

STAFF REPORT

DATE: June 6, 2017

TO: City Council

FROM: Robert A. Clarke, Public Works Director/City Engineer
Brian Mickelson, Assistant City Engineer
Michael Mitchell, Principal Civil Engineer

SUBJECT: Richards Boulevard Interchange Improvements, CIP No. 8730

Recommendation

Staff proposes that the City authorize initial work on Richards Boulevard interchange improvements in preparation for the 2018 SACOG Regional Funding cycle. Staff recommends the City Council take the following actions:

1. Approve the attached resolution approving Mark Thomas & Co. Task Order No. 10 and Scope of Work; and
2. Approve the attached Budget Adjustment allocating \$1,554,763 in Roadway Impact Fee funds to cover the estimated costs to prepare the Project Approval and Environmental Documentation and the Plans, Specifications and Estimates for construction of the project; and
3. Approve the Amendment to the Mark Thomas & Co. On-Call Agreement, increasing the maximum not-to-exceed limit from \$1,000,000 to \$2,000,000.

Fiscal Impact

The Budget Adjustment transfers \$1,554,763 of unallocated Roadway Impact Fees (Fund 475) to CIP No. 8730 for this effort.

Council Goal(s)

This project supports the Council Goals to Fund, Maintain, and improve Infrastructure and to Ensure a Safe and healthy Community. It also supports the objective to Develop plans and funding strategies to address the long term needs of the community in planning for infrastructure and City assets.

Background and Analysis

The Richards Boulevard corridor is a major entry into the City of Davis, as well as a key connector between South Davis and the downtown area. Parts of the corridor were upgraded in the 1990s, but other areas are sub-optimal for all types of travelers. Approximately 400 bicyclists and 200 pedestrians cross the Richards Boulevard interchange every day. North of I-80, between the freeway and the Richards underpass, the Richards Boulevard interchange is a two-quadrant cloverleaf configuration. This design, in which all vehicle movements are uncontrolled, results in high vehicle speeds onto and off of the freeway ramps. These high-speed movements create a safety concern for all modes on Richards Boulevard, particularly bicyclists and pedestrians.

There are currently four (4) uncontrolled conflict points between bicyclists and vehicles due to the weaving movements the configuration of the I-80 Westbound ramps require.

Richards Blvd / I-80 Interchange Conflict Points (4)



The most severe of these “weave” movements occurs on Northbound Richards Boulevard at the I-80 Westbound ramps where pedestrians and bicycles crossing the on or off-ramps must negotiate merging high-speed vehicles. Vehicles from the off-ramps that merge with Richards Boulevard traffic must look over their shoulders at a tight angle to judge gaps in traffic, all while paying attention to the signal at Richards Boulevard/Olive Drive and avoiding bicyclists. Between 2003 and 2012, 15 collisions at the Richards Boulevard interchange north of I-80 resulted in an injury. Five of these collisions involved bicyclists.

Over the past decades, the City has evaluated possible improvements to the Richards Boulevard Interchange that would eliminate the free right turns, reduce the “weave” movements, and improve comfort and safety for users of all modes. The identified preferred option is a “tight diamond” with on/off-ramps similar to those on the north side of the Mace Boulevard Interchange. Improvements to the Richards Boulevard Interchange were initially identified in the late 1980’s and have been included in the SACOG Metropolitan Transportation Plan for years, but were unfunded.

In recent years, as the City had public discussions related to the proposed Nishi Gateway development, local traffic – particularly Richards Boulevard – was identified as a key issue of public concern. It was also recognized that, even without new development, the existing interchange configuration did not provide the best traffic operations and expected regional growth would generate increased trips to and from Davis that would further exacerbate the operational concerns.

As a result of the community input focusing renewed concern about the interchange design impact on Richards Blvd., in February 2015, the City entered into a cooperative agreement with Caltrans to perform a Project Study Report for the feasibility of a reconstructed “tight diamond” interchange. Over the period of approximately a year, City staff working with our on-call consultant, Mark Thomas & Co., completed preliminary engineering and environmental documentation for this interchange project. This work was documented in a Caltrans Project Study Report (PSR). In April 2017, Caltrans approved the PSR, certifying that the project can move into the next phases, Project Approval and Environmental Documentation (PA&ED) and also final design, Plans Specifications and Estimates (PS&E).



On March 10, 2017, Staff met with SACOG Executive Staff to discuss this project. There was an agreement between City and SACOG Staff that the project was a strong candidate for the Regional/Local grant funding cycle which will occur in the spring of 2018. To competitively position the project, Staff proposes to advance the project into the design phase to:

1. Make the project nearly shovel-ready upon application submittal; and
2. Demonstrate local commitment to delivering the project.

Based upon feedback from SACOG staff and upon having a completed Project Study Report, Staff sought proposals from three of our On-Call Consulting firms for the PA&ED and PS&E of this project. Staff received two proposals and based upon a thorough review and negotiation process, has selected Mark Thomas & Co. (MT&Co.) to proceed with this phase of the project. Both proposals' scope of work met the project objectives and the fee associated with each was approximately the same. Mark Thomas & Co. was selected due to extensive knowledge of the project area, prior preparation of the Project Study Report, and completion of the Richards Boulevard/Olive Drive Corridor Plan. If approved by Council, Staff will work with MT&Co. to advance this project toward being as close to bid-ready as possible by the spring 2018 grant funding cycle.

Based upon the MT&Co. scope and fee proposal, they will proceed through the PA&ED and PS&E phases, prepare the bid package, and also prepare the grant application for submittal to SACOG in the spring of 2018. If successful in obtaining grant funding, Staff would return to Council at a future date to address a construction funding plan. The allocation of \$1,554,763 through the attached Budget Adjustment for design will count toward the local funding contributed to the overall project.

Mark Thomas & Co. Task Order

On July 12 2016, City Council approved professional services agreements with ten engineering firms to perform On-Call Engineering Services. Mark Thomas & Co. is one of the ten firms with an on-call contract. The company has extensive experience in roadway engineering and corridor planning, and has completed several planning/engineering efforts in Davis. Staff has concluded that Mark Thomas & Co. is the most qualified On-call consultant to prepare the Project Study Report for the interchange improvements.

The proposed Task Order and Scope of Work for the effort are included as Attachments. Key tasks include:

1. Project management and stakeholder coordination;
2. Project Approval and Environmental Documentation;
3. Plans Specifications and Estimates; and
4. Preparation and submittal of the SACOG grant application.

Next Steps/Timeline

Upon initiation of the process, Staff anticipates the effort to complete the scope of work to be approximately eighteen (18) months. This timeframe is consistent with the expected Fall approval of grant funding by SACOG. If the project is successful in receiving grant funding, depending upon which fiscal year funding would be available to the City, the project could potentially move into construction as early as 2019/20.

Attachments

1. Resolution Approving Mark Thomas & Co. Task Order No. 10
2. Mark Thomas & Co. Task Order No. 10
3. Budget Adjustment
4. Amendment No. 1 to the Mark Thomas On-Call Agreement
5. Mark Thomas & Co. Proposal

RESOLUTION NO. XX-XXX, SERIES 2017

RESOLUTION AUTHORIZING APPROVAL OF TASK ORDER NO. 10 WITH MARK THOMAS & CO. CONSULTANTS AS PART OF THEIR ON-CALL ENGINEERING SERVICES FOR THE DESIGN OF THE RICHARDS BOULEVARD AND INTERSTATE 80 INTERCHANGE PROJECT, CIP NO. 8730

WHEREAS, the City Council, on July 12, 2016, approved Mark Thomas & Co. (Consultant) for professional services for On-Call Engineering Services in support of City projects; and

WHEREAS, the City did enter into a 2016 On-Call Master Agreement (Agreement) with Consultant; and

WHEREAS, Task Order No. 10 for Consultant as part of the Agreement provides \$1,554,763 for the Project Approval and Environmental Documentation and Final Design of the Richards Boulevard and Interstate 80 Interchange Project, bid services, and grant writing for Project.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Davis that the City Manager is hereby authorized to approve & sign Task Order No. 10 with Consultant as part of the Agreement in a not-to-exceed amount of \$1,554,763; and

BE IT FURTHER RESOLVED by the City Council of the City of Davis that the City Manager is hereby authorized to approve & sign Amendment No. 1 with Consultant as part of the Agreement to extend the Agreement term to July 12, 2019, and to raise the not-to-exceed amount to \$2,000,000; and

BE IT FURTHER RESOLVED that all terms, conditions, and covenants of said agreement be, and the same are, hereby approved, ratified, and confirmed.

PASSED AND ADOPTED by the City Council of the City of Davis this 6th day of June 2017, by the following vote:

AYES:

NOES:

ABSENT:

Rob Davis
Mayor

ATTEST:

Zoe S. Mirabile, CMC
City Clerk

**CITY OF DAVIS
TASK ORDER**

Task Order No. 10 – I-80 / Richards Interchange

Contract: On-Call Engineering Master Agreement 2016

Consultant: Mark Thomas & Company

Staff Contact: Brian Mickelson

The Consultant is hereby authorized to perform the following work subject to the provisions of the Contract identified above:

Mark Thomas & Co. will perform all necessary work to complete for approval the PA&ED and PS&E of the Richards/I-80 interchange project. Work performed includes but is not limited to surveying and base mapping, preliminary engineering, traffic analysis, right of way and utility certification, completion of the environmental process, final design, preparing bid documents, and grant writing for the SACOG 2018 Regional Local funding cycle.

**List any attachments: Mark Thomas Proposal Dated April 19, 2017
Amended Fee Proposal**

Fee - Dollar Amount of Task Order: Not to exceed \$1,554,763

Funding for Task Order (List all funding sources and/or programs and amounts):

Completion Date: 12/30/18

The undersigned consultant hereby agrees that it will provide all equipment, furnish all materials, except as may be otherwise noted above, and perform all services for the work above specified in accordance with the Contract identified above and will accept as full payment therefore the amount shown above.

City of Davis

Consultant

Dated: _____

Dated: _____

Sign: _____

Sign: _____

Print Name _____

Print Name _____

Title: _____

Title: _____

CITY OF DAVIS
Request for Budget Adjustment

TO: City Manager
VIA: Finance Administrator

FROM: Public Works Dept Head [Signature] 5/24/17
Signature and Date BM

RECEIVED
CITY OF DAVIS
MAY 26 2017
FINANCE
DEPARTMENT

I request the following budget adjustments:

A. Internal Transfers of Currently Appropriated Funds:

TRANSFERS FROM PROGRAM NAME	FUND NO.	DIV/ PROG.	ACTIVITY	ELEMENT/ OBJECT	AMOUNT (CR)	HOURS
_____	_____	_____	_____	_____	_____	.00
_____	_____	_____	_____	_____	_____	.00
_____	_____	_____	_____	_____	_____	.00
_____	_____	_____	_____	_____	_____	.00

B. New Appropriation's Source of funding/Revised Revenue Change:

Deposit Account	_____	Fund Name	_____	Fund No.	_____
Unallocated Reserve	_____	Roadway Impact Fees	_____	475	1,554,763
New/Revised Revenue Account	_____	Revenue Account Number	_____	_____	_____

C. Allocation of Internal Transfers and/or New Appropriations:

TRANSFERS TO PROGRAM NAME	FUND NO.	DIV/ PROG.	ACTIVITY	ELEMENT/ OBJECT	AMOUNT (DR)	HOURS
i/80 Richards Interchange	475	8730	480	4550	1,554,763	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D: Reason For Adjustment (Explain fully. Attach sheet if necessary. If new revenue, record a description on reverse side on Part VI.)
The transfer of this funding is to advance the design of the Richards/I-80 interchange. The design of this project will place the City in better standing to potentially receive Regional/Local grant funding from SACOG in order to improve the Richards/I-80 interchange to improve safety and traffic flow.

FINANCE DIRECTOR

A. Funds have been appropriated & are available.

B. Funds have been appropriated.
 Funds must be appropriated.

Comments:

CITY MANAGER

A. Approved
 Disapproved

B. City Council appropriated funds.
 City Council informed of revised revenue estimate.

Comments:

[Signature]
Signature and Date

Signature and Date

Consultant Agreement
[Mark Thomas & Company Consultants]
On-Call Engineering Services

Amendment No. 1

Amendment to Agreement made and entered into this sixth day of June, 2017, by and between the **City of Davis**, a Municipal Corporation, hereinafter referred to as “**City**,” and **Mark Thomas & Company**, a California Corporation, located at [7300 Folsom Boulevard, Suite 203, Sacramento], hereinafter referred to as “**Consultant**.”

Witnesseth:

Whereas, on July 12, 2016, **City** and **Consultant** entered into an **Agreement**; and,

Whereas, **City** and **Consultant** desire to enter into an **Amendment** to their **Agreement**.

Now, Therefore, **City** and **Consultant** agree as follows:

1. **Section 1.4 Term**: Amend to extend the agreement to July 12, 2019.
2. **Section 4.1.1 Annual Cap**: Amend to extend the not-to-exceed amount from \$1,000,000 to \$2,000,000.

Except as hereinabove modified, the **Agreement** between **City** and **Consultant**, together with the terms and provisions contained therein, is hereby ratified and confirmed.

In Witness Whereof, the parties hereto have caused this **Amendment** to the **Agreement** to be executed in its name by order of its City Council, this day and year first above written.

City of Davis
A Municipal Corporation,
State of California

Consultant
Mark Thomas & Company

Dirk Brazil
City Manager

Matt Brogan

Approved as to Form:

Harriet Steiner
City Attorney

PROPOSAL



SUBMISSION DATE

APRIL 19, 2017

PROJECT

RICHARDS BOULEVARD / I-80 IMPROVEMENTS

PREPARED FOR

City of Davis



MARK THOMAS



MARK THOMAS

April 19, 2017

SA-17822

City of Davis
Public Works Department- Transportation Division
23 Russell Boulevard
Davis, CA 95616
Attn: Brian Mickelson, Assistant City Engineer/Transportation Manager

RE: Proposal for Richards Boulevard/I-80 Improvements

Dear Mr. Mickelson:

The Richards Boulevard/I-80 Interchange serves as a main entrance to the City of Davis (City) downtown and the UC Davis campus. Currently, the existing interchange experiences a high volume of vehicular and bicycle traffic and is at the end of its original design life. There are also planned projects adjacent to the interchange that will further impact traffic operations. As you know, Mark Thomas worked with the City to identify the improvements needed to the interchange and completed a Project Study Report-Project Development Support (PSR-PDS) through Caltrans to document these improvements. When constructed, these improvements improve traffic operations and multimodal safety at the interchange by reconfiguring the ramps and adding a grade separated shared-use path.

Mark Thomas has enjoyed working with the City on both the Richards Boulevard/I-80 Improvements PSR-PDS and the Richards Boulevard/Olive Drive Circulation Study (ROCS). Through these projects and our other work through the on-call contract, we have gained invaluable experience needed to successfully deliver transportation projects in the City. We understand the need to move through the environmental and design approvals efficiently and are excited to submit our proposal to document our project delivery approach.

Mark Thomas is ideally suited to continue our work on the Richards Boulevard/I-80 Improvements. We offer the City the following key benefits which meet the goals identified by the City and will result in the successful completion of the project.

- **Caltrans Expertise:** Mark Thomas has been working with Caltrans District 3 for more than 27 years and in that time we have completed more than 50 highway and interchange projects within the District. These include the recently constructed Cosumnes River Boulevard/I-5 Interchange in Sacramento and the Watt Avenue/US-50 Interchange in Sacramento County. This experience provides us with in-depth



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7300 FOLSOM BOULEVARD, SUITE 203
SACRAMENTO, CA 95826

MARKTHOMAS.COM

► April 19, 2017

knowledge of Caltrans design and project delivery requirements, and excellent working relationships with Caltrans staff.

- **Expert Project Team:** Garry Horton, PE, will serve as Project Manager and Aaron Silva, PE, will serve as Deputy Project Manager. They will continue to lead our team and will use the knowledge gained from their work in the area to streamline project delivery. Through their experience, Garry has developed a detailed understanding of the Caltrans and FHWA approval processes, and Aaron has extensive geometric design expertise and a detailed understanding of Caltrans design criteria.
- **In-Depth Project Knowledge:** Mark Thomas and our team have an unmatched understanding of the project through the interchange PSR-PDS and the ROCS. We understand the City's design preferences, local and stakeholder needs, and adjacent development projects. Additionally, Garry Horton was the project manager for the design of the existing Richards Boulevard/I-80 Interchange and the Putah Creek Trail Undercrossing. This understanding of the local conditions provides a significant advantage to the City.
- **Detailed Approach:** Based upon our overall experience and project specific knowledge, we have developed a detailed approach to advance the project on an accelerated schedule. This approach includes leveraging our existing work and experience to rapidly move into the project technical designs (such as traffic, geometrics, and environmental studies), work with FHWA and Caltrans to receive approvals, and position the project to be "shovel-ready" by 2018 SACOG funding round. We also understand the unique design details (such as the grade separated shared-use path and structure widening) and have demonstrated an ability to get these designs approved through Caltrans.

We appreciate the opportunity to propose on this project and are excited to continue our working relationship with the City. If you have any questions regarding our proposal, please contact me at (916) 381-9100 or mbrogan@markthomas.com.

Sincerely,

MARK THOMAS



Matt Brogan, PE
Principal, Vice President



(916) 381-9100
7300 FOLSOM BOULEVARD, SUITE 203
SACRAMENTO, CA 95826

MARKTHOMAS.COM



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RICHARDS BOULEVARD/I-80 IMPROVEMENTS

THE PROJECT

The City of Davis (City) is proposing improvements at the Richards Boulevard and I-80 interchange. Based on the travel demand forecasts projections, it is anticipated the existing interchange will degrade to Level of Service (LOS) “F” in the design year of 2040. The goal of this project is to relieve existing congestion at the interchange, to accommodate increased traffic demand generated by approved and proposed development in the project area, and reduce the existing conflicts between bicyclists and vehicles along Richards Boulevard.

These improvements have been identified as the City’s highest priority in the Richards Boulevard/Olive Drive Corridor Study recently completed by Mark Thomas. Also identified in the study was the closure of the isolated off-ramp at Olive Drive. The combination of this closure and the improvements at the Richards Boulevard/I-80 interchange will help the City improve circulation through this corridor and increase the safety and connectivity for bicyclists and pedestrians.

RICHARDS BOULEVARD/I-80 INTERCHANGE HISTORY

The Richards Boulevard interchange was originally built in 1959 as a trumpet style interchange before south Davis was developed. With that same construction package, I-80 was realigned from what is now Olive Drive to its current location. That configuration operated until 1992 when the interchange was completely reconstructed to a Type L-10/L-8 configuration and the overcrossing over I-80 was replaced. Richards Boulevards was widened to accommodate four lanes of traffic with the expectation of those four lanes to continue under Union Pacific Railroad (UPRR) to First Street. The widening of Richards Boulevard under UPRR was a local ballot measure that did not pass, leaving a constriction point that has slowly degraded the operations of the interchange over time. The current interchange has surpassed its 20-year design life and is in need of operational and safety improvements, which Mark Thomas has been scoping with the City and Caltrans in the Project Study Report-Project Development Support (PSR-PDS).

In the PSR-PDS, there were two build alternatives considered. The alternatives proposed a tight diamond (L-1 interchange) configuration for the westbound on- and off-ramps with an option to include a grade separated path under the westbound on-ramp. The build alternatives will utilize the existing structure over I-80 by replacing the existing 5-foot sidewalk with a 12-foot barrier separated path and restriping interior lanes to 11-feet. As part of this project, improvements at the Olive Drive intersection with Richards Boulevard were included to improve operations at that signal, triggered by the development of the Nishi Gateway property.





POSITIONED FOR SUCCESS

The City, along with Caltrans and Mark Thomas, recently delivered the PSR-PDS that was used to scope the improvements, traffic, and environmental needs for the interchange. In addition to the Caltrans planning document, Mark Thomas also prepared the Richards Boulevard/Olive Drive Corridor Study (ROCS) that identified an option to close the Olive Drive isolated off-ramp. Fehr & Peers (F&P) also recently completed signal timing recommendations for the Richards Boulevard corridor.

Through the development of the PSR-PDS, Mark Thomas worked closely with Caltrans staff including Clark Peri – Project Manager, Christine Zdunkiewicz – Traffic, John Keber – Signing and Striping, Steve Gaytan – Design, and Ken Lastufka – Environmental. Much of the feedback received was design level detailed comments that will be addressed in the Project Report (PR) and PS&E package. With the completion of the ROCS, Mark Thomas and F&P, our proposed traffic subconsultant, have intimate knowledge of the existing and future circulation needs for the corridor. The concepts developed in the PSR-PDS were presented to the Bicycling Transportation and Street Safety Commission (BTSSC) and were unanimously well received and highly supported.

This level of coordination and understanding will allow our team to efficiently deliver this project for the City and help reduce Caltrans review times.

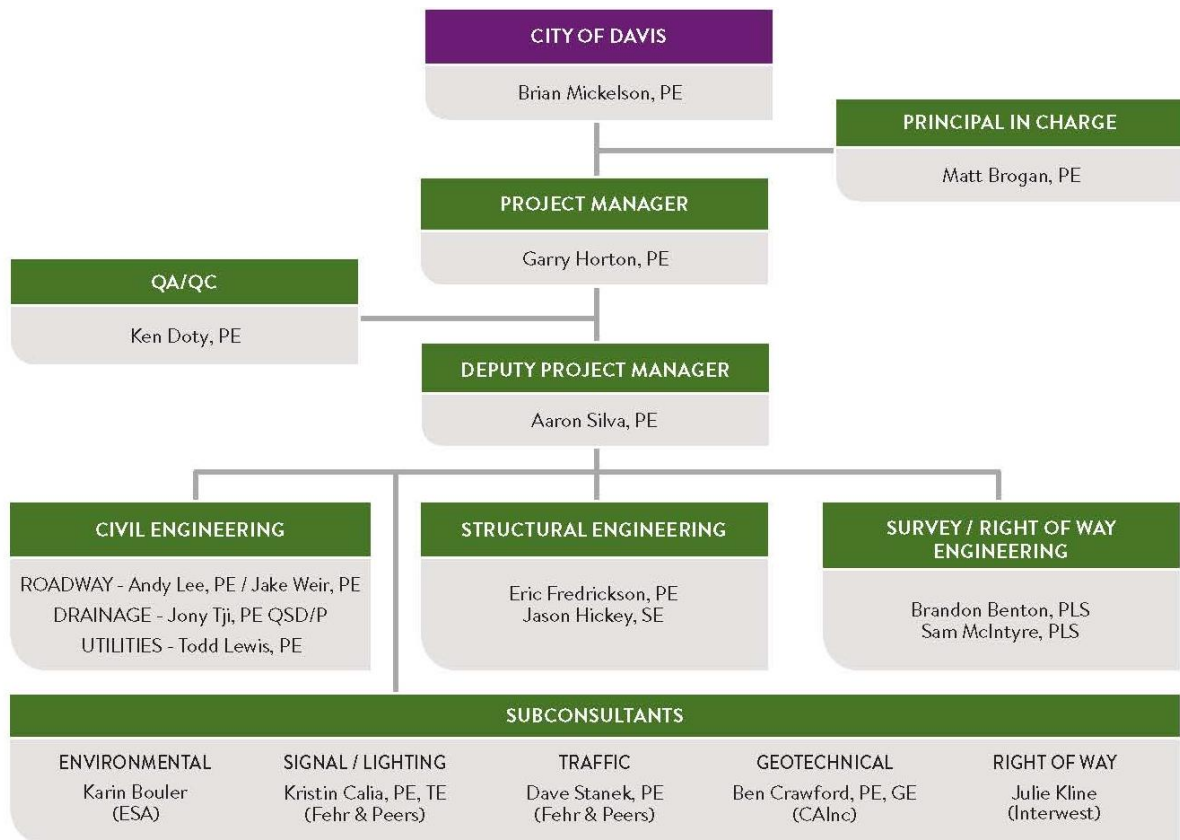
PLANNED/FUTURE DEVELOPMENT

Through our recent experience with the City, we have developed a deep understanding of several future projects that are planned in the interchange area that would have direct impacts to this project. Through our work on the PSR-PDS and the ROCS, we have studied circulation elements along Olive Drive and Richards Boulevard, coordinated the proposed improvements to the Richards Boulevard/Olive Drive intersection with the Davis Arch Project, and planned for the future development of the Hotel Conference Center and the Nishi Gateway development. *It is this understanding that will be critical to understanding the right of way needs as it relates to the project footprint and help us develop a schedule and approach to the required acquisitions.*



THE TEAM

Mark Thomas has assembled an expert team with the knowledge and experience to deliver the Richards Boulevard/I-80 Improvements. Our team consists of key individuals who have recent experience working with the City on numerous projects ranging from traffic operational studies to final PS&E. These individuals have experience working with Caltrans District 3 and neighboring Districts to complete PA&ED and PS&E for interchange and highway projects. The combined knowledge of the Mark Thomas team will allow this project to be “shovel-ready”, positioning the project for grant funding. The organization chart below depicts team member roles and lines of communication. The experience and benefits of the team are described following the organization chart.





Garry Horton, Project Manager: Garry has more than 40 years of project management and engineering design expertise. His experience includes the design of interchanges, local roadways, bicycle facilities, and pedestrian enhancements. He has led various outreach meetings and presentations including public workshops, stakeholder meetings, and Council meetings. Prior to joining consulting firms, Garry worked for FHWA in California providing project approvals for improvements on the State Highway System. He has a thorough understanding of the Caltrans Project Delivery Procedures Manual (PDPM), project delivery process, and design criteria. He also has an in-depth understanding of the environmental process, which he uses to anticipate project challenges. *Garry's experience with FHWA and Caltrans will be critical to approving the closure of the Olive Drive isolated off-ramp.*

Garry also has a long history of working with the City. He designed the last Richards Boulevard/I-80 improvements, providing him unmatched understanding of the interchange. He also designed the existing Putah Creek Pedestrian crossing immediately adjacent to the interchange. He was instrumental in the project advancing through the Caltrans approval process. He was also the project manager for the recently approved Richards Boulevard/I-80 Improvements PSR-PDS as well as the manager for the ROCS. *Garry's firsthand knowledge of the project area and the City will be leveraged to expedite the project.*

As Project Manager, **Garry Horton** will be responsible for the critical milestones related to the Caltrans and FHWA process, environmental compliance, and right of way certification. His experience will be key to successful delivery of an approved project on time for the 2018 SACOG grant funding cycle.

Aaron Silva, Deputy Project Manager: Aaron has extensive experience developing geometrics for interchange, bicycle, and pedestrian infrastructure. His career has been focused on honing his knowledge of design criteria; including the Caltrans Highway Design Manual (HDM), AASHTO "Green Book", NACTO, and other applicable design guidance. He has prepared numerous Design Information Bulletin (DIB) 78, DIB 82, and Fact Sheets for non-standard features. Aaron has leveraged this experience to develop geometrics for 10 recent interchange projects, including the Richards Boulevard/I-80 Improvements. Two of these projects include the design of grade separated shared-use paths at the Watt Avenue/US-50 interchange and Union Road/SR-120 interchange. *His experience will ensure the project meets City expectations without sacrificing design standards and safety.*

In addition to the Richards Boulevard/I-80 Improvements, Aaron has worked with the City on seven projects in the past four years. His other City projects have included Mace Boulevard and L Street final design, the ROCS, East Covell Boulevard and F Street Grade Separated Crossing study and design, and updates to the street standards. He has presented at the BTSSC and City Council, and has experience working with stakeholder groups, including Bike Davis. This experience working with key project stakeholders will allow him to anticipate their concerns. *Aaron will use this experience to address concerns early, maintaining the aggressive project schedule.*

As Deputy Project Manager, **Aaron Silva** will be responsible for the day-to-day coordination between of the project team as well as City and Caltrans staff. He will be intimately familiar with the design details and Caltrans deliverables that will result in keeping tasks on-schedule. Aaron will be actively managing the schedule to monitor critical path items in order to meet the needs of the City.





Strong Subconsultant Support: Mark Thomas will be supported by a group of subconsultants with experience working with the City, Caltrans, and resource agencies. These firms have been working with us on numerous projects for the City through our on-call contract. This provides these firms with in-depth local and project knowledge needed to deliver the project on-schedule.

- F&P will provide traffic analysis and signal/electrical design. They have extensive experience working with Caltrans District 3 to gain approvals of traffic studies for interchange improvements. They have worked with Mark Thomas on more than 55 Caltrans interchange and highway projects throughout California, including the Traffic Engineering Performance Assessment (TEPA) for the Richards Boulevard/I-80 Improvements PSR-PDS. F&P also completed the traffic studies for the ROCS and the Nishi Gateway Property, and signal retiming of the Richards Boulevard corridor.
- Environmental Science Associates (ESA) will provide CEQA and NEPA environmental compliance. They are a full service environmental firm with in-house capabilities to provide cultural resources, biological, and air quality studies. They have extensive experience delivering environmental studies through the Caltrans process. ESA has been providing environmental compliance for our projects with the City including Mace Boulevard, L Street, and East Covell Boulevard and F Street Grade Separated Crossing. They also prepared the Mini-Preliminary Environmental Assessment Report (PEAR) for the Richards Boulevard/I-80 Improvements.
- Crawford Associates, Inc. (CAInc) will provide geotechnical analysis. CAINc has provided geotechnical analysis, engineering, and pavement recommendations for interchange, roadway, and bridge projects. They are working with us on the L Street and East Covell Boulevard and F Street Grade Separated Crossing projects for the City. They purchased Taber Consultants last year, providing them with more than 50 years of geotechnical project knowledge and records. Taber provided geotechnical borings and recommendations for the last Richards Boulevard/I-80 Improvements that will be leveraged for this project.
- Interwest Consulting Group (Interwest) will provide appraisals and acquisition services. Interwest has provided full service municipal real estate consultation and turn-key right-of-way services inclusive of acquisition, appraisal, appraisal review, escrow and title coordination, and condemnation support for local agencies and on Caltrans facilities. Interwest offers early project planning to obtaining full possession of property necessary for project construction and has the experience to perform all functions of right of way. They have been working with Mark Thomas on numerous Caltrans projects including Grant Line Road/SR-99 Interchange in Elk Grove and the Placer Parkway/SR-65 Interchange in Placer County.

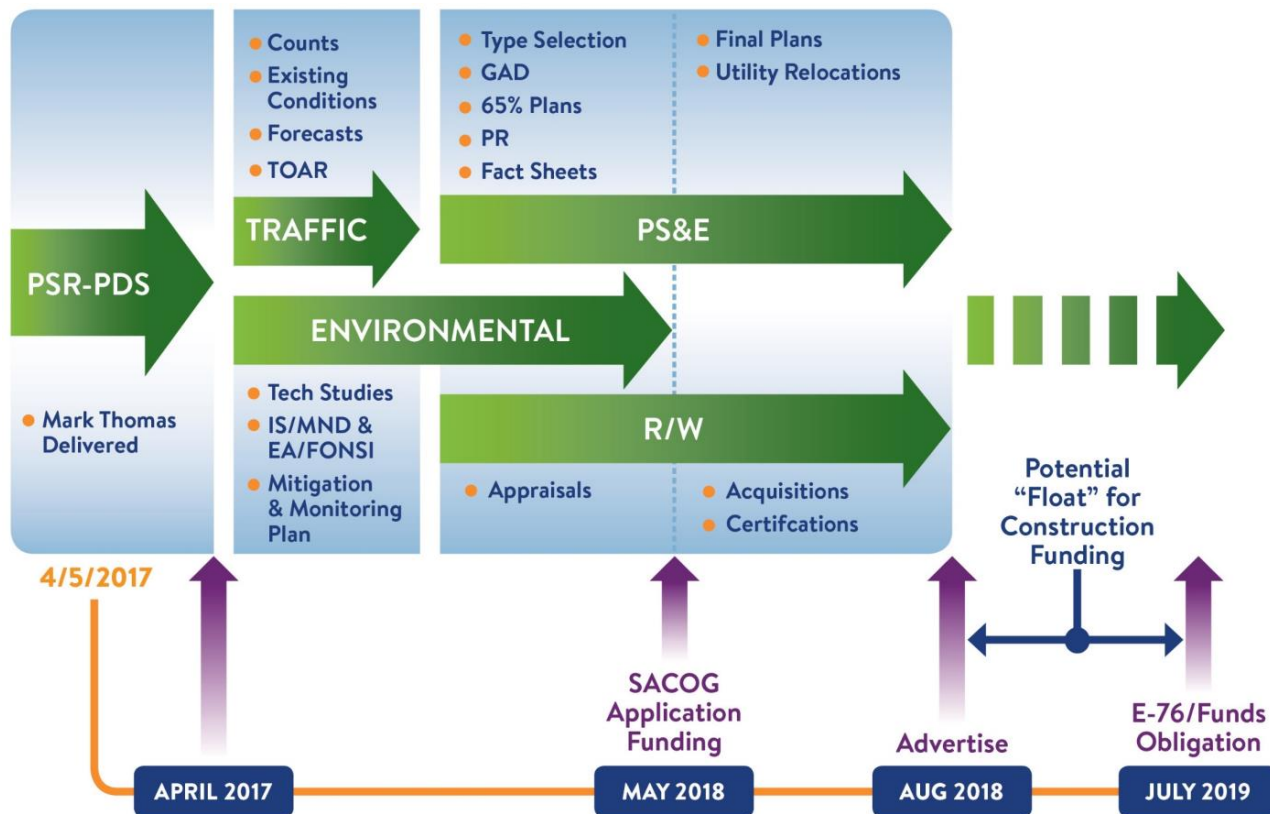
The unmatched project knowledge and experience of the Mark Thomas team will result in a project that is delivered on an aggressive schedule, minimizes delays, and positions the project for grant funding.



THE APPROACH

The successful delivery of the Richards Boulevard/I-80 Improvements will necessitate the Mark Thomas team to navigate several approval processes involving multiple agencies. Efficiencies through this project requires the understanding of Caltrans and City standards, and the expertise our team brings related to the Caltrans and FHWA process. The graphic below highlights major deliverables and timeline to position the project for funding.

The critical milestone is the SACOG funding cycle in 2018. In the RFP, the City is requesting to have this project “shovel-ready” by May 2018. A major contributor driving the schedule will be the Caltrans review process. The Mini-PEAR identified several technical studies that will be reviewed by Caltrans oversight. It will be important to work closely with the Caltrans Project Manager as well as Caltrans environmental staff to keep the review process focused and the schedule on track.



In our experience, having major project approvals including the environmental document, the PR, and PS&E well underway will show SACOG that the City is strongly positioned to advance this project to construction. *The benefit to this approach is that the City could also choose to seek grant funding for right of way acquisitions as well as construction funds.* Since the preliminary engineering is funded with local funds, the appraisals can take place prior to the environmental document being finalized. This allows the team to make offers and begin negotiations with property owners immediately following City adoption of the environmental document.



PROJECT IMPROVEMENTS

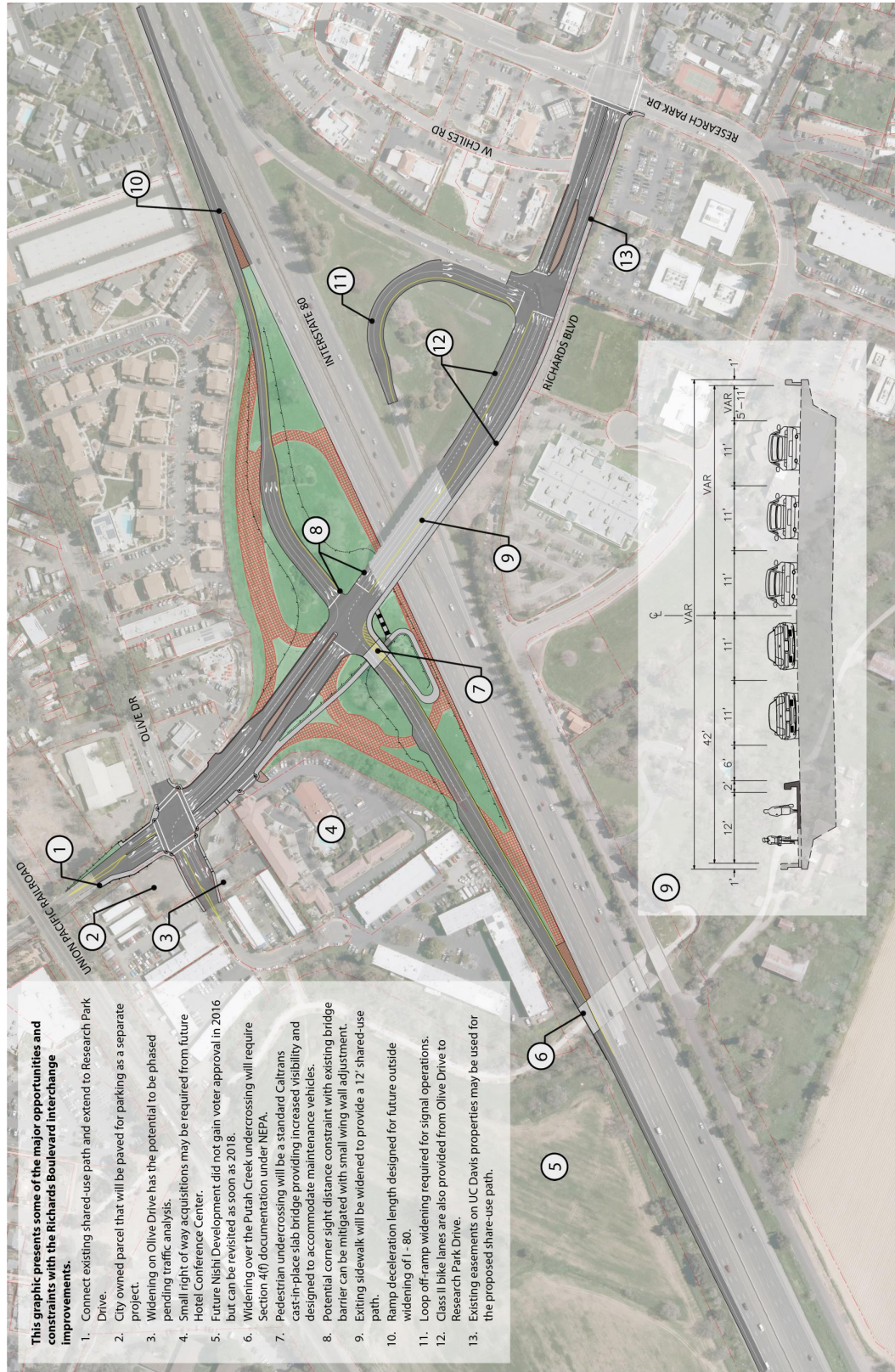
The improvements to the interchange include reconfiguring the full cloverleaf (Type L-10) to a tight diamond (Type L-1) configuration for the westbound ramps. The new diagonal ramps will be controlled by a signal at Richards Boulevard and are designed to accommodate the future 8-lane buildout of I-80. The eastbound off-ramp will be widened to add a right-turn lane, and the existing right-turn lane would become a left-turn lane.

A raised median will be installed along Richards Boulevard between Olive Drive and the westbound ramp intersections to prohibit access to driveways. The existing Class II bicycle lanes will be maintained through the interchange between Olive Drive and Research Park Drive. A barrier separated shared-use path along the west side of Richards Boulevard, between the westbound ramp intersection and Research Park Drive will be provided with the path grade separated under the westbound on-ramp. The two-way path between Olive Drive and Research Park Drive will serve both bicyclists and pedestrians, replacing the sidewalk that currently exists on the west side of Richards Boulevard.

At full build-out of the interchange, the legs of the Olive Drive intersection will be widened to provide additional turning lanes. The crosswalks will be realigned and the channelization for the westbound right-turn pocket will be removed. The near-side bus stop on westbound Richards Boulevard will be moved to the far side of the intersection. **Highlighted on the following page are the many opportunities and constraints that were identified through our work within the City, the PSR-PDS, and preparing for this proposal.**

TRAFFIC

F&P has performed numerous traffic studies and analysis over the past several years for the City. They have the most up-to-date traffic forecasting model and the existing traffic counts are already complete. Mark Thomas has collaborated on several of these projects, which brings efficiencies to the proposed project. This will allow our team to immediately submit the Existing Conditions Memo which is the first deliverable required by Caltrans traffic operations. Once approved, the team will navigate through traffic forecasting and operational analysis approvals. These tasks are critical to complete and allow us to move immediately into the Geometric Approval Drawings (GADs) that will define the environmental footprint, kicking off the technical studies and further defining the right of way needs.





ENVIRONMENTAL

Based on the PEAR completed with the PSR-PDS, the anticipated environmental document is an Initial Study/Mitigated Negative Declaration (IS/MND) for CEQA and a routine Environmental Assessment/Finding of No Significant Impacts (EA/FONSI) for NEPA.

An important decision is the delegation of the CEQA lead agency. It is Caltrans' policy to be the CEQA lead agency for improvements to the state highway system. For other projects within Caltrans District 3, Mark Thomas has successfully worked with local agencies to secure lead agency status for locally-funded interchange projects. This includes the Cosumnes River Boulevard/I-5 Interchange, the Metro Air Parkway/I-5 Interchange, and the Placer Parkway/SR-65 Interchange. For the City to be the lead agency, a formal request must be made and approval will be required from District 3 Director Ray Zhang. *Mark Thomas highly recommends that the City make the case to be the CEQA lead agency to keep the environmental document on a reasonable schedule.* Being the CEQA lead agency will have significant benefits to the project schedule, which will be important to position the project for the 2018 funding cycle. One of the first orders of work will be to prepare the formal letter to Caltrans (to be signed by the City) that will formalize this request.

Some of the most significant elements to the environmental studies will be related to noise and Section 4(f). There are several sensitive noise receptors between I-80 and Olive Drive near the interchange and there is a high potential for the existing ambient noise to exceed the noise abatement criteria. The Noise Study Report will be performed to model the existing and future noise levels. If the measurements exceed the noise abatement criteria of 67 Dba, a Noise Abatement Decision Report (NADR) will be required to determine feasible alternatives to reducing noise levels such as sound walls. There is an existing block wall at the right of way along I-80 and there is a potential that the wall will need to be extended. The design work and associated studies have been included as an optional task in our scope of work.

As a publically owned, open-to-the-public recreational facility, the Putah Creek bike path qualifies for protection under Section 4(f). The path would remain open during project construction, but the width of the path would be temporarily reduced and impacts to path users would include closure of the path for brief moments for construction equipment to pass, and 4-hour path closures for installation and removal of falsework. The project construction activities would not result in an adverse effect to the activities, features, or attributes qualifying the bike path for protection under Section 4(f), and either a de minimis determination will be made or documentation will be prepared that the project qualifies for the temporary use exception.

RIGHT OF WAY

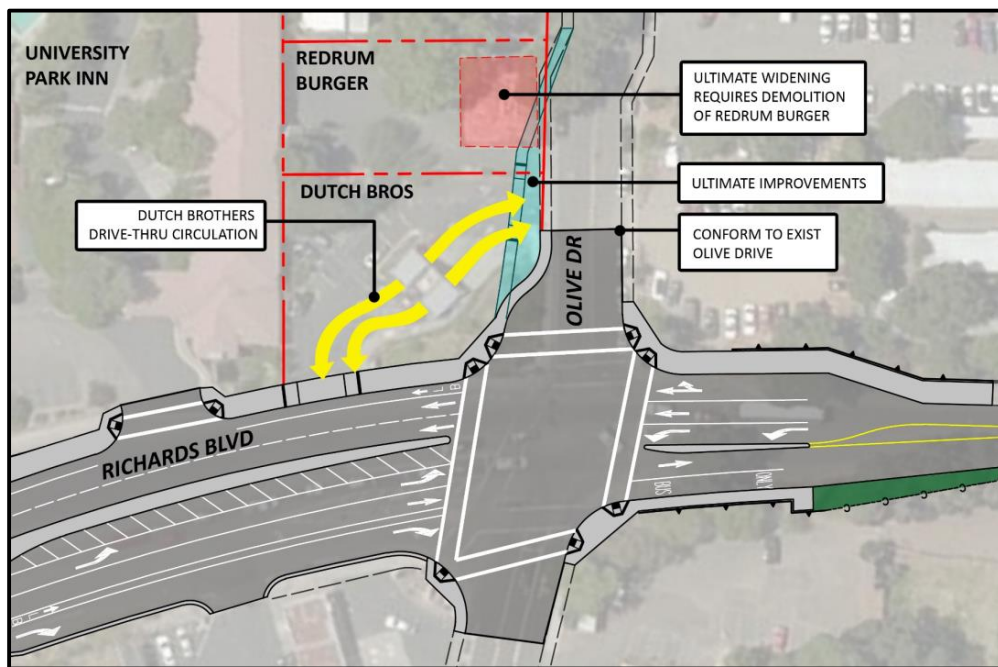
The project improvements will potentially require permanent acquisition and temporary construction easements from five properties. These acquisitions will be on the critical path to get the right of way certification and authorization for construction. Finding ways to reduce or eliminate impacts to those properties will be key to delivering the project within the desired timeframe.

Mark Thomas developed a phased approach that would defer widening on Olive Drive at the Richards Boulevard intersection. The operations of that intersection would need to provide a 10-year design life to make it a feasible first phase. One reason to defer the Olive Drive improvements is the fact that the Nishi development did not pass



when voted on in 2016, which would have greatly increased the traffic through the intersection. However, the Nishi developer may come back for re-approval by the voters with a reduced version of the project that lessens the traffic impacts and the project can be revisited as early as 2018.

By deferring the Olive Drive improvements, impacts to the Redrum Burger building can be avoided, which would eliminate the need for acquiring and demolishing the building. The remainder of the acquisitions require relatively small areas from landscaping frontage and would not impact the operations or function of the properties once construction is completed.



PS&E

Mark Thomas has successfully managed PS&E delivery in Caltrans District 3 for the past 27 years and provides an unmatched understanding of the process. During this time, *we have completed more Caltrans District 3 projects than any other firm.* One of the greatest strengths we bring to the City is our understanding of the Caltrans HDM. Several Mark Thomas staff teach the HDM (with the most recent 2016 update) to Caltrans design staff across the state. This intimate knowledge is key to identifying non-standard features during the completion of the GADs. DIB 78 and 82 will be submitted with the draft GADs to document compliance with the standards and all exceptions. Parallel with the development of GADs will be the completion of the bridge Advance Planning Studies (APSs) for the pedestrian undercrossing and widening of the Putah Creek undercrossing. The APSs will be accompanied with a Type Selection Report and meeting to receive approvals for the proposed structure type. *Eric Fredrickson, Structures Manager at Mark Thomas, has approved over 45 type selections as a Caltrans Structures Oversight Liaison and 11 in his time at Mark Thomas.*



In the PSR-PDS, possible exceptions to design standards include the corner sight distance at the westbound off-ramp and the longitudinal grade of Richards Boulevard at the ramp terminal. The need for these exceptions will be determined when topographic surveys are performed and the design revised. Mark Thomas has processed Fact Sheets for several projects with the new District 3 format that combines the mandatory and advisory design exceptions.

With GADs and the structure type selection complete, a Caltrans Draft PR will summarize the key points of the environmental document, scope, cost, and overall impact of the alternative (build and no-build).

SACOG GRANT FUNDING

The City intends to pursue SACOG Regional Funding for construction, and one of the strengths of the Mark Thomas team is our proven experience preparing grant applications for local agencies to capture this funding. As we have seen through our previous work with SACOG, the vision for this interchange will likely compete very well for the Bicycle and Pedestrian, Community Design, and Regional/Local Programs as it aligns with SEVERAL of the regional Blueprint Principles, including the following:

Transportation Choices	The proposed improvements to the Unitrans bus stop locations and bicycle facilities will augment transit, providing several options for users and a potential for increased ridership.
Compact Development	Working closely within the footprint of the existing right of way creates opportunities for a shared-use path within the interchange that will encourage more walking and biking.
Quality Design	The quality of design will be determined by how well the goals and needs are met. The project improvements will increase the walkability and bikeability of a Caltrans facility whose standards were traditionally auto-centric.

This project is also a candidate for CMAQ, RSTP, and STIP funds through SACOG. Mark Thomas has recently been a member of the Community Design Working Group that evaluates the grant applications. This brings an inside perspective of the elements that make a project competitive from not only an engineering and safety background, but from the vantage point of planners, transit, and community groups.

The recently passed Senate Bill (SB) 1 will allocate additional transportation funds over the next 10 years. The City is estimated to receive more than \$15 million and the SACOG Regional total of over \$919 million for local streets and roads. SB 1 may present the City with additional funding opportunities for the interchange and other transportation infrastructure projects.



THE DETAILS

Mark Thomas worked diligently to deliver the approved PID for the Richards Boulevard/I-80 Interchange Improvements. This programming document is relatively high level; however, our experience with the Caltrans process, developing innovative solutions within Caltrans District 3, and the City allows our team to dive into the details. Our familiarity with these specific items allows us to navigate through the required approvals and get this project delivered on the desired schedule.

OLIVE DRIVE CLOSURE

Included in the RFP is the request to close the Olive Drive exit; however, it was not originally included with the PSR-PDS. This added feature was an outcome from our recently completed Richards Boulevard/Olive Drive Circulation Improvements Feasibility Report. The closure will need to be included in the Caltrans PR for conceptual approval and in the final construction documents. Even though the closure of the Olive Drive exit is important to Caltrans as it removes an isolated ramp from their facilities, additional steps are required for approval.

Modified access points on the Interstate System require approval by FHWA. Since FHWA's approval constitutes a federal action, NEPA approval is required regardless of funding. Since this project is anticipating federal funding for construction, the environmental approach will already include the required NEPA document.

As outlined in the Caltrans PDPM, California Transportation Commission (CTC) consent is NOT required for the closure of an existing connection. *Mark Thomas will engage the FHWA transportation engineer who oversees the district projects to refine the scope of the analysis and to make an initial determination.* Approval through FHWA will require a two-step process.

Step 1 – Access Change Request

We will submit an “Interstate System Access Change Request” to the FHWA California Division Office that addresses all FHWA policy requirements. Once FHWA is satisfied that the proposed access change meets policy requirements, FHWA will send a Determination of Engineering and Operational Acceptability. This will be performed at the Draft PR phase prior to the environmental document being completed.

The FHWA review period is approximately 60 days. A formal letter is provided to the Caltrans District Director once FHWA determines that the proposal is acceptable concerning engineering and operations.

Step 2 – Final Approval

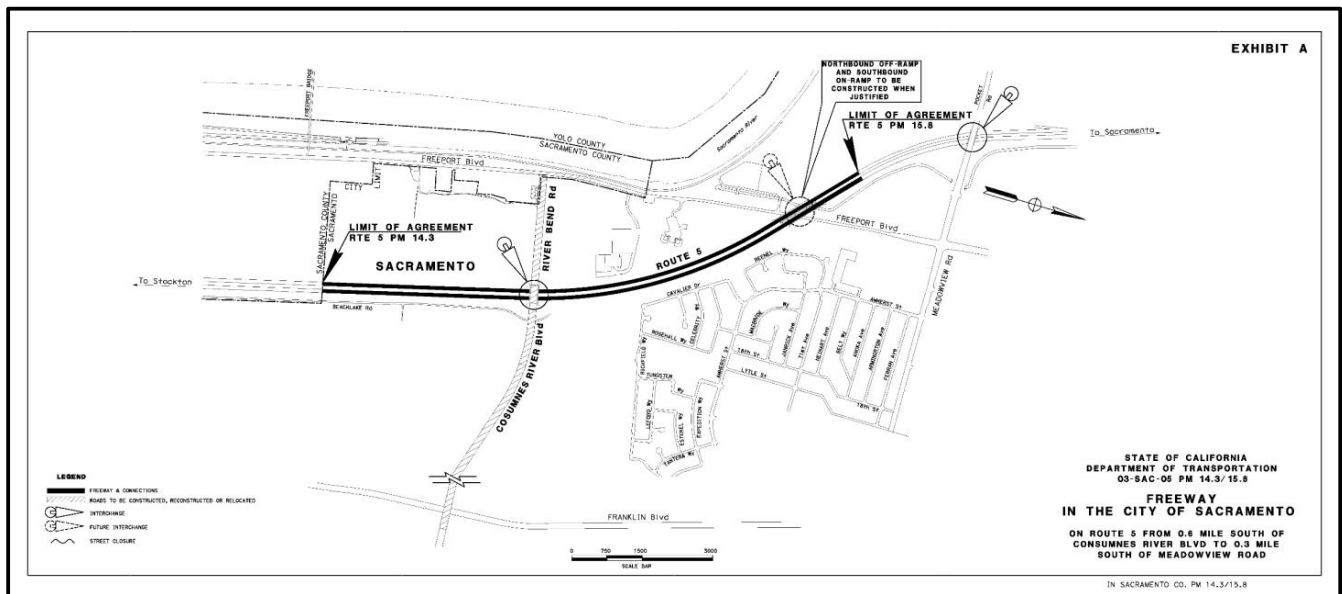
Submit an “Interstate System Access Change Request for Final Approval” to the FHWA California Division Office, including the final environmental document.

“SUPERSEDING” FREEWAY AGREEMENT

An update to the Freeway Agreement will be required due to the major reconstruction of the westbound ramps and the Olive Drive closure. A “Superseding” Freeway Agreement will serve as an amendment to the existing agreement as outlined in Section 24 of the Caltrans PDPM. This amendment will outline the changes to the agreement and include a new freeway agreement exhibit.



The Determination of Engineering and Operational Acceptability for modified Interstate access must be completed and sent to Caltrans Headquarters Division of Design before the freeway agreement can be executed by Caltrans. FHWA must grant Final Approval of proposed access control modification on the Interstate system. Mark Thomas just recently completed this process in Caltrans District 3 for the Cosumnes River Boulevard/I-5 Interchange in the City of Sacramento. This project provided a new connection to the interstate requiring FHWA and Caltrans approvals, which included an updated freeway agreement.



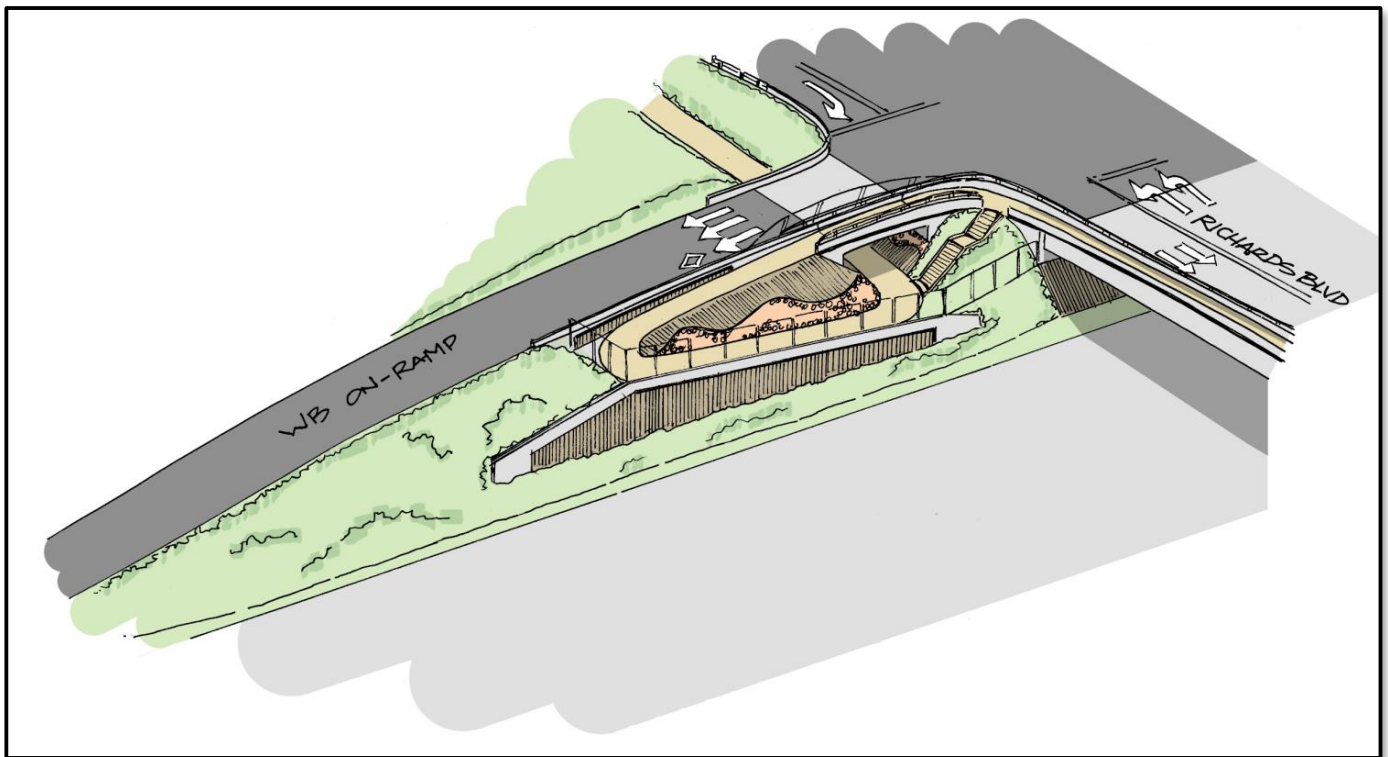
Shown above is the Freeway Agreement exhibit that was prepared for the Cosumnes River Boulevard/I-5 Interchange in the City of Sacramento. This exhibit will be required as part of the Superseding Freeway Agreement for the City’s proposed project. Mark Thomas has prepared several of these exhibits for recent project in District 3.

SHARED-USE PATH DETAILS

The westbound ramp reconstruction presents an opportunity to include a unique grade separated shared-use path treatment that Mark Thomas has successfully implemented at the Watt Avenue/US-50 interchange and is currently in 90% design at two other interchanges in California. The concept for a grade separated path was presented to the BTSSC and received significant support as the preferred treatment for pedestrians and cyclists through the interchange.



Incorporating “outside-the-box” solutions within a Caltrans owned facility has its challenges; however, Mark Thomas has identified and developed solutions to Caltrans concerns. One particular concern that will be discussed early is regarding the control of access to the state right of way. The shared-use path will include a 6-foot fence to prevent pedestrians from wandering out into the interchange or along the interstate. The fencing needs to be continuous along the path and provide enough setback for the path users and maintenance vehicles. Below are several images of the shared-use path from the Watt Avenue/US-50 Interchange.



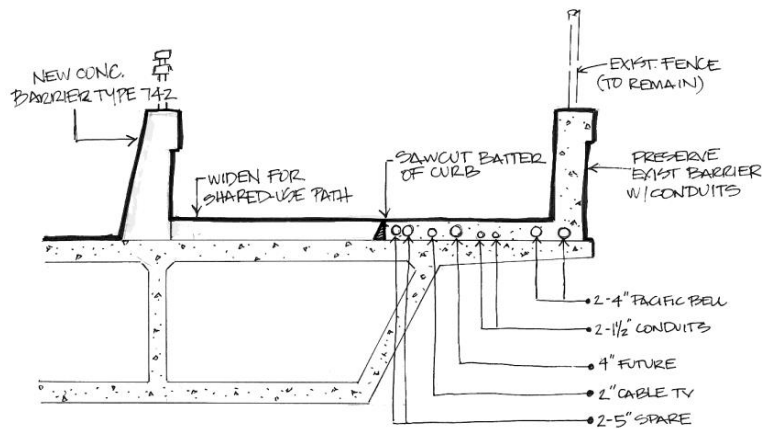
Shown above is an isometric sketch of the grade separated shared-use path at the westbound on-ramp. The path provides an opportunity for pedestrians to walk the loop up to Richards Boulevard or take stairs.



UTILITIES

The utilities along the project site consists of overhead electrical and communication lines as well as several underground fiber optic and telephone lines. It is anticipated that overhead lines will need to be relocated on both the west and east side of Richards Boulevard. The communication lines on the northwest side of Richards Boulevard come above ground at the Richards Boulevard/Olive Drive intersection and head south to the property line of Dutch Bros and University Park Inn Suites. Early coordination with the utility company’s engineering department and land agents will be required to identify a relocation plan and determine if the utilities are located within any easements. This will determine the liability for relocations.

The existing 5-foot sidewalk on the Richards Boulevard Overcrossing will need to be modified in order for the shared-use path to cross over the interstate. One solution would be to completely remove the existing sidewalk and barrier and construct a new wider sidewalk. Specific to this project there are several communication lines and conduits in the sidewalk that would require relocation. As shown, the preferred option would be to widen the existing sidewalk to achieve the full width of the path, leaving the utilities undisturbed and eliminating a costly utility relocation.

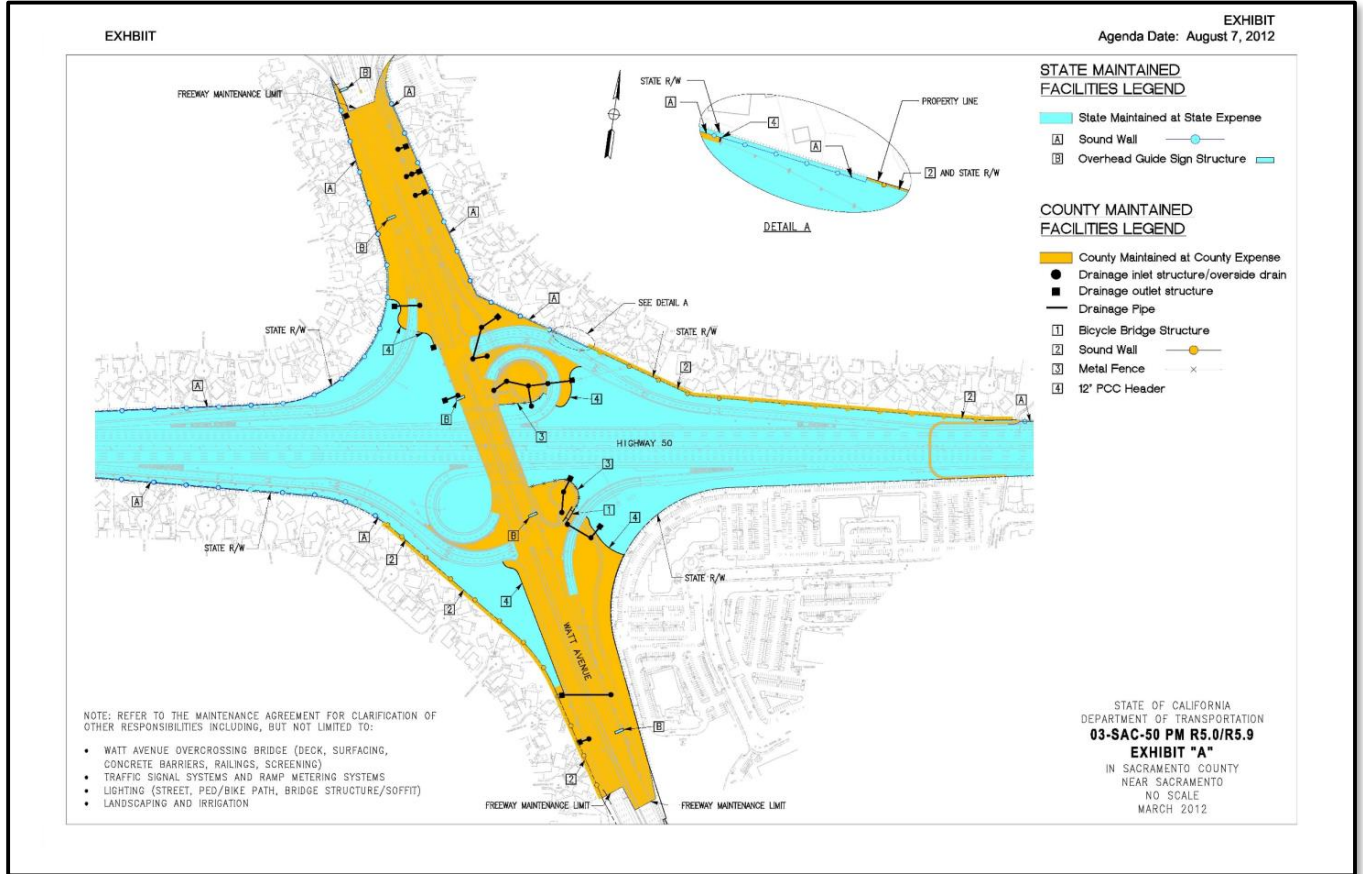


FREEWAY MAINTENANCE AGREEMENT

The existing Freeway Maintenance Agreement between Caltrans and the City will need to be updated as part of this project due to 1) The significant ramp improvements and 2) The proposed grade separated shared-use path.

Mark Thomas has delivered the only grade separated shared-use path through a Caltrans interchange in the state. A critical component to achieving Caltrans approval is a detailed maintenance agreement that outlines the maintenance responsibilities for both parties.

In particular, the maintenance agreement will outline any specific areas of landscaping, lighting, fencing, and the shared-use path itself. Accompanying the maintenance agreement will be a detailed exhibit that provides clear delineation of City maintained items.



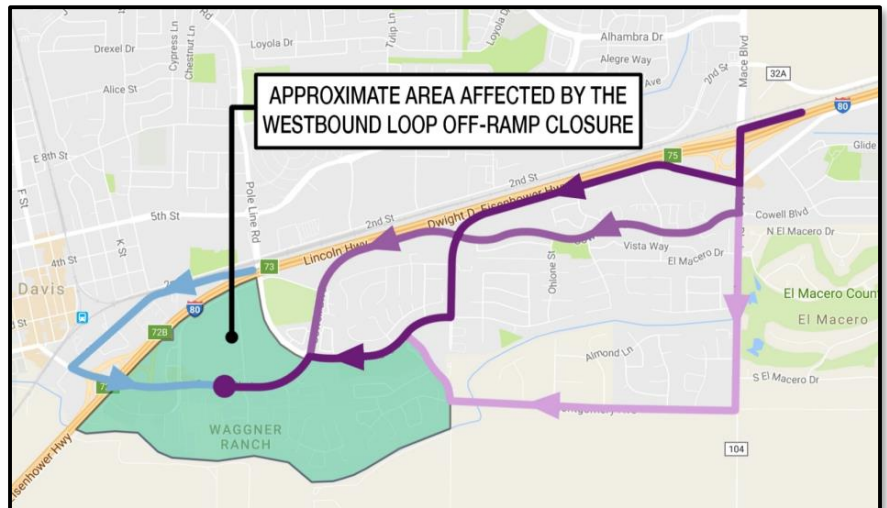
Shown above is the Freeway Maintenance Agreement exhibit that was prepared for the Watt Avenue/US-50 Interchange improvements in Sacramento County. This exhibit clearly delineates the responsibilities for maintenance between Caltrans and the local agency, and was defined in the field by a 12" wide concrete curb.



POTENTIAL DETOUR ROUTES

Ramp closures will be required for various lengths of time during construction. This will require the use of the surrounding roadway network to provide connectivity during the temporary closures. There are several options for detours that use either Olive Drive or Mace Boulevard. These are shown on the exhibit to the right.

The traffic analysis will be critical in the section of these detour options. The traffic forecasting will include not only the existing and design year conditions, but will also evaluate the construction year. In this scenario, the team will analyze the construction year with Olive Drive open and closed. Closing Olive Drive during construction will require the need to study three additional intersections at the Mace Boulevard/I-80 interchange to determine the potential impact of diverting the westbound I-80 to southbound Richards Boulevard traffic. Similarly, when the westbound to southbound loop ramp is closed, diverting traffic to Olive Drive may cause significant impact at the Richards Boulevard/Olive Drive intersection.



STAGE CONSTRUCTION

Stage construction, along with identifying detour routes, will be one of the first items to conceptualize in the project development process. Providing this information to the project development team, BTSSC and the City Council early in the process will help focus our studies to identify the potential traffic and environmental impacts. In addition, from a public acceptance perspective, having a defined plan for stage construction will help determine the level and duration of the impacts.

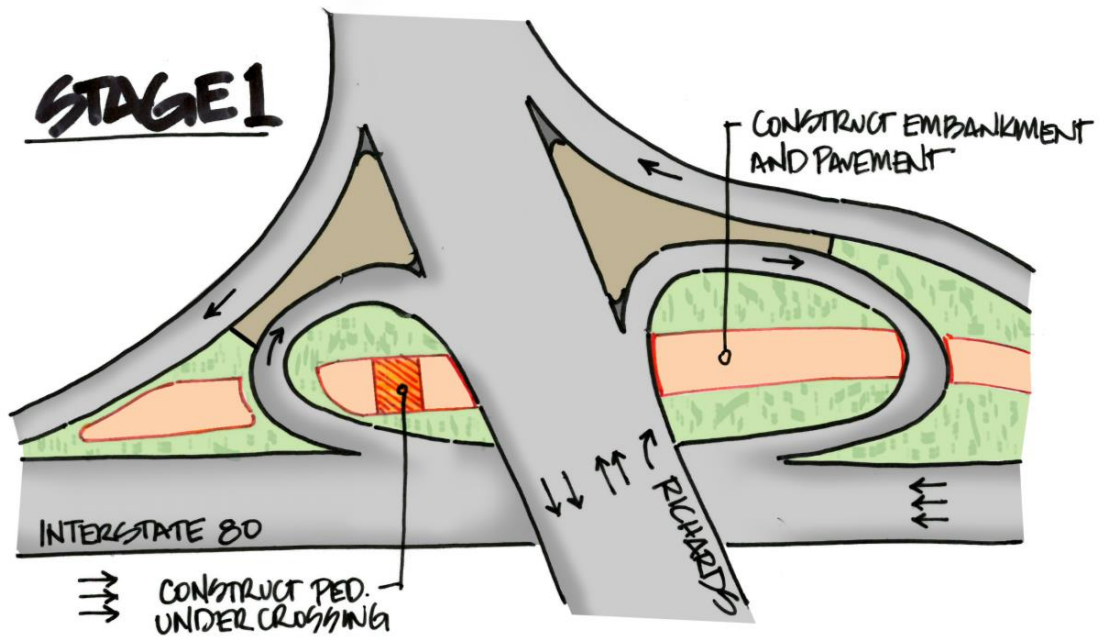
The ramp widening on the eastbound loop off-ramp and the associated roadway work on Richards Boulevard are relatively simple to maintain traffic during construction. The complex staging occurs with the bridge widening at Putah Creek, pedestrian undercrossing at the westbound on-ramp, and the realigned westbound ramps.

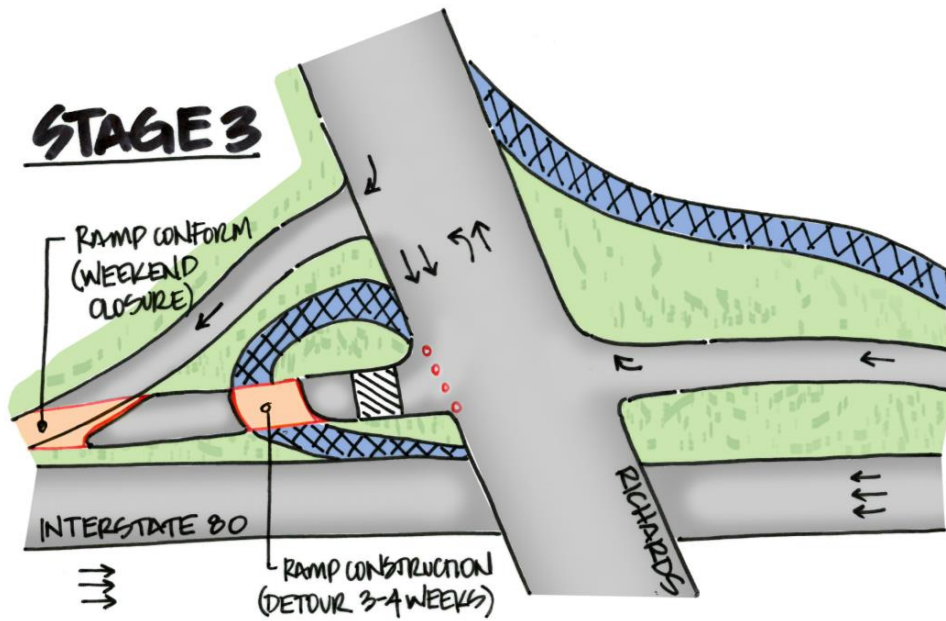
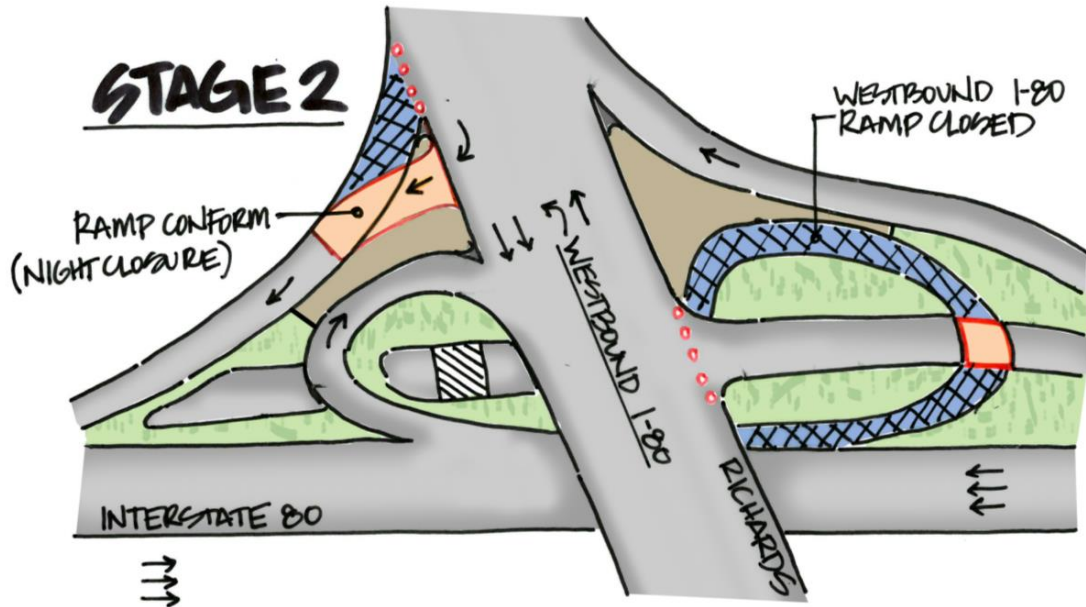


In general, the potential stages of construction would be as follows:

	Construction	Traffic
Stage 1	Begin structure widening, undercrossing construction, embankment for eastbound ramps.	Traffic uses existing interchange ramps.
Stage 2	Complete bridge construction, build temporary conform to eastbound on-ramp, temporary striping on Richards Boulevard, finish eastbound off-ramp	Close existing westbound loop on-ramp. Northbound to westbound traffic turns left onto temporary conform. All other ramps remain open.
Stage 3	Complete westbound diagonal on-ramp, widen eastbound off-ramp, conform ramps to I-80, widen Richards Boulevard, final signing and striping	Close existing westbound loop off-ramp. Westbound to southbound traffic uses approved detour (Duration approximately 3-4 weeks).

The following three exhibits detail the potential stages. This approach minimizes public inconvenience and keeps the interchange operational through construction.







THE SCOPE

We have prepared the scope of work for the Richards Boulevard/I-80 Improvements based upon the RFP, the PSR-PDS, recent projects with the City, and our understanding of the Caltrans project delivery process. Our scope of work has been prepared to be inserted directly into an agreement.

Project Approval, Environmental Document and Final Design Phase

1.0 PROJECT ADMINISTRATION & MANAGEMENT

1.1 Project Management

Mark Thomas will provide overall project management of the project and subconsultants in the performance of their work. Management activities also include development and maintenance of a critical path method (CPM) design schedule and monthly progress. The progress reports, schedule and invoicing will be submitted in the form and in sufficient detail to track the project status and contract expenditures.

Other management tasks, such as normal communication with the City, maintaining project files, coordination with subconsultants and preparation of funding assistance applications are included in this task.

Unless noted, all deliverables will be submitted electronically. No printed copies will be provided.

1.2 Meetings

The Mark Thomas project team will establish a broader Project Development Team (PDT) for the project. PDT participants shall include members of the design team, City, Caltrans, and other individual stakeholders critical to the project delivery. The purpose of the PDT meetings will be to provide a forum to share project information, identify critical issues, make decisions, assign project tasks, review the project schedule, estimates and budget, establish design criteria, or any other items critical to project delivery. PDT meetings will be held monthly throughout the PA&ED Phase and as needed during the final design phase. For purposes of this scope, we have assumed that a total of 18 PDT meetings will be held at the City's office and 6 traffic or design focused meeting will be held at Caltrans' offices.

This task also includes preparing informational materials and attending two City Council and two Bicycle, Transportation and Street Safety Commission meetings.

1.3 SACOG Funding Application

Mark Thomas will prepare the funding application and applicable exhibits for submittal to SACOG in May 2018.

1.4 Communications and Risk Management Plan

Mark Thomas will prepare and implement a Communication Management Plan and a Risk Management Plan. These plans are living documents and will be updated to respond to new information or changed conditions. The Risk Management Plan will be included in the Project Report.

1.5 QA/QC

The Mark Thomas Team Quality Control plan consists of established procedures for performing the work (which are reassessed with each project), including methods for design calculations, establishing appropriate levels of



design development for intermediate submittals, identification of required plan checks (who, what, when), design checklists, and methods of project documentation.

Task 1 Deliverables

- *PDT Meeting Agendas & Minutes (24 PDT Meetings, 4 Public meetings)*
- *Monthly progress reports, schedule updates and invoicing*
- *Communications Plan*
- *Risk Management Plan*
- *QA/QC Documentation with Submittals*

2.0 DATA GATHERING, SURVEYING & BASE MAPPING

2.1 Data Gathering

Mark Thomas will compile record information, Assessor’s Parcel Maps and Caltrans ROW maps to depict the approximate location of the existing right of way, property lines, and easements. We will use this information to relate the record information to the base mapping and will be compiled into working drawings referred to as the project Land Net. We will obtain the title reports for the following private parcels where there is potential acquisitions or easements needed.

Owner	APN	Current Use
Gansberger	070-270-012	NAPA Auto Parts
AU Energy LLC	070-280-001	Gas Station
Royal Ganesh, LLC	070-270-003	Dutch Brothers
Royal Ganesh, LLC	070-270-005	Lodging and Restaurant
UC Davis	069-060-033 & 069-060-034	Office & Flex Space

As an optional task, we have included right of way engineering to support acquisition of a temporary construction easement for the following parcel in the event that the existing masonry block wall needs to be extended easterly to mitigate for highway noise at the mobile home park.

Owner	APN	Current Use
Fowler Family Trust	070-300-002	Rental Car Lot

In addition to existing City and Caltrans mapping, we will work with the Hotel & Conference Center to identify shared opportunities for improvements.

2.2 Surveying and Mapping

Mark Thomas will perform surveying and base mapping for the project. The specific tasks are as follows:

Control Survey/Photogrammetric Topography

The control for the project will be established by GPS and conventional methods, based horizontally on the California Coordinate System North American Datum of 1983 in U.S. Survey feet and vertically based on the National American Vertical Datum of 1988. The project area will be mapped via aerial photography by Radman Aerial Surveys. The mapping will be at a scale of 1”=50’ and will have a one-foot contour interval. The mapping will



be in accordance with the Caltrans Consultant Photogrammetric Mapping Standards and obtain Caltrans approvals for their “A, B, C” process.

Supplemental Field Survey and Base Mapping

Mark Thomas will perform supplemental field surveys to identify and locate key features not visible in the aerial mapping, at key locations for pavement conforms and to confirm the location of the Richards Boulevard overcrossing railing. It is assumed three (3) days of supplemental surveys will be performed.

We will use record information to establish the existing right of way, except for the portion of work located on Richards Boulevard, northwesterly of the existing Caltrans access control limits. The existing private parcel boundaries for the four parcels at Richards Boulevard/Olive Drive will be tied to the project control in order to accurately identify right of way needs.

It is assumed that no ramp widening will be required to provide for a future eastbound entrance ramp meter and supplemental field survey is not required in this location.

2.3 Utility Coordination (PA/ ED Phase)

Mark Thomas will use the “A, B, C” process to identify and locate utilities. Mark Thomas will prepare contact letters and exhibits showing the project area and request confirmation of utility facilities (“A” letters). This effort will include inputting the preliminary utilities information into the base mapping.

“B” letter and Notice to Relocate “C” letters are addressed under the Utility Plans for PS&E in Task 4.6.

Task 2 Deliverables

- *Caltrans Encroachment Permit Application for Survey Control*
- *Project Base Mapping (AutoCAD Civil 3D) with Resolved Land Net and Existing ROW boundaries*
- *Ortho Rectified Color Photo (Digital only)*
- *Supplemental Field Topography incorporated into the Digital Terrain Model*
- *Utility “A” Letters*

3.0 PRELIMINARY ENGINEERING

The preliminary engineering is performed to provide Caltrans and FHWA approval of the design concept and to support the environmental studies.

3.1 Transportation Analysis

The Richards Boulevard corridor is constrained by the Davis Subway, a two-lane underpass at the Union Pacific Railroad that connects downtown Davis to I-80. The operation of the First Street/E Street and Olive Drive intersections on either side is critical to serving vehicle demand. During peak hours, vehicles heading towards downtown can back up into the I-80 interchange. In addition, eastbound I-80 is congested heading towards Sacramento during the PM peak hour. The bottleneck at the Yolo Bypass causes congestion that can extend back through the Richards Boulevard interchange.

Due to the congested conditions, traffic microsimulation analysis is recommended to measure the effects of bottlenecks on the system performance measures of delay, volume throughput, and travel time. The Richards



Boulevard corridor will be modeled using the Vissim traffic analysis software, and the I-80 corridor will be modeled using deterministic Highway Capacity Manual methods.

3.1.1 Data Collection and Field Review

Fehr & Peers (F&P) will obtain the traffic count, field observations, roadway geometry, and signal timing plan data collected for the previous projects in the study area (Richards-Olive Corridor, Lincoln40 Apartments, I-80 Bus-Carpool Lanes, etc.). They will request collision records from the City and Caltrans.

They propose to use the intersection turning movement counts collected in May 2016 for the Richards-Olive Corridor project.

F&P will collect weekday morning (7 to 9 AM) and evening (4 to 6 PM) peak period counts at the following locations to obtain freeway volumes.

- East Chiles Road/I-80 Eastbound Ramps
- Mace Boulevard/I-80 Westbound Ramps
- Old Davis Road/I-80 Westbound Ramps
- Old Davis Road/I-80 Eastbound Ramps
- I-80 Westbound west of Richards Boulevard
- I-80 Eastbound west of Richards Boulevard

The intersection counts will include pedestrian, bicycle, and truck traffic at the intersections. The counts will be conducted on a midweek day with good weather when schools and UC Davis classes are in session.

3.1.2 Existing Conditions

F&P will obtain Synchro and Vissim models of the AM and PM peak hours prepared for the Richards-Olive Corridor project. Synchro models of existing conditions store the traffic volume and signal timing data. Vissim models of existing conditions will be updated with the signal timing plans implemented in February 2017 and will be calibrated using the counts and field observations collected in May 2016. The Vissim model will include the First Street/Richards Boulevard/Cowell Boulevard corridor from D Street to Research Park Drive.

To evaluate construction staging alternatives (see Task 3.1.7), a Synchro/SimTraffic model will be built for the Mace Boulevard interchange intersections. The freeway corridors for westbound I-80 from Mace Boulevard to Old Davis Road and eastbound I-80 from Old Davis Road to the Yolo Bypass will be evaluated using the Highway Capacity Manual (Transportation Research Board, 2010) methods for freeway capacity analysis. The study locations are listed below.

Intersections

- First Street/D Street
- First Street/E Street/Richards Boulevard
- Richards Boulevard/Olive Drive
- Richards Boulevard/I-80 Westbound Ramps
- Richards Boulevard/I-80 Eastbound Ramps



- Richards Boulevard/Cowell Boulevard/Research Park Drive
- Mace Boulevard/I-80 Westbound Ramps

Freeway Study Area

- Westbound I-80 from Mace Boulevard on-ramp to Old Davis Road off-ramp
- Eastbound I-80 from Old Davis Road on-ramp to Mace Boulevard off-ramp

The Vissim model of the Richards Boulevard corridor includes crosswalks at intersections to account for vehicle-pedestrian interactions. Bicycles are modeled through the arterial network based on the available infrastructure: off-street bicycle paths, on-street bicycle lanes, or in regular traffic lanes. Both motor vehicles and bicycles are routed through the model network. Unitrans and Yolobus bus routes are modeled according to the stop locations and route headways. The AM and PM peak hours are modeled. Vehicle volumes are entered in 15-minute intervals so that the effect of surges in traffic volume during the peak hours are modeled.

Using the existing conditions Vissim models, we will generate network performance measures for the AM and PM peak periods. F&P proposes to use the following performance measures:

<u>Peak Period</u>	<u>Peak Hour</u>
<ul style="list-style-type: none"> • Network delay by mode • Network vehicles miles of travel • Network fuel consumption • Network volume served 	<ul style="list-style-type: none"> • Corridor travel time • Intersection delay • Intersection level of service • Off-ramp queue length

The Synchro/SimTraffic model of the Mace Boulevard interchange will include conflicting pedestrian volume at intersections to account for vehicle-pedestrian interactions. The AM and PM peak hours will be modeled in 15-minute intervals using the peak hour factor (PHF) and anti-PHF adjustments to hourly flow rates. F&P will report the following performance measures: intersection delay, intersection level of service, and off-ramp queue length for the Mace Boulevard/I-80 Westbound Ramps intersection.

The freeway operations analysis using deterministic Highway Capacity Manual methods will apply measured truck percentages and PHFs. The analysis results will report freeway density and freeway level of service.

The technical appendix will include operational performance measures for each study intersection, each movement at each study intersection, and each freeway study segment.

The collision history at the I-80/Richards Boulevard interchange will be presented. Freeway and ramp locations with higher collision rates than the statewide average will be noted. The collision types will be reviewed to look for patterns that could be addressed by design changes.

3.1.3 Travel Demand Forecasts

F&P will use the City of Davis travel demand forecasting model to prepare construction year and design year forecasts for the study locations identified in Task 1.3. The base year model will be validated to the existing traffic counts. In the cumulative year model, the land use values for the Nishi, West Olive/Davis Hotel Conference



Center, and Lincoln40 developments will be verified based on the latest proposed plans. Forecasts will be prepared for the following project alternatives.

- No Build Alternative – maintain current Richards Boulevard interchange and ramp configurations
- Build Alternative 1 – reconstruct the westbound I-80 ramps at the Richards Boulevard interchange into a diamond configuration
- Build Alternative 2 – reconstruct the Richards Boulevard interchange as in Alternative 1 and close the westbound I-80 off-ramp to Olive Drive

The cumulative year forecasts will be prepared using the difference method. That is, the difference between the cumulative year and base year model volumes will be added to the existing count to estimate the cumulative year volume. Linear interpolation/extrapolation will be used to adjust the cumulative year forecasts to the construction and design years.

F&P will estimate the vehicle-miles of travel for the project alternatives based on the state Office of Planning and Research guidance.

Bicycle and pedestrian volumes will be assumed to grow at a constant rate based on overall average residential population growth in the project vicinity.

A technical memorandum detailing the existing conditions analysis and travel demand forecasting process will be prepared. A draft memorandum will be submitted 8 weeks after traffic counts are collected. F&P will respond to comments on the draft and submit a final version two weeks after receiving comments.

3.1.4 Design Year Operations Analysis

The analysis models for existing conditions will be updated to the design year as follows.

- Separate planned projects will be added such as the widening of southbound Richards Boulevard at Research Park Drive, Olive Drive bicycle lane improvements, and the I-80 Bus/Carpool Lanes.
- Forecasted motor vehicle, bicycle, and pedestrian traffic volumes will be added.
- Signal timings will be optimized based on the forecasted volumes.

Build Alternative 1 will include the proposed conversion of the westbound ramps from the current full cloverleaf configuration to a diamond configuration. Build Alternative 2 will include both the conversion to a diamond configuration and the closure of the westbound off-ramp to Olive Drive, which will divert traffic volume to the Richards Boulevard interchange.

The AM and PM peak periods will be analyzed for the three project alternatives (No Build, Build 1, and Build 2) for a total of six scenarios. Peak period and peak hour performance measures listed in Task 3.1.3 will be prepared for each scenario. Project impacts at study intersections, study freeway segments, and freeway off-ramps will be identified based on significance thresholds developed from the City of Davis General Plan policies, Caltrans' Corridor System Management Plan for I-80, and other planning documents. Potential mitigation measures will be identified for project impacts.



The ramp meter design will be evaluated using the design year forecasts. The arrival/discharge method will be used to determine the recommended ramp lane configuration at the ramp meter signal. The ramp meter storage length will be evaluated based on providing storage for 7 percent of design year peak hour non-HOV lane volume according to the most recent Caltrans guidelines.

3.1.5 Construction Year Operations Analysis

The analysis models for existing conditions will be updated to the construction year as follows.

- Separate planned projects will be added, such as the widening of southbound Richards Boulevard at Research Park Drive, Olive Drive bicycle lane improvements, and the I-80 Bus/Carpool Lanes, depending on the planned construction year.
- Forecasted motor vehicle, bicycle, and pedestrian traffic volumes will be added.
- Signal timings will be optimized based on the forecasted volumes.

The Build Alternatives will include the proposed conversion of the westbound ramps from the current full cloverleaf configuration to a diamond configuration. In Build Alternative 2, the westbound off-ramp to Olive Drive will be closed and traffic volumes diverted to the Richards Boulevard interchange.

The AM and PM peak periods will be analyzed for the three project alternatives for a total of six scenarios. Peak period and peak hour performance measures listed in Task 3.1.3 will be prepared for each scenario. Project impacts at study intersections, study freeway segments, and freeway off-ramps will be identified based on significance thresholds developed from the City of Davis General Plan policies, Caltrans' Corridor System Management Plan for I-80, and other planning documents. Potential mitigation measures will be identified for project impacts.

3.1.6 Construction Staging Analysis

The Richards Boulevard corridor Vissim model for the No Build Alternative under construction year conditions will be used to evaluate two construction stages for construction-related impacts. One alternative will have the westbound I-80 to southbound Richards Boulevard off-ramp closed with traffic detoured via the Olive Drive off-ramp. The other alternative will evaluate the effect of closing both off-ramps and detouring traffic via the Mace Boulevard interchange. Impacts to the Mace Boulevard interchange will be evaluated using the Synchro/SimTraffic model developed for existing conditions. The model will be updated with construction year forecasts and the signals optimized for the revised traffic volumes.

The AM and PM peak periods will be analyzed for the two construction stages for a total of four scenarios. Peak period and peak hour performance measures listed in Task 3.1.3 will be prepared for each scenario. Project impacts at study intersections, study freeway segments, and freeway off-ramps will be identified based on significance thresholds developed from the City of Davis General Plan policies, Caltrans' Corridor System Management Plan for I-80, and other planning documents. Potential mitigation measures will be identified for project impacts.



3.1.7 Transportation Operations Analysis Report

F&P will prepare a draft Transportation Analysis Report (TOAR) that describes the proposed project, existing conditions, travel demand forecasts, and design and construction year operations analysis. Existing transportation deficiencies and project impacts will be noted for each analysis scenario. A safety assessment of the project alternatives will be provided. The project alternatives will be compared based on overall network operations performance, multimodal safety, and transportation impacts.

The draft TOAR will be submitted 12 weeks after the project development team accepts the travel demand forecasts memorandum. We will respond to comments on the draft TOAR and submit the final TOAR two weeks after receiving comments.

3.2 Preliminary Plans (Geometric Approval Drawings and 30% Design)

Mark Thomas will prepare preliminary plans to be utilized for final design. Design activities under this task shall include, but not be limited to the following:

- Title Sheet
- Horizontal and Vertical Alignment
- Super Elevations
- Exceptions to Design Standards
- Typical Cross Sections
- Landscape Concepts
- Conceptual Stage Construction Plans
- Delineation Concepts

This scope of work assumes that no remediation of the existing long-term settlement of the Richards Boulevard approach embankments will be required.

3.3 Preliminary and Final Geotechnical Reports

3.3.1 Coordination, Permits, and Mark for USA

Crawford Associates, Inc. (CAInc) will coordinate with the design team and the City to discuss the project needs and schedule, review published geologic mapping, and review preliminary project data. They will review the site for drill rig access, mark exploratory boring locations and notify Underground Service Alert (USA). They will obtain boring permits required by County. They will obtain the required Caltrans and City encroachment permits for our fieldwork.

3.3.2 Subsurface Exploration

CAInc will perform the following subsurface exploration program at the project site.

Location	Number of Explorations	Depth Below Existing Grade
Putah Creek Bike Trail Overcrossing	1 Auger Borings ¹	60 to 75 ft
Alternative 2 – New Bike Trail Tunnel	1 – CPT	100 ft
	1 – Auger Boring	50-70 ft
Retaining Walls	2 – Auger Borings	15-25 ft
Embankment Fill	1 – CPT	100 ft
	3 – Auger Borings	20-50 ft
	2 – Auger Borings	5-10 ft



¹CAInc will utilize the existing subsurface information acquired at the northeast abutment by Espana for our analysis and report.

The Engineer/Geologist will direct the sampling and log the borings. At a minimum, CAInc will sample at 5-foot intervals. We will deliver the samples to our laboratory for testing. The drilling contractor will advance the borings with a rubber-tired, truck-mounted drill rig using 6 to 8-inch-diameter hollow and solid stem augers and mud-rotary techniques. Standard Penetration Testing (SPT) and California Modified sampling will be performed within the borings to obtain samples and blow count information. The borings will be backfilled according to the County permit requirements.

3.3.3 Laboratory Testing

CAInc will perform the following laboratory tests on relatively undisturbed samples obtained from the exploratory borings: Moisture Content and Unit Weight for bearing/lateral capacity and settlement; Compression and/or Direct Shear for bearing/lateral capacity; Consolidation for settlement estimates; Sieve Analysis and Plasticity Index testing for liquefaction analysis; Resistance Value for pavement design; and, Resistivity, pH, Sulfate Content and Chloride Content for soil corrosivity analysis. Deflection testing and determination of rehabilitation strategies for the existing structural section is included under Optional Task 7.1.

3.3.4 Evaluation and Engineering Analysis

CAInc will perform engineering analysis (using computer software where applicable) for the following: scour, slope stability, embankment consolidation/settlement estimates, bearing capacity; lateral capacity; site seismicity including, deterministic/probabilistic procedures consistent with current Caltrans Seismic Design Criteria to determine the site acceleration response spectrum (ARS) and liquefaction potential; slope stability; lateral earth pressure and coefficient of friction to resist sliding; soil corrosivity; and pavement section.

3.3.5 Geotechnical Design/Materials Report

CAInc will prepare a Draft Geotechnical Design/Materials Report consistent with current Caltrans for embankment, new pavement, drainage and utility improvements. The report will include: Scope of Work and Project Description; Physical Setting, including topography, drainage and regional/local geology; Summary of subsurface soil and groundwater conditions; Laboratory test results; Grading recommendations, including excavation and shoring; Corrosion Investigation; Materials Sources; New Pavement Recommendations; Construction Considerations; Vicinity Map; Site Plan with boring locations; Boring logs and legend

3.3.6 Retaining Wall Foundation Report

CAInc will prepare and submit a Retaining Wall Foundation Report following Caltrans requirements. The report will include: Scope of Work; Project Description; Field Exploration; Site Geology and Subsurface Conditions; Seismic Data and Evaluation; Liquefaction Evaluation; Slope Stability Evaluation; Caltrans standard type retaining wall foundation recommendations (i.e., bearing capacity, settlement, soil strength parameters, and embedment); Construction Considerations; Location Map; Retaining Wall Log of Test Borings; Laboratory Test Results.

3.3.7 Foundation Report

CAInc will prepare and submit a Draft Foundation Report consistent with current Caltrans for the structures planned along the westbound on-ramp (Putah Creek bridge widening and the bike trail tunnel). The report will



include: Scope of Work; Site Description; Project Description; Field Exploration; Laboratory Testing; Site Geology and Subsurface Conditions; Seismic Data and Evaluation; Liquefaction Evaluation; Geotechnical Scour and Slope Stability Considerations; Foundation Recommendations (i.e., type, elevation and allowable loading of bridge and/or culvert foundation elements; Construction Considerations; Location Map; ARS Curve; Log of Test Borings; Laboratory Test Results.

3.4 Structure Advance Planning Studies

Mark Thomas will develop Structure Advance Planning Studies (APS) in accordance with Caltrans requirements for new structures and modifications to existing structures. The studies will include preparation of plan drawings showing plan, elevation and section views, and square foot costs for each structure. The plans will be developed in sufficient detail to preview what will be constructed and include items such as foundations, falsework requirements, seismic and aesthetic considerations, and traffic handling. APS's will be prepared for the following:

- Widen Putah Creek Underpass
- New Westbound I-80 entrance ramp/ bicycle and pedestrian undercrossing
- Modify the bridge railing on the Richards Boulevard Overcrossing

It is assumed that the existing Richards Boulevard Overcrossing railing can remain and the existing superstructure will not need to be widened.

3.5 Preliminary Drainage and Storm Water Reports

Mark Thomas will prepare a Storm Water Data Report (SWDR). The report will be prepared to PA&ED phase standards and submitted to Caltrans for approval and will be included as an attachment to the Project Report. We will also prepare preliminary drainage designs using the preliminary design data, all relevant drainage information gathered, and base mapping. The preliminary drainage designs will comply with Caltrans design standards with the goal to provide a functional facility that is practical and perpetuates the existing drainage as much as possible.

We will obtain all relevant drainage information, including storm drain facilities, ditches, pipe location and sizes, local rainfall intensities and flows. A hydrologic analyses will be completed to develop watershed boundaries for the areas draining to this project, flows based on Caltrans standards, and preliminary drainage concepts.

A drainage report will be developed based on Caltrans guidelines. The report will include, but not be limited to, detailed discussions of the following: existing conditions, off-site hydrology and hydraulics, onsite roadway drainage, existing and post project drainage patterns, storm water quality, and other topics of significance.

3.6 Traffic Management Plan (TMP)

Mark Thomas will prepare a Traffic Management Plan and Checklist. This will include a review of traffic control restrictions, recommendations for anticipated lane closures, construction staging/traffic requirements, COZEEP requirements, and a review of construction strategies. The TMP will be developed in consultation with the City to determine if the Olive Drive exit will remain open during construction or be closed to require rerouting of existing traffic to the Mace Boulevard, Hutchison Drive and Old Davis Road interchanges. The TMP will include additional information to show pedestrian and bicycle movements during all phases of the construction. The TMP will be submitted to Caltrans for approval and will be included as an attachment to the Project Report.



3.7 Design Exception Fact Sheets

During the refinement of the project alternatives Mark Thomas will identify features that do not meet current Caltrans Design Standards. If design exceptions are required, Mark Thomas will prepare Design Exception Fact Sheets. These Fact Sheets will be submitted to Caltrans for approval and will be included as an attachment to the Project Report. Mark Thomas has assumed two Fact Sheets will be required as identified in the approved PSR/PDS.

We will submit Design Information Bulletin 78 design checklist with the preliminary plans. The checklist documents conformance with applicable design standards.

3.8 Landscape Assessment/ VIA

A preliminary landscape concept will be developed based on a construction and maintenance budget to be provided by the City. Because the City will be responsible for portions of the landscape and hardscape associated with the grade separated bike path, it is necessary that the concepts be established and communicated to the public and disclosed in the environmental document.

3.9 Preliminary Cost Estimates

We will prepare quantities and unit costs for the proposed project and complete the new 11-page Caltrans Preliminary Project Cost Estimate Summary. Approximate quantities for major construction items will be determined and unit costs will be applied based on Caltrans Contract Cost Data and recent applicable bid results. Estimates will be prepared and submitted with each submittal of the PR.

3.10 Preliminary Right of Way

Interwest will obtain preliminary title reports for the parcels noted under Task 2.1. Mark Thomas will identify the necessary easements and acquisitions for Interwest to provide preliminary cost estimating to be included on page 10 of the 11-page Caltrans Cost Estimate Summary. We will base the Project Report cost estimate on the ultimate project, however, a separate estimate will be provided to the City for the initial construction package that does not include accommodating the ultimate widening of Olive Drive for the future Nishi development.

3.11 Project Report

Concurrent with environmental document submittals, we will prepare the Project Report (PR) for distribution, review and approval by the City and Caltrans. The PR will be prepared in conformance with Caltrans Project Development Procedures Manual and will include the supporting information (GADs, Traffic Studies, Cost Estimates, etc) listed above.

The report will be prepared and approved in two versions: the Draft PR requests approval to circulate environmental document, and the Final PR requests approval of project. Each version of the above reports will be submitted in Draft Form (full District circulation), Draft Final (limited management review) and Final Form (District circulation copies), for a total of six submittals.

3.12 Concept Approval with FHWA

Based upon our previous experience with Caltrans District 3 and FHWA, it is our understanding that the Draft Project Report will serve as the FHWA Concept Approval Document. Comments will be incorporated into the



Final Project Report. Following the completion of the Final PR, Mark Thomas will work with Caltrans and forward the PR and NEPA CE to FHWA for approval to modify the existing access control and eliminate the Olive Drive exit ramp. It is anticipated that FHWA will not require a face to face meeting to eliminate this isolated exit ramp.

Task 3 Deliverables

- Existing Traffic Conditions Memorandum
- Traffic Forecasting Memorandum (Draft & Final)
- Traffic Operations Analysis Report (Draft & Final)
- Utility "A" Letters
- Geometric Approval Drawings (1"=100')
- Preliminary Plans (1"=50')
- Structure APS
- Cost Estimate (11-page format)
- Preliminary Geotechnical/Foundation Report (Draft & Final)
- Preliminary Storm Water Data Report
- Preliminary Drainage Report
- Design Exception Fact Sheets – 1 mandatory/1 advisory
- TMP Checklist
- Landscape Assessment Plans and Memo
- Draft Project Report
- Final Project Report
- FHWA Concept Approval Request Package

4.0 RIGHT-OF-WAY & UTILITY CERTIFICATION ACTIVITIES

The Right of Way and Utility Certification effort will include documentation of existing right of way limits, updating the limits of proposed right of way acquisitions, providing right of way acquisition documents prepared to current Caltrans standards, and finalizing proposed utility relocations. Acquisition support for condemnation is excluded from this scope of work.

4.1 Appraisal Mapping/ Retracement Mapping

Mark Thomas survey staff will use available Caltrans and City record mapping to tie into existing Right of Way and property lines within the proposed project footprint. Record information will be compared to field information to resolve discrepancies when necessary. The result of the resolved right of way and processed title reports will be compiled into working drawings referred to as the project Retracement Maps (Hard Copy Surveys). These drawings will be prepared showing bearings and distances based upon the project mapping meridian and the project scale factor. Parcels in the project footprint will be annotated with ownership, County Assessor's information and/or recording information or map references.

This retracement survey of the project land net will then be used to compute the location of the I-80 centerline and required Right of Way acquisitions. These maps will become the basis for Appraisal Mapping and Record Right of Way maps. As shown under Task 2, we have assumed three parcels with fee acquisitions and three parcels with only temporary construction easements. The easements and encumbrances shown in the Preliminary Title Reports



mentioned in Task 2 will be added to the Retracement Maps. Additionally, the Appraisal Mapping will show screened topographic information and have tabular data for parcel acquisitions, owner name, areas of total ownership, acquisition remainder, and encumbrances. The scale of the maps will be 1" = 50'.

The scope also includes one round of setting "show me" stakes to delineate proposed and existing right of way limits on the five (5) mentioned parcels for the appraisers. This effort will include setting lathe with flagging along the right of way at angle points, BCs, ECs and intervisible on tangents. It is assumed this effort will take place in two (2) mobilizations to accommodate appraiser scheduling with owners. It is assumed appraiser will provide for access during discussions with owners.

Legal descriptions and plat maps will be prepared for five noted R/W acquisitions/ easements (one for each parcel). The legal descriptions will be used for both the Deed Forms and the City acquisitions; the plat maps will be used for the City acquisitions only.

Assumptions:

Caltrans style Appraisal mapping is not required because no new acquisitions or easements will involve Caltrans.

4.2 Appraisals

Interwest will coordinate with Mark Thomas and the City for the appraisal process. They have partnered with Kevin Ziegenmeyer of Seevers Jordan Ziegenmeyer. This appraisal firm employs contemporary valuation methods set in the framework of California Eminent Domain law, Caltrans Right-of-Way Appraisal Standards, the Uniform Act of 1970 as amended, and the standards established in the Uniform Standards of Professional Appraisal Practice (USPAP) to arrive at estimates of just compensation.

The reports will be prepared in conformance with and subject to the requirements of the Uniform Standards of Professional Practice (USPAP) of the Appraisal Foundation. The scope of work and the steps involved in the appraisal process are as follows:

- Meetings with City staff and/or assigned contractor, to ascertain essential acquisition and construction elements of the overall project, and to discuss the effects of the project on the individual properties to be appraised.
- Inspection of the property under appraisal, affording the owner, or his/her representative, the opportunity to accompany the appraiser during the inspection.
- Meetings with the assigned review appraisal authority early in the appraisal process in order to coordinate desired valuation methodologies and to identify potential appraisal problems relating to eminent domain considerations.
- Gathering and analyzing data concerning the real estate market area with particular attention paid to the market sectors in which the subject properties are classified.
- Gathering factual information concerning the subject properties through the examination of public records, aerial photos, flood maps, planning department records and from interviews with persons knowledgeable of the sites and neighborhood.



- Discussions with representatives of appropriate government agencies as to the properties' land use potential including zoning, community plan, general plan, flood hazard zones, availability of utilities, etc.
- A review of easements and restrictions listed in the preliminary title reports provided and measuring the effect of these easements on property utility and value.
- Market research for sales and listings of comparable properties, and confirmation with directly involved parties.
- Analysis of the data gathered and reconciliation into a conclusion of the market value of the properties in the before situation.
- Preparation of an "Appraisal Summary Statement" for each property under appraisal as per California eminent domain requirement.
- Provide City with a signed certification of the appraiser, including the effective date of the valuation.

Appraisal review services will be performed by Tim Landes of Sierra West Valuation, Inc. The review appraiser will ensure the appraisal meets minimal reporting requirements and follows case law for eminent domain in California. A Certificate of Review will be provided expressing the salient factual information in the review appraisal and a summary of the estimated fair market value/just compensation conclusions of the appraiser if the reviewer is in basic agreement with the appraiser's methodology and conclusion of value. Said reviews, consultations with the appraiser, and Certificate of Review will be completed in timely fashion so as not to delay project timelines and goals. To do so, requires open lines of communication between the City, the project team and the fee appraiser. The Appraisal Review scope of work includes the following items:

- Evaluate compliance with relevant USPAP requirements and with the appraiser's client requirements and with applicable laws and regulations, such as Caltrans appraisal procedures, California State Eminent Domain Codes, State and Federal Uniform Acts, and other applicable State and Federal laws and regulations.
- Evaluate the appraiser's support and reasonableness of the conclusions of highest and best use of the subject properties being appraised.
- Evaluate the appraiser's support and reasonableness of the applications of the acceptable valuation approaches (Market approach, Cost approach and Income approach).
- Evaluate the appraiser's support and reasonableness of the valuation conclusions.
- Evaluate the adequacy and completeness of the confirmation of the market data used for the purposes of estimating market value of the subject properties.
- In the appraisal of partial acquisitions for public projects, evaluate the support and completeness of the study and conclusions of the value of the remainder property for the purpose of estimating severance damages and benefits as a result of the partial acquisition of the property for the public project.
- Evaluate the severance damages and/or benefits for compliance of the California Eminent Domain Codes and Case laws to assure that any estimated severance damages and/or benefits do not include any non-compensable items.



4.3 Acquisition/Negotiation Services

Acquisition services include all contact with the property owner for the purpose of negotiating the acquisition of the real property interests. Services to be provided include:

- Meet with impacted property owners to explain the Project in general and the public land acquisition process.
- Prepare the offer letter based upon the value to be determined as “just compensation” by the City.
- Prepare the Acquisition Agreement and conveyance documents.
- Meet with property owners to discuss the project in general, review plat maps and legal descriptions and make the official first written offer.
- Explain the offer, make follow-up contacts, and secure the necessary documentation upon acceptance of the offer for closing escrow and securing title insurance.
- Respond to inquiries made by property owners, verbally and in writing.
- Maintain contact logs and diaries for each parcel, with all pertinent information and contracts concerning the parcel.
- Maintain parcel files of original documentation, related to the purchase of real property.
- Preparation and submittal of monthly updates on the acquisition status to the Project Manager.
- Continuation of personal negotiations with property owners until an agreement or an impasse is reached.
- Signed purchase agreements will be transmitted to the City promptly for acceptance and processing.

Pursuant to Senate Bill 1210, all offers made to property owners will include a written notice indicating they are eligible to receive reimbursement of up to \$5,000 for reasonable costs of an independent appraisal of the property the City of Davis intends to purchase.

4.4 Escrow Coordination Services

Once negotiations with the property owner are complete and acquisition documents are signed, the closing (escrow) process will begin, which involves coordinating the following activities with the City’s designated title company:

- Prepare a transmittal memorandum to the City summarizing the acquisition.
- Prepare escrow instructions.
- Notary verification.
- Obtain subordination, lien releases for deeds of trusts and other encumbrances of record.
- Verifying the payment of all real property taxes and other assessments owed on the property.
- Obtaining signatures of all property owners of record on the conveyance documents. Disbursement of sale proceeds to the property owner and other parties of interest.

We will work with the property owner and the title company throughout the entire closing process.

4.5 Project Certification

Interwest recognizes that Right of Way Certification is a written statement summarizing the status of all right of way related matters pertaining to a proposed construction project. As part of the certification process, Interwest, in coordination with Mark Thomas, will provide a Right of Way Certification that states:



- Real property interests have been, or are being, secured.
- Physical obstructions including utilities and railroads have been, or will be removed, relocated, or protected as required for construction, operation, and maintenance of the proposed project.
- Right of way acquisition requirements were conducted and in accordance with applicable federal and state laws and procedures.

4.6 Final Utility Coordination

Building on the utility coordination during PA&ED, Mark Thomas will work with the City and Caltrans to finalize all utility agreements and certifications. This will include preparing Utility “B” and “C” letters along with Notice to Owners, Reports of Investigations, and Utility Agreements to satisfy Caltrans requirements. Once completed, Utility Certification packages will be sent to the City and Caltrans for approval and included in the Right of Way Certification package.

Assumptions:

Mark Thomas anticipates one (1) day of Ground Penetrating Radar to locate existing communication conduits in lieu of potholing.

Task 4 Deliverables:

- *Right of Way Retracement Map*
- *Draft and Final Appraisal Maps and Legal Descriptions*
- *Five (5) Appraisal Reports*
- *Five (5) Appraisal Summary Statements*
- *Five (5) Certificates of Review*
- *Five (5) signed acquisition agreements, if agreements are reached with property owners.*
- *Five (5) signed Deeds, if agreements are reached with property owners.*
- *Clear, as necessary, exceptions to title for parcel to be conveyed to the City*
- *Disbursement of sale proceeds to property owner*
- *One (1) Right of Way Certification*

5.0 ENVIRONMENTAL DOCUMENTATION (CEQA/NEPA) & PERMITTING

5.1 CEQA/NEPA Environmental Documentation

Environmental Science Associates (ESA) will prepare the needed California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) documentation, which was anticipated in the mini-Preliminary Environmental Analysis Report (PEAR) prepared by ESA for Caltrans in 2016, to be a draft and final Initial Study/Environmental Assessment (IS/EA) leading to a Mitigated Negative Declaration/Finding of No Significant Impact (MND/FONSI). If, throughout the course of the environmental studies, it is found that impacts cannot be mitigated to a less than significant level or that the project may contribute to substantial public controversy, then a higher-level document would need to be prepared (which is not a part of this scope). The IS/EA will be prepared in conformance with the Caltrans Standard Environmental Reference (SER) and the IS/EA template provided on the SER.



ESA will prepare the IS/EA for distribution, review and approval by the City and Caltrans. Based on the sensitive biological resources in the project area and the fact that complete avoidance of those resources would not be possible, we anticipate the need for a MND/FONSI. They will submit the IS/EA with proposed MND/FONSI to the State Clearinghouse and prepare a Notice of Availability and Notice of Intent to Adopt Mitigated Negative Declaration with Notice of Public Hearing for that submittal. They anticipate that a public hearing will be held for the IS/EA during the 30-day public comment period. Following circulation of the IS/EA, we will respond to comments received on the IS/EA, prepare and file the MND/FONSI, as well as the Notice of Determination (NOD) and Notice of Availability (NOA) and, as applicable, the Findings.

5.2 Prepare Environmental Technical Studies

5.2.1 Biological Assessment/Support Caltrans in Obtaining Biological Opinion

Perform all tasks related to federally listed species and other studies required to complete a Biological Assessment (BA) in conformance with USFWS guidelines and Caltrans BA template. The BA will address federally listed species that may occur on the site and assess the potential for project impacts. The BA will describe the potential direct, indirect, and cumulative effects of the proposed action.

ESA will seek to develop avoidance and minimization measures; however, due the presence of potential habitat for federally listed species (associated with the former main channel of Putah Creek in the western portion of the project site), total avoidance may not be possible.

- Obtain special-status species list for project area from USFWS.
- Determine listed species that may be present.
 - Perform database searches and a field survey to support the preparation of the BA. The field survey will consist of a reconnaissance-level survey of the project site and surrounding area focusing on identifying and delineating habitat for special-status plant and wildlife species. Habitats present at the project site will be compared to the habitat requirements of regionally occurring special-status species to determine which of these species has the potential to occur at or adjacent to the project site.
 - Previous studies have identified elderberry shrubs, which are the host plant for the valley elderberry longhorn beetle (federally listed as threatened), within the Putah Creek riparian corridor. If suitable elderberry shrubs are detected during the field survey, presence of valley elderberry longhorn beetle will be assumed. Suitable elderberry shrubs will be mapped and relevant data recorded.
- Determine effect on species.
 - Biological Study Area (BSA) will include the existing right-of-way (ROW), proposed new ROW, and adjacent areas to assess the direct and indirect effects of the project.
 - Habitat types occurring in the BSA will be characterized and their locations and extent will be mapped onto aerial photographs.
 - Sensitive biological resources, including observations of special-status species and/or suitable habitat, will be documented and mapped.
- Perform formal and informal coordination with resource agencies.



- Prepare Biological Assessment.
 - Summary of consultation to date, description of the proposed action, an account of each species addressed, an assessment of project effects to each species, an analysis of the proposed action and avoidance and minimization measures, and an effect determination for each species and its critical habitat.

5.2.2 Natural Environment Study

Perform all activities related to preparing the Natural Environment Study (NES) and other biological reports related to the project in accordance with the NES template found on the Caltrans SER.

- Conduct database searches, literature review, and field surveys.
 - BSA will include the existing ROW, proposed new ROW, and adjacent areas to assess the direct and indirect effects of the project.
 - Coordinate with Caltrans on survey methodology
 - ESA does not recommend focused special-status species surveys prior to preparation of the NES, except for suitable habitat for valley elderberry longhorn beetle if it is identified in the project site.
 - This approach may result in the assumption of potential presence for some special-status species in the BSA and require incorporation of avoidance and minimization measures into the NES such as preconstruction surveys and establishment of appropriate avoidance buffers, as needed.
 - If suitable habitat for valley elderberry longhorn beetle is found on the project site, elderberry shrubs will be mapped and relevant data recorded. All elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level shall be searched for beetle exit holes and tallied by diameter size class as outlined in the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (USFWS, 1999).
 - Natural communities occurring in the BSA will be characterized and their locations and extent will be mapped onto aerial photographs.
 - Sensitive biological resources, including observations of special-status species and/or suitable habitat, and sensitive natural communities such as riparian areas and wetlands will be documented and mapped.
- Determine effects to sensitive species
 - Based on a preliminary search of the CNDDDB and our existing knowledge of the project site location and context, we anticipate the NES will focus in particular on Swainson's hawk and elderberry longhorn beetle.
 - Other special-status wildlife species that would likely be addressed include: California tiger salamander, giant garter snake, burrowing owl, western pond turtle, tricolored blackbird, and special-status plant species, but are not likely to be of significant concern.
- Determine regulatory requirements
 - Clean Water Act Section 404 and 401, Porter-Cologne Water Quality Control Act, federal Endangered Species Act (ESA); California Endangered Species Act (CESA), California Fish and



- Game Code, Migratory Bird Treaty Act, and Executive Orders 13112 and 11990 related to invasive species and the protection of wetlands.
 - o Because a separate wetland delineation report will be prepared, the NES will summarize the Wetland Delineation Report (WDR) (see WDR task below) and determine the effect on the amount and type of wetlands and other waters of the U.S. and State.
- Prepare NES
 - o Include a description of the project and its purpose and need, federal and State regulatory and permitting requirements pertinent to the proposed project, existing conditions and potential for special-status species and natural communities of concern to occur within the BSA, a description of project effects, and proposed avoidance and minimization measures and mitigation, as required.

5.2.3 Wetlands Delineation

In accordance with SER Chapter 15 and Environmental Handbook Volume 3, perform all tasks related to identifying, studying project effects on, and determining mitigation for wetlands in the project area, and prepare a report.

- Conduct database and literature review
 - o Review existing wetland data for the site, including USFWS National Wetland Inventory maps, U.S. Department of Agriculture Natural Resources Conservation Service soil survey information, U.S. Geological Survey 7.5-minute topographic quadrangle maps, existing aerial photographs of the project site and vicinity, and past wetland studies on the project site, if available.
- Delineate wetlands in the project area
 - o Conduct a field delineation of potential jurisdictional waters of the U.S. and waters of the State, including wetlands, within the potential construction footprint
 - o U.S. Army Corps of Engineers (USACE) 1987 multi-parameter methodology and 2008 Regional Supplement for the Arid West Region will be used to delineate potentially jurisdictional wetlands and waters; this involves collection of soils, vegetation, and hydrologic data to establish the jurisdictional edge of the wetlands. Field data sheets will be completed for each data point.
 - o Prepare a wetland map showing the extent and location of all potentially jurisdictional waters of the U.S and State, including wetlands, within the potential construction footprint. This map will be prepared in accordance with USACE requirements. The USACE-preferred base map for this effort is a recent aerial photograph (minimum scale of 1 inch = 200 feet).
- Prepare a wetland delineation report (WDR) that summarizes the methodology, existing conditions, and findings of the wetland delineation, including the wetland map.

5.2.4 Cultural Resource Studies

Based on the mini-PEAR for the project, the project will likely qualify as a screened undertaking pursuant to the Section 106 Programmatic Agreement (see Section 106 Programmatic Agreement, Attachment 2: Screened Undertakings, Classes of Screened Undertakings, Item 5: Minor modification of interchanges and realignments of on/off ramps). Screened undertakings are those undertakings that have the potential to affect historic properties, but following appropriate screening, may be determined exempt from further review or consultation pursuant to



Section 106. If Caltrans Professionally Qualified Staff (PQS) determines that the project qualifies as a screened undertaking, a Screened Project/Activity Memo would be prepared. If the PQS determines that the project does not qualify as screened undertaking, it is anticipated that a Historic Property Survey Report (HPSR) with attached Archaeological Survey Report (ASR) would be prepared for the project's compliance with Section 106. A Historical Resources Evaluation Report (HRER) may also be required if it is determined the project could result in adverse effects to historical archaeological resources or built environment resources, such as buildings, structures, objects, districts, and linear features. An ASR, HPSR, and HRER are not included in this scope.

ESA will complete the following tasks in order to draft a Screened Project/Activity Memo (Memo) for compliance with the *MEMORANDUM OF UNDERSTANDING BETWEEN THE CALIFORNIA DEPARTMENT OF TRANSPORTATION AND THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER REGARDING COMPLIANCE WITH PUBLIC RESOURCES CODE SECTION 5024 AND GOVERNOR'S EXECUTIVE ORDER W-26-92*.

The Memo will provide a description of the project and describe the research completed as part of the screening process, including background research and a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS). ESA will contact the Native American Heritage Commission (NAHC) to request a review of their Sacred Lands Files and a list of Native American organizations and individuals that may have cultural significance to the project vicinity. ESA will contact by letter each organization and individual on the NAHC list and will follow-up with a telephone call to any contact that did not respond. An ESA qualified archaeologist who meets the Secretary of the Interior's Professional Qualification Standards will conduct an on-foot surface survey of the project area.

ESA will prepare one draft and one final Memo documenting the methods and findings of the background research, communication with Native Americans, maps, and results of the field survey. The Memo will be prepared using the guidelines provided in Exhibit 2.5: Screened Undertaking Memo Format and Content Guide. ESA will prepare one electronic draft copy of the Memo for review. Following one consolidated round of review, ESA will prepare up to five bound paper copies and one electronic copy of the final Memo. ESA will provide one paper copy and one electronic copy of the Memo to the NWIC.

Assumptions:

- ESA assumes that no historic-era buildings or structures are located in the project area. If historic-era buildings or structures are located in the project area, ESA can document and/or evaluate the resources in a Historical Resources Evaluation Report (HRER) under a separate scope of work.
- This scope assumes that an Archaeological Survey Report (ASR) and a Historic Property Survey Report (HPSR) will not be required. If the Caltrans PQS requires these documents they can be completed under a separate scope of work.
- This scope does not include a subsurface survey, such as an Extended Phase I (XPI) Survey. If required, an XPI Survey to test for the presence or absence of buried archaeological resources can be completed under a separate scope and budget.



5.2.5 Air Quality Study and Air Quality Conformity Report

The project is located in the Yolo County portion of the Northern Sacramento Valley Air Basin, which is classified as a nonattainment area for the federal ozone and PM_{2.5} standards and maintenance for the federal carbon monoxide standards. While the project includes bicycle and pedestrian facilities, which are eligible for an exemption under 40 CFR 93.126 from conformity and air quality studies, the overall project is not exempt and an Air Quality Report will need to be completed.

Using guidance in Caltrans' SER Chapter 11 and Air Quality Analysis and Coordination webpage, ESA will analyze the Project's air quality impacts and document the result in future technical reports and environmental documents. Specifically, ESA will:

- Identify sensitive receptors and analysis locations.
- Perform micro-scale carbon monoxide modeling to predict future pollutant concentrations with no project and all applicable alternatives.
- Verify Federal Clean Air Act conformity status of the project; coordinate with regional and air quality agencies to obtain concurrence in the conformity status of the project, and carry out additional conformity-related activities as needed.
- Prepare the Air Quality Study that will analyze the Project's contribution to ambient CO concentrations and the Project's emissions of greenhouse gases and mobile source air toxics.
- Prepare an Air Quality Conformity Report.

5.2.6 Noise Technical Memo

As identified in the mini-PEAR prepared for the project, the project would generate construction noise that could affect sensitive receptors in the project area, including multi-family housing along Olive Drive. The project is likely a Type 1 project as defined by 23 CFR 772.5(h). The project involves potential substantial vertical alterations, specifically the increased height of the ramps to and from westbound I-80 that expose the line-of-sight between the receptor (i.e., multi-family housing along Olive Drive) and the traffic noise source. Because of the project's classification as a Type 1 project, a Noise Study Report (NSR) will have to be completed. If the NSR identifies noise impacts that require the consideration of noise abatement, a Noise Abatement Decision Report (NADR) would also be required (not included in this scope). Given traffic volumes on I-80 and Richards Boulevard, it is possible that the ambient noise levels may already approach or exceed the noise abatement criteria (NAC) of 67 dBA at these residences.

ESA will prepare a NSR and, if needed, a NADR for the Richards Boulevard/I-80 Improvements project would be prepared by the project engineer. The noise analysis will be conducted in accordance with the requirements of the Caltrans Traffic Noise Analysis Protocol (Protocol)¹ and Technical Noise Supplement (TeNS).² The traffic noise report will quantify the existing and projected future traffic noise associated with the project, evaluate temporary noise effects from the construction of the project, identify locations where noise impacts may occur, and

¹ Caltrans, 2011. Traffic Noise Analysis Protocol. May 2011.

² Caltrans, 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013.



evaluate measures to abate potential noise impacts associated with construction and operation of the project. Specifically, ESA will perform the following subtasks for completion of the NSR:

- **Land Use and Receiver Identification:** Identify existing noise-sensitive land uses in the vicinity of the Richards Boulevard/I-80 interchange and also undeveloped lands for which development is planned, designed, and programmed that may be affected by the proposed project.
- **Noise Level Measurements:** Conduct existing background noise measurements and obtain traffic noise level measurements and concurrent traffic counts at representative noise-sensitive receiver locations for the Traffic Noise Model (TNM) validation purpose.
- **Existing Noise Evaluation and Model Validation:** ESA will use the latest version of the TNM to develop a project-specific model of the existing conditions in the project area. Measured noise levels, traffic counts obtained during the field measurements, and observed vehicle speeds will be used to validate the accuracy of the TNM noise model in predicting noise levels in the project vicinity. Adjustments to the model would be made to account for site-specific acoustical characteristics, if needed.
- **Future Traffic Noise Level Prediction and Impact Determination:** Use the validated TNM model in conjunction with the results of the previous tasks, proposed geometric design changes, and forecast peak-hour volumes or LOS C design capacity traffic data, whichever are greater, to predict projected future peak traffic noise levels for the project No-Build and Build conditions. Calculated peak-hour noise levels will then be compared to applicable NAC to determine whether future noise levels approach or exceed the NAC, thereby triggering the need for consideration of noise abatement.
- **Traffic Noise Abatement Evaluation:** Evaluate noise barriers for locations where predicted future noise levels approach or exceed the NAC. Develop detailed information related to locations and heights of required noise barriers and determine their acoustical feasibility and reasonableness allowance in the NSR. Additionally, provide discussion of alternative noise abatement measures. Determination of reasonableness of noise barriers will be made without an engineering review in the NSR. However, the preparation of the NADR, which will include detailed noise barrier cost estimates by the project engineer would ensure the reasonableness of the proposed noise abatement.
- **Construction Noise Evaluation:** Based on the information related to construction equipment, activities, and construction and staging locations, estimate noise levels at nearby noise-sensitive locations during the construction of the proposed project. Provide discussion of approach to adhering to construction noise limits per standard specifications.
- **Draft Noise Study Report:** Prepare a draft NSR in accordance with Caltrans requirements. Upon receipt of review comments back from Caltrans, finalize the NSR. If the NSR identifies noise impacts that require the consideration of noise abatement, an NADR will be prepared. An NADR is not included in this scope and an amendment would be required, if it is found to be required.
- **Final Noise Study Report:** ESA will prepare the final NSR after Caltrans comments are incorporated.



Noise Abatement Decision Report (Optional Task)

ESA will prepare a Noise Abatement Decision Report (NADR) for the Richards Boulevard/I-80 Improvements project in accordance with the requirements of the Caltrans Traffic Noise Analysis Protocol (Protocol)³ and Technical Noise Supplement (TeNS).⁴ The NADR will further evaluate any proposed noise abatement resulting from the Noise Study Report (NSR) prepared for the project. Specifically, ESA will perform the following subtasks for completion of the NADR:

- **Review Noise Study Report (NSR):** The NSR will be reviewed for any noise abatement measures determined to be acoustically feasible that should be given further consideration as part of the NADR.
- **Evaluate Noise Abatement Decision Report Considerations:** Each acoustically feasible noise abatement measure will be evaluated for the conditions listed in the Protocol.
- **Draft Noise Abatement Decision Report:** Prepare a draft NADR in accordance with Caltrans requirements and provides data prepared as part of the evaluation described above.
- **Final Noise Abatement Decision Report:** ESA will prepare the final NADR once all comments from Caltrans have been incorporated.

Assumptions:

- The noise analysis will be conducted in accordance with the requirements of the Caltrans Traffic Noise Analysis Protocol (dated May 2011).
- Up to 5 monitoring locations will be included in the noise survey to show existing noise levels in the vicinity of Richard Boulevard/I-80 Intersection during the free flow of traffic. ESA will not be responsible for unexpected events (bad weather, traffic congestion due to accident) at the project site.
- One review cycle has been assumed for finalizing the draft NSR.
- If additional changes occur to the project description, additional modeling, abatement analysis, reporting and agency coordination, and possible noise monitoring would be required as additional cost.
- The NADR will be prepared in accordance with the requirements of the Caltrans Traffic Noise Analysis Protocol (dated May 2011).
- One review cycle has been assumed for finalizing the draft NADR.
- If additional changes occur to the project description, additional modeling, abatement analysis, reporting and agency coordination, and possible noise monitoring would be required as additional cost.

5.2.7 Visual Impact Assessment

Reconfiguration of the existing interchange, introduction of a barrier-separated bicycle and pedestrian path, and intersection and roadway improvements would introduce changes to the visual character of the project site and its surroundings. The Visual Impact Assessment Questionnaire was used to determine what level of visual assessment would be needed. The guide addressed issues including existing physical characteristics, construction impacts, and public controversy. Based on the Visual Impact Assessment Questionnaire, the project scored 14

³ Caltrans, 2011. Traffic Noise Analysis Protocol. May 2011.

⁴ Caltrans, 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013.



points, which indicates that the project's visual impacts could be addressed in technical memorandum. ESA will prepare the VIA memo following the annotated outline found on Caltrans Landscape Architecture Program webpage. The VIA memo would briefly describe project features, impacts and any avoidance and minimization measures. Visual simulations are not included in the scope.

5.2.8 Community Impacts

Caltrans may require the preparation of a community impact memorandum to document impacts to the adjacent communities during construction. ESA would prepare a brief technical memorandum discussing consistency with federal, state, and local plans; environmental justice; community character; utilities and emergency services; potential business and community impacts during construction.

5.2.9 Water Quality Report

In conformance with the 2012 Water Quality Assessment Report (WQAR) template found on the Caltrans Stormwater website, prepare WQAR, including performance of all activities related to water quality impact analysis for use in the environmental document.

- Identify receiving waters, their regulatory status, and their uses.
- Collect existing water quality information, including monitoring data from other agencies as available.
- If necessary due to inadequate existing information, conduct on-site sampling and/or monitoring.
- Perform modeling if necessary and appropriate to predict future pollutant concentrations with no project and all applicable alternatives.
- Verify applicability of Sole Source Aquifer, NPDES, and other laws and regulations to the project and design of drainage facilities.
- Develop estimates of effectiveness for alternative drainage facilities and mitigation measures.
- Prepare technical report with mapping & other graphics.

5.2.10 Section 4(f)

The Putah Creek bike path crosses under I-80 via 55-foot reinforced-concrete box girder structure in the western portion of the project site. As a publically owned, open-to-the-public recreational facility, the bike path qualifies for protection under Section 4(f). The structure would be extended by approximately 20 feet northward to widen the structure on the freeway. The path would remain open during project construction, but the width of the path would be temporarily reduced to approximately 8 to 10 feet to accommodate the falsework for the widening of the structure. Impacts to path users would include closure of the path (using flaggers) for brief moments for construction equipment to pass, and 4-hour path closures for installation and removal of falsework. Normal path operations would be restored following project construction. It is anticipated that project construction activities would not result in an adverse effect to the activities, features, or attributes qualifying the bike path for protection under Section 4(f). When more is known about the potential use of the bike trail and after coordination with the official with jurisdiction and Caltrans either a *de minimis* determination will be made or documentation will be prepared that the project qualifies for the temporary use exception pursuant to 23 CFR 774.13(d). This scope assumes a *de minimis* determination will be required and will be prepared in accordance with the Caltrans annotated outline and guidance provided in Caltrans SER Chapter 20.



5.2.11 Initial Site Assessment and Aerial Deposited Lead Evaluation

Initial Site Assessment

CAInc will prepare an Initial Site Assessment (ISA) for evidence of recognized environmental conditions (RECs) and/or potential RECs that may significantly impact the project. The ISA will include the following tasks:

- Review and discuss the project with the design team.
- Review available project documents and reports including; existing ISA reports for nearby projects, APN parcel maps, site geology and groundwater data. They will review this information for evidence of suspected or known contamination/hazardous materials issues (such as dredge tailings, pesticide usage, railroad alignments, industrial parks, orchards, etc.).
- Conduct a limited site reconnaissance to observe current land use and indications of potential contamination at the site, and to view publicly accessible portions of the adjacent properties.
- Review owner representative provided information, if available, regarding past and present operations conducted on the property to assess the potential for RECs.
- Review historical aerial photographs, topographic maps, and soil maps of the site and surrounding properties for indications of site use and potential sources of contamination.
- Perform federal, state, and city records review for indications of the use, misuse, or storage of hazardous and/or potentially hazardous materials on or near the site. The federal, state, and city database search will be provided by a professional record check service.
- Based on the results of the database search, site review, land use and existing assessments, CAInc will determine the risk of potential hazardous materials within and adjacent to the project area.
- Prepare a report summarizing the findings of our review, site reconnaissance, historical photograph evaluation, and regulatory records review. We will address identified potential contamination and hazardous material impacts to provide recommendations and determine additional investigation and analysis.

Aerial Deposited Lead Evaluation

CAInc will perform the Aerial Deposited Lead (ADL) testing along the existing on and off ramps and along I-80 within the project limits. Based on the proposed improvement plans, we expect ADL testing will be completed along approximately 4,500 lineal feet of the existing pavement. Their scope includes the following:

- Review existing site conditions and discuss with Caltrans to develop a final work scope.
- Mark sampling locations in the field for Underground Service Alert.
- Sample up to 18 locations along the existing ramp shoulders at approximately 250-foot sampling intervals. They assume the sampling can be completed along with our Geotechnical Fieldwork.
- Collect three discrete samples (0 to 4”), (6” to 12”), (18” to 24”) below ground surface from each sample location using a combination of hand equipment and Geoprobe drilling rig.
- Test all samples for total lead (EPA Method 6010B), and approximately 30% of the samples for soluble lead (WET procedure with EPA Method 6010B analysis) and pH (EPA Test Method 9045).



- Review and analyze the test data and prepare a Draft ADL Report of the test results. The draft report will be distributed to relevant members of the project team for review and comment. The Final ADL Report will include all comments.

5.3 Environmental Permitting

If the project results in impacts to wetlands and waters of the U.S., Section 404 and 401 permits will be required. These are discussed below.

The project is not anticipated to impact a stream or lake/pond and a streambed and lakebed alteration agreement (SAA) application package, in compliance with Section 1602 of the California Fish and Game Code would not be required. Further, because the project site has limited potential for species listed under the California Endangered Species Act (CESA) to be present, it is assumed that an incidental take permit (ITP) under CESA would not be required. If it is determined that an SAA or ITP is required, we can then prepare those applications. Therefore, these tasks are presented as optional tasks below.

Section 404 Nationwide Permit Application Package

Based on information obtained during the wetland delineation/assessment, confirm with the Corps that a Nationwide Permit (NWP) would be the appropriate Section 404 permit for the project. Assuming the project should qualify for an NWP, coordinate with the Corps Sacramento District office immediately upon notice to proceed in preparation of the permit application. This task includes preparation of all supporting documents required in requests for authorization under an NWP, including a completed and signed application form (404 permit application ENG Form) and attachments with supplemental information.

This task assumes that the necessary design footprint will be provided in an appropriate format for analysis of potential impacts to wetlands and other waters of the U.S. It is assumed that the project will require:

- Corps Nationwide Permit application, including:
 - ENG Form
 - 404 Application attachment
 - Formal Wetland Delineation Report (see above)

Section 401 Clean Water Act Compliance

Section 401 of the CWA requires that the discharge of dredged or fill material into waters of the United States, including wetlands, does not violate state water quality standards. As required by Section 404, water quality certification must be obtained or waived for permit compliance. A Section 401 water quality certification application package will be prepared for submittal to the Central Valley RWQCB for the proposed project.

Upon submittal of the water quality certification notification, the RWQCB has 30-days to notify the applicant as to whether the application is complete. If the applicant does not receive notification from the RWQCB within 30 days of the submittal date, the applicant may assume that project activities have been certified and proceed with the project unless other agency permits are required. Once the RWQCB deems the application complete, it may request additional information such as a Storm Water Pollution Prevention Plan (SWPPP) or evidence showing compliance with appropriate requirements of a water quality control plan.



A certification is considered valid once the RWQCB receives the notification with the applicant's signature. Thus, upon notification that the application is complete, the review and approval process could require an additional 30 to 45 days for completion. The RWQCB could deny the certification of the project if the project does not meet water quality standards or procedural requirements. However, if the deficiency is addressed and considered adequate by the RWQCB, the application for water quality certification may be reconsidered. This would require the re-submittal of the notification and adherence to the same 30 to 45 day approval process. The application review process could take up to 60 days. It is assumed that the project will require:

- Central Valley RWQCB Section 401 Water Quality Certification application, including:
 - USACE Application Package
 - Proof of CEQA Compliance
 - Fee Calculation Sheet
 - Permit Fee (to be determined)

Task 5 Deliverables

- *Initial Study/Environmental Assessment with Proposed MND/FONSI*
- *MND/FONSI*
- *Notice of Availability, Notice of Intent to Adopt MND and State Clearinghouse Submittals*
- *Notice of Determination and Findings (as applicable)*
- *One (1) electronic copy and two (2) copies of Draft BA*
- *Four (4) copies of Final BA*
- *One (1) electronic copy and two (2) copies of Draft NES*
- *Four (4) copies of Final NES*
- *One (1) electronic copy and two (2) copies of Draft WDR*
- *Four (4) copies of Final WDR*
- *Draft and Final cultural resources screening memo*
- *Air Quality Report and Air Quality Conformity Report*
- *Draft and Final Noise Study Report*
- *Draft and Final Noise Abatement Decision Report*
- *Draft and Final VIA Memo*
- *Draft and Final Community Impact Memo*
- *Draft and Final Water Quality Report*
- *Draft and Final de minimis finding document*
- *Initial Site Assessment Report*
- *One (1) electronic copy and two (2) copies of Draft 404 Permit Application*
- *Four (4) copies of Final 404 Permit Application*
- *One (1) electronic copy and two (2) copies of Draft 401 Permit Application*
- *Four (4) copies of Final 401 Permit Application*



6.0 FINAL PROJECT DESIGN

Mark Thomas will complete the design tasks for final plans, specifications, and estimates for the interchange, structure design, and local roadway connections. Plans shall be prepared to Caltrans and City format and shall be submitted at the 65%, 95%, 100% and final stages of design. Following each design submittal, City and Caltrans comments will be reviewed and addressed. The design will be based upon the Interim Phase improvements as identified in the approved Project Report.

6.1 Roadway/Traffic Plans

Mark Thomas will prepare Roadway Plans to current City and Caltrans standards. It is assumed that no new joint trench plans are to be prepared and the existing settlement of the Richards Boulevard approach fills will not be remediated.

It is assumed the following sheets will be prepared.

Description	Sheet Count	
	30% Submittal	65% and Final
Title Sheet	1	1
Typical Cross Sections	4	4
Key Map and Line Index	1	
Project Control Diagram		
Layouts		1
Profiles & Supers		
Construction Details		
Temporary Water Pollution Control Plans		1
Contour Grading	5	5
Drainage Plans, Profiles, Quantities and Details	5	5
Utility Plans and Details		16
Construction Area Signs		5
Stage Construction Plans and Quantities		4
Detour/Traffic Handling Plans	5	12
Pavement Delineation Plans, Quantities and Details		5
Sign Plans, Quantities and Details		1
Overhead Sign Plans	2	4
Summary of Quantities	2	4
Erosion Control Plans and Quantities	5	6
Landscape Concept Plans		10
Electrical**		4
Total Roadway Sheets	35	133



**Electrical sheets are assumed for street and pathway lighting, ramp metering for the westbound entrance ramp, signal interconnect between Olive Drive and Research Park Drive, modification of the three existing signals within the project limits and a new signal at the westbound exit ramp.

Preparation of sound wall plans is shown under Task 7 as an optional task, if required.

6.2 Type Selection and Structure Design (65% Plans)

Mark Thomas will prepare a Type Selection Report and conduct the Caltrans Type Selection Meeting. After Caltrans approves the Type Selection Memo, we shall commence design of the structures. The structure shall be designed using the current Caltrans Seismic Design Criteria, Caltrans Division of Structures "Bridge Memo to Designers", "Bridge Design Aids", "Bridge Design Details" and the "Office of Specially Funded Projects Information and Procedure Guide". It is anticipated that the Structures Plans will consist of the following sheets:

Description	Widen Putah Creek UP	New EB I-80 Entrance Ramp	Modify Richards Blvd OC
General Plan	1	1	1
Deck Contours	1	1	
Foundation Plan	1	1	
Abutment Layout	1	1	
Abutment Details	1	1	
Typical Section	1	1	1
Girder Layout	1		
Girder Details	1		
Slab Reinforcement		1	
Structure Approach Type EQ (3)	1		
Railing Details		1	2
Slope Paving	2	1	
Log of Test Borings (Record Information)	2	2	
Log of Test Borings (New)	1	1	
Total Structures Sheets	14	12	4

6.3 65% Cost Estimate

Mark Thomas will prepare a detailed itemized engineer's estimate for the 65% Roadway items. The format will be similar to the Caltrans BEES format. The unit costs will be determined by reviewing similar recent project bid summaries, the most current Caltrans Contract Cost Data book, the California Highway Construction Cost Index information, and the Caltrans ESC site. The structure item costs will be based on the Type Selection Report cost estimate.



6.4 95% Roadway/ Traffic PS&E

Mark Thomas will respond, in writing, to the City and Caltrans 65% plan review comments and prepare the 95% plans, specifications and cost estimate. This deliverable will be fully checked prior to submittal to Caltrans and the City.

6.5 95% Structure PS&E (Independent Check)

Upon submitting the Unchecked Details (65% Plans), will begin an independent design check. Also at this time, Mark Thomas will begin to prepare a set of Special Provisions used to augment Caltrans Standard Specifications. Upon completion of the independent check, Mark Thomas shall prepare quantity calculations. From these quantity calculations, Mark Thomas shall prepare an Engineers Estimate and submit the 95% PS&E (Plans, Specifications, and Estimate). Construction costs for the estimate will be developed using current bid results from similar projects, Caltrans data base information and from Caltrans latest Construction Cost Manual. All estimates shall be done in Caltrans BEES format using MS Excel. Structure Aesthetics plans have not been included but can be added at the City's request.

This submittal shall also include design and independent check calculations along with quantity and quantity check calculations.

6.6 Final Submittal (100% Plans)

Upon receiving comments from the City and Caltrans on the 95% submittal, Mark Thomas shall provide written comment responses and make any required revisions and submit 100% PS&E. After it is verified that neither the City nor Caltrans have any additional comments, we will submit the Final PS&E.

6.7 Resident Engineer Files

The following will be provided after the final PS&E is submitted.

Resident Engineer's (RE) File & Surveyor's File

Following the submittal of the final PS&E, Mark Thomas will prepare the RE file and Surveyor's file for the project. The RE file will include project correspondence and memorandums that are important for the Resident Engineer to know about decisions, etc. that were made during project development. The Surveyor's file will include pertinent information needed to establish project control. Caltrans Project Development Manual, latest edition will be used as a guideline. Construction Staking Notes are not included within this task; should the City want Mark Thomas to prepare staking notes, a separate scope of work and fee will be provided.

General Cross Sections

General cross sections will be developed at 1"=10' scale for the ramps, pathway and along Richard Boulevard. The cross sections will be placed on a grid showing the existing ground, surface geometry, elevations, edge of pavement, existing/proposed fence lines, subgrade and finished surface. The conform elevation will be plotted on the cross sections. The cross sections will be created every 50 feet.

Mark Thomas will also work with the City to prepare a Notice of Intent per current NPDES requirements once a construction advertisement date has been established.



Task 6 Deliverables

- *Interim PS&E Submittals (65%, 95% & 100%)*
- *Final PS&E (Ready to Advertise)*
- *Final Structure Calculations (wet stamped)*
- *Final Quality Calculations*
- *Materials Handout*
- *RE & Surveyor's File*
- *General Roadway Cross Sections*
- *Notice of Intent*

7.0 Optional Tasks

7.1 Pavement Rehabilitation Evaluation

We have provided the following scope of services to provide pavement rehabilitation options for Richards Blvd from the Olive Drive intersection to Research Park.

- Coordinate access with the City of Davis encroachment permit department and Caltrans,
- Perform five to six cores along Richards Blvd to measure the existing pavement structural section (AC and AB),
- Present the Design team and the City of Davis with multiple rehabilitation options such as mill and overlay, full depth reclamation, and cold in-place recycling,
- Perform Laboratory mix design for full depth reclamation, if needed,
- Include rehabilitation recommendations in the above proposed GDR/Materials Report.

7.2 Extend Sound Wall

We have included the optional task for extending the sound wall along APN 070-300-002. This task assumes the existing wall will be extended easterly and the existing wall will not be modified or replaced. This includes preparation of the Noise Abatement Decision Report, two additional geotechnical borings, PS&E and one additional temporary construction easement.

7.3 Incidental Take Permit (Optional)

CDFW generally prohibits the take of endangered and threatened species, unless authorized by CDFW pursuant to mechanisms provided in the Fish and Game Code. One form of CDFW take authorization is the issuance of an Incidental Take Permit (ITP) that authorizes the incidental take of a species during typical activities, such as those included in the Project. Section 2081 (b) and (c) of CESA allows CDFW to issue an ITP for State listed threatened and endangered species if specific criteria area from Title 14 CCR, Sections 783.4 (a) and (b) are met. CDFW authorizes take if it is incidental to an otherwise lawful activity; the impacts are minimized and fully mitigated; the minimization measures are roughly proportional in extent to the impact of the taking on the species and maintain the applicant's objectives while capable of successful implementation; adequate funding is provided; and the ITP will not jeopardize the continued existence of a State-listed species.

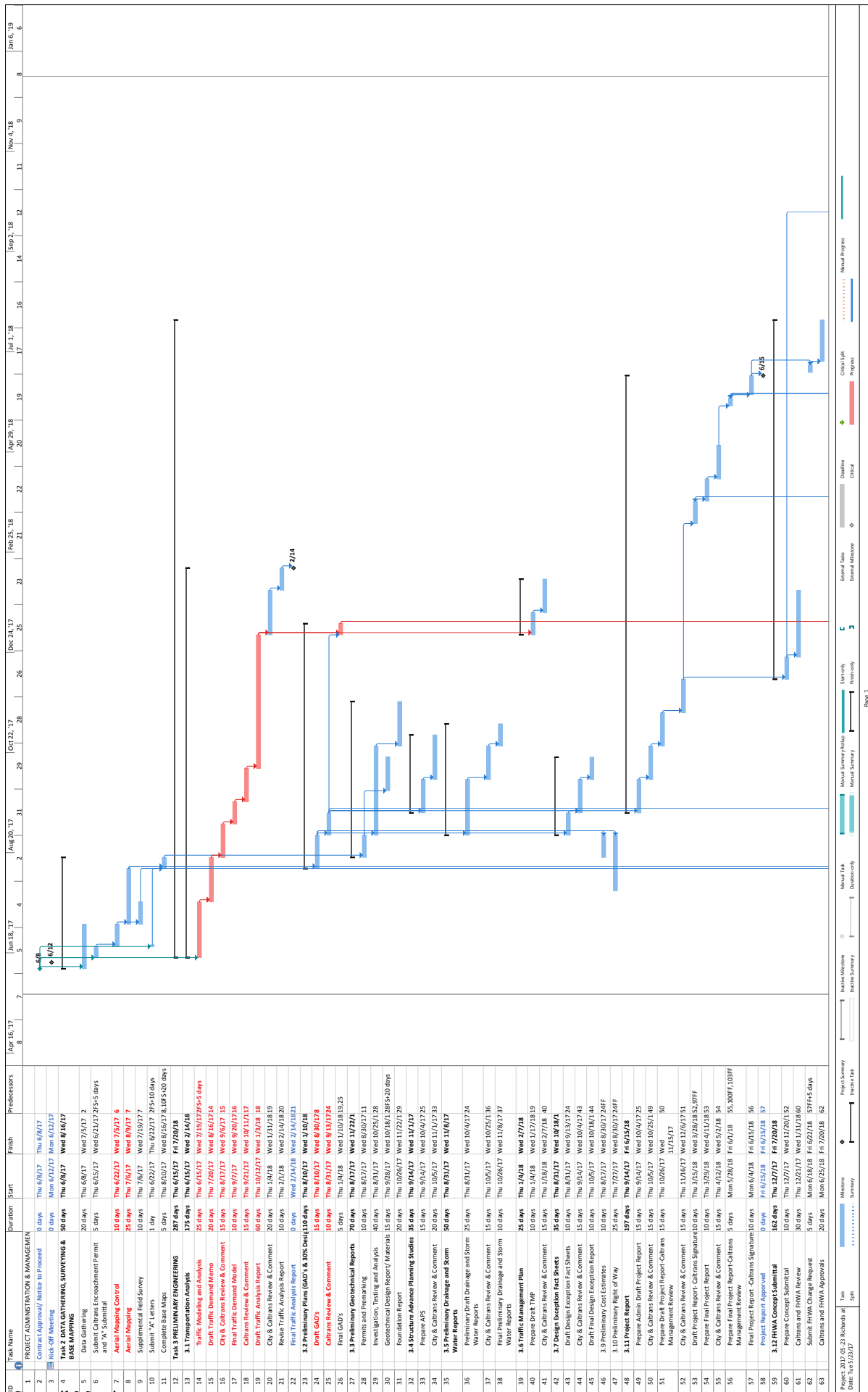
- If necessary, ESA will prepare and submit to CDFW an ITP application in accordance with the provisions of Sections 2081 (b) and (c) of CESA for the project.



- If necessary, ESA will respond to one round of comments (e.g., notice of incomplete application) from CDFW in order for the application to be deemed complete.

Task 7 Deliverables

- *One (1) electronic copy and two (2) copies of Draft ITP Permit Application*
- *Final (4) copies of ITP Permit Application*



COST PROPOSAL FOR PROJECT SCOPE: Davis-Richards I-80 Interchange Improvements

MARK THOMAS	Subs												TOTAL COST														
	Engineering Manager	Sr. Project Manager	Project Manager	Sr. Project Engineer	Project Engineer	Sr. Design Engineer	Design Engineer	Sr. Engineering/Survey/CADD Technician	Engineering/Survey/CADD Technician	Design Tech (Asst)	Sr. Survey Manager	Survey Manager		Project Surveyor	Survey Tech (Asst)	Single Chief Without Equipment	Single Chief with Equipment	2 Person Field Crew	Administrative	Project Coordinator	Total Int Cost	C2	EA	Fahr & Peers	Interest		
	\$245	\$207	\$171	\$145	\$124	\$108	\$89	\$104	\$74	\$51	\$200	\$185	\$145	\$84	\$19	\$170	\$240	\$80	\$100								
1.0 PROJECT ADMINISTRATION & MANAGEMENT																											
1.1 Project Management	40			20															16	36							
1.2 Meetings & Presentations	40			72					40																3,060		
1.3 SACOG Funding Application Exhibits	4			4			24		12															13,060			
1.4 Communication & Risk Management Plan	4			16																							
1.5 Quality Control/Quality Assurance	4			80																							
Subtotal Phase 1	88	0	112	80	0	0	24	0	52	0	0	0	0	0	0	0	0	16	36	408	\$63,176	\$0	\$0	\$13,060	\$3,060	\$79,296	
2.0 DATA GATHERING, SURVEYING & BASE MAPPING																											
2.1 Data Gathering	4			4			16																				
2.2 Survey and Mapping	4			4			40		24																		
2.3 Utility Coordination	4			4			40		24																		
Subtotal Phase 2	4	0	12	0	0	0	56	0	24	0	24	64	32	32	20	20	120	0	0	452	\$71,792	\$0	\$0	\$0	\$0	\$71,792	
3.0 PRELIMINARY ENGINEERING																											
3.1 Traffic Modeling and Analysis	12			24																							
3.2 Geometric Approval Drawings	4			24			120		40																		
3.3 Geotechnical Reports	6			10			32		88																		
3.4 Structure Advance Planning Studies	4			12			32		24																		
3.5 Preliminary Drainage & Storm Water Reports	4			16			40		4																		
3.6 Traffic Management Plan	4			8			40		4																		
3.7 Design/Exception Fact Sheets	4			24			36		20																		
3.8 Preliminary Cost Estimates	4			4			16		12																		
3.9 Preliminary Right of Way	4			4			60		24																		
3.10 Project Report	8			24			40		24																		
3.11 FHWA Concept Submittal	8			24			40		24																		
Subtotal Phase 3	62	12	154	32	168	168	432	52	136	128	0	0	0	0	0	0	0	0	0	1344	\$148,072	\$0	\$104,731	\$2,816	\$6,376	\$310,644	
4.0 RIGHT OF WAY AND UTILITY CERTIFICATION																											
4.1 Aerial Mapping/Retracement	8			12			64		16																		
4.2 Aerials	8			16			16		16																		
4.3 Acquisition/Negotiation Services	4			16			40		4																		
4.4 Easement Services	2			2			40		16																		
4.5 Final Utility Coordination	4			16			40		16																		
Subtotal Phase 4	22	0	62	0	24	0	40	64	16	24	16	48	32	40	0	16	0	0	0	0	422	\$54,370	\$0	\$0	\$36,410	\$92,880	
5.0 ENVIRONMENTAL PROCESS																											
5.1 CEQA/NEPA Document	8			24			12		16																		
5.2 Environmental Technical Studies	12			24			24		16																		
Subtotal Phase 5	20	0	48	0	0	0	0	12	16	0	0	0	0	0	0	0	0	0	0	0	96	\$15,540	\$14,200	\$157,080	\$0	\$186,420	
6.0 FINAL DESIGN																											
6.1 65% Roadway/Traffic Design	8			100			240		600																		
6.2 Type Selection and 65% Structure Plans	4			36			120		300																		
6.3 65% Cost Estimate	4			12			80		24																		
6.4 95% Roadway/Traffic PS&E	8			80			400		200																		
6.5 95% Structure PS&E	4			24			150		120																		
6.6 Final PS&E	8			12			80		80																		
Subtotal Phase 6	28	72	224	224	756	248	1480	520	764	264	0	0	0	0	0	0	0	0	0	4564	\$466,140	\$0	\$111,550	\$1,950	\$579,440		
TOTAL HOURS	224	84	596	336	948	416	2032	672	994	440	32	66	112	64	72	20	186	16	36	7386	\$44,500	\$33,705	\$3,100	\$11,609	\$138,922		
OTHER DIRECT COSTS	\$54,880	\$17,988	\$103,196	\$48,720	\$117,552	\$44,928	\$803,848	\$69,888	\$72,816	\$22,440	\$6,400	\$12,200	\$16,240	\$5,376	\$3,368	\$3,400	\$22,640	\$1,280	\$3,600	\$3,600	\$85,590	\$108,180	\$160,180	\$240,950	\$75,414	\$1,450,284	
TOTAL COST																											
PHASE 7 - OPTIONAL TASKS																											
7.1 Pavement Rehabilitation	4			6			16		24																		
7.2 Extend Sound Wall	6			8			60		80																		
7.3 Incidental Take Permit	4			2			40		40																		
Subtotal Optional Tasks	14	8	8	0	76	0	40	0	104	0	4	8	8	0	12	0	0	0	0	12	294	\$33,202	\$29,847	\$0	\$11,880	\$104,499	
TOTAL COST - OPTIONAL	\$3,430	\$1,655	\$1,368	\$0	\$9,424	\$0	\$3,540	\$0	\$7,696	\$0	\$800	\$1,480	\$1,160	\$0	\$1,428	\$0	\$0	\$0	\$0	\$1,200	\$33,202	\$29,847	\$0	\$11,880	\$104,499		

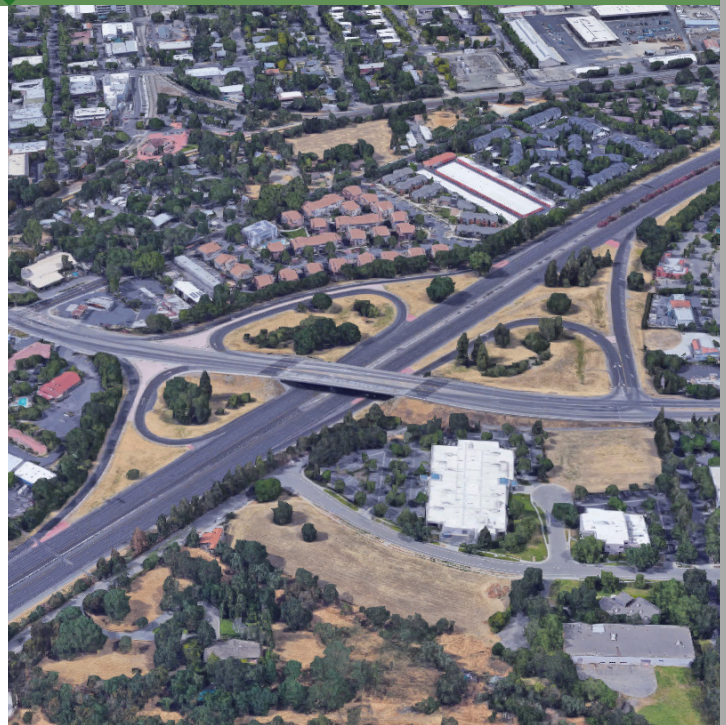
Move Forward



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