

Attachment 8 – Mechanical Engineering

A. Phase 1, Preliminary Design:

The CONSULTANT shall:

1. Ascertain the requirements for each project through a meeting with the Capital Projects Division Manager or his/her designated representative and a review of an existing schematic layout of each project.

2. Review the progress and content of the drawings and cost estimate every two (2) weeks in meetings with the COUNTY throughout the course of each project, and prepare brief minutes thereof. CONSULTANT shall monitor and keep COUNTY informed regarding the impact of design issues on the project budget. Upon the request of the COUNTY, CONSULTANT shall incorporate into the design, such reasonable design and operations changes as the COUNTY deems appropriate as a result of the COUNTY's review process and impact on the project budget or opinion of probable construction cost. If CONSULTANT disagrees with the COUNTY's request, such disagreement must be registered in writing, and the COUNTY will attempt to reconcile such disagreement. If it is impossible to make a reconciliation, the written disagreement will become part of each project's record. However, CONSULTANT shall then comply with the COUNTY request.

3. Confirm existing building systems, including structural, electrical, mechanical, plumbing, communications, telephones, and computers through visual observations, review of record documents, and discussions with the General Services Department Building Maintenance Superintendent and inform the COUNTY of potential impacts to the project. CONSULTANT shall not be responsible for unknown conditions that could not be reasonably identified through the methods described herein. (COUNTY's floor plans provided to CONSULTANT may not show all of the exact wall locations and functions indicated on those plans.)

4. Design the project to conform with the requirements of the Office of Statewide Health Planning and Development (OSHPD), Board of Corrections (BOC) and California State Fire Marshal (CSFM) or other review agency having jurisdiction,, if applicable to a specific project, and the requirements of applicable building, seismic, and health codes applicable to all projects.

5. Prepare a detailed design development (preliminary) opinion of probable construction cost which shall identify the construction components, building systems, and requirements of the project.

6. The opinion of probable construction cost shall be projected to the anticipated mid-point of construction and include material and labor unit costs, overhead, profit, insurance, taxes, general requirements, supervision, and difficulty factors, and be submitted in the Construction Specifications Institute / Uniform Construction Index (CSI/UCI) format].

7. The opinion of probable construction cost shall identify escalation and design contingency amounts, which must be approved by the COUNTY.

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8. Not proceed with the next Phase unless expressly authorized in writing by the COUNTY.

B. Phase 2, Construction Documents:

The CONSULTANT shall:

1. Unless otherwise approved in advance, prepare the final working drawings from the design development (preliminary design), as modified by the COUNTY, on 24" by 36" sheets and technical specifications on 8-1/2" by 11" pages setting forth in detail the work to be done, the materials, workmanship, finishes, and equipment required for the mechanical and other components of construction necessary to provide the COUNTY a complete and functional project for its intended purpose within the requirements of this Agreement. The COUNTY will prepare the COUNTY's standard plan title sheet.

2. Keep COUNTY abreast of design's impact on the project budget. Upon the request of the COUNTY, CONSULTANT shall incorporate into the design such reasonable changes as the COUNTY deems appropriate as a result of the COUNTY'S review processes and impact on the project budget or opinion of probable construction cost. Assist COUNTY in developing base bid and additive bid item schedules.

3. Review, comment, and/or make recommendations on the form and content of the COUNTY's General Conditions, Special Conditions, and Bid Form as they apply towards this project.

4. In addition to the technical specifications, prepare special or supplemental conditions for the construction contract. The COUNTY will package the CONSULTANT's documents with the COUNTY's approved General Conditions, Notice to Contractors calling for bids, the Bid Form, and related documents to complete the construction contract and bid specifications. Specifications for asbestos abatement, if required for a specific project, shall be incorporated by the COUNTY into the bid package.

5. Submit to the COUNTY the projected and final construction opinion of probable construction cost in the CSI/UCI format for the base bid work and alternate bid items. The opinion of probable construction cost shall be projected to the midpoint of the scheduled construction period to be scheduled by the COUNTY. Differences between the design development (preliminary) and final opinion of probable construction cost shall be explained in writing.

6. Verify the reasonableness of the estimated construction period for construction contract bidding purposes as provided by the COUNTY representative and identify long delivery times of materials and equipment which will control length of construction contract.

7. Include alternate bid items (preferably additive), not as separate design drawings

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but incorporated into the original construction drawings, to allow construction element choices or cost options by the COUNTY. The basis of award may be on the base bid only, or the base bid plus additive alternates. Additive bid items may be necessary so that the COUNTY will be able to award a contract not exceeding available construction funds.

8. If required for the construction of a project, propose and submit a recommended testing and inspection list for materials identifying type, quantity, frequency, schedule, and cost estimate of tests to be performed by an independent testing firm during construction.

9. When the scope of work of the project consists of only mechanical and/or plumbing work, submit ten (10) copies of the plans, specifications, and opinion of probable construction cost to the COUNTY for approval; otherwise submit original plans, specifications and demand calculations upon request for check set printing.

10. If required by approval agencies, such as OSHPD and the CSFM, for the construction of each project, submit to the COUNTY in the appropriate agency forms, project background information and recommended testing and inspection list for materials to be used for each project identifying type, quantity, frequency, and schedule. Submit required numbers of sets of plans, specifications, and other documents required by approval agencies to the COUNTY.

11. Modify plans as required to obtain plan check approval. (The OSHPD building permit form shall be completed by the COUNTY, and shall be assisted by the CONSULTANT.)

12. Deliver to the COUNTY two (2) weeks prior to the advertising date (which will be determined by COUNTY), the final completed original drawings and specifications for COUNTY printing and distribution of bid sets to interested contractors. The original drawings and specifications index sheet shall be stamped by a seal with CONSULTANT and subconsultants' license numbers and/or signed in accordance with the California Business and Professions Code.

13. Submit a list of general and specialty contractors who may be interested in bidding on this project.

14. Attend the pre-bid conference scheduled by the COUNTY.

15. Submit to the COUNTY for review and approval any addenda deemed necessary. Addenda, if any, shall be submitted no later than seven (7) working days prior to the scheduled bid opening.

16. Assist the COUNTY in evaluating the base bids and alternate bid items received.

17. Delete or otherwise change portions of the construction work at the request of

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the County if the lowest bid proposal for the construction contract exceeds the COUNTY approved opinion of probable construction cost (which will include the CONSULTANT's design contingency amount approved by the COUNTY) by 10% or more, and if the COUNTY rejects all bids. The CONSULTANT shall revise the plans and specifications to comply with such modifications and shall assist the COUNTY in obtaining new proposals from contractors at no additional cost to the COUNTY. Modifications shall be completed on a time schedule commensurate with the scope of the change and as set forth by the COUNTY.

C. Phase 3 A, Construction Observation:

The CONSULTANT shall:

1. Attend the preconstruction conference scheduled by the COUNTY.
2. Provide construction observation including but not limited to:
 - a. Making recommendations to the COUNTY on all claims of the COUNTY or construction contractor (hereinafter called "CONTRACTOR") and all other matters relating to the execution and progress of work, including interpretation of the CONSULTANT's contract documents.
 - b. Except for color boards, within seven (7) working days of COUNTY's request, reviewing and making recommendations for samples, schedules, shop drawings, and other submissions for general conformance with the design concept of the project and for general compliance with the plans and specifications and information given by the CONSULTANT's contract documents and as directed by the COUNTY representative.
 - c. Within two (2) working days of COUNTY's request for information (RFI), responding to the COUNTY Inspector of Record (IOR) or CONTRACTOR, through the COUNTY Construction Engineer with information and/or drawings needed from CONSULTANT in order to clarify the intent of the construction contract plans and specifications of the project. CONSULTANT shall review CONTRACTOR's cost proposals for all change orders associated with any additional work as may be necessary by the RFI clarification.
 - d. Recommending and assisting in the preparation of necessary change orders, with supporting documentation, calculations and opinion of probable construction cost, for review and issuance of change orders by the COUNTY Construction Engineer to obtain appropriate agency acceptance and approval. Where the change order arises as a result of an error or omission of the CONSULTANT, the CONSULTANT shall not be compensated as an extra service for time spent or cost incurred in efforts connected with the correction thereof. Any changes to the construction contract shall be made only with written COUNTY approval.

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(1) Drawings and work necessary to delineate the COUNTY's changes in scope of the construction contract or to make modifications as directed by the Board of Supervisors shall be made as directed by the Construction Engineer and shall be compensated as an Extra Service.

(2) Where the change order arises as a result of an error or omission of the CONSULTANT, the CONSULTANT shall not be compensated as an Extra Service for time spent or cost incurred in efforts connected with the correction thereof. The costs of rework of installed work shall be assessed upon the CONSULTANT's contract payments.

(3) Any changes to the construction contract shall be made only with written COUNTY approval.

3. Assisting COUNTY, at COUNTY's express, written authorization, with any claim resolution process involving CONTRACTOR and COUNTY as specified hereunder, including serving as a witness in connection with any public hearings or legal proceeding, including dispute resolutions required by law.

The parties recognize that this clause is provided as a means of expediting resolution of claims among the CONTRACTOR, COUNTY, and CONSULTANT. However, it is understood the CONTRACTOR is not an intended third party beneficiary of this clause.

Compensation for these services under this paragraph, number 3, shall be provided under the Extra Services provisions under Article V., Section B. and Article V., Section C. of this Agreement and shall be computed and invoiced at hourly rates, not to exceed CONSULTANT's normal and customary hourly rates for such services, to be negotiated with COUNTY at the time COUNTY authorizes these services, subject to the following:

a. COUNTY may believe that CONSULTANT's work under this Agreement is connected with errors, or omissions, or problems related to a claim. As a result and upon notice of same by COUNTY, CONSULTANT's payment request for such extra services shall be held in suspense by COUNTY until final determination in accordance with Article IX, "Errors or Omissions Claims and Disputes" of this agreement, or by a court of law of the proportion that CONSULTANT's fault bears to the fault of all parties concerned.

b. Such amounts in suspense, proportionate to the final determination that CONSULTANT's fault bears to the fault of all parties concerned, shall not be paid to CONSULTANT. However, the remainder of such amount held in suspense shall be paid to CONSULTANT when after a final determination in Accordance with Article IX, "Errors or Omissions Claims and Disputes" of this agreement, or by a court of law, is made, CONSULTANT submits a proper invoice to Department of Public Works, which shall have a maximum of five (5) working days to evaluate and approve the invoice before submitting it to the COUNTY Auditor-Controller/Treasurer-Tax Collector, who shall have an additional forty (40) calendar days from receipt of invoice to issue

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payment.

4. At intervals appropriate to the stage of construction, or as otherwise deemed necessary by CONSULTANT, visit the site of the project as necessary to become familiar generally with the progress and quality of the work and to determine that the work is proceeding in general accordance with the contract documents. CONSULTANT shall not be required to make exhaustive or continuous on-site inspections but shall give direction to the Construction Inspector as hereinafter more specifically provided. CONSULTANT shall not be responsible for the CONTRACTOR's failure to carry out the construction work in accordance with the contract documents, however, CONSULTANT shall immediately advise the COUNTY Representative of any known or observed deviation from the contract documents.

5. During the CONSULTANT's visits to the site, keep the COUNTY informed through written reports as to the progress of the work, endeavor to guard the COUNTY against defects and deficiencies of the work of contractors, and may recommend that the COUNTY reject work as failing to conform to the contract documents.

6. Conduct site visits which shall include but not be limited to on-site inspections to determine the dates of substantial completion and final completion and to recommend acceptance to the COUNTY, for the filing of the notice of completion and issuance of final certificate for payment.

7. Submit to COUNTY "verification" and "change order" forms required by OSHPD during construction.

8. Conduct a "project shakedown" and staff orientation for the completed project.

9. Review and forward two (2) copies of Operations and Maintenance Manuals to be furnished by the CONTRACTOR.

10. Inform the COUNTY of all written guarantees required of the CONTRACTOR by the CONSULTANT's technical specifications or special conditions.

11. Return to COUNTY all plans borrowed from COUNTY by CONSULTANT.

12. Require through the construction contract specifications that blue-line "record drawings" be prepared by the CONTRACTOR and submitted to the COUNTY for acceptance by the construction inspector and CONSULTANT. However, upon completion of the project, CONSULTANT shall transfer the CONTRACTOR's "record drawing" changes onto the CONSULTANT's original drawings or .003" mylar (matte one or both sides) reproductions of the original drawings. The complete "record drawing" set shall remain at all times the property of the COUNTY. Changes shall be identified by cloud markings and shall identify date of change and its source, such as from addenda, change order, or clarification.

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13. If construction plans have been prepared with a CAD system, record drawings in the form of .dxf or .dwg files shall be furnished and delivered to Department of Public Works in addition to mylar reproduces. Such .dxf or .dwg files shall be furnished on either 100MB 'Zip' disks, 3.5" DS/HD disks, or compact disk (CD-ROM).

14. Participate fully, aligned with and not adverse to the interests of the COUNTY, upon request, in the early settlement discussions of construction claims resolution issues. In the event such participation is requested of CONSULTANT, CONSULTANT shall be paid for such services as provided under the Extra Services provisions under Article V., Section B. and Article V., Section C. of this Agreement for the time spent in such participation. All provisions of Article III., Section C., Paragraph 3. of this Agreement shall apply to CONSULTANT's participation in any early settlement discussions required by this Section. Participation in this process does not preclude the COUNTY's right to make an error and omissions claim against the CONSULTANT.

15. No final payment to the CONSULTANT will be issued until the services of this Phase has been performed and errors and omissions attributed to the CONSULTANT have been resolved.

D. Construction Observation:

1. COUNTY may not have sufficient staff available at the time of construction to provide onsite construction inspection or construction testing required to ensure the CONTRACTOR's compliance with construction plans and specifications. At the sole option of COUNTY, and upon written authorization and direction as to scope of services, CONSULTANT may be required to perform construction inspection and construction testing services for the Capital Projects. It is understood that COUNTY may delete any or all of construction inspection and construction testing from CONSULTANT's services at any time prior to award of the construction contract and perform the construction inspection and testing with its own forces.

2. The CONSULTANT shall:

a. Provide an Inspector of Record (IOR) who will provide full time or part time inspection of the projects, as agreed in writing by the CONSULTANT and the COUNTY. The IOR shall be completely familiar with the project plans and specifications and knowledgeable and experienced in the type of construction involved.

b. Provide all required quality control testing required during construction. The testing shall be performed by a qualified, certified testing laboratory.

3. Based upon his/her observations of the progress of construction and the CONTRACTOR's application for payment, and the IOR's recommendation, determine on a monthly basis, the amount owing to the CONTRACTOR under the contract documents and shall recommend, through appropriate certificates, payments on such amounts. Such certificates shall constitute a representation to the COUNTY that the work has progressed to the point indicated and that to the best of the CONSULTANT's

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knowledge information and belief, the quality of the work is in accordance with the contract documents.