Article II

STATEMENT OF WORK

GENERAL

A. GENERAL DESCRIPTION OF REQUIRED SERVICES

The CONSULTANT shall perform professional and technical engineering and environmental services to prepare preliminary engineering plans, estimates, environmental studies, advanced planning studies (APS), a value analysis study and report, the preparation of Draft and Final Project Reports (PR), Modified Access Report/New Connection Report (MAR), and Plans, Specifications and Estimates (PS & E) for the Project as described below. The Project Report and Environmental Documents will be used by CALTRANS to secure project approval and environmental clearance for the Project. The PS & E will be used by CALTRANS to advertise, award and administer a construction contract to build the Project.

1. Project Location, Description and Purpose

The existing Apache Trail Road interchange, located approximately 1.8 Km east of the Fields Road Interchange and 2.78 Km west of the Main Street Interchange, is operating above capacity, with traffic backing up on the off-ramps and onto the freeway.

The proposed Project will consist of constructing a new interchange between the existing interchanges at Apache Trail Road and Main Street on Interstate 10 in Cabazon in Riverside County. Proposed improvements may include, but not limited to the following:

a. Construction of auxiliary lanes from new IC to existing Apache Trail and Main Street IC’s
b. Widening of Apache Trail Road
c. Realignment and widening of Seminole Road
d. Widening and realignment of the entrance and exit ramps in both directions
e. Signalization at the ramp termini, and at the Apache Trail Road/Seminole Road street intersection.
f. Possible reconstruction of ramps at the Apache Trail Road Interchange.

The proposed Project improvements would alleviate the congestion at the existing interchanges, reduce local street congestion, and accommodate the projected growth in the area.

2. Work Phases

Work to be performed shall consist of two phases:

Phase I: consists of, but is not limited to, the preparation of field surveys; technical studies, designs, reports and documents for the project approval and environmental clearance for the Project; Preliminary Engineering (including the study of alternatives); environmental technical studies; a Value Analysis study and report; Modified Access Report/New Connection Report (MAR), Draft and Final Project Reports; and public hearing coordination, participation and record.

An Initial Study/Environmental Assessment (IS/EA) will be prepared for the Project. It is expected that the results of the IS/EA will substantiate CALTRANS’ determination that will lead to a Negative Declaration (ND) and Finding of No Significant Impact (FONSI) per CEQA and NEPA requirements as implemented through CALTRANS and FHWA regulations.

Upon completion of Phase I work, CALTRANS shall evaluate the Phase I work products, and reserve the right to terminate this Agreement, or has the option to retain the CONSULTANT to perform work for Phase II, identified below, which may consist of a revised scope of work and cost.
A proposal to accommodate changes made necessary by the results and work products of Phase I. It is anticipated that Phase II shall begin just prior to or immediately after the completion and approval of Phase I. Under no circumstances shall the CONSULTANT proceed with Phase II without the express written approval of CALTRANS’ Contract Manager.

Phase II: consists of, but is not limited to, the preparation of Plans, Specifications and Estimates (P S & E) for the design of a new interchange and the necessary improvements, from findings of Phase I. Work includes, but is not limited to surveys, highway geometrics, grading, paving, drainage, structural design, traffic signing, delineation, and signalization, erosion control, and construction traffic control.

The detailed Work Breakdown Structure (WBS) activities for both Phases described are listed and appended as Attachment A to this Statement of Work.

B. GENERAL CONDITIONS AND REQUIREMENTS

1. All deliverables shall be in metric, except where noted. CONSULTANT will utilize the results of the Project Report and the approved general GAD’s as the basis for the PS&E. Any changes proposed by the CONSULTANT shall be brought to the attention of CALTRANS.

2. CONSULTANT shall carry out the instructions as received from CALTRANS’ Contract Manager and shall cooperate with CALTRANS, FHWA and any other consultants working on the Project.

3. CONSULTANT shall be a member of, and attend meetings of, the Project Development Team (PDT) and PDT Subcommittee established to guide the study in accordance with CALTRANS’ Project Development Procedures Manual (PDP). CONSULTANT shall serve as staff to the PDT in arranging meetings, providing discussion material, and keeping minutes.

4. CONSULTANT shall handle public and citizen contacts as needed in conformance with normal CALTRANS’ study procedures. CONSULTANT shall arrange for and conduct open houses and public hearings. CONSULTANT shall be responsible for providing technical information, exhibits, documentation of the hearing in recordings, transcripts of court reporter’s notes and reports, and providing reports on open houses. CONSULTANT shall prepare and place newspaper advertisements of the public hearing. CALTRANS will review and approve newspaper advertisements.

5. CONSULTANT shall hold open houses as needed throughout the preliminary engineering and environmental document phases of the Project. The first of these meetings shall be held within one (1) month of initiation of studies by CONSULTANT. Remaining open houses will be conducted as needed. These open houses will be conducted to identify areas of interest and economic, social and environmental issues as perceived by the citizens in the area, and shall be held at accessible locations and at times convenient for the interested parties. CONSULTANT shall notify interested parties of the open houses through press releases and direct mailing to area property owners. CONSULTANT will review and obtain approval from CALTRANS prior to press releases and the direct mailing.

6. CONSULTANT may establish direct contact with governmental regulatory and resource agencies, including, but not limited to: the U.S. Department of Agriculture Soil Conservation Service; Department of the Interior; Reclamation Boards (CALTRANS or Federal); U.S. Fish and Wildlife Service; California Fish and Game Resource Protection; Regional Water Quality Control Board; Department of Health Services; and U.S. Army Corps of Engineers, for the purpose of obtaining information, expertise and assistance in developing baseline data and resource inventories. CONSULTANT shall maintain a record of all such contacts and shall transmit copies of the contacts and records promptly to CALTRANS on a regular basis. CALTRANS will participate in
and/or provide prior approval for any and all intra-agency scoping meetings, or meetings to assess resource significance, or to discuss or develop assessment strategies or mitigation proposals. CONSULTANT shall not commit CALTRANS to any mitigation measures or mitigation compensation.

7. CALTRANS will retain responsibility for all final consultation, both formal and informal, with local, CALTRANS and Federal agencies regarding project mitigation and compensation proposals. CONSULTANT will be available to provide advice and to participate in such consultations at the request of CALTRANS.

8. CONSULTANT shall be responsible for reproduction, binding, circulation, and distribution of all studies, documents, reports, and engineering drawings pursuant to the requirements of this Statement of Work. CONSULTANT shall prepare newspaper advertisements as required by CALTRANS’ environmental process.

9. It is not the intent of the foregoing paragraph to relieve the CONSULTANT of his professional responsibility during the performance of this contract. In those instances where the CONSULTANT believes a better design or solution to the problem is possible, he shall promptly notify CALTRANS of these concerns, together with reasons therefore.

10. CONSULTANT has total responsibility for the accuracy and completeness of the plans and related designs, specifications and estimates prepared for the Project and shall check all such material accordingly. CONSULTANT shall independently check and identify the engineer and checker for all such material prior to any submittal. The environmental document will be reviewed by CALTRANS for conformity with CALTRANS’ environmental requirements, the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The PS & E will be reviewed by CALTRANS for conformity with the Project Report, constructibility, and consistency with adjacent highway segments. Reviews by CALTRANS do NOT include detailed review or checking of the design of major components and related details or the accuracy with which such designs are depicted on the plans. The responsibility for accuracy and completeness of such items remains solely that of the CONSULTANT. The CONSULTANT or his sub-consultants shall not incorporate in the design, any materials or equipment of sole source origin without written approval of CALTRANS.

11. The plans, designs, specifications, estimates, calculations, reports and other documents furnished under this Statement of Work shall be of a quality acceptable to CALTRANS. The criteria for acceptance shall be a product of neat appearance, well-organized, technically and grammatically correct, checked and having the maker and checker identified. The minimum standard of appearance, organization and content of the drawings shall be that of similar types produced by CALTRANS.

12. All elements of the Project will be considered for Value Engineering studies. To this end, the CONSULTANT shall examine the various design elements of this design segment and submit an informal written statement or memorandum addressing those elements where it appears significant savings or other advantages can be realized. The statement shall be sufficiently informative to enable CALTRANS’ Contract Manager to determine whether to undertake a detailed Value Assessment study or possibly initiate immediate design changes where the value of the change is apparent without the need of detailed study and analysis.

13. The CONSULTANT shall throughout the life of the contract retain within CONSULTANT’s firm, or through qualified sub-consultants, a staff qualified to perform each of the tasks listed in this article.
14. The page identifying preparers of engineering reports, the title sheet for specifications and each sheet of plans, shall bear the professional seal, certificate number, registration classification, expiration date of the certificate, and signature of the professional engineer(s) responsible for their preparation.

15. The CONSULTANT shall maintain a set of project files that are indexed in accordance with CALTRANS’ Project Development Uniform File System and hand over all project files to CALTRANS at the completion of the project.

16. CALTRANS reserves the right to approve all project scope of services changes. Any changes resulting from the addition, deletion, or revisions to the Statement of Work will not be made without prior written approval from CALTRANS. The CONSULTANT shall not be compensated for making any changes to the Statement of Work other than those approved in writing by CALTRANS.

17. CONSULTANT shall provide the services for the Project in close liaison with CALTRANS. If CONSULTANT fails to submit the required deliverables set forth herein, CALTRANS shall have the right to withhold payment, and/or terminate this agreement.

18. To ensure understanding of contract objectives, meetings between CALTRANS and the CONSULTANT will be held as often as deemed necessary. All work objectives, the CONSULTANT’s work schedule, the terms of the contract and any other related issues will be discussed and any issues or problems resolved.

19. CONSULTANT shall not suspend performance of this contract during the negotiations of any change in scope of work except as they may be directed by CALTRANS. CONSULTANT shall perform all changes in accordance with the terms and conditions of this contract.

20. CONSULTANT shall obtain, at its expense, all applicable CALTRANS Manuals and Standard Plans.

21. In the event that non-standard features become apparent during the initial design, CONSULTANT shall prepare the necessary Fact Sheets for Design Exceptions following CALTRANS’ guidelines.

22. CONSULTANT shall employ risk management techniques that identify potential risks and uncertainties related to construction of the Project. Risks that may be encountered include, but are not limited to, soil conditions, constructability, factors of safety, impacts to adjacent properties, public safety, and environmental considerations. If at any time during the performance of this Statement of Work, CONSULTANT observes, encounters, or identifies any circumstance that could pose potential risk, CONSULTANT shall notify CALTRANS.

23. CONSULTANT shall comply with OSHA regulations regarding safety equipment and procedures, safety instructions issued by CALTRANS, and the safety provisions included in CALTRANS’ Survey Manual. All personnel of CONSULTANT shall wear white hard hats and orange safety vests while working on the job site. CONSULTANT shall provide safety training for its employees.

24. Any existing landscaping that is displaced by the project will be replaced. CONSULTANT shall incorporate replacement plantings into the PS&E package as required. CONSULTANT shall inform CALTRANS of any impacts to the existing landscaping.

25. Project aesthetics and landscaping shall adhere to the standard details provided by CALTRANS.
26. Where CONSULTANT is required to prepare and submit studies, reports, plans, etc., to CALTRANS as required by this Statement of Work, these shall be submitted in draft as scheduled, and the opportunity provided for CALTRANS to direct revisions, prior to final submission.

27. All studies, plans, reports, data, manuals, electronic software developed, databases, spreadsheets and intellectual properties developed during the life of this contract shall become the property of CALTRANS.

REQUIRED SERVICES PERFORMED BY CONSULTANT

A. MAPPING

The CONSULTANT shall evaluate the available topographic mapping of the Project area.

The CONSULTANT shall recommend additional surveying as necessary to supplement the available mapping. The recommendations shall be forwarded to CALTRANS for review and concurrence prior to beginning any work. The topographic mapping shall be prepared in metric units. CONSULTANT shall also furnish a digital terrain model (.dtm) of the area covered by existing topographic mapping.

B. SURVEYS

1. General Requirements

a. CONSULTANT shall designate a Surveys Manager who will coordinate the CONSULTANT’s surveying operations. The Surveys Manager shall be responsible for all matters related to the CONSULTANT’s surveying operations, but shall work and coordinate through the CONSULTANT’s Project Manager.

b. Surveys performed by the CONSULTANT shall conform to the requirements of the Land Surveyors Act and CALTRANS’ Surveys Manual. In accordance with the Act, "responsible charge" for the work shall reside with a pre-January 1, 1982, Registered Civil Engineer or a Licensed Land Surveyor, in the State of California.

c. CONSULTANT shall perform all surveys, necessary to complete the PS&E. CONSULTANT shall review the available data and recommend additional design surveys required for the design of the Project.

d. Field and office surveys not covered by the current CALTRANS’ Surveys Manual, shall be performed in accordance with accepted professional surveying standards including requirements of current editions of the State of California Professional Engineer’s Act and Professional Land Surveyor’s Act. In accordance with the Act, “responsible charge” for survey services shall reside with a State of California Licensed Land Surveyor or Registered Civil Engineer (prior to January 1, 1982).

e. CALTRANS will designate the horizontal and vertical control monuments that are to be the basis of all CONSULTANT performed surveys. CALTRANS will provide the California Coordinate System values and/or elevation values for these monuments.

CALTRANS has designated that the NAD ’83 California Coordinate System datum will be used for horizontal coordinate values.

f. All survey information developed by CONSULTANT shall be in metric units.
g. CONSULTANT shall not be required to perform any Right of Way mapping or appraisal tasks under this survey scope of work.

h. CONSULTANT may be required to use methods that have the least impact on the traveling public.

2. Permits

CONSULTANT shall obtain applicable encroachment permits prior to beginning any field investigation. Additionally, if a traffic control plan is required, CONSULTANT shall prepare the plan. Such documents shall be forwarded to CALTRANS for review and concurrence prior to beginning any field investigation.

3. Design Surveys to be Performed by CONSULTANT

CONSULTANT shall identify required design surveys and provide a work plan to CALTRANS. With CALTRANS’ concurrence, CONSULTANT shall perform design surveys per the work plan. CONSULTANT surveys may include, but are not limited to, the following:

a. Surveys for detailed design of roadway, retaining walls, bridge, drainage, and utilities.

b. Survey control for geotechnical investigation, if required.

c. Supplemental surveys for preparation of cross-sections.

4. Utility Location Surveys

Utility Location Surveys will be furnished by CONSULTANT for existing utilities. CONSULTANT shall prepare Utility Conflict Maps as identified in Section 335. All potholing and related survey work will be performed by CALTRANS. Pothole information will be provided by CALTRANS to CONSULTANT.

5. Deliverables

The deliverables shall conform to the following:

a. Survey points, lines, and monuments shall be established, marked, identified and referenced, as required to complete the work and in accordance with the requirements herein.

b. Survey notes, electronic files, drawings, calculations, and other survey documents/materials shall be completed as required to complete the work and in accordance with the requirements herein.

c. A copy, except as otherwise specified herein, of all original survey documents resulting from this Statement of Work (including original field notes, adjustment calculations, final results, electronic files and appropriate intermediate documents) shall be delivered to CALTRANS. Said documents shall then become the property of CALTRANS. The original survey documents shall be retained by CONSULTANT for future reference.

d. When the survey is performed with a Total Station Survey System, the original field notes shall be a legible hard copy listing of the data (observations) as originally collected and submitted by the survey party. CONSULTANT’s party chief shall sign the listing.

e. The final results of all surveys, as required, shall be delivered to CALTRANS in the format specified below:

i. **Horizontal Control.** Alpha/numeric hard copy point listing with adjusted California Coordinate System northings and eastings and appropriate descriptions based on NAD ‘83
datum.  (Spacing and density of horizontal control monuments shall be in accordance with CALTRANS’ Surveys Manual, Chapter 11-02.)

ii. **Vertical Control.** Alpha/numeric hard copy benchmark listing with adjusted elevations on the 1929 NGVD and appropriated descriptions.  (Spacing and density of vertical control monuments shall be in accordance with CALTRANS’ Surveys Manual, Chapter 11-02.)

iii. **Topography.** Alpha/numeric hard-copy listing, hard-copy drawings and electronic files.  Additions or modifications to the delivered topographic mapping and its symbology shall conform to current version of CALTRANS’ Drafting and Plans Manual.

iv. **Terrain.** For each cross-section: an alpha/numeric listing, hard-copy drawing and computerized formatted file that is compatible with CALTRANS’ computerized design systems.  Computerized formatted cross-sections shall be provided on magnetic tapes, cassettes, or disks compatible with CALTRANS’ computer systems.

f. **Construction Control Survey Map**

   i. CONSULTANT shall provide a Construction Control Survey Map for the Project.  The map may include the following items:
      - Centerline alignment data for all Project improvements and existing street centerlines
      - Control points identified in plan (horizontal, vertical, horizontal and vertical, and cadastral monuments)
      - Tabulated control point listing with full descriptions
      - Tabulated cadastral monument listing with full descriptions
      - Horizontal and vertical control bases
      - Survey data sources

   ii. CONSULTANT shall provide a CALTRANS Plane Coordinate Control Data List.  The list shall include all geodetic control data used for the Project, including geodetic data provided by CALTRANS.  The list shall include station name, latitude, longitude, northing, easting, elevation, etc.  If available, data shall also include a full description of all photo control points used for topographic mapping within the project.

   iii. CONSULTANT shall provide a CALTRANS Plane Coordinate ASCII point file for all calculated points.  CONSULTANT shall provide full descriptions of all monuments, set or found.

   iv. CONSULTANT shall provide centerline alignment files for all permanent and temporary features.

6. Information to be provided by CALTRANS

Metric Control Diagram Maps
C. GEOTECHNICAL INVESTIGATION AND MATERIALS REPORT

1. General Requirements
   a. CONSULTANT shall perform all field exploration required to complete the PS&E. All field explorations shall meet CALTRANS requirements.
   b. CONSULTANT shall provide experienced personnel, equipment, and facilities to perform soil sampling and testing.
   c. All reports and plans shall bear the CALTRANS of California Certified Engineering Geologist or Registered Professional Registration Seal with the signature, license number and registration certificate expiration date of the geologist or engineer responsible for the preparation of the report. The geologist or engineer responsible for the preparation of the reports shall be competent in geotechnical engineering.
   d. In the event the existence of hazardous materials is discovered by CONSULTANT, CONSULTANT shall be required to immediately notify CALTRANS.
   e. In case of future construction claims against CALTRANS, CONSULTANT shall be retained by CALTRANS to provide expert testimony regarding CONSULTANT services.
   f. All reports shall be prepared in metric units.

2. Permits
   a. CONSULTANT shall provide necessary applications for Encroachment permits onto CALTRANS property. A Traffic Control plan, when required, shall be delivered to CALTRANS for review.
   b. CONSULTANT shall identify all private property requiring Rights of Entry. CALTRANS will provide all Rights of Entry for access on private property.
   c. CONSULTANT shall obtain all other encroachment permits.

3. Geotechnical Services to be provided by CONSULTANT
   a. Geotechnical Design Report (GDR)

      CONSULTANT shall prepare a GDR for the Project in conformance with the CALTRANS Guidelines for Geotechnical Design Reports. The GDR shall provide, but is not limited to, the following:

      i. Determination of ground water conditions and impacts on design and construction.

      ii. Determination of subsurface conditions and subsoil properties relating to settlement.

      iii. Determination of impacts of geologic/geotechnical conditions on construction and recommended mitigation measures.

      iv. Identification and recommendations for geologic/geotechnical constraints.

      v. Analysis for potentially liquifiable or collapsible soils and corresponding recommendations for design or mitigation measures.
vi. Engineering analyses and calculations required to provide design parameters for static and pseudo-static analysis for slope stability and settlement.

vii. Site seismicity studies and peak ground acceleration evaluations to provide a basis for estimating seismic design parameters for use in embankment design.

viii. A listing of soil samples obtained from the field exploration program which have been tested in CALTRANS certified laboratories to evaluate the controlling engineering properties of the encountered subsoils. Assuming that the soil samples are free of contamination, laboratory testing may include, but is not limited to:

- Moisture and Density
- Shear Strength
- Expansion Index
- Sand Equivalent
- Soluble Sulfate and Chlorides
- R-Value
- Maximum Density
- Sieve Analysis
- Plasticity Index
- Resistivity, Ph
- Consolidation/Collapse

b. Materials Report

CONSULTANT shall prepare a materials report for the project. Report shall comply with Topic 114, “Materials Report” of the Highway Design Manual. The Materials report should include pavement structural section recommendations or pavement studies, culverts or drainage materials, corrosion studies, and materials or disposed sites.

4. Deliverables

a. Field Exploration Map

CONSULTANT shall prepare a map detailing the field exploration plan. The map shall provide the following:

i. Location of each proposed boring. Include depth of boring and the proposed finished surface elevation. Exploratory borings using hollow-stem auger drill rig or trenches will be performed for evaluation of pavement structural section and to collect subsurface data for foundation design of the retaining walls and bridge. Borings will be drilled to collect subsurface data for R-value testing and foundation design. Backhoe trenches can be used in some areas in lieu of the soil borings. The maximum boring depth will be about 15 meters below the ground surface.

ii. Geometric layout provided from preliminary engineering.

iii. Information regarding property owner impacted by each particular boring, if available.

CALTRANS will review and approve the field exploration map prior to application for encroachment permits. All encroachment permits and rights of entry shall be obtained prior to scheduling of any field explorations.

b. Geotechnical Design Report

CONSULTANT shall submit a draft Geotechnical Design Report to CALTRANS for review. Comments from the review will be submitted to CONSULTANT for incorporation into the final report. The number of copies of each report shall be determined prior to submittal.
c. Materials Report

d. Foundation Reports

i. CONSULTANT shall prepare foundation reports and Log of Test Boring Sheets for the bridge site and, where required, retaining wall locations. This report shall recommend structure foundation types and footing elevations.

ii. The reports shall include, but not be limited to, information on the design of embankment foundations, ground water conditions, allowable bearing capacities, seismic data, and other information needed to evaluate the chosen foundation.

iii. The reports shall also address anticipated fill settlement and recommended duration for settlement periods to prevent excessive differential settlement between the structure and adjacent roadway approaches.

iv. The reports and Log of Test Boring Sheet(s) shall be prepared in accordance with the CALTRANS' Bridge Design Aids Manual, the OSFB Information and Procedure Guide, and CALTRANS' Guidelines for Foundation Recommendations and Reports.

D. UTILITY COORDINATION

1. General Requirements

1. CONSULTANT shall prepare utility plan sheets for the PS & E package in metric units. CONSULTANT shall be responsible for all conversion of utility record plans from imperial to metric units for incorporation on the utility plan sheets.

2. CONSULTANT shall update right of way requirements impacted by the relocation of utilities. CALTRANS shall coordinate with utility owners to determine right of way requirements for relocation of utilities.

2. Coordination

a. CALTRANS shall be considered the “Utility Coordinator” for the Project. CONSULTANT shall assist CALTRANS with meetings and correspondence to the utility companies affected by the Project.

b. CONSULTANT shall coordinate with CALTRANS to assist in the proper protection or relocation of affected utilities. Utility owners will prepare utility relocation plans. CONSULTANT shall provide appropriate Project plans that may assist the affected utility owner in the development of relocation plans.

3. CONSULTANT shall review relocation plans prepared by utility owners to verify compatibility with the Project, as well as other utility plans. CONSULTANT shall respond in writing to CALTRANS either confirming conformance of the relocation plans to the Project or non-conformance to the Project and reasons therefore.

3. Utility Plans

CONSULTANT shall update the utility plans to show the disposition of each utility on the Project. Disposition shall include, but not be limited to, the utility company name, original location, proposed location, and responsible party for relocation.
4. Deliverables

a. Utility Conflict Maps

CONSULTANT shall submit utility conflict maps to CALTRANS. The maps shall provide the following:

i. Geometric layout of the Project with the existing utility locations.

ii. Highlight and label each utility that conflicts with the Project.

iii. Existing utility callouts shall include the owner and the disposition of the lines.

iv. Narrative descriptions shall accompany the utility conflict maps. These narratives shall list each utility that is in conflict with the Project. Information shall include, but not be limited to, the following:
   - Conflict label and drawing reference number for the utility conflict map on which the utility is highlighted and labeled
   - Description, owner, and disposition of the utility
   - Description of the potential or actual conflict that will occur due to the Project

The utility conflict maps will be used by CALTRANS to establish which utility companies are affected by the Project and need to be relocated. CONSULTANT shall identify those portions of utilities that require potholing. All potholing and related survey work will be performed by CALTRANS as identified in Section 325.

Following the submittal of the utility conflict maps, the CONSULTANT shall inform CALTRANS in writing of any changes in the Project design that alter the utility conflict locations indicated on the maps.

E. ROADWAY DESIGN

1. General Requirements

CONSULTANT shall prepare and deliver to CALTRANS all plans, specifications, and estimates for roadway construction. Except where specified herein, all CONSULTANT prepared plans, specifications, quantity calculations, and estimates shall be prepared in metric units.

2. Geometric Approval Drawings

a. General

CONSULTANT shall prepare Geometric Approval Drawings (GADs) for the Project in accordance with CALTRANS’ standards as described in Chapter 200 of the Highway Design Manual. Traffic volumes provided by CALTRANS will be used as the basis for any traffic analysis.

CONSULTANT shall prepare necessary Design Exception Reports and/or Fact Sheets if any deviation from mandatory design criteria applies.

b. Deliverables
CONSULTANT shall deliver the following plan packages to CALTRANS. Actual plan packages, as determined by CALTRANS, may vary in quantity and content per submittal. The number of sets of each plan, estimate or report shall be determined prior to submittal.

CALTRANS will review the plans after each submittal and transmit review comments to CONSULTANT. A comment review meeting may be scheduled between CALTRANS and CONSULTANT, where responses to the plan comments will be presented.

The GAD submittal will include the following:

- GADs
- GAD Checklist
- Design Exception Reports and/or Fact Sheets
- Traffic Analyses

3. Right of Way Requirement Plan Maps

a. General

CONSULTANT shall prepare Right of Way Requirement Plan Maps utilizing the Project layout sheets as a basis. CONSULTANT shall identify the limits required for the ultimate roadway operation of the Project (the “fee” area), limits required for related facilities such as drainage or utilities (easement areas), and limits required in excess of the fee and easement areas for construction of the Project (temporary construction easements). CONSULTANT shall identify access control limits where applicable.

Requirements shall reference the freeway centerlines (station and offsets) or, where appropriate, centerlines of local roads or property lines. At minimum, the background elements on the Maps will include:

i. Station lines and centerlines of roadways and drainage facilities.
ii. Layout lines of walls.
iii. Tops and toes of slope.
iv. Edge of travel way, edge of shoulder, curb and gutter, sidewalks, and other roadway appurtenances.
v. Existing Bridges

b. Deliverables

CONSULTANT shall deliver the following Right of Way Requirement Plan Maps and coordinate geometry files to a location determined by CALTRANS. Actual plans and files, as determined by CALTRANS, may vary in quantity and content per submittal. The number of sets of each plan shall be determined prior to submittal. All Maps will have appropriate signature blocks for the CALTRANS’ oversight engineer (different from PS&E), and if necessary, appropriate revision blocks.

CALTRANS will review the plans after each submittal and transmit review comments to CONSULTANT. A comment review meeting may be scheduled between CALTRANS and CONSULTANT, where the responses to the plan comments will be presented.

c. R/W requirements are required shortly after GAD approval.

4. Plans, Specifications, and Estimates

a. General
All plans, specifications, quantity calculations, and estimates shall conform to CALTRANS’ requirements and shall be made available to CALTRANS for review and approval at stages specified in the Milestone Schedule and upon request.

b. Roadway Design

i. All title, index, sections, layouts, profiles, quantities, construction details, and other related plan sheets shall be provided on CALTRANS’ standard “full size” sheets for CALTRANS Office Engineer review at the 95% submittal. CONSULTANT shall also provide 11” x 17” reduced copy of the plan sets for all submittals.

ii. The CONSULTANT shall design the roadway structural section. The Traffic Index (TI) shall be provided to CONSULTANT by CALTRANS for use in the design of the roadway structural section. The R-value to be used for the design of the roadway structural section shall be submitted by CONSULTANT to CALTRANS for approval prior to final design of the structural section.

The design of the roadway structural section shall involve alternative analysis including estimate of life cycle costs. The design of the structural section shall be submitted to CALTRANS for review and approval.

iii. CONSULTANT shall prepare and update right of way requirement layouts and files as part of the roadway design. CONSULTANT shall coordinate with CALTRANS’ Right of Way Engineering on changes to right of way requirements.

iv. CONSULTANT shall prepare a Project Narrative, which provides a general overview of the Project. CONSULTANT shall also discuss significant design features and/or design exceptions related to the Project.

c. Deliverables

CONSULTANT shall deliver the following plan packages to a location determined by CALTRANS. Actual plan packages, as determined by CALTRANS, may vary in quantity and content per submittal. The number of sets of each plan, estimate or report shall be determined prior to submittal.

CALTRANS will review the plans after each submittal and transmit review comments to CONSULTANT. A comment review meeting may be scheduled between CALTRANS and CONSULTANT, where responses to the plan comments will be presented.

i. 35% Submittal.
   - Title Sheet
   - Typical Cross-Sections
   - Key Map & Line Index
   - Layout Plans
   - Profile Plans, and Superelevation Diagrams
   - Drainage Plans, Profiles & Details
   - Conceptual Stage Construction Strip Map
   - Construction Cost Estimate

ii. 65% Submittal
   - Project Narrative
   - Title Sheet
   - Typical Cross-Sections
iii. 95% Submittal.

- Project Narrative
- Title Sheet
- Typical Cross-Sections
- Key Map & Line Index
- Layout Plans
- Profile Plans, and Superelevation Diagrams
- Construction Details
- Contour Grading Plans
- Drainage Plans, Profiles, Details, and Quantities
- Edge Drain Plans and Quantities
- Utility Plans
- Stage Construction Plans & Quantities
- Detour Plans & Quantities
- Construction Area Signs Plans & Quantities
- Summary of Quantities Plans
- Pavement Delineation Plans, Quantities and Details
- Sign Plans, Quantities & Details
- Retaining Wall Plans and Details
- Sound Wall Plans and Details
- Noise Assessment
- Electrical Lighting, Details and Quantities
- Electrical Ramp Metering, Details and Quantities
- Special Provisions
- Construction Cost Estimate
- Permit Applications
- Right of Way, Access Control, and Temporary Construction Easement Requirements
iv. 100% Submittal.

CALTRANS shall prepare order forms for all State furnished materials and signs.

- Final PS&E (all items listed in 95% submittal)
- Grid Grades
- Quality Control Statement
- Electronic submittal files as described on p. 6, Item K.
- Resident Engineer’s File
- Surveyor’s File

F. STRUCTURAL DESIGN

1. General Requirements

a. CONSULTANT shall prepare and deliver to CALTRANS’ DIVISION OF STRUCTURES (DOS) for their review and approval, all plans, specifications, and estimates for the structures on the Project. All CONSULTANT prepared plans, specifications, quantity calculations, and estimates shall be prepared in metric units and conform to CALTRANS’ requirements.

b. Each design shall be independently checked by a qualified engineer who is registered in the State of California. Each plan sheet shall show the name of the engineer who performed the independent check.

c. The calculations for both the design and the independent design check shall be submitted as part of the PS & E Submittal. The respective calculations shall bear the State of California Registered Professional Engineer registration seal with the signature, license number and registration certificate expiration date of the design engineer and independent check engineer.

d. The instructions contained in this scope of work for structures will take precedence over any conflicting instructions found in the Bridge Memos to Designers Manuals.

2. Preliminary Design Review

a. CONSULTANT shall review the as-built drawings of all existing bridge structures within the project vicinity.

b. CONSULTANT shall perform site surveys as necessary to determine existing conditions and topography and also to establish or verify construction survey controls.

3. Plans, Specifications, and Estimates

a. General

All plans, specifications, quantity calculations, and estimates shall conform to CALTRANS’ requirements and shall be made available to CALTRANS for review and approval upon request by CALTRANS’ Contract Manager or designee.

Plans for each design shall be prepared on ESC formatted plan sheets. Current Bridge Standard Details Sheets (XS-Sheets) and current Standard Plans shall be incorporated into the Contract Plans where applicable. Each plan sheet shall show the name and address of CALTRANS and CONSULTANT in the blocks provided below the Engineer’s signature and registration stamp. Each plan sheet shall show the name of the engineer who prepared the design.

b. Special Provisions
CONSULTANT shall prepare project specific Structure Special Provisions in accordance with CALTRANS’ Plans, Specification and Estimates Guide. The Structure Special Provisions shall bear the State of California Registered Professional Engineer registration seal with the signature, license number and registration certificate expiration date of the Engineer who prepared the special provisions or the Engineer under whose direction they were prepared. A list of contract items with item descriptions, item numbers, units of pay, and item pay codes, but without quantities or estimated unit costs, shall be included in the front of the special provisions.

c. Estimate

CONSULTANT shall prepare quantity calculations and develop unit costs for items that are applicable to this project and shall prepare the bridge cost estimate, utilizing CALTRANS’ Quantity Summary and Estimate Forms. Quantities for all contract items, including cost of lump sum items, shall be substantiated by calculations. Quantity calculations shall be neat and orderly and shall show all sketches, diagrams and dimensions necessary to allow them to be independently used by field engineers. All quantity calculations shall be independently checked and substantiated with independent calculations.

d. Bridge Design

i. Construction details for each design shall be prepared on CALTRANS’ Department of Structures (DOS) format plan sheets. Blank reproducible sheets will be provided by DOS. Where specified in this Statement of Work, or as directed by CALTRANS, CONSULTANT shall also provide 11” x 17” reduced copy of the plan sets.

ii. DOS will supply CONSULTANT with the needed standard drawings as shown in Section 20 of the Bridge Design Details Manual and the current Standards Plans. The Bridge Standard Design Detail Sheets shall be prepared in metric units by CONSULTANT for the contract plans. The standard drawings and standard plans shall be incorporated into the Structure PS&E where applicable.

e. Deliverables

As required, the following submittals shall be delivered to CALTRANS. The specific number of plans, estimates, and reports shall be determined prior to submittal.

i. General Plan/Type Selection

CONSULTANT shall prepare Advance Planning Studies for each bridge in the segment in accordance with CALTRANS’ Memo to Designers, dated August, 1992. CONSULTANT shall review the Bridge Site Data Submittal form, including attachments, and complete the Draft Foundation Plan Sheet. This will lead to the submittal and presentation for review and approval of a Type Selection Report for the structure. All studies, reports, plans, specifications, estimates and other documents shall be delivered to CALTRANS’ Engineering Service Center (ESC), Office of Special Funded Projects (OSFP). This process will be considered the “Structure Type Selection” process and no further design work will be performed until written approval of the structure type is received from OSFP. A Type Selection Review Meeting will be held in Sacramento, in which CONSULTANT shall be prepared to discuss and provide information on foundation requirements, hydrological requirements, falsework requirements, seismic and aesthetic considerations, traffic handling, construction cost, and other pertinent information that is needed to determine the proper structure type.
A Type Selection Review Meeting will be scheduled a minimum of 2 weeks following receipt of the Type Selection Report which consists of the proposed General Plan, General Plan Estimate, Type Selection Memo, Vicinity Map, and Project Seismic Design Criteria. The results of the meeting will be summarized in writing to the CONSULTANT within 2 weeks following the meeting. Within 2 weeks after receiving written approval of the proposed General Plan and structure type, the CONSULTANT shall furnish OSFP with 40 reduced (279 x 431 mm) copies of the approved General Plan.

General Plan/Type Selection submittals:

- 15 copies of Type Selection Report
- 1 copy of Bridge Site Data Submittal form and attachments
- 2 copies of Draft Foundation Plan
- 4 copies of Draft Hydrology/Hydraulics Report
- 4 copies of Draft Foundation Report
- 40 copies of Approved General Plan

ii. Unchecked details submittal:

- 4 copies of unchecked structure plans
- 1 electronic copy of the unchecked structure plans (.dgn file)
- 4 copies of Final Foundation Report

OSFP will review and comment on the unchecked structure plans within 3 weeks of receipt.

iii. Initial Bridge PS&E (Checked Details Stage)

- 1 electronic copy of checked, signed structure plans (.dgn file)
- 10 sets of prints structure Plans (checked and signed)
- 4 copies edited Structure Special Provisions (and one electronic file)
- 2 copies of Construction Cost Estimate and working day schedules
- 2 copies of original and checked quantity calculations
- 1 copy of Design Calculations (with independent check calculations)
- 4 copies of Final Hydrology / Hydraulics Report
- 4 copies of Final Foundation Report
- 4 copies of complete Road Plans and Special Provisions
- 1 copy Quality Control Checklist

OSFP will review and comment on the Initial PS & E Submittal within 6 weeks of receipt of the complete package.

iv. Intermediate PS & E Submittal (if required):

- Same as the Initial PS & E Submittal or as otherwise requested by OSFP.

OSFP will review and comment on Intermediate PS & E submittal within 4 weeks of receipt of the complete package.

v. Final PS&E Submittal

- 1 Electronic copy of checked, signed structure plans (.dgn file)
- 1 set of full size reproducible of final structure plans
G. NOISE STUDY

1. Noise Study

CONSULTANT will prepare a traffic noise report for the project. The noise analysis will be based on Federal Highway Administration (FHWA) and CALTRANS’ criteria, policies and guidelines for traffic noise analyses. The report will also address any local noise standards applicable to the project. CONSULTANT will perform the following tasks for completion of the traffic noise study:

a. CONSULTANT will identify existing noise-sensitive land uses and undeveloped land for which development is planned, designed and programmed, that may be affected by the project. A location map will be prepared to show relevant noise receptors and will be submitted for review and approval by CALTRANS.

b. CONSULTANT will conduct traffic noise level measurements and concurrent traffic counts at representative noise-sensitive receiver locations throughout the project area. CONSULTANT will seek CALTRANS’ concurrence on the sufficiency of the noise monitoring locations prior to actual field work.

c. CONSULTANT shall identify existing no build noise levels, and predict future peak hour noise levels without mitigation, and future peak hour noise levels with mitigation. An acceptable software program that may be used for the analysis is SOUND 32 PC (microcomputer version of STAMINA 2.0) or an approved equivalent. Calculated peak-hour noise levels will then be compared to FHWA’S and CALTRANS’ noise abatement criteria to determine noise impacts.

d. If noise impacts exist, CONSULTANT will evaluate mitigation measures in the form of sound walls. Detailed information related to locations and heights of required sound walls will be developed and submitted on strip maps or other layout plans. CONSULTANT will also provide a discussion of alternative noise mitigation measures.

e. CONSULTANT will conduct a feasibility and reasonableness analysis based on feasibility guidelines and reasonableness allowance figures developed by CALTRANS. For this effort, the number of existing and permitted noise-sensitive receivers benefiting from prospective sound walls will be considered in combination with barrier costs. Based on the results of this analysis, CONSULTANT will submit information pertaining to feasibility and reasonableness of constructing sound walls.
f. CONSULTANT will prepare a draft report for review by CALTRANS and FHWA. Upon receipt of review comments on the draft report, CONSULTANT will address all review comments in a final noise study report submitted to CALTRANS.

2. Sound Wall Plans

For fee estimating purposes, it is assumed that the Noise Study to be performed under Section 350, Item A, will identify that a maximum of 1000 meters of sound wall will be required along the project limits. It is assumed that the maximum height of this sound wall will be 4.9 m, and it is also assumed that this sound wall will not require any special design and a standard CALTRANS sound wall design can be utilized.

H. RETAINING WALLS

1. CONSULTANT shall be required to prepare all retaining wall plans. Said plans shall include wall location, height, typical sections, log of test borings, and material and cost estimate calculations. The extent of retaining wall construction shall be determined during the development of the PS & E.

2. CONSULTANT shall update right of way requirements, as needed to incorporate temporary construction easements for retaining walls.

3. All required retaining walls are anticipated to be standard type CALTRANS walls found in CALTRANS’ Standard Plans. CONSULTANT shall notify CALTRANS immediately upon determination that any other non-standard retaining walls will be required for the Project.

I. DRAINAGE

1. General Requirements

a. CONSULTANT shall be responsible for the design, including hydrologic modifications of all drainage reports necessary to provide adequate drainage of the Project, including pavement drainage, runoff generated within the Project Area, inflows from watersheds beyond the Project, and interim drainage during construction. Except where specified herein, all plans, specifications, quantity calculations, estimates, and reports shall be in metric units and conform to CALTRANS’ requirements. Where conflicts in methodology occur, CONSULTANT shall notify CALTRANS immediately for resolution.

b. All reports shall be prepared by a qualified Civil Engineer who is registered in the State of California, and shall bear the State of California Registered Professional Engineer registration seal with his signature, license number, and registration certificate expiration date of the Engineer responsible for the preparation.

2. Permits

CONSULTANT will prepare exhibits required to assist CALTRANS in obtaining any permits and construction/maintenance agreements.

3. Hydrology Reports

a. Off-site Hydrology Report
i. CONSULTANT shall prepare an off-site hydrology report for the Project by supplementing existing drainage reports as required. The report shall be prepared in metric units and conform to CALTRANS’ standards.

ii. Layout plans identifying the location of existing and, if necessary, proposed drainage facilities shall be included within the report.

iii. The report shall be submitted to CALTRANS for review. Comments generated from this review will be returned to CONSULTANT for incorporation into the final plan. The number of copies of the report shall be determined prior to submittal.

b. On-site Hydrology Report

i. CONSULTANT shall prepare an on-site hydrology report for the Project by supplementing existing drainage reports as required. The report shall be prepared in metric units and conform to CALTRANS’ standards.

ii. Layout plans identifying the location of existing and, if necessary, proposed drainage facilities shall be included within the report.

iii. The report shall be submitted to CALTRANS for review. Comments generated from this review will be returned to CONSULTANT for incorporation into the final plan. The number of copies of the report shall be determined prior to submittal.

4. Reports and Plans

a. General

i. CONSULTANT shall update right of way requirements as needed to incorporate drainage and temporary construction easements for drainage facilities.

ii. Conflicts with other utilities, including other drainage facilities, shall be identified in plan and profile.

b. Drainage Report and Plans

i. Following CALTRANS’ review of the off-site and on-site hydrology reports, the CONSULTANT shall perform hydraulic analysis for all of the drainage facilities on the Project. The corresponding drainage report shall be prepared in metric units and shall incorporate updated hydrology calculations. Where proposed improvements modify flows to existing drainage facilities within the project, the hydraulic analysis report submitted for these facilities will be modified to reflect the changed conditions.

ii. Drainage plans and profiles of proposed drainage facilities shall be included within the report. Modifications to existing facilities shall be identified on the plans.

iii. The drainage report shall be submitted to CALTRANS for review.

c. Edge Drains

CONSULTANT shall add edge drain designs to the contour grading plans.

J. TRAFFIC ENGINEERING
CONSULTANT shall prepare the necessary traffic handling plans showing long-term closure of lanes, local road and highway detours, and number of available lanes. Included in these plans are stage construction, construction traffic handling and detours, signing, striping, lighting, and signal modifications as presented below:

1. Stage Construction

CONSULTANT shall prepare stage construction plans. Plans shall reflect the construction of all improvements identified on the plans. The plans shall include existing roadbeds, construction to be performed in the stage shown, traffic direction, number of lanes and future construction. CONSULTANT shall continually evaluate and update the stage construction plans during all phases of design.

2. Construction Traffic Handling Plans and Detours

   a. Traffic Management Plan
      i. CONSULTANT shall prepare a Traffic Management Plan. The plan should conform to CALTRANS’ standards.
      ii. The Traffic Management Plan shall be submitted to CALTRANS for review. Comments generated from this review will be returned to CONSULTANT for incorporation into the final plan. The number of copies of the plan shall be determined prior to submittal.

   b. CONSULTANT shall prepare traffic handling plans, which show long-term closure of lanes, detours and number of available lanes. Included in these plans are signing, striping, and modifications, and temporary traffic signals, if necessary. CONSULTANT shall continually evaluate and update the traffic handling plans during the design process.

   c. CONSULTANT shall update right of way requirements as needed to incorporate temporary construction easements for traffic detours.

3. Signing Plans

CONSULTANT shall prepare final plans, specifications, and estimates for signing plans including layouts showing the locations of roadside and overhead signs, special sign details, lighting, and any structural or foundation requirements in accordance with applicable standards and design criteria. Any requirements for electrical service shall be coordinated with the local electric utility by CONSULTANT.

4. Pavement Delineation Plans

CONSULTANT shall prepare final plans, specifications, and estimates for pavement delineation in accordance with applicable CALTRANS’ standards and design criteria.

5. Traffic Signal Plans

CONSULTANT shall prepare final plans, specifications, and estimates for traffic signalization as required for the Project. CONSULTANT shall determine levels of services, warrants and propose any needed improvements.

6. Electrical Plans

CONSULTANT shall prepare final plan, specifications, and estimates for electrical plans including layouts showing lighting standard and conduit locations, other lighting appurtenances, and any
structural or foundation requirements in accordance with applicable standards and design criteria. Any requirements for electrical service shall be coordinated with the local electric utility by CONSULTANT.

CONSTRUCTION BIDDING PHASE

Bidding procedures will be the responsibility of CALTRANS. While the PS&E construction package is being advertised for bids, all questions concerning the intent shall be referred to CALTRANS for resolution. In the event that any items requiring interpretation in the drawings or specifications are discovered during the bidding period or bid opening, said items shall be analyzed by CONSULTANT for decision by CALTRANS as to the proper procedure required. Corrective action taken will either be in the form of an addendum prepared by CONSULTANT and issued by CALTRANS, or by a covering change order after the award to the construction contract.

CONSTRUCTION SUPPORT PHASE

1. CONSULTANT shall attend the pre-construction starting meeting with the successful construction contractor upon notification by CALTRANS.

2. CONSULTANT will receive written notification of the award of a construction contract. Upon such notification, CONSULTANT will proceed with the services required by this contract.

3. CONSULTANT shall develop the Resident Engineer’s (RE) File related to the design of the Project. Although the RE File is identified as a deliverable during the final stages of design, CONSULTANT shall update the RE file for the duration of this Statement of Work. CONSULTANT shall provide CALTRANS with a written log of significant items that are added to the RE File. The RE File shall be available for CALTRANS’ review at any time during the performance of this Statement of Work.

4. During construction, CONSULTANT shall furnish all necessary drawings for corrections and change orders required by errors and omissions of CONSULTANT. The original tracing(s) of the drawings and contract wording for change orders shall be submitted to CALTRANS for duplication and distribution.

5. CONSULTANT shall review and approve all submittals and shop plan drawings submitted by the construction contractor. CONSULTANT shall complete shop plan review within two (2) weeks of receipt. Contract Change Order reviews shall be completed within two (2) working days of receipt.

6. Drawings and change orders required due to actions of CALTRANS, which are beyond the scope of CONSULTANT’s responsibilities, shall be considered extra services.

7. CONSULTANT shall be available to visit the job site for on-site review of construction, as requested by CALTRANS, to resolve discrepancies in the contract documents. CONSULTANT shall bring to the attention of CALTRANS’ Resident Engineer any defects or deficiencies in the work by CALTRANS’ construction contractor which CONSULTANT may observe. CONSULTANT shall have no authority to issue instructions on behalf of CALTRANS, or to deputize another to do so. All agreements shall be between CALTRANS and its construction contractor. These provisions shall not be construed as making CONSULTANT responsible for failure of CALTRANS’ construction contractor to carry out the work in accordance with the contract documents nor the construction means or methods or techniques, sequences, procedures, or safety programs in connection with the work.
8. CONSULTANT shall (using marked prints from the Resident Engineer) prepare and deliver to CALTRANS, within two months of completion of Project construction, the final “As-Built” plans in electronic format in conformance with Article II. Section 800, Part 3 of this Contract.

MATERIALS FURNISHED BY CALTRANS

Disposition of materials furnished by CALTRANS will be at the discretion of CALTRANS’ contract manager. These items may include, but not limited to:

1. Copies of “As-Built” plans
2. Drafting Standards (CTCELL 18) for electronic plan preparation
3. Existing Materials Data
4. Blank reproducible sample DOS structure plan sheets
5. Standard Special Provisions (SSP’s) in Microsoft Word
6. Existing Right of Way Maps
7. Survey Control Data
8. Aerial Photos
9. Blank CALTRANS’ plan sheet
10. Existing traffic counts, accident records and data
11. Project Study Report and other planning study data
12. Pertinent correspondence

WORK TO BE PERFORMED BY CALTRANS

All correspondence with FHWA
Prepare Right of Way plans
Preparation and execution of all utility agreements
Leads in public involvement and distribution of public information
Provide primary survey controls necessary for design surveys
Advertising and award process for construction
Monumentation Surveys

APPLICABLE STANDARDS

The PS&E shall be prepared in accordance with current CALTRANS’ regulations, policies, procedures, manuals, and standards including compliance with Federal Highway Administration (FHWA) requirements. The following documents shall be used in the production of this Contract. The documents listed are not all-inclusive, but are intended only to illustrate types of sources:

AASHTO Policy on Geometric Design of Highways and Structures (AASHTO 1990)
Caltrans Highway Design Manual
Metric Highway Design Standards
Standards for Metric Plans
Metric Standard Specification
Local Assistance Procedures Manual

2. Basic design shall be in accordance with the existing approved general GAD’s and the Final Supplemental Project Report.

3. Plans shall be prepared in conformance with the current editions of CALTRANS’ **Plans Preparation Manual** and the **CADD Users Manual** and the following:

   a) All CADD work shall be in compliance with CALTRANS’ CADD Users Manual. CADD work shall also incorporate, as deemed necessary by the Task Manager, any revisions to the CADD Users Manual that are made during the course of the contract.

   b) Consultants shall obtain and use the latest versions of the CADD files in order to conform to CALTRANS’ graphics and plotting standards. Files needed include, but are not limited to: cell libraries for highways and structures, font resources, color tables, and graphics seed files. These files are provided only in Microstation format (.dgn) format and can be obtained electronically from CALTRANS’ Internet site at:

   http://www.dot.ca.gov/hq/esc/Engineering_Technology/DevelopmentBranch/cellibs/
c) All CADD graphics files submitted to CALTRANS shall be two-dimensional (2-D) graphics files in Microstation format (.dgn). All graphics files submitted must display and plot properly on the District's plotting system. Effective October 1, 1992, in accordance with the CADD Users Manual, submitted CADD plan sheet files should not contain any referenced data. All drawing data and features relating to a CADD plan sheet file shall be fully contained in that CADD file.

d) CONSULTANT shall submit all plans on CD ROM using MicroStation (.dgn) file format in accordance with CALTRANS’ standards. The electronic files shall include the engineer’s electronic signature and seal. CONSULTANT shall verify the latest version of software used prior to submittal. CONSULTANT will also provide plot parameter (.par) files in accordance with I-Plot standards.

Diskettes are not acceptable to CALTRANS. Any translation effort necessary to obtain these formats shall be the responsibility of the Consultant at no extra cost to CALTRANS.

e) CONSULTANT requests for applicable District CADD copies of plans or topographic maps to complete the task shall be made in writing to the Task Manager at least two weeks prior to their need. The request shall be specific as to what is needed and the reason for this information. The Task Manager will review the request and only forward request of information that is deemed necessary by the Task Manager. Requests for additional CADD copies of information previously provided to CONSULTANT by CALTRANS shall be at CONSULTANT’s expense, with no extra cost to CALTRANS. CADD files associated with another project (past or present) will not be released without prior written authorization from the Project Manager responsible for the other project.

CONSULTANT shall be responsible to convert and/or modify any CADD graphics to current standards. If CADD copies are not available, CONSULTANT will have to convert what is available to meet current CADD submittal standards.

f) As part of the services involved in the preparation of the plans, specifications, and estimates, CONSULTANT shall prepare and furnish Special Provisions for all items included in the plans which are not covered in the Standard Plans and Standard Specifications or require more detail than is presented on the Project plans. CALTRANS will supply CONSULTANT with the Special Provision’s standard format on microcomputer disks in Microsoft Word. CONSULTANT shall edit and prepare Special Provisions specific to the Project using the latest version of Microsoft Word.

4. Plans, specifications, and estimates shall be prepared in conformance with the current editions of CALTRANS’ Plans, Specifications, and Estimates Guide.

5. Bridge plans, specifications, and calculations shall be in accordance with CALTRANS’ Division of Structures Bridge Design Details Manual, Bridge Design Aids Manual, Bridge Memos to Designers, Bridge Design Specifications, and Improved Seismic Design Criteria for California Bridges.

6. All surveys shall conform with the current CALTRANS’ Surveys Manual.

7. All phases of design of improvements which impact existing or proposed underground utilities shall conform to CALTRANS’ Policy on High and Low Risk Underground Facilities Within Highway Rights of Way.

8. Design of the Project shall be performed in accordance with CALTRANS’ standards and practices. Any exceptions to applicable design standards shall be approved by CALTRANS and the Federal
9. The structure design, plans, calculations, reports, special provisions, estimate and quality control shall conform to CALTRANS’ OSFP Information and Procedures Guide and the requirements in this Scope of Services. The requirements in this Scope of Services shall take precedence over any conflicting instructions found in the Bridge Memos to Designers manual.

CONSULTANT shall obtain, at its expense, all applicable CALTRANS Manuals and Standard Plans. Manuals and documents that are not available from the CALTRANS Publication Distribution Center are available from the CALTRANS Internet web site at: http://caltrans-opac.ca.gov/publicat.htm.

Since manuals, guidelines, standards, etc., are dynamic documents, it will be the responsibility of the CONSULTANT to verify that the latest version or update has been received.

**COORDINATION**

1. Coordination with CALTRANS, other Consultants and other involved agencies may be required to achieve compatible designs, phasing of construction with existing or designed conditions, and timely delivery of this contract PS&E. Coordination may include, but is not limited to, coordination with CALTRANS, local agencies, US Forest Service, National Park Service, State Department of Parks and Recreation, Native American tribal governments, and other agencies.

2. The Contract Manager will decide the manner in which the coordination of individual matters are undertaken. At the Contract Manager’s option they may be performed by the CONSULTANT’s direct contact, by the CONSULTANT acting through CALTRANS or by CALTRANS only. When coordination efforts require agreements, such agreements shall be obtained through CALTRANS.

3. For contract work on property not owned or controlled by CALTRANS, all permits, agreements, and permissions will be obtained by CALTRANS in the advance of CONSULTANT’s activities, however;

   a) The CONSULTANT shall not enter upon property or facilities not owned by CALTRANS without prior permission or permit obtained through CALTRANS.

   b) The CONSULTANT shall notify CALTRANS, in writing, two weeks in advance of their need to enter upon said property or facility to perform work.

   c) The CONSULTANT’s notice shall specify the date, purpose, duration, location, and the time of day of the CONSULTANT’s activities.

   d) The CONSULTANT shall comply with all conditions imposed by the Contract Manager and requirements set forth in the permission, permit, or agreement.

**QUALITY ASSURANCE**

CONSULTANT has total responsibility for the accuracy and completeness of the plans, calculations, and related documents furnished under this Statement of Work, and shall meet that responsibility through the implementation of a Quality Assurance Plan. CONSULTANT’s Quality Assurance Plan shall be in effect throughout the entire Contract and, at minimum, shall establish the process necessary to ensure the following:

   a. All design is done in accordance with good engineering practice and all design meets the standards set forth herein.
b. The quality control plan shall establish a process whereby all plans and calculations are independently checked, corrected and back-checked, in accordance with accepted practice, by a qualified engineer, registered in the State of California. All job related correspondence and memoranda are routed and received by affected persons and then bound in appropriate job files. All original drawings and calculations shall be maintained for the duration of the design Contract and submitted to CALTRANS at the completion of the Project.

c. Coordination and checks are provided on those drawings that show different work in the same area (i.e. plans coordinated with specifications), to see that conflicts and misalignment do not occur between plan sheets, and between the plans and specifications.


e. Delivery of plans and computations must be accompanied by supporting documentation that demonstrates CONSULTANT is following its Quality Assurance Plan. The documentation may include copies of appropriate lists of deliverables, tables, plan sheet punch lists, etc., which show columns for checking, revising, back-checking, and quality control reviews. Design review submittals not accompanied by sufficient verification of quality control procedures will be returned to CONSULTANT. Documentation of quality assurance procedures is considered to be a requisite element of each review submittal.

f. CONSULTANT shall be required to include Quality Control Statements with the 65% and 95% Roadway submittals and Initial Structures PS&E submittal. The statements shall include checklists for those pertinent items that are required for the timely, uninterrupted processing of submittals within CALTRANS.

g. Prior to the Final Design Submittal, CONSULTANT shall be required to perform an internal quality control and constructability review with engineers experienced in the appropriate discipline(s). CONSULTANT shall identify personnel responsible for this review, prior to the review. CONSULTANT shall provide review results to CALTRANS.

h. CONSULTANT shall submit to CALTRANS within 30 calendar days after receipt of Notice to Proceed two copies of their Quality Assurance Plan. CALTRANS will review the plan established by CONSULTANT to determine if quality assurance procedures are adequate and appropriate to the complexity of the project requirements. Review comments will be returned to CONSULTANT within 14 calendar days. If appropriate, the revised plan, which incorporates the comments of CALTRANS, should be resubmitted within seven calendar days of receipt of comments.

i. Evidence that the Quality Assurance Plan is functioning will be periodically confirmed by CALTRANS. Deliverables that do not conform to the approved plan will be returned to CONSULTANT without review by CALTRANS.

**PROJECT PROGRESS**

**A. GENERAL**

1. CONSULTANT shall establish internal accounting methods and procedures acceptable to CALTRANS for documenting and monitoring Contract costs.
2. CONSULTANT shall give written notice to CALTRANS within seven (7) working days after CONSULTANT knows or should know of any cause or condition which might, under reasonable foreseeable circumstances, result in delay for which CONSULTANT may request an extension of time to complete Services.
3. CONSULTANT shall report in a timely manner, through correspondence or progress reports, whenever it appears that approved schedules will not be met, whether or not the reasons are within the CONSULTANT’s control. In the event the Scope and Schedule of the Services are modified, and the modified Schedule is approved by CALTRANS, CONSULTANT shall submit a revised Milestone Schedule. CONSULTANT shall perform the Services in accordance with the latest approved revised Milestone Schedule.

4. Within 15 working days of the introductory meeting, the CONSULTANT shall submit to CALTRANS for review, a Bar Chart Schedule showing the Critical Path and Logic Network Schedule, and identifying all project development activities and milestones. CALTRANS will review these documents and return them to CONSULTANT with notes and comments as soon as possible in order to validate the planning and cost control procedures within the first calendar month of performance period.

5. CONSULTANT shall submit to CALTRANS within 30 calendar days after receipt of Notice to Proceed, two copies of their Quality Assurance Plan. CALTRANS will review the plan established by CONSULTANT to determine if quality assurance procedures are adequate and appropriate to the complexity of the Project requirements. Review comments will be returned to CONSULTANT within 14 calendar days. If appropriate, the revised plan, which incorporates the comments of CALTRANS, should be resubmitted within seven calendar days of receipt of comments.

B. MONTHLY PROGRESS REPORTS

1. On a monthly basis, CONSULTANT shall prepare and submit to CALTRANS a monthly status report that indicates the work progress achieved during the period. The report shall summarize the actual work progress compared with estimated progress and will identify problem areas, provide evaluations, recommendations and an outline on the process which CONSULTANT, and CALTRANS will follow to rectify the problem(s). The progress report shall be submitted with the monthly invoice. Progress reports shall include the total number of hours worked by the CONSULTANT’s and sub-consultant’s personnel by the CALTRANS’ Work Breakdown Structure (WBS) level element(s). Invoices shall be submitted showing the CALTRANS’ Work Breakdown Structure (WBS) level element for each billable hour increment. The most current version of the standard CALTRANS’ WBS is available on the internet at: http://www.dot.ca.gov/hq/projmgmt/pm_scope.htm

   As a minimum, the monthly report should address the following specific areas:

   a. Time related project status via a bar chart schedule
   b. Physical progress
   c. Amendment summary history
   d. Narrative status report
   e. Earned Value Report
   f. Graphical comparisons for actual progress vs. earned and planned progress for: physical (%complete), performance (hours complete) and cash flow.

2. A Progress Meeting between CONSULTANT and CALTRANS shall be held as required by the Contract Manager to discuss the design progress, potential problems, plans for the next period, and other progress issues. CALTRANS will establish with CONSULTANT the dates and times of these meetings. Three calendar days prior to each progress meeting, CONSULTANT shall provide CALTRANS with a typewritten agenda for the meeting. CONSULTANT shall prepare typewritten meeting minutes and submit them to CALTRANS within seven calendar days after the meeting. The minutes shall indicate issues discussed and the resolution or action required to resolve any issues. CONSULTANT shall submit at each Progress Meeting, a four-week horizon schedule to be used in monitoring the progress of the work.
3. Project Coordination Meetings may be called by CALTRANS or the CONSULTANT at any time that any party requires discussion of Project issues. CONSULTANT shall prepare minutes of the meeting and submit them to CALTRANS.