Attachment 1

# 2024 Speed Zone Study Proposal




**2024 Speed Zone Study**

*Prepared for:*

City of Merced

August 2, 2024

*Prepared By:*


JLB TRAFFIC ENGINEERING, INC.

***Traffic Engineering, Transportation Planning, & Parking Solutions***

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## Firm Introduction

August 2, 2024

Richard Maddox
Engineering Department
City of Merced
678 West 18th Street, 2nd Floor
Merced, CA 95340

Dear Mr. Maddox,

We appreciate the opportunity to submit our Proposal to the City of Merced. This submittal is to provide a 2024 Speed Zone Study Extension and Update to include new streets incorporated since 2018 Speed Zone Study and for surveys that have expired of will expire soon.

***JLB Traffic Engineering, Inc. (JLB)*** has been successful in completing high quality work in over 60 jurisdictions within California including the cities of Merced, Atwater, Los Banos, Madera, Fresno, Tulare, and Visalia, the counties of Kings and Fresno, and Caltrans Districts 5, 6, 9 and 10 as well as private clients. JLB's staff includes 6 full-time employees and 2 interns. JLB's project engagements include the exact category of services sought by the City of Merced and these are all areas in which we have expertise and a successful history of completed local projects. We are currently managing on-call transportation and traffic engineering contracts for the City of Atwater, City of Visalia, City of Clovis, City of Turlock, and County of Fresno and have been successful in meeting the day-to-day demands that these on-call contracts entail.

Some key advantages of ***JLB*** include our relatively local presence and knowledge of the area, our history with the City, and our commitment to responsiveness and quality. We have proven through various engagements that we place a heavy emphasis on being ready to meet with our clients, as needed, to ensure the Project results in "no surprises." By keeping in close contact with our clients, we ensure that the Project remains on schedule and fully addresses and achieves the goals of our clients.

I appreciate your review of ***JLB***'s proposal. I hereby attest that all the information presented is true and correct. Please feel welcome to contact me with any questions or if you desire more information on the qualifications, capabilities, or work history of our company. Please send all correspondence to me, Jose Luis Benavides, via e-mail at jbenavides@JLBtraffic.com. I can be reached by phone at (559) 570-8991.

Sincerely,

Jose Luis Benavides, PE, TE
President

## Approach

Mr. Jose Luis Benavides will be responsible for the overall coordination and management of the contract. The management of Mr. Benavides is based around communication. Having an open line of communication between all team members and contracting agencies is vital to satisfaction from all parties. Ensuring that all project items are clearly defined, directing/assigning appropriate personnel and maintaining quality control all stem from consistent and comprehensive communication. In order to facilitate working with City staff, JLB will seek to define the role of Project leaders and communicate effectively with City staff. In consultation with City staff, JLB will determine the best method of communication (e.g., phone, email, in-person vs. online meeting, etc.). JLB will be clear, listen and follow-up as needed to ensure the project is completed on time, according to plan and within the allocated budget. Communication can also be effective in maintaining the project schedule. Keeping this schedule is vital to the success of a project, therefore, scheduling is another essential element in the management approach of Mr. Benavides.

Mr. Benavides' overall strategy for scheduling work can be based on forwards or backwards planning depending on the City's needs. Key variables for schedule estimating will consider task durations, parallel tasks, predecessor tasks, independent tasks, slack/float time and critical path items. A schedule of milestones for meeting project deadlines will consider start and end dates for project tasks/phases, key deliveries, City staff review and approvals, important meetings and presentations as well as key dates that may impact the timeline.

Mr. Benavides and JLB have created a business environment in which both management staff and employees strive for perfection. As such, quality control measures include, but are not limited to, proper personnel training, creating benchmarks for task items and conducting reviews at various project stages

## Project Experience

Below is a list of projects that JLB has project management experience related to the type of service required by the project. A sample of the City of Atwater 2015 Engineering & Traffic Survey as well as the Community of Yosemite Lakes 2022 Engineering & Traffic Survey are located in Appendix A.

City of Atwater 2015 Engineering & Traffic Survey and 2023 Engineering & Traffic Survey Extension
Jim Vang (Scott McBride in 2015)
City of Atwater
750 Bellevue Road
Atwater, CA 93501
jvang@atwater.org
(209) 357-6233

Community of Yosemite Lakes 2022 Engineering & Traffic Survey
Randy Sacks
Yosemite Lakes Owners Association
30250 Yosemite Springs Parkway
Coarsegold, CA 93614
randy@artisanprinting.net
(408) 410-5649

City of Selma 2017 Engineering & Traffic Survey
Daniel K. Bond (Joey Daggett in 2017)
Gateway Engineering, Inc.
405 Park Creek Drive
Clovis, CA 93611
dan@gatewayeng.com
(559) 320-0344 ext. 11

City of South Lake Tahoe 2024 Engineering & Traffic Survey (Recently Awarded)
Anush Nejad
City of South Lake Tahoe
1901 Lisa Maloff Way
South Lake Tahoe, CA 96150
aburnam@Cityofslt.us
(530) 542-6034

# Work Plan

The preparation of the 2024 Speed Zone Study Extension and Update will involve 5 tasks. Task 1 will include the Kickoff Meeting and Coordination Meetings; Task 2 will include the collection of 24-hour counts, collision data and segment reconnaissance; Task 3 will include the assessment of roadway segments to be extended or updated; Task 4 will include the completion of 2024 Speed Zone Study Extension and Update preliminary report; and Task 5 will include the preparation of the 2024 Speed Zone Study Extension and Update final report.

The 2024 Speed Zone Study Extension and Update will be prepared to assist in determining which segments in the 2018 Speed Zone Study can be extended and which need to be updated. Furthermore, it will also include two (2) new segments to be added. As part of the 2024 Speed Zone Study Extension and Update, it is assumed that approximately sixty percent of the previously adopted speed limit segments would meet the criteria for a three (3) year extension. The remaining forty percent of the speed limit segments are assumed to be completely updated. Therefore, it is estimated that 78 segments would be part of the 2024 Speed Zone Study Extension and Update and 114 segments would be part of the Three (3) Year Extension.

A schedule for the 2024 Speed Zone Study Extension and Update is located in Appendix B. This schedule assumes that the Notice to Proceed will occur on September 3, 2024. The Extension Letter is estimated to be delivered on December 11, 2024. The Final 2024 Speed Zone Study Update Report is estimated to be delivered on March 12, 2025. Following the submittal of the Final 2024 Speed Zone Study Update Report, the presentation of this Report to the City Council is estimated to occur on April 10, 2025.

## Task 1: Kickoff Meeting and Coordination Meetings

JLB's Project Manager and Project Engineer will attend the Kickoff meeting at the City of Merced to finalize contact details between JLB and the City of Merced. During this meeting, JLB will also discuss the Project schedule and overall project funding in addition to items the City of Merced deem critical.

JLB is including in its scope of work one (1) meeting with City staff prior to finalizing the segments proposed to be extended as part of Task 3 "Assess Roadway Segments to be Extended or Updated".

Two (2) meetings are assumed to take place during Task 4 "Complete 2024 Speed Zone Study Extension and Update Preliminary Report". Both of these meetings would take place shortly after the Draft Preliminary Report has been submitted to City staff for their review and comment. The first meeting will be with City staff only and the second meeting with the City's Traffic Committee.

Two (2) meetings are also assumed to take place during Task 5 "Prepare 2024 Speed Zone Study Extension and Update Final Report". Both of these meetings would take place shortly after the Draft 2024 Speed Zone Study Extension and Update Report has been submitted to City Staff for their review and comment. The first meeting will be with City staff only and the second meeting with the City Council.

### *Deliverables*

- Attend Kickoff Meeting, Review Meetings and Presentation Meetings (Six (6) total meetings)

## Task 2: Collect 24-Hour Counts, Collision Data, and Segment Reconnaissance

- JLB will provide the City with a KMZ file for the 192 segments to be included as part of the 2024 Speed Zone Study Extension and Update. This KMZ file will not only include the proposed study segments, but also the location where the 24-hour volume counts are proposed to be collected from.
- New 24-hour volume counts will be obtained for all the study segments and shall be on Tuesday, Wednesday, or Thursday. Dates for the counts will be selected to avoid holidays, construction, or inclement weather. Data will be presented in 15-minute increments with a.m. and p.m. peak hours identified.
- Once all 24-hour volume counts have been collected, JLB will calculate the annual average growth rate in traffic between the common counts which were part of the 2018 Speed Zone Study and these new counts.
- JLB will calculate a collision rate for each of the project segments. The collision rate will include collision data from the City of Merced and that from the Transportation Injury Mapping System (TIMS) for the most recent readily available three-year period. Collision rates will be calculated based on the records and collected volume data. The collision rate for each segment will be compared to average rates for similar facilities as published by Caltrans. The collision data will be utilized to help recommend the speed limit to be posted.
- JLB will complete a reconnaissance of each roadway segment by driving it in both directions during non-peak hours. In addition to the driving reconnaissance, JLB will review readily available aerial imagery to determine if any changes have occurred for each roadway segment since the 2018 Speed Zone Study was prepared.

### *Deliverables*

- Attend Kickoff Meeting, Review Meetings and Presentation Meetings (Six (6) total meetings)
  Google Earth KMZ File of 24-hour Volume Count Locations
- 24-Hour Directional Volume Counts
- Average Annual Growth Rate in Traffic
- City and TIMS Collision Data
- Findings of Roadway Reconnaissance

## Task 3: Assess Roadway Segments to be Extended or Updated

- JLB will independently assess each of the previously adopted 190 segments to determine which of them could be extended for three years and which should be updated.
- To determine whether a segment could be extended, JLB proposes that all four of the following criteria be met:
  - Significant changes in traffic conditions have not occurred. The new 24-hour volume count has a growth rate that is less than or equal to 150 percent of the calculated Annual Growth Rate in traffic observed as part of Task 2. For example, if during Task 2 it is determined that the average annual growth rate in traffic is three (3) percent, then any segment which has

observed a change in traffic less than 4.5 percent. However, it should be noted that the percent deviation to be used will be based on consultation with the City of Merced.
    - The reconnaissance of street segment and review of aerial imagery determines that significant changes have not occurred within the limits of the segment.
    - The collision rate is less than 110 percent of the statewide average for similar facilities (the 110 Percent can be modified based on feedback from City staff); and
    - The roadway segment has been in effect for seven (7) years and significant changes to the roadway have not occurred.
- Prepare Technical Memo of the findings and recommendations of which segments JLB proposes to be extended for three years versus those that JLB recommends be fully updated.
- Receive feedback from the City of Merced on the Draft Technical Memo and produce a Final Technical Memo of the Findings and Recommendations.
- Prepare an Extension Letter addressed to the City of Merced which includes a table of the applicable segments that can be extended for an additional three years. This letter will be signed and stamped by a Professional Traffic Engineer.

*Deliverables*

- Draft Technical Memo of the Findings and Recommendations for Extensions and Full Updates
- Final Technical Memo of the Findings and Recommendations for Extensions and Full Updates
- Three (3) Year Extension Letter Signed and Stamped by a Professional Traffic Engineer

## Task 4: Complete 2024 Speed Zone Study Update Preliminary Report

- JLB will provide the City with a KMZ file for the roadway segments to be completely updated as part of the 2024 Speed Zone Study Extension and Update. This KMZ file will not only include the proposed study segments, but also the location where the spot speeds are proposed to be collected from. It is anticipated that these will be reviewed and approved by the City prior to the collection of the spot speed data collection.
- Vehicle speeds will be sampled using radar or lidar during off-peak periods, avoiding the morning, noon, and evening traffic peaks. These would be collected on a Tuesday, Wednesday, or Thursday. Dependent on roadway traffic volumes, we will seek to collect a minimum of 100 vehicle speed samples for each segment in each direction using standard data-collection techniques. Provided this number of data points can be obtained in a 2-hour period. The spot speed data will be collected by a technician that is certified to use a radar gun and on a radar gun that has been calibrated. The spot speed data will be collected in one-mile increments.
- All the pertinent information will be entered in an Excel spreadsheet form. JLB will develop a form that includes all the information required per the guidelines in the California Manual on Uniform Traffic Control Devices (CA MUTCD).
- The 24-hour volume counts, collision data, and segment reconnaissance collected as a part of Task 2 will be utilized to help recommend the speed limit.
- The 2042 Speed Zone Study Extension and Update will also take into account Assembly Bill 43.
- The results of each segment to be updated will be entered in a table, including the roadway segment name, roadway limits, the collision rate, comparable average Caltrans collision rates,

existing speed limit, 10 MPH pace, 50th and 85th percentile speeds, recommended speed limit, and method and reason used for the recommended speed.

- Prepare a Preliminary 2024 Speed Zone Study Extension and Update Report that includes a summary table and figures for submittal to City of Merced staff for review. Any recommended changes from the proposed speed limits will be discussed for local insight which might affect the recommendations. This Preliminary 2024 Speed Zone Study Extension and Update Report will include both a figure and KMZ file which depict the proposed speed limits along with Excel format spot speed data. The Preliminary Report will clearly identify all segments for which the recommended speed limit is proposed to be reduced or increased.

### *Deliverables*

- Google Earth KMZ File of Speed Study Locations
- Spot Speed Data (Microsoft Excel)
- Preliminary Report of Recommended Speed Limits (Microsoft Word)

## Task 5: Prepare 2024 Speed Zone Study Update Final Report

- A Draft Report will be prepared that briefly summarizes the methods, assumptions, results of the data collection and survey preparation, and recommended speed limits for each of the survey segments based on the data collected and analysis performed. Copies of all surveys will be provided in appendices. A figure of the survey segments, including the proposed new speed limits, will be provided.
- The Report will be finalized based on comments from City of Merced Staff. The Final 2024 Speed Zone Study Extension and Update Report will also include original and electronic versions of each roadway segment Engineering and Traffic Survey, both with the wet signature and seal of a Professional Traffic Engineer.

### *Deliverables*

- Draft 2024 Speed Zone Study Update Report
- Final 2024 Speed Zone Study Update Report
- 2024 Speed Zone Study Update Signed and Stamped by a California Registered Civil and Traffic Engineer

## Key Staff

The staff listed below will be working on the 2024 Speed Zone Study Extension and Update. JLB's key staff will be Jose Luis Benavides, Matthew Arndt, and Christian Sanchez and will include support from other JLB staff. The 2024 Speed Zone Study Extension and Update will be managed by Jose Luis Benavides, the principal contact person for JLB. Both Matthew Arndt and Christian Sanchez will serve under the direction of Jose Luis Benavides. Bios for Key Personnel are provided below. Resumes for key staff are located in Appendix C.

### JOSE LUIS BENAVIDES, PE, TE – PRESIDENT, PRINCIPAL

- B.S. in Surveying Engineering, California State University, Fresno
- Professional Engineer (Traffic), California – #TR2328
- Professional Engineer (Civil), California – #C62971
- Land Surveyor in Training (LSIT), California – #ZL005078

Mr. Benavides is the founder and president of JLB Traffic Engineering, Inc. His engineering expertise includes: traffic operations analysis; engineering & traffic surveys, corridor studies; plan check services; highway official plan lines; traffic forecasting; traffic planning; traffic control plans; traffic signal design; signal interconnect; geometric design; bike lane feasibility analysis; traffic impact studies; railroad pre-emption timing; pre-signals; intersection operational studies; signal/stop warrant analysis; speed studies; parking studies; and expert witness services. Mr. Benavides has dedicated his career to the Central Valley and has complete familiarity and local knowledge that will highly benefit the City of Merced.

*Representative Projects:*

- *City of South Lake Tahoe 2024 Engineering and & Traffic Survey (recetly awarded)*
- *City of Atwater 2023 Engineering & Traffic Survey Extension*
- *Community of Yosemite Lakes 2022 Engineering and & Traffic Survey*
- *City of Atwater 2015 Engineering & Traffic Survey*
- *City of Selma 2017 Engineering & Traffic Survey*
- *Downtown Merced Circulation Updates and Signal Modificaitons, Merced*
- *Merced High School Stadium at the NW Corner of "G" Street and Olive Avenue, Merced*
- *Mixed-Use Development at the Northeast Corner of "G" Street and Yosemite Avenue, Merced*
- *"G" Street and Main Driveway Traffic Signal, Merced*
- *16th Street at "V" Street traffic signal loop replacement, Merced*
- *New Signal Design, 15 locations along Golden State Boulevard through Fowler, Selma and Kingsburg, Fresno County, Fresno COG*
- *Caltrans A&E Electrical Designs for Districts 5, 6, 9 and 10*
- *Systematic Safety Analysis Report, Fresno*
- *On-Call Traffic Engineering, Atwater, Visalia, Clovis, Turlock and Fresno County*

## MATTHEW ARNDT, EIT – ENGINEER I/II

- B.S. in Civil Engineering, California State University, Long Beach
- Engineer in Training (EIT), California – #169355

Mr. Arndt serves JLB Traffic Engineering, Inc. as an Engineer I/II and has experience with the following: engineering and traffic surveys, conducting intersection turning movement counts, collision analyses, traffic impact analyses (TIA) of public and private development projects, trip generation analyses (TGA), Vehicle Miles Traveled (VMT) Analyses, intersection operational analyses, queuing analyses, traffic operational analyses of study intersections and segments utilizing Synchro and HCS7 software, preparing figures and multi-way stop and signal warrant reports.

*Representative Projects:*

- *Yosemite Lakes 2022 Engineering & Traffic Survey, Community of Yosemite Lakes*
- *Downtown Merced Circulation Modifications TIA and Parking Analysis, Merced*
- *Yosemite and G Street Mixed-Use TIA, Merced*
- *King Husein School TIA, Madera*
- *Yosemite Plaza TIA, Madera County*

## CHRISTIAN SANCHEZ, EIT – ENGINEER I/II

- B.S. in Civil Engineering, California State University, Fresno
- Engineer in Training (EIT), California – #181222
- Mr. Sanchez serves JLB Traffic Engineering, Inc. as an Engineer I/II and has experience: preparing new traffic signal plans, traffic signal modification plans, pavement delineation and signage plans, street lighting plans, High-intensity Activated crossWalK (HAWK) signal plans, conducting collision analyses, preparing figures, collision diagrams and multi-way STOP and signal warrants.

*Representative Projects:*

- *G St at Yosemite Crossing Project Drwy, Traffic Signal, Merced*
- *G St at Foothill Dr, Traffic Signal Modification, Merced*
- *Yosemite Ave at Lake Rd, Traffic Signal and Pavement Delineation & Signage, Merced*
- *Downtown Merced Circulation, Traffic Signal Modifications and Pavement Delineation & Signage, Six (6) Locations Merced*
- *Atwater Blvd at First St, Traffic Signal Plan Review, Atwater*

## *Sub-Consultants*

JLB proposes to use National Data & Surveying Services as subconsultants for the 2024 Speed Zone Study Extension and Update to collect the 24-hour counts and spot speed data.

## Litigation

JLB has no current litigations. Furthermore, JLB has not been involved in any litigations in the past.

## Disclosure

JLB has no known conflict of interest as it holds no City office, committee appointment or other relationship. At present JLB is in the process of preparing one traffic signal modification ("G" Street at Foothill Drive) for private sector clients in the City of Merced.

## Contract

*JLB* has reviewed the sample agreement associated with this RFP and, if selected, can enter into an agreement of that form.

## References

Please contact the following references as a testament of JLB's traffic engineering capabilities and performance.

1. Jim Vang, Civil Engineering Assistant, City of Atwater, 750 Bellevue Road, Atwater, CA 95301, (209) 357-6233, jvang@atwater.org
2. Harmanjit Dhaliwal, P.E., Assistant Public Works Director, Capital Projects, Public Works Department, City of Fresno, 2600 Fresno Street, Room 4064, Fresno, CA 93721, (559)621-8694, harmanjit.dhaliwal@fresno.gov
3. Dominic Tyburski, P.E., Director, Public Works Department, County of Kings, 1400 West Lacey Boulevard, Hanford, CA 93230, (559) 852-2698, dominic.tyburski@co.kings.ca.us

# Appendix A: Project Samples

# 2015 Engineering and Traffic Survey

## City of Atwater

***Prepared For:***

City of Atwater
750 Bellevue Rd.
Atwater, CA 95301

October 19, 2015

Project No.: 005-002 Task 07


JLB TRAFFIC ENGINEERING, INC.

**Traffic Engineering, Transportation Planning & Parking Solutions**
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Fresno, CA 93704
Tel.: (559) 570-8991
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info@JLBtraffic.com

**Traffic Engineering, Transportation Planning & Parking Solutions**

# 2015 Engineering and Traffic Survey

City of Atwater, CA

October 19, 2015

This Engineering and Traffic Survey has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein, and has judged the qualifications of any technical specialists providing engineering data, which recommendations, conclusions and decisions are based.

Prepared By:

Jose Luis Benavides, P.E., T.E.

President


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*C:\Users\Jose\Desktop\01 Projects\005 Atwater\005-002 2015 On Call\Task 007 Eng N Traff Surveys\Final 2015 E&TS 10212015\R10192015 Rev1.docx*

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## Introduction and Summary

JLB Traffic Engineering, Inc. (JLB) has completed the preparation of the 2015 Engineering and Traffic Survey for the City of Atwater. The Engineering and Traffic Surveys were prepared pursuant to the latest editions of the California Manual on Uniform Traffic Control Devices (MUTCD) and the California Vehicle Code (CVC). JLB's main objective for this assignment is to prepare a Citywide Engineering and Traffic Survey and recommend the appropriate speed limits consistent with the laws and practices of the State of California. This report along with its appendices provides the data and findings utilized to complete the 2015 Engineering and Traffic Survey.

## Introduction

This report presents the results of the 2015 Engineering and Traffic Survey conducted by JLB for the City of Atwater. The surveys include a summary of radar speed surveys, daily traffic count, traffic accidents, and an analysis of roadway conditions within the City of Atwater.

The purpose of these surveys is to recommend the speed limits appropriate for enforcement and to provide any recommended speed limit changes in accordance with current State of California regulations and guidelines. The CVC Section 40802 requires that engineering and traffic survey for speed limits should be conducted once every five, seven or ten years by governing municipalities in order to use radar or any other electronic device as a means of speed limit enforcement. Streets defined as "local streets and roads" as described in the amended subdivision (b) of Section 40802 "Speed Trap" of the CVC, effective January 1, 1982, are exempted.

Speed limits are established primarily for the purpose of protecting the public from the unreasonable behavior of reckless, unreliable, or dangerous drivers. Speed limits are generally established at or near the 85$^{th}$ percentile speed. The 85$^{th}$ percentile speed, also referred to as the critical speed, is defined as the speed at or below which 85 percent of traffic is moving in free flow conditions. Speed limits established on this basis conform to the consensus of those who drive on the roadways as to what speed is reasonable and safe under normal driving conditions.

The current standard as described in the California MUTCD is to consider the speed limit at the nearest five miles per hour (MPH) increment of the critical speed. However, a reduction of five mph is allowable to meet the needs of the community if justification is provided in accordance with the CVC through an engineering and traffic survey. Significant factors in determining reasonable and safe speed limits that are most appropriate to facilitate the orderly movement of traffic include: prevailing speeds, accident rates, unexpected roadway conditions, and adjacent land uses, including residential and commercial densities. A more detailed discussion of current State regulations and guidelines is provided in the Speed Limit Recommendations section of this letter. Applicable CVC Code sections are summarized in the California Vehicle Code Requirements section.

## Summary

Based on current State regulations and guidelines, it is recommended that the City of Atwater adopt the recommended speed limits for its City streets as noted in Table 1. Copies of speed survey data are included in Appendix A, the current traffic counts are included in Appendix B and the speed survey data and final recommendation for each of the study segments is included in Table 1. Finally Figure 1 illustrates the recommended speed limits within the City of Atwater.

The procedures used to formulate recommendations in this report meet the requirements of the California Vehicle Code (CVC) Section 627, Sections 22348 through 22413 under Division 11, Chapter 7 "Speed Laws", Section 40802, and others as referenced herein, and the 2014 Edition of the California MUTCD. The California MUTCD is the amended version of the Federal Highway Administration MUTCD for use in California. Summarized below are applicable portions from the CVC related to preparation of an engineering and traffic survey for speed limits.

## California Vehicle Code (CVC) Summary

**CVC Section 235 – Business District**: An area in which at least 50 percent of the properties are used for business for a minimum distance of 600 feet on one side or 300 feet on both sides of a highway.

**CVC Section 515 – Residence District:** An area outside of the Business District along a highway that has a minimum of 13 separate dwelling units on one side, or 16 on both sides within a distance of a quarter mile.

**CVC Section 627 – Engineering and Traffic Survey:** A survey of highway and traffic conditions in accordance with methods determined by the California Department of Transportation (Caltrans) for use by State and local authorities, which shall include consideration of prevailing speeds as determined by traffic engineering measurements, accident records, and highway, traffic, and roadside conditions not readily apparent to the driver. Local authorities may also consider residential density as defined in Section 515.

**CVC Section 22349 – Maximum Speed Limits**: Provides that no person shall drive a vehicle upon a highway at a speed greater than 65 mph. An exception to this, as stated in CVC Section 22356, is that Caltrans may increase the speed and these increases can only be made after consultation with the California Highway Patrol (CHP) and on the basis of an engineering and traffic survey.

**CVC Section 22350 – Basic Speed Law:** Provides that no person shall drive a vehicle upon a highway at a speed greater than is reasonable or prudent, and in no event at a speed that endangers the safety of persons or property. Reasonable is defined in Webster's New World Dictionary as "just, of sound judgment, and not excessive." Prudent is defined as "exercising sound judgment in practical matters, cautious and discreet in conduct, not rash and managing carefully."

**CVC Section 22351 – Speed Law Violations**: States that the speed of any vehicle upon a highway not in excess of the limits specified in Section 22352 of the CVC or established as authorized in the CVC is lawful unless clearly proved to be in violation of the Basic Speed Law. This same section also states that the speed of any vehicle upon a highway in excess of the prima facie speed limits in Section 22352 of the CVC or established as authorized in the CVC is unlawful unless the defendant establishes by competent

evidence that the speed in excess of said limits did not constitute a violation of the Basic Speed Law at the time, place and under the conditions then existing.

**CVC Section 22352 – Prima Facie Speed Limits:** Establishes prima facie speed limits for Local Roads and Streets. The literal definition of the phrase "prima facie" is "first appearance". It is also defined at "first view" and "before investigation". Prima facie evidence is evidence sufficient to establish fact, or to raise presumption of fact, unless rebutted. Prima facie speed limits are those that are defined in CVC Section 22352. These speed limits shall be applicable unless changed as authorized in the CVC and, if so changed, only when signs have been erected giving notice thereof.

A speed limit of 15 MPH applies at railroad crossings, at uncontrolled highway intersections with obstructed view, and on alleys. A speed limit of 25 mph applies on any highway other than State highways in any business or residence district, unless a different limit is established by procedures described in the CVC. The 25 mph limit also applies in school zones.

**CVC Sections 22357 (Increase of Local Speed Limits to 65 mph) and 22358 (Decrease of Local Speed Limits):** Authorizes local authorities to establish prima facie speed limits on streets and roads under their jurisdiction, on the basis of an engineering and traffic survey.

**CVC Sections 22358.3 (Decrease on Narrow Streets) and 22358.4 (Decrease of Local Limits Near Schools or Senior Centers):** Authorizes local agencies to reduce prima facie speed limits to 20 or 15 mph on narrow streets (with roadway width less than 25 feet), school zones, or senior centers on the basis of engineering and traffic surveys.

**CVC Section 22358.5 – Downward Speed Zoning:** Physical conditions such as width, curvature, grade, and surface conditions, or any other condition readily apparent to a driver, in the absence of other factors, would not require special downward speed zoning.

**CVC Section 40802 (a)(2) – Prima Facie Speed Limits:** Provides that prima facie speed limits established under CVC Sections 22352(b)(1), 22354, 22357, 22358, and 22358.3 may not be enforced by radar unless the speed limit has been justified by an engineering and traffic survey within the last five years. This CVC section does not apply to a local street, road or school zone. A local street or road is defined by the latest functional usage and federal-aid system maps, or a street or road that primarily provides access to abutting residential property and meets the following criteria: (1) roadway is not more than 40 feet in width; (2) roadway is not more than one-half mile of uninterrupted length; and (3) roadway is not more than one travel lane in each direction.

# Survey Methodology

## Radar Checks

The traffic speed surveys for the study segments were conducted in 2015 with a calibrated radar gun on days with fair weather, dry pavement, and clear visibility. An effort was made to ensure that the presence of radar survey equipment did not affect the speed of the traffic being surveyed. Locations were selected where the prevailing speeds were representative of the entire street segment. The CA MUTCD provides guidance for the completion of an Engineering and Traffic Survey. Under the Guidance section of the MUTCD it is recommended that a minimum sample of 50 observations be used, but for purposes of this

study a minimum of 100 observations were used. The results of the radar speed survey data are shown in Appendix A.

## Analysis of Speed Data

The radar speed survey data were compiled and analyzed to determine the 50th percentile speed, 85th percentile speed, 10 mph pace speed, the percent of vehicles observed within the 10 mph pace speed, the range of speed observed and the average speed for each surveyed location. A description of these terms is provided below:

**50th Percentile Speed (Median Speed):** The speed above and below which 50 percent of the sample speeds were observed. This value indicates the speed that a driver may choose to drive without the influence of any speed limits, speed signs, or enforcement.

**85th Percentile Speed (Critical Speed):** The speed at or below which 85 percent of the sample speeds were observed. The 85th percentile speed of a spot speed survey is the primary indicator of the appropriate speed limit for a section of the roadway.

**10 mph Pace Speed:** The 10 mph increment (range) of speeds containing the greatest number of vehicles. In almost all cases, the 85th percentile speed and the recommended speed lie within the range, frequently in the middle to upper range of the interval. The percent of vehicles that fall within the pace speed is an indicator of the bunching of vehicular speeds. The number of observed vehicles within the 10 mph pace is often between 60 and 80 percent of the entire sample.

**Average speed:** The average speed is simply the cumulative speed divided by the number of observed vehicles.

The speed limits for the study segments were recommended after determining the average speed, 85th percentile speed, pace speed and considering other significant factors like existing land use, roadway design characteristics and accident rates (based on accident records for a two year period) for the study segments.

## Traffic Counts

Average daily traffic (ADT) counts were conducted at all study locations by National Data & Surveying Services (NDS). These counts were used to determine the accident rates for each segment, which in turn were used as a factor in determining the appropriate speed limit for each segment. Traffic counts are included in Appendix B.

## Collision Data

Collisions reported at study roadway segments were obtained from the Statewide Integrated Traffic Records System (SWITRS) database for a period of two years from January 2011 through December 2012 as this was the most recent data available at the time of the preparation of this study. Collision rates are a significant factor in determining the appropriate speed limits. The number of collisions are

included in Table 1. These were then used to determine the collision rate to compare that with the Statewide Average Collision Rate of similar roadways.

## Speed Limit Recommendation

Establishment of speed limits can be controversial and requires a rational, defensible, and consistent evaluation process. Speed limits are typically set near the 85th percentile speed which establishes an upper limit of what is considered reasonable and prudent. With all of the statistics inherent to the engineering and traffic speed survey process, there is a great deal of engineering judgment required. Speed limits should be reasonable and realistic regardless of the results of the field studies. Reasonable speed limits are those at which responsible motorists would drive without enforcement and/or signage and depend on the voluntary compliance of the greater majority of motorists. Speed limits cannot be set arbitrarily low as this would create violators of the majority of drivers and would not command the respect of the public.

In 2004, in order to better conform to the intent of the federal standards as established in the Federal Highway Administration's Manual on Uniform Traffic Control Devices, and also to address some of the widespread disregard of the 5 miles per hour (mph) special downward speed zoning provision, the California Traffic Control Manual replaced the Traffic Manual, and the speed zoning section of the Traffic Manual was changed to require rounding the 85th percentile to the nearest 5 mph increment rather than the lower 5 mph increment. This specific guideline revision resulted in raising certain street speed limits and had become a challenge to state and local jurisdictions.

In 2007, the California Traffic Control Devices Committee (CTCDC) ruled to approve a language change in the California Traffic Control Manual to clarify how local speed limits should be set. The CTCDC was prompted to make this change due to major variations in the interpretation and application of the California Traffic Control Manual Section 2B.13 "Speed Limit Sign (R2-1)" and to better distinguish the differences between "within" 5 mph of the 85th percentile speed and "round to the nearest" 5 mph of the 85th percentile speed for setting local speed limits. The changes included:

Posted speed limits will be set "round to the nearest" 5 mph increment of the 85th percentile speed.

Jurisdictions can lower this speed by an additional 5mph based on and justified by conditions and factors cited in the California Vehicle Code.

Caltrans ultimately issued a Traffic Operations Policy Directive (No. 09-04), effective July 1, 2009, which clearly defined these changes and incorporated new requirements into the California Traffic Control Manual. Section 2B.13 of the 2014 Edition of the California Traffic Control Manual now requires as a standard that a speed limit shall be established at the nearest 5 mph increment of the 85th percentile speed, except that the posted speed may be reduced by 5 mph from the nearest 5 mph increment of the 85th percentile speed in compliance with CVC Sections 627 and 22358.5.

For cases in which the nearest 5 mph increment of the 85th percentile speed would require rounding up, the speed limit may be rounded down to the nearest 5 mph increment below the 85th percentile speed if no further reduction is used.

Section 2B.13 further states that justification for reducing speed limits can be based on residential density, pedestrian/bicyclist safety and other factors not readily apparent to drivers but essential to meet the traffic safety needs of the community. The following factors may be considered to adjust and determine the final speed limits:

Road characteristics, shoulder condition, grade, alignment, and sight distance
10 mph pace speed (a 10 mile range in speeds in which the highest number of data is recorded)
Roadside development and environment
Parking practices and bicycle/pedestrian activity
Reported crash experience for at least a 12-month period

Additionally, The California Traffic Control Manual recommends that speed zoning with 5 mph increments are preferable in urban areas, and that short speed zones should be avoided.

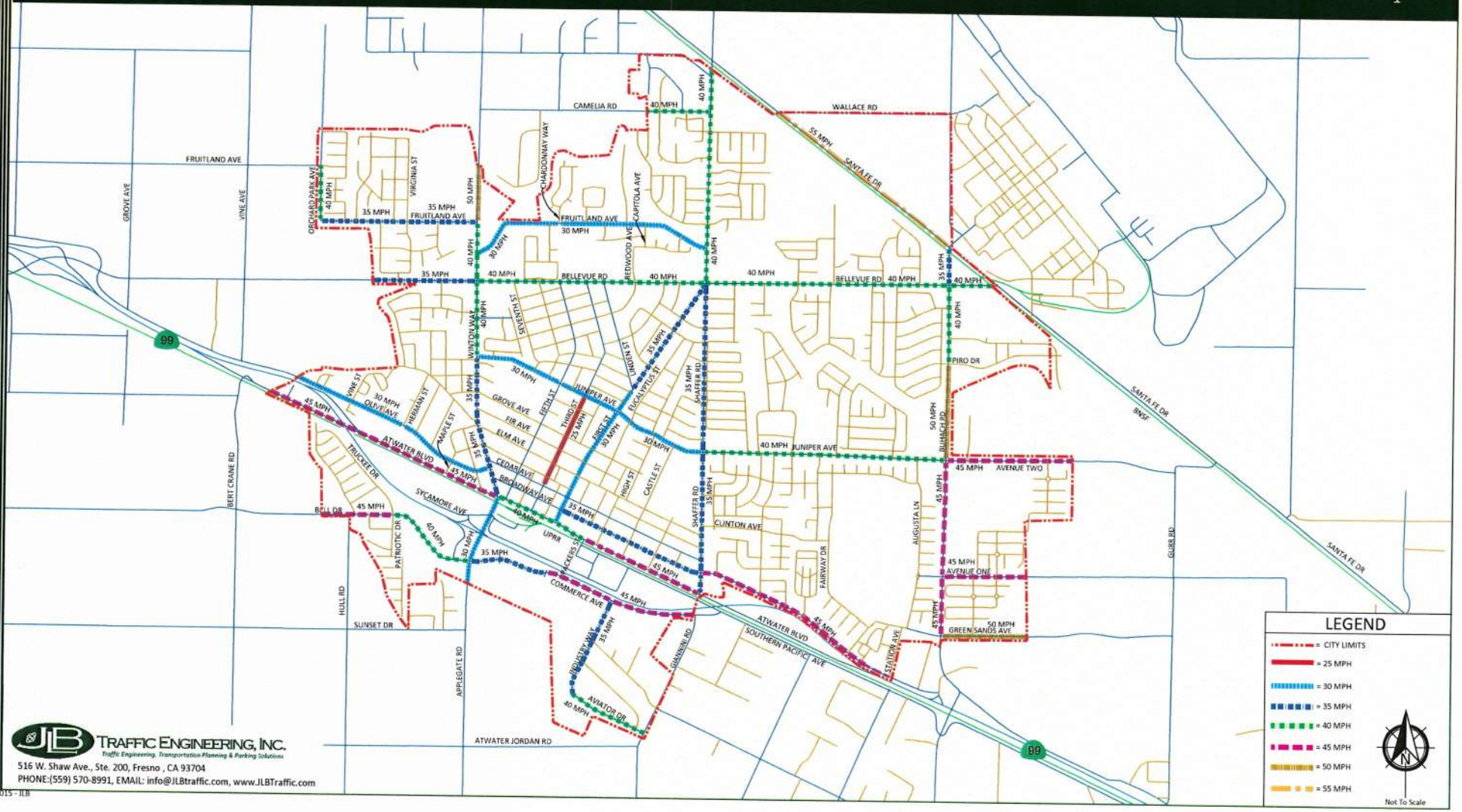
Table I summarizes existing speed limit, critical speed and recommended speed limit for each street segment. Table 1 also summarizes data and analysis pertaining to the speed survey. Based on the above guidelines, it is recommended that the recommended speed limits as noted on Table 1 be adopted by the City of Atwater. Before any changes to the current posted speed limits are made, the City shall pass a resolution or ordinance as appropriate which defines the appropriate speed limit for each of the City Streets identified in Table 1.

# Table 1: 2015 Engineering and Traffic Survey

| Road Segment Number | Street Name | Limits of Speed Survey | Direction | Number of Lanes | Posted Speed Limit (MPH) [A] | Determination of the Recommended Speed | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Average Daily Traffic (ADT) | Number of Reported Collisions (24 Months) | Collision Rate | Statewide Average Collision Rate | Length (Miles) | 10 MPH Pace | 50%tile Speed (MPH) | 85%tile Speed [D] (MPH) | Recommended Speed Limit (MPH) | Method Used For recommended Speed Limit. If Method 1, Justification if any to further reduce be an additional 5 MPH. |
| 1 | Applegate Road | southern City Limits to Atwater Ave | NB/SB | 2 to 4 | 25 | 16735 | 8 | 1.64 | 1.17 | 0.40 | 23-32 | 28 | 33 | 30 | CA MUTCD Method 2 |
| 2 | Atwater Boulevard | West City Limits to Maple St | EB/WB | 2 | 45 | 10326 | 4 | 0.62 | 1.17 | 0.85 | 40-49 | 44 | 48 | 45 | CA MUTCD Method 2 |
| 3 | Atwater Boulevard | Maple St to Winton Way | EB/WB | 2 to 4 | 45 | 10608 | 1 | 0.54 | 1.17 | 0.24 | 37-46 | 40 | 46 | 45 | CA MUTCD Method 1 |
| 4 | Atwater Boulevard | Winton Way to Packers St | EB/WB | 4 | 40 | 15153 | 11 | 2.37 | 2.08 | 0.42 | 31-40 | 36 | 41 | 40 | CA MUTCD Method 1 |
| 5 | Atwater Boulevard | Packers St to Shaffer Rd | EB/WB | 4 | 45 | 10325 | 4 | 0.95 | 2.08 | 0.56 | 40-49 | 43 | 48 | 45 | CA MUTCD Method 2 |
| 6 | Avenue One | Buhach Rd to Eastern City Limits | EB/WB | 2 to 3 | 45 | 2415 | 2 | 3.15 | 1.17 | 0.36 | 34-43 | 40 | 47 | 45 | CA MUTCD Method 1 |
| 7 | Avenue Two | Buhach Rd to Eastern City Limits | EB/WB | 2 to 3 | 45 | 6152 | 4 | 1.62 | 1.17 | 0.55 | 37-46 | 43 | 48 | 45 | CA MUTCD Method 2 |
| 8 | Aviator Drive | Industry Way to Gianninni Rd | EB/WB | 2 | unposted | 304 | 0 | 0.00 | 1.17 | 0.35 | 27-36 | 34 | 41 | 40 | CA MUTCD Method 1 |
| 9 | Bell Drive | West City Limits to Patriotic Drive | EB/WB | 2 | 45 | 1830 | 0 | 0.00 | 1.17 | 0.30 | 36-45 | 41 | 46 | 45 | CA MUTCD Method 1 |
| 10 | Bell Drive | Patriotic Drive to Applegate Road | EB/WB | 2 to 4 | 45 | 2723 | 5 | 6.14 | 1.17 | 0.41 | 30-39 | 36 | 42 | 40 | CA MUTCD Method 1 |
| 11 | Bellevue Road | West City Limits to Winton Way | EB/WB | 2 to 4 | 30 | 2288 | 2 | 2.66 | 1.17 | 0.45 | 26-35 | 30 | 36 | 35 | CA MUTCD Method 1 |
| 12 | Bellevue Road | Winton Way to Redwood St | EB/WB | 4 | 40 | 12111 | 15 | 2.42 | 2.08 | 0.70 | 32-41 | 35 | 40 | 40 | CA MUTCD Method 1 |
| 13 | Bellevue Road | Redwood Ave to Shaffer Rd | EB/WB | 4 | 40 | 12307 | 9 | 3.34 | 2.08 | 0.30 | 30-39 | 33 | 38 | 40 | CA MUTCD Method 1 |
| 14 | Bellevue Road | Shaffer Rd to Crest Rd | EB/WB | 4 | 40 | 13821 | 25 | 4.51 | 2.08 | 0.55 | 29-38 | 34 | 38 | 40 | CA MUTCD Method 1 |
| 15 | Bellevue Road | Crest Rd to Buhach Rd | EB/WB | 4 | 40 | 11649 | 10 | 2.35 | 2.08 | 0.50 | 30-39 | 34 | 39 | 40 | CA MUTCD Method 1 |
| 16 | Bellevue Road | Buhach Rd to Santa Fe Ave | EB/WB | 2 to 4 | 40 | 6815 | 3 | 3.02 | 2.08 | 0.20 | 29-38 | 34 | 38 | 40 | CA MUTCD Method 1 |
| 17 | Broadway Avenue | First St to Shaffer Rd | EB/WB | 2 | 35 | 2844 | 7 | 5.11 | 1.17 | 0.66 | 27-36 | 30 | 35 | 35 | CA MUTCD Method 1 |
| 18 | Broadway Avenue | Shaffer Rd to Station Ave | EB/WB | 2 | 40 | 3701 | 3 | 1.17 | 1.17 | 0.95 | 36-45 | 40 | 45 | 45 | CA MUTCD Method 1 |
| 19 | Buhach Road | Green Sands to Avenue One | NB/SB | 4 | 50 | 6361 | 4 | 3.31 | 1.56 | 0.26 | 40-49 | 45 | 50 | 45 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate |
| 20 | Buhach Road | Avenue One to Juniper Ave/Avenue Two | NB/SB | 4 | 50 | 8010 | 9 | 3.08 | 1.56 | 0.50 | 39-48 | 42 | 48 | 45 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate and Pedestrian and Bicyclist Safety |
| 21 | Buhach Road | Juniper Ave/Avenue Two to Piro Rd | NB/SB | 3 to 4 | 50 | 7347 | 1 | 0.44 | 1.17 | 0.42 | 38-47 | 43 | 50 | 50 | CA MUTCD Method 1 |
| 22 | Buhach Road | Piro Rd to Bellevue Rd | NB/SB | 4 | 40 | 6356 | 6 | 3.92 | 1.56 | 0.33 | 37-46 | 40 | 46 | 40 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate |
| 23 | Buhach Road | Bellevue Rd to Santa Fe Ave | NB/SB | 4 | 35 | 3343 | 2 | 4.82 | 2.08 | 0.17 | 24-33 | 28 | 34 | 35 | CA MUTCD Method 1 |
| 24 | Camellia Drive | West City Limits to Shaffer Rd | EB/WB | 2 | 35 | 2313 | 0 | 0.00 | 1.17 | 0.25 | 32-41 | 37 | 43 | 40 | CA MUTCD Method 2 |
| 25 | Commerce Avenue | Applegate Rd to 0.40 mi east of Applegate Rd | EB/WB | 4 | 35 | 9214 | 9 | 3.35 | 2.08 | 0.40 | 29-38 | 34 | 39 | 35 | CA MUTCD Method 2 |
| 26 | Commerce Avenue | 0.40 mi east of Applegate Rd to eastern City Limits | EB/WB | 2 | 45 | 8160 | 5 | 1.40 | 1.17 | 0.60 | 37-46 | 41 | 47 | 45 | CA MUTCD Method 2 |
| 27 | First Street | Atwater Blvd to Juniper | NB/SB | 2 | 30 | 7607 | 7 | 2.29 | 1.17 | 0.55 | 27-36 | 31 | 36 | 30 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate and Pedestrian and Bicyclist Safety |
| 28 | First Street | Juniper Ave to Linden St | NB/SB | 2 | 30 | 7897 | 2 | 2.89 | 1.17 | 0.12 | 26-35 | 31 | 36 | 30 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate and Pedestrian and Bicyclist Safety |
| 29 | First Street | Linden At to Bellevue Rd | NB/SB | 2 to 4 | 40 | 6376 | 9 | 3.45 | 1.17 | 0.56 | 30-39 | 36 | 40 | 35 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate and Pedestrian and Bicyclist Safety |
| 30 | Fruitland Avenue | Orchard Park Ave to Virginia St | EB/WB | 2 | 30 | 2224 | 1 | 1.66 | 1.17 | 0.37 | 25-34 | 30 | 34 | 35 | CA MUTCD Method 1 |
| 31 | Fruitland Avenue | Virginia St to Winton Way | EB/WB | 2 to 4 | 30 | 4224 | 4 | 4.32 | 1.17 | 0.30 | 28-37 | 33 | 38 | 35 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate and Pedestrian and Bicyclist Safety |
| 32 | Fruitland Avenue | Winton Way to Chardonnay Way | EB/WB | 2 | 30 | 1979 | 0 | 0.00 | 1.17 | 0.42 | 26-35 | 31 | 37 | 30 | CA MUTCD Method 1 with further reduction of 5 MPH for Pedestrian and Bicyclist Safety |
| 33 | Fruitland Avenue | Chardonnay Way to Shaffer Rd | EB/WB | 2 | 35 | 2083 | 3 | 2.99 | 1.17 | 0.66 | 28-37 | 32 | 37 | 30 | CA MUTCD Method 1 with further reduction of 5 MPH for Pedestrian and Bicyclist Safety |
| 34 | Green Sands Avenue | Buhach Rd to East City Limits | EB/WB | 2 to 4 | unposted | 4862 | 0 | 0.00 | 1.17 | 0.37 | 42-51 | 47 | 53 | 50 | CA MUTCD Method 2 |
| 35 | Industry Way | Commerce Ave to Aviator Dr | NB/SB | 2 | unposted | 2508 | 0 | 0.00 | 1.17 | 0.45 | 28-37 | 32 | 37 | 35 | CA MUTCD Method 1 |
| 36 | Juniper Avenue | Winton Way to Fifth St | EB/WB | 2 | 30 | 3169 | 8 | 9.10 | 1.17 | 0.38 | 27-36 | 33 | 37 | 30 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate, Residential, and Pedestrian and Bicyc |
| 37 | Juniper Avenue | Fifth St to First St | EB/WB | 2 | unposted | 3700 | 5 | 6.61 | 1.17 | 0.28 | 25-34 | 29 | 33 | 30 | CA MUTCD Method 2 |
| 38 | Juniper Avenue | First St to Shaffer Rd | EB/WB | 2 | 30 | 5354 | 6 | 3.74 | 1.17 | 0.41 | 25-34 | 29 | 33 | 30 | CA MUTCD Method 2 |
| 39 | Juniper Avenue | Shaffer Rd to Buhach Rd | EB/WB | 4 | 45 | 8566 | 13 | 1.96 | 2.08 | 1.06 | 35-44 | 38 | 44 | 40 | CA MUTCD Method 2 |
| 40 | Olive Avenue | City Limits 0.51 miles west of Herman St to Herman St | EB/WB | 2 | 30 | 1259 | 2 | 4.27 | 1.17 | 0.51 | 21-30 | 27 | 30 | 30 | CA MUTCD Method 1 |
| 41 | Olive Avenue | Herman St to Winton Way | EB/WB | 2 | 30 | 2785 | 12 | 13.41 | 1.17 | 0.44 | 24-33 | 27 | 32 | 30 | CA MUTCD Method 1 |
| 42 | Orchard Park Avenue | Fruitland Ave to Peerless Ave | NB/SB | 2 | unposted | 2220 | 0 | 0.00 | 1.17 | 0.25 | 32-41 | 37 | 41 | 40 | CA MUTCD Method 1 |
| 43 | Santa Fe Avenue | Wallace Rd to Buhach Rd | NB/SB | 2 | 50 | 9799 | 0 | 0.00 | 1.17 | 0.96 | 49-58 | 53 | 59 | 55 | CA MUTCD Method 2 |
| 44 | Shaffer Road | Atwater Blvd Ave to Juniper Ave | NB/SB | 4 | 35 | 12416 | 11 | 2.33 | 2.08 | 0.52 | 31-40 | 34 | 39 | 35 | CA MUTCD Method 2 |
| 45 | Shaffer Road | Juniper Ave to Bellevue Rd | NB/SB | 4 | 35 | 12349 | 14 | 2.13 | 2.08 | 0.73 | 35-44 | 38 | 42 | 35 | CA MUTCD Method 1 with further reduction of 5 MPH due to high collision rate and Pedestrian and Bicyclist Safety |
| 46 | Shaffer Road | Bellevue Rd to City Limits 0.38 Miles north of Camellia Dr | NB/SB | 4 | 40 | 9174 | 18 | 2.89 | 2.08 | 0.93 | 35-44 | 41 | 44 | 40 | CA MUTCD Method 2 |
| 47 | Third Street | Juniper Ave to Cedar Ave | NB/SB | 2 | 25 | 1790 | 6 | 10.68 | 1.17 | 0.43 | 23-32 | 28 | 33 | 25 | Prima Facie 25 MPH (Residence District) |
| 48 | Winton Way | Atwater Blvd to Fir Ave | NB/SB | 4 | 35 | 11496 | 18 | 6.92 | 2.08 | 0.31 | 29-38 | 34 | 38 | 35 | CA MUTCD Method 2 |
| 49 | Winton Way | Fir Ave to Juniper Ave | NB/SB | 4 | 40 | 12231 | 10 | 3.61 | 2.08 | 0.31 | 30-39 | 34 | 38 | 35 | CA MUTCD Method 2 |
| 50 | Winton Way | Juniper Ave to Bellevue Rd | NB/SB | 4 | 40 | 14651 | 10 | 2.83 | 2.08 | 0.33 | 30-39 | 36 | 41 | 40 | CA MUTCD Method 1 |
| 51 | Winton Way | Bellevue Rd to Fruitland Ave | NB/SB | 4 | 40 | 14604 | 13 | 4.88 | 2.08 | 0.25 | 29-38 | 35 | 40 | 40 | CA MUTCD Method 1 |
| 52 | Winton Way | Fruitland Ave to City Limits 0.25 Miles north of Fruitland Ave | NB/SB | 4 | 40 | 11494 | 3 | 1.43 | 2.08 | 0.25 | 39-48 | 45 | 50 | 50 | CA MUTCD Method 1, But we may want to consider conducting a new study just to confirm the 85th percentile. |

City of Atwater - Engineering and Traffic Surveys
2015 Study Segments and Recommended Speed Limits

Figure 1





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10/19/2015 - JLB

## Recommendations

Based on the results of the Engineering and Traffic Survey it is recommended that the City of Atwater consider adopting the 2015 Engineering and Traffic Survey. Before the speed limit signs are updated it would be necessary for City to pass the appropriate ordinance or resolution needed to post a speed limit sign.

## Study Participants

**JLB Traffic Engineering, Inc. Personnel:**

| | |
|---|---|
| Jose Luis Benavides, P.E., T.E. | Project Manager |
| Jesus Martin | Assistant Project Engineer/Graphics |

**Persons Consulted:**

| | |
|---|---|
| Scott McBride | City of Atwater, Community Development |
| Scott Duncan, | City of Atwater, Police Department |

## References:

1. *2015 California Vehicle Code,* Department of Motor Vehicles, January 2015
2. 2014 California Manual on Uniform Traffic Control Devices, Caltrans, November 7, 2014
3. City of Atwater, *2000 General Plan,* Circulation Element

# 2022 Engineering and Traffic Surveys Report

## Community of Yosemite Lakes

***Prepared for:***

Yosemite Lakes Owners Association
30250 Yosemite Springs Parkway
Coarsegold, CA 93614

September 13, 2022

Project No. 030-010


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# 2022 Engineering and Traffic Surveys Report

## Community of Yosemite Lakes, California

September 13, 2022

This Engineering and Traffic Surveys Report has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions and decisions are based.

Prepared by:

Jose Luis Benavides, PE, TE

President


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# Introduction and Summary

**JLB Traffic Engineering, Inc. (JLB)** has completed the preparation of the **2022 Engineering and Traffic Surveys Report** for the unincorporated community of Yosemite Lakes in the County of Madera. The Engineering and Traffic Surveys were prepared pursuant to the latest editions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and the California Vehicle Code (CVC). JLB's main objective for this assignment is to prepare a Communitywide Engineering and Traffic Survey and recommend the appropriate speed limits consistent with the laws and practices of the State of California. This report, along with its appendices, provides the data and findings utilized to complete the 2022 Engineering and Traffic Survey.

## Introduction

This report presents the results of the 2022 Engineering and Traffic Surveys conducted by JLB for the community of Yosemite Lakes. The surveys include a summary of radar speed surveys, daily traffic counts, traffic accidents and an analysis of roadway conditions within the community of Yosemite Lakes in the County of Madera.

The purpose of these surveys is to recommend the speed limits appropriate for enforcement and to provide any recommended speed limit changes in accordance with current State of California regulations and guidelines. The CVC Section 40802 requires that an engineering and traffic survey for speed limits should be conducted once every five, seven or fourteen years by governing municipalities in order to use radar or any other electronic device as a means of speed limit enforcement. Streets defined as "local street or road" as described in the amended subdivision (b)(1) of Section 40802 Speed Trap of the CVC, effective January 1, 2022, are exempted.

Speed limits are established primarily for the purpose of protecting the public from the unreasonable behavior of reckless, unreliable or dangerous drivers. Speed limits are generally established at or near the 85$^{th}$ percentile speed. The 85$^{th}$ percentile speed, also referred to as the critical speed, is defined as the speed which 85 percent of traffic is moving at or below in free flow conditions. Speed limits established on this basis conform to the consensus of those who drive on the roadways as to what speed is reasonable and safe under normal driving conditions.

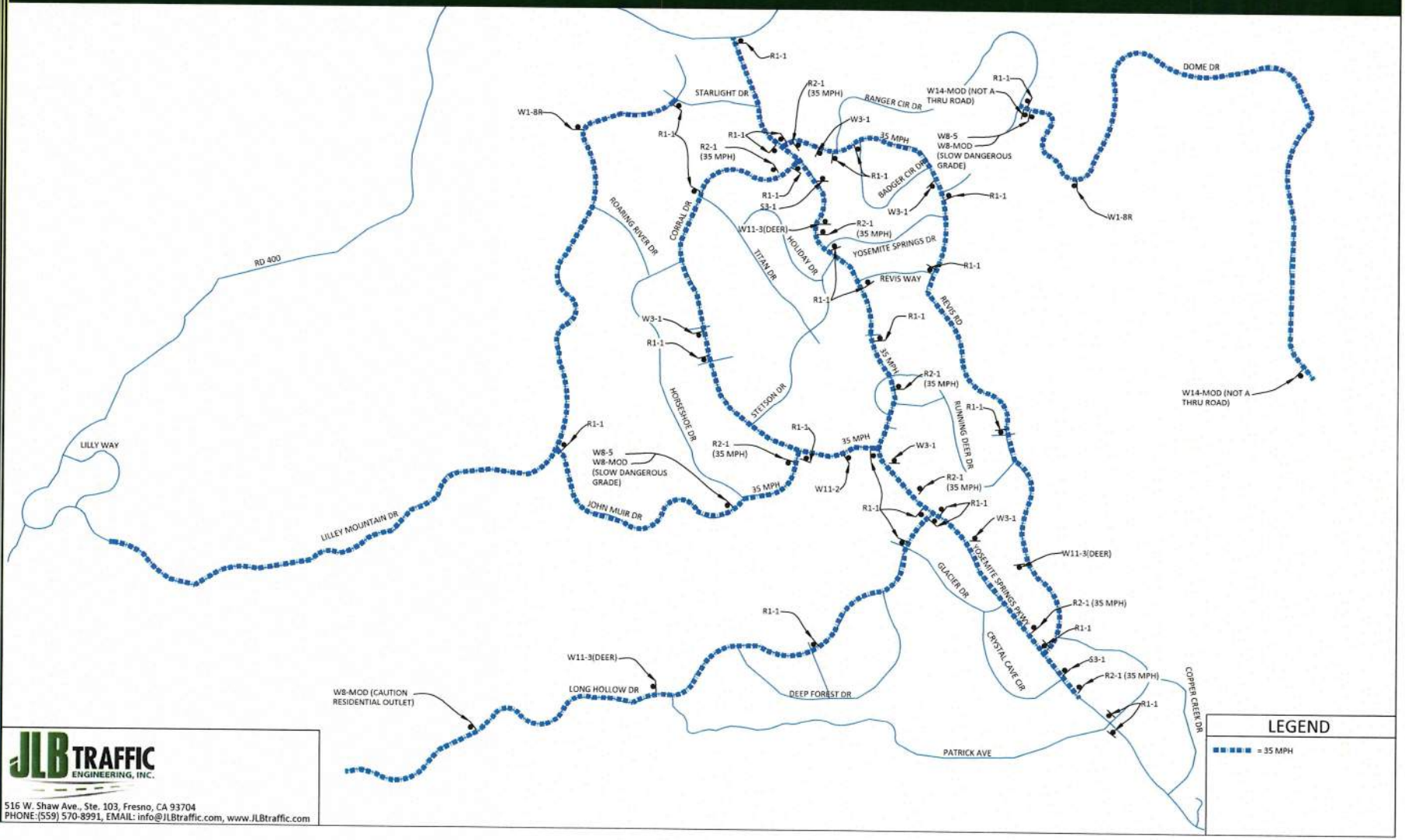
The current standard as described in the CA MUTCD is to consider the speed limit at the nearest five miles per hour (MPH) increment of the critical speed. However, a reduction of five mph is allowable to meet the needs of the community if justification is provided in accordance with the CVC through an engineering and traffic survey. Significant factors in determining reasonable and safe speed limits that are most appropriate to facilitate the orderly movement of traffic include: prevailing speeds, accident rates, unexpected roadway conditions and adjacent land uses, including residential and commercial densities. A more detailed discussion of current State regulations and guidelines is provided in the Speed Limit Recommendations section of this Report. Applicable CVC Code sections are summarized in the California Vehicle Code Summary section.

## Existing Conditions

JLB conducted a drive through for each of the study segments and took notes on the roadway conditions, circulation, signage and posted speed limits. Figure 1 displays the existing study segments, speed limits and signage. It is recommended that all signs are verified to be to the standards specified in the CA MUTCD. All signs should be verified to be elevated five (5) feet above the edge of travel way. As can be seen in Figure 1, all the existing speed limits in the Community of Yosemite Lakes are posted at 35 mph.

Yosemite Lakes - County of Madera
Existing Study Segments, Speed Limits and Signage

Figure 1

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## Summary

Based on current State regulations and guidelines, it is recommended that the community of Yosemite Lakes adopt recommended speed limits for its community streets as noted in Tables I through VII. Copies of speed survey data is included in Appendix A and the current traffic counts are included in Appendix B and the seed survey data as well as the final recommendations for each of the study segments are included in Tables I through VII. Collision Reports for these segments are included in Appendix C. Figure 2 illustrates the recommended speed limits within the community of Yosemite Lakes.

The procedures used to formulate recommendations in this report meet the requirements of the California Vehicle Code (CVC) Section 627, Sections 22348 through 22413 under Division 11, Chapter 7 "Speed Laws", Section 40802 and others referenced herein, and the 2014 Edition of the CA MUTCD. The CA MUTCD is amended version of the Federal Highway Administration MUTCD for use in California. Summarized below are applicable portions from the CVC related to the preparation of an engineering and traffic survey for speed limits.

## California Vehicle Code (CVC) Summary

**CVC Section 235 – Business District**: An area in which at least 50 percent of the properties are used for business for a minimum distance of 600 feet on one side or 300 feet on both sides of a highway.

**CVC Section 515 – Residence District:** An area outside of the Business District along a highway that has a minimum of 13 separate dwelling units on one side, or 16 on both sides within a distance of a quarter mile.

**CVC Section 627 – Engineering and Traffic Survey:** A survey of highway and traffic conditions in accordance with methods determined by the California Department of Transportation (Caltrans) for use by State and local authorities, which shall include consideration of prevailing speeds as determined by traffic engineering measurements, accident records, and highway, traffic, and roadside conditions not readily apparent to the driver. Local authorities may also consider residential density as defined in Section 515 and safety of bicyclists and pedestrians, with increased consideration for vulnerable groups.

**CVC Section 22349 – Maximum Speed Limits**: Provides that no person shall drive a vehicle upon a highway at a speed greater than 65 mph. An exception to this, as stated in CVC Section 22356, is that Caltrans or the appropriate local agency may increase the speed and these increases can only be made after consultation with the California Highway Patrol (CHP) and on the basis of an engineering and traffic survey.

**CVC Section 22350 – Basic Speed Law:** Provides that no person shall drive a vehicle upon a highway at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of, the highway, and in no event at a speed that endangers the safety of persons or property. Reasonable is defined in Webster's New World Dictionary as "just, of sound judgment, and not excessive." Prudent is defined as "exercising sound judgment in practical matters, cautious and discreet in conduct, not rash and managing carefully."

**CVC Section 22351 – Speed Law Violations**: States that the speed of any vehicle upon a highway not in excess of the limits specified in Section 22352 of the CVC or established as authorized in the CVC is lawful unless clearly proved to be in violation of the Basic Speed Law. This same section also states that the speed of any vehicle upon a highway in excess of the prima facie speed limits in Section 22352 of the CVC or established as authorized in the CVC is unlawful unless the defendant establishes by competent evidence that the speed in excess of said limits did not constitute a violation of the Basic Speed Law at the time, place and under the conditions then existing.

**CVC Section 22352 – Prima Facie Speed Limits:** Establishes prima facie speed limits for Local Roads and Streets. The literal definition of the phrase "prima facie" is "first appearance". It is also defined at "first view" and "before investigation". Prima facie evidence is evidence sufficient to establish fact, or to raise presumption of fact, unless rebutted. Prima facie speed limits are those that are defined in CVC Section 22352. These speed limits shall be applicable unless changed as authorized in the CVC and, if so changed, only when signs have been erected giving notice thereof.

A speed limit of 15 mph applies at railroad crossings, at uncontrolled highway intersections with obstructed view, and on alleys. A speed limit of 25 mph applies on any highway other than State highways in any business or residence district, unless a different limit is established by procedures described in the CVC. The 25 mph limit also applies in school zones.

**CVC Sections 22357 (Increase of Local Speed Limits to 65 mph) and 22358 (Decrease of Local Speed Limits):** Authorizes local authorities to establish prima facie speed limits on streets and roads under their jurisdiction, on the basis of an engineering and traffic survey.

**CVC Sections 22358.3 (Decrease on Narrow Streets) and 22358.4 (Decrease of Local Limits Near Schools or Senior Centers)**: Authorizes local agencies to reduce prima facie speed limits to 20 or 15 mph on narrow streets (with roadway width less than 25 feet), school zones, or senior centers on the basis of engineering and traffic surveys.

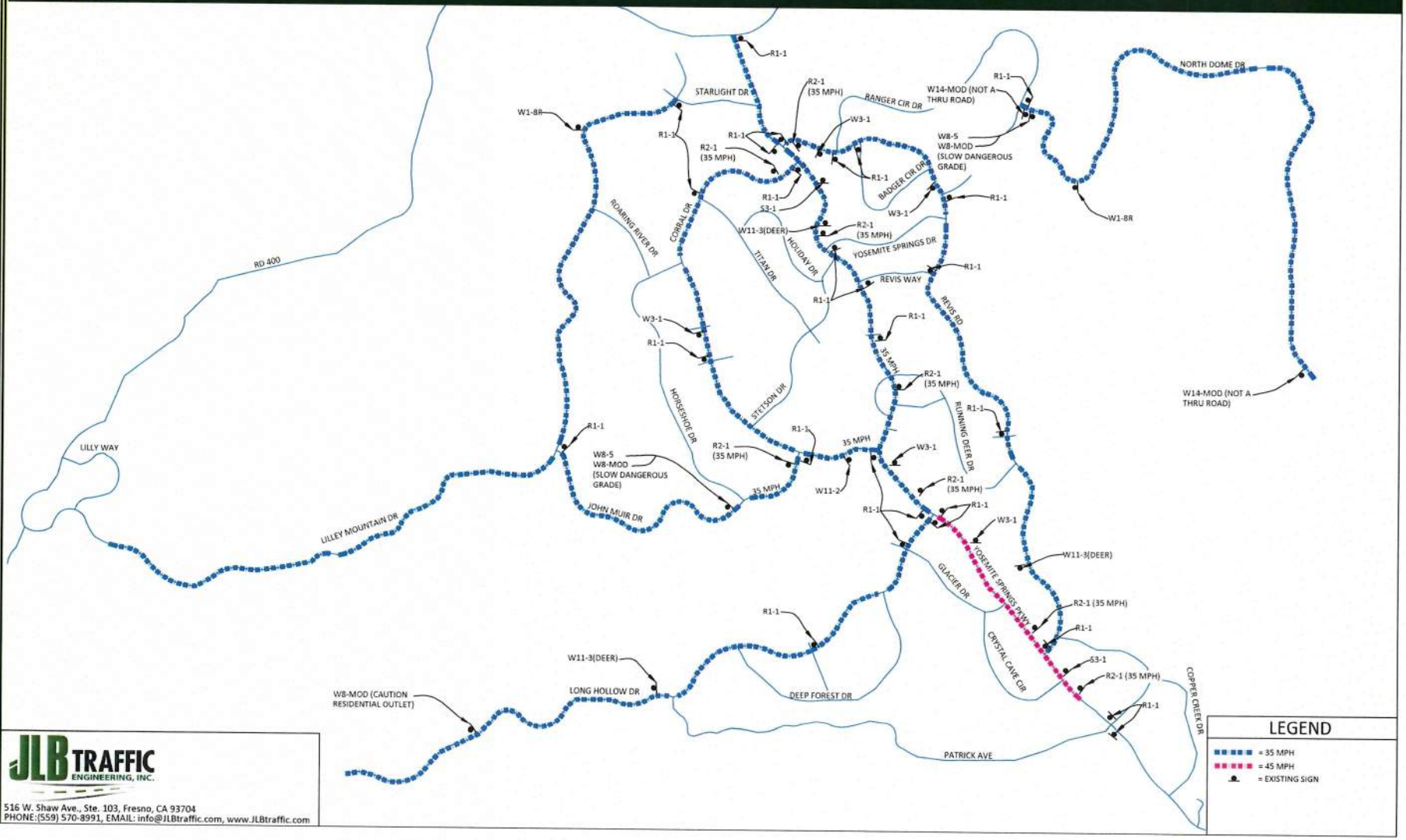
**CVC Section 22358.5 – Downward Speed Zoning:** Physical conditions such as width, curvature, grade, and surface conditions, or any other condition readily apparent to a driver, in the absence of other factors, would not require special downward speed zoning, as the basic rule of section 22350 is sufficient regulation as to such conditions.

**CVC Section 40802 (a)(2) – Prima Facie Speed Limits:** Provides that prima facie speed limits established under CVC Sections 22352(b)(1), 22354, 22357, 22358, and 22358.3 may not be enforced by radar unless the speed limit has been justified by an engineering and traffic survey within the last five years, seven or fourteen years if a registered engineer evaluates the section of the highway and determines that no significant changes in roadway or traffic conditions have occurred, including, but not limited to, changes in adjoining property or land use, roadway width, or traffic volume. This CVC section does not apply to a local street, road or school zone. A local street or road is defined by the latest functional usage and federal-aid system maps, or a street or road that primarily provides access to abutting residential property and meets the following criteria: (1) roadway is not more than 40 feet in width; (2) roadway is not more

than one-half mile of uninterrupted length; and (3) roadway is not more than one travel lane in each direction.

Yosemite Lakes - County of Madera
2022 Study Segments and Recommended Speed Limits

Figure 2

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(030-010) 08/12/22 - CS/AB

# Survey Methodology

## Radar Checks

The traffic speed surveys for the study segments were conducted in 2022 with a calibrated radar gun on days with fair weather, dry pavement and clear visibility. An effort was made to ensure that the presence of radar survey equipment did not affect the speed of the traffic being surveyed. Locations were selected where the prevailing speeds were representative of the entire street segment. The CA MUTCD provides guidance for the completion of an Engineering and Traffic Survey. Under the Guidance section of the MUTCD it is recommended that a minimum sample of 50 observations be used, but for purposes of this study a minimum of 100 observations were used or a maximum period of two hours if 100 observations are not achieved. The results of the radar speed survey data are shown in Appendix A.

## Analysis of Speed Data

The radar speed survey data were compiled and analyzed to determine the 50th percentile speed, 85th percentile speed, 10 mph pace speed, the number and percent of vehicles observed within the 10 mph pace speed, and the range of speed observed for each surveyed location. A description of these terms is provided below:

**50th Percentile Speed (Median Speed):** The speed above and below which 50 percent of the sample speeds were observed. This value indicates the speed that a driver may choose to drive without the influence of any speed limits, speed signs, or enforcement.

**85th Percentile Speed (Critical Speed):** The speed at or below which 85 percent of the sample speeds were observed. The 85th percentile speed of a spot speed survey is the primary indicator of the appropriate speed limit for a section of the roadway.

**10 mph Pace Speed:** The 10 mph increment (range) of speeds containing the greatest number of vehicles. In almost all cases, the 85th percentile speed and the recommended speed lie within the range, frequently in the middle to upper range of the interval. The percent of vehicles that fall within the pace speed is an indicator of the bunching of vehicular speeds. The number of observed vehicles within the 10 mph pace is often between 60 and 80 percent of the entire sample.

The speed limits for the study segments were recommended after determining the 85th percentile speed, pace speed and considering other significant factors like existing land use, roadway design characteristics and accident rates (based on accident records for a three year period) for the study segments.

## Traffic Counts

Average daily traffic (ADT) counts were conducted at all study locations by National Data & Surveying Services (NDS). These counts were used to determine the accident rates for each segment, which in turn were used as a factor in determining the appropriate speed limit for each segment. Traffic counts are included in Appendix B.

## Collision Data

Collisions reported at study roadway segments were obtained from the Statewide Integrated Traffic Records System (SWITRS) database for a period of three years from January 2019 through December 2021 as this was the most recent data available at the time of the preparation of this study. Collision rates are a significant factor in determining the appropriate speed limits. These were then used to determine the collision rate to compare that with the Statewide Average Collision Rate of similar roadways. Collision Reports can be found in Appendix C. A table that includes Collision Rates and Statewide Average Rates can be found in Appendix D.

## Speed Limit Recommendations

Establishment of speed limits can be controversial and requires a rational, defensible and consistent evaluation process. Speed limits are typically set near the 85$^{th}$ percentile speed which establishes an upper limit of what is considered reasonable and prudent. With all of the statistics inherent to the engineering and traffic speed survey process, there is a great deal of engineering judgment required. Speed limits should be reasonable and realistic regardless of the results of the field studies. Reasonable speed limits are those which responsible motorists would drive without enforcement and/or signage and depend on the voluntary compliance of the greater majority of motorists. Speed limits cannot be set arbitrarily low as this would create violators of the majority of drivers and would not command the respect of the public.

In 2004, in order to better conform to the intent of the federal standards as established in the Federal Highway Administration's Manual on Uniform Traffic Control Devices, and also to address some of the widespread disregard of the 5 mph special downward speed zoning provision, the California Traffic Control Manual replaced the Traffic Manual, and the speed zoning section of the Traffic Manual was changed to require rounding the 85$^{th}$ percentile to the nearest 5 mph increment rather than the lower 5 mph increment. This specific guideline revision resulted in raising certain street speed limits and had become a challenge to state and local jurisdictions.

In 2007, the California Traffic Control Devices Committee (CTCDC) ruled to approve a language change in the California Traffic Control Manual to clarify how local speed limits should be set. The CTCDC was prompted to make this change due to major variations in the interpretation and application of the California Traffic Control Manual Section 2B.13 "Speed Limit Sign (R2-1)" and to better distinguish the differences between "within" 5 mph of the 85$^{th}$ percentile speed and "round to the nearest" 5 mph of the 85$^{th}$ percentile speed for setting local speed limits. The changes included:

Method 1: Posted speed limits will be set "round to the nearest" 5 mph increment of the 85th percentile speed.

Method 2: Jurisdictions can lower this speed by an additional 5mph based on and justified by conditions and factors cited in the California Vehicle Code.

Caltrans ultimately issued a Traffic Operations Policy Directive (No. 09-04), effective July 1, 2009, which clearly defined these changes and incorporated new requirements into the California Traffic Control Manual. Section 2B.13 of the 2014 Edition of the California Traffic Control Manual now requires as a standard that a speed limit shall be established at the nearest 5 mph increment of the 85$^{th}$ percentile speed, except that the posted speed may be reduced by 5 mph from the nearest 5 mph increment of the 85$^{th}$ percentile speed in compliance with CVC Sections 627 and 22358.5.

For cases in which the nearest 5 mph increment of the 85$^{th}$ percentile speed would require rounding up, the speed limit may be rounded down to the nearest 5 mph increment below the 85$^{th}$ percentile speed if no further reduction is used.

Section 2B.13 further states that justification for reducing speed limits can be based on residential density, pedestrian/bicyclist safety and other factors not readily apparent to drivers, but essential to meet the traffic safety needs of the community. The following factors may be considered to adjust and determine the final speed limits:

Road characteristics, shoulder condition, grade, alignment, and sight distance
10 mph pace speed (a 10 mile range in speeds in which the highest number of data is recorded)
Roadside development and environment
Parking practices and bicycle/pedestrian activity
Reported collision experience for at least a 12-month period

Tables I through VII summarize existing speed limit, critical speed, recommended speed limit, and method used to justify speed limit changes if any were used for each street segment. Based on the above guidelines, it is recommended that the recommended speed limits as noted in Tables I through VII be adopted by the Community of Yosemite Lakes. Before any changes to the current posted speed limits are made, the Community shall pass a resolution or ordinance as appropriate which defines the appropriate speed limit for each of the Community Streets identified in Tables I through VII. A table that summarizes all the segment, speed, and collision data for each of the study segments can be found in Appendix D. Figures that display each segment and speed data can be located in Appendix E.

**Table I: Lilley Mountain Drive**

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| 860' East of Lilley Wy. | 3500' West of Lilley Mtn. Ct. | Unposted | 37 | 35 | - |
| 3500' West of Lilley Mtn. Ct. | John Muir Dr. | Unposted | 38 | 35 | CA MUTCD Method 2, multiple driveways unapparent to motorist |
| John Muir Dr. | Starlight Dr. | Unposted | 40 | 35 | CA MUTCD Method 1, collision rate higher than state average |

**Table II: Corral Drive**

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| Yosemite Springs Pkwy. | Horseshoe Dr. | 35 | 41 | 35 | CA MUTCD Method 1, collision rate higher than state average |
| Horseshoe Dr. | John Muir Dr. | 35 | 39 | 35 | CA MUTCD Method 2, multiple driveways unapparent to motorist |
| John Muir Dr. | Yosemite Springs Pkwy. | 35 | 38 | 35 | CA MUTCD Method 2, collision rate higher than state average |

**Table III: Yosemite Springs Parkway**

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| County Road 400 | Revis Rd. | 35 | 41 | 35 | CA MUTCD Method 1, collision rate higher than state average |
| Revis Rd. | Long Hollow Dr. | 35 | 42 | 35 | CA MUTCD Method 1, collision rate higher than state average |
| Long Hollow Dr. | 500' North of Limestone Cir. | 35 | 50 | 45 | CA MUTCD Method 1, multiple driveways unapparent to motorist |

## Table IV: John Muir Drive

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| Lilley Mountain Dr. | Horseshoe Dr. | 35 | 38 | 35 | CA MUTCD Method 2, multiple driveways unapparent to motorist |
| Horseshoe Dr. | Corral Dr. | 35 | 35 | 35 | - |

## Table V: Long Hollow Drive

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| 750' West of Sequoia Ct. | Long Hollow Lane | Unposted | 36 | 35 | - |
| Long Hollow Lane | Deep Forest Dr. (East) | Unposted | 34 | 35 | - |
| Deep Forest Dr. (East) | Yosemite Springs Pkwy. | Unposted | 36 | 35 | - |

## Table VI: North Dome Drive

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| Ranger Circle Dr. | Blue Heron Wy. | Unposted | 39 | 35 | CA MUTCD Method 2, collision rate higher than state average |
| Blue Heron Wy. | 650' South of Tioga Drive | Unposted | 34 | 35 | - |

### Table VII: Revis Road

| Limits | | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Recommended Speed (MPH) | Method and Reason |
|---|---|---|---|---|---|
| Yosemite Springs Pkwy. | Yosemite Springs Dr. | 35 | 35 | 35 | - |
| Yosemite Springs Dr. | Running Deer Dr. | 35 | 38 | 35 | CA MUTCD Method 2, collision rate higher than state average |
| Running Deer Dr. | Yosemite Springs Pkwy. | 35 | 36 | 35 | - |

## Recommendations

Based on the results of the Engineering and Traffic Survey, it is recommended that the Community of Yosemite Lakes consider adopting the 2022 Engineering and Traffic Surveys. Before the speed limit signs are updated, it would be necessary for the Community of Yosemite Lakes to pass the appropriate ordinance or resolution needed to post a speed limit sign. Upon approval of the 2022 Engineering and Traffic Surveys, the appropriate regulatory speed limit signage will need to be installed pursuant to the CA MUTCD. Enforcement of the speed limits can commence after the regulatory speed limit signage has been in place for a minimum period of 30 days.

# Study Participants

**JLB Traffic Engineering, Inc. Personnel:**

| | |
|---|---|
| Jose Luis Benavides, PE, TE | Project Manager |
| Matthew Arndt, EIT | Engineer I/II |
| Adrian Benavides | Engineering Aide |
| Christian Sanchez | Engineering Aide |

**Persons Consulted:**

| | |
|---|---|
| Randy Sacks | Yosemite Lakes Owners Association |

## References

Caltrans. 2021. "California Manual on Uniform Traffic Control Devices". Sacramento: State of California.

Department of Motor Vehicles. 2015. "California Vehicle Code". State of California.

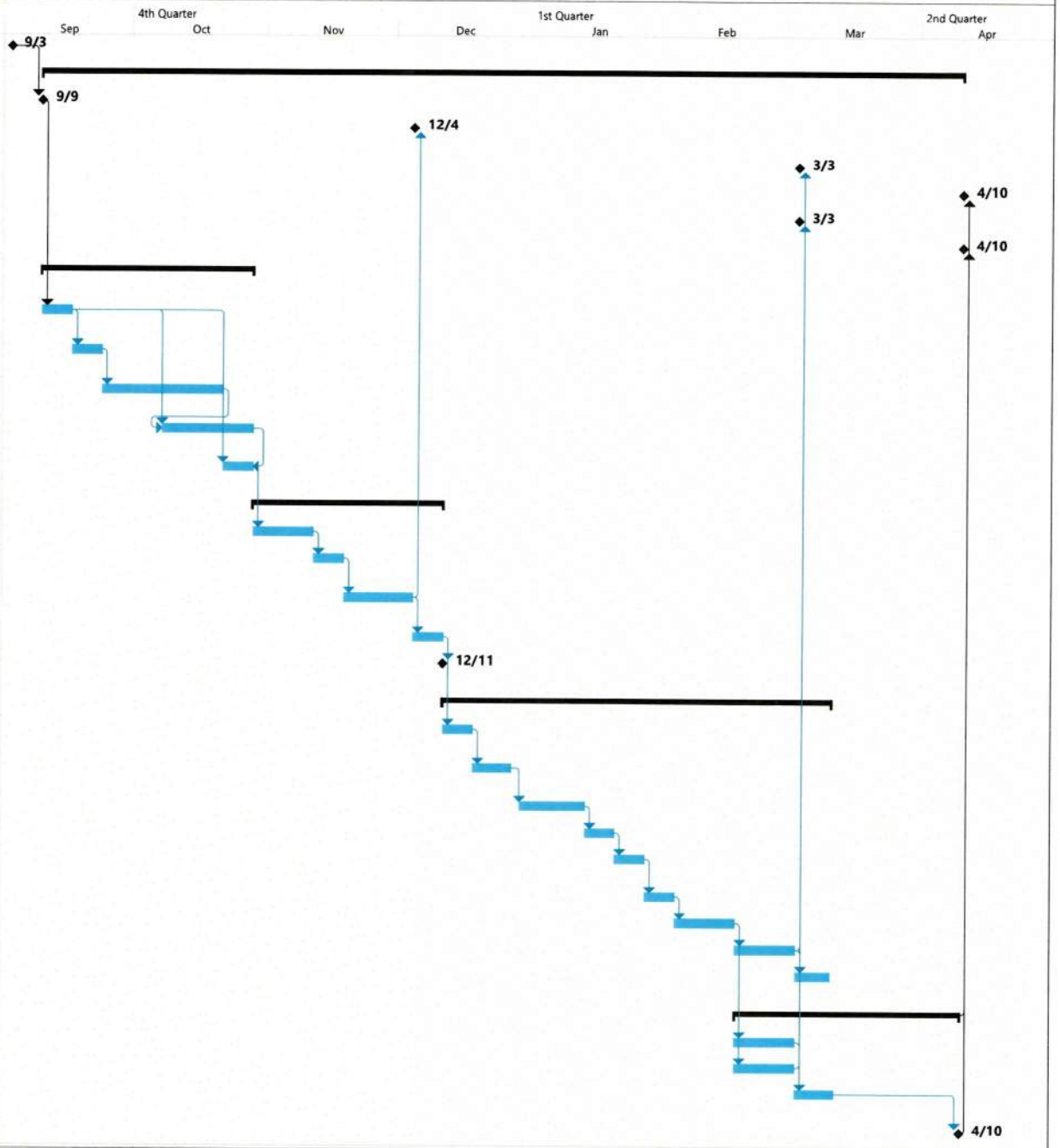
Madera County. 1995. "Madera County General Plan". Madera: County of Madera.

# Appendix B: Project Schedule

# City of Merced 2024 Speed Zone Study Extension & Update

## Project Schedule

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | Notice to Proceed | 0 days | Tue 9/3/24 | Tue 9/3/24 |
| 2 | **Task 1: Kickoff Meeting and Coordination Meetings** | **148 days** | **Mon 9/9/24** | **Thu 4/10/25** |
| 3 | Task 1.1 Kickoff Meeting | 0 days | Mon 9/9/24 | Mon 9/9/24 |
| 4 | Task 1.2 Meet With City to Go Over Technical Memo For Segments Proposed to be Extended | 0 days | Wed 12/4/24 | Wed 12/4/24 |
| 5 | Task 1.3 Meet with City to Go Over Preliminary E&TS Report | 0 days | Mon 3/3/25 | Mon 3/3/25 |
| 6 | Task 1.4 Meet with City Traffic Committee | 0 days | Thu 4/10/25 | Thu 4/10/25 |
| 7 | Task 1.5 Meet with City to Go Over Draft E&TS Report | 0 days | Mon 3/3/25 | Mon 3/3/25 |
| 8 | Task 1.6 Present E&TS to City Council | 0 days | Thu 4/10/25 | Thu 4/10/25 |
| 9 | **Task 2: Collect 24-Hr Counts, Collision Data, and Segment Reconnaissance** | **35 days** | **Tue 9/10/24** | **Mon 10/28/24** |
| 10 | Task 2.1.1 Prepare KMZ File of Roadway Segments & Count Locations | 5 days | Tue 9/10/24 | Mon 9/16/24 |
| 11 | Task 2.1.2 City Review of KMZ Files of Roadway Segments & Count Locations | 5 days | Tue 9/17/24 | Mon 9/23/24 |
| 12 | Task 2.2 Collect 24-Hr Directional Volume Counts and Determine Average Annual Growth Rate | 20 days | Tue 9/24/24 | Mon 10/21/24 |
| 13 | Task 2.3 Collect Collision Data from TIMS (36 month period) | 15 days | Tue 10/8/24 | Mon 10/28/24 |
| 14 | Task 2.4 Segment Reconnaissance with Go Pro for All Segments | 5 days | Tue 10/22/24 | Mon 10/28/24 |
| 15 | **Task 3: Assess Roadway Segments to be Extended or Updated** | **30 days** | **Tue 10/29/24** | **Wed 12/11/24** |
| 16 | Task 3.1 Assess 190 Segments for 3 Year Extension | 10 days | Tue 10/29/24 | Mon 11/11/24 |
| 17 | Task 3.2.1 Prepare Technical Memo of Segments Proposed to be Extended | 5 days | Tue 11/12/24 | Mon 11/18/24 |
| 18 | Task 3.2.2 City Review of Technical Memo of Segments Proposed to be Extended | 10 days | Tue 11/19/24 | Wed 12/4/24 |
| 19 | Task 3.3.1 Prepare Letter for Segments to be Extended | 5 days | Thu 12/5/24 | Wed 12/11/24 |
| 20 | Task 3.3.2 Submitt Letter for Segments to be Extended | 0 days | Wed 12/11/24 | Wed 12/11/24 |
| 21 | **Task 4: Complete Engineering & Traffic Surveys Preliminary Report** | **61 days** | **Thu 12/12/24** | **Tue 3/11/25** |
| 22 | Task 4.1.1 Prepare KMZ File of Proposed Spot Speed Locations | 5 days | Thu 12/12/24 | Wed 12/18/24 |
| 23 | Task 4.1.2 City Review of KMZ File of Proposed Spot Speed Locations | 5 days | Thu 12/19/24 | Fri 12/27/24 |
| 24 | Task 4.2 Collect Spot Speed Data | 10 days | Mon 12/30/24 | Mon 1/13/25 |
| 25 | Task 4.3 Enter Spot Speed (10 MPH Pace, 50th %, 85th %) | 5 days | Tue 1/14/25 | Mon 1/20/25 |
| 26 | Task 4.4 Review All Data and Determine Recommended Speed Limit with Method for Recommended Speed | 5 days | Tue 1/21/25 | Mon 1/27/25 |
| 27 | Task 4.5 Prepare Speed Limit Figure | 5 days | Tue 1/28/25 | Mon 2/3/25 |
| 28 | Task 4.6 Prepare E&TS Preliminary Report | 10 days | Tue 2/4/25 | Mon 2/17/25 |
| 29 | Task 4.6.2 City Reviews E&TS Preliminary Report | 10 days | Tue 2/18/25 | Mon 3/3/25 |
| 30 | Task 4.6.3 Update E&TS Preliminary Report to Address City Comments | 6 days | Tue 3/4/25 | Tue 3/11/25 |
| 31 | **Task 5: Prepare Engineering & Traffic Surveys Final Report** | **38 days** | **Tue 2/18/25** | **Thu 4/10/25** |
| 32 | Task 5.1 Prepare Draft E&TS Report | 10 days | Tue 2/18/25 | Mon 3/3/25 |
| 33 | Task 5.1.2 City Reviews Draft E&TS Report | 10 days | Tue 2/18/25 | Mon 3/3/25 |
| 34 | Task 5.2 Respond to Comments and Produce Final E&TS Report | 7 days | Tue 3/4/25 | Wed 3/12/25 |
| 35 | Task 5.2.1 Final E&TS Report Presented to City Council | 0 days | Thu 4/10/25 | Thu 4/10/25 |




City of Merced
August 2, 2024

Task
Milestone
Summary
Group By Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Manual Summary
Deadline
Progress

# Appendix C: Key Staff Resumes

# Jose Luis Benavides, P.E., T.E.

## PRESIDENT

## JLB TRAFFIC ENGINEERING, INC.

### EDUCATION

B.S. Surveying Engineering – California State University, Fresno (1994)

### REGISTRATION

CA Traffic Engineer #TR2328
CA Civil Engineer #C62971
CA LSIT, #ZL005078

### PROFESSIONAL AFFILIATIONS

American Council of Engineering Companies, San Joaquin Valley Chapter
Jul. 2015 – Present, President

Institute of Transportation Engineers, (ITE), Central California Section
Jul. 2008 – Present

- Secretary
- Treasurer
- Vice President
- President

### YEARS OF EXPERIENCE: 28

### PROFESSIONAL HISTORY

JLB Traffic Engineering, Inc.
Jan. 2014 – Present, President

TJKM Transportation Consultants
Aug. 2005 – Dec. 2013, Project Manager

City of Fresno
Jan. 1996 – Aug. 2005

- City Traffic Engineer
- Assist. Traffic Engineering Mgr.
- Traffic Planning Supervisor
- Professional Engineer

### OTHER PROFESSIONAL ACTIVITY

ITS Technology Transfer Program, University of California, Berkeley

- Parking Management for Sustainable Development (2019)

### EXPERTISE

Mr. Benavides is the founder and president of JLB Traffic Engineering, Inc. His engineering expertise includes: traffic operations analysis; engineering & traffic surveys, corridor studies; plan check services; highway official plan lines; traffic forecasting; traffic planning; traffic control plans; traffic signal design; signal interconnect; geometric design; bike lane feasibility analysis; traffic impact studies; railroad pre-emption timing; pre-signals; intersection operational studies; signal/stop warrant analysis; speed studies; parking studies; and expert witness services.

### REPRESENTATIVE PROJECT EXPERIENCE

**Traffic Impact, Engineering & Traffic Surveys, and Traffic Safety**

- 2024 Engineering & Traffic Surveys, 8 Segments, South Lake Tahoe
- 2023 Engineering & Traffic Surveys Extension, 47 segments, Atwater
- 2022 Engineering & Traffic Surveys, 19 segments, Yosemite Lakes – Madera County
- 2017 Engineering & Traffic Surveys, 51 segments, Selma
- 2015 Engineering & Traffic Surveys, 54 segments, Atwater
- "G" Street at Yosemite Avenue Mixed-Use Development TIA, Merced
- Downtown Merced Circulation Modifications TIA, Merced
- Houston Avenue at 17th Avenue, Traffic Safety Audit, Kings County
- Clovis Community Medical Center Phase 2 Master Plan TIA, Clovis
- Traffic Safety Audits, Grangeville at Avenue 7, Kings County

**Other Projects**

- Signal, State Route 59 at 16th Street, Merced
- Signal, "G" Street at Yosemite Shopping Center, Merced
- Signal Modification, "G" Street at Foothill Drive, Merced
- Signal, Yosemite Avenue at Lake Road, City & County of Merced
- On-Call Traffic Engineering, Atwater, Clovis, Fresno County, Merced and Visalia
- CMAQ Grant Application and Cost Benefit Analysis for Signal Interconnect Project, Atwater
- HSIP Grant Application and Cost Benefit Analysis for Shaffer Road and Juniper Avenue, Atwater
- Systematic Safety Analysis Report, Fresno
- Yosemite Avenue Pedestrian-Vehicle Safety Evaluation, Madera

JLB TRAFFIC ENGINEERING, INC.

# Matthew Arndt, EIT
## ENGINEER I/II
## JLB TRAFFIC ENGINEERING, INC.

### EDUCATION
B.S. in Civil Engineering – California State University, Long Beach (2018)

### REGISTRATION
CA Engineer in Training, EIT #169355

### PROFESSIONAL AFFILIATIONS
Institute of Transportation Engineers, (ITE), Central California Section
Dec. 2019 – Present, Member

Chi Epsilon (XE) Honors Society
Aug. 2016 – Present, Member

American Society of Civil Engineers (ASCE)
Aug. 2016 – Jul. 2017, Associated Student Incorporation Representative

### YEARS OF EXPERIENCE: 5

### PROFESSIONAL HISTORY
JLB Traffic Engineering, Inc.
Mar. 2019 – Present, Engineer I/II

### OTHER PROFESSIONAL ACTIVITY
ITS Technology Transfer Program, University of California, Berkeley
- Parking Management for Sustainable Development (2019)
- Fundamentals of Preemption At Railroad Grade Crossings (2022)

### EXPERTISE
Mr. Arndt serves JLB Traffic Engineering, Inc. as an Engineer I/II and has experience: engineering and traffic surveys, traffic impact analyses (TIA) of public and private development projects; trip generation analyses (TGA); Vehicle Miles Traveled (VMT) Analyses; Intersection Control Evaluations (ICE); Traffic Operational Analyses (TOA) of study intersections and segments utilizing Synchro and HCS7 software; conducting intersection turning movement counts; collision analyses; queuing analyses; preparing figures; multi-way stop and signal warrant reports; preparing electrical design projects for Caltrans District 5, District 6 and District 10; new traffic signal plans; and traffic signal modification plans.

### REPRESENTATIVE PROJECT EXPERIENCE
**Traffic Impact, Vehicle Mile Traveled, Engineering and Traffic Surveys, Traffic Operational, and Safety Studies**
- Engineering & Traffic Surveys (19 segments), Yosemite Lakes Madera County
- Engineering & Traffic Surveys (8 segments), South Lake Tahoe
- Downtown Merced Circulation Modifications TIA, Merced
- Yosemite and G Street Mixed-Use TIA, Merced
- Clovis and Dakota Business Park TIA, Clovis
- Fowler and Herndon Campus TIA & VMT Analysis, Clovis
- The Home Place TIA & VMT Analysis & VMT Analysis, Clovis
- Busseto Foods TIA & VMT Analysis, Fresno
- Copper River Ranch TIA & VMT Analysis, Fresno
- RP East Industrial Development TIA, Fresno
- Simonian TIA & VMT Analysis, Fresno
- Sunset Center Commercial Development TIA, Fresno
- AA 3845 TIA & VMT Analysis, Fresno County
- Academy Packing House TIA & VMT, Fresno County
- CUP 3729 TIA & VMT, Fresno County
- Elkhorn Training Facility TIA & VMT, Fresno County
- Kamm Avenue Plant TIA & VMT Analysis, Fresno County
- Malaga industrial TIA & VMT Analysis, Fresno County
- Terry Bradley Ed. Center TIA & VMT Analysis, Fresno County
- Crown Schaad Residential TIA & VMT, Kerman
- SR 180 at First ICE, Kerman
- Liberty Pointe Focused TIA, Hanford
- Lacey Ranch TIA & VMT Analysis, Lemoore
- King Husein School TIA, Madera
- Yosemite Plaza TIA, Madera County
- Tulare Morrison ICE Study, Tulare

JLB TRAFFIC ENGINEERING, INC.

# Christian Sanchez

## ENGINEER I/II

## JLB TRAFFIC ENGINEERING, INC.

### EDUCATION

B.S. in Civil Engineering – California State University, Fresno (2022)

### REGISTRATION

CA Engineer in Training, EIT #181222

### PROFESIONAL AFFILIATIONS

Institute of Transportation Engineers, (ITE), Central California Section
Jan. 2023 – Present, Member

### YEARS OF EXPERIENCE: 2

### PROFESSIONAL HISTORY

JLB Traffic Engineering, Inc.
Dec. 2019 – Dec. 2022, Engineering Aide

JLB Traffic Engineering, Inc.
Dec. 2022 – Present, Engineer I/II

### EXPERTISE

Mr. Sanchez serves JLB Traffic Engineering, Inc. as an Engineer I/II and has experience: preparing new traffic signal plans, traffic signal modification plans, pavement delineation and signage plans, street lighting plans, High-intensity Activated crosswalk (HAWK) signal plans, conducting collision analyses, preparing figures, collision diagrams and multi-way STOP and signal warrants.

### REPRESENTATIVE PROJECT EXPERIENCE

**Design Projects**

- Yosemite Ave at Lake Rd, Traffic Signal and Pavement Delineation & Signage, Merced
- Downtown Merced Circulation, Traffic Signal Modifications and Pavement Delineation & Signage, Six (6) Locations, Merced
- G St at Foothill Dr, Traffic Signal Modification, Merced
- G St at Yosemite Crossing Project Drwy, Traffic Signal, Merced
- State Route 180 at First St, HAWK, Kerman
- Golden State Blvd Signals and Lighting, Fresno County. Total of Fifteen (15) Signals along Golden State Boulevard in the County of Fresno, City of Fowler, City of Selma and City of Kingsburg. Eleven (11) of the signals contained Pre-Signal and Railroad Preemption Timing.
- Terry Bradley Educational Center, Geometric Approval Drawings, Five (5) Locations, Fresno County
- Martin Luther King Jr. Blvd, Signal Modifications and Street Lighting, Fresno
- Behymer Ave at Maple Ave, Signal Modification, Fresno
- Blackstone Ave at Weldon Ave, Signal Modification, Fresno
- Alicante Dr at Willow Ave, Traffic Signal, Fresno
- Chestnut Ave at Sommerville Dr, Traffic Signal, Fresno
- Ashlan Ave at Polk Ave, Traffic Signal, Fresno
- Fowler Ave at McKinley Ave, Street Lighting, Fresno
- CMAQ 2021 Shoulder Paving CML 5941 (131), Temporary Traffic Control Plans, (21.5 miles), Madera County
- Visalia Interconnect, Signal Interconnect, 5 Segments along ben Maddox Ave, Demaree St, Goshen Ave, Houston Ave and Mooney Blvd, Fifteen (15) Signals, Visalia

**Other Projects**

- VMT Screen Out Table, Atwater
- Atwater Blvd at First St, Traffic Signal Plan Review, Atwater On-Call, Atwater
- Juniper Ave at Bridgewater St, Traffic Signal Plan Review, Atwater On-Call, Atwater
- Systematic Safety Analysis Report, Fresno

JLB TRAFFIC ENGINEERING, INC.