MAJDI KANAAN, P.E.

Project Manager, Senior Engineer, President

EDUCATION:

MS/1985/Structural Engineering/Lamar University, Beaumont, Texas
BS/1981/Civil Engineering/Saint Martin's University, Olympia, Washington
Post Graduate Project Management, University of California, Davis, California

REGISTRATION:

1992/Professional Engineer/Washington/#29397
1993/Professional Engineer/California/#50238
1999/Professional Engineer/Colorado/#33439
1999/Professional Engineer/Nevada/#14096
2009/Professional Engineer/Texas/#102500

AFFILIATIONS:

ASCE, American Society of Civil Engineers

PROFESSIONAL EXPERIENCE:

30-year structural engineering career
With ADKO Engineering, Inc. for 12 years
With other prestigious firms for 22 years

BACKGROUND:

I have over 33 years' experience, including 12 years with ADKO Engineering involving bridge CM and bridge inspections of long-span bridges.

I have been responsible for the planning, managing, and construction of many transportation highway bridge, rail, and civil structures; is very familiar with Caltrans Local Assistance procedures and funding process; and has assisted in the completion of many bridge projects, including advanced analysis and design, preparation of plans, specifications, and estimates (PS&E) per AASHTO, Caltrans' BDS and LRFD, Seismic Design Criteria (SDC), Bridge Design Details, and Memos to Designers for new construction and widening designs.

Implemented Quality Assurance procedures. Prepared contract change orders for any changes, additions, or deletions from the contract plans and specifications to ensure proper completion of projects; Completed monthly payment quantities; Responded to RFI's, and resolved Contractors' claims; prepared daily, weekly reports, and letters to address the project construction issues.

Participated in the project weekly meeting with the Resident Engineers; Conferred with contractors regarding compliance with project plans, quality of work, construction activities, and CAL-OSHA regulations; Provided Bridge construction engineering inspection to ensure contractual compliance and adherence to the Special Provisions, Contract Plans, Standard Specifications, Standard Plans, Construction Procedure Directives, OSC technical manuals, and supplemental project information.

Followed guidance on Bridge Construction Records & Procedures, OSC Construction Practices & Procedures, and CAL-OSHA construction safety regulations. Performed structure analysis for Bridge construction and all other structural related items.

Reviewed and approved Contractors' submittals of demolition plans, soil excavation plans, shoring plans, sloping, benching, falsework, forms, concrete mix design, concrete curing, column guying plans, box girder post tensioning, overhead sign structures shop drawings, pile placement plans,

pile driving; Calculated bridge camber, joint seals, pile driving, grades for bridge soffit, deck dowels, abutments and shear keys.

Performed field inspection for materials to be inspected at the jobsite, structure excavation and backfill, shoring, reinforcing steel, placing and curing concrete, finishing concrete surfaces, pile driving, bridge deck construction, barrier rails, sign structures, box girder post tensioning, joint seal installation; Advised the Contractor on major phrases of construction activities, and schedules; Carried out on-site material quality check and CTM testing procedures (California Test Method).

Recorded and filed project documents pertaining to construction progress including diaries, Structure Rep weekly reports, weekly newsletters, project status initial and completion reports, structure item memo, material testing results, as-built drawings, etc.

RELEVANT PROJECTS:

Greenwood Avenue Culvert Replacement, Napa County, CA
As the project manager for the replacement of Greenwood Avenue Bridge, I am thoroughly familiar with Caltrans and local agency requirements. My experience working for contractors and local agencies gave me a unique perspective in schedule management that directly benefited this project. My duties have included scheduling, office engineering, field engineering and inspection, quality control, budget forecasting, public relations, procurement, supervision of crews, field coordination of subcontractors, assisted in daily quantities, billing, CCO estimates, and field take-offs. I am well versed in Microsoft Office. I provided an on-going consultation and interpretation of construction documents during the construction of the project. Construction support services included; attended the project pre-construction meeting; reviewed and commented on contract change orders; prepared plan revisions as necessitated by contract change orders; provided construction engineering assistance as required; reviewed and approved all submittals and shop drawings.

Oakville Cross Road Bridge, Napa County, CA
As the project manager for the replacement of for the replacement of Oakville Cross Road Bridge. The structure improvements included replacement of a narrow bridge with a new two-lane two-span box girder bridge, a roughened channel, and the lengthening of a four cell box culvert. My duties have included scheduling, office engineering, field engineering and inspection and quality control.

McKinley Ave. Bridge Rehabilitaion, Stockton, CA
For this rehabilitation project ADKO provided PS&E for the rehabilitation of this HBP bridge. The purpose of the project was to repair scour/erosion damage of the eroded channel of the slough and to repair damage to the bridge abutments and piers. The project was also needed to minimize the possibility of future damage. My duties have included scheduling, field engineering and inspection, quality control, public relations, procurement, supervision of crews, assisted in daily quantities, billing, CCO estimates, and field take-offs. I provided an on-going consultation and interpretation of construction documents during the construction of the project. Construction support services included; attended the project pre-construction meeting; reviewed and commented on contract change orders; prepared plan revisions as necessitated by contract change orders; provided construction engineering assistance as required; reviewed and approved all submittals and shop drawings.

High Speed Rail Project Ave 8 OH, Ave 9 OH and Ave 10 OH Fresno, CA
Provided the independent design check of three primary type 2, simple span structures. Ave 9 OH is 177 feet long by 66 feet wide CA Wide Flange Precast Girder Bridge. Ave 10 OH is 112 feet long by 34 fee wide CA Wide Flange Precast Girder Bridge. Ave 11 OH is 106 feet long by 34 feet wide CA Wide Flange Precast Girder Bridge. I provided extensive quality control was provided on this project.

West 4th Street Overcrossing Rehabilitation Widening, Madera, CA
Project manager providing preliminary and final PS&E services for the widening of the existing West 4th Street Bridge over SR99 in Madera. The bridge is comprised of two continuous box girder main spans supported on a three-column center bent and two transverse slab end spans supported on bin type wall abutments. ADKO Engineering delivered the bridge for MRO Engineering. I provided an on-going consultation and interpretation of construction documents during the construction of the proposed project. Construction support services included; attending the project pre-construction meeting; reviewed and commented on contract change orders; prepared plan revisions as necessitated by contract change orders; provided construction engineering assistance as required; reviewed and approved all submittals and shop drawings

Sperry Rd Extension Bridges, Stockton, CA
I provided Construction Management for the construction of new five bridges for Sperry Road Extension Project. The new five bridges consist of 3 span Cast-In-Place Prestress box girder on seat type abutments and 648-14" square Precast Prestressed Concrete Piles.I am a proactive construction manager that excels at public relations, coordination with third party agencies. My technical expertise, combined with my contract administration knowledge and strong work ethic have enabled me to expand ADKO Engineering capabilities and leadership in performing detailed biddability/constructability reviews on contract documents that results in significant cost/schedule savings for the owners.

As a structures Rep, I provided construction administration and inspection oversight services for the project; my specific responsibilities included daily construction and inspection observation, field report writing, responding to RFIs, reviewing submittals and shop drawings, evaluating change orders, claim due to change in site conditions for hard pile driving, preparation of daily diaries and other inspection duties, as required, attended weekly meetings, monitored schedule, answered questions regarding the contract documents during the advertising of the project and assisting the City during the construction period.

Davis Road Bridge, Stockton, CA
Provided Construction Management for the replacement of Davis Road Bridge. This new bridge consists of 5 span cast-in-place slab on diaphragm type abutments and 56-16" diameter Precast Prestressed Concrete Piles. Coordination included multiple projects in the vicinity of the project. This includes AT&T's directional boring of 6" pipe 50' below ground and Delta Water's boring for 36" pipe below ground. Provided Construction Management on site. Coordination with other agencies: Caltrans, Woodbridge Irrigation District, San Joaquin County Parks, Delta Water.

As a structures Rep and a Resident Engineer, I provided construction administration and inspection oversight services for the project; my specific responsibilities included daily construction and inspection observation, field report writing, responding to RFIs, reviewing submittals and shop drawings, evaluating change orders, preparation of daily diaries and other inspection duties, as required, attended weekly

meetings, monitored schedule, answered questions regarding the contract documents during the advertising of the project and assisting the City during construction period.

Bay Bridge Yerba Buena Island Viaduct, Oakland, CA:
Assisted C.C. Meyers, Inc. to serve as the project manager for the construction inspection, analysis and design of the false work system for the Bay Bridge Yerba Buena Island Viaduct project. Bridge inspection, field layout, submittal review and falsework inspection. To minimize the impacts on Bay Bridge traffic, the temporary 5 span reinforced concrete replacement structure had to be constructed directly adjacent to the existing Bay Bridge, and slid into position once the existing structure was demolished. Various false work systems were considered, and the bracing system which optimized resistance, lateral displacement, constructability, and cost was selected. The analyses were complicated by the construction site's variable terrain, high winds, and scattered staging areas.

Galena Creek Arch Bridge, Reno, NV:
Teamed with C.C. Meyers, Inc. to serve as the project manager for the analysis and design of the false work system for the Galena Creek Arch Bridge; the largest cast-in-place concrete arch span in the United States. To streamline construction, various false work systems were considered, and those which optimized resistance, lateral displacement, constructability, and cost were selected for use at various points along the span. The analyses were complicated by the construction site's variable canyon-type terrain, and unusually high winds. I also provided construction inspection for the false work system.

Floriston Ramp Bridge Improvement Project, Nevada County, CA:
Provide preliminary engineering and the 100% PS&E package for the revitilization of the Floriston Ramp Bridge in Truckee, California. The existing structure was a conventionally reinforced concrete box girder that carried 2 lanes of traffic across its 3 spans over the Truckee River. The existing bridge deck had become structurally deficiant as a result of heavy chain usage over its lifetime, which left much of the reinforcing steel exposed to the corrosive marine environment. To correct the problem, the existing superstructure was removed and replaced. The new structure measures approximately 182 feet long by 34 feet wide, and is characterized by a 4 cell box girder typical section. The new bridge spans a curved and skewed alignment, and is supported on new seat type abutments and existing pier walls. The new abutments are founded on spread footing foundations.

South Sacramento Corridor Phase II: Civil & Tracks Project
Provided construction support. ADKO Engineering teamed with LAN as a sub-consultant to provide Preliminary Engineering, and Design (PS&E) of Deer Lake Drive and Valley Green Pedestrian Bridges including Sound Walls, Transparent Walls and Retaining Walls for South Sacramento Phase 2 project. The South Corridor is approximately 4.80 miles and connects Meadowview Station with Consumes River College. The corridor is planned as a Light Rail Transit corridor. The 20,000 feet masonry block will meet the noise requirements level. The environmental study noise level requirements dictated the use of sound walls next to adjacent communities. The 8,000 feet retaining walls were required to minimize the right of way requirements.
The two pedestrian bridges that are part of this corridor include Deer Lake Drive Pedestrian Bridge and Valley Green Pedestrian Bridge. The pedestrian bridges consist of structural steel single span bridges that convey the 100 Year design flow for Union House Creek and provide access for pedestrians to Franklin

Blvd and Center Parkway Stations from adjacent communities. The pedestrian bridges are 10'-0"wide and supported on seat type abutments.

South Sacramento Corridor Phase II: Stations Project
Provided construction support. ADKO Engineering teamed with HLA as a sub-consultant to provide Preliminary Engineering, and Design of Morrison Creek, Franklin Blvd and Center Parkway Stations platforms, shelters, mini height platforms, retaining walls, operator's restroom, monument sign walls, decorative fences. The South Corridor is approximately 4.80 miles and connects Meadowview Station with Cosumnes River College.

Barajas Bridge, El Dorado County, CA:
In addition to design services, and as a service to the private project owner, I provided construction support services for the Barajas Bridge. The new structure is a single span reinforced concrete slab bridge supported on seat type abutments. The new bridge carries 2 lanes of traffic over Clark Creek along an orthogonal alignment. Mr. Kanaan's specific responsibilities included periodic construction and inspection observation, field report writing, responding to RFIs, reviewing submittals and shop drawings, and evaluating change orders.

Thunder Valley Sunset Blvd Bridge, Rocklin, CA:
In addition to design services, I provided construction support services for the Sunset Blvd Bridge. The new structure is a 7 span precast prestressed voided slab bridge measuring approximately 460 feet long, and is supported on seat type abutments and driven concrete pile extensions. The new bridge accommodates 4 lanes of vehicular traffic. Mr. Kanaan's construction support responsibilities included periodic construction and inspection observation, field report writing, responding to RFIs, reviewing submittals and shop drawings, and evaluating change orders. A unique feature of this project was the coordination effort that was required to lift the 4 foot wide voided slab segments with a 100 ton crane.

Calvine Road Bridge Improvements, Sacramento, CA:
In addition to design services, Mr. Kanaan provided construction support services for the widening of the Calvine Road Bridge. The existing structure was a 3 span reinforced concrete slab bridge supported on seat type abutments and driven concrete pile extensions, and carried 2 lanes of traffic over Laguna Creek. The widened structure matches the existing structure, and now carries 6 lanes of traffic over Laguna Creek. Other aspects of this project included the construction of a fully landscaped center median, class II bike lanes, and underground water transmission mains. Mr. Kanaan's construction support responsibilities included periodic construction and inspection observation, field report writing, responding to RFIs, reviewing submittals and shop drawings, and evaluating change orders.

Houston Rapid Transit Guideway Rail Project, Houston, TX:
As a sub-consultant to Lockwood, Andrews & Newman, Inc., ADKO Engineering, Inc. and Mr. Kanaan provided design services for the track slab portion of the Houston Rapid Transit Guideway Rail Project. This project included approximately 4.70 miles of new track along Houston's Southeast Corridor. A challenging aspect of this project was satisfying the numerous requirements imposed by various local and environmental agencies.

South Sacramento Corridor Phase II Project – Stations, Sacramento, CA:
As a sub-consultant to the HLA Group, ADKO Engineering, Inc. and Mr. Kanaan provided structural design services for the stations portion of the South Sacramento Corridor Phase II Project. This project included the design of 3 light rail stations along the approximately 4.80 mile long South Sacramento Corridor, which connects the Meadowview area with the Cosumnes River College campus. The structural design services included station platforms, shelters, retaining walls, monument sign walls, restroom buildings, and decorative fences. This project is currently pending plan approval and funding.

South Sacramento Corridor Phase II Project – Civil & Tracks, Sacramento, CA:
As a sub-consultant to Lockwood, Andrews & Newman, Inc., ADKO Engineering, Inc. and Mr. Kanaan provided design services for the structural aspects of the civil and tracks portion of the South Sacramento Corridor Phase II Project. This project included the design of 2 pedestrian bridges, sound walls, and retaining walls along the approximately 4.80 mile long South Sacramento Corridor, which connects the Meadowview area with the Cosumnes River College campus. The pedestrian bridges were designed as single span pre-manufactured steel trusses, and are supported on seat type abutments. Nearly 20,000 feet of masonry sound walls were specified to meet the noise level requirements of adjacent communities. Nearly 8,000 feet of retaining walls were specified to meet profile requirements and minimize right-of-way acquisitions. This project is currently pending plan approval and funding.

Maybert Road Bridge, Nevada County, CA:
As the prime consultant, ADKO Engineering, Inc. and Mr. Kanaan were selected to provide conceptual recommendations, preliminary engineering, the 100% PS&E package, and construction support for the new Maybert Road Bridge. The new single span structural steel truss will span Canyon Creek, replace an existing structural steel truss, measure approximately 80 feet long by 20 feet wide, and accomodate 2 lanes of traffic. The new structure will be supported on seat type abutments and spread footing foundations. In addition to managing the structural design, Mr. Kanaan was responsible for coordinating the efforts of the other engineering disciplines, satisfying the owner's needs, and meeting the requirements of various regulatory agencies. The early success of this project required advanced planning studies, geotechnical investigations, environmental studies, hydraulic evaluations, utility relocations, public relation efforts, and right-of-way appraisals and acquisitions. Unique to this project was a site that was deemed eligible for the National Register of Historic Places, and an environmental process that required a joint NEPA/CEQA document preparation; the CEQA document was also used to satisfy the Streambed Alteration Agreement review conducted by the State of California Department of Fish and Game. During the construction phase, Mr. Kanaan will be responsible for providing periodic construction and inspection observation, written field reports, RFI responses, submittal and shop drawing review, and change order evaluation. This project is currently pending environmental approval.

Hinton Overhead Bridge Retrofit, Nevada County, CA:
ADKO Engineering Inc. and Mr. Kanaan were selected to perform a seismic analysis on, and provide retrofit recommendations for the Hinton Overhead Bridge in Hirschdale, California. The original bridge was constructed in 1925, and carried 2 lanes of traffic along Old Highway 40 over a set of UPRR tracks. The structure measures approximately 170 feet long by 25 feet wide, and is characterized by 4 spans of reinforced concrete T-beams. The bridge is supported on seat type abutments and reinforced concrete 2-column bents; all substructure elements are founded on

spread footing foundations. As a result of the investigative efforts, link beams, pipe restrainers, and CIDH piles were added at the piers to make the structure more resilient to seismic load effects.

Truckee River Bridge Retrofit, Nevada County, CA:
ADKO Engineering Inc. and Mr. Kanaan were selected to perform a seismic analysis on, and provided retrofit recommendations for the Truckee River Bridge in Hirschdale, California. The original bridge was constructed in 1925, and carried 2 lanes of traffic along Old Highway 40 over the Truckee River. The structure measures approximately 250 feet long by 26 feet wide, and is characterized by 5 spans of reinforced concrete T-beams. The bridge is supported on seat type abutments and reinforced concrete pier walls; all substructure elements are founded on spread footing foundations. As a result of the investigative efforts, link beams and CIDH piles were added at the abutments, and pipe restrainers were added at the piers to make the structure more resilient to seismic load effects.

Metro Blue Line Rail Transit Project, Long Beach to Los Angeles, CA:
As a member of Dokken Engineering, Mr. Kanaan provided the 100% PS&E package for two rail transit aerial structures that were part of the Metro Blue Line Rail Transit Project, which connected Long Beach to Los Angeles, California. The new structures total 40 spans, measure approximately 6,000 feet long, and are characterized by a 25 foot wide, cast-in-place, prestressed concrete box girder typical section. The new structures incorporate several hinges, resulting in the presence of multiple longitudinal frames. Each frame is typically supported on 1 or 2 column bents, but outriggers and C-bents are featured as necessitated by site-specific conditions.

Metro Green Line Rail Transit Project, Norwalk to El Segundo, CA: As a member of Dokken Engineering, Mr. Kanaan provided the 100% PS&E package for two rail transit aerial structures that were part of the Metro Green Line Rail Transit Project, which connected Norwalk to El Segundo, California. The new structures total 28 spans, measure approximately 3,400 feet long, and are characterized by a 33 foot wide, cast-in-place, prestressed concrete box girder typical section. The new structures incorporate several hinges, resulting in the presence of multiple longitudinal frames. Each frame is typically supported on 1 or 2 column bents, but outriggers are featured as necessitated by site-specific conditions.

Carquinez Bridge Seismic Retrofit, Carquinez, CA:
As a service to Caltrans, Mr. Kanaan checked the seismic retrofit design of the existing Carquinez Bridge deck "4E" approach. The retrofit called for the approach to act as a seismic diaphragm, and the proposed deck was checked for its ability to adequately distribute seismic forces to the resisting substructure elements.

Center Street and El Dorado Street Overpasses, Stockton, CA:
As a service to the City of Stockton, ADKO Engineering, Inc. and Mr. Kanaan were selected to provide the 100% PS&E package for the bridge deck rehabilitation project along the Center Street and El Dorado Street Overpasse. The existing overpass structures are parallel 15-span reinforced concrete box girder bridges, measuring approximately 1400 feet long and 55 feet wide. Each structure is supported on seat type abutments and a combination of multi and single column bents. As a result of a field study conducted by ADKO Engineering, Inc. and the City of Stockton, it was determined that 17% of the Center Street Overpass bridge deck and 11% of the El Dorado Street Overpass bridge deck was structurally deficient. As a result of heavy usage over their lifetime, the bridge decks showed extensive cracking and delamination, and left much of the rebar exposed to

the corrosive marine environment. To correct the problem, ADKO Engineering, Inc. specified the following rehabilitation procedure: remove unsound concrete by hand or high pressure water jet, shot blast and clean bridge deck, treat bridge deck with Lithium, treat the entire bridge surface with mythacrylate, and apply a polyester concrete overlay over the entire bridge surface. In addition, new Type A and Type B joint seals at the abutments and hinges were specified to replace the existing deteriorated joint seals, and spalled concrete areas at the abutment seats and end diaphragms were chipped-out, drilled, doweled, and patched with new concrete.

Lewis Avenue Bridge, Atascadero, CA:
As a service to the City of Atascadero, ADKO Engineering, Inc. and Mr. Kanaan were selected as the lead structural engineer for the Lewis Avenue Bridge. The new structural steel truss tied arch bridge spans Atascadero Creek, and measures approximately 164 feet long by 64 feet wide. The structure provides 2 lanes of vehicular traffic, 2 lanes of bicycle traffic, and 2 sidewalks for pedestrian traffic. The structural steel arches are anchored to the abutments with an anchor rod and tie-back system, and the bridge is supported on seat type abutments and pile foundations. Specific design challenges included aesthetics, hydraulic conveyance, and simultaneously satisfying the traffic flow desires of the City, local residents, and the Contractor. The visually pleasing tubular shapes were selected to satisfy the aesthetics requirement. The concrete deck and secondary structural members were supported by suspension cables, which allowed the deck thickness to be minimized, and subsequently enabled the structure to accommodate the design flow of Atascadero Creek. A stage construction and traffic control plan was developed to accomodate the needs of the various interested parties. The successful completion of this project relied upon the professional cooperation of the various engineering disciplines and the City of Atascadero, and upon the close coordination of advanced planning studies, geotechnical investigations, environmental studies, hydraulic evaluations, utility relocations, public relation efforts, and right-of-way appraisals and acquisitions.

Floriston Ramp Bridge Improvement Project, Nevada County, CA:
Provide preliminary engineering and the 100% PS&E package for the revitilization of the Floriston Ramp Bridge in Truckee, California. The existing structure was a conventionally reinforced concrete box girder that carried 2 lanes of traffic across its 3 spans over the Truckee River. The existing bridge deck had become structurally deficiant as a result of heavy chain usage over its lifetime, which left much of the reinforcing steel exposed to the corrosive marine environment. To correct the problem, the existing superstructure was removed and replaced. The new structure measures approximately 182 feet long by 34 feet wide, and is characterized by a 4 cell box girder typical section. The new bridge spans a curved and skewed alignment, and is supported on new seat type abutments and existing pier walls. The new abutments are founded on spread footing foundations.

Bear River Siphon Suspension Bridge, Grass Valley, CA:
As a service to the Nevada County Irrigation District Maintenance Department, I performed a seismic and wind load analysis on, and provided retrofit recommendations for the Bear River Siphon Suspension Bridge. The structure was constructed in the early 1970s, and carries a 30" diameter pipe across the Bear River Canyon. The bridge measures approximately 450 feet long by 30 feet wide (including its outriggers), and features a main suspended span that measures approximately 250 feet long between the North and South towers. The carried pipe is supported by two main cables that span between the North and South towers, is fixed at the South tower, but is free to move transversely at the North tower. The North tower is approximately 40 feet tall, while the

South tower is approximately 24 feet tall. Each tower is fixed to its spread footing foundation by an array of anchor bolts. As a result of the investigative efforts, a main cable tightening sequence was proposed, and a passive restraint system was proposed for the Northern end of the pipe.

Wilson Way Bridge Widening, San Joaquin County, CA:
As a service to the County of San Joaquin, I provided an independent design check and construction support services for the Wilson Way Bridge widening project. The existing structure was an 8 span reinforced concrete slab bridge supported on seat type abutments and driven concrete pile extensions, and carried 4 lanes of traffic. The widened structure matches the existing structure, and now carries 6 lanes of traffic. To maintain local traffic flow during construction, Mr. Kanaan assisted in the development of a sophisticated construction staging plan. During the construction phase of the project, Mr. Kanaan was responsible for maintaining a working day schedule, responding to RFIs, reviewing submittals and shop drawings, and evaluating change orders.

River Road Bridge Replacement, San Joaquin County, CA:
As a service to the County of San Joaquin, I was the project manager for the design of a precast concrete U-section bridge that replaced an existing reinforced concrete slab bridge. Mr. Kanaan's notable responsibilities included coordinating the work of the casting yard to transport the precast units on time, and within tolerable loads and clearances.

Lewis Stein Bridges, Elk Grove, CA:
As a service to the City of Elk Grove, Mr. Kanaan acted as project manager for the design of the Laguna Creek and Laguna Bypass Bridges. The new structures are reinforced concrete slab bridges measuring approximately 160 feet long, and are supported on seat type abutments and driven concrete pile extensions. During construction, Mr. Kanaan provided construction support services, and was responsible for periodic construction and inspection observation, field report writing, responding to RFIs, reviewing submittals and shop drawings, and evaluating change orders.

Allis Street/Avenue 16 Overcrossing, Madera, CA:
As a service to Caltrans and the City of Madera, I was the project manager for the design of the Allis Street/Avenue 16 Overcrossing. The new structure is a 6 span cast-in-place prestressed concrete box girder bridge, carries 4 lanes of traffic, and measures approximately 515 feet long by 62 feet wide. The structure is supported on seat type abutments and pier walls founded on CIDH piles. Mr. Kanaan's responsibilities included oversight of the engineering analyses, development of the 100% PS&E package, and maintenance of a working day schedule.

Benicia Martinez Bridge, Solano County and Contra Costa County, CA:
As a service to Caltrans and the lead design engineer, I checked the post-tensioning design of the superstructure's transverse ribs between piers 16 and 17 for this segmentally constructed precast post-tensioned concrete box girder bridge.

Caltrans "On-Call" No. 51 Seismic Retrofit, Santa Barbara, CA:
As a service to Caltrans, I was the on-call project engineer for seismic retrofits along State Route 101 near Santa Barbara. Mr. Kanaan's responsibilities included the development of structural calculations and the maintenance of the PS&E packages for 8 bridge structures. Notable structures included the 360 foot long cast-in-place prestressed box girder Central Outfall Overcrossing, the Cadillac Ramp Separator, the 790 foot long Interstate 10 Connector Overcrossing, the Ballona Creek On-Ramp Overcrossing, and the Manning Avenue On-Ramp Overcrossing.

Caltrans "On-Call" Phase II Seismic Retrofit, Santa Clara County, CA:
As a service to Caltrans, I provided seismic retrofit recommendations for bridge structures along State Route 101 in Santa Clara County on an on-call basis. Notable structures included the 5 span reinforced concrete arch and T-beam Pacheco Creek Bridge, the 4 span precast prestressed concrete I-girder Story Road Overcrossing, and the 2 span precast prestressed concrete I-girder Lafayette Street Overcrossing.

State Route 160 North Sacramento Viaduct, Sacramento, CA:
As a service to Caltrans, I provided a seismic retrofit strategy for the North Sacramento Viaduct along State Route 160. This multi-span, multi-frame reinforced concrete T-beam structure measures approximately 1500 feet long and 65 feet wide. As part of the retrofit strategy, hinge improvements, barrier replacements, and shear wall additions were proposed.

Lower Guadalupe River, Santa Clara, CA:
As a service to the Santa Clara Valley Water District, Mr. Kanaan provided design services for the capacity augmentation project of the Lower Guadalupe River. As part of this project, the existing levee height was raised using a system of floodwalls, concrete retaining walls, MSE retaining walls, and tie-back walls. An advanced planning study and preliminary engineering effort was also conducted for a 9 span reinforced concrete slab bridge along State Route 237.

EBMUD Overcrossing Widening, Stockton, CA:
As a service to the East Bay Municipal Utilities District and the City of Stockton, I served as the lead structural engineer for the widening of a 4 span reinforced concrete box girder bridge, which measures approximately 260 feet long, and spans the EBMUD's primary aqueduct at the Interstate 5/March Lane interchange. In addition to preparing the 100% PS&E package, Mr. Kanaan was responsible for evaluating the original structure for seismic retrofit needs, developing a waterline pipe protection scheme, and coordinating efforts to control noise levels during construction.

State Route 30 Fruit Street Overcrossing Flume Structure, Los Angeles, CA:
Lead structural engineer for the 100% PS&E package of a flume structure crossing Fruit Street along State Route 30. The new structure is a 2 span cast-in-place prestressed concrete box girder bridge, measuring approximately 200 feet long by 85 feet wide. The design included special seismic criteria, and required special joint seal detailing to accommodate the flow of storm water from the flume structure to the adjacent reinforced concrete box culvert structure.

Sacramento Metropolitan Airport, Sacramento, CA:
I served as the project design engineer for the Crossfield Drive Overcrossing. This new structure is a 2 span cast-in-place reinforced concrete box girder bridge, and was part of the Sacramento Metropolitan Airport expansion project. I was responsible for developing the 100% PS&E package.