TECHNICAL PROPOSAL

Development of the Garden Grove

Local Roadway Safety Plan (LRSP)

October 16, 2020

AGA Engineers, Inc.

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TABLE OF CONTENTS

APPENDICES

AGA Engineers, Inc.

This proposal is a firm offer for a period of 90 days following the submission and shall become part of the contract agreement.

October 16, 2020

Mr. Dai Vu
Traffic Engineer
City of Garden Grove
11222 Acacia Parkway
Garden Grove, California 92842

RE: Technical Proposal for the Development of the Garden Grove Local Roadway Safety Plan (LRSP)

Dear Mr. Vu:

AGA Engineers, Inc. (AGA) is pleased to respond to the City of Garden Grove's Request for Proposal for the Development of the City's Local Roadway Safety Plan (LRSP) dated September 23, 2020. In accordance with the Request for Proposal (RFP), AGA is delivering three copies of each proposal via courier to the City prior to the 4pm deadline of October 16, 2020. Additionally, the three copies of our Fee Proposal are submitted in a separate, sealed envelope.

AGA Engineers, Inc. was founded in 2020 by Mr. Chalap K. Sadam, former Vice President at Albert Grover & Associates. Mr. Sadam has been providing traffic/transportation consulting services for 30 years. The new company was formed after the recent passing of the founder and CEO, Mr. Albert Grover. Both Mark Miller and Chalap K. Sadam, along with Albert Grover, were co-founders of Albert Grover & Associates formed in 1993. As a part of Albert Grover & Associates, the team worked together for 27 years successfully providing engineering services to various cities and Counties throughout southern California. All of the senior and professional staff members of Albert Grover & Associates are now part of AGA Engineers, bringing with them all their collective professional engineering qualifications, expertise and experience. Although we are technically a new company with a new name and new owner, as a team we have been established since 1993. This will allow us to continue to provide the culture, policies, financial stability and appropriate work environment for our employees to continue to serve our clients successfully.

As a team, we are truly excited about the opportunity to work for the City on this important project. We strive to deliver projects with results beyond expectations. Be it value-added safety upgrades, operational improvements, or communications enhancements, we don't simply blindly follow a task list, but we are tenacious at providing our clients more for their professional services dollar.

The following demonstrates our capability to complete this project on time and within budget:

- AGA's proposed project design team has successfully worked together on numerous traffic signal upgrade and safety projects having completed design plans for approximately 150 traffic signals last year alone.

- Our longstanding personal relationships with key staff of the City and Caltrans gives the AGA team a clear understanding of the desires and expectations of the City, which is key to attaining necessary project approvals and Caltrans reimbursements.

- The City of Garden Grove would be hard pressed to find another consulting firm more familiar with the technical complexities the project comprises as well as the political importance of its success.

- Our proposed Project Manager, Mr. Greg Wong, has over 24 years of experience conducting traffic studies, safety studies and implementing safety improvements both from a consultant point of view and City staff point of view, In addition, our proposed Project Advisor, Mr. Mark Miller, Executive Vice President of AGA, is a recognized expert in improving traffic safety. During his forty-three years of professional service working as both a municipal engineer and as a contract Traffic Engineer, Mr. Miller has conducted countless traffic safety studies and has successfully implemented a wide variety of traffic safety enhancement projects and countermeasures specifically designed to address patterns and root causes of crashes. He understands where the high priority safety concerns are throughout the City.

- AGA staff has successfully assisted many other municipalities in successfully securing federal funding for their safety projects through the Highway Safety Improvement Program (HSIP) so we know how to "package" projects and programs so they get funded. AGA staff has recently completed safety assessments to several municipalities including the cities of Fountain Valley, Placentia, Redlands, Rialto and Torrance.

- The AGA team has successfully obtained $3.5 million HSIP grants for the cities of Fountain Valley, Placentia and Redlands.

- Based on our Project Team's experience successfully completing Highway Safety Improvement Programs (HSIPs), Systemic Safety Analysis Report Programs (SSARPs) and additional safety projects and our extensive knowledge of the City, our proposal outlines a work plan approach that is consistent with the goals of the project to significantly improve traffic operations and safety. As such, we are confident that the work tasks outlined in our proposal will meet and exceed the needs and the desires of the City.

- AGA's unique combination of engineers and skilled traffic signal system and communications technicians allows us to ensure the City and its project partners a trouble-free project from the outset of design through implementation and into operations. We do more than simply prepare traffic signal modifications – *we actually make the systems work for our clients.*

- AGA has worked on numerous traffic engineering projects in the City throughout the years. It our previous work with the City that provides the project team with unmatched familiarity with the City's street system, traffic signal system and traffic patterns. Additionally, it is our deep understanding of the City and its transportation system that will be a tremendous asset in bringing forward safety recommendations that are reasonable, feasible and cost effective.

AGA has a comprehensive understanding of the LRSP. We will ensure that the final report and all documents produced are in compliance with the LRSP and that the key safety projects recommended are eligible for future HSIP and/or ATP grant funding. Special attention will be paid to the requirements to assist the City for reimbursement of eligible costs per the Caltrans Local Assistance Procedures Manual (LAPM).

The project team looks forward to working with the City of Garden Grove on this very important traffic safety study effort. If you have any questions, please don't hesitate to give me a call at (714) 992-4592 or via e-mail at chalap@agaengineersinc.com. As the President of AGA, I am duly authorized to negotiate with the City and contractually bind AGA with my signature.

Respectfully submitted,

AGA Engineers, Inc.

Chalap K. Sadam, P.E., T.E.
President

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SECTION 1: COMPANY OWNERSHIP DESCRIPTION/DESCRIPTION OF OFFICE

AGA Engineers, Inc. (AGA) is pleased to submit this Proposal in response to the City of Garden Grove's Request for Proposals (RFP) for the Development of the Garden Grove Local Roadway Safety Plan (LRSP). Our AGA Team's experience working with the City on a variety of projects in the past has given us a keen understanding of the requirements and desires of the City.

AGA's office in Fullerton

AGA Engineers, Inc. (AGA) is a California S Corporation with 19 employees, all of whom work out of the company office located on Imperial Highway in the City of Fullerton. The majority of our employees have worked together for at least five years, and 75% of the team have worked together for almost 15 years, which is a respectable indication of the stability and compatibility of our team. AGA is a multidiscipline engineering firm specializing in municipal and transportation engineering. Through the utilization of today's most sophisticated computer-aided equipment by highly skilled and talented professional engineers and technicians, AGA is able to provide its clients with quality, cost-effective, professional services in a timely manner. Our success can be attributed to our commitment to provide clients with personalized, quality service. AGA's services are not just routine, but rather the application of experience and knowledge to first properly identify a problem, then provide the most appropriate and cost-effective solution. Each project is unique and carried out with the highest degree of pride and professionalism with a dedication to satisfy the client's needs. We offer professional services ranging from the planning and conceptual design stage through the construction supervision and "as-built" stage, placing us among the forerunners in the full-circle service concept. AGA's wide range of services offered can be divided into six primary areas of expertise: traffic engineering, day-to-day traffic signal operations, transportation planning, civil engineering/construction management, communication and operational control of traffic signal systems, and actual onsite City Traffic Engineer staffing. While we are well known and respected for our work in all six of these areas, we are perhaps best known for our widespread knowledge and experience in the field of design and multijurisdictional traffic signal coordination. It should also be noted that AGA operates over 400 traffic signals on behalf of four jurisdictions in Southern California. Those traffic signals, including the City of Fullerton's, are remotely monitored and controlled from the Traffic Management Center located in AGA's Fullerton office.

AGA personnel, many of whom are former governmental employees, have provided services to clients ranging from design and construction management of full freeway interchanges at costs exceeding a million dollars, to minor traffic impact studies costing only a few thousand dollars. Whatever the project, our management approach is to complete the project to the satisfaction of the client in as quick a time frame as possible while still producing quality work products. The AGA approach to the provision of professional services and projects is to do more than simply provide labor or prepare design plans and study reports – *we actually improve traffic operations and safety in everything we touch.* AGA is not a company that simply provides engineering labor to complete client designated tasks; rather, AGA provides a high level of intellectual support to accomplish client objectives. AGA's unique blend of Civil Engineers, Traffic Engineers, and skilled traffic signal system and communications technicians provides a synergy which results in successful projects beyond client expectations.

The project team of AGA Engineers, Inc., possesses all the necessary qualifications, experience and personnel to provide the requested services for the Local Roadway Safety Plan as detailed in the City's Request for Proposal. The following pages outline the team's specific experiences and technical competence along with references and representative projects. AGA's services are not just routine, but rather the application of experience and knowledge to first properly identify a problem and then to provide the most appropriate and cost-effective solution. Each project is carried out with the highest degree of pride and professionalism and a dedication to satisfy the client's need. AGA's engineers have extensive experience in safety improvements. We typically take a holistic approach to our design efforts to not only include those improvements initially identified but to look beyond the confines of the RFP to recommend other operational improvements that can significantly improve operations and reduce maintenance costs. Such operational improvements could be a simple resequencing of the traffic signal phases to reduce stops and improve coordination. It's not just a job for us at AGA, your traffic safety project is our passion!

AGA's Project Team has ample experience in conducting large-scale traffic safety studies and has successfully completed more than two hundred safety investigations for our municipal clients across Southern California. AGA is proficient at identifying traffic safety issues through systemic safety analysis techniques and comprehensive field investigations—enabling AGA engineers to: discover the risk factors for, and root causes of, collisions occurring on extensive corridors such as those throughout Garden Grove; prioritize mitigations; and make common-sense, low-cost safety recommendations to address those factors and causes.

The professionals at AGA have extensive municipal experience in completing detailed traffic signal inventories and in the conduct of systemic safety analysis based on both collision history and proactive risk assessments. We have ample experience in the conduct of large-scale safety traffic studies for cities through the use of systemic safety analysis techniques as well as comprehensive field investigations to discover and address the risk factors for, and root-causes of, collisions. Due to this extensive experience, we are incredibly proficient at identifying problem areas and developing commonsense low-cost safety enhancement recommendations that are successful at reducing collision rates. Our team has recently completed citywide traffic safety studies in the Cities of Fountain Valley, Redlands, Rialto and Placentia under the Systemic Safety Analysis Report Program (SSARP) program funded with State/Federal grants.

AGA Engineers, Inc. personnel include valuable tenured Professional Engineers with in-depth experience in the field—allowing us to quickly get to the root of safety, planning, design and operational issues, and provide our clients quick, appropriate advice. Our executive staff is also comprised of engineers who have spent a large portion of their careers in governmental service (both as City and State Traffic Engineers). This unique "hands-on" experience combined with municipal service means that AGA can provide feasible, common-sense projects that make a difference. AGA is a uniquely qualified firm to perform all tasks associated with the proposed Local Roadway Safety Plan (LRSP) project for the following reasons:

- AGA staff has worked in the past with the City of Garden Grove and is familiar with the street/arterial system, schools, residential concerns, high traffic (vehicle and pedestrian) areas, and overall needs of the City.
- AGA staff has recently completed safety assessments to several municipalities including the cities of Fountain Valley, Placentia, Redlands, Torrance and Rialto.
- The Project team successfully obtained $3.5 million HSIP grants for the cities of Fountain Valley, Placentia and Redlands.

We are confident that our experience working with the City, in addition to our expertise in performing proposed project tasks in general, will give the City insightful evaluations of possible safety projects along various corridors—enabling the City to confidently seek further funding through the Highway Safety Improvement Program (HSIP) and other fund opportunities.

The AGA team has the years of experience, current understanding of the issues as stake in LSRP and Systemic Safety Analysis Report Program (SSARP) studies, and the team elements to provide relevant studies backed by essential data which will, in turn, be effective in the City's applications for future funding. Our team is thoroughly familiar with and equipped to support the City with its knowledge of program parameters and guidelines—with key members who are skilled in systemic safety methodology and adept at performing the functions of benefit/cost analysis, providing appropriate project documentation, and giving assistance with the application processes and follow-up events, such as audits.

The professionals at AGA are recognized experts in Southern California in the conduct of traffic safety investigation studies for municipalities. AGA is known for applying best practices of systemic safety techniques to identify the root causes of crashes and the development of commonsense low-cost safety enhancement recommendations. Engineers at AGA routinely teach other engineers and university students on the investigative techniques necessary to assess crash data, identify crash patterns, and discover safety solutions that work.

SECTION 2: PROJECT ORGANIZATION AND STAFFING

Strong results-oriented leadership is a key element of our management approach in order to fully leverage both the expertise and experience of the Project Team. For this reason, **Mr. Greg Wong, P.E.,** has been identified as the consultant Project Manager. As such, he will be the City's primary contact for the project and will be responsible for day-to-day management of the project. He will coordinate all meetings which are included as part of the scope of work, and make any requested presentations to the public, City staff, committees, commissions, or councils. He will be responsible for adherence to the project schedule and, along with **Mr. Chalap Sadam, P.E., T.E.,** and **Mr. Mark Miller, P.E., T.E.,** for maintaining quality control of all project work products. In short, Mr. Wong, Mr. Sadam, and Mr. Miller will do everything necessary to ensure that the project is completed on time, within budget, and in a manner that fulfills all the goals and objectives of the City.

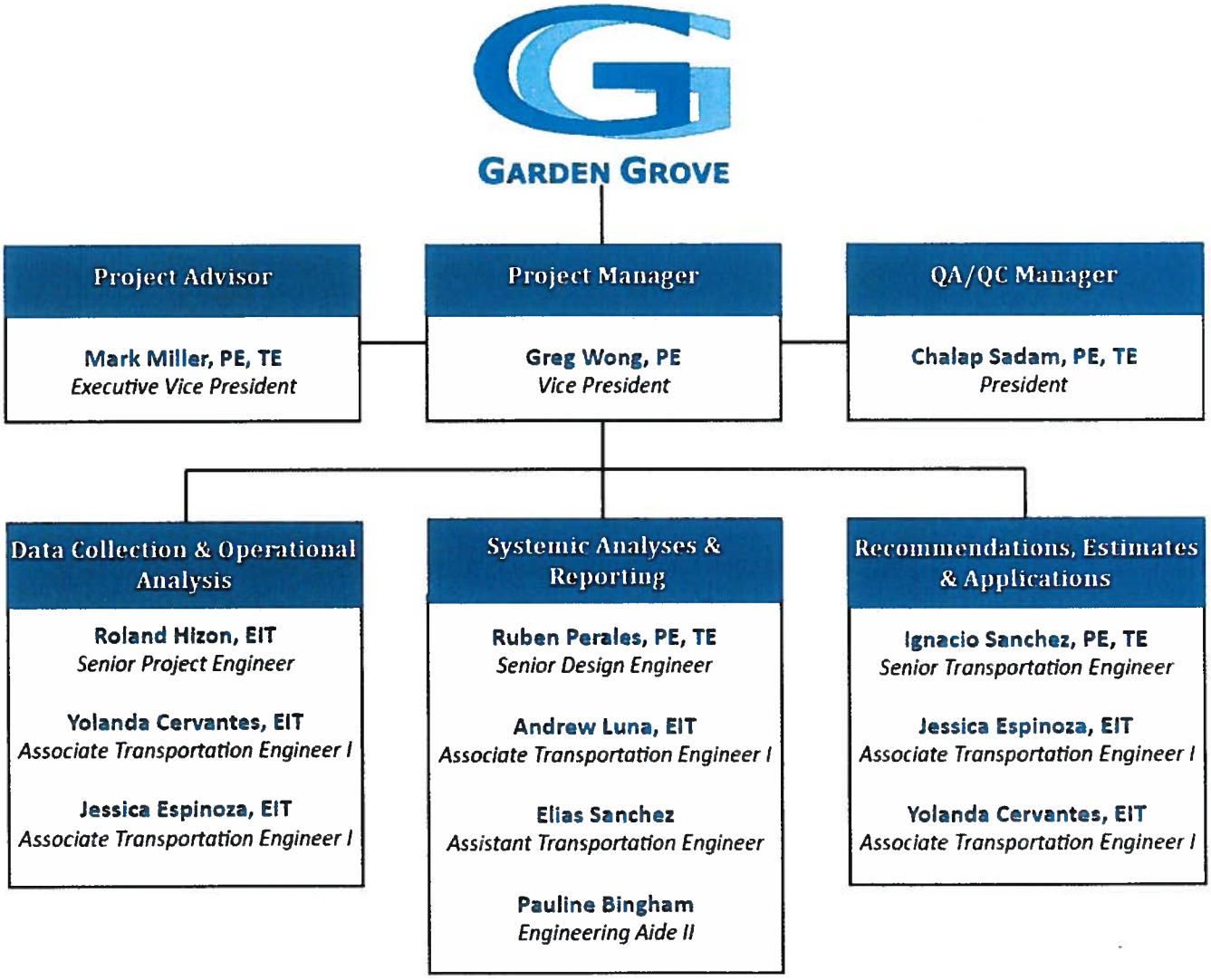
AGA's in-house team of skilled professionals have up-to-date resources at our home office in Fullerton, California with regards to any computer software program or modeling program inherent in our service as a Professional Transportation Consultant, including AutoCAD, MicroStation, Synchro and Microsoft applications, to name a few. Our staff includes Professional Engineers with decades of experience, as well as many who have worked in Municipal environments for up to 30 years; we also call upon a skilled staff of technicians with valuable expertise in transportation related technology, including traffic software and hardware, CCTV, communications, and Intelligent Transportation Systems.

The individual works tasks would be led by a team of three accomplished engineers/managers; **Ignacio Sanchez, P.E., T.E., Ruben Perales, P.E., T.E., and Roland Hizon, E.I.T.** Our experienced Associate Transportation Engineers, **Yolanda Cervantes, E.I.T., Jessica Espinoza, E.I.T., and Andrew Luna, E.I.T.** will assist Mr. Wong and our team of engineers/managers to ensure this project is completed on time and within budget. Each of the

task leaders have selected a group of professionals that have worked on various safety study projects to assist them in the conduct of the study efforts.

Key personnel resumes can be found in **Appendix A.**

An organization chart showing the names of the key personnel to be assign to the project for each phase is located below.



Following are brief highlights of the qualifications and experience of the key project task leaders.

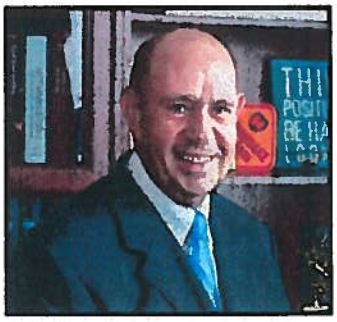
Mr. Greg Wong, P.E., Vice President, has an extensive background in traffic operations and traffic signal timing, traffic signal design, transportation planning. He is a registered Civil Engineer with 24 years of transportation and traffic engineering expertise. He has been instrumental in developing transportation safety studies, sight distance analyses, traffic signal and stop sign warrant analyses, capacity and level of service analysis, and environmental impact report review and analysis. Mr. Wong has extensive experience with various traffic control systems and both arterial and grid type traffic signal coordination timing. He has developed signal timing for hundreds of traffic signals throughout Orange County. His knowledge of traffic signal operations has provided him to evaluate cost effective safety measures through traffic signal timing and traffic signal modifications.

Mr. Wong has identified safety improvements in the Cities of La Habra, Fullerton, and Torrance and assisted in the SSARP safety assessments in the cities of Placentia, Fountain Valley and Redlands. Mr. Wong recently evaluated 184 intersections within the City of Torrance that included review of the traffic signal infrastructure, level-of-service analyses for existing, near term and long term conditions, comparison of historical traffic volumes, traffic index (TI) calculations for all truck routes, and traffic safety analysis of the City's high collision intersections. Detailed cost estimates were also conducted for the traffic signal and communication, intersection capacity improvements and traffic safety improvements. His experience also includes the Orange County I-405 Freeway Improvement Project. For this multi-year project, Mr. Wong provided freeway, ramp and arterial intersections evaluations and analysis to explore alternative improvement scenarios for the I-405 freeway between the SR-73 and I-605 in order to increase capacity, reduce congestion, enhance interchange operations, maximize throughput and enhance safety throughout this corridor. These reports were considered a "template for future traffic studies statewide" (DOT, CA). Additionally, over the past 15 years, Mr. Wong has also been working with Los Angeles County Public Works on their Transportation Signal Synchronization Project (TSSP) program, which included 12 corridor projects and over 140 traffic signals. One of the goals of the TSSP program is to assess the study intersection for safety related concerns and to recommend improvements for each location to be compliant with the current CA MUTCD guidelines and Caltrans Standards.

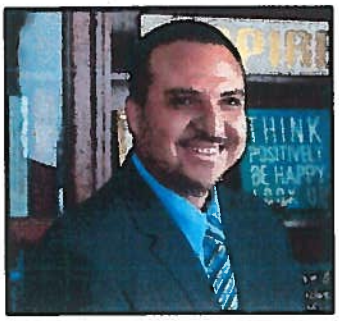
Mr. Chalap Sadam, P.E., T.E., President of AGA, will serve as QA/QC Manager. Mr. Sadam has over thirty years of experience reviewing traffic operations and making improvement recommendations. Mr. Sadam is Project Manager for various Orange County Transportation Authority and San Bernardino Association of Governments funded traffic signal synchronization improvement projects. There is arguably no other engineering manager available with more grant-funded corridor-based traffic signal synchronization project experience in Southern California than Mr. Sadam. Mr. Sadam is a registered Civil and Traffic Engineer with a Master of Science, Civil Engineering (Transportation) degree from Virginia Polytechnic Institute and State University, and a Master of Business Administration degree from the University of Southern California. Mr. Sadam is a recognized expert in the design and operations of traffic signal systems, transportation studies, and safety improvement projects. Mr. Sadam also has extensive experience in interagency consensus building, Intelligent Transportation Systems, and the development of transportation mitigation and improvement projects. Mr. Sadam previously developed the Citywide Traffic Improvement Study and identified various safety and capacity improvements throughout the City of Fullerton, many of which have since been implemented. Mr. Sadam

completed 10 citywide safety assessments funded by Californian Office of Traffic Safety. In addition, Mr. Sadam recently completed the SSARP safety projects in the cities of Placentia, Fountain Valley, Redlands and Rialto. He also completed citywide safety improvements for the cities of La Habra, Montclair, Palm Springs, Downey and Inglewood. In addition, Mr. Sadam prepared Highway Safety Improvement Project (HSIP) grant applications, and design/implementation of multiple State funded projects and assisted multiple agencies in successful re-imbursements of local, State and Federal funds. Additionally, Mr. Sadam served as QA/QC Manager for multiple safety improvement projects throughout southern California.

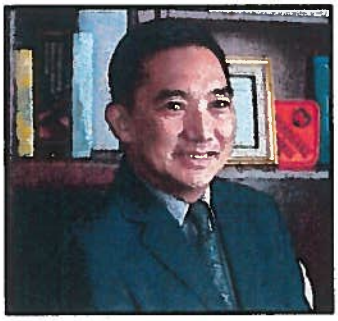
Mr. Mark Miller, P.E., T.E., Executive Vice President of AGA is a registered Civil and Traffic Engineer, with more than forty-three years of experience. As previously outlined, Mr. Miller will serve as a Project Advisor to the project team. He already is familiar of the areas of concern for this type of project and where feasible improvements could be accomplished and the areas where there will need to be a significant investment. Mr. Miller is a recognized expert in conducting traffic safety studies for municipalities across Southern California, and is regularly consulted by agency leaders, lawyers, and the press concerning matters of traffic safety. He has completed numerous traffic and transportation engineering projects and studies such as traffic signal and striping designs, review of traffic impact studies, speed zone surveys, and warrant analyses for removal of midblock crosswalks, and has made many presentations to Traffic and Planning Commissions and City Councils. Recently, Mr. Miller has led the AGA team on important safety studies in the Cities of Fountain Valley, Placentia, Redlands, Fullerton, and Huntington Beach. Mr. Miller presently serves as Contract Traffic Engineer for the City of San Dimas. With Mr. Miller's knowledge of the City and understanding of the constituents, addressing the areas of concern and developing the necessary countermeasures will be vital in this project.



Mr. Ignacio Sanchez, Senior Transportation Engineer for AGA is a registered Civil Engineer. Mr. Sanchez has twenty-five years of experience in the investigation and design of traffic controls. Mr. Sanchez has designed and/or modified hundreds of traffic signals and has prepared hundreds of signing/striping plans throughout Southern California. His duties at AGA include coordination timing plan development, CAD design, field topo and preparation of engineers cost estimates on projects relative to traffic signals, signing & striping, street lighting and conceptual improvement plans. Mr. Sanchez was the Project Manager for the City's HSIP Stewart & Gray Road Fiber-Optic Traffic Signal Communications and Upgrades Project. Mr. Sanchez extensive experience also includes the City of Rialto's left-turn phase and intersection improvement upgrades of four signalized intersections project. Additionally, Mr. Sanchez has prepared plans for both Caltrans and other government agencies such as the County of Riverside, County of Los Angeles, City of Riverside, City of Santa Clarita and City of Victorville, and for private developers such as Home Depot, Rite Aid, and CVS.



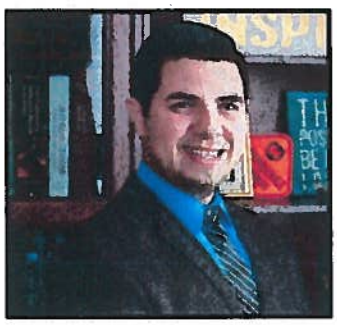
Mr. Ruben Perales, P.E., T.E., Senior Design Engineer, will lead the efforts in Systemic Analysis and Reporting. Mr. Perales has ample experience in performing a wide variety of traffic engineering tasks, as well as providing leadership on many projects. His duties at AGA include conducting traffic signal system inventories, conducting traffic signal operations studies, developing transportation designs and preparation of engineering cost estimates for projects relative to traffic signals, signing and striping, street lighting, fiber-optic communications, ITS systems and conceptual improvement plans. Mr. Perales has prepared design plans and overseen construction of ITS system improvements for multiple OCTA-led and city-led corridor projects, including Adams Avenue, Alicia Parkway, Baker Street-Placentia Avenue, Irvine Center Drive/Edinger Avenue and Malvern Avenue/Chapman Avenue corridors. He has worked on multiple TSSP projects throughout Orange and Los Angeles Counties. Mr. Perales also provided design plans including PS&E packages, and construction support and was instrumental in the competition of the following HSIP projects: City of Huntington Beach HSIP Goldenwest St/Heil Ave, Newland St/Slater Ave, Newland St/Ellis Ave Traffic Signal Modifications Project, City of Downey HSIP Stewart & Gray Road Fiber-Optic Traffic Signal Communications and Upgrades Project, and the City of Rialto HSIP Cycle-8 Protected Left-Turn Signal Phasing Project.



Mr. Roland P. Hizon, Senior Project Engineer, has over 30 years of professional engineering experience covering the design and modification of traffic signals & interconnect communications, roadway signing & striping plans and Intelligent Transportation Systems (ITS) for various cities and counties in California. Currently Mr. Hizon has been assisting local governmental agencies in securing federal and state-funded grants, including SSARPs, HSIPs and OCTA's Comprehensive Transportation Funding Programs (CTFP). Mr. Hizon was project lead on the Systemic Safety Analysis Report Programs (SSARP) projects for the Cities of Fountain Valley, Placentia and Redlands. He conducted collision analysis, identified roadway safety issues, and developed systemic, low-cost safety improvement programs. From the SSARP findings, Mr. Hizon assisted the cities in applying and securing implementation funding from the Highway Safety Improvement Program (HSIP). The City of Fountain Valley was awarded $1.9 Million, Placentia was awarded $1.2 Million and Redlands was awarded $ 250,000 to implement their safety improvement programs. He has also assisted agencies in the entire project implementation, completion and funding close-out of the same government funded grants. Since 2011, Mr. Hizon and the AGA Team have developed multiple OCTA Regional Traffic Signal Synchronization Program (RTSSP) grants for Fullerton (10 corridors, project cost - $15MM) and the City of La Habra (4 corridors, project cost – $7MM), to name a few. For this project, Mr. Hizon will be the task lead for the Data Collection and Operational Analysis and will be responsible for collecting and analyzing the safety data that will identify the steps to reduce the traffic accident fatalities and serious injuries on all public roads within the City. This analysis will be the foundation for which to develop the City's Local Roadway Safety Plans.

Ms. Yolanda Cervantes, E.I.T. develops design plans for new signalized intersections, traffic signal modifications, and signal interconnect projects. She conducts field topographic surveys to develop design plans, incorporates Caltrans Standard Plans to update signal hardware to current standards, and assists in the preparation of plans, specifications and estimates (PS&E). Recently, she gained experience as a project leader for various smaller projects and has become a reliable liaison with government and private agencies. Recently, she worked on the SSARP safety assessment project in the City of Placentia. In addition, she designed various safety improvements including left-turn phasing designs, roadway re-striping plans and other traffic signal modifications. She also worked extensively on the HSIP funded traffic signal projects for City of Rialto. Ms. Cervantes also assisted in implementing HSIP funded safety improvement projects in the Cities of Downey and Fountain Valley and has assisted in designing safety improvements for multiple corridors in the County of Los Angeles. Ms. Cervantes also performed citywide date collection, field reviews, roadway and signal analysis and provided recommendation for the safety analysis report of the Citywide SSARP for the City of Placentia.

Ms. Jessica Espinoza, E.I.T. typically performs sight distance analysis and traffic signal warrants, along with other field studies including crossing guard studies, traffic impact studies, and traffic operations analysis. She has conducted field topographic surveys required to develop design plans for improving intersection safety and updating signal hardware to current standards. Recently, Ms. Espinoza was instrumental in the design efforts for the multi-million-dollar traffic signal safety and communications improvement project on Central Avenue in the City of Montclair. Ms. Espinoza also assisted in implementing HSIP funded safety improvement projects in the Cities of Downey and Fountain Valley and has assisted in designing safety improvements for multiple corridors in the County of Los Angeles.



Mr. Andrew Luna, E.I.T. duties typically include responding to city traffic requests, conducting traffic warrant analyses, stop sign warrant analyses, and sight-distance analyses for local city clients. Additionally, he assists in traffic signal design, completes neighborhood traffic studies, and monitors traffic signal timing and coordination in the field. Mr. Luna has worked with Mr. Wong directly on signal improvement and timing projects for over 150 intersections. He has also identified various safety improvements in the City of La Habra. He has also assisted in designing safety improvements for multiple corridors in the County of Los Angeles. He recently completed pedestrian safety studies for the Santa Monica Boulevard/Robertson Boulevard intersection in West Hollywood. This project led to the implementation of the region's first part-time exclusive pedestrian interval—an innovative design that enhanced pedestrian safety and improve mobility at this busy intersection with heavy congestion, turn movements, and pedestrian activity. Additionally, he assists in traffic signal design, completes neighborhood traffic studies, and monitors traffic signal timing and coordination in the field.

Ms. Yolanda Cervantes, E.I.T., Ms. Jessica Espinoza, E.I.T., and Mr. Andrew Luna, E.I.T., are skilled Associate Transportation Engineers who have extensively worked with Mr. Wong, Mr.

Perales and Mr. Sanchez on traffic signal, detection and communications designs for hundreds of traffic signals in Southern California in the past five years.

SECTION 3: RELEVANT FIRM EXPERIENCE

AGA staff has been providing Professional Transportation and Traffic Engineering Services to both private and public sectors for 25 years. Through the use of today's most sophisticated equipment, employed by highly skilled and experienced professional engineers and technicians, AGA is able to provide its clients with a wide range of services—from the planning and conceptual design stage through construction supervision and the "as-built" stage. AGA has recently completed similar traffic safety studies for the cities of Fountain Valley, Placentia, Rialto and Torrance. Due to our years of experience, AGA staff is proficient at identifying traffic safety issues through systemic safety analysis techniques and comprehensive field investigations—enabling AGA engineers to: discover the risk factors for, and root causes of, collisions occurring on major corridors; prioritize mitigations; and make common-sense, **low-cost safety recommendations** to address those factors and causes. AGA's extensive experience in analyzing roadway safety issues includes analyzing collision data impacting pedestrians and bicyclists and promoting best practices design solutions to create complete streets that are safe and enjoyable for all users.

Licensed Civil Engineer Staff

AGA personnel include licensed Civil and Transportation Engineers, as well as skilled traffic signal system and communications technicians, all with several decades' experience—allowing us to quickly get to the root of safety, planning, design and operational issues, and provide our clients with comprehensive, appropriate advice. Our executive staff is also comprised of engineers who have spent a large part of their careers in governmental service (both as City and State Traffic Engineers). This unique "hands-on" experience combined with municipal service means that AGA can provide feasible, common-sense projects that make a difference.

Experience Analyzing Safety Issues & Collision Data Impacting Bicyclists and Pedestrians

AGA has completed several systemic safety analysis projects in Southern California cities which were completed through State and Federal funding, including: assessments for left-turn accident rates and collisions, evaluating left-turn phasing operations and recommending mitigation measures for the City of Fountain Valley; citywide evaluations of pedestrian/bicycle and vehicle collisions, reviewing signage and existing safety measures, and recommending improvements in infrastructure for the City of Placentia; and citywide safety study with traffic signal evaluations for the cities of Redlands and Rialto with SSARP funds.

Preparing Countermeasures

AGA has several years' experience completing Citywide Safety studies (in the Cities of Inglewood, Downey, Palm Springs, La Habra and Montclair to name a few) to assess citywide collision records in order to determine prevalent collision patterns and location frequencies for the development of recommended countermeasures, most of which were funded by the California Office of Traffic Safety grant funds.

Benefit/Cost Analysis Following HSIP Guidelines

The projects wherein we were contracted to perform functions in keeping with SSARP guidelines have also allowed our staff to provide valuable assistance to our clients in securing HSIP funding. Our staff has assisted municipalities in drafting SSARP and HSIP applications and performed

benefit/cost analyses adhering to reporting and invoicing guidelines of both programs. Our past experiences in supporting state and federal grant-funded projects also informs our team of the assistance necessary with project close-out—ensuring appropriate documentation and providing assistance in the event of an audit.

Past Experience of the Staff and Years as a Transportation Consultant

Our staff's experience in performing services similar to those requested for this project are identified, and our team is currently involved with additional SSARP funded projects in Southern California. In addition, as a full-service transportation engineering consultant, our staff has over 30 years of providing services similar to the ones requested for this LRSP project. All projects listed were completed on time and within budget.

Experience with the City

Our project team has successfully worked with the City of Garden Grove on past projects. AGA assisted the City on the various speed surveys starting in 2008. Additionally, our team developed and implemented traffic signal timing plans and traffic signal coordination improvements on Valley View Street, Garden Grove Boulevard and Euclid Street. Our previous experience working with the City will ensure seamless, successful completion of the proposed Local Roadway Safety Project.

References

City of Fullerton
Traffic Signal Priority Study

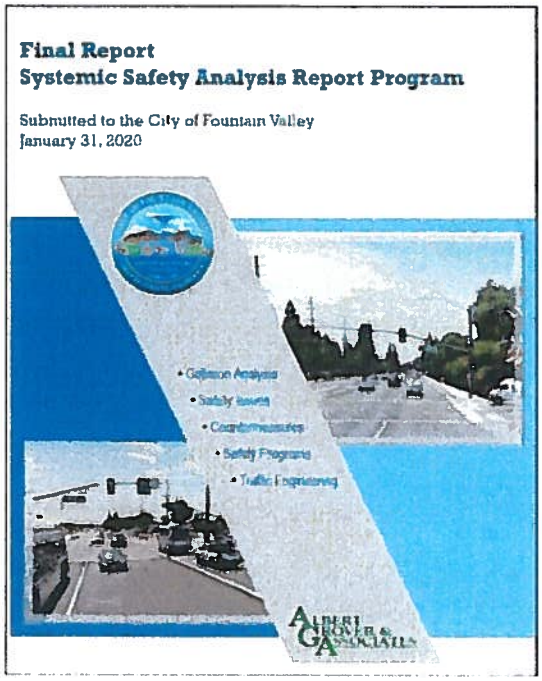
The study evaluated the City's highest incidence/collision locations using the City's Crossroads Program. The analysis considered various factors such as pedestrian volumes, traffic volumes and patterns, number of collisions, type and severity, and developed safety recommendations including installation of traffic signals. Signal warrant studies were conducted for the project intersections.

Years Completed: 2007, 2012, and 2017
Total Cost: $15,500
Reference: Mr. Dave Langstaff, Senior Traffic Engineering Analyst
City of Fullerton, 303 West Commonwealth Avenue, Fullerton, CA 92832
(714) 738-6858, DaveL@ci.fullerton.ca.us
Project Team Staff: Mark H. Miller, Greg Wong

City of Fountain Valley
Citywide SSARP Project

AGA staff has been providing On-Call as needed traffic engineering services for over a decade to the City. Services include both remote and on-site monitoring; development, implementation, and fine-tuning of weekday and weekend coordination traffic signal timing plans citywide; signal warrant analyses; conducting speed surveys and development of recommendations for raising/lowering speed limits; designing both new and modified signal installations; and interagency coordination with adjacent cities and Caltrans. Most recently AGA completed a Citywide Emergency Vehicle Preemption Study and a federally funded Citywide SSARP project. The SSARP project conduced an evaluation or engineering operation at 28 existing PPLT signalized intersections. The study evaluated collisions to identify targeted modifications in traffic

controls and safety improvement projects that could be implemented to address elevated collision rates along roadways and at intersections. This report highlights the findings and recommendations of that study effort and provides the City with a prioritized list of potential safety improvement projects that could be eligible for future grant funding. The systemic analysis conducted as a part of the assessment, pinpointed the highest occurring collision types, identified high-risk corridors and intersections, and determined appropriate countermeasures. Engineers then conducted comprehensive field investigations in order to determine potential traffic control measures and safety improvements specifically designed to reduce the likelihood of future crashes. Ultimately a prioritized list of recommendations was developed, and cost estimates determined.



Year Completed: 2020
Total Cost: $245,132
Reference: Mr. Temo Galvez, Director of Public Works/City Engineer
City of Fountain Valley, 10200 Slater Avenue, Fountain Valley, CA 92708
(714) 593-4517, temo.galvez@fountainvalley.org
Project Team Staff: Mark Miller, Chalap Sadam, Greg Wong, Ignacio Sanchez, Ruben Perales, Roland Hizon, Andrew Luna, Jessica Espinoza, Pauline Bingham

City of Newport Beach
Balboa Peninsula Pedestrian Safety Study

This project included the review of City collision records, existing traffic controls, gathering of traffic data, conduct of engineering assessments, and the recommendation of various low-cost safety enhancement projects.

Year Completed: 2017
Total Cost: $84,000
Reference: Mr. Brad Sommers, Senior Civil Engineer
City of Newport Beach, 100 Civic Center Drive, Newport Beach, CA 92660
(949) 644-3326, bsommers@newportbeachca.gov
Project Team Staff: Mark H. Miller, Yolanda Cervantes, Andrew Luna

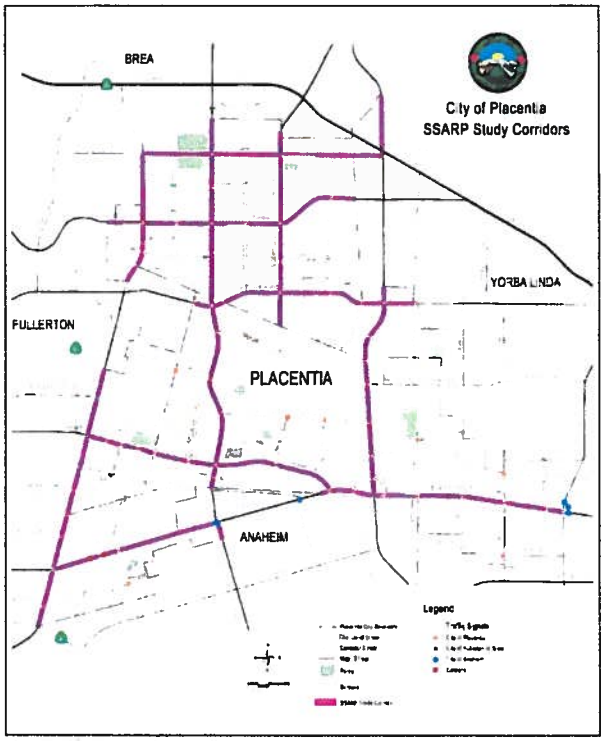
City of Torrance
Left-turn Safety Review

The project involved conducting a study of left-turn phasing upgrades to increase the operational capacities while maintaining safe operation and reducing left turn delays. It included review of collision data, conducting an engineering operations, sight distance field evaluation, and safety evaluation.

Year Completed: 2017
Total Cost: $199,072
Reference: Mr. Steve Finton, Engineering Manager
City of Torrance, 3031 Torrance Boulevard, Torrance, CA 90503
(310) 618-6260, sfinton@torranceca.gov
Project Team Staff: Mark Miller, Greg Wong, Ruben Perales, Pauline Bingham

City of Placentia
Citywide SSARP Project

As a part of the Caltrans funded Systemic Analysis Report Program (SSARP), the AGA Team conducted a citywide assessment of collisions to identify targeted modifications in traffic controls and safety improvement projects that could be implemented to address elevated collision rates along roadways and at intersections. The systemic analysis conducted as a part of the assessment, pinpointed the highest occurring collision types, identified high-risk corridors and intersections, and determined appropriate countermeasures. Engineers then conducted comprehensive field investigations in order to determine potential traffic control measures and safety improvements specifically designed to reduce the likelihood of future crashes. Ultimately a prioritized list of recommendations were developed and based on the analysis and assessments conducted, the project team developed a total of 46 project recommendations.



Year Completed: 2019
Total Cost: $165,000
Reference: Mr. Luis Estevez, Acting
Deputy City Administrator
City of Placentia, 401 E Chapman Avenue, Placentia, CA 92870
(714)993-8148, lestevez@placentia.org
Project Team Staff: Mark Miller, Chalap Sadam, Greg Wong, Roland Hizon, Yolanda Cervantes

SECTION 4: UNDERSTANDING OF THE PROJECT AND APPROACH

Approach & Methodology

AGA staff's valuable familiarity with the project area and an enthusiasm for the improvements that could be gained through this LRSP study will be very helpful to the City of Garden Grove. We are very proud to be part of the effort to enhance safety and effective access to all roadway users in the City. Federal regulations require that each State have a Strategic Highway Safety Plan (SHSP), which is a traffic safety plan that coordinates the efforts of a wide range of organizations to reduce fatalities and injuries from traffic accidents. A LRSP can be a means for providing local road owners a way to address unique highway safety needs within their jurisdictions. The LRSP creates a framework to systemically identify and analyze problems and recommend safety improvements.

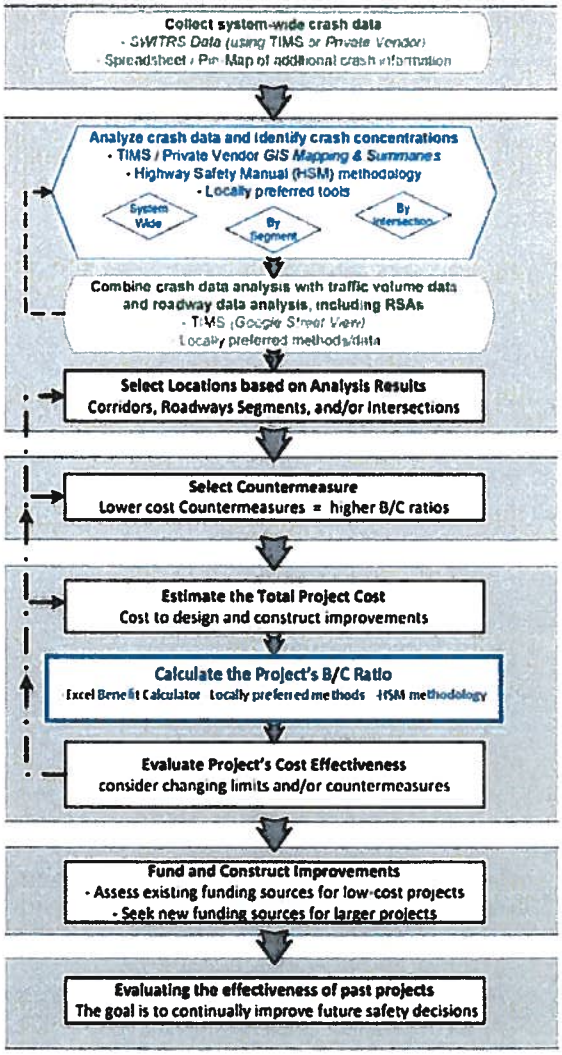
The intent of LRSP funding is to assist local agencies in performing collision analysis, identifying safety issues on roadway networks, and developing a list of systemic low-cost countermeasures to be used to prepare future Highway Safety Improvement Program (HSIP) and other safety programs. Although traffic collision data and benefit/cost evaluations can be a "numbers game" when it comes to funding, our team understands that behind every collision is a human story which deserves a thorough examination in order to discover the root cause of why the collision occurred. It is this deeper understanding of collision patterns that is our primary focus. We don't indiscriminately recommend generic traffic safety projects because they "could" work. It is from our deeper understanding of human behavior and the root causes of accidents that we recommend customized safety improvement projects that are truly successful. It is through many years of experience reading CHP 555 traffic collision reports and conducting safety reviews for cities across Southern California that our engineers can recognize issues or collision patterns that others simply don't see or perceive. It is this detailed persistence that is the hallmark of our approach to safety reviews.

The overall plan will include the following.

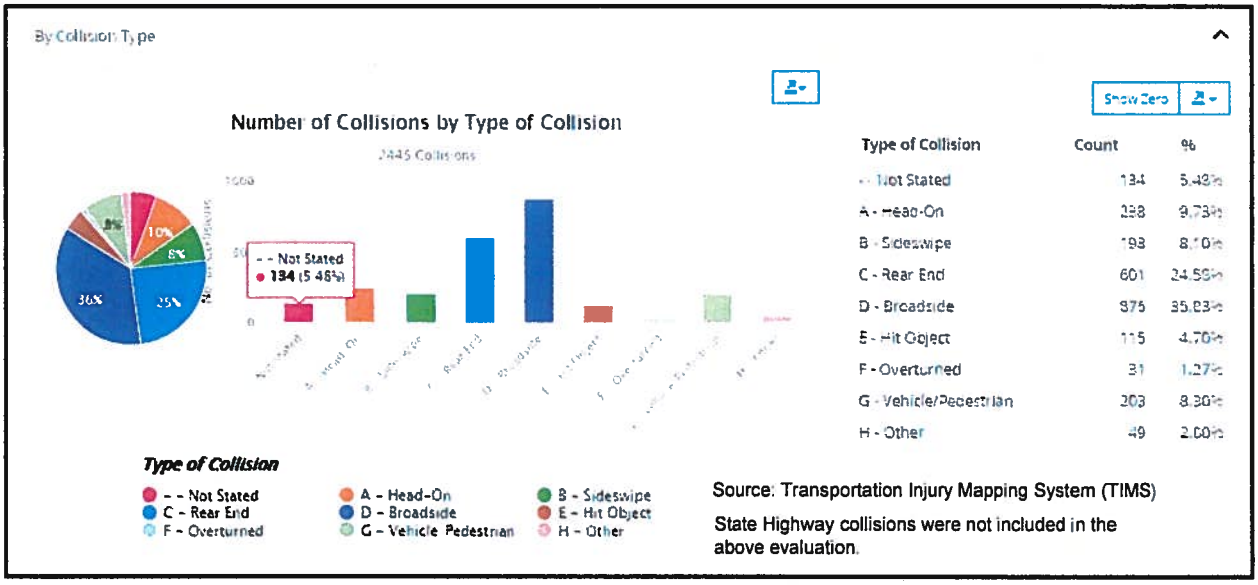
- Engage Stakeholders
- Develop a Working Group and a Champion
- Identify and Prioritize Projects
- Identify Funding Mechanisms and Allocate Appropriate Resources
- Undertake Project Delivery
- Conduct Evaluation of the Success of the Implemented Improvements
- Continue Communication and Coordination to Maintain/Update the Plan

While the State requirements for HSIP grants are rigorous, we have considerable experience in successfully assisting cities in obtaining Caltrans approvals and implementing various safety improvements. We have successfully assisted the cities in the environmental process, Caltrans E-76 authorization for design and construction, and the reimbursement process involved in the HSIP grant funded projects. AGA will coordinate with City staff on explaining all steps and procedures of the Final Plan in order the City to better compete for future Caltrans calls-for-projects. The flow chart to the right provides the overall approach for this plan.

Proactive Safety Analysis Approach



In reviewing the Statewide Integrated Traffic Records System (SWITRS) collision data available through the Transportation Injury Mapping System (TIMS) website, it appears that there were 39 fatal and 128 severely injured collisions in City of Garden Grove within the past five years. AGA proposes to conduct a safety review of the latest available five years' worth of SWITRS information, which is currently available up to December of 2019 with preliminary, or provisional, data available up to June of 2020. In reviewing the collision data for January 2015 through December 2019, it appears that broadside collisions, at about a 36% rate of all collisions, are the most prevalent type followed closely by rear end involved collisions at a rate of 25%. In reviewing the number of collisions by the Primary Collision Factor (PCF) violation, automobile right of way (26%), unsafe speed (22%) and improper turning (14%) were the highest percentage of PCF violations. Collision data by type from TIMS is shown below. It is clear to us that there is sufficient collision data available to determine predominate types and patterns of collisions which could be addressed through a series of traffic safety improvement projects.



AGA will coordinate with the City on what the focus or emphasis areas (type of collisions and strategy) should be primarily studied using the 4 E's of traffic safety – Engineering, Enforcement, Education, and Emergency Response. The areas may differ based on concerns from different stakeholders and/or the community. AGA will work with the City to develop a working group that includes stakeholders and a "champion", which will be a person(s) that is willing to be engaged in the plan from the beginning and continue it into the future to ensure that it will be maintained and updated.

Once we have documented the safety performance of the City's roadway network, and have a thorough understanding of the types and patterns of collisions in the City, our engineers will develop a customized list of low-cost traffic safety improvement projects. We anticipate that some recommendations could be citywide in nature, but most will be location specific. Many times just a small change can have a significant result.

Since collision data is readily available on-line from SWITRS, and all other roadway characteristic data needed for the analysis will be gathered by the project team, we do not foresee any reason that completion of the study effort would be unduly delayed since the vast majority of the work is data gathering, analysis, and engineering evaluation which is not dependent on others outside the project team. Commission and City Council meetings could potentially introduce scheduling

delays due to other political priorities, or if either political body requests additional information, more analysis be conducted, or a change in recommendations before voting to concur with the study report. Should either political body request a continuance for more discussion, changes to the report, or additional information, we will, at the direction of the City, perform the additional work and return for a follow-up meeting at no additional charge to the City.

It is anticipated that all study work can be completed within 12 months of receipt of a formal Authorization to Proceed. Upon receipt of Authorization to Proceed, AGA will prepare a more detailed project schedule that includes start dates, activity durations, and product submittal dates. Based on our extensive experience in conducting safety studies, a preliminary review of SWITRS collision information, and a review of the City's Scope of Services, we have developed a Scope of Services consisting of six tasks, which are outlined on the following pages.

To summarize, a successful implementation of the LRSP will include the following.

- Approval of an implementation plan
- Execute safety projects/programs
- Deploy proven countermeasures
- Integrate 4E solutions
- Change agency policies and practices
- Reduce fatalities and serious injuries

Example Focus Crash Type	Potential Risk Factors
Rural Crashes	
Road Departure	• Road edge condition • Access density • Curve density • Traffic volume
Road Departure in Horizontal Curve	• Curve radius • Speed differential (from tangent approach) • Visual trap • Intersection in the curve • Traffic volume
Intersection	• Skewed approach • Proximity to horizontal and/or vertical curve • Presence of commercial development • Proximity to at-grade railroad crossing • Traffic volume • Distance from previous controlled intersection
Urban Crashes	
Pedestrian	• Intersection control type • Major road characteristics (e.g. number of lanes, divided or undivided) • Traffic volume • Traffic speed • Presence or proximity of pedestrian generator • Presence or proximity of transit stop • Presence of sidewalk
Intersection	• Left or right turn lanes • Left-turn signal phasing • Right-turn-on-red • Red-light enforcement • Intersection control • Number of lanes on major approach • Divided or undivided • Lighting • Traffic volume • Speed

Potential Risk Factors for Example Focus Crash Types

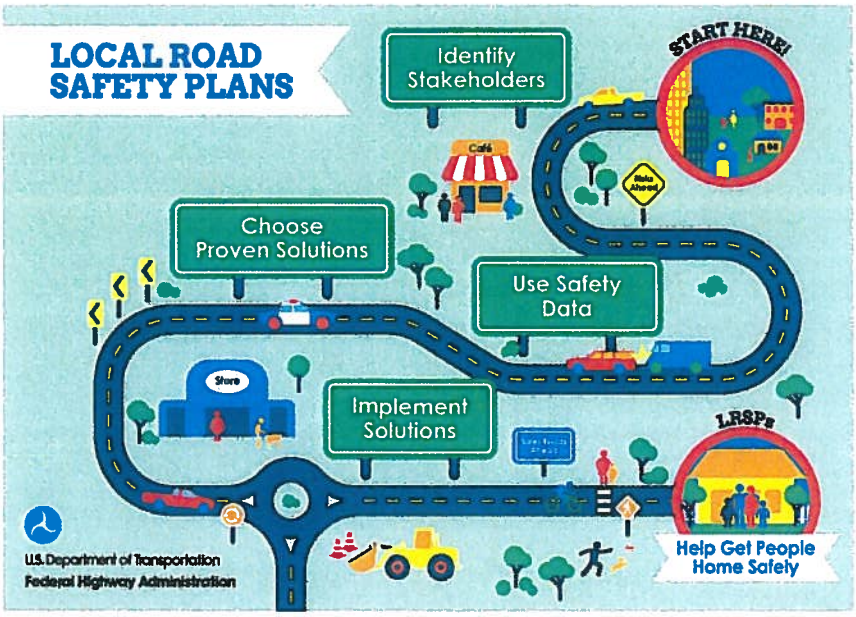
SECTION 5: SCOPE OF WORK

Task 1: Project Management/Coordination

AGA will identify and contact the various stakeholders to develop a working group. This group could include first responders (police and fire departments), transportation providers (buses, taxis, Uber, etc.) schools (both public and private) and school districts, businesses, residents, etc. Once the working group is assembled, it will work together to identify high need areas and priorities, establish visions and goals, review potential solutions and countermeasures, and prioritize implementation plans. AGA will lead all working group meetings.

Establish Leadership

The LRSP creates a framework to identify and analyze safety problems and recommend safety improvements. It creates a greater awareness of road safety and risks by providing a framework



for the City to identify, analyze, and prioritize safety improvements on its local road system. The results of the LRSP is to assist local agencies in developing a list of systemic low-cost countermeasures to be used to prepare future Highway Safety Improvement Program (HSIP) and other safety programs. AGA recognizes that for the program to be successful, the LRSP will need a "champion", someone or multiple people that will lead the initiative of the program from the beginning and carry it forward into the future after the implementation of the improvements. The champion could be City staff, commissioner and/or council member, or even a local resident. AGA will work with the City on determining a champion to lead this effort.

In the initial steps of the LRSP development, AGA will identify and contact the various stakeholders (includes City staff) to develop a working group. This group could include first responders (police and fire departments), transportation providers (buses, taxis, Uber, etc.) schools (both public and private) and school districts, businesses, residents, etc. AGA staff will work with all stakeholder to fully understand where their concerns are throughout the City. Once the working group is assembled, the person(s) chosen to be the champion will lead the group and will work together to identify high need areas and priorities, establish visions and goals, review potential solutions and countermeasures, and prioritize implementation. The working group should have a strategic vision and common goal and adopt it as part of their plans moving forward. A goal could be as simple as to significantly reduce the number of fatality and seriously injured collisions along the City roadways. The plan will also need appropriate resources so that the working group could ensure it is successfully implemented and maintained. Once the LRSP is established, AGA will coordinate with the working group to schedule a regular review of the plan and to evaluate the effectiveness of the plan. An evaluation matrix will be developed to assist the City and the working group in monitoring the number of collisions after an improvement/strategy has been implemented. It is essential to maintain the monitoring of the plan. Not only will the monitoring evaluate how well the plan's improvements are working, but the monitoring will keep the working group and stakeholders engaged for long term success. There could also be new legislation, technologies, guidelines and developments that could improve the LRSP, which the working group would be able to incorporate and update the plan. AGA will lead all working group meetings.

Coordination with City staff and the working group will be key in every step of the process. Brief progress meetings, either in person or over the phone, will be held with City staff on a regular basis during the course of the study effort. Additionally, AGA will fully leverage the administrative team's experience in managing the project, including project budget control and invoicing, tracking the project schedule, regular project updates and progress reports, agency comment dispositions, and document control and filing. An estimated payment schedule listing the estimated completion

of milestones/ deliverables, along with estimated dollar amounts, will be provided with each progress report and/or invoice.

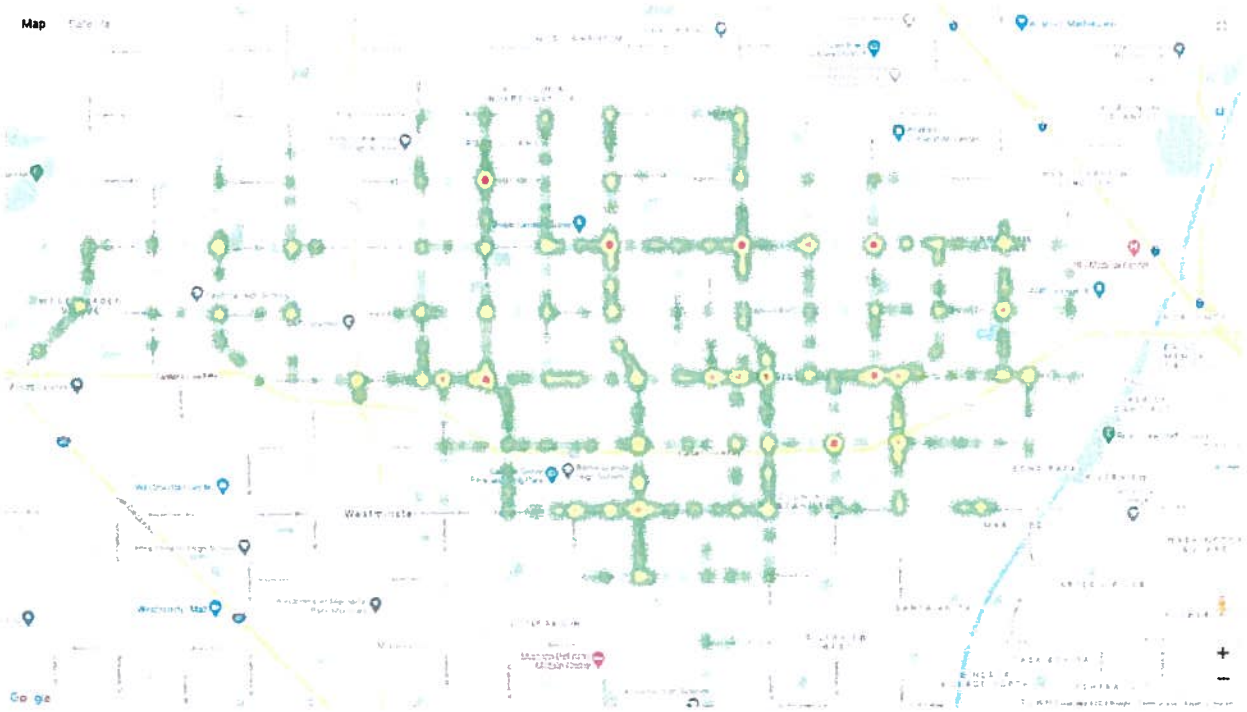
The Project Manager will conduct a project kick-off meeting with the City to discuss and finalize project objectives, the scope of work, the project schedule, and various budget factors. Since this initial meeting sets the stage for the entire project, the Project Manager and Task Leaders will be in attendance at the meeting. In addition to the project kick-off meeting, Task Leaders will be made available periodically to meet with the City and/or working group to present and discuss the study progress, findings, recommended solution concepts, receive direction, and obtain feedback and City approval throughout the project. After City and the working group's review of the LRSP, AGA will address all comments and provide a final LRSP.

Deliverables:

- Meeting agendas and minutes for all meetings
- Project Schedule (Microsoft Project format) and updates

Task 2: Crash History Assessment

AGA will review all data collected, programs, policies, and activities as well as the City's General Plan, Garden Grove Municipal Code (DMC), supplemental planning documents, policies, and programs and provide a brief summary of current efforts to address transportation safety measures. The summary will be included in the final LRSP and will explain what the current process/steps are being utilized to address the 4 E's of traffic safety and what also could be added or updated in the ongoing efforts.



Traffic Collision Heat Map from the Transportation Injury Mapping System (TIMS) of the City of Garden Grove in the most recent 5-years

The goal of this systemic safety analysis will be to pinpoint the highest occurring crash types and high-risk corridors and intersections. A minimum of 30 top high collision locations will be identified. We will determine the high-risk corridors and intersections with the highest number of collisions.

The high collision-prone locations in the City will be evaluated for countermeasures. It is important to provide a contextual comparison of the number of collisions occurring along a corridor, or at an intersection, by also comparing collision rates based on traffic volume. We will determine corridor or intersection collision rates based on gathered traffic volumes or rates published in current speed surveys.

In order to gain additional insight into the root causes of collisions along collision-prone corridors or intersections, we will request, through the Garden Grove Police Department, to review selected California Highway Patrol (CHP) 555 collision reports. We believe that reviewing the actual collision reports is the best way to fully understand the nature of the collisions. When available, those reports can provide valuable insight to the details and potential causes or contributing factors of collisions not captured in the standardized SWITRS formatted information. It is the similarities and patterns found from reading the individual collision reports that can provide clues to possible counter measures that would reduce the likelihood of future accidents. We understand the sensitive nature of the information contained within the 555 reports, and we will not release or compromise the confidential information contained within those reports.

The Project Team will organize and categorize the collision data into tables and figures which can be easily understood by engineers, City staff, politicians, and the public. In addition, graphical and mapping exhibits showing high accident concentrations, as well as collision by characteristics, will be produced. All of the data/information compiled will identify the High Crash Concentration Locations (HCCL's) and what may be the cause of the collisions. All tables, charts, graphics, and maps will be created in a format for inclusion in the final report which can also be easily reproduced by City staff if so desired. We will prioritize specific corridors and intersections based on their crash history and presence of risk factors that indicate an increased risk for continued high frequency and severity of crashes. It is the determination of these high-priority locations that will be the focus of further detailed analysis included in Task 4.

In conducting the systemic analysis, the five most recent complete years of crash data from Crossroads, SWITRS and TIMS will allow us to effectively and efficiently map the injury and fatal crashes. Data analysis will document the findings which will include trends/patterns in crash type, crash severity, driver factors, roadway classification/features, vehicle factors, and environmental conditions. A few factors in the roadway features could include, traffic volumes, roadway cross-sections, speed limits, intersection control and visibility, street lighting, school/high pedestrian areas and left turn/side street sight distances. If there are known areas of concerns that do not have readily available collision data, then other sources of data will be evaluated, such as; traffic citations, traffic counts, hospital records, insurance claims, road safety ratings information and discussions with the working group and/or the residential community. Areas with similar characteristics to an area with high collisions could also be evaluated as to why there are less collisions in those areas. Traffic operational reviews may also be needed to assess the cause of the collisions. The operational reviews may include review of traffic controls and lighting, review of signing and striping, review of crosswalks and their visibility, observe traffic and pedestrian activity, and determine compliance with current traffic engineering standards per the latest California Manual on Uniform Traffic Control Devices (CAMUTCD). All of the above mentioned findings will be used to determine the locations for the safety countermeasures.

Deliverables:

- Draft and Final Crash History Assessment memos

Task 3: Field Visits

In the development of traffic signal improvement plans, it is imperative to have appropriate intersection equipment inventory, geometrics, signal phasing, and understanding of the existing traffic signal system, communication equipment and its capabilities, and identification of operational deficiencies. On similar projects, AGA has completed a detailed field inventory of project signals (over 1,000) on a large number of intersections throughout Orange County, Los Angeles County, Riverside County, and San Bernardino County. For this project, the field data inventory will be directly overseen by AGA's Project Manager so that the prevailing conditions in the project area are better understood by all team members.

Example of Field Visit

Due to our previous work in the City, we are very familiar with existing conditions at many of the intersections throughout the City, and will conduct field visits at various high crash locations to observe traffic patterns and roadway characteristics. AGA will summarize the crash activity, physical characteristics, relevant behavioral and social economic context, and likely factors that contribute to crashes at a particular location. AGA is very capable of providing the City with quality field review services. Utilizing information gathered during the field review as well as available record drawings, AGA will develop appropriate countermeasures.

Deliverables:

- ✓ Field Review Notes

Task 4: Countermeasure Development

AGA will select the most feasible and cost-effective countermeasures, Crash Modification Factors (CMF's) and Crash Reduction Factors (CRF's) to mitigate the problems and safety concerns identified.

AGA will identify high need areas and establish goals and specific countermeasures to confront safety issues based on the trends observed as part of the data analysis. These countermeasures will include the 4E's of traffic safety – Engineering, Enforcement, Education, and Emergency Response. AGA will use a variety of resources when selecting effective and cost-efficient countermeasures such as: Federal Highway Administration (FHWA), Highway Safety Manual (HSM), National Highway Traffic Safety Administration (NHTSA), Crash Modification Factors (CMF) Clearinghouse, etc.

After the high-priority corridor and intersections have been identified, the project team will work together to determine a set of potential safety improvements to reduce the likelihood of future collisions. Individual elements of standard safety improvements are referred to as countermeasures, and most countermeasures have corresponding Crash Modification Factors (CMFs). Crash Reduction Factors (CRFs) are directly connected to the CMFs and are another indication of the potential effectiveness of a particular treatment. The CRF's are measured by the percentage of crashes the specific countermeasure is expected to reduce. Selecting an appropriate countermeasure and corresponding CMF is similar to choosing the right tool for a job.

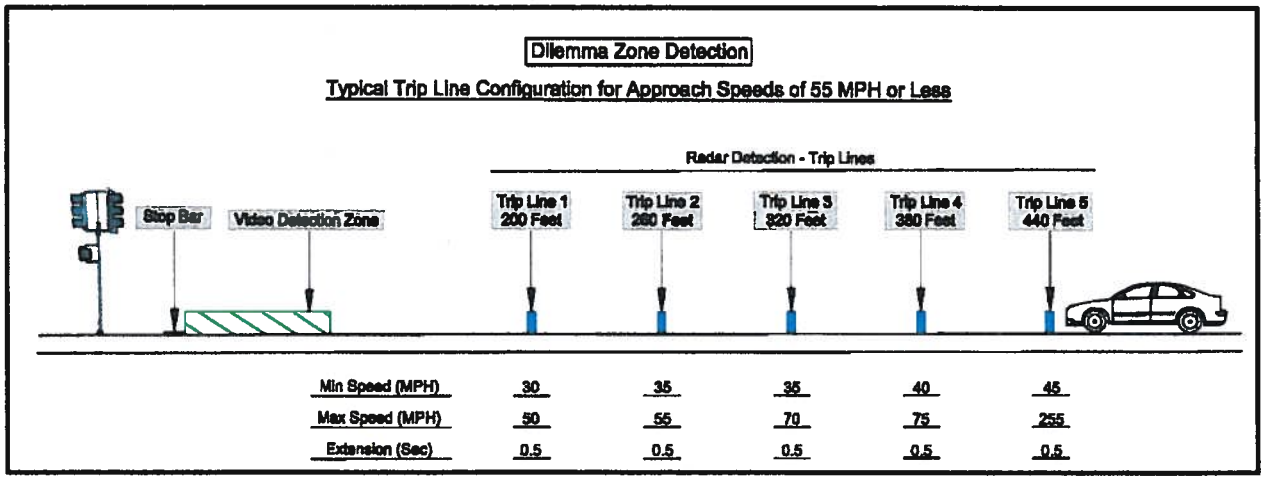
The Federal Highway Administration (FHWA) has identified three main considerations to assure appropriate selection of a CMF for a given countermeasure:

1. Availability of Relevant CMFs
2. Applicability of Available CMFs
3. Quality of Applicable CMFs

The project team has extensive experience in recommending various countermeasures at problem areas to reduce future collisions. Additionally, to ensure potential funding of recommended improvements via the HSIP, we will focus on those countermeasures that meet the funding criteria and are likely to be looked on favorably by the application evaluators. The following are examples of countermeasures that could be identified through the systematic analysis approach:

Signalized Intersection Countermeasures

- Improve signal hardware – lenses, retro-reflective back plates, mounting, size and number.
- Provide protected left-turn phase
- Upgrade vehicle detection to radar/video detection to reduce dilemma zone conflicts (see dilemma zone figure on the following page).
- Install flashing beacons as advance warning.
- Create directional median openings to allow (and restrict) left-turns and U-turns.
- Install pedestrian countdown signal heads.
- Install advance stop bar before crosswalk
- Install pedestrian channelization
- Upgrade/Install bicycle detection/timing
- Install additional pedestrian crossings



Non-Signalized Intersection Countermeasures

- Add intersection lighting
- Install/upgrade larger or additional stop signs or other intersection warning/regulatory signs
- Install flashing beacons as advance warning

- Create directional median openings to allow (and restrict) left-turns and U-turns
- Install raised medians/refuge islands (pedestrian/bike only)
- Install enhanced pedestrian crossing features, e.g. signs/markings, rapid rectangular flashing beacon or curb extensions, etc.
- Install pedestrian crossings at uncontrolled locations (signs and markings only)
- Install enhanced safety features at pedestrian crossings, including pedestrian signals

Roadway Segment Countermeasures

- Road diet (striping only).
- High friction surface treatment.
- Upgrade signing through Roadway Safety Signing Audit.
- Upgrade pavement markings through Roadway Safety Pavement Marking Audit.
- Install delineators, reflectors and/or object markers.
- Install guardrail and impact attenuators.
- Install bike lanes.
- Install centerline and edge line rumble strips/stripes.
- Install new sidewalks and/or pathways
- Install pedestrian crossings with enhanced safety features
- Install raised pedestrian crossings and pedestrian median fencings

An example of where some of these improvements could be implemented is at the intersection of Brookhurst Street and Westminster Boulevard. This intersection carries a high amount of traffic (vehicular and pedestrian) due to the crossing of the two major corridors. An improvement to increase the visibility of the traffic signal vehicle heads could be to add reflective yellow backplates. This has been shown to be very effective in decreasing collisions, especially during late night/early morning time periods. The crosswalks could be restriped to high visibility markings for better visibility of the pedestrian crossings. The figure below shows what these potential improvements could look like at this intersection.

Brookhurst St/Westminster Blvd – Potential Reflective Backplates and Crosswalk Enhancement

Deliverables:

- Draft and Final Countermeasure Development memos

Task 5: Implementation Program

Based on the data gathered, analysis conducted, and engineering evaluations, AGA will prepare a prioritized list of countermeasures that are expected to be successful in addressing demonstrated and potential future collision risks. It is anticipated that many of the countermeasures will fall into the category of minor low-cost safety enhancements or strategies that the City can be reasonably expected to implement over time without the need of significant grant funds. Examples of such countermeasures include minor signage, striping, or traffic signal modifications/timing at specific intersections or along short roadway segments. Generally, such projects will not require detailed or comprehensive design plans and could be implemented as a part of the City's operating budget. The engineers at AGA will develop either descriptive text or sketches as necessary for these minor safety improvement projects that will be of sufficient detail such that they can be used as "work orders" for implementation by City crews or contractors.

In addition to the low-cost safety improvements, it is anticipated that AGA will also identify countermeasures that will be of sufficient complexity or cost that they would best fit into the City's Capital Improvement Program. Such improvements generally are of larger scope and require detailed design plans and a construction contract for implementation. Alternatively, a number of low-cost safety improvements can be aggregated into larger programmatic measures that are more appropriate for the Capital Improvement Program and potential HSIP grant funding. Examples of such programmatic measures in the past have been projects to replace all walk/don't walk pedestrian indications at traffic signals in the City to countdown type indications or the conduct of pedestrian and bicycle safety training at schools. It is anticipated that the engineers at AGA will develop descriptive text clearly identifying the scope and extent of each of the recommended capital improvement projects as well as an order of magnitude cost estimate for each. The project team will also prioritize the various capital improvement projects into three categories (high priority, medium priority, and low priority) based on the following factors:

- Significance of Improvement
- Estimated Implementation Cost
- Ease of Implementation
- Feasibility
- HSIP Grant Competitiveness
- Anticipated Success Rate of Reducing Crashes
- Alternative Solutions

We recognize that we can't engineer out all collisions from the transportation network. However, some crash types and trends can be positively addressed through education, enforcement, and/or emergency services considerations. To be able to identify potential programmatic countermeasures or changes related to education, enforcement, and emergency services, we propose to provide a list of enforcement and educational strategies to be employed. The City could utilize these strategies with first responders, residents, local businesses and/or the school district.

Calculate Benefit/Cost Ratio

A Benefit-Cost Ratio (BCR) is an indicator of the relationship between the relative costs and benefits of a proposed project, expressed in monetary or qualitative terms. If a project has a BCR

greater than 1.0, the project is expected to deliver a positive net present value. The BCR is a key criteria for grant funding. It is critical that the BCR is calculated correctly. For Highway Safety Improvement Programs, the minimum federal reimbursement amount for a single project is $ 100,000. The amount was established to ensure the efficiency and cost-effectiveness of the overall program and individual projects. For all HSIP funding applications that involve a BCR, the minimum value of 3.5 is required.

Benefit-Cost Ratio Formula

$$\text{Benefit-Cost Ratio} = \frac{\text{PV of Expected Benefits}}{\text{PV of Expected Costs}}$$

***Note:** PV – Present Value*

As the BCR is the relationship between benefits and costs, a high BCR can be achieved by maximizing the benefits, low project cost or a sensible combination of both. An option would be to group together projects which can result in a high BCR value. AGA will prioritize the projects that will compete well for grant funding as well as compare cost effectiveness. We will determine benefit/cost ratios for each of the potential safety improvement projects. Based on the cost estimates, each of the projects will be ranked as to their anticipated competitiveness for future funding.

Identify Funding Sources to Implement Improvements

With the Local Roadway Safety Plan in place and safety improvement projects identified, analyzed and prioritized, AGA Engineers will work the City staff in identifying funding sources to construct these improvement projects.

There are federal/state funding programs that the City may apply for, including the following:

1. Highway Safety Improvement Program (HSIP) – The program is aimed at significant reductions in traffic collisions on all public roads resulting in fatalities and serious injuries. The purpose of the HSIP funding is for safety projects that can be designed and constructed expeditiously. The current HSIP Call for Projects (Cycle 10) was announced on May 5, 2020. The HSIP Calls are usually every 2 – 3 years. The next HSIP Call for Projects (HSIP Cycle 11) is expected to be announced around April 2022. As the HSIP projects are generally evaluated based on the Benefit/Cost Ratio (BCR), those with the highest BCRs will be chosen for funding application. Projects may likewise be funded if they fall under certain countermeasures or improvements where common roadway safety concerns are identified nationwide. These are called Funding Set-Asides. These types of projects do not require a BCR. The reimbursement ratio for Set-Asides is 100%.

   For HSIP Cycle 10, Funding Set-Asides include the following:

   - Guardrail Upgrades
   - Pedestrian Crossing Enhancements
   - Installing Edgelines

   An agency can submit only one grant funding application for each Set-Aside.

   In the last HSIP grant application cycle (Cycle 9), the AGA Project Team has successfully procured grant funding of approximately $1.9 million to the City of Fountain Valley, $1.3 million to the City of Placentia, and $250,000 to the City of Redlands.

2. Active Transportation Program (ATP) – The program is aimed at encouraging increased use of active modes of transportation, such as biking and walking. The program's objective is to increase the safety and mobility of non-motorized users. The projects identified for

ATP funding will have a transformative benefit to the community and significantly expand the active transportation opportunities in the City.

3. There could also be opportunities where an improvement from the LRSP may overlap with an existing Capital Improvement Program (CIP) project. It may be more cost efficient to include the safety improvement within the CIP improvement.

Currently, Senate Bill (SB) 99 specifies that at least 25% of ATP funds must satisfy certain conditions, including disadvantaged communities which are communities are areas that suffer from a combination of economic, health, and environmental burdens. They are specifically targeted for investments of proceeds from the State's cap-and-trade program. Once the LRSP is completed and a list of projects is established, AGA can assist City staff in completing grant funding applications for HSIP Cycle 11. This work would be separate from this study.

Deliverables:

- Draft and Final Improvement Program memos

Task 6: Local Roadway Safety Plan (LRSP)

AGA will develop the final Local Road Safety Plan for the City using information gained from previous tasks. AGA will prepare a Draft Study Report for City review as well as distributing it to the working group and/or the identified stakeholders. It will summarize the analyses, evaluations, investigations, and recommendations conducted as a part of the study effort. It will outline collision statistics, crash trends, collision prone intersections and corridors, and countermeasures considered. Also included will be complete documentation of the project including a discussion of study objectives, the study methodologies and findings, engineering evaluations and prioritization of recommendations, and conclusions. The report will present the findings and technical information in a manner that is easily referenced and understood through the use of maps, figures, and graphics. The final report will be primarily structured around addressing safety challenge areas outlined in the Strategic Highway Safety Plan (SHSP).

While much of the information contained in the report will have already been presented to City staff at periodic project meetings during the course of the study effort, the final report will combine the results of all of the individual study components into one technical document. We will incorporate all comments, recommendations, and suggestions from City staff and the working group into the final project report.

The final LRSP will also include an evaluation matrix that will allow for future evaluation once an improvement is constructed and compare it against the pre-construction data that was collected in the LRSP. Included in the matrix will be the necessary parameters Caltrans requires once an improvement is constructed. A sample of the matrix for a single location is shown to the right. The Caltrans evaluation process analyses collisions three years after the construction of the improvement. Most likely collisions within a year after the construction will not be readily available via SWITRS until sometime. In

Agency, Project Location: City, Main St at 1st Ave
Description of Work: Upgrade traffic signal; install protected left turn phasing
HSIP Funds Obligated/Total Project Cost: $190,000/$210,000
Counter Measure: S6

Date	Severity of Collision				
	Fatal*	Severe*	Other Visible Injuries	Complaint of Pain Injuries	Property Damage Only (PDO)
Year 3 Before: July 1, 2012 - June 30, 2013					
Total	0	0	1	4	0
Year 2 Before: July 1, 2013 - June 30, 2014					
Total	0	0	0	4	4
Year 1 Before: June 30, 2014 - July 1, 2015					
Total	0	0	1	3	1
[redacted]	3 Months Prior to Construction		1		1
Construction October 1, 2015 - May 2, 2016					
[redacted]	During Construction and 3 Months After to Construction		1		
Year 1 After: August 2, 2016 - August 1, 2017					
Total	0	0	0	0	1
Year 2 After: August 2, 2017 - August 1, 2018					
Total	0	0	0	1	0
Year 3 After: August 2, 2018 - August 1, 2019					
Total	0	0	0	2	0

*Per SWITRS reports received, no Fatal or Severe injuries were recorded during these time periods

order to evaluate the immediate effectiveness of an improvement, other measures of effectiveness (MOEs) will need to be evaluated. Such MOES are the number of concerns by the public and law enforcement, citations by law enforcement and the number of impacts to roadway equipment/structures. The matrix will also have an input for these MOEs. As previously mentioned, the matrix will be used to evaluate the effectiveness of the improvements and could be utilized to determine if other or newer strategies could be implemented. The working group should also continue well into the future to re-evaluate the plan to verify if it is consistent with the population and development growth of the City, changes to driver/pedestrian behaviors and any new trends that affect the traffic patterns. Also, the stakeholders may need to be expanded to other groups and new commissioners and council members will need to be educated on the plan.

Deliverables:

- Draft and Final LRSP

Quality Assurance/Quality Control

An effective quality assurance/quality control (QA/QC) review will minimize or eliminate additional costs to the City related to reengineering or contractor claims during construction and liability after project completion. Delivering a quality product that is right the first time is the primary focus of AGA's comprehensive QA/QC process. It is an integral part of our regular engineering design and study processes and the delivery of every investigation, study, report, or document we produce. This added layer of independent work product review will be conducted at no additional cost to the City. Our QA/QC program requires that all deliverables leaving our office be reviewed prior to submittal to the client. All personnel performing work on this project are responsible to ensure its implementation. We have the philosophy that QA/QC is a continuous process to be utilized on plan preparation from conceptual design to final PS&E, as well as when conducting various other professional engineering tasks. Our technical staff is trained to always review work products prior to finalization. Our experienced QA/QC Manager, Mr. Chalap Sadam, AGA's President, will conduct an objective review of the work products. When several disciplines are involved in a project, the QA/QC Manager may also seek review assistance when needed from other individuals specializing in those disciplines to verify that all project concepts are being met and all project feasibility and constructability issues are addressed prior to delivery of the project.

SECTION 6: WORK HOUR ESTIMATE

Attached on the following page is a Work Hour Estimate Matrix indicating hours for the effort of each task in the above Scope of Work.

SECTION 7: FEE PROPOSAL

As requested by the RFP, AGA Engineers, Inc. has included a Fee Proposal based upon the required work hours and a current fee schedule in a separate, sealed envelope.

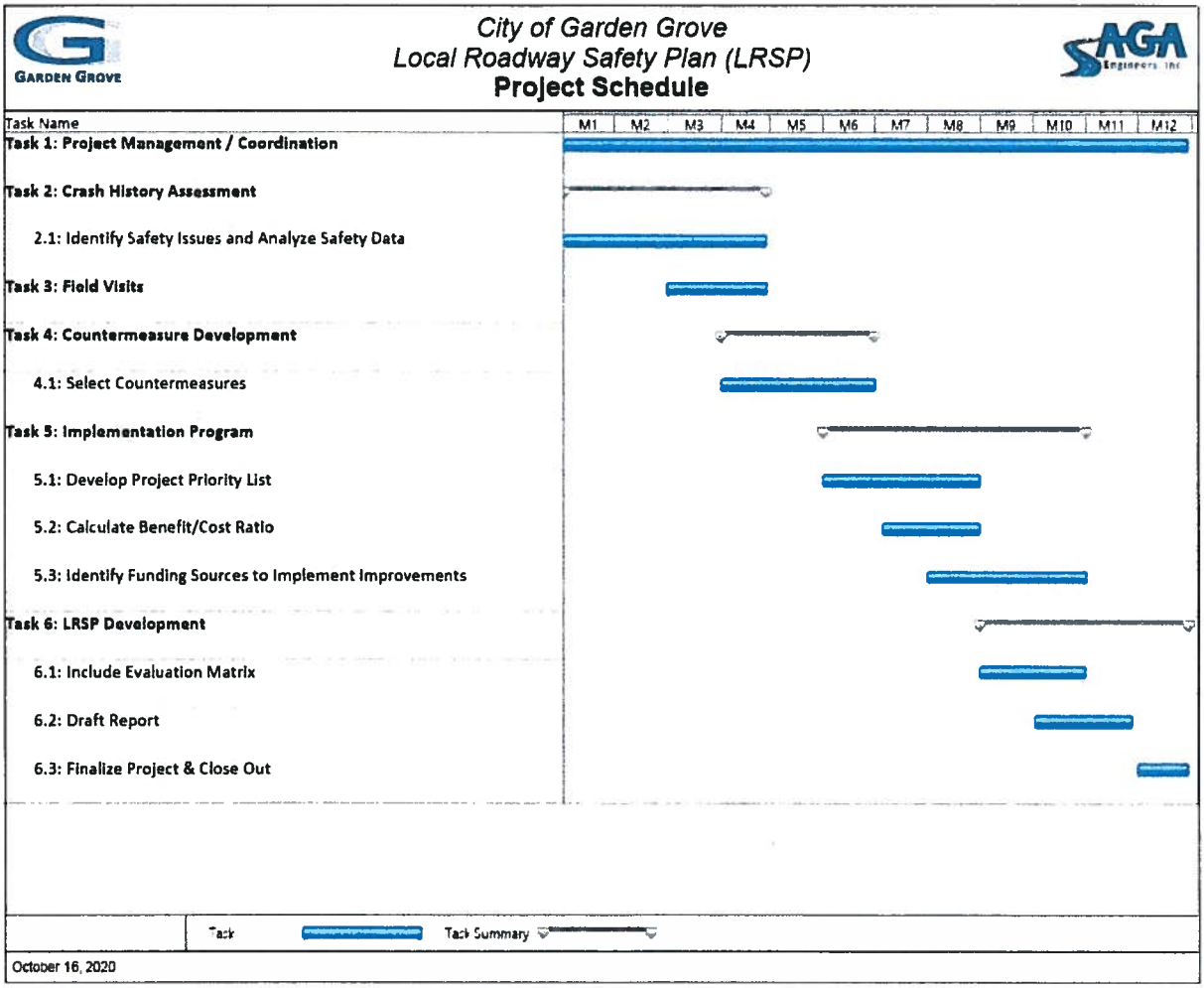
Work Hour Estimate Matrix
City of Garden Grove
Development of The Garden Grove Local Roadway Safety Plan (LRSP)
AGA Engineers, Inc.

	Chalap Sadam QA/QC Manager President	Mark Miller Project Advisor Executive Vice President	Greg Wong Project Manager/Vice President	Ignacio Sanchez Sr. Transp Engineer	Ruben Perales Sr. Design Engineer	Roland Hizon Sr. Project Engineer	Yolanda Cervantes, Andrew Luna & Jessica Espinoza Associate Transportation Engineer I	Elias Sanchez Assist. Transp Engineer	Pauline Bingham Engineering Aide II	TOTAL Hour/Cost
Task 1: Project Management & Coordination	2	2	16	6	6	4				36
Task 2: Crash History Assessment	4	4	12	4	4	16	30	16	8	98
Task 3: Field Visits/Review	2	2	10	6	10	8	48	16		102
Task 4: Countermeasure Development	4	4	20	8	20	20	48	16	8	148
Task 5: Implementation Program	2	2	10	6	10	8	16	8	4	66
Task 6: LRSP Development	4	4	8	6	6	12	24	12	8	84
TOTAL ESTIMATED HOURS	**18**	**18**	**76**	**36**	**56**	**68**	**166**	**68**	**28**	**534**

SECTION 8: SCHEDULE

The Project Manager will submit a detailed project schedule to the City at the kick-off meeting. That schedule will include timelines for completion of project tasks, key dates for the completion of milestones, and the submittal of deliverables. The schedule will also highlight any interdependencies between tasks and provide the City with a clear understanding of the work flow by time.

It is anticipated that all study work can be completed 12 months of a formal Authorization to Proceed. Attached below is a preliminary schedule.

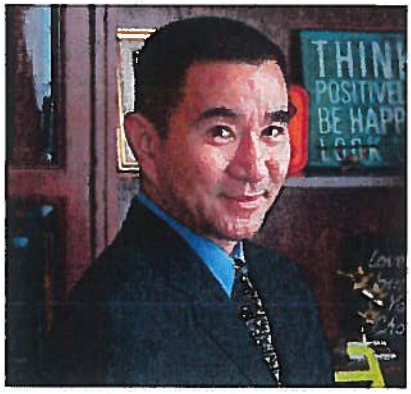


APPENDIX A

Resumes of Key Personnel

Greg Wong, PE

Vice President



Education
University of California, Irvine
Bachelor of Science, Civil Engineering, 1996

Westech College
Certified Geographical Information Systems, 1997

Professional Registrations
CA Registered Civil Engineer – CE #64349

Professional Associations
Institute of Transportation Engineers

Mr. Wong has over 25 years of experience and completed numerous projects that involve state, local, and private agencies — including Traffic Signal Synchronization Program (TSSP) projects, street and highway improvement projects, local city projects, and signal upgrades. His duties included preparing traffic signal coordination timing plans, traffic impact studies and analyses, GIS analyses, design and implementation projects, parking circulation analyses, and traffic signal design. He has extensive experience in a variety of transportation planning and traffic engineering software, such as Synchro, Tru-Traffic and HCS; additionally, he is experienced in the operational use of GIS, AutoCAD, Microstation, as well as Microsoft and Adobe applications.

Development, implementation, and fine-tuning of coordination timing plans are all under Mr. Wong's purview. He has developed hundreds of signal timing plans throughout Orange and Los Angeles Counties, including plans for almost every city in Orange County under the OCTA traffic synchronization program. He was also responsible for preparing and implementing traffic signal timing for approximately 650 intersections for the San Bernardino Valley Coordinated Traffic Signal System Project, a valley-wide signal coordination project covering about 150 miles of arterial highway.

Mr. Wong also performs reviews for project development traffic signals and site plans, conducts traffic studies, and assesses traffic impact fees. He is experienced in evaluating traffic signal operations and recommending cost-efficient and feasible mitigations. As a skilled traffic signal designer, he provides workable improvements to traffic systems and operations and is well-versed in city, state, and federal standards and regulations.

Mr. Wong previously worked at Albert Grover & Associates solving various traffic engineering problems throughout Southern California. Early in his career, Mr. Wong worked for the City of Los Angeles Department of Transportation, where his duties were to divert and control the flow of cut-through traffic from residential areas to arterials and monitor the "Safe Routes to School" program. He also worked for the County of Los Angeles Public Works Department, where he prepared and reviewed traffic signal coordination timing plans, traffic signal modification plans, striping and marking layouts, maps utilizing GIS, and left-turn studies.

Relevant Experience

OCTA, Orange County Traffic Signal Coordination Program—Mr. Wong was instrumental in this project to improve Orange County arterial signal progression, providing signal timing and coordination for over 60 arterials, and involving interjurisdictional coordination of 34 cities, the County and Caltrans District 12. Many of the multijurisdictional traffic signal timing projects that have been completed or are underway now in Orange County are a direct result of recommendations of the master plan provided by AGA.

OCTA Euclid Street Signal Synchronization Demonstration Project—Mr. Wong provided timing and signal coordination for this project to improve traffic flow operations along the interjurisdictional 15-mile corridor of Euclid Street in Orange County from Imperial Highway to I-405 Freeway—coordinating 66 traffic signals and enhancing arterial roadway capacity via traffic signal synchronization. The project also was a template to identify appropriate procedures and techniques for

improving and optimizing traffic carrying capacity of arterial roadways.

Other OCTA-led Synchronization Projects for Chapman Avenue, Tustin/Rose Drive, Bolsa Avenue/First Street, Adams Avenue, Antonio Parkway, La Paz Road, Alicia Parkway—Mr. Wong has provided detailed and relevant signal timing for numerous municipalities through OCTA-led projects.

Los Angeles County Traffic Signal Synchronization Projects—Mr. Wong analyzed, provided recommendations and designs for upgrading traffic signals on eight (8) corridor projects that included 146 intersections, as well as providing multijurisdictional signal timing and coordination of signals along Atlantic Boulevard, Garfield Avenue and Sepulveda Boulevard.

On-Call Traffic Engineering Support, Cities of La Habra and Fullerton—As contact person, Mr. Wong reviews proposed development site and circulation plans, traffic signal plans, and traffic impact studies; he responds to resident concerns regarding parking, red curb/sight distance requests, school traffic, day-to-day traffic signal monitoring and operations.

SBCTA, San Bernardino Valley Coordinated Traffic Signal System Plan Tier 1 & 2—Mr. Wong conducted studies for signal interconnect, timing and coordination of 652 signalized intersections on about 150 miles of arterial highway through 15 cities. This project received the California Transportation Foundation "Local Project of the Year" Award in 2012.

Orange County I-405 Freeway Improvement Project, Major Investment Study and subsequent Project Study Report/Project Development Support (PSR/PDS) and Project Approval/Environmental Document (PA/ED)—For this multi-year project, Mr. Wong provided freeway, ramp and arterial intersections evaluations and analysis to explore alternative improvement scenarios for the I-405 freeway between the SR-73 and I-605 in order to increase capacity, reduce congestion, enhance interchange operations, maximize throughput and enhance safety throughout this corridor. These reports were considered a "template for future traffic studies statewide" (DOT, CA).

Citywide Traffic Operation and Traffic Management Study, City of Irvine—As part of the traffic operational analysis, Mr. Wong evaluated 130 critical intersections in the City of Irvine for existing and near term conditions utilizing the Highway Capacity Manual procedures. The analyses included identification of any capacity constraints, excessive queuing and available storage, approved near term developments (project trip generation impacts), evaluation of the appropriate signal operation and coordination signal timing. Improvements were developed and ranged from low cost solutions (adding protected/permissive-Flashing Yellow Arrow traffic signal phasing) to major improvements of widening an arterial.

Citywide Traffic Study, City of Torrance—Mr. Wong evaluated 184 intersections within the City of Torrance that included review of the traffic signal infrastructure, level-of-service analyses for existing, near term and long term conditions, comparison of historical traffic volumes, traffic index (TI) calculations for all truck routes, and traffic safety analysis of the City's high collision intersections. Detailed cost estimates were also conducted for the traffic signal and communication, intersection capacity improvements and traffic safety improvements.

West Hollywood and Sunset Boulevard Signal Timing Project (12 intersections)—Mr. Wong converted McCain 233 program timing to McCain 2033 program timing for Model 2070 controllers, modifying and fine tuning existing plans, and/or creating additional timing plans where needed.

Grant Applications for Smart Crosswalks, City of Los Angeles—Mr. Wong prepared AB 1475 grant applications for the installation of Smart Crosswalks for multiple uncontrolled intersections in the City.

Chalap K. Sadam, PE, TE

President

Education
University of Southern California
Master of Business Administration, 2002

Virginia Polytechnic Institute and State University
Master of Science, Civil Engineering (Transportation), 1990

Jawaharlal Nehru Technological University
Bachelor of Engineer, Civil Engineering, 1988

Professional Registrations
CA Registered Civil Engineer – CE #74080
CA Registered Traffic Engineer – TE #1813

Professional Associations
American Society of Civil Engineers
Institute of Transportation Engineers
Intelligent Transportation System Council
Transportation Planning Council

Mr. Sadam started his career in 1990 as a Transportation Engineer with MGA, a municipal and traffic/transportation engineers. In 1993 he joined Albert Grover & Associates, Inc., as a Senior Transportation Engineer and founding member of the company. He provides our team with an extensive educational background in Civil, Traffic, and Transportation Engineering, as well as a Master's degree in Business Administration. In 2002, he began serving as Vice President of the firm, focusing on business development, client management, team leadership, and project management. *"Do the right thing—provide value to the client—be passionate about projects"* are standards which guide his business and project decisions. In 2020, Mr. Sadam founded AGA Engineers, Inc.

During his tenure, Mr. Sadam has performed traffic studies, feasibility studies, Major Investment Studies, long-term roadway improvement studies, and transportation-related Master Plan studies for countless cities and counties throughout Southern California. Under his direction, plans for a Major Investment Study and subsequent PSR/PDS and PA/ED for the I-405 Freeway (SR-73 to I-605) were completed with significant attention to detail in 2002. Those same plans are the current standard for the project's construction.

More recently, he has become well-known for his studies involving Regional Traffic Signal Synchronization Programs (RTSSP), working effectively to promote multijurisdictional cooperation between State (Caltrans), county, and city entities to synchronize traffic signals for multiple major corridors in Orange County and the San Bernardino Valley.

Mr. Sadam's ability to bring together diverse governmental agencies was demonstrated in 2016 during OCTA's Antonio Parkway Regional Traffic Signal Synchronization Project. Under his direction, AGA engineers and technicians provided plans and expertise for a multi-agency agreement to share infrastructure, communications, and operational expenses between the City of Rancho Santa Margarita, the County of Orange, and Caltrans' District 12, saving each entity millions of dollars in installation and operational costs.

In addition to his expertise and technical acumen, which ensure successful projects, our clients most appreciate his commitment to establish the most effective and interactive systems possible for both large and small projects. Whether facilitating award-winning, multi-million dollar, multi-jurisdictional transportation communications projects, or applying his expertise to single intersection traffic operations, Mr. Sadam stands out as a meticulous, innovative planner/designer, and an outstanding leader of the AGA team.

Relevant Experience

Master Plan Projects

OCTA, Orange County Traffic Signal Coordination Program—Mr. Sadam was assistant project manager for the development of a master plan for signal coordination to improve Orange County arterial signal progression (a study which included 34 cities, the County, and Caltrans District 12). Many of the multijurisdictional traffic signal timing

projects that have been completed or are underway now in Orange County are a direct result of recommendations of the master plan promoted by AGA.

SBCTA, San Bernardino Valley Coordinated Traffic Signal System Plan Tier 1 & 2—Mr. Sadam was project manager for this valley-wide project to interconnect and coordinate more than 1,200 traffic signals. The first two tiers involved interconnect and coordination of 652 signalized intersections on about 150 miles of arterial highway.

Orange County I-405 Freeway (SR-73 to I-605) Major Investment Study and subsequent Project Study Report/Project Development Support (PSR/PDS) and Project Approval/Environmental Document (PA/ED) —Mr. Sadam was project manager for AGA's evaluation of arterial related issues on this multijurisdictional project to improve arterial mobility.

Traffic Signal Synchronization Projects

OCTA Euclid Street Signal Synchronization Demonstration Project—Mr. Sadam led the AGA team on a project to improve traffic flow operations along the 15-mile corridor of Euclid Street in Orange County from Imperial Highway to I-405 Freeway coordinating 66 traffic signals to enhance arterial roadway capacity via traffic signal synchronization.

Synchronization of 260 signals on 22 crossing arterials in the Cities of Huntington Beach, Fountain Valley, Westminster, Garden Grove and Seal Beach—As project manager, Mr. Sadam has extensive experience successfully managing and delivering grant funded multi-agency traffic signal synchronization projects.

Studies/Reports

Developer Fee Program Nexus Study Report (City of Montclair) —Mr. Sadam directed our team in this nexus study report reviewing and updating the City of Montclair's developer fee program to be consistent with the latest approved regional transportation mitigation project list and cost estimates.

Papers & Presentations

"San Bernardino Valley Coordinated Traffic Signal System—Implementation of Tiers 1 & 2" Presented at ITE Annual Conference, Anaheim, California

"Orange County, California's Traffic Signal Coordination Program" Presented at ITE District 6 Meeting in Portland, Oregon

"Strategies to Recapture Lost Arterial Traffic Carrying Capacities" Presented at ITE Annual Conference, Rapid City, South Dakota

"Measures to Mitigate Impacts Associated with Temporary Closure of a Major Intersection in Orange County" Presented at ITE District 6 Annual Meeting, Honolulu, Hawaii

"Developing Coordination Signal Timing Using Software as a Tool" Presented at ITE Southern California and RSBTEA Seminars

"Development of Traffic Signal Coordination Timing" Presented Riverside: San Bernardino ITE Section Workshop

"Quantification of Air Quality Benefits Achieved Through Traffic Signal Coordination" Presented at ITE District 6 Annual Conference, Salt Lake City, Utah

"A Successful Multijurisdictional Traffic Signal Coordination Project" Presented at ITE Annual Conference, Dana Point, California

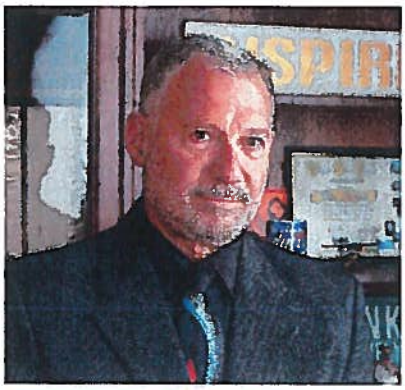
"Multijurisdictional Traffic Signal Coordination—A Pleasant Experience" Presented at the 65th ITE Annual Meeting, Denver, Colorado

Honors & Recognition

California Transportation Foundation Local Project of the Year
San Bernardino Valley Coordinated Traffic Signal System, 2012

Mark H. Miller, PE, TE

Executive Vice President



Education

California State Polytechnic University, Pomona
Bachelor of Science, Civil/Traffic Engineering, 1974

Northwestern University
Traffic & Transportation Engineering Highway Capacity Workshop

Institute of Transportation Studies
Safety Design and Operational Practices for Streets and Highways
Traffic Signal Equipment & Operations
Urban Street Design
Public Works Inspections
Legal Aspects and Liabilities
Risk Management & Traffic Safety

Professional Registrations

CA Registered Civil Engineer – CE #40956
CA Registered Traffic Engineer – TE #1575

Professional Associations

American Public Works Association
American Society of Civil Engineers
City Traffic Engineers Association (former Chairman)
Institute of Transportation Engineers (former President)
Orange County Traffic Engineering Council
American League of Cyclists

Mr. Miller has over forty years of extensive experience in Traffic and Transportation Engineering in both governmental and private sectors.

Throughout his career, Mr. Miller has worked on many projects including ITS, signal interconnect and coordination plans, CCTV installations, traffic signal systems, and street lighting. He has also developed and implemented design standards, and plans, specifications and estimates (PS&E) for traffic signals, interconnect communications, and CCTV projects. He has hands-on experience programming all models of traffic signal controllers and has developed numerous traffic signal coordination and timing plans for a wide variety of central system and local controller software.

Having served with multiple municipal entities, including the Cities of Pasadena, Pomona, San Dimas, and Fullerton, as well as the State of Illinois, Mr. Miller knows what it takes to get design plans and studies approved, projects completed, and invoices paid. As Assistant Traffic Engineer in the City of Pasadena, he prepared and reviewed major transportation studies, including the Rose Bowl/Rose Parade major event traffic studies, and developed an accident recording system for the City. As City Traffic Engineer for the City of Pomona, he was responsible for a multimillion-dollar Operations and Capital Improvement budget, managing 14 subordinates in the Traffic Engineering Division.

As a senior, tenured Traffic/Transportation Engineer, Mr. Miller provides on-call, as-needed Traffic Engineering services to the Cities of Montclair, Cerritos, and Laguna Beach, and is presently serving as the Contract City Traffic Engineer for the City of San Dimas. In this capacity, he gives general traffic engineering guidance, makes presentations to Planning and Traffic Commissions and City Councils, checks construction plans, and reviews traffic studies and General Plan studies.

Mr. Miller also serves as an Expert Witness, conducting investigative review, providing professional advice, and speaking in the defense of claims and legal actions for a number of governmental agencies.

On top of his significant professional experience, Mr. Miller has long been involved in several professional associations, sharing his depth of knowledge with those both outside of and newly entering the field of traffic engineering. While serving as Chairman of the City Traffic Engineers Association (CTE), he conducted workshops throughout Southern California to educate Traffic Commission and Planning Commission members regarding pertinent traffic and safety issues.

As a former President of the Institute of Transportation Engineers (ITE) and current member, he mentors several local student chapters, including one at California State University, Fullerton. He also regularly attends and speaks at workshops and conferences, presenting on innovative and informative topics in the industry.

Relevant Experience

Signal Interconnect Analysis, Design and Coordination—Mr. Miller performed these services for the Cities of Bakersfield, Cerritos, Chino, Colton, La Habra, Lancaster, Loma Linda, Montclair, Palm Springs, Pomona, Rialto, San Bernardino, Santa Clarita, Temecula, and Upland.

AGA Engineers, Inc.
211 Imperial Hwy, Ste 208, Fullerton, CA 92835
(714) 992-4592 email: aga@agaengineersinc.com

Montclair Plaza Traffic Operations Study—Mr. Miller was project leader for this large redevelopment project in the City of Montclair.

Roadway Signal Improvements—Cities of Cerritos, Chino, Claremont, Cypress, Ontario, and Upland.

School Safety Studies and Development of Safe Route to School Programs—Mr. Miller led the AGA team on important safety studies in the Cities of Costa Mesa, Fullerton, and Huntington Beach

Expert Witness—Mr. Miller is highly qualified and performs the duties of an Expert Witness for Cities throughout Los Angeles and Orange Counties.

Citywide Engineering and Traffic Speed Survey—Mr. Miller has provided consultation for over 50 different municipalities in Southern California

City Contract Traffic Engineer—Mr. Miller serves on behalf of AGA for Fullerton, Montclair and San Dimas

School Safety Projects—Mr. Miller puts his expertise to work for school districts in Fullerton, Huntington Beach, San Marino, Pomona and Diamond Bar.

Identification of High Accident Locations—With years of experience in traffic and transportation engineering, Mr. Miller has helped several municipalities to enhance safety on busy streets and intersections.

Computerized Traffic Accident Record System—Mr. Miller developed the first of such systems during his tenure with the City of Pasadena.

Papers & Presentations

"Three Year Experience with Flashing Yellow Arrow Display" Presented at ITE Annual Conference, Anaheim, California

"Strategies to Recapture Lost Arterial Traffic Carrying Capacities" Presented at ITE Annual Conference, Rapid City, South Dakota

"Effectively Slowing Drivers – Speed Feedback Signs" Presented at ITE District 6 Annual Meeting, Honolulu, Hawaii

"School Area Traffic Safety" Presented at City Traffic Engineers' Traffic Commissioners Workshop

"Minimize Delay Maximize Progression with Protected Permissive Lead/Lag Phasing" Presented at ITE Inland Empire Section Technical Workshop

"Microwave Traffic Signal Interconnect—A Viable Alternative to Land Lines" Presented at ITE District 6 Annual Meeting, Portland Oregon

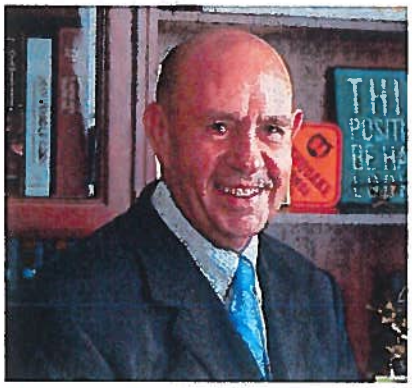
"Quantifications of Air Quality Benefits Achieved Through Traffic Signal Coordination" Presented at ITE District 6 Annual Meeting, Salt Lake City, Utah

"A Successful Multijurisdictional Traffic Signal Coordination Project" Presented at ITE Annual Conference, Dana Point, California

"School Area Traffic Safety" Presented at City Traffic Engineers' Traffic Commission Workshop

Ignacio Sanchez Hernandez, PE, TE

Senior Transportation Engineer



Education
Universidad de Guadalajara
Bachelor of Science, Civil Engineering, 1986

Fullerton College
Computer-aided Design, AutoCAD and Customization, 1988, 1989

Environmental Systems Research Institute (ESRI)
Geographic Information Systems, 1994

Professional Registrations
CA Registered Civil Engineer – CE #72073

CA Registered Traffic Engineer – TE #2344

Mexico Registered Civil Engineer – Cédula Profesional #3806180

Professional Associations
Institute of Transportation Engineers

Mr. Sanchez contributes a strong sense of professional ethics and pride in every project he oversees or participates in. His prime objective is to always strive for excellence, provide solid traffic engineering solutions for our clients, as well as valuable training and mentorship for young engineers on the AGA team.

His duties include designing traffic signals, signing and striping plans, signal interconnect plans, project management, preparation of engineers cost estimates and specifications, GPS installations, street lighting plans, as well as development and installation of system graphics for a wide range of Traffic Management Control Systems.

In addition to his excellent design abilities, Mr. Sanchez provides important assistance in the field including construction inspection, generation of change directives and change orders on behalf of City clients, coordination with Caltrans and Southern California Edison, review and approval of equipment quantities during construction for progress payments, and preparation of as-built plans.

Mr. Sanchez is also responsible for ensuring compliance with all current regulations and standards, such as California Vehicle Code (CVC) Section 21400, and the most recent California Manual on Uniform Traffic Control Devices (California MUTCD), the Caltrans Highway Design Manual (HDM), Americans with Disabilities Act (ADA) compliance requirements, etc.

Mr. Sanchez was lately part of Albert Grover & Associates where he completed a multitude of design engineering projects throughout Southern California. Prior to that, he worked for Rick Engineering, Mohle, Grover & Associates, and Hank Mohle & Associates where he coordinated projects between Caltrans and many Southern California government agencies, was responsible for development of traffic signal design and construction, coordination of timing, signal modifications, plan checking for city Capital Improvement Projects (CIP), development of signing and striping plans, traffic control plans, and preparing plans, specifications and engineer's estimates (PS&E).

Relevant Experience

Orange County

Regional Traffic Signal Synchronization Projects—Mr. Sanchez has been a key participant in managing and preparing PS&E, along several interjurisdictional corridors throughout Orange County (La Habra Boulevard/State College, Euclid Street from Imperial Hwy to I-405, Brea Boulevard, Lemon Street in Fullerton, Bolsa Avenue/First Street, and Lambert Road through La Habra and Brea).

Traffic Control Technology Improvement Program, City of Brea—Mr. Sanchez provided PS&E, bid assistance, and construction management for Emergency Pre-emption System upgrades and traffic signal modifications, including controllers and cabinets, communication hardware (fiber optic cables, switches, Ethernet radios, etc.), video detection, CCTV surveillance cameras, etc.

AGA Engineers, Inc.
211 Imperial Hwy, Ste 208, Fullerton, CA 92835
(714) 992-4592 email: aga@agaengineersinc.com

Los Angeles County

Traffic Signal Signing and Striping Modifications—Mr. Sanchez has prepared designs for modifications along San Gabriel Boulevard for the City of San Gabriel and the County of Los Angeles; for the City of West Hollywood along the Sunset Boulevard Corridor from Doheny Road/Cory Avenue to Harper Avenue/Roxbury Road; and for the City of South Gate at Firestone Boulevard/Otis Street.

Intersection Improvements, City of Compton—Mr. Sanchez provided signing & striping plans, new traffic signals and signal modification plans, signal interconnect and street lighting plans for the following roads and corridors:

- Signing & Striping at Towne Center Drive from Alameda Street to Commercial Center
- Signing & Striping at the loop ramp connector between Artesia and Alameda
- New traffic signal designs and modifications along Alameda Street, Greenleaf Boulevard, Towne Center Drive, Plaza Drive and Tamarind Avenue
- Signal Interconnect plan for Alameda Street from Greenleaf Boulevard to Artesia Boulevard Connector Road
- Street lighting plans for Greenleaf Boulevard from Willowbrook Avenue to Alameda Street
- Plans for private developer (Prism-IQ Partners LLC)
- Plans for Home Depot

Riverside County

Signalization Ramps with PPLT phasing, City of Indio—Mr. Sanchez assisted with the signalization of I-10 ramps with PPLT phasing, as well as signal coordination and implementation; he also prepared traffic analysis reports for PSR.

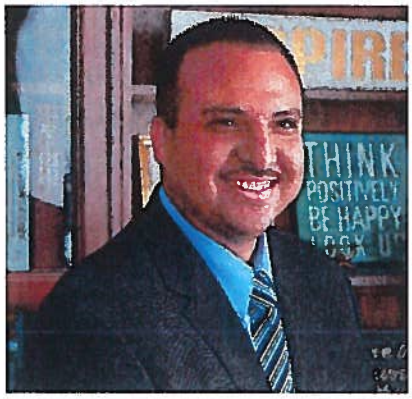
Interim and Ultimate Improvements, City of Lake Elsinore—Mr. Sanchez assisted in the preparation of PSR/PR traffic analysis reports for improvements along Central Avenue/SR-74 at I-15.

San Bernardino County

Bear Valley Road Improvement Project, City of Victorville—Mr. Sanchez provided signal timing and coordination, striping and intersection improvements for 17 intersections (City and Caltrans).

Ruben Perales, PE, TE

Senior Design Engineer



Education
California State Polytechnic University, Pomona
Bachelor of Science, Civil Engineering, 2005

Professional Registrations
CA Registered Civil Engineer – CE #83169

CA Registered Traffic Engineer – TE #2838

Professional Associations
American Society of Civil Engineers
Institute of Transportation Engineers
Orange County Traffic Engineering Council

Mr. Perales performs a wide variety of traffic engineering tasks, as well as providing leadership on many projects. Whether he is coordinating large interjurisdictional projects which include working with Caltrans and multiple cities or counties or patiently mentoring junior staff, he is known for his ability to see through complex problems, promote positive working relationships, and provide clarity for successful projects.

Mr. Perales' projects include communications upgrades, fiber optic communication plans and specifications, and intersection improvement plans to upgrade controllers and connect existing fiber for communication purposes. He has prepared plans for multiple flashing yellow arrow (FYA) conversions and Traffic Signal Synchronization Projects (RTSSP) throughout Orange and LA Counties. He physically inspects actual conditions in the field to provide time- and cost-saving mitigations which might not be apparent to others.

Mr. Perales utilizes multiple traffic engineering software programs, including AutoCAD, MicroStation, Crossroads, and Synchro. He conducts intersection Level of Service (LOS) analysis to identify geometric improvements needed to achieve acceptable LOS and prepares geometric conceptual plans to illustrate required improvements and their impacts to adjacent properties. In addition, he is adept at signal design and modification planning, fiber optic communications, signal coordination, signing, striping, and street lighting.

Mr. Perales previously worked at Albert Grover & Associates providing engineering and project management functions. Prior to that he worked for the City of Upland in the Traffic Division—preparing street improvement, striping and traffic control plans, initiating work orders for removal and installation of traffic signs, preparing striping modification plans, and retrieving accident reports and collision diagrams utilizing the Crossroads software program. He did field work, including setting up traffic counters and compiling the count data. He calculated traffic volumes, conducted traffic signal warrant analyses, and interfaced with the public.

Relevant Experience

OCTA Traffic Light Synchronization Programs—Mr. Perales provided plans for intersection equipment upgrades to enhance communication and provide signal timing and coordination in projects involving cooperation with multiple municipalities along Chapman Avenue (through Garden Grove and Orange) and Orangethorpe Avenue (through La Palma, Buena Park, Fullerton, Anaheim and Placentia), as well as cooperation with the County of Orange and Caltrans District 12. He provided fiber optic plans, specifications, and estimates (PS&E), Caltrans controller upgrades and a fiber integration to the Caltrans TMC; he applied for Caltrans Encroachment Permits and procured required equipment (controllers, GPS units, traffic signal cabinets, service cabinets, etc.) from vendors and from Caltrans.

OCTA Traffic Signal Synchronization Implementation Project—As task leader, Mr. Perales provided implementation and monitoring of signals along Harbor Blvd., Chapman Avenue and State College Blvd., additionally developing traffic signal interconnect plans for the City of Costa Mesa on the Harbor corridor—a project which included fiber optic cable installation and integration of fiber related equipment.

OCTA Bus Rapid Transit Project—Mr. Perales provided signal timing and coordination of 157 signals on three arterials (Harbor Blvd., Chapman Avenue and State College Blvd.) in seven (7) cities from Brea to Costa Mesa.

LA County Traffic Signal Synchronization Projects—For this multijurisdictional project, Mr. Perales developed plans for traffic signal modifications along Artesia Blvd, Wilmington Ave., Studebaker Road, and Vincent/Glendora/ Hacienda Blvd.

Signal Synchronization Project, City of Buena Park—Mr. Perales provided field inventory of existing signal and controller cabinet equipment along Valley View Street, Knott Avenue and La Palma; he coordinated with Caltrans for installation of GPS time source receiver units and made application for a Caltrans Encroachment Permit.

Signal Synchronization, City of Placentia—Mr. Perales provided traffic signal cabinet inventory to identify equipment required to provide upgrades on the Rose Drive corridor; he also led our team in preparing a Citywide Traffic Signal System Map to identify existing signal interconnect, traffic signal cabinet and controller types.

Traffic Signal System Master Plan, Cities of Costa Mesa and Rancho Cucamonga—Mr. Perales led our team in detailing existing infrastructure and future infrastructure requirements for several corridors throughout these cities in anticipation of local grant funding.

Traffic Signal Plans, Signing and Striping Plans, Street Lighting Plans—Mr. Perales has provided plans for cities throughout the Southland, including the cities of Calimesa, Carson, Fullerton, Indio, Redondo Beach, and Victorville.

Citywide Improvements, City of Seal Beach—Mr. Perales provided plans for traffic signal modifications, intersection equipment upgrades and signal interconnect plans along Seal Beach Blvd.; he also coordinated with Caltrans to install GPS time source units at three Caltrans intersections using Caltrans Encroachment Permits.

Citywide Traffic Engineering, Speed Surveys, Speed Zone Maps and Traffic Volume Maps—Along with the AGA team, Mr. Perales has provided these services for innumerable cities, including Palm Springs, Buena Park, Chino, Cerritos, Lancaster, Santa Ana, Long Beach and Fountain Valley.

Level of Service Analysis and Geometric Conceptual Plans, City of Huntington Beach—Mr. Perales conducted LOS analysis to identify geometric improvements required and their impact to adjacent properties.

Major Corridor and Freeway Interchange Conceptual Improvement Plans, City of Indio—Mr. Perales completed conceptual plans, traffic signal, street lighting and signal interconnect plans throughout major corridors along Interstate 10 and Highway 111, as well as for new shopping centers in the City of Indio; he also provided plans for flashing yellow arrow conversions on major City routes.

Roland P. Hizon, EIT

Senior Project Engineer

Education
University of the Philippines, Manila
Bachelor of Science, Civil Engineering, 1982

Professional Registrations
CA Registered Engineer-in-Training – EIT #XE095497

Professional Associations
Institute of Transportation Engineers

Mr. Hizon provides valuable insights on every level of the work we produce. His design activities include traffic signing and striping, signal modification and signal interconnect projects for several California cities. He has developed conceptual roadway signing/striping and signal installations for major developers. He has assisted governmental agencies in securing federal and state-funded grants, including CTFP, SSARP and HSIP. He knows what it takes to complete projects and fully comprehends the regulatory expectations of the funding agencies. He ensures the documentation is prepared appropriately, giving municipal clients the surest pathway for approvals and reimbursements. He also provides invaluable assistance in the event of an audit.

Mr. Hizon previously worked at Albert Grover & Associates providing design engineering and project management assistance on various projects. He completed SBCTA's (formerly SANBAG) Coordinated Traffic Signal System – Tiers 1 and 2, which focused on interjurisdictional traffic signal coordination throughout the San Bernardino Valley. He was involved in all phases of the project, including the field design and construction, signal synchronization and central system implementation phases. With part of the project being federally funded, he was also involved in ensuring federal guidelines were met in the implementation of the project. This included keeping accurate and appropriate documentation for this extremely large and complex project which involved over 650 signalized intersections controlled operated by 16 separate governmental agencies.

He was lead engineer for OCTA's Project P Regional Traffic Signal Synchronization Program (RTSSP), and was responsible for several OCTA funding applications for synchronizing traffic signals along the Orange County Priority Corridors, including Euclid Street corridor, Bastanchury Road corridor, Lambert Road corridor, Brea Boulevard corridor, Commonwealth Avenue corridor, Bolsa Avenue/First Street corridor to name a few.

Prior to that, Mr. Hizon worked for Meyer Mohaddes Associates/Iteris as Transportation Engineer providing professional engineering services including plans, specifications, and estimates (PS&E) preparation of fiber optic communications systems, traffic signals and interconnect, and transportation planning projects. He also worked for Kimley-Horn and Associates as lead engineer on the Harbor Boulevard Smart Street Project and task leader for the Arroyo Verdugo Traffic Forum which developed ITS strategies for the region. At DKS Associates, he developed Early Deployment Plans for the Cities of Hartfort, Connecticut, Indianapolis, Indiana, and Las Vegas, Nevada. In addition, he was responsible for designing fiber optic communication, VSAT communications systems, closed circuit television (CCTV), ramp metering systems, highway advisory radios, traffic monitoring systems, and traffic operation system elements on over 150 miles of major Los Angeles freeways.

Relevant Experience

SSARP Studies—Mr. Hizon is currently task lead on Systemic Safety Analysis Report Programs (SSARP) assisting local

agencies conduct collision analysis, identify roadway safety issues, and develop systemic, low-cost safety improvement programs.

Project P Regional Traffic Signal Synchronization Program (RTSSP)—Mr. Hizon was project engineer responsible for PS&E design for multiple corridor-wide traffic signals along Bolsa Avenue/First Street.

OCTA Local Signal Synchronization Plan (LSSP)—Mr. Hizon was in charge of periodic updating signal synchronization implementation plans of local Orange County agencies, including Fullerton and Seal Beach.

Ontario Transportation Management Center (TMC) Design—For this project, which included restoring communications to the City's traffic signals and integrating them into the current traffic signal central system, Mr. Hizon was responsible for the design, upgrade and installation of equipment hardware and software at the City's TMC.

SR-710 ITS Mitigation Project—Mr. Hizon was a project engineer responsible for the PS&E design of approximately 100 intersections in the City of Pasadena, including 21 intersections with CCTV installations.

Lakewood Boulevard Traffic Signal Communication System—Mr. Hizon was Project Manager and lead engineer in charge of the PS&E design of 18 signalized intersections to be incorporated into the proposed signal communications system.

Port of Oakland Dynamic Message Systems (DMS)—Mr. Hizon was responsible for the design of two dynamic message systems.

SR-55/Dyer Road IC Surveillance System, Cities of Santa Ana and Irvine—As project lead engineer, Mr. Hizon was in charge of the PS&E design of four CCTV installations and fiber optic communications intertie between the Cities of Santa Ana and Irvine.

Mission Viejo CCTV and Detection System—Mr. Hizon performed the PS&E design of a CCTV system and system detection for the Cities of Mission Viejo and Lake Forest.

Marina Boulevard Surveillance Project—Mr. Hizon was design engineer in charge of PS&E design of four CCTV systems in the City of San Leandro, CA.

Riverside County On-Call Project—As project engineer, Mr. Hizon provided technical engineering support for signing and striping design and traffic signal modification plan checks for developer projects.

OCTA's Centerline Project—Mr. Hizon was design engineer responsible for signing, striping and traffic signal modification design for the intercity rail project.

Yolanda G. Cervantes, EIT

Associate Transportation Engineer I

Education
California State University
Fullerton, California
Bachelor of Science, Civil Engineering, 2016

Professional Registrations
CA Registered Engineer-in-Training – EIT #162276

Professional Associations
Institute of Transportation Engineers
Orange County Traffic Engineering Council

Ms. Cervantes develops design plans for new signalized intersections, traffic signal modifications, and signal interconnect projects. She conducts field topographic surveys to develop design plans, incorporates Caltrans Standard Plans to update signal hardware to current standards, and assists in the preparation of plans, specifications and estimates (PS&E). Recently, she gained experience as a project leader for various smaller projects and has become a reliable liaison with government and private agencies. Her experience with design software includes both AutoCAD and MicroStation.

Ms. Cervantes previously worked Albert Grover & Associates as an Associate Engineer. Prior to joining Albert Grover, she gained valuable experience as a Traffic Engineering Intern for the City of Santa Ana where she conducted field surveys for traffic signal plans and worked on new traffic signal installation designs, modifications of signalized intersections and striping plans for implementation of bike lanes.

During her first position with the County of Orange as an Engineering Technician Trainee, she conducted field surveys for slurry seal and asphalt overlay resurfacing plans, prepared quantity calculations for contract bids and engineer's estimates for Capital Improvement Projects (CIP). She also did utility research, prepared right-of-way maps and assisted resident engineers by preparing drawings and inspecting slurry seal jobs for OC Parks.

Relevant Experience

TSSP for Los Angeles County Public Works, Valley Blvd-Holt Avenue—Ms. Cervantes conducted topographic surveys to verify existing conditions of traffic signals and worked on signal modification design.

Traffic Signal Design—Ms. Cervantes worked on traffic signal modification plans for the intersection of Imperial Hwy & Amery Ave. in the City of South Gate, and she is currently working on a new signal design for Pepper Avenue and Winchester Dr. for the City of Rialto.

SSARP Citywide Traffic Safety Study, City of Placentia—Ms. Cervantes performed citywide data collection, roadway and signal analysis and provided recommendations for the safety analysis report.

HSIP Cycle 8 Signal Design, City of Rialto—Ms. Cervantes is currently working on the design of four traffic signals to incorporate left-turn phasing.

Regional Traffic Signal Synchronization Projects (RTSSP)—As part of the AGA team, Ms. Cervantes has performed studies and signal design for corridor projects on Imperial Hwy, in the City of Costa Mesa, on Antonio Pkwy, and Alicia Pkwy.

Balboa Peninsula Crossing Study—Ms. Cervantes designed signing and striping plans to improve pedestrian safety along an approximately 3.75 mile corridor.

Flashing Beacon Design, City of Newport Beach—Ms. Cervantes is currently working on the design plans for the implementation of flashing beacons at the intersection of Balboa Blvd. & 13th.

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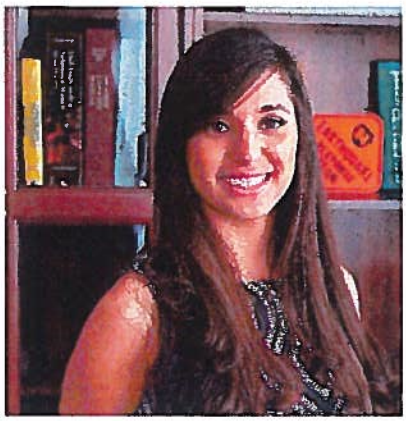
Jessica Espinoza, EIT

Associate Transportation Engineer I



Education
California State University, Fullerton
Bachelor of Science, Civil Engineering, 2016

Professional Registrations
CA Registered Engineer-in-Training – EIT #160008

Professional Associations
Institute of Transportation Engineers
American Society of Civil Engineers
Orange County Traffic Engineering Council

Ms. Espinoza's duties include signal design and modifications, fiber communications design, signing and striping, street lighting, and implementation of bike lanes. She responds to on-call engineering requests and resident complaints for City clients. She performs sight distance analysis and traffic signal warrants, along with other field studies including crossing guard studies, traffic impact studies, and traffic operations analysis. She has conducted field topographic surveys required to develop design plans for improving intersection safety and updating signal hardware to current standards.

Ms. Espinoza participates in a wide variety of transportation engineering functions, has worked with government agencies such as the County of Los Angeles and the City of Buena Park, and is competent with traffic engineering software including AutoCAD and MicroStation.

Ms. Espinoza previously worked at Albert Grover & Associates as an Associate Engineer. Prior to that, she worked as Engineering Intern for the City of Santa Ana. While there, she conducted field surveys for signing and striping plans, performed traffic signal design and was involved in the implementation of bike lanes. She also prepared and reviewed traffic control plans, and prepared quantity calculations for contract bid items.

Relevant Experience

Los Angeles County Public Works—Ms. Espinoza conducted topographic surveys to verify existing conditions of traffic signals.

Traffic Signal Synchronization Project (RTSSP), City of Fullerton—Ms. Espinoza supported the design process, including traffic signal design and communications planning; she prepared specifications and helped with cost estimates; she also prepared Caltrans encroachment permits.

Regional Traffic Signal Synchronization Project (RTSSP), Alicia Parkway—Ms. Espinoza designs traffic signal modifications and interconnect for this ongoing project.

Studies/Signal Design, City of Buena Park—Ms. Espinoza has performed sight distance studies, traffic signal warrants, and completed signal designs for various intersections and pedestrian crossings in the City (including Commonwealth and Indiana Avenue and for the SCE Trail mid-block pedestrian signal crosswalk on Valley View Street).

Central Avenue Rehab Project, City of Montclair—Ms. Espinoza designs full striping and signing plans, traffic signal modifications and traffic signal interconnect for this ongoing project.

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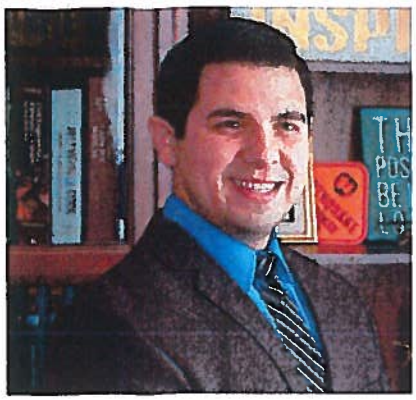
Andrew Luna, EIT

Associate Transportation Engineer I



Mr. Luna's duties include responding to city traffic requests, conducting traffic warrant analyses, stop sign warrant analyses, and sight-distance analyses for local city clients. Additionally, he assists in traffic signal design, completes neighborhood traffic studies, and monitors traffic signal timing and coordination in the field. He is prolific in transportation planning and traffic engineering software programs including Synchro, WEBSTER and Tru-Traffic, as well as AutoCAD design software.

He recently completed pedestrian safety studies for the Santa Monica Boulevard/Robertson Boulevard intersection in West Hollywood. This project led to the implementation of the region's first part-time exclusive pedestrian interval—an innovative design that will enhance pedestrian safety and improve mobility at this busy intersection with heavy congestion, turn movements, and pedestrian activity.

Mr. Luna previously worked at Albert Grover & Associates as an Associate Engineer where he completed many design engineering and signal timing tasks.

Education
California State University, Fullerton
Bachelor of Science, Civil Engineering, 2016

Professional Registrations
CA Registered Engineer-in-Training – EIT #156851

Professional Associations
Institute of Transportation Engineers
American Society of Civil Engineers
Orange County Traffic Engineering Council

Relevant Experience

Citywide Traffic Operations and Traffic Management Study, City of Irvine—Mr. Luna assisted our AGA team by performing intersection capacity analysis, vehicle queuing analysis, and volume analysis with Synchro modeling.

On-Call Services, City of La Habra—Mr. Luna regularly responds to resident concerns, conducts sight-distance analysis, traffic studies, stop sign warrant analyses, and traffic signal warrants.

Intersection Improvements on Valley Boulevard, Los Angeles County—Mr. Luna completed field surveys and designed intersection improvements.

Regional Traffic Signal Synchronization Projects (RTSSP)—Mr. Luna conducted yellow time evaluations and Synchro modeling for project areas throughout Orange County including La Paz Road, Malvern Avenue/Chapman Avenue, Alicia Parkway, Irvine Center Drive, and Imperial Highway.

Pedestrian Safety Study, West Hollywood—Mr. Luna completed studies leading to implementation of the region's first part-time exclusive pedestrian interval for the intersection of Santa Monica Blvd. and Robertson Blvd.

Traffic Signal Synchronization, Indio—Mr. Luna completed a traffic signal synchronization project along the corridors of Highway 111, Monroe Street, and Jackson Street. The project included updating the pedestrian clearance times and local intersection timing. Various intersections throughout the three corridors were synchronized to improve traffic flow. Assisted in preparing bicycle timing and vehicle timing for the intersections along Highway 111.

Papers & Presentations

"Your Signal Does What?... The Hybrid Pedestrian Interval" Presented at the Joint ITE International and Texas District Annual Meeting, Austin, Texas

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