology for the City of Sunnyvale. The intersection level of service calculations under existing conditions for the 16 city-controlled intersections will be adjusted to reflect field-measured approach delays and queue lengths. Further adjustments will be applied to ensure the level of service results are identical between the TRAFFIX software and the Synchro software for these 16 intersections. All TRAFFIX parameters are assumed to be the same between the existing and cumulative scenarios. Existing transit services as well as bicycle and pedestrian facilities in the vicinity of the proposed plan area will be described. Evaluation of intersection level of service for City of Santa Clara intersections will follow new guidelines per City of Santa Clara staff. The TIA document will report only TRAFFIX outputs.

4. ***Area Traffic Model.*** Hexagon will utilize the Sunnyvale travel demand forecasting model (STFM) to prepare the traffic analysis. The City's model was updated within the last 3 years and was validated against 2013-2015 count data.

5. ***Evaluation of Cumulative Conditions with Project Option A with Foreseeable General Plan Amendments (GPA).*** Hexagon will obtain from City staff the TAZ-level land use inputs into the STFM for this scenario. It is our understanding that the City is currently working on several other projects that would require GPAs. This scope assumes that City staff would provide TAZ-level land use inputs encompassing all proposed projects that would require a GPA. Potential GPAs outside of Sunnyvale will be included as directed by City staff. Hexagon will coordinate with the corresponding agencies to obtain TAZ-level land use inputs for potential GPAs outside of Sunnyvale. Roadway network improvements will be coded into the model as directed by City staff. The traffic volumes for this scenario will be adjusted based on the scenario model run results and existing traffic volumes. Traffic conditions at the study intersections will be evaluated using the TRAFFIX software

using City-specific guidelines. Intersection improvements will be assumed as directed by City staff.

6. ***Evaluation of Cumulative Conditions with Project Option B with Foreseeable General Plan Amendments (GPA).*** Hexagon will obtain from City staff the TAZ-level land use inputs into the STFM for this scenario. It is assumed that the only difference between this scenario and the scenario analyzed in Task 5 is the land use assumptions for the LSAP zones. Roadway network improvements will be coded into the model as directed by City staff. The traffic volumes for this scenario will be adjusted based on the scenario model run results and existing traffic volumes. Traffic conditions at the study intersections will be evaluated using the TRAFFIX software using City-specific guidelines. Intersection improvements will be assumed as directed by City staff.

7. ***Evaluation of Cumulative Conditions with Project Option C with Foreseeable General Plan Amendments (GPA).*** Hexagon will obtain from City staff the TAZ-level land use inputs for the STFM for this scenario. It is assumed that the only difference between this scenario and the scenario analyzed in Task 5 is the land use assumptions for the LSAP zones. Roadway network improvements will be coded into the model as directed by City staff. The traffic volumes for this scenario will be adjusted based on the scenario model run results and existing traffic volumes. Traffic conditions at the study intersections will be evaluated using the TRAFFIX software using City-specific guidelines. Intersection improvements will be assumed as directed by City staff.

8. ***Determination of Project-Generated Intersection Impacts.*** The cumulative scenarios analyzed in Tasks 5 to 7 will be compared to existing conditions to determine potential cumulative impacts. Hexagon will identify for each intersection with a cumulative impact the threshold for a significant contribution to the cumulative impact. Hexagon will perform a select-link analysis to determine whether the updated LSAP as a whole would meet the threshold for a significant contribution. Hexagon will then compare the entire updated LSAP impact conclusions to the impact conclusions in the previously adopted LSAP EIR. The LSAP update is said to generate a new intersection impact at locations that are identified with an intersection impact but not previously identified with an impact. This task will be performed separately for the three cumulative scenarios analyzed in Tasks 5 to 7.

9. ***Evaluation of Freeway Segments.*** Hexagon will select up to eight freeway segments for evaluation for the three cumulative scenarios analyzed in Tasks 5 to 7. Hexagon will submit the proposed study freeway segments for City approval. Freeway segment volumes under all study scenarios will be adjusted based on model forecasts and existing volumes. Freeway segment levels of service results will be evaluated per VTA guidelines. Freeway segment impacts will be identified in accordance with VTA guidelines.

10. ***Evaluation of Freeway Ramps.*** Hexagon will select up to eight freeway ramps for evaluation for the three cumulative scenarios analyzed in Tasks 5 to 7. Hexagon will submit the proposed study freeway ramps for City approval. Freeway ramp volumes under all study scenarios will be adjusted based on model forecasts and existing volumes. Hexagon will conduct a volume-to-capacity evaluation at the study freeway ramps. For ramps that would not have sufficient capacity, Hexagon will determine whether the proposed LSAP Update would generate traffic greater than 1% of the ramp capacity.

11. ***General Plan Amendment Study: VMT Analysis.*** Pursuant of SB 743, the Governor's Office of Planning and Research (OPR) published the finalized *Updates to the CEQA Guidelines in November 2017.* The OPR guidelines state that projects located within ½ mile of an existing major transit stop would have a less-than-significant impact on VMT. The proposed LSAP Update would thus be presumed to have a less-than-significant impact on VMT per OPR guidelines. However, given that the City of Sunnyvale has not adopted OPR's guidelines, and no standard approach or guidelines have been finalized by the City of Sunnyvale, Hexagon will present VMT data for information only. It is not intended to provide any indication of the transportation impacts of the project under SB 743. VMT will be analyzed using the STFM.

12. ***Transit, Pedestrian and Bicycle Traffic Review.*** The traffic analysis will include a discussion of existing and planned transit services in the area, as well as bicycle and pedestrian facilities. This task will include a quantitative analysis of transit delay in compliance with VTA traffic study guidelines. Any deficiencies will be identified, and improvements will be recommended.

13. ***Description of Impacts and Recommendations.*** Hexagon will identify and describe the impacts created by the proposed project. Hexagon will identify the locations and types of improvements or modifications necessary to mitigate the project impacts. If the recommended improvements are already captured in the City's Deficiency Plan, that will be acknowledged. Project impacts and recommendations will be submitted for City staff review prior to submitting the Administrative Draft report.

14. ***TIA Reports and Response to Comments.*** Hexagon will summarize its methods, findings, and recommendations in an Administrative Draft TIA report including text, tables, and graphics. Hexagon will submit three hard copies of the Administrative Draft report and two hard copies of the report appendices to City staff for review. Hexagon will respond to editorial comments from City staff and prepare a Draft TIA. Hexagon will submit two hard copies of the Draft report and appendices to City staff for review. Hexagon will respond to comments on the Draft TIA report and prepare a Final TIA report. Hexagon will submit two hard copies of the Final report and appendices to City staff. Hexagon will also respond to comments on the ADEIR and DEIR.

15. ***Meetings.*** The fee estimate includes staff attendance at two public hearings and five project meetings with City staff related to the proposed project. The five project meetings include a kick-off meeting and a public outreach meeting.

## Optional Task

16. ***Project-Specific TIA.*** The tasks included in the above Scope of Work are for a plan-level traffic study. If specific projects are identified in the future, as an optional task, Hexagon will conduct project-specific TIAs. Budget and schedule for project-specific TIAs vary largely depending on the project description. Therefore, Hexagon will submit separate additional service requests outlining the required tasks, budget and schedule as the needs for project-specific TIAs are identified. Hexagon will proceed with this optional task upon receipt of authorization to proceed.

### Additional Services

Any work not specifically referenced in the above Scope of Work – for example analyzing additional project alternatives, analyzing additional study intersections, conducting additional field delay measurements – shall be considered additional services. Additional services will require additional budget and additional time and will be conducted upon receipt of authorization to proceed.

## Schedule and Budget

Billings for the project will be conducted monthly on a time and expenses basis, not to exceed $107,000 for work items 1 through 13, as outlined in our Scope of Services. A breakdown of the budget by task is shown in Table 2. This price quote is good for 30 days. This price quote assumes all project-related activities will be completed within one year. Extended project schedules will require additional budget for project administration.

Barring any unforeseen delays, the Administrative Draft report will be submitted 10 weeks after (1) a contractual agreement has been reached, and (2) the required information – such as TAZ-level land use data – has been received. Upon receiving comments on the Administrative Draft report, the Draft report will be submitted within two weeks. The Final report will be delivered one week after receipt of all comments on the Draft report. Cognizant of your desired schedule, we are ready to start work immediately upon authorization.

We look forward to working with you and appreciate your consideration of Hexagon for this assignment. If you have any questions, please do not hesitate to call.

Sincerely,

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Gary K. Black
President

**Table 1**
**Approaches at Intersections for Field-Measured Delay**

| # | Intersection | AM Peak Hour Approaches | AM Peak Hour Survey Duration [1] | PM Peak Hour Approaches | PM Peak Hour Survey Duration [1] |
|---|---|---|---|---|---|
| 1 | Sunnyvale Ave & Evelyn Ave | WB | 8-9:15 | EB | 5-6:15 |
| 2 | Fair Oaks Ave & Tasman Dr | NB, WB | 8-9:15 | SB | 5-6:15 |
| 3 | Fair Oaks Ave & US 101 NB Ramps | NB, WB | 8-9:15 | SB | 5-6:15 |
| 4 | Fair Oaks Ave & Duane Ave | NB, WB | 7:45-9 | SB | 5-6:15 |
| 5 | Fair Oaks Ave & Evelyn Ave | NB | 8-9:15 | SB | 5-6:15 |
| 6 | Fair Oaks Ave & Old San Francisco Rd / Reed A | NB | 8-9:15 | SB | 5-6:15 |
| 7 | Wolfe Rd & Stewart Dr | NB | 8-9:15 | SB | 5-6:15 |
| 8 | Wolfe Rd & Arques Ave | NB | 8-9:15 | SB, WB | 5-6:15 |
| 9 | Wolfe Rd & Kifer Rd | NB | 8-9:15 | SB, WB | 5-6:15 |
| 10 | Wolfe Rd & Evelyn Ave | NB, WB | 8-9:15 | SB | 5-6:15 |
| 11 | Wolfe Rd & Reed Ave | NB | 8-9:15 | SB | 5-6:15 |
| 12 | Wolfe Rd & El Camino Real | NB, WB | 8-9:15 | SB, EB | 4:45-6 |
| 13 | Wolfe Rd & Fremont Ave | NB, EB | 8-9:15 | SB, EB | 5-6:15 |
| 14 | Wolfe Rd & Homestead Rd | NB, WB | 8-9:15 | SB, EB | 5-6:15 |
| 17 | Evelyn Ave & Reed Ave | WB | 8-9:15 | SB | 5-6:15 |
| 35 | Oakmead Pkwy & Arques Ave | WB | 8-9:15 | EB | 5-6:15 |

Notes:
1. The survey duration is 15 minutes longer than the peak hour to ensure the end of queue is captured.

**Table 2**
**Budget Breakdown**

| # | Task | Labor Hours President | Labor Hours Associate | Labor Hours Admin | Cost Labor | Cost Expenses |
|---|---|---|---|---|---|---|
| 1 | Field-Measure Approach Delays and Queue Lengths | 2 | 50 | 2 | $ 9,760 | $ 9,240 |
| 2 | Synchro Network | | 16 | | $ 2,880 | |
| 3 | Evaluation of Existing Conditions | | 60 | | $ 10,800 | |
| 4 | Area Traffic Model | | 4 | | $ 720 | |
| 5 | Evaluation of Cumulative Conditions Option A | | 24 | | $ 4,320 | |
| 6 | Evaluation of Cumulative Conditions Option B | | 16 | | $ 2,880 | |
| 7 | Evaluation of Cumulative Conditions Option C | | 16 | | $ 2,880 | |
| 8 | Determination of Project-Generated Intersection Impacts | | 56 | | $ 10,080 | |
| 9 | Evaluation of Freeway Segments | | 16 | | $ 2,880 | |
| 10 | Evaluation of Freeway Ramps | | 12 | | $ 2,160 | |
| 11 | VMT Analysis | 2 | 6 | | $ 1,630 | |
| 12 | Bike, Pedestrian and Transit Facilities | 1 | 16 | | $ 3,155 | |
| 13 | Description of Impacts and Recommendations | 1 | 20 | | $ 3,875 | |
| 14 | TIA Reports and Response to Comments | 24 | 120 | 16 | $ 29,880 | |
| 15 | Meetings | 30 | 8 | | $ 9,690 | $ 170 |
| | Sub-Total: | 60 | 440 | 18 | $ 97,590 | $ 9,410 |
| | **Total Contract Cost:** | | | | **$ 107,000** | |

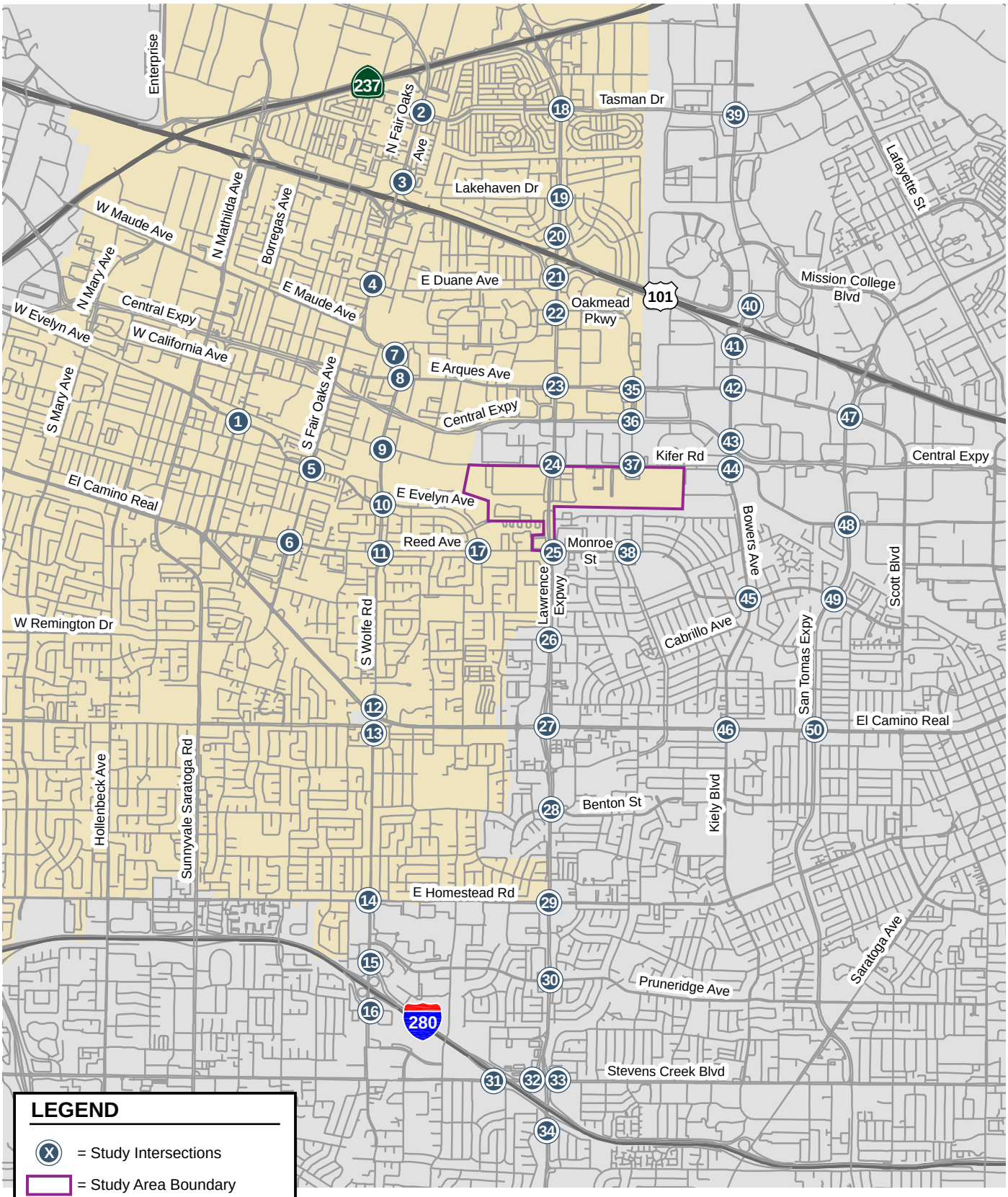


**Figure 1**
**Proposed Intersections**