SUBMITTAL TO THE BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

ITEM
3.25
(ID # 6124)

MEETING DATE:
Tuesday, February 6, 2018

FROM : TLMA-TRANSPORTATION:

SUBJECT: TRANSPORTATION AND LAND MANAGEMENT AGENCY/TRANSPORTATION: Approval of Amendment 2 between the County of Riverside and Dokken Engineering for engineering and environmental services for the Avenue 66 /Union Pacific Railroad Grade Separation Bypass Project near the Community of Mecca. 4th District [$4,612,846 - Total Cost] 100% Coachella Valley Association of Governments

RECOMMENDED MOTION: That the Board of Supervisors:

1. Approve the Amendment Number 2 between the County of Riverside (County) and Dokken Engineering for the Avenue 66 /Union Pacific Railroad (UPRR) Grade Separation Bypass Project; and
2. Authorize the Chairman of the Board to execute the same.

ACTION: Policy

Patricia Romo, Director of Transportation 1/24/2018

MINUTES OF THE BOARD OF SUPERVISORS

On motion of Supervisor Tavaglione, seconded by Supervisor Ashley and duly carried by unanimous vote, IT WAS ORDERED that the above matter is approved as recommended.

Ayes:	Jeffries, Tavaglione, Washington, Perez and Ashley
Nays:	None
Absent:	None
Date:	February 6, 2018
xc:	Transp.

Kecia Harper-Ihem
Clerk of the Board
By: Deputy

SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

FINANCIAL DATA	Current Fiscal Year:	Next Fiscal Year:	Total Cost:	Ongoing Cost
COST	$ 758,836	$ 771,914	$ 4,612,846	$
NET COUNTY COST	$ 0	$ 0	$ 0	$ 0

SOURCE OF FUNDS: Coachella Valley Association of Governments (100%)

Budget Adjustment: No

For Fiscal Year: 16/17 to 22/23

C.E.O. RECOMMENDATION: Approve

BACKGROUND:

Summary

Currently, the only UPRR crossing in the Mecca area is an at-grade crossing at 4th Street. Traffic going in and out of the Mecca community must wait at the tracks for trains to pass before they are able to cross the tracks. The Transportation Department is proposing to extend Avenue 66 with a bridge over the railroad tracks to provide a link between SR-86 and the community of Mecca and beyond to I-10 via Box Canyon Road. UPRR and SR-86 are both designated North American Free Trade Agreement (NAFTA) freight corridors and increasing vehicular traffic due to regional population growth and train traffic along this rail trade corridor is increasing the congestion and causing delays at the existing 4th Street at-grade crossing. The proposed new overcrossing will provide a safe crossing, separated from the train traffic, for vehicles, trucks, farm equipment, emergency vehicles, and pedestrians. (see Exhibit A)

By Minute Order 3-43 of July 12, 2011, the Board of Supervisors approved an agreement with Dokken Engineering for preliminary engineering.

The Transportation Department started work on the Avenue 66 grade separation after the project was approved to be included into the Trade Corridor Improvement Funds (TCIF) program, adopted by the California Transportation Commission in 2011. Several alignment options were developed and presented at Mecca community meetings and at meetings with local property owners, and a final preferred alternative was eventually developed.

By Minute Order 3-63 of June 17, 2014, the Board of Supervisors approved Amendment Number 1 with Dokken for final engineering design documents including Plans, Specifications and Estimates.

Significant design and environmental work had been completed when the Coachella Valley Conservation Commission notified the county that the issuance of a Coachella Valley Multi-Species Habitat Conservation Plan (CVMSHCP) permit was highly unlikely due to sensitive Mesquite habitat located within area of the proposed new road. This discovery created the need to look at avoidance options.

The proposed alignment of Avenue 66 was shifted northerly to avoid the sensitive habitat and the Transportation Department is proceeding with the environmental clearance and design of the revised roadway alignment. The revision will require a significant amount of rework of the environmental and engineering work that had been completed, however, the overall cost of the project is expected to decrease as a result of the changes.

By Minute Order 3-20 of September 19, 2017, the Board of Supervisors approved Amendment 3 to the original Funding Agreement between the Coachella Valley Association of Governments (CVAG) and the County of Riverside to provide an additional $9,372,417 in funding that will be used to fund the additional design, environmental work and a portion of construction.

This Amendment 2 between Dokken Engineering and the County of Riverside provides $1,933,446 in additional funding to make the necessary revisions to the environmental and engineering documents, provide construction support, and includes a $200,000 contingency.

Contract Funding Summary

Original authorization	$676,507	Preliminary Engineering & Environmental
Amendment 1	$2,002,893	Final Design
Amendment 2	$1,933,446	Environmental, Design & Construction Support
Total contract amount	$4,612,846	

Impact on Residents and Businesses

The Avenue 66/UPRR Project will improve access and safety for the Community of Mecca and improve goods and services movement through the region.

SUPPLEMENTAL:

Additional Fiscal Information:

The additional design and environmental work will be 100% funded by CVAG. No General funds will be used on this Project.

Contract History and Price Reasonableness

The proposed cost for revising the design is consistent with the cost of services to perform the original design and is consistent with the cost of services for other similar projects.

ATTACHMENTS:

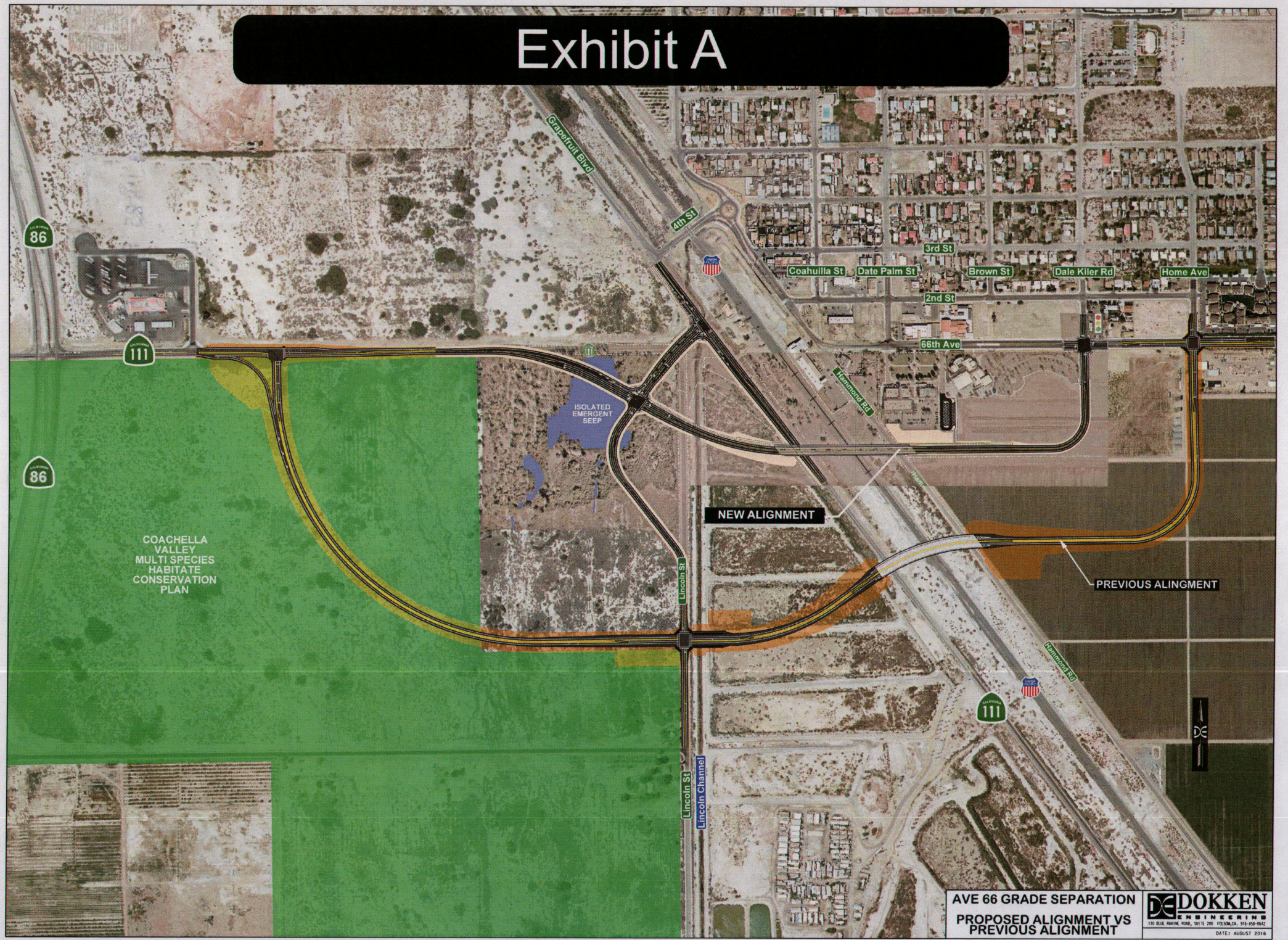
Vicinity Map

SUBMITTAL TO THE BOARD OF SUPERVISORS COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

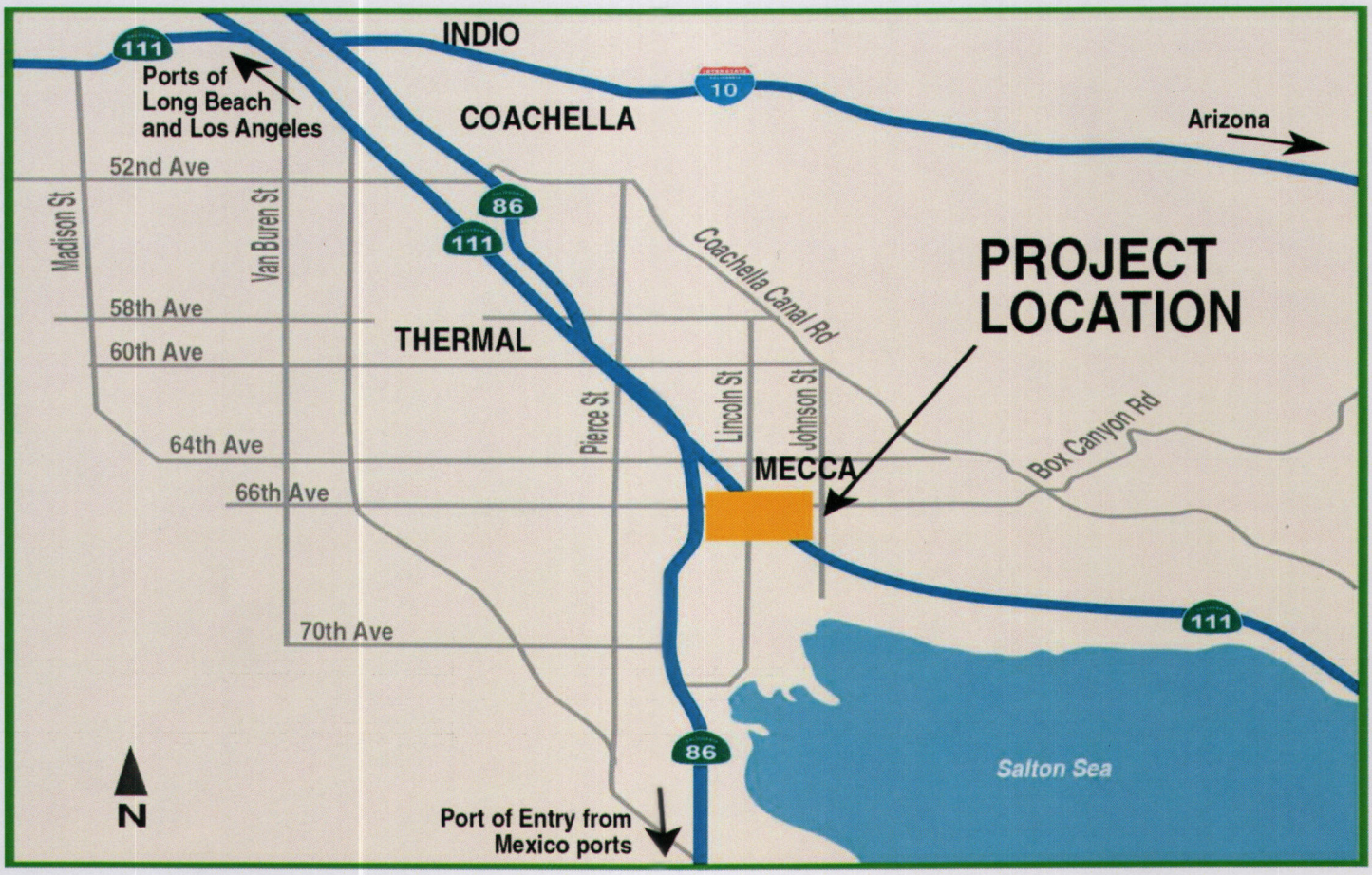
Exhibit A
Agreement

Gregory P. Priamos, Director County Counsel 1/25/2018

Exhibit A


Grapefruit Blvd
4th St
3rd St
Coahuilla St
Date Palm St
Brown St
Dale Kiler Rd
Home Ave
2nd St
66th Ave
Hammond Rd
86
111
ISOLATED EMERGENT SEEP
NEW ALIGNMENT
PREVIOUS ALINGMENT
COACHELLA VALLEY MULTI SPECIES HABITATE CONSERVATION PLAN
Lincoln St
Lincoln Channel
AVE 66 GRADE SEPARATION
PROPOSED ALIGNMENT VS PREVIOUS ALIGNMENT
DOKKEN ENGINEERING
110 BLUE RAVINE ROAD, SUITE 200 FOLSOM,CA. 916-858-0642
DATE: AUGUST 2016

Vicinity Map



AMENDMENT 2

Amendment to Agreement Between

The County of Riverside and Dokken Engineering

THIS AMENDMENT (hereinafter the "Amendment 2") to an agreement is made and entered into as of this 6th day of February 2018, by and between the County of Riverside, a political subdivision of the State of California (hereinafter the "COUNTY"), and Dokken Engineering (hereinafter "ENGINEER").

RECITALS

A. COUNTY and ENGINEER have entered in an agreement entitled "Engineering Services Agreement for 66th Avenue Grade Separation Project at Union Pacific Railroad (UPRR) between County of Riverside • Transportation Department and Dokken Engineering that is dated July 12, 2011 (hereinafter the "Agreement"). The Agreement provides the terms and conditions, scope of work, schedule and budget for the performance of professional and technical services related to preliminary engineering and environmental technical studies necessary to complete an environmental document and obtain environmental clearance.

B. On June 17, 2014 (item 3-63), COUNTY and ENGINEER amended the agreement (Amendment No. 1). Amendment No. 1 provides additional terms and conditions, scope of work, schedule and budget for the performance of professional and technical services related to providing final engineering design documents including Plans, Specifications and Estimates.

C. Significant design and environmental work had been completed when the Coachella Valley Conservation Commission notified the county that the issuance of a Coachella Valley Multi-Species Habitat Conservation Plan (CVMSHCP) permit was highly unlikely due to sensitive Mesquite habitat located within area of the proposed new road. This discovery created the need to look at avoidance options. The proposed alignment of Avenue 66 was shifted northerly to avoid the sensitive habitat and shared with the Community of Mecca and with CVAG, and it has been determined that the new alignment will effectively meet the needs of the community while satisfying the concerns of the Coachella Valley Conservation Commission.

D. The County is proceeding with the environmental clearance and design of the revised roadway alignment. The revision will require a significant amount of revision to the environmental and engineering work that had been completed.

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E. This Amendment No. 2 provides additional funding to make the necessary revisions to the environmental and engineering document. This Amendment No. 2 will increase the funding as follows:

Original authorization	$676,507
Authorized under Amendment 1	$2,002,893
Total Previously Authorized	$2,679,400
Authorized by this Amendment 2	**$1,933,446**
Revised Total Authorized	$4,612,846

F. The project is funded in part with Proposition 1b (Trade Corridor Improvement Funds). These funds require any billable construction work to be completed by December 31, 2022. The County desires to have the contract term extended so that ENGINEER is available to provide construction support services through this timeframe.

G. The parties desire to amend the Agreement to include the scope of work, schedule and budget needed to make the necessary revisions and complete the project.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants hereinafter contained, the parties agree as follows:

1. Appendix A, as amended by Amendment 1• Appendix A1 are amended to include the additional services as described in the attached Scope of Services entitled "AMENDMENT 2 • APPENDIX A2 • PA/ED, PS&E AND CONSTRUCTION SUPPORT SCOPE OF SERVICES".
2. Appendix B, as amended by Amendment 1 • Appendix B1 are amended to extend the Schedule of Services from June 30, 2020 to June 30, 2023 as shown in the attached Schedule of Services entitled "AMENDMENT 2 • APPENDIX B2 • SCHEDULE OF SERVICES".
3. Article VI (Compensation), Appendix C, as amended by Amendment 1 • Appendix C1 are amended by increasing the contract budget by $1,933,446 for a total revised budget of $4,612,846 as provided below and in accordance with the attached Fee Proposal entitled "AMENDMENT 2 • APPENDIX C2 • PA/ED, PS&E AND CONSTRUCTION SUPPORT FEE PROPOSAL WORKSHEETS".

	PHASE I Alternatives	PHASE II PA/ED	PHASE III PS&E	PHASE IV Bid Support	PHASE V Con Support	PHASE ALL Contingency*	TOTAL
ORIGINAL BUDGET	$168,240.11	$446,767.22				$61,500.00	**$676,507.33**
PRIOR AMENDMENTS & MODIFICATIONS	$33,490.00	$152,139.74	$1,878,763.32			($61,500.00)	$2,002,893.06
Administrative Modification 1	$23,769.00	$4,363.00				($28,132.00)	
Administrative Modification 2	$9,721.00					($9,721.00)	
Amendment 1			$1,629,814.32	$36,022.35	$137,056.39	$200,000.00	$2,002,893.06
Administrative Modification 3		$147,776.74	$248,949.00	($36,022.35)	($137,056.39)	($223,647.00)	
CURRENT BUDGET	$201,730.11	$598,906.96	$1,878,763.32				**$2,679,400.39**
AMENDMENT (NO. 2)		$104,614.88	$1,413,057.88	$40,926.60	$174,846.35	$200,000.00	**$1,933,445.71**
Dokken Engineering (Prime)		$81,509.85	$1,233,212.02	$40,926.60	$174,846.35	$200,000.00	$1,730,494.82
Earth Mechanics Inc. (Geotech)		$20,975.10	$179,845.86				$200,820.96
Fehr & Peers (Traffic)		$2,129.93					$2,129.93
PROPOSED AMENDED BUDGET	$201,730.11	$703,521.84	$3,291,821.20	$40,926.60	$174,846.35	$200,000.00	**$4,612,846.10**

** Contingency funds are subject to the contract requirements as defined in Article VI • Compensation.*

4. Except to the extent specifically modified or amended hereunder, all of the terms, covenants and conditions of the Agreement and Amendment 1 shall remain in full force and effect between the parties hereto.

IN WITNESS HEREOF, the parties hereto have caused this Amendment 2 to the Agreement to be duly executed this day and year first written above.

ARTICLE VIII • APPROVALS

COUNTY Approvals

RECOMMENDED FOR APPROVAL:

Dated: 1/16/2018

PATRICIA ROMO

Director of Transportation

APPROVED AS TO FORM:

GREG PRIAMOS, County Counsel

Dated: 1/24/18

By Deputy

APPROVAL BY THE BOARD OF SUPERVISORS

Dated: FEB 06 2018

Chuck Washington

PRINTED NAME

Chairman, Riverside County Board of Supervisors

ATTEST:

Dated: FEB 06 2018

KECIA HARPER-IHEM

Clerk of the Board (SEAL)

ENGINEER Approvals

ENGINEER:

Dated: 12/21/17

Richard T. Liptak

PRINTED NAME

President

TITLE

ENGINEER:

Dated: 12/21/17

Cathy Chan

PRINTED NAME

Secretary

TITLE

AMENDMENT 2 • APPENDIX A2 • PA/ED, PS&E AND CONSTRUCTION SUPPORT SCOPE OF SERVICES

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AMENDMENT 2 • APPENDIX A1 • PA/ED, PS&E AND CONSTRUCTION SUPPORT SCOPE OF SERVICES

ARTICLE AI • INTRODUCTION

A. DESCRIPTION

The County of Riverside proposes a grade separation of Avenue 66 over the Union Pacific Railroad (UPRR) near the community of Mecca. On July 12, 2011 the County of Riverside Transportation Department (COUNTY) entered into an Engineering Services Agreement with Dokken Engineering (ENGINEER) to provide Final Alignment Studies and prepare Project Approval/Environmental Documents for the proposed grade separation. On June 17, 2014 the COUNTY amended the contract (Amendment 1) to provide Plan, Specification and Estimate Documents for the proposed grade separation. ENGINEER was substantially complete with the work in Amendment 1 but the work had to be redirected because of complications during the right of way acquisition process. COUNTY requested the ENGINEER evaluate a new alternative that reduces project cost, minimizes environmental impacts, and decreases right of acquisition. Amendment 2 of this contract includes preparation of a Project Approval/Environmental Document and Plan, Specification and Estimate documents required to bid a construction contract for the new alternative.

B. LOCATION

The location of the proposed improvements is generally consistent with the location as described in the original agreement. The specific location is expected to be dependent on the selected alternative derived for the Project Study Report-Project Report (PSR-PR).

C. COORDINATION

ENGINEER shall continue to coordinate with other agencies as per the terms of the original agreement.

D. PHASES

Services performed by ENGINEER under this Amendment 2 shall be accomplished in the following phases:

- Phase II – Project Approval/Environmental Document
- Phase III – Plans, Specifications & Estimates for the proposed project alternative
- Phase IV – Construction Bid Support
- Phase V – Construction Support

Phases IV and V shall proceed upon written notice to proceed by COUNTY.

E. STANDARDS

The Plans, Specifications and Estimates shall be prepared in accordance with current CALTRANS regulations, policies, procedures, manuals and standards including compliance with Federal Highway Administration (FHWA) requirements and/or COUNTY Road Standards as appropriate. Improvements of local roads may be prepared in accordance with COUNTY standards in lieu of CALTRANS standards as directed by the COUNTY PROJECT MANAGER. ENGINEER will prepare fact sheets for COUNTY approval, documenting the exceptions to mandatory and advisory design standards. All documents shall be prepared using English Standard Units and dimensions.

1. Environmental

The standards for environmental activities are not changed and remain per the terms of the original agreement.

2. Survey

Supplemental topographic and ground surveys shall be performed by the COUNTY.

3. Design

The standards for design activities are not changed and remain per the terms of the original agreement.

4. Project Files

The standards for project files are not changed and remain per the terms of the original agreement.

F. KEY PERSONNEL

The key personnel for performance of this PROJECT are as identified in Amendment 1 and is modified by this Amendment 2 to include the following:

Assignment	Key Personnel
Principal in Charge	Richard Liptak, PE
Project Manager	Juann Ramos, PE
Roadway Engineer	Kris Kofoed, PE
Structures Engineer	Robert Burns, SE
Senior Environmental Planner	Namat Hosseinion
QA/QC Engineer	Elizabeth Diamond, PE

G. COUNTY RESPONSIBILITIES

The following includes tasks to be completed by the COUNTY:

- Provide all current COUNTY standards, existing plans, and manuals when requested by ENGINEER and available to COUNTY personnel.
- Provide supplemental survey controls, supplemental topographic mapping, current digital orthophotography and supplemental surveys.
- Provide updated right of way and parcel mapping in Caltrans format
- Verify that COUNTY survey control points are still in place and undisturbed.
- Provide survey records research, including grant deeds and right of way documents in support of Right of Way base mapping prepared by COUNTY surveyor for the preferred alternative
- COUNTY will provide Survey and Land Acquisition Services generally as described below:
  - Prepare existing right of way and parcel mapping.
  - Coordinate Permits for Right of Entry with property owners.
  - Obtain and review Title Reports, identify easements and encumbrances.
  - Preparation of Plats and Legal Exhibits.
  - Prepare appraisals for temporary and permanent right of way and perform appraisal review.
  - Perform right of way negotiations and acquisitions.
  - Certify new acquired right of way.

ARTICLE AII • PROJECT ADMINISTRATION (PHASES II, III, IV & V)

A. PROJECT MANAGEMENT

This task includes the day-to-day management of the work performed under this Amendment 2 and is a continuation of the management actives performed under the Agreement.

B. COST ACCOUNTING/PROGRESS REPORTS

The ENGINEER will continue to prepare budgets for each task and milestone under this Amendment 2. Such budgets will be entered in to the ENGINEER's Management Information System along with actual costs incurred and used as a basis for cost monitoring and control. ENGINEER will continue to prepare monthly reports of expenditures and progress reports consistent with the terms of the Agreement.

C. SCHEDULING

Within one month from the Notice to Proceed (NTP) of this Amendment 2, the ENGINEER will provide an updated project schedule, which indicates milestones, major activities and deliverables, to the COUNTY for review and comments. This schedule will reflect assumed review times necessary by all of the agencies involved. Review of the schedule will occur at subsequent trend meetings. Adjustments will be made, if necessary, due to changing circumstances.

ARTICLE AIII · PROJECT APPROVAL (PA) AND ENVIRONMENTAL DOCUMENT (ED) TASK LIST (PHASE II)

ENGINEER shall provide a Project Approval Report (PA) and Environmental Document (ED) for the PROJECT. The following task list is consistent with the project schedule.

T1 PROJECT MANAGEMENT

Project Management shall be conducted to ensure a smooth flow of information between Project Development Team (PDT) members. A project schedule shall be developed and periodically updated. A comprehensive Quality Assurance/Quality Control (QA/QC) plan shall be implemented. Monthly PDT Meetings shall be held.

1.1 PROJECT COORDINATION AND PROJECT TEAM MEETINGS

A Project Development Team (PDT), for the Project Approval and Environmental Document Phase, including representatives from the COUNTY, UPRR, Caltrans, subconsultants, and other relevant agencies will be established within fifteen days after Notice to Proceed (NTP). A kick off meeting with the PDT will be held as soon as possible after NTP. PDT meetings with the COUNTY PROJECT MANAGER and other representatives from affected agencies will be held at least once a month. ENGINEER shall prepare minutes for each meeting and distribute the minutes to all attendees and other interested parties.

1.2 MONTHLY PROGRESS REPORTS

ENGINEER shall prepare progress reports to record the progress of the project and as supporting data for invoices presented monthly to the COUNTY. The Progress Report shall include accomplished tasks for the month, anticipated progress for the next month, pending issues and schedule completion target dates. ENGINEER shall mail progress reports with the monthly invoices and deliver the Progress Reports to the COUNTY and Caltrans Project Managers at the monthly PDT meetings.

1.3 PROJECT SCHEDULE

ENGINEER shall, within 2 weeks of Notice to Proceed (NTP), provide a detailed project baseline schedule, indicating milestones, major activities and deliverables, to the COUNTY and Caltrans for review and comments. ENGINEER shall update the schedule on a monthly basis, to coincide with the PDT meetings or as required.

1.4 QUALITY CONTROL

ENGINEER shall have a quality control plan in effect during the entire course of the project. ENGINEER shall develop a plan establishing a process to ensure design calculations are independently checked. Exhibits and plans shall also be checked, corrected and back-checked for accuracy and completeness. ENGINEER shall review environmental and engineering Sub-consultant report submittals to ensure that appropriate background information, study methodology, interpretation of data, format and content are completed in accordance with current standards.

1.5 PUBLIC MEETINGS

ENGINEER shall organize and attend public information meetings with COUNTY staff and appropriate team members to inform the public and interested parties of the COUNTY'S intent to construct the proposed project and to obtain input for the project development process. The meetings shall be conducted to identify economic, social and environmental issues perceived as important by the public. The meetings shall be held using the Caltrans open house format. The format of the open house is informal, allowing attendees to speak directly with COUNTY and ENGINEER representatives about their concerns. The public information meeting summary report shall become part of the formal project documentation and may be summarized as part of the discussion of project-related public outreach efforts. ENGINEER shall prepare materials for Public Meetings.

1.6 COST ACCOUNTING

The ENGINEER shall prepare monthly reports of expenditures for the PROJECT by task and milestone. Expenditures include direct labor costs, other direct costs, and sub-consultant costs. These reports shall be included as supporting data for invoices presented to the COUNTY every month.

1.7 PROJECT FILES

Project Files shall be indexed in accordance with Caltrans Project Development Uniform File System.

1.8 PERMITS

ENGINEER shall prepare all necessary encroachment permits and rights of entry needed for Phase II activities.

Deliverable: *ENGINEER shall prepare meeting notices, agendas and minutes, schedules, monthly progress reports and invoices, public meeting materials, and maintain project files. ENGINEER shall obtain permits and right-of-entry. Although fees for encroachment permits to access Caltrans or UPRR r/w to obtain information are included, fees for construction permits are not included.*

T2 TOPOGRAPHIC SURVEY

2.1 TOPOGRAPHIC MAPPING

2.1.1 Set Photo Control

COUNTY shall set aerial control panels at locations and frequency adequate to meet National Mapping Accuracy Standards of 1"=100' scale mapping with 2' contour intervals. ENGINEER will provide COUNTY with the project limits for COUNTY to set necessary control panels.

2.1.2 Topographic Mapping

COUNTY shall prepare supplemental topographic mapping to a scale of 1"=100' with 2' contours and shall show all visible surface features, contours and spot elevations within the mapping limits. ENGINEER will provide COUNTY with survey requests limits for all conforms and areas that need to be supplemented with new field data. The ENGINEER will review survey data for consistency.

2.1.3 Digital Orthophotography

COUNTY shall obtain a current digital color photo background imagery utilizing the aerial photography. The imagery shall be adjusted using orthocorrection within the mapping limits, and simple rectification within the ground control limits. ENGINEER will identify limits of aerial limits and will review for consistency.

2.1.4 Supplemental Field Mapping

COUNTY shall perform supplemental field survey to supplement the aerial topographic mapping at conforms, tie-ins, potential conflicts, etc. ENGINEER will provide COUNTY with survey requests limits for all areas that need to be supplemented with new field data. The ENGINEER will review survey data for consistency.

Deliverable: *ENGINEER shall prepare survey request exhibits and limits of aerial mapping.*

T3 ENGINEERING STUDIES

3.1 PRELIMINARY GEOTECHNICAL REPORT

ENGINEER shall update/prepare a Preliminary Geotechnical Report (PGR) documenting the site geotechnical and geologic conditions. The PGR will include topography, geology and identification of potential geologic hazards, liquefaction potential and general mitigation measures with respect to geologic and seismic hazards for input to the environmental document. ENGINEER shall integrate and utilize information obtained from the previous PGR performed during previous phases.

ENGINEER will also address stability and settlement of proposed roadway embankments. The evaluation will be based on a review of existing subsurface data and will not include field investigations, borings or laboratory testing.

Deliverable: *ENGINEER shall prepare Preliminary Geotechnical Report*

3.2 STRUCTURE PRELIMINARY FOUNDATION REPORT

ENGINEER shall update/prepare a SPFR for each APS. Three APSs are planned for (1) Avenue 66 Grade Separation, (2) Lincoln Channel crossing and (3) retaining walls at the western and eastern bridge approachs. The following scope of work will be performed in order to produce the SPFRs.

Idealized soil profiles and design strength parameters for foundation analysis will be developed based on existing subsurface data obtained. ENGINEER shall provide seismic design parameters (acceleration and response spectrum) using the latest Caltrans web-based seismic design criteria.

Using the soil profiles and strength parameters, ENGINEER shall provide preliminary foundation type and foundation design data for the bridge. The Avenue 66 Grade Separation is likely to be pile supported. For pile foundations, ENGINEER shall estimate the required pile length based on preliminary axial nominal resistances provided by you. The Lincoln channel crossing is planned to be a box culvert. ENGINEER shall provide bearing capacity, settlement estimate and overexcavation requirement for this box culvert. The retaining walls are likely to be MSE walls. ENGINEER shall provide preliminary foundation parameters and recommendations following Caltrans BDA 3-8. ENGINEER shall integrate and utilize information obtained from the previous SPFR performed as part of the old alignment.

Deliverable: *ENGINEER shall prepare one Structure Preliminary Foundation Report for Avenue 66 Grade Separation, One Structure Preliminary Foundation Report for the Lincoln*

Channel Crossing, and One Structure Preliminary Foundation Report for the retaining walls at the western and eastern bridge approaches.

3.3 PRELIMINARY ROADWAY MATERIALS REPORT

ENGINEER shall update/prepare a Preliminary Roadway Materials Report to provide pavement structural sections, corrosion potential of on-site soils and culvert materials requirements. The evaluation will be based on a review of existing subsurface data and will not include field investigations, borings or laboratory testing. ENGINEER shall follow Caltrans pavement design procedure with Traffic Indices to be provided by COUNTY and Caltrans. ENGINEER shall integrate and utilize information obtained from the previous Preliminary Roadway Materials Report performed as part of the old alignment.

Deliverable: *ENGINEER shall prepare a Preliminary Roadway Materials Report*

3.4 TRAFFIC ANALYSIS

ENGINEER shall perform a traffic analysis in support of the development of project alternatives. Although traffic counts for this project were collected 2007 and 2012, new data will be collected to ensure that the existing conditions for this analysis is current and will continue to be acceptable to Caltrans (less than three years old) during the entire PA/ED phase

3.4.1 Data Collection

Data Collection – ENGINEER shall collect AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak period turning movement counts at five (5) existing study intersections (#1 through #5):

1. Dale Kiler Road & 66th Avenue (SR-111)
2. Hammond Road & 4th Street
3. Grapefruit Boulevard (SR-111) & 4th Street
4. Grapefruit Coulevard (SR-111) & 66th Avenue (SR-111)
5. Lincoln Street & 66th Avenue (SR-111)
6. Proposed Overpass & 66th Avenue (SR-111)
7. Proposed Overpass & Lincoln Street
8. Proposed Overpass & Dale Kiler Road

ENGINEER shall collect existing traffic signal timings for study intersections. ENGINEER shall conduct site reconnaissance of the project location and surrounding roadway network to verify

existing intersection control, lane configurations, traffic signal timings, and other roadway characteristics. ENGINEER shall observe peak hour traffic operations and vehicle queue lengths to help calibrate/validate the traffic operations models.

ENGINEER shall also prepare a collision summary based on Caltrans TASAS data for the most recent available three-year period for SR-111 in the study area.

Analysis Scenario – This scope assumes that a No Build and one (1) Build Alternative will be evaluated in the PA/ED. The analysis scenario during the PA/ED stage includes:

- Existing Conditions
- Opening Year (2020) Conditions – No Build Alternative
- Opening Year (2020) Conditions – Build Alternative
- Design Year (2040) Conditions – No Build Alternative
- Design Year (2040) Conditions – Build Alternative

3.4.2 Traffic Analysis Assumptions and Methodologies

ENGINEER shall prepare a Draft Traffic Analysis Assumptions and Methodologies Memorandum and submit to Caltrans for one round review at the beginning of the PA/ED phase. The memorandum will contain a list of assumptions and recommended methodologies to use for traffic forecasting and operations analysis. ENGINEER shall respond to one round of written comments from Caltrans and prepare the Final Memorandum.

3.4.3 Traffic Demand Forecasting

ENGINEER shall discuss with the project team to apply the appropriate travel demand forecasting (TDF) models to develop Year 2040 AM and PM peak hour traffic forecasts. The land use and roadway improvements assumptions contained in the TDF model will be reviewed to ensure consistency in model assumptions with the recently adopted SCAG 2016 RTP model.

Year 2040 peak hour traffic forecasts will be developed for the No Build and Build Alternative. Year 2020 forecasts will be estimated through linear interpolation between existing counts and Year 2040 forecasts.

ENGINEER shall submit a Draft Traffic Forecasting Report to Caltrans for up to two rounds of review and written comments. ENGINEER shall respond to the written comments and prepare a Final Traffic Forecasting Memo.

Deliverable: *ENGINEER shall prepare a Memorandum summarizing existing conditions assessment, the electronic analysis files, the forecasting assumptions, and the forecasting results*

3.4.4 Traffic Operations Analysis

ENGINEER shall conduct operations analysis using the methodologies contained in the Highway Capacity Manual 2010 (HCM 2010) and Synchro 8 software. Traffic analysis will be conducted under existing conditions, opening year (2020) no build conditions, opening year (2020) with build alternative conditions, design year (2040) no build conditions, and design year (2040) with build alternative conditions. The analysis will present delay and LOS at each study location.

3.4.5 Develop Draft and Final Traffic Operations Report (TOR)

ENGINEER shall prepare the TOR summarizing the results and findings. ENGINEER shall prepare a Draft TOR to submit to Caltrans and other Project Development Team (PDT) members for up to two rounds of review and comments. ENGINEER shall submit the Final TOR in both hard copy and electronic format. It is anticipated that the TOR will be incorporated into the Project Approval Report and Environmental Document by others.

Deliverable: *ENGINEER shall prepare a Draft and Final Traffic Operations Report*

3.4.6 ICE Analysis

ENGINEER shall conduct operations analysis required for both a Step One and Step Two ICE Analysis. This analysis could include traffic control warrant studies, project alternative capacity, operational, and safety analysis, intersection control delay, and collision frequency and severity.

Operations analysis will be conducted using methodologies contained in the Highway Capacity Manual 2010 (HCM 2010). Macro-level tools (e.g. Synchro, Sidra, etc.) will be used to conduct this analysis.

ENGINEER shall provide this information in a technical memorandum for inclusion in the ICE documentation.

Deliverable: *ENGINEER shall prepare a Memorandum summarizing the ICE analysis*

3.5 PRELIMINARY DRAINAGE REPORT

ENGINEER shall evaluate surface drainage and develop a preliminary design for the drainage features necessary to convey storm water off the bridge deck and roadways. As part of the drainage study,

ENGINEER shall evaluate opportunities to include source controls, runoff reduction measures, and treatment controls into the project in accordance with currently accepted Best Management Practices (BMPs). ENGINEER shall document the preliminary drainage design and water quality evaluation in Preliminary Drainage Report.

3.6 STORM WATER DATA REPORT

ENGINEER shalll develop a long-form PA/ED-level SWDR in accordance with the latest Caltrans Project Planning and Design Guide. The document will include:

- A description of the project and the major engineering features.
- A preliminary estimate of the Total Disturbed Soil Area (DSA), New Impervious Surface (NIS) Area, and Post Construction Treatment (PCT) Area.
- A determination of Risk Level and requirement for Treatment BMPs.
- A discussion of the stormwater quality issues specific to this project.
- A description of the probable design pollution prevention BMPs.
- A description of the probable permanent treatment BMPs, if required.
- A description of the probable maintenance and construction site BMPs.
- SWDR Summary Spreadsheets
- Maps and exhibits

ENGINEER shall submit the document to the Caltrans District Storm Water Coordinator for review with the Project Study Report-Project Report. One round of comments will be addressed, and the final document will be submitted for approval. This scope assumes that Rapid Stream Assessment is not applicable to this project.

Deliverable: *ENGINEER shall prepare Preliminary Drainage Report and Storm Water Data Report.*

T4 ENVIRONMENTAL DOCUMENT

The following items will need to be updated and/or revalidated to incorporate the Alternative 1 alignment. All studies must be completed and approved prior to starting the permitting process.

4.1 TECHNICAL STUDIES

4.1.1 Natural Environment Study Revalidation Memorandum

A Natural Environment Study Revalidation Memorandum will be prepared to reflect any changes in impacts to documented special status species within the project area due to revising the project alignment. Additional surveys will be required due to the new alignment being outside of the previously studied BSA. The NES revalidation memorandum will be sent to the County and Caltrans for review and approval before finalization.

Deliverable: *ENGINEER shall prepare a NES Revalidation Memorandum*

4.1.2 Supplemental Historic Property Survey Report/Finding of Effect and Supplemental Archaeological Survey Report

A Supplemental Historic Property Survey Report (HPSR)/Finding of Effect, and Archaeological Survey Report (ASR) will be prepared to reflect any changes in impacts to cultural resources in the project area due to revising the project alignment. Additional surveys will be required due to the new alignment being outside of the previously studied APE. The Supplemental HPSR/FOE and ASR will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare a Supplemental HPSR/FOE and ASR*

4.1.3 Visual Impact Assessment Revalidation Memorandum

A Visual Impact Assessment (VIA) Revalidation Memorandum will be prepared to reflect any visual impacts within the project area due to revising the project alignment. The memorandum will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare a VIA Revalidation Memorandum*

4.1.4 Community Impact Assessment Revalidation Memorandum

A Community Impact Assessment (CIA) Revalidation Memorandum will be prepared to reflect any additional impacts to the surrounding community due to revising the project alignment. The memorandum will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare a CIA Revalidation Memorandum*

4.1.5 Hazardous Waste Initial Site Assessment Revalidation Memorandum

A Hazardous Waste Initial Site Assessment (ISA) Revalidation Memorandum will be prepared to reflect any additional hazardous waste sites within the new project area. Additional surveys will be

required due to the new alignment being outside of the previously studied project footprint. The memorandum will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare a Hazardous Waste ISA Revalidation Memorandum*

4.1.6 Air Quality Analysis Revalidation Memorandum

An Air Quality Analysis Revalidation Memorandum will be prepared to reflect any additional impacts to air quality within the project area due to revising the project alignment. The memorandum will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare an Air Quality Analysis Revalidation Memorandum*

4.1.7 Air Quality Conformity Analysis

An Air Quality Conformity Analysis report will be prepared after public circulation to determine a project-level air quality conformity for the new project alignment. This analysis will address the conformity requirements of the Federal Clean Air Act and will provide all information needed by FHWA to make a project-level conformity determination. The report will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare an Air Quality Conformity Analysis*

4.1.8 Supplemental Noise Study Memorandum

A Supplemental Noise Study Memorandum will be prepared to reflect any additional impacts to air quality within the project area due to revising the project alignment. The memorandum will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare a Supplemental Noise Study Memorandum*

4.1.9 Section 4(f) De Minimus Finding

It has previously been determined that the UPRR adjacent to the project area is considered an historic structure, and it is anticipated that the project will have an effect on this structure. ENGINEER shall prepare a Section 4(f) De Minimis in accordance with FHWA and Caltrans guidelines to assess the impacts to the UPRR as a Section 4(f) resource. It is anticipated that a De Minimis determination is appropriate as any impacts to the UPRR will be temporary and will not constitute a use of the resource. The determination will require concurrence from SHPO that the temporary impacts of the UPRR constitutes as a de minimis as well as concurrence with any avoidance and minimization measures proposed to reduce potential impacts.

Deliverable: *ENGINEER shall prepare Section 4(f) De Minimus Finding*

4.1.10 Water Quality Assessment Revalidation Memorandum

A Water Quality Assessment Revalidation Memorandum will be prepared to evaluate any permanent or temporary impacts to water quality in the revised project area. The revalidation memorandum will be sent to Caltrans and the County for approval prior to finalization.

Deliverable: *ENGINEER shall prepare a Water Quality Assessment Revalidation Memorandum*

4.2 ENVIRONMENTAL DOCUMENTATION

4.2.1 CEQA Categorical Exemption

ENGINEER shall prepare a CEQA Categorical Exemption (CE) for the proposed revised project area. The CE will be provided to the County for review and comment prior to submittal to Caltrans.

Deliverable: *ENGINEER shall prepare a CEQA Categorical Exemption*

4.2.2 NEPA Revalidation Form

ENGINEER shall prepare a Caltrans standard NEPA Revalidation Form for the Categorical Exclusion that was approved by Caltrans in 2015. The Revalidation Form would document updates to the project description including the phasing of the project and any other environmental sections that would warrant updates due to changes in the project timing or changes in local, state, or federal regulations. The revalidation form will be reviewed and approved by Caltrans for NEPA determinations.

Deliverable: *ENGINEER shall prepare a NEPA Revalidation Form*

T5 UTILITY MAPPING

5.1 UTILITY MAPPING

ENGINEER shall perform a utility search for affected utilities in the project area. The search shall include a verification field review and review of available as-builts for the project area. Utility companies identified to potentially have facilities within the area shall be sent a letter requesting information regarding existing and proposed utilities. ENGINEER shall plot the location of all newly found facilities on a utility base plan and identify potential utility conflicts. Where it is necessary to evaluate alternative impacts, ENGINEER shall meet with selected utilities to discuss a conceptual relocation strategy.

Deliverable: *ENGINEER shall update the Utility Base Map*

5.2 UTILITY INFORMATION SHEET

ENGINEER shall update the Utility Information Sheet for the build alternative. The names of all utilities and points of contact shall be developed and a description of the location, existing facility and potential conflicts with the project shall be prepared. The utility information can be used as part of the alternative evaluation process and during future tasks and phases including utility coordination and preparation of the final design.

Deliverable: *ENGINEER shall prepare a Utility Information Sheets*

T6 RIGHT OF WAY

6.1 PRELIMINARY RIGHT OF WAY MAPPING

COUNTY shall update previous right of way mapping for the project study area. COUNTY shall research existing recorded maps and surveys for those parcels along the project corridor that fall within the project area. COUNTY shall prepare preliminary right of way base mapping along the project corridor based on the records research. The right of way base map shall show existing right of way lines and adjoining parcels with owners of record and available assessor's numbers. ENGINEER will coordinate with COUNTY

Deliverable: *ENGINEER shall coordinate with COUNTY surveyor and update Right of Way Base Map*

6.2 RIGHT OF WAY REQUIREMENTS MAP

ENGINEER shall prepare a map showing anticipated right of way requirements for the proposed alternative. The right of way requirement map shall provide enough detail to support the decision making process in selecting an alignment and shall define property acquisition/easement areas required for the Right of Way Data Sheet.

Deliverable: *ENGINEER shall prepare a Preliminary Right of Way Requirements Map*

6.3 RIGHT OF WAY DATA SHEETS

ENGINEER shall summarize right of way impacts for the proposed alternative. Data sheets shall summarize the number of parcels potentially affected, impacts to property access and shall include a preliminary estimate of right of way acquisition costs.

Deliverable: *ENGINEER shall prepare a Right of Way Data Sheet*

T7 PRELIMINARY DESIGN

7.1 REFINE/EVALUATE PROJECT ALTERNATIVE

Depending on the results from the ICE study whether a roundabout or a signal is preferred at the intersection of SR-111 and Avenue 66, ENGINEER shall refine the project alternative. The Alternative alignment will be evaluated to identify approximate impact limits for the area of potential effects and project study area.

Deliverable: *ENGINEER shall develop the preferred Project Alternative*

7.2 GEOMETRIC APPROVAL DRAWING

Once the preferred alternative is selected, ENGINEER shall prepare a Geometric Approval Drawing (GAD) package to obtain approval of the alignment geometrics. ENGINEER shall prepare the GAD in accordance with Caltrans GAD requirements. The purpose of the GAD is to demonstrate that the proposed design meets the requirements of the Highway Design Manual and County Standards and formally confirm that the design meets the operational needs of the facility. In addition, the GAD provides the foundation for the project base map. ENGINEER shall prepare the GAD submittal package which includes plan view exhibits, profiles with superelevation diagrams, and typical sections.

Deliverable: *ENGINEER shall prepare a Geometric Approval Drawing for the preferred alternative*

7.3 DESIGN EXCEPTION FACT SHEETS

ENGINEER shall evaluate the build alternative for all non-standard features that are identified in the Design Information Bulletin (DIB) 78. The DIB 78 shall be used in conjunction with the Caltrans Highway Design Manual and compared to mandatory, advisory, procedural, and permissive designs. Design exceptions shall be identified for the project alternative in the Project Study Report-Project Report.

ENGINEER shall prepare Design Exception Fact Sheets for all identified non-standard features and shall submit to Caltrans for review and approval. The Fact Sheets shall be prepared in accordance with Chapter 21 of the Project Development Procedures Manual, "Exceptions to Design Standards." The signed Design Exception Fact Sheets shall become an attachment to the Project Study Report-Project Report.

Deliverable: *ENGINEER shall prepare the DIB 78 and Design Exception Fact Sheets for the preferred alternative*

7.4 STRUCTURES ADVANCED PLANNING STUDIES

ENGINEER shall prepare Advanced Planning Studies (APS's) conforming to Caltrans Memo to Designers 1-8, and Caltrans Bridge Design Aids Section 10.

As part of the preparation of the APS's, ENGINEER shall perform the necessary preliminary engineering to justify the proposed bridge and walls types, develop an APS for the structures per Caltrans Bridge Design, and develop a cost estimate for the structures work. The estimate shall be prepared in the usual format for bridge projects. Preliminary design (for member sizing) of the structures shall be performed to ensure that it meets the latest AASHTO Load and Resistance Factor (LRFD) guidelines with Caltrans amendments along with the latest Caltrans Seismic Design Criteria.

Deliverable: *ENGINEER shall prepare the Advance Planning Studies for the preferred alternative*

7.5 STAGE CONSTRUCTION CONCEPT

ENGINEER shall complete a stage construction plan for the project alternative. The stage construction concept shall assist in determining constructability, staging sequencing, potential detours, construction schedule duration, project footprint, and costs associated with the project staging.

Deliverable: *ENGINEER shall prepare the Stage Construction Concept for the preferred alternative*

7.6 TRANSPORTATION MANAGEMENT PLAN

ENGINEER shall complete a Preliminary Transportation Management Plan (TMP) checklist for the construction of the project alignment. The TMP shall be in accordance with Caltrans guidelines and shall show measures needed during the staged construction of the project, traffic handling during each stage, detour plans, permissible lane closures, and analysis of traffic operations. The checklist shall be an attachment to the Project Study Report-Project Report.

Deliverable: *ENGINEER shall prepare the Preliminary Transportation Management Plan for the preferred alternative*

7.7 LIFE CYCLE COST ANALYSIS

ENGINEER shall prepare a Life Cycle Cost Analysis (LCCA) for the project to determine cost effectiveness of project components such as pavement, structural elements, etc. The LCCA shall be in accordance with Caltrans guidelines. The LCCA shall be an attachment to the Project Study Report-Project Report.

Deliverable: *ENGINEER shall prepare the Life Cycle Cost Analysis for the preferred alternative*

7.8 35% ROADWAY PLANS

ENGINEER will prepare plans to 35% of the preferred alternative in accordance to County standards for PS&E. The plan sheets will include:

7.8.1 Title Sheet

ENGINEER shall prepare a title sheet that includes an index of sheets, the project description, location map, structures list, begin/end work, begin/end construction, and limits of work.

7.8.2 Typical Cross Section Sheets

ENGINEER shall prepare typical cross section sheets for road improvements that include original ground, traveled way, shoulders, cut/fill slopes, retaining walls, existing and proposed right of way and existing/recommended structural sections.

7.8.3 Layout Sheets

ENGINEER shall prepare base geometrics and layout sheets that include all geometric data required to construct the project. Geometric curve data will be organized in a data table. A legend and abbreviations list will be prepared along with a "location of sheet" diagram for ease of layout understanding.

7.8.4 Profile/Superelevation Sheets

ENGINEER shall prepare profile and superelevation sheets for roadway improvements that include original ground, profile grade information and superelevation diagram.

7.8.5 Drainage Sheets

ENGINEER shall prepare existing drainage sheets for the proposed improvements.

7.8.6 Utility Sheets

ENGINEER shall prepare utility sheets.

7.8.7 Staging and Detour Sheets

ENGINEER shall prepare staging and detour sheets for the proposed improvements.

7.8.8 Pavement Delineation Sheets

ENGINEER shall prepare pavement delineation sheets for the proposed improvements.

Deliverable: *ENGINEER shall prepare the 35% Roadway Plans, Title Sheet, Typical Sections, Layouts, Profiles and Superelevations, Existing Drainage, Utility Plans, Staging and Detour Plans, Delineation Plans*

7.9 COST ESTIMATES

ENGINEER shall prepare a Caltrans standard 11-page cost estimate for the project alternative. The unit costs for construction items shall be based on current bids. Costs shall include all roadway items, structure items, and right of way items. The Cost estimate shall be an attachment to the Project Study Report-Project Report.

Deliverable: *ENGINEER shall prepare the 11-Page Cost Estimate*

T8 PROJECT STUDY REPORT-PROJECT REPORT

8.1 PROJECT STUDY REPORT-PROJECT REPORT

ENGINEER shall prepare a Project Study Report-Project Report for submittal to the County and Caltrans. The Project Study Report-Project Report shall include the following sections: Introduction, Recommendation, Background, Purpose and Need, Alternatives, Considerations Requiring Discussion, Other Considerations as Appropriate, Programming, Review, and Project Personnel. In addition, the Project Study Report-Project Report shall include the following engineering reports and studies as attachments: Utility Information Sheet, Preliminary Drainage Report, Storm Water Data Report, Right of Way Data Sheets, Cost Estimate, Structure Advance Planning Studies, Traffic Management Plan checklists, Conceptual Stage Construction exhibits.

Deliverable: *ENGINEER shall prepare a Project Study Report-Project Report*

ARTICLE AIV · PLANS, SPECIFICATIONS AND ESTIMATES TASK LIST (PHASE III)

ENGINEER shall provide Plans, Specifications and Estimates for the PROJECT. The following task list is consistent with the project schedule.

T1 PROJECT MANAGEMENT

Project Management shall be conducted to ensure a smooth flow of information between Project Development Team (PDT) members. A project schedule shall be developed and periodically updated. A comprehensive Quality Assurance/Quality Control (QA/QC) plan shall be implemented. Monthly PDT Meetings shall be held.

1.1 PROJECT COORDINATION AND PROJECT TEAM MEETINGS

Project Development Team

A Project Development Team (PDT), for the Plans, Specifications, and Estimates Phase, including representatives from the COUNTY, the Community of Mecca, UPRR, Caltrans, and other relevant agencies will be established prior to start of PS&E. PDT meetings with the COUNTY PROJECT MANAGER and other representatives from affected agencies will be held at least once a month. ENGINEER shall prepare minutes for each meeting and distribute the minutes to all attendees and other interested parties.

Kick-off Meeting

This meeting is intended to:

- Clearly defining work tasks to be accomplished.
- Finalizing the project schedule including critical milestones, and deliverables.
- Identifying and discussing existing project constraints and concerns.

1.2 QUALITY ASSURANCE / QUALITY CONTROL (QA/QC)

ENGINEER shall have a quality control plan in effect during the entire course of the project. ENGINEER shall develop a plan establishing a process to ensure design calculations are independently checked. Exhibits and plans shall also be checked, corrected and back-checked for accuracy and completeness. ENGINEER shall review Sub-consultant report submittals to ensure that appropriate background information, study methodology, interpretation of data, format and content are completed in accordance with current standards.

1.3 PERMITS

ENGINEER shall prepare all necessary encroachment permits and rights of entry for other than property owners (i.e. Caltrans, utility companies, UPRR, etc.) needed for Phase III activities, if any. COUNTY will obtain right of entry for affected property owners agreements. Permits needed for other design work will also be obtained by the ENGINEER during the appropriate time, such as utility potholing, geotechnical drilling permits and constructions permits needed for work to be completed during Phase V.

Deliverable: *ENGINEER shall prepare meeting notices, agendas and minutes, schedules, monthly progress reports and invoices, public meeting materials, and maintain project files. ENGINEER shall obtain permits and right-of-entry. Although fees for*

encroachment permits to access Caltrans or UPRR r/w to obtain information are included, fees for construction permits are not included.

T2 UPRR & PUC APPLICATION AND AGREEMENT COORDINATION & LIAISON SERVICES

2.1 UPRR COORDINATION AND RIGHT OF ENTRY (BORINGS & SURVEYS)

ENGINEER will coordinate with the UPRR on issues related to the proposed project and impacts to the UPRR property. It is anticipated that the following agreements will be required from the UPRR for the project:

- Easements (aerial and footing) for the proposed bridge
- Temporary construction licenses for project construction
- Temporary rail crossing agreements for construction access ("Private Crossing Agreements")
- A Construction and Maintenance Agreement (C&M Agreement) for project construction and ongoing bridge maintenance
- Rights of entry for field visits, utility potholing, soil borings, surveying, and other design activities.
- Utilities within the bridge

ENGINEER will develop the necessary exhibits and attachments to obtain approval from the UPRR for all of the above agreements.

Key project submittals to address railroad issues include:

- Design A Submittal – Concept (Plans and Site Pictures)
- Design B Submittal – 30% (Application Response, Design Plans, Project Specs, Drainage Report, Construction Staging Plans)
- Design C Submittal – 100% (Application Response, Design Plans, Project Specs, Drainage Report, Construction Staging Plans)

ENGINEER will provide Submittals A, B, and C for UPRR review and feedback. These plans will include the Plan, Elevation and Typical Section of the proposed grade separation with structure clearances to railroad dimensioned, photo log with pictures of the proposed project location and site pictures in all controlling directions including, but not limited to North, East, South and West. The plan view will show a reference location and direction for each picture.

ENGINEER will prepare exhibits for project meetings and coordination. These exhibits will include roadway striping, drainage concepts, railroad features, utilities, and structure limits. The exhibits are intended to show design information on an easy to read and discuss format for use in meetings.

This task also includes the cost of up to five days of UPRR flagging services to allow survey, geotechnical, and potholing work in the railroad right-of way.

Deliverable: *ENGINEER shall prepare Submittals A, B, and C and Proposed Alternative Alignment Exhibits*

2.2 UPRR CONCURRENCE LETTER

ENGINEER will obtain a UPRR concurrence upon selection of the proposed alignment to be the basis for the bridge type selection and 65% design. Once the bridge design advances to the "C" Submittal, a formal concurrence letter to use in the PUC application will be obtained.

Deliverable: *ENGINEER shall prepare UPRR Concurrence Letter*

2.3 PUC APPLICATION FOR NEW CROSSING

ENGINEER will prepare and process a Grade Separation Permit application from the CPUC. The application will be signed by the COUNTY and must include written concurrence by the UPRR.

Deliverable: *ENGINEER shall prepare CPUC Grade Separation Permit*

2.4 UPRR AGREEMENTS

ENGINEER will process agreements as required to accomplish construction and the entitlement of the bridge. COUNTY will negotiate with assistance from ENGINEER to acquire permanent entitlement rights (easement and C&M agreements) and construction access rights for the Project (temporary construction license(s), Private Crossing agreements and/or Rights of Entry) from the UPRR Railway. Appraisals that may be required by UPRR for the easement are to be provided by the COUNTY as provided for in Article A-I.G

Deliverable: *ENGINEER shall assist the COUNTY with the preparation of Private Crossing Agreement, Construction and Maintenance (C&M) Agreement, Right of Way Agreement/Permits, Temporary Construction Licenses, and Easement Documents.*

T3 SURVEYING/RIGHT OF WAY ENGINEERING

3.1 COORDINATION WITH COUNTY/CALTRANS/UPRR RAILWAY

Prior to field survey work, COUNTY will verify survey controls and right of way base mapping. COUNTY will obtain encroachment permits from Caltrans and UPRR Railway and provide training for survey work within UPRR property. ENGINEER will coordinate and assist COUNTY with obtaining encroachment permits.

3.2 SUPPLEMENTAL FIELD SURVEY

COUNTY will perform supplemental field surveys as needed at the intersections of Avenue 66/Dale Kiler, Avenue 66/Lincoln Street, and Avenue 66/SR 111. COUNTY will obtain supplement field shots as needed along the centerline of the project alignment. COUNTY will perform cross section for Lincoln Channel for new channel crossings. Additional field shots will be obtained along SR 111, UPRR Railway tracks, and Hammond Road including existing features such as culverts, utilities, etc. Field survey work includes traffic control for SR 111, Hammond Road, Lincoln Avenue and Avenue 66. Field survey crews will locate potholed utilities by coordinates and elevations that may be in conflict with project features. ENGINEER will review supplemental field surveys and provide feedback to the COUNTY.

Deliverable: *ENGINEER shall assist COUNTY with obtaining encroachment permits, prepare survey request, and review supplemental field surveys.*

3.3 PROPERTY OWNER EXHIBITS

After reconciliation of the right of way base map by County surveyor, ENGINEER will determine permanent right-of-way and temporary construction easement requirements for each parcel. These needs will be depicted on individual parcel exhibits. These exhibits will include an aerial photograph of the parcel, with the County boundary survey information, owner, APN, address, parcel size and take area all shown. The exhibits will be used by ENGINEER and COUNTY staff during the appraisal and acquisition discussions with the property owner. ENGINEER will prepare permanent and temporary right of way base mapping for preparation of plats and legals

Deliverable: *ENGINEER shall prepare Property Owner Exhibits & Right of Way Mapping*

3.4 PLATS AND LEGAL EXHIBITS

COUNTY will prepare ten (8) right of way, ten (10) temporary construction easement, two (2) railroad easements over the railroad, and one (1) roadway easement over the Lincoln Channel plats and legal exhibits. ENGINEER will review, check, and verify the plats and legals to the right of way base mapping.

Deliverable: *ENGINEER shall review, check, and verify plats and legal exhibits for right of way, temporary construction easements, railroad easements, and roadway easement over the railroad tracks.*

3.5 RFA DOCUMENTATION AND APPROVALS

Construction funding for the project may include Federal or State funds that require the completion of a Request for Authorization (RFA) package to obligate the funds. In the event such funds are obtained, COUNTY will prepare the necessary forms with assistance from ENGINEER and requests to Caltrans Local Assistance.

Deliverable: *ENGINEER shall assist COUNTY with preparation of RFA Approval Forms*

T4 UTILITY COORDINATION

ENGINEER will extend the utility research conducted during the PA/ED Phase for all utilities within the project limits to identify, locate, and accurately layout the underground improvements. ENGINEER will coordinate with utility owners, COUNTY and CALTRANS staff with respect to all utility related matters. ENGINEER will implement utility coordination and relocation in accordance with CALTRANS Right of Way Manual Chapter 13 and necessary COUNTY procedures. ENGINEER will prepare Utility Plan sheets at a scale of 1"=40', depicting all known existing utility facilities from record research and field verification. Dimensions are to be shown in English units.

ENGINEER will provide additional notifications letters to the utilities and/or call utilities, as necessary, until a written response is received from the utility. ENGINEER will prepare letters for COUNTY signature as required. ENGINEER will prepare and send correspondence under ENGINEER's signature when feasible and appropriate. ENGINEER is responsible to complete and mail the documents, and provide the COUNTY with a copy.

ENGINEER will coordinate inclusion of special provisions in COUNTY's bid documents for adjustment and relocations of utility facilities as alternate bid items, if requested by the owning utility. Said work may require

utility agreements be prepared between the COUNTY and owning utility companies. ENGINEER will prepare agreements and shall provide information and exhibits as required to support the preparation of utility agreements, if needed.

4.1 UTILITY BASE MAP

ENGINEER will expand the Utility Base Map from the As-builts received from the "A" Letters previously obtained during the PA/ED Phase. ENGINEER will obtain record copies of utility maps from each utility owner within the project limits for existing and/or proposed utility facilities. The Utility Base Map will be used throughout the design development process and will be updated upon obtaining field potholing information.

Deliverable: *ENGINEER shall prepare Utility Base Map*

4.2 UTILITY POTHOLING

ENGINEER will perform "potholing" of utilities that may be in conflict with the proposed project improvements. ENGINEER will coordinate the use of field survey crews to locate potholed utilities by coordinates and elevations that may be in conflict with bridge abutments, drainage facilities, bridge foundations, and signal and light pole foundations based on the project's survey controls. Subsequently, potholing information will be included on the design plans.

Deliverable: *ENGINEER shall prepare Potholing Exhibit and Report*

4.3 UTILITY SUBMITTALS

ENGINEER will send the plans of the 65% submittal showing the existing utility location information to the utility companies for their review and comment, including request for all property rights information. This will provide notice to the utility companies of the approved project and will facilitate continued coordination. ENGINEER will include mapping and/or exhibits that clearly define the project limits as part of the requests for utility information. All utilities in conflict with the approved alignment will be highlighted with possible options for relocation. ENGINEER will provide written responses to utility companies with regard to stated concerns and conduct design coordination meetings as needed to mitigate conflicts. ENGINEER will prepare "Report of Investigations" for all utilities within the project footprint. For utility conflicts that require relocating, the ENGINEER will prepare "Notice to Owners" and if required "Utility Agreements".

ENGINEER will schedule meetings with the utility companies to discuss relocation or protection in place of the impacted utilities. ENGINEER will schedule site meetings with affected utility companies to resolve relocations and/or necessary protections during construction. It will further be clarified if relocations will be constructed by the project Contractor or by utility forces. ENGINEER will coordinate and communicate with respect to utility facilities that are to be installed within the planned bridge structure including preparation of agreements as required. ENGINEER will coordinate and communicate with respect to utility facilities that are to be installed prior to or concurrent with COUNTY's construction project, including preparation of agreements as required.

ENGINEER will check horizontal and vertical clearances for utilities and coordinate design with the various utility companies to address conflicts.

ENGINEER will coordinate with Imperial Irrigation District to arrange for new electrical service points to supply service to proposed signalized intersections, street lights along proposed project, and soffit bridge lighting at the proposed Overhead.

Deliverable: *ENGINEER shall prepare Utility Letters, Report of Investigations, Notice of Owners, Utility Agreements*

T5 GEOTECHNICAL DESIGN REPORT

Geotechnical work will include conducting a field investigation, performing laboratory tests, and conducting analyses to develop geotechnical parameters and recommendations for the design and construction of proposed structures, roadway embankment, and pavement structural sections.

5.1 GEOTECHNICAL FIELD INVESTIGATIONS

The geotechnical field investigation plan to be performed by ENGINEER is presented in Table 1 below.

TABLE 1. PROPOSED SOIL BORING INFORMATION

Design Element	Number of Borings/CPTs and Approximate Depth
Ave 66 Grade Separation	2 abutment borings: 80 feet each 4 bent borings: 100 feet
Lincoln Channel Culvert	2 borings: 60 feet each
Retaining Walls	3 borings: 50 feet each
Roadway Pavement	8 borings: 5 feet or Grab sample each
Roadway Embankments	1 boring: 30 feet

Note: Some of the above borings are used for more than one Design Element.

A truck-mounted rotary-wash drill rig with be used to perform the soil borings. ENGINEER may substitute some of the soil borings with cone penetration test (CPT) soundings. Large bulk samples will be collected for the near-surface soil. Relatively undisturbed and disturbed samples will be collected at approximately 5-foot intervals. The California sampler will be used alternating with the Standard Penetration Test (SPT) sampler. ENGINEER shall prepare a boring location plan and this plan will be used to secure encroachment permits from Riverside County, CVWD and UPRR. Boreholes will be located outside Caltrans right-of-way.

County surveyor will stake the Avenue 66 centerline in the field so that the ENGINEER can locate the borings. Upon completion of the field exploration program, ENGINEER will coordinate with County surveyor to determine the stationing, offset and top-of-hole elevation of each boring.

Soil cuttings will be temporarily stored onsite in 55-gallon drums, tested for contaminants, then dispose offsite. Cold patch asphalt or quick-set cement will be used to cover the boreholes at existing traffic lanes.

5.2 LABORATORY TESTING

ENGINEER will select representative soil samples for laboratory testing. Various laboratory tests will be performed to determine or derive physical and engineering characteristics of soils. Anticipated laboratory soil tests include: in-place moisture and unit weight, grain size distribution, direct shear, consolidation/collapse potential, R-value, Atterberg Limits, Unconsolidated-Undrained (UU) Triaxial, maximum density and optimum moisture content, and soil corrosion tests. Additional tests may be necessary depending on the subsurface conditions. All tests will be conducted in general accordance with Caltrans Test Methods and/or ASTM Standards.

5.3 GEOTECHNICAL ENGINEERING ANALYSIS

Results obtained from the field and laboratory testing program will be used to establish idealized soil profiles and strength parameters for bridge, culvert and retaining wall foundation design, and slope stability and settlement calculations for the roadway embankments. R-value will be used to determine composite pavement structural sections using Traffic Indices.

5.4 GEOTECHNICAL REPORTS

5.4.1 Final Foundation Report

A Foundation Report will be developed by the ENGINEER for the Ave 66 Grade Separation, Lincoln Channel Box Culvert and the Retaining Walls following completion of the geotechnical field investigation and laboratory testing. The report will include descriptions of subsurface soil conditions, geological conditions, boring logs, site seismicity, geotechnical analysis, and recommendations for structure foundations, including spread footing and/or pile foundation data tables and soil springs for use in structure analysis. The Foundation Report will be prepared in general accordance with the Caltrans Guidelines for Structure Foundation Report dated December 2009.

Deliverable: *ENGINEER shall prepare One (1) Structure Preliminary Foundation Report for Avenue 66 Grade Separation, One (1) Structure Preliminary Foundation Report for the Lincoln Channel Crossing, and One (1) Structure Preliminary Foundation Report for the retaining walls at the western and eastern bridge approaches.*

5.4.2 Final Geotechnical Design Report

ENGINEER will prepare a Geotechnical Design Report for design and construction of embankments, and shall present the data obtained during field exploration and laboratory testing. The Geotechnical Design Report will summarize design parameters for roadway embankments.

Deliverable: *ENGINEER shall prepare Final Geotechnical Design Report*

5.4.3 Final Roadway Materials Report

ENGINEER will prepare a Roadway Materials Report that will provide the recommended pavement structural section design based on traffic indices and results of the R-value test.

ENGINEER will obtain the necessary encroachment permits from the COUNTY and Caltrans to allow the placement of exploratory borings on necessary roads. Several exploratory borings along the alignment will be obtained in order to characterize existing soil and pavement conditions and to sample the underlying soil for sand equivalent, sieve analysis and R-value testing. Samples of probable pavement subgrade soils will be obtained along with existing pavement information on Avenue 66 and SR-111.

Deliverable: *ENGINEER shall prepare Final Roadway Materials Report*

T6 HYDRAULICS

6.1 STORM WATER DATA REPORT (SWDR)

The PA/ED-level SWDR will be updated during the PS&E phase to reflect the final proposed project improvements. Any new information, changes, and/or refinements to the project design will be addressed as part of the following tasks:

- Updating the project description and significant features.
- Finalizing calculations related to the project DSA, NIS and PCT areas.
- Confirming the feasibility of selected design pollution prevention, treatment, maintenance, and construction BMPs and ensuring that they are reflected in the project plans, specifications, estimates, and right of way acquisition documents.
- Finalizing BMP sizing and cost estimates.
- Updating the SWDR Summary Spreadsheets and completing the SW, DPP, T, and CS checklists.
- Completing the RUSLE2 Summary Sheet.
- Completing the SWDR Attachment for SMARTS Input.
- Preparing supporting calculations and BMP deployment plans.

ENGINEER shall submit the draft document for review by Caltrans Maintenance, Landscape, and Storm Water units. One round of comments will be addressed, and the final document will be submitted for approval. This scope assumes that Rapid Stream Assessment is not applicable to this project.

Deliverable: *ENGINEER shall prepare Draft and Final SWDR*

6.2 DRAINAGE REPORT

ENGINEER will update and expand upon the Preliminary Drainage Report that was prepared during the Project Approval/Environmental Document (PA/ED) phase of the project. ENGINEER has previously determined the existing drainage patterns and storm drain facilities in the project area, including existing channels/ditches, pipe/culvert locations, sizes, local rainfall intensities, and flows. This information will be used for on- and off-site hydrologic analyses of the existing and post-project condition, emphasizing the primary objective of maintaining existing flow patterns and runoff amounts.

The on-site analyses will include identifying where new facilities are needed, developing drainage boundaries for the areas within the project limits, developing flows for each facility based on Rational

Method calculations, and laying out the new/retrofitted storm drain facilities. The off-site analyses involve obtaining flows for the water courses draining toward and/or through the project area from outside the project limits and designing new or upgraded facilities for these flows. If flows are not readily available for these water courses and the contributing watersheds exceed 0.5 square miles, ENGINEER will approximate the off-site flows based on the conveyance of facilities immediately up- or downstream. For off-site watersheds less than 0.5 square miles in area, drainage boundaries will be developed and flows calculated based on the Rational Method where appropriate.

A draft Drainage Report will be prepared to document the hydrologic and hydraulic analysis and will provide a detailed discussion of the following: existing conditions and facilities in the project area, the on- and off-site hydrologic analyses, existing and post-project drainage patterns, conditions and any issues of special concern or significance, results of the on- and off-site hydraulic analyses and any issues of special concern or significance. The draft report will be submitted to the COUNTY for review at the 65% milestone and will be finalized upon completion of the 100% PS&E.

Deliverable: *ENGINEER shall prepare Draft and Final Drainage Report*

6.3 HYDRAULIC DESIGN REPORT

The proposed project includes a series of box culverts crossing the Lincoln Channel. ENGINEER will coordinate with Coachella Valley Water District (CVWD) to obtain the water surface elevation of the Lincoln Channel.

A scour analysis will be performed. The potential for aggradation and degradation will also be evaluated based on a review of any recent survey data together with historic data collected from USGS quadrangles.

Based on water surface elevation and results of the scour analysis, ENGINEER will prepare a Draft Hydraulic Design Report to satisfy State and local criteria. The report will be submitted to the COUNTY for one round of comments. Comments on the draft report will be addressed and the Hydraulic Design Report will be updated and finalized.

Deliverable: *ENGINEER shall prepare Draft and Final Hydraulic Design Report*

6.4 NPDES GENERAL CONSTRUCTION PERMIT

ENGINEER's Qualified Stormwater Developer (QSD) will prepare the Notice of Intent (NOI) as well as the Storm Water Pollution Prevention Plan (SWPPP) and, at the COUNTY's discretion, upload these

documents to the SMARTS system. Preparation of the NOI will include calculating the total disturbed and percent impervious area of the project site, preparing the required map attachments, and completing the NOI application. All permit fees will be paid directly by COUNTY.

Preparation of the SWPPP will involve the following tasks:

- Developing a detailed project information exhibit;
- Determining the risk level classification of the project;
- Identifying the sources that could add pollutants to storm water discharges or could result in non-storm water discharges;
- Selecting risk level appropriate Best Management Practices (BMPs) that will control each of the identified pollutants;
- Identifying the required construction site monitoring efforts and, dependent on risk level, preparing a monitoring and sampling exhibit;
- Integrating appropriate post-construction storm water BMPs;
- Developing a maintenance, inspection and repair program.

A draft SWPPP will be provided to the COUNTY for review and comment. Upon receipt of comments, ENGINEER will make the necessary modifications to the SWPPP and prepare a final SWPPP for use in obtaining the NPDES permit. ENGINEER will provide QSD services through the issuance of the Waste Discharge Identification Number.

Deliverable: *ENGINEER shall prepare NOI/SWPPP*

T7 65% SUBMITTAL

7.1 65% ROADWAY PLANS

Roadway, Construction Details, Construction Area Signs, Erosion Control, Contour Grading Plans, Drainage Plans, Stage Construction Plans, Signing and Striping Plans

ENGINEER will prepare the plans for the roadway improvements, which will follow the 35% roadway plans prepared during the PA/ED Phase. The 65% plans will be submitted for review by the COUNTY and Caltrans. The 65% submittal will include construction details, construction area signs, erosion control, contour grading plans, drainage plans, stage construction plans, and signing and striping plans.

Deliverable: *ENGINEER shall prepare 65% Roadway including Title Sheet/Typical Sections/Plans/Profile/Superelevation/ Construction Details/Construction Area*

Signs/Erosion Control/Contour Grading Plans/Stage Construction Plans/Drainage Plans/Signing and Striping Plans

Utility Plans

ENGINEER will prepare 65% utility plans. The plans will include the following:

- Identify utility companies affected by the project and delineate utilities within the project's sphere of influence on the plans.
- Include all existing utilities (above ground and below ground) identified by location, size, type and owner.
- Known utility conflicts with construction notes indicating action to be taken and by whom.
- Inventory numbers of poles, vaults and other surface facilities.

In addition to information provided by the owning utility companies and through research of other record maps, field surveys shall be used to locate utility features such as manholes, valves, fire hydrants, poles, risers, etc., which will be reflected on the plans.

Deliverable: *ENGINEER shall prepare 65% Utility Plans*

Electrical Plans (Traffic Signals and Bridge and Street Lighting Plans)

ENGINEER will prepare the 65% electrical plans. The plans will include the following:

- Construction of three new traffic signals at 1) the intersection of SR-111/Ave 66/Lincoln St; 2) the new intersection of the new roadway and SR-111 and; 3) the intersection of Dale Kiler Rd/Avenue 66.
- Provided intersection and bridge lighting for the proposed project between SR-111 and Dale Kiler Rd
- Soffit lighting for the new roadway Overhead of the UPRR railroad
- Electrical design to show preferred service location
- Application to electric purveyor for electric service point(s), including any and all electricity use calculations information
- Obtain service address for appropriate municipality
- Application to electric purveyor for electric service, including coordination with account holder for signatures, payments of fees, etc.

The traffic signal, intersection and bridge lighting will be designed to current COUNTY and CA MUTCD standards. This will include any ADA considerations. Bridge soffit lighting will be designed and analyzed per UPRR standards. All new electrical service points will be coordinated with Imperial Irrigation District.

Deliverable: *ENGINEER shall prepare 65% Electrical Plans/Details*

7.2 65% STRUCTURE PLANS

ENGINEER will use the conceptual bridge type and span configuration previously approved by COUNTY and UPRR during the PA/ED Phase. ENGINEER will develop a General Plan for the proposed bridge. The Bridge General Plan for the proposed alternative will be prepared showing the plan, profile and typical section views. Denoted on these views will be the lanes, shoulders, sidewalks, utility locations, horizontal and vertical permanent clearances, falsework opening sizes, abutment heights, barrier types, lighting, aesthetic treatments, and slope protections.

This task includes the structure design and the preparation of plans, specifications and quantities for the new roadway Overhead, Lincoln Channel Culvert (3-cells) at new roadway, and Retaining Walls.

The 65% bridge plans comprise all anticipated plan sheets and details for the unchecked bridge design.

The bridge design will follow UPRR and Caltrans structure design procedures, specifications, manuals and standards including following publications: BNSF Railway – UP Railroad Guidelines for Railroad Grade Separation Projects, AREMA Manual for Railway Engineering, AASHTO LRFD Bridge Design Specifications 2007 Edition with California Amendments, Caltrans Memo to Designers, Caltrans Bridge Design Aids, Caltrans Seismic Design Criteria (Version 1.7) and Caltrans Bridge Design Details manual.

The design of the foundations for each structure will be coordinated between the bridge design engineer and the geotechnical engineer.

The plans will be prepared for use with Caltrans Standard Plans and Specifications dated 2015. The structure plans will be prepared in English Units, using Microstation software.

ENGINEER will prepare the bridge design, detailing all elements of the bridge and completing the full design with a set of stamped calculations prepared by a Registered Civil Engineer.

The overhead structure will be submitted to the COUNTY, Caltrans and UPRR. The channel bridges will be submitted to the COUNTY only.

Deliverable: *ENGINEER shall prepare 65% Draft Structure Plans/ Structure Pay Item List*

Structures Type Selection (Bridge Overhead and MSE Walls)

The Type Selection Package will follow the format provided in Caltrans Memo to Designers and include a memorandum with discussions of the following: bridge types considered, wall types considered, site geometric and hydraulic constraints, life cycle costs of considered alternatives, environmental impacts, community concerns, construction duration, UPRR clearance requirements and any maintenance requirements. Specific bridge and wall treatment ideas will be discussed in the memo including abutment, barrier, approach walls, bridge lighting, and any unique sidewalk scoring pattern. Included with the Package submittal will be the memorandum, the Bridge General Plans, the Bridge Foundation Plan, the MSE Wall General Plan, the MSE Wall Foundation Plan, the Preliminary Foundation Report, and Drainage Report.

A meeting to confirm the selected bridge and wall types and functional/aesthetic features will be scheduled at the COUNTY or at Caltrans to conclude the type selected bridge prior to the start of detailed design. Any changes to the Structures Type Selection Memo will be recorded in the meeting minutes. ENGINEER will initiate a request through the COUNTY for a type selection meeting with Caltrans Office of Special Funded Projects.

The Structures Type Selection Memo will be submitted to UPRR and concurrence from UPRR on structure clearances will be obtained before proceeding with bridge design beyond General Plan development.

Deliverable: *ENGINEER shall prepare Bridge Type Selection Package, including Bridge General Plan, Bridge Draft Foundation Plan, Bridge General Plan Estimate, Bridge Preliminary Foundation Report and MSE Wall Type Selection Package, including Wall General Plan, Wall Draft Foundation Plan, Wall General Plan Estimate, and Wall Preliminary Foundation Report*

Lincoln Channel Box Culvert General Plans

ENGINEER will prepare general plans for the 3-cell Box Culvert at Lincoln Channel showing the alignment, dimensions, grading, stream channelization and scour protection.

Deliverable: *ENGINEER shall prepare Lincoln Channel General Plans*

7.3 65% QUANTITIES AND ESTIMATE

ENGINEER will prepare detailed quantity calculations from the 65% roadway and structure plans. The quantities will be based on estimated calculations, using a contingency of 20%. Unit prices will be estimated from Caltrans cost data, other ENGINEER projects recently advertised and other COUNTY or regional project bid results.

Deliverable: *ENGINEER shall prepare 65% Quantities and Estimates*

T8 ENVIRONMENTAL PERMITTING

Following the approval of the Environmental Document and based on the results of the Biological Report, ENGINEER will prepare applications and conduct coordination to obtain the following regulatory permits:

8.1 SECTION 1602 STREAMBED ALTERATION

ENGINEER shall prepare and process an application for the permit required for compliance with Section 1602 permits under the authority of the California Department of Fish and Wildlife (CDFW). The revised permit application will include the revised impacts to State-listed species and habitat for the revised project area.

Deliverable: *ENGINEER shall revised Section 1602 Streambed Alternation Agreement Application*

8.2 SECTION 404 CLEAN WATER ACT

ENGINEER shall prepare and process an update to the application for the permit required for compliance with Section 404 permits under the authority of the U.S. Army Corps of Engineers (USACE). The revised permit application will include the revised impacts to waters of the U.S. and State for the revised project area.

Deliverable: *ENGINEER shall revised Section 404 Nationwide Permit 14 Application*

8.3 SECTION 401 CLEAN WATER ACT

ENGINEER shall prepare and process an application for the permit required for compliance with Section 401 permits under the authority of the Regional Water Quality Control Board (RWQCB). The revised permit application will include the revised impacts to waters of the U.S. and State for the revised project area.

Deliverable: *ENGINEER shall revised Section 401 Water Quality Certification Application*

8.4 ENVIRONMENTAL MITIGATION

8.4.1 Paleontological Monitoring

ENGINEER will coordinate paleontological monitoring of geotechnical borings in compliance with mitigation indicated in the NEPA and CEQA environmental documents. The approved Paleontological Mitigation Plan will be implemented to include a weekly email summary submitted to the Caltrans Task Manager/Paleontology Coordinator and a Final Report will be provided upon completion of the monitoring effort.

Deliverable: *ENGINEER shall prepare Final Report of Paleontological Monitoring*

8.4.2 Compensatory Mitigation Coordination

ENGINEER will coordinate with the COUNTY to facilitate the compensatory mitigation fee payment with Coachella Valley Association of Governments (CVAG) for compliance with the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). To facilitate the process, the ENGINEER shall contact with CVAG and provide exhibits, GIS files of the impact areas, and copies of the Natural Environment Study as necessary. Payment of mitigation fee is not included.

Deliverable: *ENGINEER shall obtain compensatory mitigation confirmation.*

T9 95% SUBMITTAL

9.1 95% ROADWAY PLANS

Roadway, Construction Details, Temporary Water Pollution Control Plans, Utility Plans, ESA Fencing Plans, Construction Area Signs, Stage Construction Plans, Detour Plans, Contour Grading Plans, Erosion Control Plans, Drainage Plans, Signing and Striping Plans, Electrical Plans

Upon receipt of comments on the 65% submittal, ENGINEER will prepare a written response to each comment from the COUNTY and Caltrans. Resolution of any difficult comments will be facilitated in a meeting with the COUNTY or Caltrans.

ENGINEER will update the 65% plans and prepare the 95% plan submittal.

Deliverable: *ENGINEER shall prepare 95% Roadway including Title Sheet/Typical Sections/Plans/Profile/Superelevation/ Construction Details/Temporary Water Pollution Control/Utility Plans/ESA Fencing/Construction Area Signs/Stage Construction Plans/Detour Plans/Contour Grading Plans/Erosion Control*

Plans/Drainage Plans/Signing and Striping Plans /Electrical Plans/Responses to Comments

9.2 95% STRUCTURE PLANS

9.2.1 95% PS&E Structure Plans

ENGINEER will address any comments from the COUNTY, Caltrans and UPRR 65% review. The designer will also address ENGINEER Quality Control Review comments as well as coordination input from roadway design, electrical design, drainage design and the utility coordinator. The designer and checker will meet to resolve any discrepancies noted in the design and the structure plans will be updated accordingly.

In addition to submitting to the COUNTY, the overhead structure will be submitted to Caltrans and UPRR.

9.2.2 Independent Design Check

ENGINEER will complete the independent design check for each of the bridges to be performed by a registered civil engineer completely independent from the designer. The design checker will prepare a complete set of design check calculations to verify the capacity of all substructure and superstructure elements. All structure plan details will be reviewed by the check engineer for completeness and accuracy.

Deliverable: *ENGINEER shall prepare 95% Checked Structure Plans/Structure Design Calculations/Structure Design Check Calculations/ Final Foundation Report/Responses to Comments.*

9.3 95% QUANTITIES AND ESTIMATE

ENGINEER will prepare detailed quantity calculations from the 95% plans. The detailed item list will be updated for any new items added between the 65% and 95% design. The quantities will now be based on detailed calculations, allowing the contingency to be reduced to 10%. Quantities will be calculated using the roadway design software and checked using hand calculations and the design plans. Unit prices will be estimated from Caltrans cost data, other ENGINEER projects recently advertised and other County or regional project bid results.

Deliverable: *ENGINEER shall prepare 95% Checked Quantities and Estimates.*

9.4 95% DRAFT SPECIAL PROVISIONS

Project Special Provisions will be based upon the Caltrans 2015 Standard Specifications and Standard Special Provisions. ENGINEER will prepare a full set of special provisions for the project in Microsoft Word for the 95% submittal, gathering all necessary input from each design discipline.

ENGINEER will make recommendations for special provisions language with regard to utility issues, recommendations for construction windows of time for utility relocation activities, recommendations for inclusion of utility bid items, etc.

ENGINEER will work with COUNTY staff to make edits to the as necessary and to make the project requirements clear.

Deliverable: *ENGINEER shall prepare 95% Draft Special Provisions/Responses to Comments*

T10 100% SUBMITTAL

10.1 100% ROADWAY PLANS (INCLUDING CROSS SECTIONS)

ENGINEER will prepare 100% Roadway Design plans based on comments received from the COUNTY and Caltrans on the 95% plans. The plans will be checked for accuracy and completeness, and will incorporate any changes to the other roadway plans that may have been updated or modified.

Cross sections will be generated along the alignment at a minimum of 50 ft intervals. Additional cross sections will be generated at points such as the following: begin/end of tapers and unique features.

Deliverable: *ENGINEER shall prepare 100% Roadway including Title Sheet/Typical Sections/Plans/Profile/Superelevation/ Construction Details/Temporary Water Pollution Control/Utility Plans/ESA Fencing/Construction Area Signs/Stage Construction Plans/Detour Plans/Contour Grading Plans/Erosion Control Plans/Drainage Plans/Signing and Striping Plans /Electrical Plans/Responses to Comments*

10.2 100% STRUCTURE PLANS

ENGINEER will prepare the 100% Structure Design plans submittal and coordinate all last comments from the COUNTY or other agency to obtain approval. ENGINEER will provide final plans to the COUNTY and Caltrans.

Deliverable: *ENGINEER shall prepare 100% Structure Plans/Supplemental Structure Design and Check Calculations/ Responses to Comments*

10.3 100% QUANTITIES AND ESTIMATE

ENGINEER will update the quantities from the 95% submittal. Quantities will be updated in the calculations, the estimate and on the quantity plan sheets for any changes made between the 95% and Final Submittals.

The Engineer's Estimate will be updated for current and projected unit prices at the time of bidding.

Deliverable: *ENGINEER shall prepare 100% Quantities and Estimate/Responses to Comments*

10.4 100% SPECIAL PROVISIONS

ENGINEER will review the COUNTY comments on the draft special provisions and meet with the COUNTY to discuss any revisions that could have a major impact on construction. The draft special provisions will be updated and revised as many times as necessary to obtain COUNTY approval. The special provisions will be prepared and stamped and by a licensed Civil Engineer in the State of California. ENGINEER will respond to each comment made by the COUNTY with a written response explaining how the comment was addressed.

Deliverable: *ENGINEER shall prepare 100% Special Provisions/Responses to Comments*

T11 FINAL APPROVED SUBMITTAL

11.1 100% SUBMITTAL

Final Roadway Design

ENGINEER will prepare Final Roadway Design plans based on comments received from the COUNTY on the 100% plans. The plans will be checked for accuracy and completeness, and will incorporate any changes to the other roadway plans that may have been updated or modified.

Upon approval, ENGINEER will provide signed plans to be incorporated into the bid package.

Deliverable: *ENGINEER shall prepare Final Roadway Design/Roadway Cross Sections /Responses to Comments*

Final Structure Design

ENGINEER will prepare the Final Structure Design plans based on comments received from the COUNTY on the 100% plans. The plans will be checked for accuracy and completeness, and will incorporate any changes to the other structure plans that may have been updated or modified. Upon approval, ENGINEER will provide signed plans to be incorporated into the bid package.

Deliverable: *ENGINEER shall prepare Final Structure Design Plans/ Responses to Comments*

Final Quantities and Estimate

ENGINEER will update the quantities from the 100% submittal. Quantities will be updated in the calculations, the estimate and on the quantity plan sheets for any changes made between the 100% and Final Submittals.

Deliverable: *ENGINEER shall prepare Final Bid Item List with Quantities/Final Engineer's Estimate/Responses to Comments*

Final Special Provisions

ENGINEER will prepare the final special provisions and meet with the COUNTY to discuss any revisions that could have a major impact on construction. Upon approval, ENGINEER will provide signed special provisions to be incorporated into the bid package

Deliverable: *ENGINEER shall prepare Final Signed Special Provisions/Responses to Comments*

ARTICLE AV • CONSTRUCTION BID SUPPORT (PHASE IV)

Contract Award, Contract Analysis, and Construction Bidding Support. In the event that clarification is needed during the bid phase, ENGINEER will be available to provide a written response. Corrective action taken will be in the form of an addendum prepared by ENGINEER and issue by the COUNTY or by a covering change order after the award of the construction contract.

ARTICLE AVI • CONSTRUCTION SUPPORT (PHASE V)

A. CONSTRUCTION SUPPORT AND AS-BUILT PLANS

ENGINEER will attend the pre-construction meeting with the successful construction contractor. During construction, ENGINEER will furnish all necessary additional drawings as required and will review shop drawings submitted by the construction contractor. ENGINEER will be available to visit the job site for on-site review of construction and other visits to the job site as requested to resolve any discrepancies in the contract documents. ENGINEER will prepare and deliver to the COUNTY "As-Built" plans at the completion of project construction. The plans will be delivered in Microstation format and/or mylar hard copies as desired by the COUNTY within three months of completion of the project.

Deliverable: *Pre-Construction Meeting, Job Site Visits, Additional Drawings/Clarification, Shop Drawing Reviews, As-built Plans*

B. ENVIRONMENTAL MITIGATION MONITORING

ENGINEER shall provide environmental support during construction of the project. The ENGINEER shall oversee implementation of the construction mitigation measures cited in the NEPA and CEQA environmental documents and permits. Environmental staff shall provide documentation of the mitigation efforts through completion of an Environmental Commitments Record/Mitigation Monitoring and Reporting Program matrix and site visits during pre-construction, the beginning of construction, and towards the completion of construction.

Deliverable: *Environmental Commitments Record/Mitigation Monitoring and Reporting Program matrix for the project files.*

C. BIOLOGICAL CONSTRUCTION MITIGATION MEASURES.

ENGINEER shall provide a qualified biologist to provide the following services in compliance with the NEPA and CEQA environmental documents:

- Oversee the placement of Environmentally Sensitive Area fencing or staking to avoid impacts to the Lincoln Street Stormwater Channel, mesquite, and active nest sites, if found;
- Conduct pre-construction burrowing owl and nesting bird surveys consistent with the 2012 California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation;
- Conduct clearance surveys for Crissal thrasher and Le Conte's thrasher and applicable Covered Species within the Conservation Area.

Deliverable: *ENGINEER shall provide a final report documenting results of the pre-construction and clearance surveys.*

AMENDMENT 2 • APPENDIX B2 • SCHEDULE OF SERVICES

ARTICLE BI • INTRODUCTION

The Engineer shall perform the covenants set forth in Appendix A, Appendix A1 and Appendix A2 in accordance with the performance requirements of Article V of the original agreement. All Covenants set forth in the Appendix A, Appendix A1 and Appendix A2 shall be completed by June 30, 2023, unless extended by supplemental agreement.

A. PHASES

The Services to be provided are divided into the following 5 phases:

1. Alignment Studies
2. Project Approval & Environmental Documentation (PA/ED)
3. Plans, Specifications and Estimates (PS&E)
4. Bid Support
5. Construction Support

AMENDMENT 2 • APPENDIX C2 • PA/ED, PS&E AND CONSTRUCTION SUPPORT
FEE PROPOSAL WORKSHEETS

Avenue 66 Grade Separation in Mecca, CA Fee Proposal Summary October 16, 2017

COMPANIES	PHASE II	PHASE III	PHASE IV	PHASE V	TOTAL
Dokken Engineering Prime	$ 81,509.85	$ 1,233,212.02	$ 40,926.60	$ 174,846.35	**$ 1,530,494.82**
Earth Mechanics Inc. Geotech	$ 20,975.10	$ 179,845.86			**$ 200,820.96**
Fehr & Peers Traffic	$ 2,129.93				**$ 2,129.93**
TOTAL	**$ 104,614.88**	**$ 1,413,057.88**	**$ 40,926.60**	**$ 174,846.35**	**$ 1,733,445.71**

Phase II **Preliminary Engineering & Environmental**
Phase III **Plans, Specs & Estimates**
Phase IV **Bid Support**
Phase V **Construction Support**

FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Project Summary**	**All Phases**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Rick Liptak	Principal In Charge	62	@	$100.00	$6,200.00
Juann Ramos	Project Manager	976	@	$75.00	$73,200.00
Liz Diamond	QA/QC	82	@	$75.00	$6,150.00
Kris Kofoed	Project Engineer-Roadway	1,746	@	$50.00	$87,300.00
Robert Burns	Project Engineer-Structures	724	@	$59.00	$42,716.00
Staff	Senior Engineer	417	@	$65.00	$27,105.00
Namat Hosseinion	Senior Environ Planner	87	@	$75.00	$6,525.00
Staff	Associate Engineer	1,308	@	$47.00	$61,476.00
Staff	Assistant Engineer	3,588	@	$31.00	$111,228.00
Staff	Assoc. Env. Planner	178	@	$38.00	$6,764.00
Staff	Env. Planner/Biologist	270	@	$30.00	$8,100.00
Staff	SR CAD/Detailer	872	@	$55.00	$47,960.00
Staff	Engineering Technician	284	@	$26.00	$7,384.00

TOTAL HOURS **10,594** OTAL DIRECT LABOR **$492,108.00**

MULTIPLIERS

ESCALATION @		(Rates Vary by Phase)	
OVERHEAD @	80.00%	(of Direct Labor + Escalation)	$393,686.40
PAYROLL ADDITIVES @	85.00%	(of Direct Labor + Escalation)	$418,291.80
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$130,408.62
		TOTAL MULTIPLIERS	**$942,386.82**

OTHER DIRECT COSTS

••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT		UNIT COST	AMOUNT
Paleontology Monitoring (PS&E)	1	LS	@	$5,000.00	$5,000.00
Paleontology Monitoring (Construction)	1	LS	@	$30,000.00	$30,000.00
Utility Potholing	1	LS	@	$25,000.00	$25,000.00
Roundabout Design Check	1	LS	@	$20,000.00	$20,000.00
UPRR Flagging	1	LS	@	$10,000.00	$10,000.00
Permits	2	LS	@	$2,000.00	$4,000.00
Record Search	1	LS	@	$2,000.00	$2,000.00

TOTAL ODC'S **$96,000.00**

SUB CONSULTANT SERVICES

COMPANY	LABOR	MULTIPLIERS	ODC's	TOTAL
Earth Mechanics Inc.	$47,042.25	$96,657.71	$57,121.00	$200,820.96
Fehr & Peers	$695.16	$1,434.77		$2,129.93

TOTAL SUBCONSULTANT SERVICES **$202,950.89**

TOTAL **$1,733,445.71**

FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	Preliminary Engineering & Environmental	Phase II
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Rick Liptak	Principal In Charge	2	@	$100.00	$200.00
Juann Ramos	Project Manager	54	@	$75.00	$4,050.00
Liz Diamond	QA/QC	2	@	$75.00	$150.00
Kris Kofoed	Project Engineer-Roadway	174	@	$50.00	$8,700.00
Robert Burns	Project Engineer-Structures	4	@	$59.00	$236.00
Staff	Senior Engineer	11	@	$65.00	$715.00
Namat Hosseinion	Senior Environ Planner	15	@	$75.00	$1,125.00
Staff	Associate Engineer			$47.00	
Staff	Assistant Engineer	354	@	$31.00	$10,974.00
Staff	Assoc. Env. Planner			$38.00	
Staff	Env. Planner/Biologist			$30.00	
Staff	SR CAD/Detailer	8	@	$55.00	$440.00
Staff	Engineering Technician			$26.00	
	TOTAL HOURS	**624**		OTAL DIRECT LABOR	**$26,590.00**

MULTIPLIERS

ESCALATION @		(of Direct Labor)	
OVERHEAD @	80.00%	(of Direct Labor + Escalation)	$21,272.00
PAYROLL ADDITIVES @	85.00%	(of Direct Labor + Escalation)	$22,601.50
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$7,046.35
		TOTAL MULTIPLIERS	**$50,919.85**

OTHER DIRECT COSTS

••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT		UNIT COST	AMOUNT
Paleontology Monitoring (PS&E)		LS		$5,000.00	
Paleontology Monitoring (Construction)		LS		$30,000.00	
Utility Potholing		LS		$25,000.00	
Roundabout Design Check		LS		$20,000.00	
UPRR Flagging		LS		$10,000.00	
Permits	1	LS	@	$2,000.00	$2,000.00
Record Search	1	LS	@	$2,000.00	$2,000.00
				TOTAL ODC'S	**$4,000.00**

SUB CONSULTANT SERVICES

COMPANY	LABOR	MULTIPLIERS	ODC's	TOTAL
Earth Mechanics Inc.	$6,866.50	$14,108.60		$20,975.10
Fehr & Peers	$695.16	$1,434.77		$2,129.93
		TOTAL SUBCONSULTANT SERVICES		**$23,105.03**

TOTAL **$104,614.88**

FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Plans, Specs & Estimates**	**Phase III**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Rick Liptak	Principal In Charge	40	@	$100.00	$4,000.00
Juann Ramos	Project Manager	772	@	$75.00	$57,900.00
Liz Diamond	QA/QC	80	@	$75.00	$6,000.00
Kris Kofoed	Project Engineer-Roadway	1,352	@	$50.00	$67,600.00
Robert Burns	Project Engineer-Structures	500	@	$59.00	$29,500.00
Staff	Senior Engineer	382	@	$65.00	$24,830.00
Namat Hosseinion	Senior Environ Planner	42	@	$75.00	$3,150.00
Staff	Associate Engineer	1,308	@	$47.00	$61,476.00
Staff	Assistant Engineer	2,994	@	$31.00	$92,814.00
Staff	Assoc. Env. Planner	128	@	$38.00	$4,864.00
Staff	Env. Planner/Biologist	150	@	$30.00	$4,500.00
Staff	SR CAD/Detailer	734	@	$55.00	$40,370.00
Staff	Engineering Technician	184	@	$26.00	$4,784.00

TOTAL HOURS **8,666** OTAL DIRECT LABOR **$401,788.00**

MULTIPLIERS

ESCALATION @		(of Direct Labor)	
OVERHEAD @	80.00%	(of Direct Labor + Escalation)	$321,430.40
PAYROLL ADDITIVES @	85.00%	(of Direct Labor + Escalation)	$341,519.80
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$106,473.82
		TOTAL MULTIPLIERS	**$769,424.02**

OTHER DIRECT COSTS

••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT		UNIT COST	AMOUNT
Paleontology Monitoring (PS&E)	1	LS	@	$5,000.00	$5,000.00
Paleontology Monitoring (Construction)		LS		$30,000.00	
Utility Potholing	1	LS	@	$25,000.00	$25,000.00
Roundabout Design Check	1	LS	@	$20,000.00	$20,000.00
UPRR Flagging	1	LS	@	$10,000.00	$10,000.00
Permits	1	LS	@	$2,000.00	$2,000.00
Record Search		LS		$2,000.00	

TOTAL ODC'S **$62,000.00**

SUB CONSULTANT SERVICES

COMPANY	LABOR	MULTIPLIERS	ODC's	TOTAL
Earth Mechanics Inc.	$40,175.75	$82,549.11	$57,121.00	$179,845.86
Fehr & Peers				

TOTAL SUBCONSULTANT SERVICES **$179,845.86**

TOTAL **$1,413,057.88**

FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Bid Support**	**Phase IV**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Rick Liptak	Principal In Charge	8	@	$100.00	$800.00
Juann Ramos	Project Manager	30	@	$75.00	$2,250.00
Liz Diamond	QA/QC			$75.00	
Kris Kofoed	Project Engineer-Roadway	60	@	$50.00	$3,000.00
Robert Burns	Project Engineer-Structures	60	@	$59.00	$3,540.00
Staff	Senior Engineer	24	@	$65.00	$1,560.00
Namat Hosseinion	Senior Environ Planner			$75.00	
Staff	Associate Engineer			$47.00	
Staff	Assistant Engineer	40	@	$31.00	$1,240.00
Staff	Assoc. Env. Planner			$38.00	
Staff	Env. Planner/Biologist			$30.00	
Staff	SR CAD/Detailer	30	@	$55.00	$1,650.00
Staff	Engineering Technician			$26.00	
	TOTAL HOURS	**252**		OTAL DIRECT LABOR	**$14,040.00**

MULTIPLIERS

ESCALATION @		(of Direct Labor)	
OVERHEAD @	80.00%	(of Direct Labor + Escalation)	$11,232.00
PAYROLL ADDITIVES @	85.00%	(of Direct Labor + Escalation)	$11,934.00
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$3,720.60
		TOTAL MULTIPLIERS	**$26,886.60**

OTHER DIRECT COSTS ••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT
Paleontology Monitoring (PS&E)		LS	$5,000.00	
Paleontology Monitoring (Construction)		LS	$30,000.00	
Utility Potholing		LS	$25,000.00	
Roundabout Design Check		LS	$20,000.00	
UPRR Flagging		LS	$10,000.00	
Permits		LS	$2,000.00	
Record Search		LS	$2,000.00	
			TOTAL ODC'S	

SUB CONSULTANT SERVICES

COMPANY	LABOR	MULTIPLIERS	ODC's	TOTAL
Earth Mechanics Inc.				
Fehr & Peers				
			TOTAL SUBCONSULTANT SERVICES	

TOTAL **$40,926.60**

FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	Construction Support	Phase V
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Rick Liptak	Principal In Charge	12	@	$100.00	$1,200.00
Juann Ramos	Project Manager	120	@	$75.00	$9,000.00
Liz Diamond	QA/QC			$75.00	
Kris Kofoed	Project Engineer-Roadway	160	@	$50.00	$8,000.00
Robert Burns	Project Engineer-Structures	160	@	$59.00	$9,440.00
Staff	Senior Engineer			$65.00	
Namat Hosseinion	Senior Environ Planner	30	@	$75.00	$2,250.00
Staff	Associate Engineer			$47.00	
Staff	Assistant Engineer	200	@	$31.00	$6,200.00
Staff	Assoc. Env. Planner	50	@	$38.00	$1,900.00
Staff	Env. Planner/Biologist	120	@	$30.00	$3,600.00
Staff	SR CAD/Detailer	100	@	$55.00	$5,500.00
Staff	Engineering Technician	100	@	$26.00	$2,600.00

TOTAL HOURS **1,052** OTAL DIRECT LABOR **$49,690.00**

MULTIPLIERS

ESCALATION @		(of Direct Labor)	
OVERHEAD @	80.00%	(of Direct Labor + Escalation)	$39,752.00
PAYROLL ADDITIVES @	85.00%	(of Direct Labor + Escalation)	$42,236.50
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$13,167.85
		TOTAL MULTIPLIERS	**$95,156.35**

OTHER DIRECT COSTS

••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT		UNIT COST	AMOUNT
Paleontology Monitoring (PS&E)		LS		$5,000.00	
Paleontology Monitoring (Construction)	1	LS	@	$30,000.00	$30,000.00
Utility Potholing		LS		$25,000.00	
Roundabout Design Check		LS		$20,000.00	
UPRR Flagging		LS		$10,000.00	
Permits		LS		$2,000.00	
Record Search		LS		$2,000.00	

TOTAL ODC'S **$30,000.00**

SUB CONSULTANT SERVICES

COMPANY	LABOR	MULTIPLIERS	ODC's	TOTAL
Earth Mechanics Inc.				
Fehr & Peers				

TOTAL SUBCONSULTANT SERVICES

TOTAL **$174,846.35**

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Manhour Summary**	**All Phases**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS
	$291.50	$218.63	$218.63	$145.75	$171.99	$189.48	$218.63	$137.01	$90.37	$110.77	$87.45	$160.33	$75.79	
PHASE TOTALS	**62**	**976**	**82**	**1,746**	**724**	**417**	**87**	**1,308**	**3,588**	**178**	**270**	**872**	**284**	**10,594**
PHASE II	2	54	2	174	4	11	15		354			8		624
PHASE III	40	772	80	1,352	500	382	42	1,308	2,994	128	150	734	184	8,666
PHASE IV	8	30		60	60	24			40			30		252
PHASE V	12	120		160	160		30		200	50	120	100	100	1,052

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Preliminary Engineering & Environmental**	**Phase II**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
	$291.50	$218.63	$218.63	$145.75	$171.99	$189.48	$218.63	$137.01	$90.37	$110.77	$87.45	$160.33	$75.79		
Total Manhours	**2**	**54**	**2**	**174**	**4**	**11**	**15**	**354**				**8**		**624**	
TASK 1 PROJECT MANAGEMENT															
1.1 Project Coordination and PDT Meetings	2	2		2			2							8	$ 1,749
1.2 Monthly Progress Reports		2												2	$ 437
1.3 Project Schedule		2												2	$ 437
1.4 Quality Control			2											2	$ 437
1.5 Public Meetings							1							1	$ 219
1.6 Cost Accounting		2												2	$ 437
1.7 Project Files		1												1	$ 219
1.8 Permits		1												1	$ 219
TASK 2 TOPOGRAPHIC SURVEY															
2.1 Topographic Mapping															
2.1.1 Set Photo Control				2										2	$ 292
2.1.2 Topographic Mapping				2				2						4	$ 472
2.1.3 Digital Orthophotography				2										2	$ 292
2.1.4 Supplemental Field Mapping				2				2						4	$ 472
TASK 3 ENGINEERING STUDIES															
3.1 Preliminary Geotechnical Report		2		4										6	$ 1,020
3.2 Structure Prelim Foundation Report		2		4	2									8	$ 1,364
3.3 Preliminary Roadway Materials Report		2		4										6	$ 1,020
3.4 Traffic Analysis															
3.4.1 Data Collection				1										1	$ 146
3.4.2 Assumptions and Methodologies				1										1	$ 146
3.4.3 Traffic Demand Forecasting				1										1	$ 146
3.4.4 Traffic Operations Analysis				1										1	$ 146
3.4.5 Traffic Operations Report (TOR)				1										1	$ 146
3.4.6 ICE Analysis				1										1	$ 146
3.5 Preliminary Drainage Report						1								1	$ 189
3.6 Storm Water Data Report		2				2		8						12	$ 1,539
TASK 4 ENVIRONMENTAL DOCUMENT															
4.1 Technical Studies															
4.1.1 NES Revalidation Memorandum							1							1	$ 219

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Preliminary Engineering & Environmental**	**Phase II**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
4.1.2 Supplemental HPSR/FOE & ASR						1								1	$ 219
4.1.3 VIA Revalidation Memorandum						1								1	$ 219
4.1.4 CIA Revalidation Memorandum						1								1	$ 219
4.1.5 Haz Waste ISA Revalidation Memo						1								1	$ 219
4.1.6 AQA Revalidation Memorandum						1								1	$ 219
4.1.7 Air Quality Conformity Analysis						1								1	$ 219
4.1.8 Supplemental Noise Study Memo						1								1	$ 219
4.1.9 Section 4(f) De Minimus Finding						1								1	$ 219
4.1.10 WQA Revalidation Memorandum						1								1	$ 219
4.2 Environmental Documentation															
4.2.1 CEQA Categorical Exemption						1								1	$ 219
4.2.2 NEPA Revalidation Form						1								1	$ 219
TASK 5 UTILITY MAPPING															
5.1 Utility Mapping		2		4				8						14	$ 1,743
5.2 Utility Information Sheet		2		4				10						16	$ 1,924
TASK 6 RIGHT OF WAY															
6.1 Preliminary Right of Way Mapping		4		6				20						30	$ 3,556
6.2 Right of Way Requirements Map		4		6				12						22	$ 2,833
6.3 Right of Way Data Sheets		4		10				30						44	$ 5,043
TASK 7 PRELIMINARY DESIGN															
7.1 Refine/Evaluate Project Alternative				2				2						4	$ 472
7.2 Geometric Approval Drawing				4				10						14	$ 1,487
7.3 Design Exception Fact Sheets				4				10						14	$ 1,487
7.4 Structures Advanced Planning Studies		2		2	2			4			8			18	$ 2,717
7.5 Stage Construction Concept		2		6				10						18	$ 2,215
7.6 Transportation Management Plan		4		8				10						22	$ 2,944
7.7 Life Cycle Cost Analysis		4		32				40						76	$ 9,153
7.8 35% Roadway Plans															
7.8.1 Title Sheet								6						6	$ 542
7.8.2 Typical Section Sheets				2				10						12	$ 1,195
7.8.3 Layout Sheets				2				10						12	$ 1,195
7.8.4 Profile/Superelevation Sheets				2				10						12	$ 1,195
7.8.5 Drainage Sheets				4		8		10						22	$ 3,002

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Preliminary Engineering & Environmental**	**Phase II**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
7.8.6 Utility Sheets				4					10						14	$ 1,487
7.8.7 Staging and Detour Sheets				4					10						14	$ 1,487
7.8.8 Pavement Delination Sheets				4					10						14	$ 1,487
7.9 Cost Estimates		4		12					40						56	$ 6,238
TASK 8 PSR-PROJECT REPORT																
8.1 PSR-Project Report		4		24					60						88	$ 9,794

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Plans, Specs & Estimates**	**Phase III**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER - ROADWAY	PROJECT ENGINEER - STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
	$291.50	$218.63	$218.63	$145.75	$171.99	$189.48	$218.63	$137.01	$90.37	$110.77	$87.45	$160.33	$75.79		
Total Manhours	**40**	**772**	**80**	**1,352**	**500**	**382**	**42**	**1,308**	**2,994**	**128**	**150**	**734**	**184**	**8,666**	
TASK 1 PROJECT MANAGEMENT															
1.1 Project Coordination and PDT Meetings	40	180		90										310	$ 64,130
1.2 QA/QC			80					40						120	$ 22,970
1.3 Permits		40		20					40					100	$ 15,275
TASK 2 UPRR & PUC COORDINATION															
2.1 UPRR Coordination and ROE		40		60										100	$ 17,490
2.2 UPRR Concurrence Letter		24		10										34	$ 6,705
2.3 PUC Application for New Crossing		16		24										40	$ 6,996
2.2 UPRR Agreements		20		20										40	$ 7,288
TASK 3 SURVEYING/RIGHT OF WAY ENG															
3.1 Coordination with County/CT/UPRR		4		2										6	$ 1,166
3.2 Supplemental Field Survey		4		2										6	$ 1,166
3.3 Property Owner Exhibits		16		40					200					256	$ 27,401
3.4 Plats and Legal Exhibits		8		8										16	$ 2,915
3.5 RFA Document and Approvals		16		40					40					96	$ 12,943
TASK 4 UTILITY COORDINATION															
4.1 Utility Base Map		4		40					120					164	$ 17,548
4.2 Utility Potholing		16		60					80					156	$ 19,472
4.3 Utility Submittals		40		100					180					320	$ 39,586
TASK 5 GEOTECHNICAL DESIGN REPORT															
5.1 Geotechnical Field Investigation		16		8										24	$ 4,664
5.2 Laboratory Testing															
5.3 Geotechnical Engineering Analysis															
5.4 Geotechnical Reports															
5.4.1 Final Foundation Report		8		8	10									26	$ 4,635
5.4.2 Final Geotechnical Design Report		8		8										16	$ 2,915
5.4.3 Final Roadway Materials Report		8		20										28	$ 4,664
TASK 6 HYDRAULICS															
6.1 Storm Water Data Report (SWDR)		2		12		12		40	60					126	$ 15,362
6.2 Drainage Report		4		12		12		60	120					208	$ 23,961
6.3 Hydraulic Design Report		4		12		24		60	120					220	$ 26,235

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Plans, Specs & Estimates**	**Phase III**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
6.4 NPDES General Construction Permit				4		8		16	16					44	$ 5,737
TASK 7 65% SUBMITTAL															
7.1 65% Roadway Plans		60		220		160		80	540					1,060	$ 135,256
7.2 65% Structure Plans		16		40	210	76		120	490			450	120	1,522	$ 201,805
7.3 65% Quantities and Estimates		12		30	26	4		80	120			60		332	$ 43,649
TASK 8 ENVIRONMENTAL PERMITTING															
8.1 Section 1602 Streambed Alteration		8		8			2			16	50			84	$ 9,497
8.2 Section 404 Clean Water Act		8		8			2			16	50			84	$ 9,497
8.3 Section 401 Clean Water Act		8		8			2			16	50			84	$ 9,497
8.4 Environmental Mitigation															
8.4.1 Paleontological Monitoring		4		8			18			40				70	$ 10,407
8.4.2 Compensatory Mitigation Coordination		4		8			18			40				70	$ 10,407
TASK 9 95% SUBMITTAL															
9.1 95% Roadway Plans		40		180		8		140	290					658	$ 81,882
9.2 95% Structure Plans															
9.2.1 95% PS&E Structure Plans		24			80	16		60	48			80	40	348	$ 50,453
9.2.2 Independent Design Check								280	110					390	$ 48,302
9.3 95% Quantities and Estimates		16		24	20			24	48			40		172	$ 24,474
9.4 95% Draft Special Provisions		16		24	48	6		120						214	$ 32,829
TASK 10 100% DESIGN SUBMITTAL															
10.1 100% Roadway Plans		30		100		12		24	180					346	$ 42,961
10.2 100% Structure Plans		8			40	16		16	80			80		240	$ 33,907
10.3 100% Quantities and Estimates		8		8	6			8	32					62	$ 7,935
10.4 100% Special Provisions		16		6	20	4		60						106	$ 16,790
TASK 11 FINAL APPROVED SUBMITTAL															
11.1 100% Submittal		16		80	40	24		80	80			24	24	368	$ 50,441

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	Bid Support	Phase IV
PROJECT:		**DATE:**
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
	$291.50	$218.63	$218.63	$145.75	$171.99	$189.48	$218.63	$137.01	$90.37	$110.77	$87.45	$160.33	$75.79		
Total Manhours	8	30		60	60	24			40			30		252	
CONSTRUCTION BID SUPPORT															
Construction Bid Support	8	30		60	60	24			40			30		252	$ 40,927

MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Dokken Engineering	**Construction Support**	**Phase V**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

TASK	PRINCIPAL IN CHARGE	PROJECT MANAGER	QA/QC	PROJECT ENGINEER-ROADWAY	PROJECT ENGINEER-STRUCTURES	SENIOR ENGINEER	SENIOR ENVIRON PLANNER	ASSOCIATE ENGINEER	ASSISTANT ENGINEER	ASSOC. ENV. PLANNER	ENV. PLANNER/BIOLOGIST	SR CAD/DETAILER	ENGINEERING TECHNICIAN	HOURS	COST
	$291.50	$218.63	$218.63	$145.75	$171.99	$189.48	$218.63	$137.01	$90.37	$110.77	$87.45	$160.33	$75.79		
Total Manhours	**12**	**120**		**160**	**160**		**30**		**200**	**50**	**120**	**100**	**100**	**1,052**	
CONSTRUCTION SUPPORT															
Construction Support	**12**	**120**		**160**	**160**		**30**		**200**	**50**	**120**	**100**	**100**	**1,052**	**$ 144,846**

SUBCONSULTANT FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Earth Mechanics Inc.	**Geotech**	**All Phases**
PROJECT:		DATE:
Avenue 66 Grade Separation In Mecca, CA		**October 16, 2017**

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Lino Cheang	Project Manager	192	@	$80.00	$15,360.00
Andy Korkos	Principal Engineer	55	@	$68.75	$3,781.25
Wendy Drummond	Senior Geologist	60	@	$55.00	$3,300.00
S. (Raja) Pirathiviraj	Project Engineer	464	@	$41.00	$19,024.00
Kiat Kaekul	Senior Technician	96	@	$34.65	$3,326.40
Jianmin Fang	Staff Engineer	62	@	$36.30	$2,250.60
	TOTAL HOURS	**929**		TOTAL DIRECT LABOR	**$47,042.25**

MULTIPLIERS

ESCALATION @		(Rates Vary by Phase)	
OVERHEAD @	177.70%	(of Direct Labor + Escalation)	$83,594.08
PAYROLL ADDITIVES @		(of Direct Labor + Escalation)	
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$13,063.63
		TOTAL MULTIPLIERS	**$96,657.71**

OTHER DIRECT COSTS ••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT		UNIT COST	AMOUNT
1. Drilling Rig Rental	6	Day	@	$4,091.00	$24,546.00
2. CPT Rental	3	Day	@	$4,425.00	$13,275.00
3- Soil Lab Tests	1	LS	@	$7,500.00	$7,500.00
4- UPRR Permit Fees	1	LS	@	$6,500.00	$6,500.00
5- CVWD Permit Fees	1	LS	@	$1,500.00	$1,500.00
6- RR Protective Liability Insurance	1	LS	@	$1,000.00	$1,000.00
7- Drum Disposal	20	EA	@	$140.00	$2,800.00
				TOTAL ODC'S	**$57,121.00**

TOTAL **$200,820.96**

SUBCONSULTANT FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Earth Mechanics Inc.	Geotech	Phase II
PROJECT:		**DATE:**
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Lino Cheang	Project Manager	28	@	$80.00	$2,240.00
Andy Korkos	Principal Engineer	6	@	$68.75	$412.50
Wendy Drummond	Senior Geologist	14	@	$55.00	$770.00
S. (Raja) Pirathiviraj	Project Engineer	84	@	$41.00	$3,444.00
Kiat Kaekul	Senior Technician			$34.65	
Jianmin Fang	Staff Engineer			$36.30	
	TOTAL HOURS	132		OTAL DIRECT LABOR	$6,866.50

MULTIPLIERS

ESCALATION @		(of Direct Labor)	
OVERHEAD @	177.70%	(of Direct Labor + Escalation)	$12,201.77
PAYROLL ADDITIVES @		(of Direct Labor + Escalation)	
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$1,906.83
		TOTAL MULTIPLIERS	$14,108.60

OTHER DIRECT COSTS ••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT
1. Drilling Rig Rental		Day	$4,091.00	
2. CPT Rental		Day	$4,425.00	
3- Soil Lab Tests		LS	$7,500.00	
4- UPRR Permit Fees		LS	$6,500.00	
5- CVWD Permit Fees		LS	$1,500.00	
6- RR Protective Liability Insurance		LS	$1,000.00	
7- Drum Disposal		EA	$140.00	
			TOTAL ODC'S	

TOTAL $20,975.10

SUBCONSULTANT FEE PROPOSAL WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Earth Mechanics Inc.	**Geotech**	**Phase III**
PROJECT:		DATE:
Avenue 66 Grade Separation in Mecca, CA		**October 16, 2017**

DIRECT LABOR

PERSONNEL	POSITION	HOURS		RATE	AMOUNT
Lino Cheang	Project Manager	164	@	$80.00	$13,120.00
Andy Korkos	Principal Engineer	49	@	$68.75	$3,368.75
Wendy Drummond	Senior Geologist	46	@	$55.00	$2,530.00
S. (Raja) Pirathiviraj	Project Engineer	380	@	$41.00	$15,580.00
Kiat Kaekul	Senior Technician	96	@	$34.65	$3,326.40
Jianmin Fang	Staff Engineer	62	@	$36.30	$2,250.60

TOTAL HOURS **797** OTAL DIRECT LABOR **$40,175.75**

MULTIPLIERS

ESCALATION @		(of Direct Labor)	
OVERHEAD @	177.70%	(of Direct Labor + Escalation)	$71,392.31
PAYROLL ADDITIVES @		(of Direct Labor + Escalation)	
PROFIT (FIXED FEE) @	10.0%	(of Direct Labor + Escalation + Overhead + Payroll Additives)	$11,156.81

TOTAL MULTIPLIERS **$82,549.11**

OTHER DIRECT COSTS ••• Billed at Actual Cost •••

ITEM	QUANTITY	UNIT		UNIT COST	AMOUNT
1. Drilling Rig Rental	6	Day	@	$4,091.00	$24,546.00
2. CPT Rental	3	Day	@	$4,425.00	$13,275.00
3- Soil Lab Tests	1	LS	@	$7,500.00	$7,500.00
4- UPRR Permit Fees	1	LS	@	$6,500.00	$6,500.00
5- CVWD Permit Fees	1	LS	@	$1,500.00	$1,500.00
6- RR Protective Liability Insurance	1	LS	@	$1,000.00	$1,000.00
7- Drum Disposal	20	EA	@	$140.00	$2,800.00

TOTAL ODC'S **$57,121.00**

TOTAL **$179,845.86**

SUBCONSULTANT MANHOUR WORKSHEET SUMMARY

COMPANY:	SCOPE OF WORK:	PHASE:
Earth Mechanics Inc.	Geotech	All Phases
PROJECT:		**DATE:**
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

TASK	PROJECT MANAGER	PRINCIPAL ENGINEER	SENIOR GEOLOGIST	PROJECT ENGINEER	SENIOR TECHNICIAN	STAFF ENGINEER	HOURS
	$244.38	$210.01	$168.01	$125.24	$105.85	$110.89	
PHASE TOTALS	**192**	**55**	**60**	**464**	**96**	**62**	**929**
PHASE II	28	6	14	84			132
PHASE III	164	49	46	380	96	62	797
PHASE IV							
PHASE V							

SUBCONSULTANT MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Earth Mechanics Inc.	Geotech	Phase II
PROJECT:		**DATE:**
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

TASK	PROJECT MANAGER	PRINCIPAL ENGINEER	SENIOR GEOLOGIST	PROJECT ENGINEER	SENIOR TECHNICIAN	STAFF ENGINEER								HOURS	COST
	$244.38	$210.01	$168.01	$125.24	$105.85	$110.89									
Total Manhours	28	6	14	84										132	
TASK 3 ENGINEERING STUDIES															
3.1 Preliminary Geotechnical Report	12	2	6	28										48	$ 7,867
3.2 Structure Prelim Foundation Report	8	2	4	28										42	$ 6,554
3.3 Preliminary Roadway Materials Report	8	2	4	28										42	$ 6,554

SUBCONSULTANT MANHOUR WORKSHEET

COMPANY:	SCOPE OF WORK:	PHASE:
Earth Mechanics Inc.	Geotech	Phase III
PROJECT:		**DATE:**
Avenue 66 Grade Separation in Mecca, CA		October 16, 2017

TASK	PROJECT MANAGER	PRINCIPAL ENGINEER	SENIOR GEOLOGIST	PROJECT ENGINEER	SENIOR TECHNICIAN	STAFF ENGINEER								HOURS	COST
	$244.38	$210.01	$168.01	$125.24	$105.85	$110.89									
Total Manhours	164	49	46	380	96	62								797	
TASK 5 GEOTECHNICAL DESIGN REPORT															
5.1 Geotechnical Field Investigation	4			24	96									124	$ 14,144
5.2 Laboratory Testing	4	2		16		8								30	$ 4,288
5.3 Geotechnical Engineering Analysis	36	8	8	100										152	$ 24,346
5.4 Geotechnical Reports															
5.4.1 Final Foundation Report	34	13	13	70										130	$ 21,990
5.4.2 Final Geotechnical Design Report	38	13	13	72										136	$ 23,218
5.4.3 Final Roadway Materials Report	34	13	12	70										129	$ 21,822
TASK 7 65% SUBMITTAL															
7.2 65% Structure Plans	14			28		54								96	$ 12,916