



STAFF REPORT

SAUSALITO CITY COUNCIL

AGENDA TITLE

Award of Professional Services Contract to Multitrans Transportation Consultants, Inc. for Traffic Speed Limit Survey and Analysis Services for Purposes of Speed Enforcement Using Radar

RECOMMENDED MOTION

Adopt a Resolution of the City Council of the City of Sausalito Awarding a Professional Services Agreement to and Authorizing the City Manager to Execute a Professional Services Agreement with Multitrans Transportation Consultants, Inc. for Traffic Speed Limit Survey and Analysis Services for Purposes of Speed Enforcement Using Radar

SUMMARY:

Sections 40802 and 627 of the California Vehicle Code, and Section 2.B.13 of the Caltrans Manual on Uniform Traffic Control Devices (September, 2006) (excerpts attached) establish the need for and scope of regular speed surveys required to allow successful prosecutions of Police Department speed enforcement using radar, laser, or other electronic devices. The Police Department has determined that it is time to perform a new survey for the 32 street segments required.

Public Works staff has evaluated alternatives and contacted the firm that prepared the last set of surveys for the City, Multitrans Transportations Consultants, Inc. (Multitrans), Staff requested and Multitrans submitted a proposal to perform the necessary services and after evaluating Multitrans' proposal has concluded that award of the work to Multitrans will provide the best value to the City when compared with the alternatives identified (self-performance, and development of a detailed request for proposals to multiple candidates). The budget proposed is \$16,500, for which adequate funding is available in the approved budget as summarized below:

Account	Department	Amt Requested	Amt Unencumbered as of February 26, 2009
120-190-3000-320	Traffic Safety Committee Studies	\$16,500	\$25,000

BACKGROUND

On the basis of its prior service to the City, and its proposal, Multitrans has demonstrated a level of experience, competence, staffing and other professional qualifications appropriate for the necessary services. Further, Multitrans has agreed to and accepted the terms and conditions reviewed and approved in form by the City Attorney.

Because the proposed services fall within the definition of "Professional Services" set forth in section 3.30.020 of the Sausalito Municipal Code (SMC) – which specifically includes engineering services – it is not necessary to comply with either formal or informal bidding procedures with respect to award of the contract. The requirements of SMC Article 4, sections 3.30.500 *et seq.* have been met.

ISSUES

None identified. The proposed professional services will not have an adverse effect on the environment and are being performed to comply with Court requirements.

FISCAL IMPACT

The funding requested is \$16,500. Said funding is available in the adopted General Fund budget, account number 120-190-3000-320, Traffic Safety Committee Studies. As of February 26, 2009, \$25,000 was available and unencumbered in that account. SMC section 3.30.520 requires Council approval for any professional services contract exceeding \$15,000.

STAFF RECOMMENDATION

Adopt Resolution ____ awarding a professional services contract to and authorizing the City Manager to execute an agreement with AEW Engineering, Inc. for Environmental Consulting Services associated with the Public Safety Facilities Project.

ATTACHMENTS

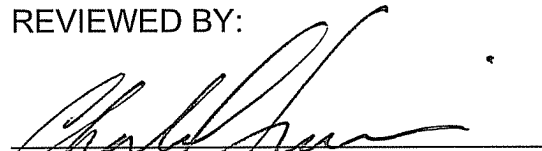
1. Resolution ____ of the City Council of the City of Sausalito Awarding a Professional Services Contract to and Authorizing the City Manager to Execute an Agreement with Multitrans Transportation Consultants, Inc. for Traffic Speed Limit Survey and Analysis Services for Purposes of Speed Enforcement Using Radar
2. Excerpts from CVC and CAMUTCD

PREPARED BY:



Jonathon Goldman
Director of Public Works

REVIEWED BY:



Charles Francis
Interim Finance Director

REVIEWED BY:

Mary A. Wagner
Mary Wagner
City Attorney

SUBMITTED BY:

Adam W. Politzer
Adam W. Politzer
City Manager

[PSA Multitrans]

ATTACHMENTS 2

Item: 482
Meeting Date: 3/10/2009
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RESOLUTION No. _____

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SAUSALITO AWARDING
A PROFESSIONAL SERVICES AGREEMENT TO AND AUTHORIZING THE CITY
MANAGER TO EXECUTE A PROFESSIONAL SERVICES AGREEMENT WITH
MULTITRANS TRANSPORTATION CONSULTANTS, INC. FOR TRAFFIC SPEED
LIMIT SURVEY AND ANALYSIS SERVICES FOR PURPOSES OF SPEED
ENFORCEMENT USING RADAR**

WHEREAS, with action of June 24, 2008 the City Council adopted the 2008-2009 Annual Budget which includes funding for Traffic Safety Studies (Fund 120-190-3000-320) and an unencumbered balance of \$25,000 in that fund remains as of February 26 2009; and

WHEREAS, the Director of Public Works and City Engineer have evaluated alternatives and contacted the firm that prepared the last set of surveys for the City, Multitrans Transportations Consultants, Inc.; and

WHEREAS, Staff requested and Multitrans submitted a proposal to perform the necessary services; and

WHEREAS, in conformance with Article 4, Section 3.30.500 *et seq.* of the Sausalito Municipal Code after evaluating Multitrans' proposal the Director of Public Works and City Engineer have concluded that Multitrans has the level of experience, competence, staffing and other professional qualifications necessary for more than a satisfactory performance of the services required and that award of the work to Multitrans will provide the best value to the City when compared with the alternatives identified (self-performance, and development of a detailed request for proposals to multiple candidates); and

WHEREAS, the proposed professional services will not have any adverse environmental impact; and

WHEREAS, the proposal received includes a detailed scope of services, schedule and budget, as well as acceptable terms and conditions for performance of said services.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Sausalito:

1. Awards a Professional Services Agreement to Multitrans Transportation Consultants, Inc. for the services described in the attached Agreement for a lump sum of \$16,500 which shall not be exceeded without express approval.
2. Authorizes the City Manager to execute the attached Professional Services Agreement on behalf of the City.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Sausalito on the 10th day of March, 2009 by the following vote:

AYES: Councilmembers:
NOES: Councilmembers:
ABSTAIN: Councilmembers:
ABSENT: Councilmembers:

MAYOR OF THE CITY OF SAUSALITO

ATTEST:

DEPUTY CITY CLERK

CITY OF SAUSALITO
PROFESSIONAL/CONSULTING SERVICES AGREEMENT

This **PROFESSIONAL/CONSULTING SERVICES AGREEMENT**, (this "Agreement") is made and entered into this ___ day of March, 2009, by and between the **CITY OF SAUSALITO**, a municipal corporation (hereinafter "City") and – **Multitrans Transportation Consultants, Inc.** (hereinafter "Consultant").

In consideration of the mutual promises contained herein, the parties hereto agree as follows:

Section 1. Scope of Work

Excepting the proposed optional traffic counts described therein and not desired by City, Consultant shall provide City with the services described in Exhibit A which is attached hereto and incorporated herein by this reference as though set forth in full.

The duties and services required of Consultant under this Agreement and pursuant to this Section 1 are referred to throughout the remainder of this Agreement as "the Work."

Section 2. Responsible Individual. The individual directly responsible for the performance of the duties of Consultant is **David H. Yzhari, FITE, Principal**. Consultant represents and warrants that the execution of this Agreement has been approved by Consultant and that person executing this Agreement on behalf of Consultant has the full authority to do so.

Section 3. Work Schedule.

Consultant shall be available to work as many hours as required to complete the Work immediately upon receipt of the signed Agreement from the City and shall complete each task in a timely manner as specified in Section B of Consultant's proposal in Exhibit A. Consultant shall not be held responsible for delays caused beyond its reasonable control.

Section 4. Compensation.

In consideration of the performance of the Work described in Section 1 pursuant to the schedule set forth in Section 3, Consultant shall be compensated with a firm fixed fee of \$16,500 (SIXTEEN THOUSAND FIVE-HUNDRED DOLLARS). Consultant shall not charge City for any administrative expenses or overhead, including without limitation, facsimile and other/or any other expenses incurred by Consultant in connection with Consultant's provision of the Work. Consultant acknowledges and agrees that the compensation to be paid to Consultant under this Section 4 represents the full amount due and owing to Consultant in connection with performance of the Work.

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Section 5. Amendments.

In the event City desires to retain Consultant for the performance of additional services, or wishes to delete any services in connection with this Agreement, specifications of such changes and adjustments to compensation due Consultant therefore shall be made only by written and signed amendment to this Agreement.

Section 6. Independent Contractor - Subcontractors.

It is specifically understood and agreed that in the making and performance of this Agreement, Consultant is an independent contractor and is not and shall not be construed to be an employee, common law employee, agent or servant of City. The consultant shall be solely liable and responsible to pay all required taxes and other obligations, including, but not limited to, withholding and Social Security. Consultant acknowledges and agrees that he/she is not entitled to the benefits of civil service status and/or the rights and privileges enjoyed by civil service employees and Consultant hereby waives any and all claims to such rights and/or privileges.

Section 7. Consultant's Responsibility.

It is understood and agreed that Consultant has the professional skills necessary to perform the Work, and that City relies upon the professional skills of the Consultant to do and perform the Work in a skillful and professional manner in accordance with the standards of the profession. Consultant thus agrees to so perform the Work.

Acceptance by City of the Work, or any of it, does not operate as a release of the Consultant from such professional responsibility. It is further understood and agreed that Consultant has reviewed in detail the scope of the work to be performed under this Agreement and agrees that in his professional judgment, the Work can and shall be completed for a fee within the amounts set forth in Section 3 of this Agreement.

Section 8. Hold Harmless and Indemnification.

Consultant shall indemnify, defend and save City, its officers, elected and appointed officials, employees, contractors and agents harmless from and against any and all liability, claims, suits, actions, damages and/or causes of action of any kind arising out of any bodily injury, personal injury, property damage or in violation of any federal, state or municipal law or ordinance or other cause in connection with the activities of Consultant, or on account of the performance or character of the Work or otherwise related to its performance of this Agreement to the extent that any such liability, claims, suits, actions, damages and/or causes of action arises out of the intentional, negligent or willful misconduct of the Consultant.

Section 9. Insurance.

Consultant shall take out and maintain during the life of the Contract: Comprehensive General Liability and Automobile Liability insurance in an amount not less than \$1,000,000 combined single limit applying to bodily injury, personal injury and property damage.

The liability policy(ies) are to contain, or be endorsed to contain, the following provisions:

The City, its officers, elected and appointed officials, employees, contractors and agents must be named as a Named Insured under the coverage afforded with respect to the work being performed under the Agreement.

Section 10. Nondiscrimination.

There shall be no discrimination against any employee who is employed in the Work, or against any applicant for such employment because of race, religion, color, sex or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

Section 11. City Personnel Conflict of Interest.

No officers, member, or employee of City and no member of the governing body of City who exercises any functions or responsibilities in the review, approval of the undertaking or carrying out of the project, shall participate in any decision relating to this Agreement which affects his personal interest or the interest of any corporation, partnership, or association in which she is, directly or indirectly interested; nor shall any such officer, member or employee of City have any interest, direct or indirect, in this Agreement or the proceeds thereof.

Section 12. Consultant Conflict of Interest.

Consultant covenants that she presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of his services hereunder. Consultant further covenants that in the performance of this Agreement, no persons having any such interest shall be employed.

Section 13. Assignment.

Consultant shall not assign any interest in this Agreement, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written consent of City.

Section 14. Ownership of Documents.

Consultant agrees that all documents produced in the performance of this Agreement shall be the sole property of the City including all rights therein of whatever kind and whether arising from common or civil law or equity. The Work shall be used solely for the project for which it was originally intended.

Section 15. Termination.

City may terminate this Agreement at any time without reason stated or required by giving written notice of the same and specifying the effective date thereof, at least seven calendar days before the effective date of such termination. If the Agreement is terminated by City as provided herein, Consultant shall be paid for all effort and material expended on behalf of the Work under the terms of this Agreement, less any charges against Consultant as otherwise provided herein, up to the effective date of termination, except that upon notification of such termination, Consultant shall immediately cease to undertake any duties under the Agreement not yet underway, and shall limit its further activities up to the effective date of termination to those duties necessary to wind up work then underway.

In Witness Whereof, City and Consultant have executed this Agreement as of the date first written above.

City of Sausalito

Consultant

By: Adam W. Politzer
Its: City Manager

By: _____
Its: _____

approved as to form:

By: Mary Anne Wagner
Its: City Attorney

EXHIBIT A
SCOPE OF WORK

MULTITRANS

Transportation Consultants, Inc.

February 10, 2009

Mr. Todd Teachout, P.E.
City of Sausalito
420 Litho Street
Sausalito, California 94965

Subject: **Proposal to Provide Traffic Speed Limit Surveys and Analysis**

Dear Mr. Teachout:

In accordance with your request, MULTITRANS is pleased to submit this Proposal to provide Traffic Speed Limit Surveys and Analysis for the City of Sausalito. MULTITRANS staff have participated in a number of projects for the City of Sausalito, including the 1999 and 2004 citywide Traffic Speed Surveys, and look forward to the opportunity to once again work with you, the Sausalito Police Department, and other participating staff from the City of Sausalito on this important project. We have the experience, expertise, available staff, and overall commitment to work closely with you in undertaking this project in a timely manner.

MULTITRANS has a long record of successful accomplishments in virtually all types of traffic and transportation projects. Our staff members are uniquely qualified to provide the services required for this project. MULTITRANS team offers a staff of senior level professionals that are totally familiar with traffic operations in the City of Sausalito. Our proposed Project Manager, Mr. David Yazhari, FEIT, has extensive experience in speed studies and traffic monitoring projects. His experience and expertise ensures that this project will be completed on time and in a comprehensive, yet cost-effective manner.

MULTITRANS staff have extensive experience in conducting speed survey projects, traffic monitoring, Highway Performance Monitoring System (HPMS), and CMP projects. We have collected and analyzed all types of traffic data, including traffic speed studies, 24-hour tube counts, manual turning movement counts, and vehicle classification and occupancy counts.

Highlights of our qualifications

- Experience with traffic speed studies for several cities and counties including City of Hayward, City of Oakland, County of Santa Clara, City of West Sacramento, City of Pleasant Hill, City of Sausalito, City of Orinda, City of Berkeley, City of Atherton, etc.
- Extensive experience in the areas of traffic speed studies, traffic monitoring, traffic operations analyses, and collection and analyses of traffic data;

- Availability of senior staff having substantial experience to work as the project staff on the project;
- Ability to complete the project within desired schedule and budget due to our ability to assign senior staff to this project that are totally familiar with these types of projects;
- Familiarity with the traffic conditions in the City of Sausalito;
- Proven capability of collecting traffic data for both small and large projects;

The opportunity of preparing and submitting this proposal to perform the requested services is greatly appreciated. If you have any questions regarding the information in this submittal, please do not hesitate to call.

Sincerely,

MULTITRANS
Transportation Consultants, Inc.



David H. Yazhari, FITE
Principal

DHY/bd

PROPOSAL

For

TRAFFIC SPEED LIMIT SURVEYS AND ANALYSIS

Submitted to:

THE CITY OF SAUSALITO

MULTITRANS

Transportation Consultants, Inc.

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PROPOSAL

For

TRAFFIC SPEED LIMIT SURVEYS AND ANALYSIS

Submitted to:

THE CITY OF SAUSALITO

Submitted by:

MULTITRANS

***Transportation Consultants, Inc.
2410 Camino Ramon, Suite 166
San Ramon, California 94583
Phone (925) 355-7300
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Email: davidy@multitransusa.com***

February 10, 2009

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TRAFFIC SPEED LIMIT SURVEYS AND ANALYSIS

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City of Sausalito - Traffic Speed Limit Surveys and Analysis

A. PROPOSED SCOPE OF WORK

MULTITRANS is pleased to provide the following services:

1. Collection of traffic speed data for the designated study segments in accordance with the Caltrans Traffic Manual; and,
2. Conduct and complete traffic surveys and analysis for the 33 designated roadway segments in accordance with the California Vehicle Code (CVC) Section 627, and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

The project consists of collection of traffic speed data for a total of 33 roadway segments in the City of Sausalito. Data to be collected will be the roadway segment speeds observed using a radar device as needed to fully satisfy the methodology described in Section 8-03 of the Caltrans Traffic Manual. The collected speed data will be evaluated and analyzed in accordance with the procedures recommended by CVC, and Caltrans. As part of additional services, we can also conduct 24-hour roadway traffic counts. Recommendations will be developed and presented on the City standard forms (similar to the reports prepared for the 1999 and 2004 surveys) and summarized in a tabular format. Appropriate Draft and Final Reports will be prepared in accordance with the City of Sausalito requirements. A senior level staff of MULTITRANS will direct the project. MULTITRANS trained staff will exercise proper care to collect all data. Project objectives will be accomplished through a logical work program of the following five tasks:

Task 1 - Project Initiation and Coordination

Task 2 - Collect Speed Data - Reduce and Analyze Data

Task 3 - Conduct Traffic Counts - Reduce and Analyze Data (optional task)

Task 4 - Conduct Engineering and Traffic Survey

Task 5 - Report Preparation and Presentation

City of Sausalito - Traffic Speed Limit Surveys and Analysis

Task 1. Project Initiation and Coordination

Following authorization to proceed, our proposed Project Manager will meet with the designated City staff to refine or identify the lines of communication, reporting procedures, project requirements in detail, including refining and/or confirming the proposed work program, project schedule, and to confirm milestone dates. This important meeting will also allow for exchange of philosophies, which will aid in the development of the final deliverables and products including the Draft and Final Reports.

At this meeting, all pertinent and available data specific to the project will be obtained. Following our meeting, we will refine the scope of work and work program, based upon information and comments provided by the City staff.

Task 2. Collect Speed Data

MULTITRANS will collect speed data for a total of 33 requested roadway segments in the City of Sausalito (same 33 segments used for the previous years). The roadway segment speeds will be observed and recorded using a radar device to fully satisfy the methodology described in Section 8-03 of the Caltrans Traffic Manual. MULTITRANS will measure free-flow speeds during off-peak hours on typical weekdays.

We will avoid surveying a roadway that is under any abnormal operating conditions until the road segment returns to normal operating conditions. MULTITRANS will evaluate the collected speed data using the standard analysis method described in the Caltrans Traffic Manual and the Manual of Traffic Engineering Studies. We will analyze the speed data to determine the following data:

1. 85th percentile speed
2. Range of speed
3. Average speed
4. 10-mile pace
5. Percent in pace
6. Street name, limits, directions, classification, posted speed limits, location number, roadway description, recommended speed limit.

Deliverables: Vehicle speed survey sheets and data

Task 3. Conduct 24-hour Traffic Counts (Optional Task)

Utilizing Automatic Traffic Recorders (ATRs), we will collect bi-directional tube counts at the study locations. The counters will be set up by our expert technicians in a manner to provide at minimum, midnight to midnight traffic data, recorded on 15-minute intervals.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

The 24-hour counts will be taken on a typical Tuesday, Wednesday, or Thursday. All tube counts will be conducted on days that do not conflict with special events, holidays, or during roadway construction projects. We will recount any locations where tubes or equipment fail, at no additional cost.

Optional Deliverables: 24-hour weekday traffic volumes

Task 4. Conduct Engineering and Traffic Survey

MULTITRANS will evaluate the collected speed, and traffic volume data using the standard analysis methods described in the Caltrans Traffic Manual. We will analyze the traffic data to prepare and provide the Traffic Speed Limit Surveys and Analysis.

Task 5. Report Preparation and Presentation

Our analyses, findings, and resultant recommendations will be reviewed with the City staff prior to incorporating them in a draft report. We will then prepare a Draft Report, including documentation, analyses, findings, and conclusions, and present this for your review. It will include the following:

1. A listing and data for all the 33 study segments,
2. A description of the survey methodology,
3. All information gathered in a neat legible tabular format.

Upon receipt of comments from the City on the Draft Report, we will revise the report and submit a Final Report.

Deliverables:

1. Three copies of the Draft Report;
2. Three copies of the Final Report.

B. PROPOSED PROJECT SCHEDULE

It is essential that a strategy be developed for scheduling project work and for planning the necessary and appropriate interaction between the Consultant and the City of Sausalito staff involved in this project. Acknowledging the City of Sausalito's desire to move forward with the timely completion of this important project, MULTITRANS will complete the project in 3 to 4 weeks following the date of authorization to proceed.

The time allocated to this project is fully accomplishable through the commitment of MULTITRANS, to the City of Sausalito. This suggested schedule offers a starting point for further review and refinement with the City. If required, an alternative appropriate and responsive schedule to satisfy overall project requirements can be developed with the City staff, and adhered to.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

C. PROPOSED PROJECT BUDGET

The following budget for the proposed Scope of Work described in Section A of this proposal has been prepared. This suggested project budget is based on MULTITRANS understanding of the City of Sausalito's project scope and needs to evaluate a total of 33 study segments.

MULTITRANS is prepared to collect all the required speed data, analyze and prepare draft and final reports for a fee of \$500.00 per segment and for a total fee of \$16,500.00.

Optional traffic counts can be conducted for an additional fee of \$150.00 for each segment, or for a total of \$4,950.00.

D. PROPOSED STAFFING PLAN

Close coordination between the MULTITRANS team and the City of Sausalito staff is critical to the proper execution of the project. Familiarity with the project area, as well as technical knowledge will be required to successfully complete the project. MULTITRANS has assembled a highly qualified team of experienced staff members to perform this project. Their expertise includes management of traffic projects, traffic speed studies, traffic monitoring projects, CMP and HPMS projects, traffic operations analyses, traffic circulation studies, traffic impact studies, transit operations projects, development of transportation models, as well as collection and analyses of all types of traffic and roadway data.

Our proposed team has given consideration to your requirements, and we are pleased to provide a team of experienced staff that fully responds to your needs. The participating key professional staff is described below. The professional resumes are included in the Appendix A of this proposal for your review. Members of the MULTITRANS team are carefully selected based on technical expertise of the different tasks related specifically to this project, thus providing an understanding of the project needs that could accelerate the project schedule and reduce costs. They were also selected based on their experience and familiarity with the projects surrounding traffic speed studies and traffic monitoring projects.

David H. Yazhari, Project Manager

Our staff will work with the City staff under the direction of David Yazhari, a Principal of MULTITRANS, with over thirty years experience in traffic and transportation projects. Mr. Yazhari will be responsible for organizing and directing project staff, assigning responsibilities, and controlling the elements of cost, schedule and quality of work. He will work closely with the City staff. Additionally, Mr. Yazhari will be participating in conducting technical analyses and preparation of the technical reports.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

Mr. Yazhari has also been the project manager for all the projects presented in Section E of this Proposal, including the following projects:

- City of Hercules Police Department Traffic Speed Limit Studies
- City of Orinda Police Department Traffic Speed Limit Studies
- City of Berkeley Traffic Speed Limit
- City of Sausalito Traffic Speed Limit Study and Traffic Counts
- City of Pleasant Hill City-wide 2000 Speed Study and Traffic Counts
- County of Santa Clara Traffic Speed Limit Study and Traffic Counts
- City of Hayward Traffic Speed Limit Study
- County of Santa Clara County Expressways Speed Limit Study and Traffic Counts
- City of West Sacramento Speed Limit Study and Traffic Counts
- City of Pleasant Hill O & D Study, Speed Study and Traffic Counts

Michael F. Yazhari, P.E. Texas, Senior Associate - Michael Yazhari will provide Quality Assurance and Control. He will monitor the project and provide technical oversight for maintaining quality in project development and management. One of the initial project activities performed by MULTITRANS will be the preparation of a quality control plan to define project deliverables, standards of practice, and level and frequency of reviews. Michael Yazhari has been responsible for or actively participated in completion of numerous traffic engineering projects including traffic monitoring projects, traffic signal design projects, and traffic circulation and parking projects.

Merben Mercado - Field Operations Supervisor

Mr. Mercado will provide supervision of field operations. His experience includes collection and analyses of traffic data for numerous traffic monitoring projects. Mr. Mercado has participated on many projects including the following:

- City of Hercules Police Department Traffic Speed Limit Studies
- City of Berkeley Traffic Speed Limit
- County of Santa Clara Traffic Speed Limit Study and Traffic Counts
- County of Santa Clara County Expressways Speed Limit Study and Traffic Counts

Field Personnel and Technicians - Mr. Yazhari will be assisted by other experienced field personnel with substantial experience in the collection and analyses of the traffic data. The Field Technicians have worked on several similar projects at MULTITRANS. The field personnel will work under the direction of David Yazhari.

The resumes of all participating key staff is incorporated in the Appendix A of this proposal.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

E. QUALIFICATIONS AND EXPERIENCE

MULTITRANS specializes in all aspects of traffic and transportation planning, and collection of traffic data in support of the traffic speed studies, traffic monitoring projects, HPMS and CMP projects. MULTITRANS is the largest traffic counting firm in northern California with over 200 new electronic traffic counters. We have the experience, expertise, available staff, the most sophisticated traffic counting equipment, and overall commitment to work closely with you in undertaking this project in a timely manner. We have had a project in almost every county in the State of California. Our expertise is particularly in traffic speed studies and monitoring, CMP, and HPMS projects.

Since 1973 the principals of MULTITRANS have provided services to both the public and private sectors, including industry, developers, municipalities, Caltrans, counties, other regional and State governments, universities and colleges, transit districts, airports, CCTA, AMBAG, MTC, SJCOG and other metropolitan planning organizations (MPOs) and public agencies.

Since our formation, there have been dramatic changes in the collection and analysis of traffic data, dominated by an array of complex government policies and a watchful public. The ability to stay ahead of these changes, adapting quickly and effectively, can spell success. As we face the dynamics of the decades ahead, MULTITRANS will continue to provide the vision and excellence our clients demand in an increasingly challenging environment.

Since it's founding, MULTITRANS has been dedicated to quality service with a high degree of commitment and responsiveness to client needs. MULTITRANS is highly committed to developing and maintaining close working relationships with its clients and enjoys a strong reputation for providing services of highest professional quality, both on time, and within the requested budget.

In working for public agencies, MULTITRANS staff have prepared general plan updates and have performed traffic impact analyses in support of EIRs, traffic impact studies, area-wide transportation circulation projects, congestion management projects, travel speed studies, collection and analysis of roadway and traffic data, signal design projects, street and highway operation and design projects, corridor planning studies, transit system development or improvement projects, etc.

For clients in the private sector, such as developers, shopping centers, hospitals, and landfill operators, we have conducted traffic impact studies, trip generation studies, transit studies, and have prepared Environmental Impact Reports (EIRs), and parking and circulation plans. MULTITRANS staff have participated in conducting numerous studies of similar type throughout northern California. We have the experience, expertise, available staff, and overall commitment to work closely with you in undertaking this project in a timely manner.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

Our capabilities and experience include:

- ❖ Congestion Management and HPMS Projects
- ❖ Traffic operation analyses
- ❖ Area-wide traffic circulation projects
- ❖ Traffic Speed Studies
- ❖ Preparation of the Circulation Elements of General Plans
- ❖ Preparation of transportation elements for EIRs
- ❖ Traffic impact studies for proposed land developments
- ❖ Parking studies and design
- ❖ Multi-modal, area-wide, and urban sub-area transportation planning projects
- ❖ Transportation model development and application
- ❖ Corridor and route location projects
- ❖ Transportation demand management projects
- ❖ Traffic signal timing analyses
- ❖ Transit planning and operation projects

MULTITRANS computer and communication systems are supported by the latest version of numerous technical and professional computer software. An advanced system of telecommunication supports the operation of the firm's computer system, resulting in improved efficiency and productivity.

The following is a list of the selected prior projects:

Speed Limit Study Projects

MULTITRANS staff have extensive experience in preparation of Traffic Speed Limit Studies. We have collected all types of traffic speed data, and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement. The following is a partial list of recent projects conducted by MULTITRANS staff:

City of Hercules Police Department Traffic Speed Limit Studies - The project consisted of collection of traffic data for locations throughout the City of Hercules to conduct and complete traffic speed limit studies in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement. A total of approximately 70 roadway segments were studied. Draft and Final reports were prepared including recommendations for speed limits.

City of Orinda Police Department Traffic Speed Limit Studies - The project consisted of collection of traffic data for locations throughout the City of Orinda to conduct and complete traffic speed limit studies in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement. Draft and Final reports were prepared including recommendations for speed limits.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

City of Berkeley Traffic Speed Limit Studies - The project consisted of collection of traffic data for locations throughout the City of Berkeley to conduct and complete traffic speed limit studies in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement. A total of approximately 200 roadway segments were studied. Draft and Final reports were prepared.

City of Sausalito Traffic Speed Limit Study and Traffic Counts - The project consisted of collection of traffic data for locations throughout the City of Sausalito to conduct and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

City of Pleasant Hill City-wide 2000 Speed Study and Traffic Counts - The project consisted of collection of traffic data for locations throughout the City of Pleasant Hill to conduct and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

County of Santa Clara Traffic Speed Limit Study and Traffic Counts - The project consisted of collection of traffic data for locations throughout the County of Santa Clara to conduct and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

City of Hayward Traffic Speed Limit Study - The project consisted of collection of traffic data for locations throughout the City of Hayward to conduct and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

County of Santa Clara County Expressways Speed Limit Study and Traffic Counts - The project consisted of collection of traffic data for locations on expressways throughout the County of Santa Clara to conduct and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

City of West Sacramento Speed Limit Study and Traffic Counts - The project consisted of collection of traffic data for locations throughout the City of West Sacramento to conduct and complete Engineering and Traffic Surveys in accordance with the California Vehicle Code (CVC), and Section 8-03 of the Caltrans Traffic Manual, to allow legal use of radar or other electronic devices for speed enforcement.

City of Pleasant Hill O & D Study, Speed Study and Traffic Counts - The project consisted of collection of traffic volume and speed data in support of the Pleasant Hill Road and Taylor Boulevard Safety study.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

Traffic Data Collection and Monitoring Projects

MULTITRANS staff have extensive experience in the collection and analysis of traffic data including conducting traffic monitoring and highway performance monitoring system (HPMS), and CMP projects. We have collected all types of traffic data, including 24-hours tube counts, manual turning movement counts, and vehicle classification and occupancy counts, and speed surveys. The following is a partial list of recent projects conducted by MULTITRANS staff:

County of Santa Clara Roads and Airports Department - traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Clara County Congestion Management Agency.

County of Santa Clara Roads and Airports Department, Expressway Study - consisting of traffic counting and monitoring of all expressways in Santa Clara County.

City of Sausalito 1999 and 2004 citywide Traffic Monitoring Projects - consisting of traffic counting and monitoring at locations throughout the City. Also, collected speed data to update speed limit signs within the City.

City of Pleasant Hill 2000 citywide Traffic Monitoring Projects - consisting of traffic counting and monitoring at over 200 locations. Also, collected speed data to update speed limit signs within the City.

San Joaquin Council of Governments Countywide CMP and Traffic Monitoring Project as well as a countywide Vehicle Occupancy Rate Study. Provided county-wide traffic counts on the roadways throughout the San Joaquin County, including 24-hour ADT tube counts at 15-minute intervals at approximately 200 locations, vehicle classification counts, vehicle occupancy counts, and analyses of collected traffic data.

City of Cupertino CMP and traffic monitoring Projects - consisting of traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Clara County Congestion Management Agency.

City of Los Gatos CMP Project - consisting of traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Clara County Congestion Management Agency.

City of Sunnyvale CMP Project consisting of traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Clara County Congestion Management Agency.

San Francisco International Airport Monitoring Projects - This project included evaluation of landside traffic operations throughout the Airport Area and the access roadways. Over 150 locations were evaluated during the summer and Thanksgiving weeks for three years. Counts were taken over one or two weeks - San Francisco International Airport.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

Caltrans Highway Performance Monitoring System (HPMS) Project - This project included evaluation of traffic operations at 900 locations within the State of California - California Department of Transportation

Caltrans Highway Performance Monitoring System (HPMS) Project - This project included evaluation of traffic operations at 1,500 locations within all the counties and the cities in the nine-county San Francisco Bay Area region - California Department of Transportation

Caltrans Highway Performance Monitoring System (HPMS) Project - This project included evaluation of traffic operations at 180 locations within all the counties and the cities in the five-county Greater Sacramento Region - California Department of Transportation

Caltrans Highway Performance Monitoring System (HPMS) Project - This project included evaluation of traffic operations at 150 locations within all the counties and the cities in the Greater San Joaquin Valley - California Department of Transportation

Association of Monterey Bay Area Governments CMP and Highway Performance Monitoring System (HPMS) Project - Provided traffic engineering services in support of the Highway Performance Monitoring System (HPMS) project conducted for FHWA and Caltrans, for the two counties of Santa Cruz and Monterey. 48-hour tube counts were conducted at 15-minute intervals, at major roadways throughout the two counties. Traffic engineering analyses were conducted in support of the project. The results of analyses were incorporated in a HPMS Report and were submitted to FHWA, Caltrans and AMBAG.

City of Mountain View CMP Project consisting of traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Clara County Congestion Management Agency.

City of Palo Alto CMP Project consisting of traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Clara County Congestion Management Agency.

City of San Jose CMP Project consisting of traffic counting and monitoring based on guidelines provided by the Santa Clara County Congestion Management Agency.

City of Capitola CMP Project consisting of traffic counting, monitoring, and level of service analyses based on guidelines provided by the Santa Cruz County Congestion Management Agency.

City of Sausalito - Traffic Speed Limit Surveys and Analysis

Traffic Operation and Circulation Projects

MULTITRANS staff members have conducted area-wide traffic operation and circulation analyses and developed recommendations to improve traffic operations and circulation. The following is a partial list of recent traffic circulation studies prepared by MULTITRANS staff:

- ❖ Traffic Circulation Analyses and Parking Study for Downtown Sausalito, 2001
- ❖ Traffic Circulation Analyses and Parking Study for Foothill College
- ❖ Traffic Circulation Analyses and development the Year 2020 Master Plan for City of Big Bear Lake
- ❖ Traffic Circulation Analyses and Development of Impact Fee for the County of San Luis Obispo
- ❖ Traffic Circulation Study East San Carlos Street Closure, San Jose
- ❖ Traffic Circulation Study for Shannon Road Residential Area of the City of Los Gatos - Santa Clara County
- ❖ Traffic Circulation Studies Merced County
- ❖ U.S. Route 101/Ralston Avenue Interchange Detour Routes, Traffic Operations Study - Caltrans
- ❖ State Route 237 Traffic Operations Analyses and Design Forecast for Measure A Improvements - Santa Clara County
- ❖ Traffic Operations Analyses and design of Alternatives for US-101, SR-85, and SR-237 Triangle Study Area - Santa Clara County
- ❖ Traffic Operations Analyses and design of Alternatives for US-101, SR-237, and Mathilda Avenue Mini-Triangle Study Area - Santa Clara County.

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RESUMES OF THE KEY PARTICIPATING STAFF

DAVID H. YAZHARI

Principal Project Manager

Education

M.S., Civil/Transportation Engineering, University of California, Berkeley
M.B.A., Finance and Management, Western New England College
B.S., Civil Engineering, Southeastern Massachusetts University/Central New England College

Professional Registration

Registered Professional Engineer, Civil (Texas)

Experience

Mr. Yazhari has over 30 years of diversified professional experience in planning, design, and operation analyses of transportation systems and facilities. His experience includes project management of major transportation projects performed for private developers, the states, counties, cities, transit districts, and regional planning agencies. Mr. Yazhari's assignments have included planning, design, and operation analyses of transportation facilities; traffic circulation projects; traffic monitoring projects; preparation of EIRs; traffic engineering studies; traffic signal design projects; pedestrians and bicycle projects; and public transportation projects including projects involving buses and LRTs. The following is a list of his recent projects.

Engineering and Traffic Survey projects

- City of Sausalito Traffic Speed Limit Study and Traffic Counts
- City of Pleasant Hill citywide 2000 Speed Study and Traffic Counts
- County of Santa Clara Traffic Speed Limit Study and Traffic Counts
- City of Hayward Traffic Speed Limit Study
- County of Santa Clara County Expressways Speed Limit Study and Traffic Counts
- City of West Sacramento Speed Limit Study and Traffic Counts
- City of Pleasant Hill O & D Study, Speed Study and Traffic Counts
- City of Orinda Traffic Speed Limit Speed Study and Traffic Counts
- City of Hercules Police Department Traffic Speed Limit Studies
- County of Santa Clara Traffic Speed Limit Studies and Traffic Counts
- City of Berkeley Traffic Speed Limit Studies and Traffic Counts
- City of Atherton Traffic Speed Limit Studies

Traffic Monitoring and Congestion Management Program Projects

Mr. Yazhari has extensive experience in conducting traffic monitoring and highway performance monitoring system (HPMS) and CMP projects. He has managed collection of all types of traffic data, including 24-hours tube counts and manual turning movement counts, vehicle classification and occupancy counts. The following is a list of his recent projects:

- MTC and Caltrans 2004 Bay Area Travel Time and Speed Study Project,
- MTC 2004 Bay Area Freeways Traffic Monitoring Project,

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- County of Santa Clara, 2004 Traffic Monitoring and CMP Project
- City of Cupertino, 2004 Traffic Monitoring and CMP Project
- City of Napa, 2004 citywide Traffic Monitoring Project
- MTC, 2004 Bay Area 9-county Traffic Monitoring Project
- MTC, 2003 Bay Area 9-county Traffic Monitoring Project
- County of Santa Clara, 2002 Traffic Monitoring and CMP Project
- County of Santa Clara, 2001 Traffic Monitoring and CMP Project
- San Francisco International Airport, 2001 Traffic Monitoring Project
- San Francisco International Airport, 2000 Traffic Monitoring Project
- City of San Francisco - 2000 citywide traffic counting program
- California Department of Transportation (Caltrans) - 2000 Statewide Traffic Monitoring and HPMS Project
- County of Contra Costa, 2000 Traffic Monitoring and CMP Project
- California Department of Transportation (Caltrans) - 1998 Statewide Traffic Monitoring and HPMS Project
- 1999 Traffic Monitoring Project - Downtown San Mateo
- 1999 Citywide Traffic Monitoring project - City of Big Bear Lake
- 1998 Traffic Monitoring and CMP Project - City of San Jose
- 1998 Traffic Monitoring and CMP Project - County of Santa Clara
- 1998 Traffic Monitoring and CMP Project - City of Campbell
- 1998 Traffic Monitoring and CMP Project - City of Mountain View
- 1998 Traffic Monitoring and CMP Project - City of Palo Alto
- 1998 Traffic Monitoring and CMP Project - City of Los Gatos
- California Department of Transportation (Caltrans) - 1997 Traffic Monitoring and HPMS Project including 9-County San Francisco Bay Area
- 1997 Highway Performance Monitoring System (HPMS) Project including five-county Greater Sacramento Region - Caltrans
- 1997 Traffic Monitoring and CMP Project - County of Santa Clara
- 1997 Traffic Monitoring and CMP Project - City of Sunnyvale
- 1997 Traffic Monitoring and CMP Project - City of Los Gatos
- 1997 Highway Performance Monitoring System (HPMS) Project, all counties in the San Joaquin Valley Region - Caltrans
- 1996 Traffic Monitoring and CMP Project - City of Los Gatos
- 1996 Traffic Monitoring and CMP Project - City of Sunnyvale
- 1996 Traffic Monitoring and CMP Project - City of Capitola
- 1996 Traffic Monitoring, CMP and Highway Performance Monitoring System (HPMS) Project - Association of Monterey Bay Area Governments (AMBAG)
- 1995 county-wide CMP and Traffic Monitoring Project - San Joaquin Council of Governments (SJCOG)
- 1995 Traffic Monitoring and CMP Project - City of Sunnyvale
- 1995 Traffic Monitoring and CMP Project - City of San Jose
- 1994 Traffic Monitoring and CMP Project - City of San Jose
- 1993 Traffic Monitoring and CMP Project - City of Sunnyvale
- City of South San Francisco 1993 FETSIM traffic counting and signal project.

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Environmental Impact Reports and Traffic Impact Studies

Mr. Yazhari has been project manager for numerous traffic impact studies in support of EIRs for residential, commercial, and industrial developments, both in the Bay Area and throughout the Country. His recent assignments have included participation on the following traffic studies:

- The Proposed Church Expansion Project, 71 Bay Road - Menlo Park
- The Proposed Mixed-use (Menlo Square) Project - Menlo Park
- Marketplace Shopping Center Project - Cupertino
- Richmond Ranch General Plan Amendment EIR - San Jose
- AM Homes Oakmead Residential Development EIR - San Jose
- Pacific Life Care Senior Center/Residential Development EIR - Santa Rosa
- First San Jose Housing KEEN Radio Station Site GPA EIR - San Jose
- Kaiser Santa Teresa Medical Center Master Plan PD EIR - San Jose
- Downtown Sausalito Master Plan - City of Sausalito
- Country Club Villa Shopping Center project - San Jose
- Kaiser Santa Teresa Medical Center, Surgical Center - San Jose
- Palo Alto Hills Golf and Country Club - Palo Alto
- Retail Warehouse Project EIR, Harvey West Boulevard - Santa Cruz
- Nissan-Dodge-Volkswagen New Auto Dealership - Santa Cruz
- Farm Bakery, Trip Generation and Traffic Impact Fee Study - Santa Cruz
- Bay Avenue Nob Hill Shopping Center Project EIR - Capitola
- Capitola Medical Center - Capitola
- Green Valley Highlands Residential Development - Watsonville
- Capitola Medical Center Master Plan EIR - Capitola
- Pacific West Christian Academy Expansion Project - Gilroy
- Golden State Baptist College Master Plan Project - Santa Clara
- San Jose Unified School District Elementary School - San Jose
- Christian Church School Expansion Project - Los Gatos
- Trimble Road Bridge Widening Over the Guadalupe Rive - San Jose
- Winchester Drive-in site Redevelopment EIR, City of Campbell
- San Francisco Bay Area Seaport Plan Update EIR – Metropolitan Transportation Commission and BCDC
- Shoreline Business Park/Home Depot Master Plan EIR - San Rafael
- El Paseo de Saratoga Shopping Center EIR - San Jose
- Rosenberg Department Store EIR - City of Santa Rosa
- Pacific Life Care Senior Citizen Development EIR - Santa Rosa
- Landfill and Integrated Waste Management Facility EIR - Alameda County
- Napa County Landfill Transfer Station EIR - County of Napa
- East Valley Clinic Expansion Master Plan - San Jose/Santa Clara County
- Calero County Park Master Plan EIR - Santa Clara County
- Paul Masson Mountain Winery Concert Facilities EIR - Santa Clara
- North San Jose Housing Initiative General Plan Amendment EIR - San Jose
- Oakmead Development (1,430 residential units) EIR - San Jose

- Redevelopment Area Expansion Master Plan EIR - Campbell

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- Biomass Power Plant Supplemental EIR - Soledad
- Deer Park/Rancho Hills Residential Development - Gilroy
- Keller Canyon Landfill - Contra Costa County
- Kaiser Santa Teresa Medical Center, Medical Offices - San Jose
- East Valley Clinic - San Jose
- Santa Clara County Courts Consolidation - Santa Clara County
- San Jose Unified School District - San Jose
- Office Development State Route 53 - Lower Lake, California
- Alma Avenue Residential Development - Walnut Creek
- Special Services Hospital - San Jose
- Bishop Hawk Commercial Real Estate traffic impact and fee study - Fremont
- Coyote Valley Research Park Travel Time Study - San Jose
- Proposed Crossroads Regional Shopping Center - Paso Robles
- J. Lohr Properties EIR for 700 dwelling units and 200,000 square feet of office in Downtown Frame Area - San Jose.

Traffic Circulation and Operation Analyses Projects

Mr. Yazhari has managed numerous area-wide traffic operations and circulation analyses projects and has developed recommendations to improve traffic operations and circulation. The following is a partial list of his recent traffic circulation and operation analyses projects:

- City of San Jose Citywide bicycle study - City of San Jose
- San Francisco Bay Area Seaport Plan Update - Metropolitan Transportation Commission
- City of Big Bear Lake Traffic Circulation and Pavement Management Master Plan
- Downtown Sausalito Traffic Circulation and Parking Study Project - Sausalito
- San Jose State University Traffic Circulation Study - San Jose
- Foothill College Traffic Circulation Study - Los Altos
- State Route 237 Traffic Design Forecast for the Santa Clara County Measure A Improvements - Santa Clara County Traffic Authority
- Traffic Operational Analysis of Alternatives for Routes 101/237/Mathilda Avenue Mini-Triangle Study Area - Santa Clara County Traffic Authority
- Traffic Operational Analysis of Alternatives for US-101, SR-85, and SR-237 Triangle Study Area - Santa Clara County Traffic Authority
- Project Manager for a neighborhood traffic improvement study in the City of Los Gatos - Santa Clara County
- Project Director for area-wide traffic circulation studies in Templeton and South Bay areas of San Luis Obispo County - County of San Luis Obispo
- Project Manager for area-wide traffic circulation studies in the unincorporated communities of Winton, Delhi, and Franklin/Beachwood in Merced County - County of Merced.
- U.S. Route 101/Ralston Avenue Interchange Detour Routes, Traffic Operations Study - Caltrans
- Traffic circulation and redevelopment project within downtown East Providence - East Providence
- Area-wide traffic engineering/circulation study and street design project prepared for the City of East Providence - East Providence

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Traffic Signal Design Projects

- Traffic signal design for the intersection of Green Valley Road and Paulsen Road in Santa Cruz County;
- Signal design for the intersection of McKee Road and King Road in San Jose.
- Traffic Signal Design for Airport Boulevard at Oyster Point Boulevard - Caltrans
- Traffic Signal for State Route 29 at South Kelly Road - Napa County
- Downtown South San Francisco traffic signal design, signal coordination, and traffic operations project involving 13 traffic signals - South San Francisco
- Traffic signal design and signing and striping plans for the intersection of Green Valley Road and Paulsen Road - Santa Cruz County
- Re-design and preparation of construction plans for roadway and traffic signal at the intersection of King Road and McKee Road - City of San Jose
- Green Valley Road traffic signal design and signing and striping plans - Watsonville
- Design of over 50 traffic signals for the State of Rhode Island Department of Transportation - Providence

Public Transportation Projects

Mr. Yazhari has extensive experience in the planning and evaluation of transit systems and services. He has prepared both short and long-term transit plans, developed transit system networks, projected passenger ridership, developed system standards, and planned routes and schedules. Additionally, he is experienced in the planning and design of transit centers, terminal facilities, and maintenance facilities, both for bus and light rail transit.

Mr. Yazhari directed station location studies and design projects for the proposed rail stations located within the Dallas Area Rapid Transit's (DART) Southwestern Service Area. Responsibilities included corridor planning studies, preparation of design scenarios, multi-modal access studies, traffic and parking analyses, traffic/rail system signal coordination, and valuation of the rail at-grade crossings.

Mr. Yazhari directed the formulation and documentation of a system-wide rail corridor planning study for DART, which included evaluation of all proposed rail corridors within the DART service area. He was responsible for a number of alignment alternative analyses and station location studies for DART's 100-mile proposed rail system and for the DART Southwest Alternative Alignment Study, evaluating a total of 13 alternative alignments and 50 different combination systems. The following is a list of the recent transit projects undertaken by him:

- AC Transit system-wide On-board Passenger Survey - 1985
- AC Transit system-wide On-board Passenger Survey - 1980

- AC Transit system-wide On-board Passenger Survey - 1979
- Dallas Area Rapid Transit District (DART), planning and design of the proposed light rail system alignments - DART, Dallas
- Dallas Area Rapid Transit District (DART), planning and design of the proposed light rail system maintenance facilities - DART, Dallas

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- Dallas Area Rapid Transit District, planning and conceptual design of bus stops and transit centers - DART, Dallas
- Planning and conceptual design of busways in the City of Pittsburgh, PA
- Planning and scheduling of numerous bus lines operating within the Alameda Contra Costa Transit District - AC Transit, Oakland
- Preparation of Five-Year Transit Plans for the Alameda Contra Costa Transit District for five consecutive years - AC Transit, Oakland
- Evaluation and design of a number of bus routes for the City of Santa Rosa - Santa Rosa
- Evaluation and re-structuring of bus routes in the City of Berkeley - AC Transit, Oakland
- Evaluation and re-structuring of Line 58, a major bus line operating within the Cities of Oakland, Emeryville, and Berkeley - AC Transit, Oakland
- Conducted several passenger on-board surveys for a number of bus routes operating in the Bay Area - AC Transit, Oakland
- Developed and designed bus operations plans for the San Francisco Transbay Terminal - Caltrans/AC Transit, Oakland
- Developed operating schedules and run cutting programs for numerous major bus lines operating in the Bay Area - AC Transit, Oakland
- Conducted a comprehensive study to evaluate the operations of the sixty-foot Articulated Buses for AC Transit - AC Transit, Oakland
- Conducted a comprehensive study to evaluate the operations of the Mini-Buses for AC Transit - AC Transit, Oakland
- Developed bus schedules for buses operating through BART stations, to coordinate bus operations with BART operations - BART/AC Transit, Oakland
- Planning, scheduling, and re-structuring of Line F, a major Transbay line operating between the City of Berkeley and the City of San Francisco - AC Transit, Oakland.

Roadway Design Projects

Mr. Yazhari has managed the preparation of roadway design and construction plans. His assignments have included both small roadway and major highway and rail projects throughout the country. The following is a partial list of his recent projects:

- State Route 237 design plans Measure A Improvements - Santa Clara County
- Traffic operations analyses and design of alternatives for US-101, SR-85, and SR-237 Triangle Study Area - Santa Clara County
- Traffic operations analyses and design of alternatives for US-101, SR-237, and Mathilda Avenue Mini-Triangle Study Area - Santa Clara County
- Re-design and preparation of construction plans for the intersection of McKee Road and Ludlow Way - City of San Jose
- Foothill College Transit Center Project
- Traffic signal design and signing and striping plans for the intersection of Green Valley Road and Paulsen Road - Santa Cruz County
- Re-design and preparation of construction plans for roadway and traffic signal at the intersection of King Road and McKee Road - City of San Jose
- Re-design and preparation of construction plans for the intersection of McKee Road and Jose Figueres Avenue - City of San Jose.

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Parking Projects

David Yazhari has managed several parking projects to evaluate the parking needs of the existing and proposed developments. He has prepared plans and designs of parking facilities to accommodate the parking requirements. The following is a list of his recent parking projects:

- Target Store Parking and Traffic Circulation Project - Cupertino
- Santa Clara County Courts Consolidation Parking Project - San Jose
- Kaiser Santa Teresa Medical Center Parking Master Plan - San Jose
- East Valley Clinic Traffic and Parking Master Plan - San Jose
- Lawrence Station Shopping Center Parking Project - Santa Clara
- Downtown Sausalito Traffic and Parking Master Plan - City of Sausalito
- Foothill College Traffic Circulation and Parking project - Los Altos Hills
- Nissan Auto Dealership - Santa Cruz
- Palo Alto Hills Golf and Country Club - Palo Alto
- Tougas Enterprises Restaurant Project - Campbell
- Rasputin Record Store Parking Project - Campbell
- Comprehensive parking study and design project in downtown Providence.

Teaching

Mr. Yazhari has been an instructor at the University of California at Berkeley, in the Institute of Transportation Studies (ITS) extension program. He has also developed and conducted seminars in transportation engineering related topics to the staff members of both private and public agencies, including Caltrans and Los Angeles Department of Transportation.

Membership in Professional Organizations

Institute of Transportation Engineers (FITE) - Fellow Member
Past Board President, California Society of Professional Engineers
National Society of Professional Engineers (NSPE)
American Society of Civil Engineers (ASCE)

Section 2B.13 Speed Limit Sign (R2-1)

Standard:

After an engineering study has been made in accordance with established traffic engineering practices, the Speed Limit (R2-1) sign (see Figure 2B-1) shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency. The speed limits shown shall be in multiples of 10 km/h or 5 mph.

Guidance:

At least once every 5 years, States and local agencies should reevaluate non-statutory speed limits on segments of their roadways that have undergone a significant change in roadway characteristics or surrounding land use since the last review.

No more than three speed limits should be displayed on any one Speed Limit sign or assembly.

When a speed limit is to be posted, it should be ~~within~~ established at the nearest 10 km/h or 5 mph increment of the 85th-percentile speed of free-flowing traffic.

Option:

The posted speed may be reduced by 10 km/h (5 mph) from the nearest 10 km/h or 5 mph increment of the 85th-percentile speed, where engineering study indicates the need for a reduction in speed to match existing conditions with the traffic safety needs of the community.

Support:

An example of the application of this speed limit criteria is as follows:

- If the 85th percentile speed in a speed survey was 60 km/h (37 mph), then the speed limit would be posted at 35 mph or optionally reduced to 30 mph. However,
- If the 85th percentile speed in a speed survey was 61 km/h (38 mph), then the speed limit would be posted at 40 mph or optionally reduced to 35 mph.

This method of establishing posted speed limits applies to all engineering and traffic surveys (E&TS) performed after May 20, 2004. This section, as amended for use in California, does not apply to E&TS performed prior to May 20, 2004.

Examples:

- An Engineering and Traffic Survey (E&TS) performed on April 6, 1999 due for renewal on April 6, 2004 (5 years) would be performed per Chapter 8 of the 1996 Caltrans Traffic Manual, which was the applicable guidance at the time. This would then be due for renewal on April 6, 2009 using the California MUTCD criteria.
- However, if conditions of the E&TS and the applicable enforcement agency, its personnel and equipment meet provisions of CVC 40802.c.2.B.I, the E&TS could have been extended two additional years (for a total of 7 years). In this case, the posted speed limit(s) remain(s) enforceable for the seven-year period and would then be due for renewal on April 6, 2006 and would be renewed using California MUTCD criteria.
- Further, if at the end of the seven years, a registered engineer evaluates the highway section and determines that no significant changes in roadway or traffic conditions have occurred (see CVC 40802.c.2.B.II), the engineer could extend the E&TS for three additional years (for a total of 10 years). Renewal of the extended E&TS would then be deferred to April 6, 2009 and at that time performed with California MUTCD criteria.

Option:

Other factors that may be considered when establishing speed limits are the following:

- A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
- B. The pace speed;
- C. Roadside development and environment;
- D. Parking practices and pedestrian activity; and
- E. Reported crash experience for at least a 12-month period.

Two types of Speed Limit signs may be used: one to designate passenger car speeds, including any nighttime information or minimum speed limit that might apply; and the other to show any special speed limits for trucks and other vehicles.

A changeable message sign that changes the speed limit for traffic and ambient conditions may be installed provided that the appropriate speed limit is shown at the proper times.

A changeable message sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit sign.

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Guidance:

If a changeable message sign displaying approach speeds is installed, the legend YOUR SPEED XX km/h (MPH) or such similar legend should be shown. The color of the changeable message legend should be a yellow legend on a black background or the reverse of these colors.

Support:

Advisory Speed signs are discussed in Sections 2C.36 and 2C.46 and Temporary Traffic Control Zone Speed signs are discussed in Part 6.

Speed limits in California are governed by the California Vehicle Code (CVC), Sections 22348 through 22413; also, pertinent sections are found in Sections 627 and 40802 and others referenced in this section. See Section 1A.11 for information regarding this publication.

Refer to Part 6, Section 6C.01 for speed limit signs in temporary traffic control zones. Refer to Part 7 for speed limit signs in school areas.

Engineering and Traffic Survey (E&TS)

Support:

CVC Section 627 defines the term "Engineering and traffic survey" and lists its requirements.

Standard:

An engineering and traffic survey (E&TS) shall include, among other requirements deemed necessary by the department, consideration of all of the following:

- (1) Prevailing speeds as determined by traffic engineering measurements.
- (2) Collision records.
- (3) Highway, traffic, and roadside conditions not readily apparent to the driver.

Guidance:

The E&TS should contain sufficient information to document that the required three items of CVC Section 627 are provided and that other conditions not readily apparent to a driver are properly identified.

Prevailing speeds are determined by a speed zone survey. A speed zone survey should include:

- The intent of the speed measurements is to determine the actual speed of unimpeded traffic. The speed of traffic should not be altered by concentrated law enforcement, or other means, just prior to, or while taking the speed measurements.
- Only one person is required for the field work. Speeds should be read directly from a radar or other electronic speed measuring devices; or,
- Devices, other than radar, capable of accurately distinguishing and measuring the unimpeded speed of free flowing vehicles may be used.
- A location should be selected where prevailing speeds are representative of the entire speed zone section. If speeds vary on a given route, more than one speed zone section may be required, with separate measurements for each section. Locations for measurements should be chosen so as to minimize the effects of traffic signals or stop signs.
- Speed measurements should be taken during off-peak hours between peak traffic periods on weekdays. If there is difficulty in obtaining the desired quantity, speed measurements may be taken during any period with free flowing traffic.
- The weather should be fair (dry pavement) with no unusual conditions prevailing.
- The surveyor and equipment should not affect the traffic speeds. For this reason, an unmarked car is recommended, and the radar speed meter located as inconspicuously as possible.
- In order for the sample to be representative of the actual traffic flow, the minimum sample should be 100 vehicles in each survey. In no case should the sample contain less than 50 vehicles.
- Short speed zones of less than 0.8 km (0.5 mi) should be avoided, except in transition areas.
- Speed zone changes should be coordinated with changes in roadway conditions or roadside development.
- Speed zoning should be in 20 km/h (10 mph) increments except in urban areas where 10 km/h (5 mph) increments are preferable.
- Speed zoning should be coordinated with adjacent jurisdictions.

Support:

Physical conditions such as width, curvature, grade and surface conditions, or any other condition readily apparent to the driver, in the absence of other factors, would not require special downward speed zoning. Refer to CVC 22358.5.

Option:

When qualifying an appropriate speed limit, local authorities may also consider all of the following findings:

1. Residential density, if any of the following conditions exist on the particular portion of highway and the property contiguous thereto, other than a business district:
 - a. Upon one side of the highway, within 0.4 km (0.25 mi), the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures.
 - b. Upon both sides of the highway, collectively, within a distance of 0.4 km (0.25 mi) the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures.
 - c. The portion of highway is larger than 0.4 km (0.25 mi) but has the ratio of separate dwelling houses or business structures to the length of the highway described in either subparagraph a or b.
2. Pedestrian and bicyclist safety.

The following two methods of conducting E&TS may be used to establish speed limits:

1. State Highways - The E&TS for State highways is made under the direction of the Department of Transportation's District Traffic Engineer. The data includes:
 - a. One copy of the Standard Speed Zone Survey Sheet (See Figure 2B-101(CA)) showing:
 - A north arrow
 - Engineer's station or post mileage
 - Limits of the proposed zones
 - Appropriate notations showing type of roadside development, such as "scattered business," "solid residential," etc. Schools adjacent to the highway are shown, but other buildings need not be plotted unless they are a factor in the speed recommendation or the point of termination of a speed zone.
 - Collision rates for the zones involved
 - Average daily traffic volume
 - Location of traffic signals, signs and markings
 - If the highway is divided, the limits of zones for each direction of travel
 - Plotted 85th percentile and pace speeds at location taken showing speed profile
 - b. A report to the District Director that includes:
 - The reason for the initiation of speed zone survey.
 - Recommendations and supporting reasons.
 - The enforcement jurisdictions involved and the recommendations and opinions of those officials.
 - The stationing or reference post in kilometers (mileage) at the beginning and ending of each proposed zone and any intermediate equations. Location ties must be given to readily identifiable physical features.
2. City and County Through Highways, Arterials, Collector Roads and Local Streets.
 - a. The short method of speed zoning is based on the premise that a reasonable speed limit is one that conforms to the actual behavior of the majority of motorists, and that by measuring motorists' speeds, one will be able to select a speed limit that is both reasonable and effective. Other factors that need to be considered include but are not limited to: the most recent two-year collision record, roadway design speed, safe stopping sight distance, superelevation, shoulder conditions, profile conditions, intersection spacing and offsets, commercial driveway characteristics, and pedestrian traffic in the roadway without sidewalks.
 - b. Determination of Existing Speed Limits - Figures 2B-103(CA) & 2B-104(CA) show samples of data sheets which may be used to record speed observations. Specific types of vehicles may be tallied by use of letter symbols in appropriate squares.

In most situations, the short form for local streets and roads will be adequate; however, the procedure used on State highways may be used at the option of the local agency.

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Guidance:

The factors justifying a reduction below the 85th percentile speed for the posted speed limit are the same factors mentioned above. Whenever such factors are considered to establish the speed limit, they should be documented on the speed zone survey or the accompanying engineering report.

The establishment of a speed limit of more than 10 km/h (5 mph) below the 85th percentile speed should be done with great care as studies have shown that establishing a speed limit at less than the 85th percentile generally results in an increase in collision rates; in addition, this may make violators of a disproportionate number of the reasonable majority of drivers.

Support:

Generally, the most decisive evidence of conditions not readily apparent to the driver surface in collision histories.

Speed limits are established at or near the 85th percentile speed, which is defined as that speed at or below which 85th percent of the traffic is moving. The 85th percentile speed is often referred to as the critical speed. Pace speed is defined as the 16 km/h (10 mph) increment of speed containing the largest number of vehicles (See Figure 2B-102(CA)). The lower limit of the pace is plotted on the Speed Zone Survey Sheets as an aid in determining the proper zone limits. Speed limits higher than the 85th percentile are not generally considered reasonable and prudent. Speed limits below the 85th percentile do not ordinarily facilitate the orderly movement of traffic and require constant enforcement to maintain compliance. Speed limits established on the basis of the 85th percentile conform to the consensus of those who drive highways as to what speed is reasonable and prudent, and are not dependent on the judgment of one or a few individuals.

The majority of drivers comply with the basic speed law. Speed limits set at or near the 85th percentile speed provide law enforcement officers with a limit to cite drivers who will not conform to what the majority considers reasonable and prudent. Further studies show that establishing a speed limit at less than the 85th percentile (Critical Speed) generally results in an increase in collision rates.

Option:

When roadside development results in traffic conflicts and unusual conditions which are not readily apparent to drivers, as indicated in collision records, speed limits somewhat below the 85th percentile may be justified. Concurrence and support of enforcement officials are necessary for the successful operation of a restricted speed zone.

Guidance:

Speed zones of less than 0.8 km (0.5 mi) and short transition zones should be avoided.

Signs

Standard:

The Speed Limit (R2-1) sign shall be used to give notice of a prima facie or maximum speed limit except as provided under Prima Facie Speed Limits in CVC 22352.

When used, the TRUCKS, 3 AXLES OR MORE 55 MAXIMUM (R6-3(CA)) sign shall be installed approximately 230 m (750 ft) following each R2-1 sign.

The ALL VEHICLES WHEN TOWING 55 MAXIMUM (R6-4(CA)) sign shall be installed approximately 230 m (750 ft) following the R6-3(CA) sign.

Guidance:

The R6-3(CA) and R6-4(CA) signs should be placed on highway segments where speeds in excess of 90 km/h (55 mph) are permitted.

Option:

The existing AUTOS WITH TRAILERS, TRUCKS 55 MAXIMUM (R6-1(CA)) sign may remain in place until it is knocked down, damaged, stolen, vandalized, or otherwise reaches the end of its useful life.

The local California Highway Patrol office may be consulted to identify highway segments where enforcement is an issue. On these segments early replacement of existing R6-1(CA) signs may be necessary.

Support:

Refer to CVC Section 22406 for types of vehicles subject to the 90 km/h (55 mph) maximum speed limit.

Option:

The Speed Zone Ahead (R2-4(CA)) sign (see Figure 2B-1(CA)) may be used to inform the motorist of a reduced speed zone.

Standard:

The R2-4(CA) sign shall always be followed by a Speed Limit (R2-1) sign installed at the beginning of the zone where the reduced speed limit applies.

The End Speed Limit (R3(CA)) sign shall only be used to mark the end of a speed zone.

The R3(CA) sign shall not be used at a transition into a change in speed limits within a reduced zone.

Option:

The R3(CA) sign (see Figure 2B-1(CA)) may be used with the TRUCK (M4-4) plaque to mark the end of truck speed zones on descending grades.

Standard:

Speed limit signs shall be placed at the beginning of all restricted speed zones.

Option:

Where speed zones are longer than 1.6 km (1 mi), intermediate signs may be placed at approximate 1.6 km (1 mi) intervals. For three or more lanes in each direction, dual installation may be used.

Standard:

The Speed Limit (R2-1) and End Speed Limit (R3(CA)) signs, as appropriate shall be placed at the end of all restricted speed zones.

Freeways with 110 km/h (65 mph) and those segments where a speed limit of 110 km/h (70 mph) has been approved by the Department of Transportation, with approval by the California Highway Patrol, shall be posted as follows:

- At the segment entrance, R2-1 signs shall be installed right of traffic off of the right shoulder.
- R2-1 signs shall also be installed off of the right shoulder only, throughout the segment, at a maximum of 40 km (25 mi) intervals.

Option:

- The 40 km (25 mi) interval may be modified to include locations following entrance ramps.

Standard:

- The R6-3(CA) sign (see Figure 2B-3(CA)) shall be installed approximately 230 m (750 ft) following each R2-1 sign, both at the beginning and throughout each 95 (60), 110 (65) or 110 (70) km/h (mph) segment.
- The R6-4(CA) sign (see Figure 2B-3(CA)) shall be installed approximately 230 m (750 ft) following each R6-3(CA) sign.

Option:

- The SLOWER TRAFFIC KEEP RIGHT (R4-3) signs may be installed at locations where there is a tendency of the motorists to drive in the left-hand lane(s) below the normal speed of traffic.

Standard:

- Signs shall be placed in protected locations.
- At the end of the 110 (70)/110 (65) km/h (mph) segment, R2-1 signs shall be installed off of the right shoulder.

Freeway segments where a 90 km/h (55 mph) speed limit has been approved by the Department of Transportation, with the approval of the California Highway Patrol, shall be posted as follows:

- The beginning of the segment shall be posted with an R2-1 sign installed on the right shoulder and left shoulder where the median is of sufficient width to permit sign maintenance without lane closures.

Guidance:

- Subsequent signs should then be posted on the right shoulder, on approximate 4.8 km (3 mi) intervals, with no more than 3 interchanges between signs.

- At the end of the segment, an R2-1 sign with the appropriate number for the next speed limit should be posted on the right shoulder.

Conventional highways with 90 km/h (55 mph) speed limits should be posted as follows:

Standard:

- The beginning of the segment shall be posted with an R2-1 sign installed on the right shoulder.

Guidance:

- Subsequent signs should then be posted on approximate 8 to 16 km (5 to 10 mi) intervals and immediately after locations where significant volumes of traffic enter the segment.
- At the end of the segment, an R2-1 sign with the appropriate number for the next speed limit should be posted on the right shoulder.

Conventional highways with 110 km/h (65 mph) speed limits should be posted as follows:

- The beginning of the segment should be posted with an R2-1 sign installed on the right shoulder.
- Subsequent signs should then be posted at 8 to 16 km (5 to 10 mi) intervals and after locations where significant volumes of traffic enter the segment.
- At the end of the segment, an R2-1 sign with the appropriate number for the next speed limit should be posted on the right shoulder.

Option:

Pavement markings with appropriate numerals (see Section 3B.19) may be used to supplement speed limit signs.

Standard:

The R2-1 and R6-3(CA) and R6-4(CA) signs giving maximum statewide speed limits for various types of vehicles shall be installed on all State highways near the points of entrance into California.

Guidance:

The R2-1 and R6-3(CA) and R6-4(CA) signs should be placed in a location to be most effectively viewed by the approaching motorists.

Speed Enforced Signs

Option:

The SPEED ENFORCED BY RADAR (R48(CA)) sign (see Figure 2B-1(CA)) may be used where the California Highway Patrol has received authority to use radar and requests such signs.

Guidance:

One sign should be used in each direction at the beginning of the segment of roadway, and at intervening major route intersections, where radar enforcement is in effect.

Support:

The R48(CA) sign is a stand-alone sign intended to alert motorists that speed is enforced by radar on a particular segment of roadway.

Option:

The RADAR ENFORCED (R48-1(CA)) sign (see Figure 2B-1(CA)) may be used in combination with the Speed Limit (R2-1) sign on any roadway where law enforcement has the authority to use radar.

Guidance:

When used, the R48-1(CA) sign should be placed below the R2-1 sign, at the beginning of the segment of roadway and at intervening major intersections, where radar enforcement is in effect.

Option:

The SPEED ENFORCED BY AIRCRAFT (R48-2(CA)) sign (see Figure 2B-1(CA)) may be placed, when requested by the California Highway Patrol, on sections of highway regularly patrolled by aircraft.

Standard:

The R48-2(CA) sign shall be used for both directions of travel.

Guidance:

The R48-2(CA) sign should be placed at the beginning of the section and spaced at 40 km (25 mi) intervals. See Figure 3B-106(CA).

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Vehicle Speed Feedback Signs

Option:

A Vehicle Speed Feedback sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit (R2-1) sign.

Standard:

If a Vehicle Speed Feedback sign displaying approach speeds is installed, the legend shall be YOUR SPEED XX.

The numerals displaying the speed shall be white, yellow, yellow-green or amber color on black background.

When activated, lights shall be steady-burn conforming to the provisions of CVC Sections 21466 and 21466.5.

Vehicle Speed Feedback signs shall not alternatively be operated as variable speed limit signs.

Guidance:

To the degree practical, numerals for displaying approach speeds should be similar font and size as numerals on the corresponding Speed Limit (R2-1) sign.

Option:

When used, the Vehicle Speed Feedback sign may be mounted on either a separate support or on the same support as the Speed Limit (R2-1) sign.

In lieu of lights, legend may be retroreflective film for flip-disk systems.

The legend YOUR SPEED may be white on black plaque located above the changeable speed display.

Support:

Driver comprehension may improve when the Vehicle Speed Feedback Sign is mounted on the same support below the Speed Limit (R2-1) sign.

Vehicle Speed Feedback Signs are appropriate for use with advisory speed signs and with temporary signs in temporary traffic control zones.

Basic Speed Law and Prima Facie Speed Limits – See CVC 22350 & 22352

Support:

The basic speed law states "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 which endangers the safety of persons or property."

Standard:

Prima facie speed limits are specific limits and shall apply unless changed based upon an engineering and traffic survey (E&TS) and signs are posted that display the new speed limit.

Option:

Prima facie speed limits may be preempted by the basic speed law, when roadway, traffic or weather conditions warrant a lower speed.

Use of Metric System Designations – See CVC 21351.3

Option:

Dual units for speed limits on signs may be placed on local streets and roads in both Metric and English units.

Guidance:

If used, dual unit speed limits should be rounded to the nearest 10 km/h for Metric and 5 mph for English units for posting on signs on local streets and roads.

Support:

Refer to AASHTO's Traffic Engineering Metric Conversion Factors. See Section 1A.11 for information regarding this publication.

Standard:

Metric speed limits shall not be placed on State highways. For use in this California MUTCD, 70 mph shall be shown as a metric equivalent of 110 km/h, neither of which shall be used on any local street or road.

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Legal Authority for Establishing Speed Limits

Support:

Delegation of legal authority to set speed limits on State highways is given to Department of Transportation's District Directors. The District Director of each transportation district is authorized to issue orders regulating the speed of traffic, up to 110 km/h (65 mph) on State highways. The Director of the Department of Transportation retains the authority to approve variable, minimum, and maximum speeds up to 110 km/h (70 mph) on State freeways.

Standard:

The speed limits shown in Table 2B-103(CA) shall apply, unless changed upon the basis of an engineering and traffic survey (E&TS).

Option:

The speed limits shown in Table 2B-104(CA) may apply, unless changed upon E&TS.

Variable Speed Limits on Freeways - See CVC 22355

Option:

The following speed limits may apply:

- Whenever the Department of Transportation determines based upon an engineering and traffic survey (E&TS) that the safe and orderly movement of traffic upon any freeway segment will be facilitated by the establishment of variable speed limits.
- The Department may erect, regulate, and control signs upon the state highway which is a freeway, or any portion thereof, which, if used, signs shall be designed to permit display of different speeds at various times of the day or night.
- Such signs need not conform to the standards & specifications per CVC 21400, but if used, shall be of sufficient size and clarity to give adequate notice of the applicable speed limit.

Minimum Speed Limits on State Highways - See CVC 22400

Option:

The following speed limits may apply:

- Whenever the Department of Transportation determines based upon an engineering and traffic survey (E&TS) that slow speeds on any part of a state highway consistently impede the normal and reasonable movement of traffic, the Department may determine and declare a minimum speed limit. Appropriate signs giving notice shall then be installed on that segment.
- A motorist can be cited for stopping or impeding the normal and reasonable movement of traffic unless the stop is necessary for safe operation and in compliance with the law.

Speed Traps

Support:

Refer to CVC 40802 for Speed Traps.

Standard:

A speed trap shall not apply to a local street, road, or school zone.

A section of highway shall be defined as a speed trap if the prima facie speed limit is not justified by an engineering and traffic survey (E&TS) within five years, and the enforcement of the speed limit involves the use of radar or any other electronic device that measures the speed of moving objects.

This time provision shall be extended to seven years when using radar and all of the following criteria are met:

- The arresting officer has successfully completed a minimum of 24 hours of certified radar operator course training.
- The radar used to measure the speed meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within three years of the alleged violation.

This time provision shall be extended to seven years when using laser or other electronic device (other than radar) and all of the following criteria are met:

- The arresting officer has successfully completed a minimum of 24 hours of certified radar operator course training.
- The arresting officer has successfully completed a minimum of 2 hours of additional approved certified training.
- The radar used to measure the speed meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within three years of the alleged violation.

Option:

This time provision for an E&TS may be extended to ten years when all of the above conditions are met and no significant changes in roadway or traffic conditions have occurred, including changes in adjoining property or land use, roadway width, or traffic volume as determined by a registered engineer.

Truck Speed Zone on Descending Grades

Guidance:

Highway descending grades, if used for posting TRUCK Speed Limit signs (R2-1 and M4-4) for trucks travelling downhill, should have recorded incident history of runaway commercial vehicles. Descending grades shorter than 1.6 km (1 mi) should be avoided for posting signs because deceleration of vehicles due to braking action can generally provide sufficient control on descending grades of less than 1.6 km (1 mi).

Support:

To establish a downhill truck speed limit, a physical profile showing length and gradient and a downhill speed profile for three or more axle commercial vehicles with a gross rating of 4,536 kg (10,000 lbs.) or more will be provided.

Standard:

Speed profiles for truck speed limits shall be prepared on the same form as other speed surveys. An analysis of collisions involving trucks shall be prepared.

Guidance:

Posted speeds should be on the low side of the scale, generally within the pace of loaded commercial vehicles.

Standard:

If warranted, the Department of Transportation's District Director shall issue a standard speed zone order.

Support:

Posting of the regulation will be by placement of a standard 900 x 1150 mm (36 x 45 in) Speed Limit (R2-1) sign with a TRUCK (M4-4) plate above.

Standard:

A standard End Speed Limit (R3(CA)) sign with TRUCK (M4-4) plate shall be posted at the end of the truck zone when appropriate.

Speed Zones in Temporary Traffic Control Areas

Support:

For signing and establishing speed zones in temporary traffic control areas, refer to Section 6C.01 in Part 6.

Section 2B.14 Truck Speed Limit Sign (R2-2)

Standard:

Where a special speed limit applies to trucks or other vehicles, the legend TRUCKS XX or such similar legend shall be shown on the same panel as the Speed Limit sign ~~or on a separate R2-2 sign (see Figure 2B-1) below the standard legend.~~

The Truck Speed Limit (R2-2) sign shall not be used in California. The TRUCK (M4-4) plaque placed above the Speed Limit (R2-1) sign shall be used instead.

The TRUCK (M4-4) plaque shall be placed above the Speed Limit (R2-1) sign to indicate the truck speed limit. It shall also be placed above the End Speed Limit (R3(CA)) sign to mark the end of truck speed limits.

Support:

Refer to Section 2B.13 for more details.

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