

ROADS
General Scope of Work
“ON-CALL” Engineering Services

DESCRIPTION OF THE ARCHITECT-ENGINEER (A/E) SERVICES

The requested services consist, in general, of preparation of Project Reports, final Plans, Specifications and Engineer’s Estimate (PS&E) and Plans Examination for the construction of new or rehabilitation of roadways. Certain related Support Services as described herein may also be requested. Wherever in Agreement or in this Scope of Work, the County is named as the approving, or directing authority, County shall also mean the Director, RDMD, or the Director’s designee. A/E tasks may include, but not be limited to, the following:

I. PROJECT REPORT

The A/E may be required to prepare a Project Report in conformance with the County of Orange Project Report Format. The Project Report shall include the A/E’s reviewing of existing documents, visiting PROJECT site, identifying and evaluating conceptual design issues based on existing and ultimate conditions, preparing preliminary calculations and cost estimates, identifying access and detour concepts and determining all major issues affecting budget, construction phasing, prioritization and schedule. Also, the report shall recommend the most practical, feasible and cost effective solution and justify the chosen alternative. To ensure proper project development, A/E shall attend and conduct PROJECT status meetings with staff and with others as required to discuss status and/or details of PROJECT.

II. PLANS, SPECIFICATIONS & ESTIMATES (PS&E)

The A/E, as directed by COUNTY, shall prepare the plans, specifications and final design calculations and estimates as necessary for the PROJECT. Engineering design and drafting shall be in accordance with instructions, criteria and standards set forth by the Director of RDMD or Director’s designee. Also, A/E shall attend and conduct PROJECT status meetings with staff as directed and with others as required to discuss status and/or other details of PROJECT. Typical items during this phase include, but are not limited to, the following:

- A. Utilities:** Unless directed otherwise, COUNTY will provide initial and second (1st and 2nd) utility notice coordination with the utility companies within limits of PROJECT and will determine prior rights and future needs. A/E shall ensure that PROJECT’s final design is compatible with all utilities in PROJECT area to be installed, relocated, adjusted or otherwise modified, including adding utility relocation windows in the construction specifications as necessary. A/E shall also provide utility dispositions identifying existing utility locations above and below ground by station, offset and elevation and describing their disposition. COUNTY will issue Notice to relocate to utilities requiring such.
- B. Rights-of-Way:** The A/E will identify R/W needs for the PROJECT as necessary including preparing maps, legal descriptions, title reports, final record maps and other necessary

documents for the identification of existing and proposed rights-of-way and easements for slope, drainage, access and temporary construction.

- C. Geotechnical:** If needed, the A/E shall perform geotechnical investigations and incorporate any findings and recommendations into the final design.
- D. Structural Design:** The A/E shall perform structural design, calculations and drawings for retaining walls, box culverts, etc. All structural calculations shall conform to the OCRDMD standards and guidelines.
- E. Hydrology/Hydraulics:** The A/E shall perform a complete hydrologic evaluation of all contributing drainage areas, with recommendations on structures and pipe sizes for interim and ultimate conditions. The evaluation shall include a determination of street and system capacity, and catch basin location, lengths and hydraulic analysis.
- F. Traffic/Transportation:** The A/E as directed may prepare Traffic Signal, Striping, Signing and Detour Plans for the PROJECT.
- G. Environmental:** Pertinent items from certified EIRs and/or any Mitigation Program that have an impact on the final design shall be evaluated and incorporated into the final design. If needed, The A/E shall perform necessary environmental assessments and include the findings in the PROJECT.
- H. Landscaping:** The A/E as directed shall plan, design and incorporate into the plans and specifications all landscape and irrigation services necessary for road projects such as medians, side slopes, replacement of existing vegetation, etc.
- I. Drafting:** All drafting of plans shall be performed in accordance with Orange County drafting standards, format and conventions. Final Plans shall be computer-drafted to be compatible with County's Microstation computer system for standard 22" X 34" plan. The final plan submittal shall include one set of Engineer-signed hard copy plans on mylar sheets, and one full set of Microstation compatible computer diskettes of the plan sheets. Final drawings shall be stamped and signed by California registered professional engineers.
- J. Quantity Calculations:** All quantities shown for bid items used in the construction contract documents and cost estimate shall include easy to follow backup calculations demonstrating how the quantities were determined. Quantity calculations shall be accompanied with sketches, diagrams and dimensions necessary to allow them to be independently used by field inspectors.
- K. Cost Estimate:** The A/E shall prepare a detailed Cost Estimate using COUNTY format, which includes all bid items described within the "Specifications". The estimate shall use the same nomenclature and units of pay as indicated in the Specifications. The estimate shall reflect current bid prices based on similar projects and the design engineer's own judgement.
- L. Specifications:** The A/E shall use the OCRDMD Specifications Library and "Boiler Plates" (to be provided), and shall prepare the PROJECT's contract specifications documentation to conform to the current County format.

III. PLANS EXAMINATION

The A/E as required may provide a third party, partial or complete review services for processing final bid packages for County's road improvement projects. The package, in general, is comprised of engineering plans, quantity calculations, cost estimates, design, specifications, permits, right-of-way documents, environmental document mitigation measures and survey documents etc. Also, the A/E shall attend and conduct PROJECT status meetings with staff as directed and with others as required to discuss status and/or other details of PROJECT's review.

IV. SUPPORT SERVICES

The A/E as required will prepare and process related services to either accomplish the above tasks or as stand-alone services. This may include, but not be limited to, the following services:

- A. **Survey:** Road projects may require surveying of existing topography, and locating and identifying existing facilities. Professional surveying services include a survey report and electronic files that can be used for design purposes. The requested survey may include topographic survey, cross section, aerial photographs, etc.
- B. **Geotechnical:** The A/E as required shall review past pavement, soil and geology investigations, discuss past findings as impacting the subject roadway project, and independently perform design-needed geotechnical services including development and implementation of a field investigation plan involving any field data collection as deemed necessary, development of a laboratory testing program to conduct soils surface and subsurface characterization tests as applicable to the needs of the project, development of seismic analysis and design criteria in accordance with code requirements, development of pavement condition studies to provide recommendations concerning life cycle costs and rehabilitation/reconstruction methods, and recommendations for the design of foundations, embankment and excavation procedures, settlement analysis, lateral, active, and passive earth pressures, de-watering, landslide mapping, slope stabilization, soil corrosion, erosion, sedimentation control and other applicable design criteria as deemed necessary.
- C. **Traffic/Transportation Reports:** The A/E as required will prepare under the supervision of a Registered Traffic Engineer by the State of California a report typically divided into the following sections:
 - 1. Project Description
 - 2. Existing Conditions
 - 3. Interim Conditions
 - 4. Future Conditions
 - 5. Project Trip Generation
 - 6. Intersection Analysis
 - 7. Summary of Impacts
 - 8. Mitigation(s)

The report shall, in general, include a discussion of the following:

1. Link analysis of roadway(s) using existing Average Daily Traffic (ADT) values, projected ADT, County of Orange's current Traffic Flow Map and/or approved A/E analytical methods to establish widening/upgrading needs.
 2. Intersection analysis using OCTA and County approved ICU methodology, or approved HCM methodology, to identify peak periods, existing and projected Levels of Service (LOSs) and need for turn lanes and interim roadways and their design if needed.
 3. Signal phasing: An analysis done for intersections with split signal phasing or intersections with optional through/left or through/right lanes to reflect the true distribution of the approach traffic into these optional lanes.
 4. Adverse impacts created by the PROJECT and a detailed description of mitigation measures proposed by the project and a rough cost estimates of all the recommended mitigation measures.
- D. **Environmental:** The A/E shall identify PROJECT impacts and describe them in the associated initial studies for the County/Planning & Development Services/Environmental Planning Division to review and make recommendations. A/E may then be requested to prepare the appropriate environmental documentation as listed below and consistent with the requirements of the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA) and/or other applicable requirements.
1. Environmental Site Assessments (ESA) Phase I
 2. Categorical Exemption
 3. Negative Declaration (ND)
 4. Negative Declaration with conditions
 5. Focused Environmental Impact Report
 6. Environmental Impact Report (EIR)
 7. Federal Environmental Impact Statement (EIS)
 8. Acoustics (noise analysis/study)
 9. Other as needed
- E. **Permits/Approvals:** The A/E services may be required to coordinate design efforts with the affected entities, agencies and/or property owners. Identification, processing and approval of permits may include, but not be limited to, the following:
1. State Fish and Game
 2. Regional Water Quality Control Board
 3. Coastal Commission
 4. State Lands Commission
 5. Caltrans
 6. Coast Guard
 7. Corps of Engineers
 8. City(ies)/County(ies)
 9. Railroads
 10. Air Quality Management District (AQMD)
 11. Other

A more detailed scope of services will be developed following selection of the A/E consultant.

V. STATEMENT OF QUALIFICATIONS (SOQ) SUBMITTAL REQUIREMENTS

The submittal requirements are outlined in the RFQ for the on-call engineering service that is a companion document to this. Please note that the information contained within the SOQ shall be submitted in the order and to the format as described within the RFQ.

All STATEMENT OF QUALIFICATIONS for **ROAD** are due by **4:00 p.m. (Local Time) on February 14, 2006**, and shall be mailed or hand delivered to:

Mr. Ignacio Ochoa, P.E.
Manager, RDMD/Road Division
300 N. Flower Street, 7th Floor
Santa Ana, CA 92702
(714) 834-3484