IMPERIAL COUNTY
TRANSPORTATION COMMISSION

PROJECT REQUIREMENTS
BOOK 2

Calexico East Port of Entry Bridge Widening

FOR DESIGN AND CONSTRUCTION ADJACENT TO STATE ROUTE 7 IN IMPERIAL COUNTY

Off System Facility Located in Imperial County
0.7 Mile South of Route 7 Near the US/Mexico Border

ICTC CONTRACT NO. 20-101
11-IMP-007-PM0.0
PROJECT ID: 1118000265

Federal Aid Project BUILD L-6471 (017)

RFP Issue Date: September 21, 2020
Proposal Due Date: November 20, 2020

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TABLES

1 GENERAL

1.1 General

The Design-Builder shall perform all Work necessary to meet the requirements of the Contract.

1.2 Introduction to Books 2 and 3

This introduction provides instructions to the Design-Builder on the relationship between Books 2 and 3. It does not replace the order of precedence set forth in Book 1. Book 1, Section 1.3, "Order of Precedence," defines the order of precedence for the Contract Documents. If there are any conflicts between Book 1, Section 1.3, "Order of Precedence," and this introduction, then Book 1, Section 1.3, "Order of Precedence," shall control.

Book 3 sets forth the standards applicable to the Project. Some standards have been modified for application to the Contract. Those modified standards are identified in Book 3. Book 3, Section 3, "Modifications to Department (Caltrans) Manuals," includes modifications to the Caltrans manuals. Book 3, Section 4, "Design-Build Modifications to the Caltrans Standard Specifications," includes modifications to the Caltrans Standard Specifications.

Book 2 sets forth requirements that are intended to apply to this Project. Book 2 incorporates the standards in Book 3 by reference. In many cases, Book 2 modifies, supplements, or replaces the standards in Book 3.

1.3 Project Description

1.3.1 Basic Configuration

The Basic Configuration means those portions of the Preliminary Engineering Drawings that depict:

- Horizontal alignment – The following is allowed without being considered a change to the Basic Configuration: The horizontal alignments for the roadways may be changed one (1) foot, or within the R/W limits, whichever is less, except that the horizontal alignments shall not be moved closer to existing Land Port of Entry facilities immediately adjacent to the access roadway.
- Lane, shoulder, and sidewalk widths may not be changed from those provided in the Approved Project Report (PR) and its Attachments.
- Number of lanes may not be changed from those provided in the Approved PR and its Attachments.
- Location and number of roadway access points may not be changed from those provided in the Approved PR and its Attachments.
- Approximate location of Project limits may not be changed from those provided in the Approved PR and its Attachments.

1.3.2 Project Limits

The Project is located in Imperial County at the Calexico East Port of Entry. The Project limits are as provided in the Approved PR and its Attachments

The lateral limits of the Project shall extend to the locations necessary to complete the Work and meet the Project requirements. Lateral limits on Land Port of Entry access or service roadways shall be as needed to tie Project Work into the existing access or service roadways to a line perpendicular to the access or service roadway curb return or to the extent necessary to construct drainage facilities, whichever is more extensive.

1.3.3 General Description

The Design-Builder shall not rely on the physical description contained in this Section 1 to identify all Project components. The Design-Builder shall determine the full scope of the Project through thorough examination of the RFP, the Approved PR and its Attachments, available as-built information provided by the GSA accessible by complying with the GSA Controlled Unclassified Information (CUI) Guide, and the Project Site or as may be reasonably inferred from such examination.

The Project Build Alternative generally consists of two (2) options as described in the Approved PR and its Attachments. The two Options both propose to widen the existing Bridge on its east side as traffic impacts during construction and capital construction cost are reduced.

Given current funding, **Option A** is the proposed Project alternative. Option A proposes adding new eight (8)-foot shoulders, concrete barriers, four (4) northbound lanes on the existing nine (9) lane structure, two (2) commercial vehicle lanes and two (2) passenger vehicle lanes, shifting the northbound pedestrian walkway to the east on the bridge to facilitate the addition of the two (2) new northbound passenger vehicle lanes, constructing embankment and roadway pavement south and north of the existing bridges, extending sheet piling at the bridge abutments, extending the existing 36-inch culvert north of the bridges, extending the underpass tunnels at both bridge abutments, and performing maintenance on the existing bridges. Option A includes minor modifications to existing landscaping, drainage, signage, and lighting; relocating, replacing, or upgrading the existing lift pump station, and traffic lighting electrical Work. All Work under this Contract shall be conducted in the U.S. Any coordination with Mexico will be provided by ICTC and GSA. The PR Attachment C1 illustrates Option A.

Additional Project elements include stage construction, storm sewer, grading, hot mix asphalt and concrete paving, milling and overlaying, pavement marking, sidewalks, curb and gutter, medians, and highway lighting.

Additional responsibilities are environmental management, stakeholder coordination and communication, and Utility coordination, among other things.

The estimated amount of the Option A Contract (in U.S. dollars) for this design-build Project is approximately $18,444,000.

If additional funding comes available, **Option B** will become the proposed Project alternative. Under Option B, an eight (8)-foot shoulder for commercial vehicles, non-critical rehabilitation work on the existing structures and tunnels, and a bridge canopy along the northbound pedestrian walkway will be included with the Option A Work. The PR Attachment C2 illustrates Option B.

The estimated additional amount of the Option B Work (in U.S. dollars) if funding becomes available is approximately $7,500,000. The additional funding for Option B is still under consideration. It is ICTC's understanding that any additional funding to incorporate the Option B Scope items into the Project Work will be identified prior to start of design. ICTC anticipates more information regarding Option B funding prior to start of design.

1.3.4 Cooperation

Attention is directed to the Caltrans *Standard Specifications*, Sections 7-1.14, Cooperation, and 8-1.10, Utility and Non-Highway Facilities, and these Project Requirements.

It is anticipated that work by contractors on other projects may be in progress adjacent to or within the limits of this Project during progress of the Work on this Contract. No such projects are identified at this time in addition to the one noted in this Section. If construction is under way by other forces or contractors within or adjacent to the limits of the Work specified, or if work of any other nature is under way by other

forces within or adjacent to those limits, the Design-Builder shall cooperate with all the contractors or other forces to the end that any delay or hindrance to their work is avoided. The right is reserved to perform other or additional work at or near the Site at any time by the use of other forces.

When the Design-Builder and a contractor on another project are employed on related or adjacent work or obtain materials from the same material source, each shall conduct their operations in such a manner as not to cause any unnecessary delay or hindrance to the other.

The Design-Builder and the contractor on the other project shall each be responsible to the other for all damage to work, to Persons or property caused to the other by their operations, and for loss caused the other due to unnecessary delays or failure to finish the work within the time specified for completion.

Other contracts anticipated within the Project limits include:

- Construction of a pedestrian walkway security fence may be occurring during the construction Work.

2 PROJECT MANAGEMENT AND ADMINISTRATION

2.1 Scope Management

2.1.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with scope management in accordance with the requirements of the Contract Documents and these Project Requirements. In general, this includes preparing, documenting, revising, and submitting information that details the Work and changes to the Work.

2.1.2 Administrative Requirements

2.1.2.1 Structure of Payment Management Processes

Following NTP1, the Design-Builder shall structure its Project management processes in accordance with the payment item breakdown on invoices and file structure for the Document Control System (DCS) according to Chapter 7, "Uniform File System," of the Caltrans *Project Development Procedures Manual* for design and the Caltrans *Local Assistance Procedures Manual* for construction.

2.1.2.2 Meetings

The Design-Builder shall schedule, conduct, prepare, and distribute the minutes of all Project meetings for the duration of the Contract.

ICTC and the Design-Builder shall meet at the request of one of the parties, as necessary, to discuss and resolve matters relating to the Work during the design and construction stages, particularly as related to GSA and CBP design, Site security, and safety requirements. The requesting party shall provide the other parties with at least five (5) Working Days' notice of such meetings.

2.1.3 Construction

2.1.3.1 ICTC or GSA-Furnished Materials

ICTC or GSA-furnished materials are not anticipated for the Project.

2.1.3.2 Salvage

The Design-Builder shall provide a Salvaging Material Memorandum. The Memorandum shall show materials to be salvaged, recycled, or reused. All other material to be removed that is not reused or salvaged shall become the property of the Design-Builder and shall be removed from the job Site in conformance with the Caltrans *Standard Specifications.*

2.1.4 Submittals

The Design-Builder shall prepare and submit Project meeting minutes to ICTC within five (5) Days for review and comment before making final.

2.2 Cost Management

2.2.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with cost management in accordance with the requirements of the Contract Documents and these Project Requirements. In general, this includes preparing, processing, revising, and submitting of invoices and progress reports.

2.2.2 Administrative Requirements

2.2.2.1 Payment Breakdowns

Following NTP1, the Design-Builder shall develop a payment breakdown based on Book 1, Exhibit N-8, "Proposal Price," and the activity breakdown in the Project Schedule. This breakdown shall be documented in an Original Payment Breakdown.

The Design-Builder shall ensure that all costs necessary to meet the requirements of each item are included in the payment breakdown.

The Design-Builder shall incorporate any Approved changes to the payment breakdown and submit a Revised Payment Breakdown.

In all payment breakdowns, the Design-Builder shall show the total cost per item and the cost per billing period for each item.

The Design-Builder shall ensure that all cost breakdowns are consistent and total up to the Contract Price.

2.2.2.2 Invoices

2.2.2.2.1 General

ICTC reserves the right to withhold processing of an invoice if the requirements of this Section are not met.

The Design-Builder shall structure the billing periods to start on the first (1st) day of the month and end on the last day of the month. The Design-Builder shall include the following on the invoice cover sheet:

- ICTC and Federal Project numbers and title.
- Invoice number, numbered consecutively starting with "01."
- Period covered by the invoice, in specific Days.
- Total earned to date for the Project and for each Work segment and pay item breakdown.
- Authorized signature and title of signatory.
- Date invoice was signed.

The Design-Builder shall include with the invoice the Monthly Progress Report for the period being billed.

On a monthly basis, at a minimum, the Design-Builder shall meet with ICTC to review the following before submitting invoices:

- Activity percent completes, which are based on physical percent complete estimated by the field personnel relating to a resource and cost loaded schedule activity.
- Incorporation of ICTC-Approved Change Orders as individual activities with proper title, coding by Change Order number, associated logic, duration, and cost/resource loading.
- Verification of any unit price items.
- Status of outstanding Nonconforming Work and Warranties.
- Status of submittals.
- Backup documentation for cost reimbursable procurement and Change Order schedule activities.

2.2.2.2.2 Invoice Calculations

ICTC will base payments on ICTC's estimate of physical percent complete of the Work, not on measured quantities, except where specifically stated in the Contract.

The payment to the Design-Builder will be the amount shown on the Design-Builder's Approved invoice less deductions made by ICTC.

The following Project management items from the Proposal Price (Form 9), in Book 1, Exhibit N-8, "Proposal Price," will be paid by prorating any unpaid balances by the amount of time remaining until Substantial Completion:

- Contract management, including scope management, cost management, and schedule management.
- Quality management.
- Safety and security management.
- Public and stakeholder information management.
- Environmental management.
- Maintenance during construction.
- Payment for insurance and premiums will be made upon presentation of a paid invoice by the Design-Builder.

ICTC makes the payments for mobilization according to Public Contract Code § 10264.

ICTC pays the item total for mobilization in excess of ten (10) percent of the total bid in the first payment after Final Acceptance.

ICTC will base payments for design on estimated percentage complete for each RFC package with the following limitations:

- Maximum ninety (90) percent will be paid when RFC Documents have been issued.
- Maximum of ninety-five (95) percent will be paid when all construction Work associated with each RFC package is complete.
- Maximum of one hundred (100) percent will be paid when all As-Built Documents have been Approved by ICTC.

2.2.2.3 Monthly Progress Report

The Design-Builder shall include the following in a Monthly Progress Report:

- Summary of Work performed during the previous month. Include digital color photographs of the Project Work progress.
- Safety and security
  - Summary of Project accidents, including frequency and severity, and corrective actions taken.
  - Updates to emergency services access points to the Project Site.
  - Updates on safety and security training provided.
  - Updates on any Site safety and security issues addressed by the Project team.
- Labor compliance
  - Total monthly labor hours for construction, maintenance, and non-construction personnel by classification of management, engineering, and other technical personnel used on the job.
  - DBE progress and Project updates.
  - EEO progress and Project updates.
  - Update on labor compliance unresolved issues.

- Quality updates
  - Statement verifying continued compliance with the Quality Manual signed by the Quality Manager.
  - Summary of quality audits, QC and QV Inspections and testing performed, and summary of anticipated quality activities for the next month.
  - Listing of Nonconforming Work and resolutions.
  - Summary of anticipated quality activities for the next month.
  - Summary of quality improvements, including all proposed corrective and preventative actions suggested by the Design-Builder, ICTC, or GSA, and the associated responses.
  - Summary of Quality Manual updates.
- Public and stakeholder information updates
  - Summary of public and stakeholder input received and responses.
  - Summary of any media contacts.
  - Summary of any complaints and resolution.
  - Summary of information provided to the public and stakeholders regarding construction staging changes.
- Environmental compliance
  - Summary and copies of environmental monitoring reports.
  - Summary of non-compliance issues and resolution.
  - Summary of any agency Inspections.
- Utilities
  - Status of Utility Work performed and required.
- Geotechnical
  - Summary of vibration and settlement monitoring activities and issues.
  - Copies of vibration monitoring reports.
  - Copies of settlement monitoring reports.
- MOT
  - Summary of traffic switches and a look ahead to future traffic switches.
  - Summary of known traffic incidents within the Work zone.
- Visual quality
  - Summary of visual quality activities.
  - Summary of recommendations and decisions.
- Change Orders
  - Summary of outstanding Change Orders.

2.2.3 Submittals

2.2.3.1 Invoices

The Design-Builder shall include with the monthly invoice an electronic copy of the billing spreadsheet in an electronic media compatible with ICTC's software.

2.2.3.2 Monthly Progress Reports

The Design-Builder shall provide four (4) hardcopies of the Monthly Progress Report and an electronic PDF copy.

2.2.3.3 Original Payment Breakdown

The Design-Builder shall submit for ICTC Approval the Original Payment Breakdown as a condition of NTP2. ICTC will respond within twenty (20) Working Days of receipt of the Original Payment Breakdown.

2.2.3.4 Revised Payment Breakdown

The Design-Builder shall submit the Revised Payment Breakdown for ICTC Approval of any change to the Original Payment Breakdown. ICTC will respond within twenty (20) Working Days of receipt of the Revised Payment Breakdown. No payment shall be processed without ICTC's acceptance of the Revised Payment Breakdown.

2.2.3.5 Design Breakdown Report

Within thirty (30) Days after NTP1, the Design-Builder shall provide a breakdown of the design hours and design costs for the Project in accordance with the following:

- Breakdown shall be provided electronically as a spreadsheet in Excel format.
- Breakdown shall list all major design activities. At a minimum, the breakdown shall be to a level of detail consistent with the Baseline Schedule.
- Breakdown shall list hours and rates per activity for each employee classification such as Technicians, Senior Engineers, Project and Task Managers, or Administration.
- Breakdown shall list budgeted expenses per activity.
- Breakdown shall list a combined markup factor for overhead and profit.
- Spreadsheet shall sum the design activities, hours per activity, expenses, and overhead/profit markup into a single lump sum value equal to Book 1, Exhibit N-8, "Proposal Price," Line 9 – Design Services.

2.3 Human Resource Management

2.3.1 General

The Design-Builder shall conduct all Work necessary to meet the requirements of human resource management, including personnel, facilities, and equipment.

2.3.2 Administrative Requirements

2.3.2.1 General

All personnel performing Work on the Project shall have the experience, skills, knowledge, and required security and safety training to perform the Work assigned to them. All personnel performing Work on the Project shall also have appropriate required professional licenses and certifications.

2.3.2.2 Key Personnel

2.3.2.2.1 General

The Project Key Personnel including those positions, assignments, and experience requirements as addressed in the RFQ, as Amended, are incorporated by reference into this Project Requirements Section.

2.3.2.2.2 Minimum Requirements of Key Personnel

The Key Personnel assigned to the Project shall comply with the job description and minimum requirements described in the RFQ, as Amended, and the ITP. These requirements are incorporated by reference into this Project Requirements Section. All Key Personnel shall be required to be available at the Project Site during activities that involve their areas of responsibility, except as otherwise provided in the Contract Documents.

2.3.2.2.3 Approval of Key Personnel

The Design-Builder's Key Personnel shall be Approved by ICTC before they begin participating on the Project. Such Approval is based on the qualification requirements set forth above, in the RFQ, as Amended, and elsewhere in the Contract Documents for all Key Personnel.

2.3.2.2.4 Deductions for Removal of Key Personnel

Unless otherwise Approved in advance, the Design-Builder will be assessed a monetary deduction for Key Personnel who cannot meet the following commitments to the Project, except due to retirement, death, disability, incapacity, or voluntary or involuntary termination of employment.

The Project Manager shall remain on the Project until Final Acceptance. If not, the monetary deduction to be assessed will be $10,000.

The Design-Builder will be assessed a monetary deduction of $5,000 for each of the Key Personnel in the following list who do not remain on the Project for the completion of his or her function:

- Construction Manager
- Design Manager

For any changes in Key Personnel, the Design-Builder shall submit the qualification summaries and resume of the individual and obtain Approval of the individual's participation in the Project before his or her start of Work.

2.3.2.2.5 Replacement of Key Personnel

The Design-Builder shall notify ICTC in writing of any proposed changes to Approved Key Personnel and shall include a detailed resume summarizing the items set forth above and elsewhere in the Contract Documents. No Key Personnel shall be replaced without the prior ICTC Approval. The changes will only be Approved if the replacement Key Personnel are equally qualified or more qualified than the original Key Personnel.

2.3.2.2.6 Directory of Key Personnel

The Design-Builder shall prepare a directory of Approved Key Personnel that includes the following information for each individual: name, Project title, Project office address, Project office location, e-mail address, office and mobile telephone numbers, and fax number (if applicable). The directory shall be kept current throughout the course of the Project.

2.3.2.3 Other Personnel

The Design-Builder shall provide other personnel that comply with the job description and minimum requirements described below. The Design-Builder shall submit documentation of the qualifications of the

individuals proposed to fill the other personnel positions to demonstrate compliance with the minimum requirements.

2.3.2.3.1 Design Task Managers

The Design Task Managers shall comply with the following requirements:

- Shall be responsible for all aspects of the design and QC checking within their respective disciplines or portion of the Work.
- Shall be responsible for assigning staff to perform design functions, including preparation of drawings, calculations, specifications, and quantities and assigning qualified designers to check design Work.
- Shall report directly to the Design Manager.
- Shall have five (5) years of experience in managing and delivering the design of highway projects similar in scope and complexity or in their respective discipline.
- Shall be a registered Professional Engineer in the State of California.

2.3.2.4 Co-location

Co-located facilities are not required. The Design-Builder shall provide or arrange for the use of meeting space for regularly scheduled Project meetings. This meeting space shall be within five (5) miles of ICTC's primary offices. The Design-Builder shall provide office space and high-speed Internet connections for the use of up to five (5) ICTC personnel or its design consultant in the office during the design phase of the Project.

Given the on-going COVID-19 assembly and gathering restrictions, the majority of the Project meetings and reviews may need to be conducted using remote video conferencing tools. To accommodate these remote video conferencing requirements, the Design-Builder shall provide adequate resources to provide ICTC and its contract administration consultant's efficient access to these remote video conference meetings. ICTC currently uses the Zoom video conference platform. The Design-Builder may use the Zoom video conference platform, or another video conference platform with ICTC's Approval. The cost for any alternative video conferencing platform shall be the Design-Builder's responsibility.

2.3.3 Submittals

The Design-Builder shall submit to ICTC the directory of Approved Key Personnel within seven (7) Days after NTP1.

If the Design-Builder proposes a change to Approved Key Personnel, the Design-Builder shall submit a request in writing setting forth the qualifications of the replacement as required by Section 2.3.2.2.5 for ICTC Approval.

2.4 Safety and Security Management

2.4.1 General

The Design-Builder is responsible for public, GSA and CBP staff, and construction worker safety and security on the Project Site and shall conduct all Work necessary to meet the requirements of safety and security management.

The Work shall be conducted in compliance with the GSA and CBP Site security requirements presented in the RFQ, as Amended.

2.4.2 Administrative Requirements

2.4.2.1 Design-Builder Safety and Security Management Plan

The Design-Builder shall develop, implement, and maintain a written Safety and Security Management Plan that describes the processes to be followed to ensure public, GSA and CBP staff, and worker safety on the Project Site.

The Safety and Security Management Plan shall be Project-specific, shall include Work to be performed by Subcontractors, and shall describe processes to control hazards.

At a minimum, the Design-Builder's Safety and Security Management Plan shall:

- Be consistent with the Project insurance requirements.
- Describe the participation of safety and security personnel in all Work activities.
- Delineate administrative responsibilities for implementing the Safety and Security Program.
- Identify responsibilities and accountability.
- Identify dedicated safety and security professionals or managers covering all production shifts.
- Describe the process of conducting safety and security orientation for all employees. The description of the safety and security orientation process shall include:
    - Description of the extent and nature of the Project.
    - Description of any hazards that can typically be expected during the course of Work that is specific to the job assignment.
    - Required Work practices, job conduct, and injury-reporting procedures.
    - Any other general information to acquaint the employee with special Work and safety and security requirements at the Work Site, in compliance with industry practice and GSA and CBP requirements.
- Describe the Design-Builder's drug policy, including the policy at the Work Site and any pre-job Site and post-incident drug testing to satisfy Project insurance requirements.
- Describe employee training requirements.
- Describe safety Inspection procedures of Work areas, materials, and equipment to ensure compliance with the Safety and Security Program; methods of record keeping; and correction of deficiencies.
- Describe incident and emergency response procedures for incidents, including response capabilities, evacuation and egress, responsibilities for reporting and investigating incidents, exposures, contingency plans, and the maintenance of safety-related logs.
- Describe incident reporting procedures.
- Describe the Design-Builder's Work Site control policy and plans for maintaining Site cleanup, on-Site first aid facilities or medical clinic, and safe access.
- Identify public safety requirements including fencing, signs, and barricades.
- Describe the Design-Builder's hazard communication program.

- Describe the process of including representatives from the Design-Builder, representatives from all major Subcontractors, and ICTC personnel working on the Project.
- Describe the Design-Builder's method of tracking open safety and security issues.
- Describe hazard analysis, tracking, reduction of risk, logs, and mapping procedures.
- Describe the Design-Builder's management and auditing of the Safety and Security Management Plan.
- Describe personal protective equipment requirements and policy.
- Describe safety procedures for Design-Builder's employees working around and handling Hazardous Materials.
- Describe the Design-Builder's approach to complying with the GSA and CBP Site security requirements as described in the RFQ, as Amended.

2.4.3 Reserved

2.4.4 Construction Requirements

All Work under this Contract shall comply with the requirements and standards specified by the Williams-Steiger Occupational Safety and Health Act of 1970, 29 U.S.C. §651, et seq., Public Law 91-596, and other applicable federal, State, and local laws. The Design-Builder shall not require any laborer or mechanic to Work in surroundings or under working conditions that are unsanitary, hazardous, or dangerous to his/her health and safety as determined under construction safety and health standards promulgated by the U.S. Secretary of Labor.

2.4.5 Submittals

The Design-Builder shall submit two (2) individually bound copies of the Safety and Security Management Plan, one USB flash drive with a searchable PDF version, and subsequent revisions to the plan for ICTC Approval within twenty (20) Days after NTP1.

The Design-Builder shall provide verbal notification and a written report to ICTC of all incidents arising out of or in connection with the performance of the Work, whether on or adjacent to the Site, that cause death, personal injury, or property damage. The Design-Builder shall verbally notify ICTC within one (1) hour from time of occurrence of an event causing public or GSA and CBP staff injury on the Project Site. Verbal notification shall include date and time, location, brief description, extent of property damage, and extent of injuries.

The Design-Builder shall provide a written monthly incident summary report to ICTC as part of the Monthly Progress Report conditions of Section 2.2.2.3.

3 PUBLIC AND STAKEHOLDER INFORMATION

3.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with public and stakeholder information in accordance with the requirements of the Contract Documents and these Project Requirements.

3.2 Administrative Requirements

Public and stakeholder information goals for the Project shall be consistent with the *Caltrans Strategic Management Plan*. These include meeting public and stakeholder expectations with information that is reliable and encourages open communications with and among all audiences.

3.2.1 Standards

The Design-Builder shall perform the Work in general accordance with the requirements of the standards listed below as modified by this Section. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 3-1: Public and Stakeholder Information Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Project Development Procedures Manual*
2	Caltrans	Deputy Directive DD-19: Media Relations/Public Information
3	Caltrans	*Project Communication Handbook*
4	World Wide Web Consortium	Web Content Accessibility Guidelines 2.1, or a subsequent version

3.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the public and stakeholder information Work.

Table 3-2: Public and Stakeholder Information References

Organization	Title
Caltrans	*Caltrans Strategic Management Plan*

3.2.3 Public and Stakeholder Information Memorandum

ICTC requires Project communications efforts to establish and build trust between ICTC, the Design-Builder, GSA, CBP, Project stakeholders, and the public.

Two (2) broad categories of information shall be communicated and coordinated between ICTC and the Design-Builder:

- The Project progress – ongoing messages to keep people informed about how the Project is moving forward, whether it is on schedule, and what disruptions or improvements are coming in the near future.
- Coping during the Project – information that helps people deal with inconveniences caused by the Project, such as details about temporary lane closures, blocked access points, and potential construction and noise impacts.

The Design-Builder shall develop and maintain a consistent level of Project communication with the goal of establishing awareness and Project understanding. The Design-Builder shall develop, implement, and maintain a Project Public and Stakeholder Information Memorandum that recognizes the fluid nature of the Project.

The Design-Builder's public and stakeholder information staff shall be accessible 24 hours a Day, 7 Days a week, and shall respond within two (2) hours of contact to address Project issues, except in emergency situations the response shall be within fifteen (15) minutes. The Design-Builder's public and stakeholder information staff shall provide contact information, including mobile, office, and fax and pager numbers (if applicable), to ICTC within two (2) Days after NTP1.

The Design-Builder and its public and stakeholder information staff shall meet at least monthly or as jointly deemed necessary with ICTC and other appropriate representatives as designated by ICTC to review, assess input, and modify the Design-Builder's Public and Stakeholder Information Memorandum. The Design-Builder shall regularly communicate with ICTC, including phone calls and e-mail updates.

The Design-Builder shall become aware of and comply with the California Records Act throughout the Project.

The Design-Builder's Public and Stakeholder Information Memorandum shall provide its approach to addressing the follow items and other items as required by ICTC during the Project delivery:

- Coordinating Project information with ICTC, GSA, CBP, and Project stakeholders.
- A crisis communications approach for responding to emergencies and incidents during the Project.
- Providing information related to construction activities.
- MOT and access information for the Project duration.
- Emergency services access.
- Change of access
- Bicycle and pedestrian access.
- Incident management approach
- Utility shutdowns or disruptions
- Lane closure information
- Providing telephone hotline access
- Providing media information
- Project identity sign boards
- Providing Project information for ICTC to post on the Project website.
- Providing public contact information and concerns to ICTC.

3.2.4 Reserved

3.2.5 Reserved

3.2.6 Reserved

3.2.6.1 Reserved

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3.2.8.4.3 Reserved

3.2.8.5 Reserved

3.3 Reserved

3.4 Reserved

3.5 Submittals

Three (3) hardcopies of the Design-Builder's final Public and Stakeholder Information Memorandum shall be submitted to ICTC for Approval within fourteen (14) Days after NTP1. ICTC will respond within seven (7) Working Days of receipt of the plan. Upon Approval of the submittal, the Design-Builder shall provide electronic versions to ICTC.

4 PROJECT SCHEDULE MANAGEMENT

4.1 General

The Design-Builder shall complete and maintain a Project Schedule.

4.2 Administrative Requirements

4.2.1 Definitions

The capitalized terms used in this Section that are defined in Book 1, Exhibit A, "Abbreviations and Definitions," supplement or supersede definitions provided with Oracle Primavera P6 Professional Project Management for Windows.

4.2.2 General Requirements

The Design-Builder shall manage and work with each Subcontractor and Supplier to obtain information on activities for implementation and sequencing of the Work. The schedules shall reflect Contract requirements and known limitations.

4.2.3 Computer Software

Software must be compatible with the current version of the Microsoft Windows operating system in use by ICTC.

4.2.4 Naming Convention

4.2.4.1 Preliminary and Baseline Schedule

Preliminary Schedules shall be assigned a filename and a version, starting with filename "PR00" and version "Rev0". Until ICTC Approves the schedule, the Design-Builder shall resubmit using the same filename and increment the version number by one (for example PR00 Rev1). The Preliminary Schedule that is ultimately Approved as the Baseline Schedule shall be resubmitted with filename of "BL00" and a version "Baseline."

4.2.4.2 Impact Schedule and Recovery Schedule

Impact Schedules shall be assigned a filename starting with filename "IM01" and shall be incremented by one for every submitted Impact Schedule. Recovery Schedules shall be assigned a filename starting with filename "RE01" and shall be incremented by one for every submitted Recovery Schedule. For a Recovery Schedule that is related to an Impact Schedule, the Recovery Schedule's version shall indicate the Impact Schedule's filename (for example RE02 RevIM03).

4.2.4.3 Working Schedule

Working Schedules shall be assigned a filename starting with the filename "WS00" and the version "Rev0." For each revision to the Working Schedule, including the monthly revisions, the filename shall be incremented by one and the version shall be started back at "Rev0" (for example WS01 Rev0). Approved Impact Schedules or Recovery Schedules that become the new Working Schedule shall be assigned the filename "WSXX," with "XX" being the next increment after the most recent Working Schedule, and the version shall indicate the Approved Impact Schedule's or Recovery Schedule's filename (for example WS02 RevIM01 or WS02 RevRE01).

4.2.5 Project Schedule Requirements

4.2.5.1 Preliminary Schedule

All schedules submitted before Approval of the Baseline Schedule will be considered Preliminary Schedules. The first Preliminary Schedule shall communicate that all Milestone dates are understood and sufficiently detail a thirty (30)-Day look-ahead period. The Design-Builder shall continually improve upon the Preliminary Schedules and shall show the status of Work actually completed until it is Approved as the Baseline Schedule. Preliminary Schedules shall be submitted with Data Dates of the twenty-first (21st) day of the month; the schedule shall be submitted to ICTC as soon as possible after the applicable Data Date, but in no instance shall it be submitted later than four (4) Calendar Days after the applicable Data Date. Submittal of the first Preliminary Schedule shall be a condition of NTP1.

4.2.5.2 Baseline Schedule

The Design-Builder shall submit a Baseline Schedule for ICTC Approval within twenty-one (21) Calendar Days after NTP1.

The Baseline Schedule shall not extend beyond any Completion Deadlines, contain negative Float, or use any other prohibited scheduling techniques. A total of not more than fifty (50) percent of the Baseline Schedule activities shall be critical activities (activities with zero or negative Float) or near critical activities (activities with from one (1) to ten (10) Days of Float), unless otherwise Approved by ICTC.

The Baseline Schedule shall include the applicable level of detail indicated in Section 4.2.14.3, unless changes are Approved by ICTC. Failure to include any element of required Work in any schedule shall not relieve the Design-Builder from performing all Work necessary to complete the Project according to Completion Deadlines.

4.2.5.3 Working Schedule

At a minimum, the Design-Builder shall submit an updated Working Schedule, with a Data Date of the twenty-first (21st) day of the month or other date established by ICTC, that accurately records the dates Work was started and subsequently completed. The schedule shall be submitted to ICTC as soon as possible after the applicable Data Date, but in no instance shall it be submitted more than four (4) Calendar Days after the Data Date. Changes to the schedule shall be closely coordinated with ICTC and are subject to ICTC's Approval. If ICTC deems Work is performed substantially out of sequence, the Design-Builder shall demonstrate the impacts in accordance with the TIA requirements in Section 4.2.8.

The Design-Builder shall minimize the number of changes and state within the update narrative the reasons for any changes to the schedule or planned Work. ICTC may elect to allow the Design-Builder to include modifications such as adding or deleting activities or modifying activity constraints, durations, or logic without submitting a TIA, if, in the sole opinion of ICTC, the modifications do not:

- Alter the Critical Path(s) or near Critical Path(s).
- Extend the scheduled Completion Deadlines or Milestone(s) compared to that shown on the current Approved Working Schedule.
- Disrupt the integrity or comparative relationship between the last Approved Working Schedule.
- Consume "unreasonable" amount of Total Float.
- Modify budget estimates on in-progress activities.
- Delete in-progress activities with budget estimates.

If, in the opinion of ICTC, any proposed changes in planned Work result in any of the above stated conditions, the Design-Builder shall submit a TIA as described herein within fifteen (15) Days of ICTC's request.

4.2.5.4 As-Built Schedule

Within thirty (30) Days after Substantial Completion, the Design-Builder shall submit an As-Built Schedule to ICTC for review and Approval. The As-Built Schedule shall include all actual start and finish dates through Substantial Completion and shall incorporate all previously Approved schedule revisions included in Impact Schedules, Recovery Schedules, and Project Schedules.

The Design-Builder shall submit a final updated As-Built Schedule with actual start and finish dates for all activities within thirty (30) Days after Final Acceptance. Once Approved, the As-Built Schedule will serve as the final update of the Project.

The Design-Builder shall provide with the final As-Built Schedule a certification by the Project Manager stating the following:

> "To the best of my knowledge, the enclosed final update of the Project Schedule reflects the actual start and completion dates of the activities for the Project contained herein."

4.2.6 Approval of Schedules

ICTC's review and Approval of schedules shall not waive any Contract requirements and shall not relieve the Design-Builder of any obligation or responsibility for submitting complete and accurate information. By review and Approval of the schedules, ICTC does not endorse or otherwise certify the validity or accuracy of any part of the schedules. The responsibility for validity and accuracy of all schedules is the sole responsibility of the Design-Builder.

Errors or omissions within schedules shall not relieve the Design-Builder from finishing all Work within the time limit specified for completion of the Contract. If, after a schedule has been Approved by ICTC, either the Design-Builder or ICTC discovers that any aspect of the schedule has an Error, it shall be corrected, and the effects shall be indicated in accordance with the TIA requirements in Section 4.2.8.

Changes to the Project Schedule shall be closely coordinated with ICTC and are subject to ICTC's Approval. If ICTC deems Work is performed substantially out of sequence, ICTC may request the Design-Builder to demonstrate the impacts in accordance with the TIA requirements in Section 4.2.8.

The Design-Builder's refusal, failure, or neglect to diligently pursue timely Approval of any schedule or TIA shall constitute reasonable evidence that the Design-Builder is not prosecuting the Work, or separable part, with the diligence that will ensure its completion within the applicable Completion Deadline and shall constitute sufficient basis for ICTC to exercise one or a combination of the following options: (a) withhold an amount of twenty-five (25) percent of the monthly progress payment, or (b) assess a non-recoverable monetary deduction of $1,000 per Day for every Day past an applicable schedule submittal deadline stated herein.

4.2.6.1 Preliminary and Baseline Schedules

ICTC will Approve or return comments on submitted Preliminary and Baseline Schedules within seven (7) Calendar Days after being received. Schedules that are not Approved shall be corrected by the Design-Builder within seven (7) Calendar Days after ICTC has returned comment. It is the Design-Builder's responsibility to meet with ICTC as often as necessary to satisfy ICTC's comments within said seven (7) Calendar Days.

4.2.6.2 Working Schedules

ICTC will Approve or return comments on submitted Working Schedules within seven (7) Calendar Days after being received. Schedules that are not Approved shall be corrected by the Design-Builder within seven (7) Calendar Days. It is the Design-Builder's responsibility to meet with ICTC as often as necessary to satisfy ICTC's comments within said seven (7) Calendar Days. All Change Orders shall be incorporated into the schedule updates by separate activities with Approved costs and resources. All Change Orders shall be coded appropriately by Change Order number and appropriate activity coding.

4.2.6.3 Impact Schedules

ICTC will Approve or return comments on submitted Impact Schedules within fourteen (14) Calendar Days after being received. Impact Schedules that are not Approved shall be corrected by the Design-Builder within seven (7) Calendar Days. It is the Design-Builders responsibility to meet with ICTC as often as necessary to satisfy ICTC's comments within said seven (7) Calendar Days.

4.2.7 Monthly Look-Ahead Schedule

The Design-Builder shall submit, monthly, a detailed forward-looking schedule covering the period of at least thirty (30) Calendar Days. This schedule shall be a hand- or computer-generated bar chart and shall specifically reference the applicable CPM activity ID. This Look-Ahead Schedule shall be in greater detail than the Working Schedule and define specific daily operations at each specific location to be performed during the four (4)-week period.

4.2.8 Time Impact Analysis

The Design-Builder shall submit a TIA at any time the Design-Builder is unsure if any one event, or accumulation of events, impacts a Completion Deadline. The Design-Builder shall determine the effect of an impact as early as possible and shall not wait to analyze the effects of an impact; this may require estimates of the duration of the impact. Failure of the Design-Builder to submit a TIA addressing the impact will be considered prima facie evidence that ICTC was not afforded the opportunity to mitigate the impact. At any time, ICTC may require the Design-Builder to demonstrate the impacts of any ordered or proposed change to the last Approved Working Schedule via TIA and to submit the analysis within seven (7) Calendar Days of receiving the request, even if the Design-Builder believes that there is no impact to the schedule.

A TIA shall include a statement that there is "No effect to the schedule," or the TIA shall include the following:

- Impact Schedule.
- Any associated cost burden or savings.
- Brief narrative report developed specifically to demonstrate effects of deviations from the current Working Schedule to include:
    - Detailed factual statement of the impact and its cause, providing all necessary dates, locations, and items of Work affected and included in each impact.
    - Date(s) that actions resulting in the impact occurred or conditions resulting in the impact became evident.
    - Identification and copies of all pertinent documents relating to such impact.
    - Basis for entitlement and identification of the provisions of the Contract that support the impact.

- All, if any, concurrent Design-Builder–caused delays during the time frame of the impact.
- All activities represented or affected by the change, with activity numbers, durations, predecessor and successor activities, resources, and cost.
- Any additional information requested by ICTC.

ICTC may Approve the Impact Schedule as the new Working Schedule while parties determine associated cost burden or savings. All Approved Impact Schedules shall become the next Working Schedule.

4.2.9 Recovery Schedules

Unless otherwise directed in writing by ICTC, whenever the current Working Schedule indicates negative Float greater than five (5) percent of the remaining Calendar Days before a Milestone, but in no case greater than negative forty (40) Working Days, the Design-Builder shall submit, within seven (7) Calendar Days, a Recovery Schedule. The Recovery Schedule shall eliminate the negative Float regardless of fault of either party for past delays. The requirement to recover negative Float regardless of fault is not a directive by ICTC to accelerate the Work but rather a directive to provide a proposal. Any resolution involving acceleration at a cost to ICTC shall be directed in writing from ICTC before any execution of acceleration thereof.

4.2.10 Change Orders

Requests for Change Orders that involve time adjustments shall include a TIA. All Change Orders that involve time adjustments shall be incorporated into the Working Schedule, and the Design-Builder shall identify all schedule activity(s) that were affected by the Change Order. Each Change Order shall have its own activity ID and specifically reference the Change Order number as the P6 resource; and be assigned to a cost account (CO).

4.2.11 Early Completion

If the Design-Builder intends to complete the Work, or any portion thereof, earlier than any Completion Deadline, it is understood that the Project benefits from the increase in shared Total Float. The Design-Builder agrees that delays shall only be based on impacts to the Completion Deadlines, not the planned early finish date of the Project Schedule. Completion Deadlines can only be changed by an executed Change Order.

4.2.12 Calendars

The duration of each activity shall include the necessary Working Days to actually complete the Work defined by the activity; contingency shall not be built into the durations. Each activity shall be assigned the appropriate calendar as it relates to each major item of Work. The Design-Builder shall submit a statement indicating duration (in hours) of their normal workday as it relates to the work week (for example M-F [10 hrs] and Sat [6 hrs] for each calendar).

4.2.13 Float

The Design-Builder shall not engage in Float suppression manipulations and techniques of network logic, whether intentional or unintentional, that have the net effect of sequestering Float time, that is, diminishing, screening, or removing Float that would otherwise be available to both parties. It is expressly agreed and understood that the Design-Builder shall not be entitled to any compensation or damages on account of delays that could have been avoided by revising activity time or logic used to sequester Float and will exclude the Design-Builder's right to recover any delay damages or compensation. Lags/leads are subject to the consent of ICTC. The Design-Builder shall remove any lags/leads and replace them with an activity identifying the lag/lead upon request of ICTC, regardless of prior Approval on previous schedules.

The Design-Builder acknowledges that all Float is a shared commodity available to the Project and is not for the exclusive benefit of any party, but is an expiring resource available to accommodate changes in the Work, however originated. Contract time extensions for Contract performance will be granted only to the extent that delays or disruptions to affected Work paths exceed Total Float along those paths of the current Working Schedule in effect at the time of delay or disruption.

Total Float shall be calculated using the finish dates. Hammocks shall be ignored when determining Float and Critical Path(s).

4.2.14 Schedule Requirements

4.2.14.1 Data, Network Diagrams, and Narrative Reports

For each schedule submittal, the Design-Builder shall include:

- One (1) USB flash drive containing the schedule data.
- One (1) set of originally plotted, time-scaled network diagrams.
- One (1) copy of the narrative report.

Label the USB flash drive with:

- Project name
- Contract number
- Date produced
- Filename complying with Section 4.2.4.

The time-scaled network diagrams shall:

- Show a continuous flow of information from left to right.
- Show the Baseline Schedule in grayscale above the current progress bar for each task.
- Clearly show the primary critical path using graphical presentation.
- Be based on early start and early finish dates of activities.
- Include the following:
  - Activity ID and description
  - Original duration
  - Remaining duration
  - Percent complete
  - Activity Float and Total Float
  - Predecessors and successors
- Include only contractually required constraints unless otherwise Approved. by ICTC
- Be on 34-by-44-inch or larger sheets.
- Include a title block and timeline on each page. The title block shall include Project name, filename, revision, start date, finish date, Data Date, and run date.

As a minimum each activity shall:

- Have a unique activity description that appropriately describes the Work to be performed.

- Not be less than one (1) Day or more than nineteen (19) Days in duration. Express activity duration in Days.
- Be logically tied to at least one predecessor and one successor activity, except for the first and last activities, respectively.
- Use the activity code "DETL" to best represent a geographic area of the Project. The DETL code field shall be shorter than five (5) characters.

The narrative report shall be organized in the following sequence with all applicable documents included:

- Transmittal letter.
- Work completed during the period.
- Identification of unusual conditions or restrictions regarding labor, equipment, or material, including multiple shifts, six (6)-day work weeks, specified overtime, or Work at times other than regular days or hours.
- Description of the current Critical Path.
- Changes to the Critical Path and scheduled completion date since the last schedule submittal.
- Description of problem areas.
- Current and anticipated delays, including:
  - Cause of delay
  - Impact of delay on other activities, Milestones, and Completion Deadlines.
  - Corrective action and schedule adjustments to correct the delay.
- Upcoming and pending coordination required with ICTC or third parties.
- Pending items and status of:
  - Permits
  - Change Orders
  - Time adjustments
  - Noncompliance notices
- Reasons for an early or late scheduled completion date in comparison to the Completion Deadlines.
- Bar chart of all activities, sorted by early start and indicating longest path(s) in red.
- Bar chart sorted by early start for each Milestone's Critical Path.
- Bar chart of only activities with Total Float less than ten (10) Days, sorted by early start.
- Description and reason for any changes made to the schedule and the effects the changes have on Milestones or Project Completion Deadlines, including schedule recovery.

4.2.14.2 Cost and Resource Loading

The Project Schedule shall be both cost- and resource-loaded and will be used to administer the payments to the Design-Builder. If the Design-Builder intends to bill for materials on hand, all procurement activities shall be scheduled and cost/resource loaded separately from the installation activities.

The costs assigned to schedule activities shall roll up to equal the price for the items identified in Book 1, Exhibit N-8, "Proposal Price." The total cost of all schedule activities shall equal the Contract Price. The cost assigned to individual schedule activities shall reflect the Design-Builder's cost for each activity and shall not artificially inflate, imbalance, or front-load the items. Each activity shall identify a reasonable estimate of either a commodity or labor hour upon which the activity value is based. Combining multiple cost/resource account codes on single activities is not allowed, for example "Install Sound Walls" shall not include both "Painting" and "Installation" cost or resources.

4.2.14.3 Level of Detail

The Project Schedule shall be sufficiently detailed to accurately reflect the complexity, Site security, and construction operations of this Project to the satisfaction of ICTC, GSA, and CBP. The level of detail described below is an example of the kind of detail expected but can be improved upon or changed as applicable.

Administration:

- Schedule Milestones
- Mobilization
- All submittals (design packages, Working Drawings, and related items)
- ICTC review periods
- GSA and CBP review periods.
- NTO and Relocation by Utility Owner
- Material on hand (procured items) requests and payments
- Substantial Completion
- Punch List

Bridge:

- Test piling, if used
- Test holes
- Embankment for each abutment location
- Fabrication and delivery of piling
- Structural steel fabrication, delivery, and erection
- Pile installation per abutment
- Sheet pile installation at each abutment
- Abutments
- Diaphragms
- Deck placement
- Parapets and railings

Roadway:

- Traffic switches
- Submission of job mix formula for asphalt pavement
- Delivery schedule for items such as drainage pipe, guardrail, signs, and permanent lighting facilities
- Internal access and haul roads (location and duration in place)
- Clearing and grubbing by stationing
- Excavation
- Embankment placement
- Drainage system

- Retaining walls
- Subgrade for roadway
- Base for roadway
- Curb, barrier wall, and sidewalks for roadway
- Pavement (asphalt and concrete) for roadway
- Bridge approach slabs
- Guardrail
- Slope pavement or riprap
- Roadway lighting
- Roadway striping
- Finishing roadway and final cleanup

4.3 Deliverables

4.3.1 Preliminary Schedule

The Design-Builder shall submit to ICTC a Preliminary Schedule in accordance with Section 4.2.5.1.

4.3.2 Baseline Schedule

The Design-Builder shall submit to ICTC a Baseline Schedule in accordance with Section 4.2.5.2.

4.3.3 Working Schedule

The Design-Builder shall submit to ICTC updated Working Schedules in accordance with Section 4.2.5.3.

4.3.4 Time Impact Analysis

The Design-Builder shall submit to ICTC TIAs as required in accordance with Section 4.2.8.

4.3.5 Recovery Schedule

The Design-Builder shall submit to ICTC Recovery Schedules as required in accordance with Section 4.2.9.

4.3.6 Weekly Look-Ahead Schedule

The Design-Builder shall submit to ICTC a Look-Ahead Schedule weekly in accordance with Section 4.2.7.

4.3.7 As-Built Schedule

The Design-Builder shall submit to ICTC an As-Built Schedule in accordance with Section 4.2.5.4.

5 QUALITY PROGRAM

5.1 General

The Design-Builder shall perform all Work necessary to meet the requirements related to QC and QV and provisions pertaining to the development of a Quality Program for the Project in accordance with the requirements of the Contract Documents and these Project Requirements. The Design-Builder's Quality Program shall include developing, implementing, and maintaining a Quality Manual that encompasses the Project quality management system, the design and construction quality, and the documentation requirements for the Project and shall include the Design-Builder's quality policy, quality objectives, organizations, Design and Construction Quality Management Plans, quality processes and procedures, Work instructions, and records management.

The Design-Builder shall be responsible for all Work for the design and construction quality of the Project and for fully complying with the Project Requirements and the Design-Builder's Quality Program. The Design-Builder shall be responsible for QC and QV as described in this Section 5 and in the Approved Quality Manual.

5.2 Administrative Requirements

5.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 5-1: Quality Program Standards and Requirements

Priority	Organization	Title
1	Caltrans	Standard Special Provisions
2	Caltrans	*Standard Specifications**
3	Caltrans	*Standard Plans*
4	Caltrans	*Construction Manual*
5	Caltrans	*Project Development Procedures Manual*
6	Caltrans	*Independent Assurance Manual* and amendments

*Document modified for design-build.

5.2.2 Overall Quality Approach

The Design-Builder shall develop, implement, and maintain a Quality Program that:

- Encompasses the overall Project, the design and construction quality, and documentation requirements for the Project.
- Establishes comprehensive quality management processes and procedures.

- Integrates the quality goals and objectives of both the design and construction elements of the Project.
- Defines the minimum standards, processes, and procedures for quality management.
- Assigns the responsibilities for specific quality management functions.

The Quality Program shall ensure that design, procurement, shipping, handling, fabrication, installation, cleaning, inspection, construction, testing, storage, examination, repair, maintenance, and required modifications of all materials, equipment, and elements of the Work comply with the requirements of the Contract Documents. The Quality Program shall also ensure that all materials, equipment, and other elements of the Work will perform satisfactorily for the purpose intended. The Quality Program shall provide ICTC the opportunity to perform Owner Verification of the Design-Builder's compliance with the Contract Documents, including access to all Work. Representatives of GSA and CBP, other agencies of the federal government, and representatives of other agencies of California shall have the right to inspect the Work to the same extent provided for ICTC and as required by Governmental Rules.

The Design-Builder shall have the primary responsibility for the QC and QV of the Work, including all Work and products of subcontractors, both on-Site and off-Site, in accordance with the policies and procedures defined in the Approved Quality Manual. The Design-Builder's QC activities shall include the total of all design and construction activities to ensure that a product meets the Contract requirements. The QV activities shall include all systematic monitoring and evaluation of various aspects of the Project to ensure the standards of quality are being met, thereby providing confidence that all Work complies with the Contract and that all materials incorporated in the Work, all equipment, and all elements of the Work will perform satisfactorily. The Design-Builder shall perform design quality check and review to ensure that the Work meets Contract requirements. The Design-Builder shall also perform construction quality testing and Inspection activities to ensure that materials and the constructed Work meet Contract requirements. Although ICTC may be performing material source Inspection, the Design-Builder is responsible for QV when materials come to the Site and for cast-in-place concrete and asphalt plant Inspection. The quality tests and Inspections shall be in accordance with the policies and procedures defined in the Approved Quality Manual.

The Design-Builder's QV personnel shall be independent from and have no responsibilities in the production of the Work. There shall be a clear separation between QC and QV staff, including separate reporting authorities, and QV staff shall work for and report to the Quality Manager.

The Persons and organizations performing Quality Program functions shall have sufficient authority and organizational freedom to identify quality problems and to initiate, recommend, provide, and verify implementation of solutions. The Design-Builder shall ensure that staff with the authority to stop Work understand the processes to implement this. The Design-Builder's quality staff shall not have the ability to deviate from Project Requirements or to interpret Project specifications. Their role is solely to ensure the finished Work meets the requirements of the Contract.

The Design-Builder shall document quality activities and maintain quality data in accordance with the policies and procedures defined in the Approved Quality Manual. The Design-Builder shall provide a DCS to store and record all documents generated under the Contract for document management.

ICTC will audit the Design-Builder's Quality Program to determine whether quality activities are being carried out and implemented effectively in accordance with the Approved Quality Manual and the Contract Documents.

ICTC will perform testing and Inspection for Owner Verification.

The description of the Quality Program in this Section is not intended to be all encompassing, but to give the Design-Builder and ICTC the flexibility to design and develop a program that best fits the needs of the Project and both parties.

ICTC expects Quality Program improvements throughout the delivery of the Project. The Design-Builder shall involve all its staff and partners with ICTC to ensure overall Project satisfaction.

5.2.3 Quality Manual

The Design-Builder's Quality Program shall be described in a Quality Manual. The Quality Manual shall encompass all Contract requirements with regard to design, construction, and documentation requirements for all quality processes. The Quality Manual shall be prepared under the direction of the Quality Manager.

The Quality Manual shall graphically show, via flow chart, the processes and their relationships to each other, the Inspection and test controls, and a narrative for each process.

All written procedures shall clearly describe the purpose of the process, overview of the process, responsibilities, steps of the process, and records resulting from the process.

Other areas the Design-Builder shall address in the Quality Manual include:

- Unique or innovative design items, including special designs
- Unique or innovative construction items
- Warranty requirements that could lead the Design-Builder to modify their quality processes or procedures

Caltrans has developed a Quality Manual Template to aid the Design-Builder with development of the Quality Manual for the Project. The Quality Manual Template will be provided to the Design-Builder upon NTP1. The Quality Manual Template consists of the following components:

- Volume I – Quality Management Plan (includes the overall Quality Management Plan, the Design Quality Management Plan, and the Construction Quality Management Plan)
- Volume II – Construction Inspection and Testing Plan
- Volume III – Materials Control Schedule
- Volume IV – Document Management Plan

The Caltrans Quality Manual Template contains the quality processes and procedures ICTC expects to see in the Design-Builder's Quality Manual for the Project. The template shall be considered minimum and the Design-Builder shall modify it as necessary to provide an overall comprehensive Quality Manual for the Project. The Design-Builder may develop its Quality Manual independently, but it shall cover all the topics contained in Volumes I-IV of the Caltrans Quality Manual Template and meet all requirements of the Contract. If any discrepancies exist between the requirements shown in the Quality Manual Template and the requirements of Section 5, the requirements of Section 5 shall prevail. This Quality Manual shall be subject to the Approval process detailed in Section 5.5.

The Design-Builder shall track all changes made to the Caltrans Quality Manual Template and clearly depict them to ICTC in each submittal of the Quality Manual. Versions with tracked changes shall be submitted with all native electronic files.

5.2.3.1 Volume I – Quality Management Plan

The Quality Manual shall include an overall Quality Management Plan, a Design Quality Management Plan, and a Construction Quality Management Plan. At a minimum, the Quality Management Plans shall meet the requirements of the example Quality Management Plans in the Quality Manual Template.

5.2.3.2 Overall Quality Management Plan

The overall Quality Management Plan shall, at a minimum, include the following information:

- Organization: Include the following information:
  - Chart showing lines of authority and reporting structure with the specific Quality Program responsibilities.
  - Names, qualifications, duties, responsibilities, and authorities of each Person proposed by the Design-Builder to be assigned a Quality Program function.
  - Provision for updating the Quality Program staffing schedule to reflect accurate forecasting of QC/QV staffing requirements, as necessary, through Final Acceptance.
- General Processes and Procedures: Describe processes and procedures for:
  - Coordinating and ensuring consistency and quality of Work performed by Design-Builder and Subcontractors. Subcontractors shall comply with all applicable aspects of the Quality Program relating to their Work.
  - Coordinating and ensuring consistency and quality of materials and products.
  - QC and QV review processes for management, administrative, and nontechnical functions for the Project.
- Documentation: Describe procedures for identifying, controlling, and storing QC/QV documentation for the Work.

5.2.3.3 Design Quality Management Plan

The Design-Builder shall develop, implement, and maintain a Design Quality Management Plan that:

- Demonstrates sound design QC and QV review and check processes and procedures.
- Ensures the Design Documents comply with the requirements of the Contract Documents.
- Provides quality measures and encourages continuous improvement of the design submittals.
- Involves ICTC throughout the entire design development process.
- Integrates ICTC, GSA, CBP, local and regulatory agencies, and other applicable third parties in the design review comment process.

5.2.3.4 Construction Quality Management Plan

The Design-Builder shall develop, implement, and maintain a Construction Quality Management Plan that:

- Develops a comprehensive resource management and training program that clearly defines the roles and responsibilities of the QC and QV; and an implementation and monitoring program that ensures such compliance.
- Establishes a materials tracking system for materials from the source to the point of installation.
- Establishes the QC and QV testing methods and frequency, with testing methods and frequency meeting ICTC and governing local agency requirements as a minimum.

- Provides quality measures and encourages continuous quality improvement during the construction phase.
- Integrates all Subcontractors and Suppliers.
- Involves ICTC, GSA, CBP, local and regulatory agencies, and other applicable third parties throughout the entire construction process.

5.2.3.5 Volume II – Construction Inspection and Testing Plan

The Quality Manual shall include a detailed Construction Inspection and Testing Plan describing all of the proposed Inspections and tests to be performed throughout the construction process. At a minimum, the Construction Inspection and Testing Plan shall meet the guidelines, frequency, and requirements of the example Construction Inspection and Testing Plan in the Quality Manual Template and the Caltrans *Construction Manual*. The Design-Builder shall tailor the Inspection and Testing Plan to meet the Project Requirements.

The Inspection and Testing Plan shall:

- Establish procedures for QV Inspections and tests to be performed during the production of the Work, as materials arrive on the Site, and as materials are incorporated into the Work to validate that all materials conform to Contract requirements. All QV Inspections and tests shall be performed and recorded by the QV staff.
- Be managed through the provision of document control and be updated when new Subcontractor or Supplier contracts are implemented.
- List the activity to be tested or inspected. All material tests shall reference the activity ID.
- List the required qualifications of the inspector performing the work.
- Identify the agency or laboratory to perform the test or Inspection.
- Specify the frequency of the test or Inspection.
- Specify the test or Inspection procedure or reference standard.
- Specify the Contract reference (plan or specification).
- Include example Inspection and test reports.
- Identify Work for which statistical techniques will be used as a basis of quality and acceptance or rejection of lots.
- Include a performance tracking system that demonstrates the statistical values and tolerances of tests conducted.
- Show what products or services are to be subcontracted.
- Describe verification of Suppliers' and Subcontractors' compliance with Project requirements.
- Ensure that Suppliers perform applicable QC tests on materials as they are produced. Before the material arrives on the Project Site, testing information shall be forwarded to the Construction QV Manager demonstrating the material meets requirements.
- Identify critical activity points at which Work shall be formally accepted before proceeding to the next stage of the Work.

- Ensure that the proper tests and Inspections have been performed for the critical activity points by collecting Inspection and testing data, forms, and reports required for the critical activity point sign-off and verifying that the test and Inspection data meets Contract requirements.
- Include quality processes and procedures and control of Nonconforming Work.
- Ensure cooperation and coordination with ICTC for materials fabrication through installation.

5.2.3.6 Volume III – Materials Control Schedule

The Quality Manual shall include a Materials Control Schedule. At a minimum, the Materials Control Schedule shall meet the requirements in the example Materials Control Schedule in the Caltrans Quality Manual Template.

The Materials Control Schedule shall describe roles and responsibilities for sampling and testing of materials, including sampling and testing to be performed by the Design-Builder and ICTC to validate and verify that all Work conforms to the Contract requirements. This sampling and testing shall serve the purpose of assuring and verifying that all materials, equipment, and elements of the Work will perform satisfactorily in service and will meet the requirements of the Contract Documents.

The Materials Control Schedule shall describe the minimum sampling, testing, and Inspection required for the materials used in the Project. The Design-Builder shall review the example Materials Control Schedule for areas where Inspection or testing is not addressed or the Design-Builder desires an increased rate of Inspection or testing. The example Materials Control Schedule has been reviewed and approved by Caltrans and FHWA, so any recommended changes by the Design-Builder shall require Approval from ICTC and possibly approval from Caltrans and FHWA.

5.2.3.7 Volume IV – Document Management Plan

The Quality Manual shall include a Document Management Plan describing how the Design-Builder will create, collect, store, search, manage, and distribute documents and information. At a minimum, the Document Management Plan shall meet the requirements in the example Document Management Plan in the Quality Manual Template.

The Document Management Plan shall:

- Be compliant with the following governing documents:
  - CA State Admin Manual - Records Management Act - Section 1600
  - CalRIM E-Records Guidebook
  - CalRIM Records Retention Handbook
  - Caltrans *Project Development Procedures Manual*, Chapter 7
  - Caltrans *Construction Manual*, Chapter 5, Section 1
- Define the processes and procedures that address the following:
  - Approve documents for adequacy before use
  - Review and update as necessary and re-approve documents
  - Ensure changes and the current revision status of documents are identified
  - Ensure relevant versions of applicable documents are available at points of use
  - Ensure documents remain legible and readily identifiable

  - Ensure documents of external origin are identified and their distribution controlled
  - Prevent the unintended use of obsolete documents and apply suitable identification to obsolete documents if they are retained for any purpose
- Identify how records are to be maintained and kept throughout the duration of the Project. Specifically elaborate on how 3101DB forms are responded to for items that are source or jobsite inspected. Also, explain how each material item will have corresponding source or field release records for Final Acceptance.
- Include process to describe how the Design-Builder will provide information to ICTC in a controlled, efficient, transparent, auditable, and timely manner.
- Contain information on Design-Builder's internal workflow, metadata, approval process, and status.
- Be compatible with ICTC's CADD/GIS Standards.
- Describe the submittal process of all certifications as set forth in Sections 5.2.4 and 5.3.5.
- Detail how data and information will flow from the Design-Builder's electronic CADD management environment to the DCS.
- Describe how the security of documents will be controlled during the Project.
- Detail how assigned authority is controlled through workflows and permissions to ensure any sign-off function will only be presented to the correct authority.
- Describe the methods by which all documents issued and received by the Design-Builder will be logged, tracked, and retrieved.
- Identify how all documents will be tracked using a unique document control number.

The Design-Builder shall store and record in the DCS all documents, correspondence, design inputs, drawings, progress reports, technical reports, specifications, Contract Documents, submittals, calculations, test results, Inspection reports, testing and Inspection records from Suppliers and Subcontractors, Nonconformance Reports, administrative documents, and other documents generated under the Contract. This includes all hardcopy and electronic records.

The Design-Builder shall use the DCS for design comments logging, tracking, and resolution and for logging and tracking their construction Inspection and testing data.

The Design-Builder shall provide DCS access to ICTC. The Design-Builder shall provide any software necessary for ICTC's Project personnel to access the Project DCS.

The Design-Builder shall ensure that any changes to documents provided to ICTC are in a format that can enable changes to be readily apparent and trackable such as documents using the redline and strikeout or track changes methods.

5.2.3.8 Quality Manual Updates

The Design-Builder shall maintain the Quality Manual on a regular basis to contain current versions of the following information:

- Organization charts that identify all QC/QV personnel and the line reporting relationships within the Design-Builder's management, design, and construction organizations

- Description of the roles and responsibilities of all QC/QV personnel and those who have authority to stop Work
- Identification of testing agencies, including information on each agency's capability to provide specific services required for the Work, certifications held, equipment, and location of laboratories
- Qualifications/certifications for all QC/QV personnel

The Design-Builder shall revise the Quality Manual and its implementation when either the Design-Builder or ICTC identifies a systemic problem. The Quality Manual or any part of the Quality Manual shall be periodically updated to more accurately define the processes and/or procedures. The Design-Builder is expected to review the Caltrans Quality Manual improvements with ICTC before submitting an update to the Quality Manual. These revisions shall be Approved by ICTC as described in Section 5.5 before implementation.

5.2.4 Certifications

The table below lists the types of certifications required to be submitted by the Design-Builder to ICTC, the section of the Contract Documents that describes the submittal, and the certifying party. This table reflects a nonexclusive list of certifications identified in the Contract Documents and is not intended to be an all-inclusive or exhaustive listing. The Design-Builder shall include the certification with each referenced submittal.

Table 5-2: Certification List

Required Certification	Section of Contract Documents	Certifying Party
Design Documents (other than RFC Documents)	5.3.5.1	Design Manager Design QV Manager or Quality Manager
RFC Documents	5.3.5.2	Design Manager Design Task Manager Design QV Manager Project Manager Construction QV Manager
QC/QV training	5.3.2, Item e, 5.4.2,	Construction QV Manager Quality Manager
Substantial Completion		
Conformity of the Design Documents with the requirements of the Contract Documents	Book 1, Section 20.2.1, Item d	Design Manager
Conformity of the construction with the Design Documents	Book 1, Section 20.2.1, Item e	Project Manager
No outstanding nonconformances other than those identified on the Punch List	Book 1, Section 20.2.1, Item f	Construction QV Manager

Table 5-2: Certification List

Required Certification	Section of Contract Documents	Certifying Party
Work is completed in accordance with the Contract Documents	Book 1, Section 20.2.1, Item j	Quality Manager
Final Acceptance		
As-Built Documents	3.2.5.4, 5.5.2	Project Manager Design QV Manager or Design Manager
Conformity of the Design Documents with the requirements of the Contract Documents	Book 1, Section 20.3.1.2, Item e	Design Manager
Conformity of the construction with the Design Documents	Book 1, Section 20.3.1.2, Item f	Project Manager
No outstanding nonconformances	Book 1, Section 20.3.1.2, Item g	Construction QV Manager

5.2.5 ICTC Audits

ICTC may perform systematic audits that entail the collection and documentation of objective evidence to verify whether requirements have been met. ICTC will document the results of auditing on standardized audit report forms with copies provided to the Design-Builder. ICTC will communicate and track Nonconforming Work in separate reports. ICTC will record the audit results in a database and provide regular summary and status reports to the Design-Builder. The timing, frequency, and depth of auditing will be at ICTC's discretion.

ICTC may perform management program auditing of the implementation of the Design-Builder's management plans and the Approved Quality Manual. These audits will be systematic and independent examinations to determine whether quality activities and related results comply with planned quality activities and expected results and whether they are implemented effectively and are suitable to achieve objectives.

ICTC may perform design auditing on the products of design (drawings, calculations, specifications, special provisions, studies, reports, and other design outputs) on an ongoing basis during the design phase of the Project.

5.2.6 Nonconforming Work

5.2.6.1 Review and Disposition of Nonconforming Work

The resolution of Nonconforming Work shall conform to the requirements set forth in Book 1, Section 5.7, Nonconforming Work.

The Design-Builder shall ensure that Nonconforming Work identified during the design verification and checking, testing, and Inspection activities is recorded. The Design-Builder is responsible for the resolution of all Nonconforming Work, including that of Subcontractors or Suppliers.

The Quality Manual shall describe how the Design-Builder plans to deal with discovered Nonconforming Work, tracking Nonconforming Work, resolving Nonconforming Work, and preventing similar Nonconforming Work from occurring on future Work within the Project.

5.2.6.2 Corrective and Preventative Actions

The Quality Manual shall describe the corrective and preventive actions the Design-Builder will take upon the identification of actual or potential major and systemic Nonconforming Work identified internally or by ICTC.

The Design-Builder shall, within five (5) Days of the identification of major or systemic Nonconforming Work by either Design-Builder or ICTC staff, review the cause of the Nonconforming Work and propose to the ICTC, for their Approval, a corrective or preventive action to prevent the recurrence of the Nonconforming Work. The Design-Builder shall update the Quality Management Plan to incorporate the Approved corrective action. The Design-Builder's proposed corrective action shall be documented in a format and medium acceptable to ICTC.

The Design-Builder shall advise ICTC when the corrective action has been implemented so ICTC may verify the implementation, if ICTC so chooses.

5.2.7 Withholding of Payment and Work Suspension

If there is evidence that the Design-Builder is not following Approved quality procedures, as evidenced by Owner Verification activities or problems arising during design or construction, ICTC may withhold payment until sufficient quality procedures are in place. If construction is in progress, ICTC may suspend ongoing Work represented by deficient Work that requires correction of design or construction defects.

ICTC may deduct from any amounts otherwise owing to Design-Builder, including each progress payment and the final payment, any additional costs borne by ICTC to address lapses in the Design-Builder's quality management system, as specified in Book 1, Section 11.5.1, Deductions.

5.3 Design Requirements

5.3.1 Design Quality Management Plan

The Design Quality Management Plan process places the primary responsibility for design quality on the Design-Builder, facilitates the completion of Design Documents, and allows ICTC, GSA, and CBP to oversee the design process and design products. The Design Quality Management Plan shall provide processes that ensure the design, including design by Subcontractors, is performed in accordance with the Approved Quality Manual and complies with all requirements of the Contract Documents. Any non-standard designs, details, manuals, or documents other than those Approved by ICTC shall be submitted to ICTC for Approval before being used for design or the preparation of structure Plans.

5.3.2 Design Quality Management Plan Procedures

The Design-Builder shall provide Quality Program procedures for Design Documents and other design information, organizing the procedures by engineering discipline including structural, civil, utilities, and traffic. The Design Quality Management Plan procedures and methods shall, at a minimum, include the following requirements:

- Schedule:
    - Description of how the design team schedules the design efforts, including design reviews, verification and checking stages, and issue dates of design submittals.

- Validation:
  - Quality requirements are specified and included in the development of Design Documents.
  - Compliance with and effectiveness of all aspects of the Design Quality Management Plan shall be demonstrated through a comprehensive system of planned and periodic audits at least every six (6) months. Audits shall be performed by appropriate trained QC/QV personnel not having direct responsibility in the areas being audited and in accordance with the written procedures or checklists. Audit results shall be documented, reviewed, and acted on by management having responsibility in the areas audited. The audit results shall determine the root cause and corrective action necessary, including follow-up and re-audit or closeout of deficient areas.
- Design inputs and outputs:
  - Description of how all design inputs, such as design criteria, Contract requirements, and computer software, are defined, identified, reviewed, and approved. The Design-Builder shall maintain an accessible, centrally-controlled manual, database, or list of all relevant design inputs to be used by design personnel to incorporate into the design.
  - Definition of the design outputs including the specific Plans and specifications to be produced.
- Checking and reviewing:
  - Include independent checking and back-checking by an independent reviewer not involved in the preparation of Design Documents being checked. For the design and analysis of structures, the Design-Builder's designer and independent checker shall not use the same design and analysis computer software. The independent checker shall perform analysis based only on the drawings and associated reports. Results from the design and independent check calculations shall match each other within a five (5) percent margin of difference, and both results shall meet the Contract requirements.
  - Include checking and back-checking level, frequency, and methods to ensure the accuracy and adequacy of the Design Documents.
  - Define the frequency, timing, content, and format of ICTC's over-the-shoulder reviews.
- Training:
  - Implement and document training of all design staff on the applicable requirements of the Design Quality Management Plan and Contract Documents pertaining to their responsibilities.
  - Provide certification that the personnel performing activities affecting or measuring the quality of the Work have received training on the Project's Quality Program.
- Roles and responsibilities:
  - Identify the roles and responsibilities for Key Personnel and Design Task Managers assigned for the design Work.
  - Confirm that assigned Key Personnel and Design Task Managers participate in the reviews for all Design Documents.
  - Description of the coordination of the design with construction.
  - Include details as to the level of involvement of ICTC and GSA in the design development process. The Design-Builder is encouraged to involve ICTC and GSA in all design development processes, including independent technical reviews and constructability reviews.

  - Integrate all Subcontractors into the Quality Program.
  - Maintain an auditable method to ensure complete and thorough internal and external review by all applicable entities for each discipline of Work.
- Design changes:
  - Include a process whereby design changes to previous RFC Documents packages are prepared, reviewed, submitted, and approved by authorized personnel before they are released for construction.
  - Specify procedures for tracking and distributing design changes made after the RFC Documents package.

5.3.3 Authorized Material List

The Design-Builder shall only use products that meet the Caltrans *Standard Specifications* or that appear on the Caltrans Authorized Material List at the following Web site:

www.dot.ca.gov/aml/

To propose the addition of a new product to the Authorized Material List, the Design-Builder shall submit the product for evaluation through the Caltrans Product Evaluation Process at the following Web site:

http://www.dot.ca.gov/pep/

The Design-Builder shall allow thirty (30) Days for Caltrans initial evaluation of adding a product to an existing Authorized Material List and ninety (90) Days for Caltrans initial evaluation of a new product. Approval is at Caltrans discretion and the evaluation and implementation process can take over two (2) years.

5.3.4 RFC Documents

Before certifying and submitting the RFC Documents submittal, the Design Manager and the Quality Manager, or their designees, shall meet with ICTC, GSA, and CBP to review the proposed contents of the submittal.

The RFC Documents submittal shall include Construction Inspection and Testing Plans and Materials Control Schedules that are specific to the Work included in the RFC Documents. Any updates or revisions in the RFC-specific Construction Inspection and Testing Plans and Materials Control Schedules compared to the versions in the Approved Quality Manual shall be submitted to ICTC for Approval in accordance with the Quality Manual Template.

5.3.5 Design Documents Certification

5.3.5.1 Certification of Conceptual, Intermediate, and Final Design Documents

The Conceptual, Intermediate, and Final Design Documents submittals shall include certification from the Design Manager and the Design QV Manager or the Design Manager and the Quality Manager that:

- Design-Builder has fully applied and followed the Design Quality Management Plan described in the Approved Quality Manual.
- Independent technical review of the Design Documents has been completed and the design complies with all applicable requirements of the Contract Documents, Governmental Rules, and Governmental Approvals.

- Environmental review of the Design Documents has been completed and the design does not change any conditions of the original NEPA/CEQA approval and, therefore, the original NEPA/CEQA approval remains valid.

The Design Manager and the Quality Manager or Design QV Manager shall refuse and reject any submittal that does not comply with the requirements of the Approved Quality Manual, Contract Documents, Governmental Rules, and/or Governmental Approvals.

Design Documents submittals not accompanied by written certification will be returned to the Design-Builder.

5.3.5.2 Certification of RFC Documents

When the Design-Builder has completed the design for each Design Documents submittal, the Design Manager, the Design Task Manager, the Design QV Manager, the Construction QV Manager, and the Project Manager shall certify the RFC Documents submittal in accordance with Form DQP418FA in the Quality Manual Template.

5.3.6 Submittal of Design Documents to Other Agencies

Submission of Design Documents to agencies other than ICTC, GSA, and CBP shall be determined by the Design-Builder and included in the Quality Manual. All Work associated with review and comment of the design by outside agencies shall be the responsibility of the Design-Builder. The Design-Builder shall submit to ICTC copies of all correspondence with and comments from outside agencies.

5.4 Construction Requirements

5.4.1 Construction Quality Management Plan

The Construction Quality Management Plan places the primary responsibility for construction quality on the Design-Builder to perform, control, and ensure that construction Inspection methods and operational techniques and activities produce Work that is in compliance with Contract requirements and are in compliance with the Approved Quality Manual requirements and the Contract Documents. The QC personnel may be part of a separate organization within the Design-Builder's organization, the front line supervisors, the Supplier, the producer, or the manufacturer, but in no case shall they be associated with the QV organization. The construction QC personnel shall report to the Construction Manager or his or her designee. The designee shall not be the Construction QV Manager. This plan shall include a resource management plan with methods to ensure adequate QV personnel are assigned at all times during construction activities. QV staff shall be at a minimum ratio of one (1) QV inspector to four (4) crew foremen or the equivalent. Additional QV staff shall be added when needed to perform all the functions as detailed in the Caltrans *Construction Manual*.

The Design-Builder shall identify all materials, equipment, and elements of the Work; identify the individuals and organizations performing any functions under the Construction Quality Management Plan; and provide control over all activities affecting the quality of the materials, equipment, and elements.

ICTC Approval of the Quality Manual is required before any RFC Documents can be Approved. The Design-Builder shall not start construction Work activities that require QC and QV Inspection or testing until the Quality Manual has been Approved by ICTC.

5.4.2 Construction Quality Management Plan Procedures

The Construction Quality Management Plan procedures and methods shall meet Caltrans *Construction Manual* requirements and, at a minimum, include the following:

- Validation:
  - All activities affecting the quality of the construction Work shall be accomplished under suitably controlled conditions and executed in accordance with the Approved Quality Manual.
  - All Work shall conform to the requirements of the Contract Documents.
  - All materials, equipment, and services shall conform to the Contract Documents.
  - All materials, equipment, and elements of the Work used in the Project shall perform satisfactorily for the intended purpose.
  - Work shall be prescribed by and performed in accordance with the RFC Documents and Construction Documents.
  - Certificate of accreditation, scope of accreditation and testing methods, Inspection of testing laboratories, capability check, and test results for independent testing laboratories shall be performed. ICTC reserves the right to check independent testing laboratories' equipment and laboratory technician testing procedures, techniques, and other items pertinent to testing, for compliance with the Contract Documents.
  - Tools, gages, instruments, and other measuring and testing devices used in activities affecting quality shall be properly installed, monitored, maintained, controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits and in accordance with applicable specifications.
  - Handling, storage, shipping, cleaning, and preservation of materials and equipment shall be performed in a manner that prevents damage or deterioration.
  - Compliance with and effectiveness of all aspects of the Construction Quality Management Plan shall be demonstrated through a comprehensive system of planned and periodic audits at least every six (6) months. Audits shall be performed by appropriate trained QC/QV personnel not having direct responsibility in the areas being audited and in accordance with the written procedures or checklists. Audit results shall be documented, reviewed, and acted on by management having responsibility in the areas audited. The audit results shall determine the root cause and corrective action necessary, including follow-up and re-audit or closeout of deficient areas.
- Inspection and Testing:
  - Design-Builder QC/QV staff shall be qualified engineers and certified technical experts experienced in the Inspection of public works projects involving highways and transportation-related structures. Inspectors shall have a minimum of six (6) years of experience in highway or structures construction inspection and shall have a bachelor's degree or higher in civil engineering from an accredited university or a valid Engineer-in-Training certificate issued by the California State Board of Registration for Professional Engineers and Land Surveyors. QC/QV staff shall have appropriate accredited certifications with California Test Methods, ASTM, ACI, American Welding Society, American Society of Nondestructive Testing, and National Association of Corrosion Engineers as required to perform the testing or Inspection. QV staff witnessing QC shall have the same certifications as required to conduct

the test or Inspection. All personnel performing QC and QV activities shall meet the following minimum qualification requirements unless otherwise Approved by ICTC:

Table 5-3: QC/QV Staff Qualification Requirements

Type of Inspection	Minimum Required Certifications
Welding and Miscellaneous Steel Inspections	American Welding Society Certified Welding Inspector For fracture critical Work, American Welding Society Certified Welding Inspector with fracture critical member experience
Non-Destructive Testing Inspections	American Society for Nondestructive Testing TC- 1A NDT Level II For Fracture critical Work, American Society for Nondestructive Testing NDT Level III. NDT Level III shall be available to certify Level IIs, oversee the Level II's work, and act as a reference when needed.
Paint/Coating Inspections for Structural Elements	NACE Certified Coating Inspector Level III
Concrete Field Inspections	ACI Concrete Transportation Construction Inspector or Engineer-in-Training with two (2) years of concrete experience or California-registered Professional Engineer or International Code Council Reinforced Concrete Special Inspector
Bolting Inspections	Current International Code Council certification as a Structural Steel and Bolting Special Inspector or other equivalent level of training/experience as Approved by ICTC
Electrical Inspections	California-registered Electrical Engineer. Eight (8) years of experience in engineering highway electrical systems, including illumination, traffic signals, and/or intelligent transportation systems, or four (4) years of full-time experience as an electrical inspector on highway construction projects, or other equivalent level of training/experience as Approved by ICTC.

- The Design-Builder shall demonstrate qualifications of quality personnel performing construction Inspection by submitting qualification documentation to ICTC at least thirty (30) days before ground-disturbing construction activities. After the Approvals of the initial Inspection team, obtain ICTC Approval for new or replacement staff before allowing them to perform Work on the Project.
- Design-Builder shall obtain ICTC certification of the Design-Builder's independent laboratories and field technicians who are sampling and testing materials for the Project for the

test methods they are performing. The certifications shall be through the Joint Training and Certification Program, when applicable, and as described in the Caltrans *Independent Assurance Manual*. The Design-Builder shall coordinate scheduling of the certification examinations with ICTC. The Design-Builder shall maintain ICTC certificates for all Design-Builder QC/QV personnel performing field-testing at the Site for ICTC review. Before using Design-Builder QC/QV personnel in any Quality Program Work, submit to ICTC current QC/QV personnel certificates for all Design-Builder QC/QV staff performing field testing.

- Design-Builder shall provide a testing program that incorporates the requirements and acceptance limits contained in applicable Design Documents and Construction Documents, ensures that all prerequisites for the given test have been met and adequate test instrumentation is available and used, and documents and evaluates that the test requirements and results have met ICTC requirements.
- All laboratory testing and equipment calibration for the material tests required by these Project Requirements shall be performed at a laboratory that is accredited by Caltrans in accordance with the Caltrans *Independent Assurance Manual*. The QC and QV laboratories shall be separate and shall be accredited as follows:
  - Concrete, asphalt, aggregate, soil – AASHTO accredited
  - Structural steel, rebar, and miscellaneous metals – American Association for Laboratory Accreditation accredited or ISO 17025 accredited
- Construction QV laboratory shall not be owned by the Design-Builder or any subsidiary or Affiliate unless agreed to in writing by ICTC.
- Construction QV laboratory shall be located within sixty (60) miles of the Project, unless Approved by ICTC.
- QC and QV of sampling, testing, and checking the Work shall be addressed, including initial and source testing and Work performed by Subcontractors. QC/QV staff shall monitor the quality of Work and validate compliance with the plans and applicable regulations. QV staff shall conduct representative Inspections of all QC functions and periodic Inspections of the materials, welding, and fabrication.
- Use of incorrect or defective materials and equipment shall be prevented.
- Quantitative and/or qualitative criteria shall be provided, as appropriate, to demonstrate satisfactory performance.
- Source evaluation and selection, objective evidence of quality furnished by Subcontractors, Inspection at the manufacturer or vendor source, and examination of products on submittal shall be provided. Although ICTC may be providing source Inspection, the Design-Builder shall be ultimately responsible for the material and material documentation.
- Examinations, measurements, and tests of materials or elements of the Work for each Work operation shall be provided, where appropriate, to validate that the Work conforms to Contract requirements. If the Contract Documents specify mandatory Inspection critical activity points that require witnessing, Inspecting, or acceptance by the Design-Builder or ICTC, the specific critical activity points shall be indicated on the appropriate documents.
- Design-Builder shall comply with the manufacturer’s recommended quality testing procedures and any other quality testing procedures that serve as a substitute for the manufacturer's procedures.

- Method shall be provided to resolve Nonconforming Work items timely and adequately and to implement a tracking system for such items that ensures timely closure.
- Procedure for the resolution of disputes that arise in the QC/QV sampling and testing process.

- Training:
  - Training and QC/QV certificates shall be provided for personnel performing activities affecting or measuring conformance of the Work to requirements. All construction QC and QV staff shall understand their role is to determine whether the Work meets the Project Requirements.
  - All personnel performing construction Work shall be familiar and fluent with all applicable requirements of the Quality Program and Contract Documents pertaining to their responsibilities and shall understand their role is to construct the Project in accordance with the RFC Documents and the Project Requirements.
  - Effectiveness of the Quality Program by the Design-Builder's own forces and Subcontractors shall be provided for at intervals consistent with the importance, complexity, and quantity of the product or services or as requested by ICTC.
- Roles and Responsibilities:
  - For Working Drawing review and approval, including structure Working Drawings, specify the personnel assigned to review and approve, the procedures for documenting review and Approval from ICTC, and the procedures for obtaining any corrective action.
  - Design-Builder shall cooperate with and coordinate any Inspection and testing by local agencies and Utility Owners.
- Construction Changes:
  - Process for the issuance of and changes to RFC Documents and Construction Documents and distribution of changes to all the recipients of the original documents.
  - Approved RFC Documents and Construction Documents, including all authorized changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel.
  - Procedures for Nonconforming Work shall be addressed, including identification, documentation, segregation, disposition, and notification to ICTC and all other affected Persons and procedures for ICTC to review Nonconforming Work and accept, reject, or require repair and/or reworking of Nonconforming Work. For any Nonconforming Work proposed as fit-for-purpose, the Design-Builder shall provide an engineering analysis and approval before submitting to ICTC for review and Approval.
  - Changes to RFC Documents and Construction Documents shall be reviewed and approved by the same organizations that performed the original review and approval unless Approved by ICTC.
- Documentation:
  - Materials and equipment shall conform to the Contract Documents, and such documentation shall be readily available at the Site at least twenty-four (24) hours before installation or use of the materials and equipment.
  - Documentation shall be retained at the Site.
  - Identification or classification of materials, equipment, and elements of the Work shall be

tracked by appropriate means, either on the item or on records traceable to the item, as necessary, throughout fabrication, assembly, erection, installation, and use of the item.

- Independent testing laboratories and the qualified QC/QV personnel used to perform sampling and testing shall be listed.
- Status of Inspections and tests performed on individual items of the Work and identification of items that have satisfactorily passed required Inspections and tests shall be indicated by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, where necessary, to preclude inadvertent bypassing or duplication of such Inspections and tests.
- Cause of Nonconforming Work, such as failures, malfunctions, Errors, defective material and equipment, and deviations, shall be promptly identified. For significant conditions of Nonconforming Work, actions shall be to be taken to preclude repetition and document and report the corrective action taken to the Design-Builder's management and ICTC.
- Survey records and checks of the accuracy of construction stakes, lines, and grades established by the Design-Builder shall be retained.
- Signed certificates for laboratory accreditation and other documentation shall be furnished to ICTC.
- Test data of materials incorporated into the Work shall be summarized and reported at the end of each month.
- Design changes, RFIs, and request for clarification notices shall be tracked during construction.
- Daily diaries of all Work performed shall be submitted to ICTC by 9:00 a.m. the next Business Day. QV test results and test records shall be submitted to ICTC within twenty-four (24) hours of completing the test.
- Design-Builder shall track general quantities of materials, labor, and equipment and enter the data into DCS. The Design-Builder shall share quantities and production rates, as requested, for verification of testing rates (in accordance with the Materials Control Schedule) with both their quality staff and ICTC's staff on the Project.
- As-Built Documents shall incorporate any changes from the RFC Plans. A process shall be established that ensures that As-Built Documents are field verified.

- Periodic Quality Reporting
  - Reporting process for recording, organizing, and distributing quality records shall be described. ICTC shall have immediate and full electronic access to all valid quality records, including test reports, daily Inspection reports, quality audits, and Nonconformance Reports.
  - Quality Manager shall submit a weekly Nonconformance Report to ICTC. Each instance of Nonconforming Work shall be given a brief description, a status, and, if it is not resolved, an expected date for resolution.
- Geotechnical Inspection:
  - Inspection and material testing reports shall be provided for all compressible/collapsible soil and/or debris and for excavations for spread footings for structures.
  - Design-Builder shall verify that unsuitable material has been removed before backfilling.
  - Inspection and geologic mapping of all fill keys shall be provided to ensure that the geologic

conditions are favorable for the stability of the finished fill, including recommendations and design for additional keys and buttress fills.

- Inspection and geologic mapping of temporary cut slopes shall be provided on a regular basis to ensure they are stable and safe for their intended use and do not jeopardize adjacent structures.

5.4.3 ICTC Oversight

ICTC's oversight role during construction is to perform reviews and audits of the Work and the Design-Builder's QC and QV activities, including independent audits and evaluation of the technical checks, sampling and testing procedures, and equipment calibration.

ICTC may perform independent assurance of all laboratories, equipment, and testers performing QC and QV testing of construction materials in accordance with the Caltrans *Independent Assurance Manual.*

ICTC may perform source Inspection as shown in the Caltrans Source Inspection Material Control Process. The Design-Builder shall submit to ICTC a list of the Design-Builder's sources of materials and the locations at which those materials will be available for Inspection at least fifteen (15) days before any construction activity at that source. The Design-Builder shall submit the list to ICTC on the Caltrans Notice of Materials to Be Used Form (CEM-3101DB) within the required time as listed on the Caltrans Form (TL-38DB), to allow inspecting and testing of materials to be furnished from the listed sources in advance of their use. Both forms are included in the Caltrans Quality Manual Template. ICTC will respond to form CEM-3101DB indicating whether materials will be subject to Owner Verification at the source.

ICTC may perform source Inspection of materials or products that will be used that are produced or fabricated at locations outside the construction Site. ICTC will inspect the Design-Builder's QC processes at the fabrication sites and perform Owner Verification at the jobsite on the products that require special processes. The frequency and level of source Inspection will be determined by ICTC.

As set forth in the Caltrans *Standard Specifications,* Sections 11-2.03B, "Welding Quality Control Plan"; 59-2.01A(3)(c), "Painting Quality Work Plan"; 59-2.01A(4)(c), "Prepainting Meeting"; and 90-4.01D(2)(b), "Quality Control Meeting," ICTC Approval is required for the QC/QV plans that include structural material fabrication-related activities, including welding activities for rebar, steel bridge structures, electric poles, and PTFE bearings fabrication activities for structural components, and an ICTC representative may participate in pre-welding, and pre-paint meetings in order to assess the QC/QV plans.

ICTC will perform Owner Verification to evaluate compliance of the Work with the Contract requirements. ICTC retains sole responsibility for all acceptance decisions in accordance with 23 CFR 637. When there is conflict between the Design-Builder's QC/QV and the Owner Verification testing results, ICTC will initiate a dispute resolution process. The dispute resolution process shall use an independent testing laboratory that is not a participant in the Quality Program for either the Design-Builder or ICTC. ICTC and the Design-Builder shall each pay half the cost of the independent testing.

ICTC will not perform Owner Verification until the QC and QV personnel working on behalf of the Design-Builder have completed their quality checks and ICTC is assured by the Design-Builder of the cooperation and assistance of both the Design-Builder and the Supplier of the material. The Design-Builder shall ensure that ICTC or ICTC's authorized representative has free, safe access at all times to the Work, the Design-Builder's organization, and all Subcontractor and Supplier organizations to allow ICTC to carry out Owner Verification activities, including examination of records and interviews with Design-Builder, Subcontractor, and Supplier personnel. When requested by ICTC to ensure the safety of ICTC personnel, the Design-Builder shall take samples for ICTC. ICTC determines the location of the sample, witnesses,

and directs the taking of the sample, takes possession of the sample, and transports it for testing, unless otherwise specified in the Caltrans *Standard Specifications*.

The Design-Builder shall provide ICTC with copies of requested records within two (2) Days of receipt of request. When requested, the Design-Builder shall advise ICTC of the time, to within four (4) hours accuracy, when a specific activity is scheduled within the next five (5) Days.

The Design-Builder shall allow reasonable time for ICTC to perform Owner Verification activities. The Design-Builder shall allow ICTC to record, including photograph and video record, to ensure a material is produced to comply with the Contract. It is understood that the Inspections and tests, if made at any point other than the point of incorporation in the Work, shall in no way be considered as a guaranty of acceptance of the material nor of continued acceptance of material presumed to be similar to that upon which Inspections and tests have been made. Owner Verification is the prerogative of ICTC and does not relieve the Design-Builder of responsibility for QC and QV. The Design-Builder shall not use the results of verification activities carried out by other parties as a substitute for its own quality activities, unless otherwise Approved by ICTC.

Where required by the Contract Documents, materials or products shall be fabricated at an audited and authorized facility that resides on the latest Caltrans Authorized Facility Audit List. See the Caltrans Materials Engineering and Testing Services Web site for the latest list of audited facilities.

At any time as deemed necessary at the sole discretion of ICTC, all materials and each part of the Work are subject to Inspection, sampling, and testing by ICTC. In addition, GSA, CBP, Governmental Persons, Utility Owners, or their respective representatives have the right to inspect the Work.

ICTC will perform verification of the Design-Builder's construction management, including scheduling, invoicing, Working Drawing review, and document control.

5.4.4 Critical Activity Points

Critical activity points shall be formally accepted by the Construction QV Manager, the Critical Activity Point Lead, and ICTC before proceeding to the next stage of the Work. The Design-Builder shall provide Critical Activity Point Leads to ensure that all required tests and Inspections have been performed leading up to critical activity points and that the test and Inspection results meet Contract requirements. Critical Activity Point Leads and Lead Structure Inspectors shall be registered Professional Engineers in the State of California and shall have the applicable technical certifications for the Work performed under the critical activity point.

The Design-Builder is encouraged to enhance the critical activity points portion of the Construction Inspection and Testing Plan from the Quality Manual Template. The following is a list of critical activity points that the Design-Builder shall include in the Construction Quality Management Plan, at a minimum:

- Pre-activity meeting agenda and meeting minutes before the start of any major Work activity
- At specified intervals of embankment construction
- At completion of bridge embankment or excavation, and before the start of structure foundation
- Layout of abutment protection sheet piles
- Layout of structure piles, foundations, superstructure elements, civil Work, Utilities or other Work
- Before closing of any formwork
- Before concrete placement including formwork, reinforcing, embeds, joint lay out, and bearings
- Bearings before girder erection
- Sub-grade verification before base material or sub-base placement
- After forming is completed and before loading

- Sub-grade or base verification (as applicable) before surfacing placement
- Verification of trench bottoms for underground Utility Work
- After placement of pipe or culvert sections
- Before backfill operation at any structure, Utility, or facility
- Before welding
- Paving, before any traffic striping.
- Substrate, before any specialized Work including deck overlay or water proofing

ICTC may at any time require that the Design-Builder add critical activity points and corresponding Inspection checklists to the Construction Quality Management Plan.

5.4.5 Construction Quality Meetings

5.4.5.1 Pre-activity Meetings

The Design-Builder shall schedule, conduct, and document pre-activity meetings before starting construction on new types of Work or large segments of Work. The construction operations that will be considered major construction operations for the purposes of pre-activity meetings is subject to the discretion of ICTC. Pre-welding and pre-painting meetings are required in accordance with the Caltrans *Standard Specifications*. The appropriate ICTC quality personnel and the Design-Builder's QC/QV personnel shall be in attendance. The Design-Builder shall notify ICTC at least one (1) week before the start of the operation. The follow shall be discussed at the meeting:

- Specific operation or type of Work
- Necessary material sampling, testing, and Inspections required before, during, and after the Work
- QC/QV personnel responsible for material testing and Inspection
- Design and Construction Documents
- Construction QV Manager oversight, validation, and documentation requirements
- Anticipated schedule, including work shifts and production rates for the operation such that staffing can be planned adequately

The Construction QV Manager shall document compliance with appropriate Quality Program requirements and discuss the following topics:

- Review of applicable requirements of the Contract Documents, including RFC Documents and other Design Documents and Construction Documents.
- Validation that appropriate drawings and submittals for materials and equipment are furnished and back up test results are received and on file.
- Review of the material testing plan to ensure that required QC/QV testing is provided.
- Examination of the Work area to ensure that the required preliminary and precedent Work is completed.
- Validation that the required materials, equipment, and samples conform to the approved drawings and submittals.
- Review of the Health and Safety and Security Plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met.
- Discussion of construction means and methods.

- Establishment of the process control and validation efforts (QC and QV) to ensure the standard of workmanship required to produce Work that conforms to Contract requirements.

5.4.5.2 Daily Reviews

During ongoing construction Work, the Construction QV Manager and the QV staff shall perform and document the following minimum activities either daily or more frequently, as necessary, until the completion of each Work element:

- Ensure the Work complies with requirements of the Contract Documents.
- Ensure and validate that the standard of workmanship produces Work that conforms to Contract requirements.
- Ensure that items or elements of Work found to be Nonconforming Work are properly resolved and that rework items are corrected in accordance with Approved methods.

ICTC, GSA, and CBP have the right to review the Work, processes, and procedures at any time to determine whether the Work is in accordance with the Construction Quality Management Plan described in the Approved Quality Manual and the Contract Documents. The Design-Builder shall correct Work, processes, and procedures that do not conform to the Approved Quality Manual or Contract Documents.

5.4.6 Request for Information

RFIs are issued by either the Design-Builder or ICTC to obtain clarifications on RFC Documents from the Design Task Manager. The Design-Builder shall assign a tracking number to each RFI and shall log each RFI and resolution. The Design Task Manager shall address RFIs in a timely manner. RFIs shall be limited to plan and specification clarifications and shall not be used to request revisions to the RFC Documents. The Design-Builder shall provide a copy of all RFIs and associated responses to ICTC.

5.4.7 Design Changes During Construction

Either the Design-Builder or ICTC may initiate design changes for items or elements undergoing construction.

The submittal format for Design Documents resulting from a design change shall be the same as the format required for the original submittal. Similarly, the format for Construction Documents resulting from a change during construction shall be the same as the format required for the original submittal

All design changes shall undergo the same Quality Program checks and certifications as the original Design Document that is changed. Design changes shall undergo the same submittal processes as Final Design Documents submittals and RFC Documents submittals with the same ICTC review, review time, and Approvals as the original submittals. The changes shall be reviewed and approved by the same organizations that performed the original review and approval, unless Approved by ICTC. The Design-Builder shall include revised plan sheets, specifications, technical memos, reports, studies, calculations, and other pertinent data, as applicable, with the submittal.

The original designer responsible for the design shall provide written approval for any changes, before or during construction, to previously approved Design Documents or Construction Documents, unless otherwise specifically Approved by ICTC.

5.4.7.1 Notice of Design Change

A Notice of Design Change is used for revising plan sheets and specifications that have been previously released for construction. A Notice of Design Change may become necessary due to changes that occur during the design progress, a conflict between design elements, or the discovery of a design error. The

Design-Builder shall assign a tracking number to each Notice of Design Change and log each Notice of Design Change. The Design Task Manager shall address any necessary plan or specification changes and shall adhere to the required Quality Program checks and certifications. The Design-Builder shall submit a copy of each Notice of Design Change to ICTC for Approval before it is released for construction. ICTC will respond within ten (10) Working Days of receipt of each Notice of Design Change.

5.4.7.2 Field Design Change

Field Design Changes are used to document changes by the Design-Builder to address situations discovered in the field after the Plans and specifications have been released for construction. Field Design Changes are used to create As-Built Documents. The Design-Builder shall use a Field Design Change to define and request modifications to the Approved RFC Documents.

Field Design Changes shall be limited to adjusting Project elements to match conditions encountered in the field, to accommodate specific details of Work elements already constructed by the Design-Builder, or to address other minor issues. The changes are limited to minor dimensional and other adjustments to RFC Documents that do not impact future construction. Major dimension changes, material changes, or changes that impact multiple disciplines shall be Approved through the Notice of Design Change process.

The Design-Builder shall assign a tracking number to each Field Design Change and log each Field Design Change. Field Design Changes shall be approved by the Engineer of Record and Approved by ICTC.

5.5 Submittals

ICTC Approval of the Design Quality Management Plan and the Document Management Plan is a requirement for the issuing of NTP1 and for starting any Work. If the Design-Builder begins design before Approval of the Design Quality Management Plan and the Document Management Plan, it shall be at the Design-Builder's sole risk. ICTC Approval of the entire Quality Manual is a requirement for issuing NTP2. ICTC reserves the right to withhold payment for design Work until the Design Quality Management Plan and Document Management Plan have been Approved. ICTC reserves the right to withhold payment for construction Work until the entire Quality Manual has been Approved. Once the Quality Manual is Approved, the Design-Builder shall not revise any portion without the prior written Approval of ICTC. The Approved Quality Manual shall be in effect until all requirements of the Contract Documents have been fulfilled.

The Quality Manual shall be approved and endorsed by the Design-Builder's executive management before submitting the Quality Manual to ICTC.

The Design-Builder shall submit four (4) individually bound hardcopies and one (1) electronic version on USB flash drive of the Quality Manual (Vol. I – IV) for ICTC Approval. ICTC will respond to the Design-Builder within fifteen (15) Working Days of receipt and will either Approve or return comments on the submitted manual. If the draft Quality Manual is not Approved, ICTC's comments shall be incorporated by the Design-Builder. Within ten (10) Days after ICTC has returned the comments, the Design-Builder shall submit a new draft Quality Manual. It is the Design-Builder's responsibility to meet with ICTC as often as necessary to discuss and resolve ICTC's comments within the ten (10) Days. Following Approval, the Design-Builder shall provide ICTC with four (4) hardcopies of the Quality Manual and shall upload an electronic version in native and PDF format into DCS.

Any updates or revisions to the Approved Quality Manual require Approval by ICTC. The Design-Builder shall submit four (4) hardcopies of the modified pages with a summary of the revisions and one (1) electronic version of the integrated Quality Manual (Vol. I-IV) on USB flash drive for ICTC Approval. ICTC will respond to the Design-Builder within fifteen (15) Working Days of receipt and will either Approve or return comments on the submitted manual. If the draft Quality Manual is not Approved, ICTC's

comments shall be incorporated by the Design-Builder. Within ten (10) Days after ICTC has returned the comments, the Design-Builder shall submit a new draft Quality Manual. It is the Design-Builder's responsibility to meet with ICTC as often as necessary to discuss and resolve ICTC's comments within the ten (10) Days. Following Approval, the Design-Builder shall provide ICTC with four (4) hardcopies of the Approved revised pages with instructions for updating the Quality Manual and shall upload an electronic version in native and PDF format into DCS.

6 SUBMITTALS AND REVIEW PROCESS

6.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with submittals and the submittal review process in accordance with the requirements of the Contract Documents and these Project Requirements.

6.2 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the Caltrans standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 6-1: Submittals and Review Process Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Office of Special Funded Projects Information and Procedures Guide*
2	Caltrans	*Plans Preparation Manual*
3	Caltrans	*CADD User's Manual*
4	Caltrans	*Bridge Design Details*
5	Caltrans	*Memo to Designers*
6	Caltrans	*Bridge Design Aids*
7	Caltrans	*Project Development Procedures Manual*
8	Caltrans	Standard Special Provisions
9	Caltrans	*Standard Specifications**
10	Caltrans	*Standard Plans*
11	Caltrans	Design Information Bulletin 78-04: Design Checklist

*Document modified for design-build

6.3 Submittal and Review Process Requirements

6.3.1 Submittal Types

The intent of the submittal process is to provide a formal opportunity for ICTC, GSA, CBP, Governmental Persons, the Design-Builder, various design team disciplines, and other Project stakeholders to review documents to verify that the Work is progressing appropriately. In general, submittals include the following:

- Administrative documents such as the Quality Management Plan, Safety and Security Plan, and other plans and memoranda not considered Design Documents or Construction Documents
- Design Documents
- Construction Documents

6.3.2 Submittal Review Times

Review times for submittals are applicable only for complete and comprehensive documents that are deemed acceptable by ICTC for review. ICTC will notify Design-Builder within two (2) Working Days if a submittal is rejected due to being incomplete. Submittals provided to ICTC after 12:00 p.m. Pacific Time will be considered submitted at 8:00 a.m. Pacific Time the next Business Day. The review period ends when ICTC provides the Design-Builder a submittal response. Review times for resubmittals will be the same as for the initial submittal.

If a review time is not specified for a submittal to ICTC, the default review time shall be ten (10) Working Days.

Unless noted otherwise in the Contract Documents, ICTC does not guarantee any specific review period for third parties, including GSA and CBP. The review period for each third party, unless noted elsewhere in the Contract Documents, will be established by the third party, at its discretion, after a submittal package has been provided to the third party.

ICTC will complete its review of the Design-Builder's plans and submittals based on the following review time requirements unless otherwise specified in subsequent Sections of these Project Requirements:

Table 6-2: Design Submittal Review Times

Submittal	ICTC Review Time
Quality Manual	Twenty (20) Working Days
Design exceptions	Twenty (20) Working Days
Conceptual Design	Ten (10) Working Days
Structure Type Selection	Ten (10) Working Days
Intermediate Design	Ten (10) Working Days
Roadway Final Design	Ten (10) Working Days
Structure Final Design	Twenty (20) Working Days
RFC Documents	Five (5) Working Days
Working Drawings	Ten (10) Working Days
Other Reports, Plans, and Memoranda with review times not established in the Project Requirements	Twenty (20) Working Days
RFI submittal	Three (3) Working Days

These review timelines depict the maximum allowed time ICTC shall have to review the associated submittals and respond to the Design-Builder without impacting the overall Project Schedule. The actual ICTC review timeline may be directly related to the extent of involvement the Design-Builder allows during the design development process. More up-front ICTC, GSA, and CBP involvement may shorten the review timelines; however, the ICTC makes no guarantees of a streamlined review process for any design submittal. Submittal review times may be reduced or extended as mutually agreed upon for simple or complex submittals.

6.3.3 Review Process

ICTC is under no obligation to review Design Documents or Construction Documents until Approval of the Quality Manual as described in Section 5.

ICTC may reject or require resubmittal of any submittal that does not comply with the Contract Documents, including QC/QV requirements. If a submittal is rejected, the Design-Builder shall notify all recipients of the rejected submittal to remove all copies from circulation. The Design-Builder shall provide the replacement submittal to ICTC so that ICTC may redistribute the submittal to the appropriate reviewers. Otherwise, the Design-Builder shall redistribute the replacement submittal to other appropriate parties, as authorized by ICTC.

The Design-Builder shall resubmit submittals as many times as necessary to obtain Approval from ICTC and approval from other entities.

The Design-Builder shall address all comments and concerns raised by ICTC by revising the submittal to ICTC's satisfaction. The Design-Builder shall provide documentation to ICTC that comments from third parties have been addressed.

6.3.4 Hardcopy and Electronic Submittal Requirements

The Design-Builder shall furnish hardcopies of all Project submittals to ICTC. The Design-Builder shall furnish four (4) hardcopies of each design submittal and three (3) hardcopies of each construction submittal. The Design-Builder may request ICTC's Approval to submit fewer hardcopies. All management plans and memoranda, such as the Quality Manual, Public and Stakeholder Information Memorandum, Environmental Management Plan, Utility Plan, and Transportation Management Memorandum shall be individually bound.

Electronic copies of all documents generated under the Contract, including all Project submittals, shall be uploaded to DCS in native format and software-generated PDF format such as creating PDF files from DGN files for RFC Plan sheets. Scanned PDF files are not accepted unless the original document is in handwritten form or the original is not electronic.

Electronic submittals shall be compatible with existing ICTC systems and software. Systems and software currently being used by the ICTC include the following:

- Microsoft Windows 10 (operating system)
- Microsoft Office with Word and Excel
- Hydrologic/hydraulic design software listed in Table 808.1, "Summary of Related Computer Programs and Web Applications," of the Caltrans *Highway Design Manual*
- PEAKFQ by USGS
- MicroStation CADD software by Bentley Systems
- Civil 3D roadway design software by Autodesk
- Primavera P6 scheduling software
- gINT geotechnical software by Bentley Systems
- AASHTOWare Bridge Rating by AASHTO and CSiBridge by CSI for bridge rating
- CSiBridge by CSI for seismic bridge analysis and design model

- Roadway pavement software at the Web page listed in Section 21.2.4 (CalAC, CalFP, RealCost, CalME, CalBack)
- Synchro and SimTraffic by Trafficware, CORSIM by FHWA, and VISSIM by PTV Group for traffic signal analysis
- GuideSIGN by Transoft Solutions, Inc

ICTC is using the most current version of the software listed above, unless otherwise specified.

6.4 Design Submittal and Review Process Requirements

6.4.1 Design Submittal Schedule

Within thirty (30) Days after issuance of NTP1, the Design-Builder shall submit a Design Submittal Schedule to ICTC for Approval. The schedule shall depict the development, scheduling, and characterization of the Design-Builder's design Work and shall include the individual submittal packages listed in Section 6.4.5.1 for each Project element, including reports. The schedule shall include the required ICTC review periods.

The Design-Builder shall limit the number of design submittals as shown in the following table:

Table 6-3: Design Submittal Requirements

Submittal			Number of Submittals Allowed per Week	Total Number of Submittals Allowed in the Aggregate Pending Review at any Given Time
Roadway	Roadway design Plans, memoranda, and reports		2	5
	Other Plans, memoranda, and reports		2	
Structures	Bridge	Structures Type Selection	1	2
		Intermediate Design	1	
		Final Design	1	
		RFC Documents	1	
	Special design ERSs and special design miscellaneous structures and culverts[1]	Structures Type Selection	1	
		Intermediate Design	1	
		Final Design	1	
		RFC Documents	1	

Table 6-3: Design Submittal Requirements

Submittal			Number of Submittals Allowed per Week	Total Number of Submittals Allowed in the Aggregate Pending Review at any Given Time
	Other Plans not directly required by the standards or reports not directly associated with a Plan submittal	2		

Exceeding the maximum number of submittals allowed requires Approval from ICTC, which reserves the right to withhold Approval if it deems the request unreasonable or if ICTC cannot accommodate the additional reviews.

6.4.2 In-Progress Design Reviews

6.4.2.1 Over-the-Shoulder Reviews

ICTC, GSA, and CBP may perform over-the-shoulder reviews of Design Documents during the Project design process. Over-the-shoulder reviews are informal examinations that mainly assess whether the requirements and design criteria of the Contract Documents are being followed and whether the Design-Builder's Design Quality Management Plan activities are being undertaken in accordance with the Approved Quality Manual.

Each design package may have multiple over-the-shoulder reviews at the request of either ICTC or the Design-Builder. The reviews may, at ICTC's discretion, include review of design drawings, electronic files, calculations, reports, specifications, geotechnical data, progress prints, computer images, draft documents, draft specifications and reports, other Design Documents, and any other relevant design information as requested by ICTC.

It is the intent of these reviews to check for concept, level of detail, design criteria, and fatal flaws. Comments made by the oversight team shall be considered non-binding. It is the Design-Builder's responsibility to conform to the Contract requirements. These reviews will not routinely include detailed calculation or drawing reviews, although ICTC retains the right to perform detailed reviews of any item at any time. If mutually agreed upon between the parties, for specific review items, the over-the-shoulder review may consist of an exchange of electronic files between the Design-Builder's designer and ICTC.

The Design-Builder shall schedule over-the-shoulder reviews with ICTC during the course of the development of each design package, before issuance of RFC Documents. The over-the-shoulder reviews are not critical activity points that restrict the progress of design. They are simply reviews of the design as it progresses and opportunities for ICTC to provide comments and feedback on the design.

Two (2) Working Days before every over-the-shoulder review, the Design-Builder shall provide ICTC with hardcopies of the latest design of the element to be reviewed.

6.4.2.2 In-Progress Design Workshops

Throughout the design process, the Design-Builder or ICTC may request (with at least five (5) Working Days' notice) in-progress design workshops to discuss and verify design progress and to assist the Design-Builder's designers in resolving design questions and issues.

At least five (5) Working Days before each in-progress workshop, the Design-Builder shall assemble and submit drawings or other documents to be reviewed during the workshop to ICTC for its information and review.

The Design-Builder shall maintain a written record of all in-progress design workshops, including:

- A list of the participants in attendance, date, time, and location.
- Description of the items covered and discussed.
- Identification of discrepancies and comments, and a report on corrective actions (both those taken and those planned).
- Identification of follow-up action items, due dates, the party responsible for action items requiring resolution, and deadlines for resolution.

6.4.2.3 Oversight Visits

Throughout the design process, ICTC, GSA, and CBP may make oversight visits to discuss and verify design progress and ascertain the overall progress of the Project with respect to the Quality Manual. If, at the sole option of ICTC, the Design-Builder is not meeting the goals and objectives of the Quality Manual, the Design-Builder shall suspend Project Work and ICTC may withhold payment for the associated design activities.

6.4.3 Design Document Submittal Requirements

6.4.3.1 General

All Design Documents shall be prepared by or under the authority of and signed by the Engineer of Record and shall be certified as set forth in Section 5. The Design-Builder shall prepare all Design Documents in accordance with the Caltrans *Plans Preparation Manual* and the Caltrans *CADD User's Manual*, except as otherwise provided in the Contract Documents and Approved by ICTC. Structures submittals shall also be prepared in accordance with Caltrans *Bridge Design Details* and shall comply with the requirements set forth in the Caltrans *Office of Special Funded Projects Information and Procedures Guide*, except as otherwise specifically provided in the Contract Documents. Current Caltrans *Bridge Standard Detail Sheets* (XS-Sheets) and current Caltrans *Standard Plans*, including Revisions to Standard Plans, shall be incorporated into the structure Plans, as applicable.

The Design-Builder shall produce Design Documents in a format that aids and facilitates design review by ICTC and that provide adequate information for safe, efficient, and high-quality construction.

Plans shall be similar in appearance and content as shown in the Caltrans *Plans Preparation Manual*. Variations may result due to design-build delivery. The Design-Builder shall meet with ICTC to obtain Approval of any variations in Plan content and format.

All submittals containing CADD data shall be submitted in MicroStation format (see the Caltrans *CADD User's Manual*, Section 4.1, "For Plans, Specifications & Estimate (PS&E) Submittal") or Civil 3D format for design submittals (see the Caltrans *CADD User's Manual*, Sections 3.6, "Roadway Design," and 3.7, "Roadway Design Deliverables").

All MicroStation drawings, Civil 3D design files, and associated documents shall be organized in a logical manner, have a uniform and consistent appearance, and clearly depict the intention of the design and construction.

The Design-Builder shall follow general plotting requirements as stated in the Caltrans *CADD User's Manual*, Section 4.1, "For Plans, Specifications & Estimate (PS&E) Submittal."

All designs and drawings shall be in U.S. survey foot.

6.4.3.2 Resubmittals

Resubmittals of any design submittal may be required if deemed necessary by the Design QV Manager or ICTC. Each resubmittal shall address all comments received from a prior submittal in a manner satisfactory to the commenting party. The Design-Builder shall not be entitled to any additional compensation or time extension due to any resubmittal requirement by the Design QV Manager's review process or ICTC.

The Design-Builder acknowledges and agrees that resubmittal of any submittal may be required. The Design-Builder shall resubmit the submittal as many times as necessary to address the comments of the Design QV Manager's review process and ICTC.

The Design-Builder may continue its design activities, at its sole risk, during the resubmittal process. Such continuation in no way relieves the Design-Builder of the responsibility to incorporate the comments of the resubmittal process and ICTC into the Design Documents.

Upon completion of the Design QV Manager's review, the Design-Builder may forward such resubmittals to ICTC for review and comment. If ICTC requests additional information during review of the resubmittal, the Design QV Manager shall conduct an additional review of the resubmitted items.

6.4.4 Design Document Submittal Packages

6.4.4.1 General

The primary Design Document submittal packages are:

- Conceptual Design
- Structure Type Selection
- Intermediate Design
- Final Design
- Released for Construction

The Design-Builder may request the right to eliminate a Design Document submittal package. ICTC reserves the right to withhold Approval of such request.

Design Document submittal packages shall include all supporting information necessary for ICTC and reviewers to conduct a review of the submittal. Design Document submittal packages shall have a unique alphanumeric identifier that remains with the package and identifies each submittal step such as intermediate, final, and RFC. The alphanumeric identifier shall remain constant and track the design package through the life of the Project.

The Design-Builder shall provide a design checklist in accordance with Caltrans Design Information Bulletin 78-04: Design Checklist, with every Design Document submittal. The checklist shall be filled out to the level representative of the design stage of the submittal. The checklist provided with the Final Design submittal shall have all items of the checklist completed.

The Design-Builder is encouraged to review the content of submittals with ICTC before providing submittals to reduce the potential for resubmittal.

Unless noted otherwise, roadway submittals shall include all elements of the Work except bridge, special design ERS, and special design miscellaneous structure Design Documents.

The "Review Duration (Weeks)" and number of copy requirements listed in Attachment 1-7.1 of the Caltrans *Office of Special Funded Projects Information and Procedures Guide* does not apply. Bridge site data, cost, quantity, and Working Day schedule submittals are not required unless noted otherwise in the Contract Documents.

Partial RFC Document submittals for rough grading are allowed only if the Design-Builder obtains ICTC Approval. The Design-Builder shall demonstrate that the partial Work will eventually fit with, match in, or otherwise not impact future Work. Rough grading design submittals shall meet the requirements for Final Design and RFC Document submittals and shall include:

- Horizontal and vertical alignment
- Typical sections
- Related elements of the drainage system
- Subsurface geotechnical explorations and recommendations
- Slope stability analysis and recommendations, if necessary
- Preliminary structure General Plan, if the bridge is within the element or portion of the nonstructural Work
- Construction specifications for fills
- Environmental clearance
- Transportation Management Memorandum

Partial structure design submittals for structure foundation elements, such as pile driving and pile cap construction, are allowed only if the Design-Builder obtains ICTC Approval. The Design-Builder shall demonstrate that the partial Work will eventually fit with, match in, or otherwise not impact future Work. Partial structure design submittals shall meet the requirements for Final Design and RFC Document submittals and shall include:

- Preliminary structure design, including Type Selection.
- Applicable structure design loads for the complete structure.
- Plans depicting size and depth of piles, footings, and other foundation and substructure elements, including reinforcement and relevant details. Bridge Plans shall include General Plan with Approved roadway geometric layouts, Foundation Plan, Abutment Layout, Abutment Details, sheet pile installation at each abutment, and Log of Test Borings. The structure portion to be constructed shall be clearly shown and labeled "Released for Construction" and signed and sealed by the Design Lead Engineer – Structures (Engineer of Record).
- Complete structural design and independent structural design calculations for the structure portion to be constructed.
- Approved Foundation Report and Final Structure Hydraulics Report, if required.
- Quantities and applicable Special Provisions for the structure portion to be constructed.

ICTC's Approval of the partial structure design submittal does not constitute final Approval. Final Approval will be given with the Final Design submittal for the complete structure. If at final Approval corrective

actions need to be taken to a portion of the structure that has already been constructed, it shall be done so at the Design-Builder's cost and could include the removal of deficient elements in their entirety.

6.4.4.2 Conceptual Design Submittal

The Design-Builder shall submit Conceptual Design submittals for review and Approval. Conceptual Design submittals shall include:

- Cover sheet with submittal description and schedule activity identification.
- Plans.
- Exceptions to design standards, if applicable.
- Updated list of anticipated Caltrans SSPs and nSSPs
- Design Documents certification.
- Supporting Design Documents including reports, memos, and other documents.
- Status of all reports applicable to the Work submitted.
- Preliminary Geotechnical Design Report.
- Additional Properties, as applicable.

6.4.4.3 Structure Type Selection Submittal

The Design-Builder shall submit the Structure Type Selection submittal for review and Approval. The structure type shall be as presented in the Approved Project Report and its Attachments. The Structure Type Selection submittal shall not be submitted until after the Conceptual Design submittal has been Approved.

Design exceptions shall be coordinated with ICTC before the submittal of Structure Type Selection. The Design-Builder shall obtain general concurrence from ICTC that the design exception will likely be later Approved.

The Structure Type Selection submittal shall include a General Plan and Type Selection Report prepared in accordance with the Caltrans Bridge Design Aids and the Caltrans Memo to Designers. The Type Selection Report shall also include the following:

- Permanent and temporary vertical and horizontal clearances with supporting calculations
- Evaluation and location of deck drains for the widened structures
- Structure repair work required in structure maintenance records
- Quantitative seismic design evaluation for the new structure and retrofit evaluation of the existing structures to be widened. For the existing structures to be widened, the Type Selection Report shall include a summary of the seismic design evaluation and strategies of the new structure, seismic evaluation and potential retrofit strategies of the existing bridges, supporting documentation, and other pertinent details.
- Preliminary Structure Hydraulics Reports, if applicable
- Preliminary Foundation Reports

Type Selection Report shall clearly delineate aesthetic features that are consistent with the existing structures and have been incorporated into the structure type.

When all issues raised at the Type Selection meeting are satisfactorily addressed, ICTC will provide Approval of the proposed structure type within five (5) Working Days of receiving the final meeting summary.

Within ten (10) Working Days after receiving ICTC Approval of the structure type, the Design-Builder shall update the General Plan and submit the required number of reduced copies to ICTC for review and comment. The Design-Builder shall address all comments from ICTC in the design.

6.4.4.4 Intermediate Design Submittal

The Design-Builder shall submit Intermediate Design submittals for review and Approval. Intermediate Design submittals shall include:

- Cover sheet with submittal description and schedule activity identification.
- Design Documents certification.
- Supporting Design Documents including reports, memos, and other documents.
- Status of all reports and memoranda applicable to the Work submitted.
- Summary of the status of any consultations with third parties pertaining to the submitted package.
- For roadway and roadway facilities:
  - Roadway Plans
  - Daft Special Provisions (Standard Special Provisions and nSSPs)
  - Reports (Geotechnical Design Report and others as required by the Contract Documents) and memoranda
  - Additional Properties
- For the structure:
  - Structure Plans
  - Most recent roadway Plans, if not already submitted
  - Most recent Foundation Report
  - Most recent Hydrology and Hydraulics Report, if applicable

The structure Plans shall include complete dimensional detailing for all bridge structural elements and include all detail design sheets, including title sheets, bridge layouts, staging and removal plans, foundation and geotechnical reports, foundation layouts, foundation details and design tables, Log of Test Borings, abutment details, sheet pile details at each abutment, framing plans and elevations, slab plans, typical sections and details, beam details and data sheets, deflection and camber diagrams, architectural elevations, and other details, as applicable. Individual detail sheet contents shall be in accordance with applicable checklists provided in the Caltrans *Bridge Design Details*.

The Design-Builder shall prepare Project special provisions in conformance with the Caltrans *Office of Special Funded Projects Information and Procedures Guide* and the Caltrans *Construction Contract Development Guide*. The Design-Builder shall determine the applicability of Standard Special Provisions, modify them for use on the Project, and submit them as special provisions. Instructions for modifying Standard Special Provisions are included as hidden text within the provisions themselves; however, it is the Design-Builder's responsibility to determine the extent of modifications needed. Any deviation from the Caltrans Standard Special Provisions requires submittal of an nSSP for review and Approval by ICTC. If the Design-Builder proposes the use of methods or materials that are not Caltrans standards, the Design-Builder shall submit comprehensive nSSPs associated with the proposed non-standard methods or materials. The Design-Builder shall provide justification and supporting documentation for the use of

nSSPs. ICTC's review and Approval process for nSSPs can be lengthy and is not subject to the contractual review time specified for Intermediate Design submittals. ICTC does not guarantee any specific review time for the review of nSSPs. The Design-Builder shall submit nSSPs early to allow for review by ICTC.

The Design-Builder shall provide drafts of all reports and memoranda required for the Project with the Intermediate Design submittal. The most recent versions of the reports and memoranda shall be provided.

Intermediate Design submittal comment resolution that requires a change in the submittal package shall be addressed in the Final Design submittal. Similarly, draft report and memoranda comment resolution that requires a change in the report and memoranda shall be addressed in the final report.

6.4.4.5 Final Design Submittal

The Design-Builder shall submit Final Design submittals for review and Approval. Final Design submittals shall incorporate comments from the over-the-shoulder reviews and resubmittals into its design and resolve all concerns and questions to the satisfaction of ICTC. Once the comments are resolved, the Design-Builder shall provide a clean Final Design submittal to ICTC for review to confirm the comments are addressed. Final Design submittals shall include:

- Cover sheet with submittal description and schedule activity identification.
- Comment resolution form showing how the Final Design submittal has addressed the review comments generated during previous reviews.
- Design Documents certification.
- Copies of PLACs obtained for the Project.
- Supporting Design Documents including reports, memos, and other documents.
- Status of all reports and memoranda applicable to the Work submitted.
- Summary of the status of any consultations with third parties pertaining to the submitted package.
- For roadway and roadway facilities:
    - Roadway Plans
    - Design calculations
    - Check calculations
    - Final Special Provisions (Standard Special Provisions and nSSPs)
    - Reports (Approved Geotechnical Design Report, Approved Storm Water Data Report, and others as required by the Contract Documents) and memoranda
    - Additional Properties
- For structures:
    - Structure Plans
    - Design calculations
    - Independent check calculations signed and sealed by the independent design checkers as specified in Section 17.2.6
    - Special Provisions (Standard Special Provisions and nSSPs)
    - Approved final Foundation Report

- Final Hydrology and Hydraulics Report, if applicable

The Design-Builder shall provide the most recent version of reports and memoranda with the Final Design submittal. The Design-Builder shall obtain Approval from ICTC for the final Geotechnical Design Report, Foundation Report, and Storm Water Data Report before submitting them with the Final Design submittal.

The requirements for special provisions and NSSPs included for the Intermediate Design submittal shall also apply to the Final Design submittal.

The calculations shall:

- Include a title block with the calculation title, file number, page number, initials of the designer and the checker, and dates of design and checking.
- Indicate the design requirement, the assumptions made, the methods used, the source of the information, and the cross-reference for the applicable design drawings.
- Be readily accessible, clear, understandable, concise, complete, and accurate.
- Be bound and numbered with a table of contents.
- Identify the code or standard used and indicate the specific section referenced in the right-hand column.
- Reference the computer programs used.
- If they are manual calculations, be printed neatly and legibly on 8-½-by-11-inch or 11-by-17-inch standard computation sheets.

6.4.4.6 Released for Construction Documents Submittal

The Design-Builder shall submit RFC Documents for review and Approval. The RFC Documents shall have resolved all concerns and questions to the satisfaction of ICTC.

RFC Documents shall include all documents and materials, revised as necessary, from the complete Final Design submittal and the following:

- Cover sheet with submittal description and schedule activity identification.
- Comment resolution form showing how the RFC Documents have addressed the review comments generated during previous reviews.
- Notes from designers.
- RFC Documents certification.
- 4-scales and slope staking notes.
- Survey staking control notes.
- Completed copies of the Caltrans RFC Checklist for R/W and Utilities.
- Utility Policy Certification that complies with Chapter 17 of the Caltrans *Project Development Procedures Manual*.
- Documentation of Governmental Approvals and Utility Owner approvals.
- For structures:
  - Checked joint movement calculations

  - Notice of Change in Clearance or Bridge Weight Rating (Form TR-0019 or TR-0029), if applicable
  - Notice of Change in Vertical or Horizontal Clearance (Form TR-0020), if applicable
- MicroStation and/or Civil 3D files, including all drawings and data files used to create the RFC Documents.
- Excel spreadsheet with drawing index for DCS compatibility. This spreadsheet shall include the discipline, drawing number, drawing title, sequential sheet number, and sheet title.
- Quantities for all items that require Inspection or testing in accordance with the Materials Control Schedule.
- Limits of excavation for all excavation Work.

The requirements for special provisions, nSSPs, and calculations included for the Intermediate Design and Final Design submittals shall also apply to the RFC Documents submittal.

RFC Documents are intended to allow construction to begin on segments or elements of the Project as the design progresses. The Design-Builder may proceed with construction of elements or portions of the Project in accordance with RFC Documents before the design of the entire Project has been completed at the Design-Builder's sole risk.

The Design-Builder shall not start construction on any RFC Documents until ICTC Approves the RFC Documents. Construction of any item, element, or phase covered by the Design QV Manager's statement approving construction shall progress only to the extent covered by the Design Documents included in that approval.

Irrespective of whether ICTC provides the Design-Builder with the authority to begin construction on elements of the Project before completion of the design of the entire Project, the Design-Builder shall bear the responsibility to ensure that construction meets the requirements of the Contract Documents, applicable law, and the Governmental Approvals. The Design-Builder shall bear the risk of any required modifications to the construction defined by the RFC package due to subsequent design changes resulting from further design development.

6.5 Construction Submittal and Review Process Requirements

Except as otherwise expressly provided in these Project Requirements, the Design-Builder shall submit the following to ICTC during construction:

- Construction Document submittals
- As-Built Documents
- Final Acceptance submittal

The Design-Builder may request the right to eliminate a submittal package. ICTC reserves the right to withhold Approval of such request.

All Construction Documents shall be submitted in electronic format in accordance with Section 6.3.4.

6.5.1 Construction Documents

The Design-Builder shall prepare Construction Documents for the Work as specifically set forth in the Contract Documents and the Approved Quality Manual. Construction Document submittals shall include drawings, calculations, certifications, and any other information specifically required by the Construction QV Manager, the Caltrans *Standard Specifications,* and other governmental entities. The Construction

Documents shall describe the methods of construction proposed and adequately define and control the Work.

The Design-Builder shall provide Working Drawings and calculations for the following items of Work, at a minimum:

- Structural steel fabrication
- Anchor bolt layouts
- Erection
- Bearing pads and joint seals
- Bridge deck overlay
- Utilities
- Temporary support systems or temporary Work
- Formwork
- Manufactured products, such as ERSs

The Design-Builder shall submit the following Construction Documents:

- Structure construction inspection checklists on all structure components
- Final bridge deck profile by applying Profilograph or similar test results (California Test 547)

The Engineer of Record responsible for the design related to a Construction Document shall approve the Construction Document before submitting it to ICTC.

The Design-Builder shall submit Construction Documents to ICTC at least five (5) Working Days before starting any Work detailed by the Construction Documents, including fabrication. ICTC Approval of Construction Documents for non-permanent installations is not required unless otherwise specified in the Contract Documents, but ICTC reserves the right to review and provide comment within five (5) Working Days.

The Construction Documents may also be subject to approval by GSA, CBP, governmental entities, and Utility Owners. The Design-Builder shall coordinate the preparation, submittal, and review of all such Construction Documents to the applicable party in accordance with the party's requirements.

Any changes to a Construction Document shall require resubmittal and approval by the Engineer of Record, ICTC, GSA, CBP, and/or governmental entities, as required above.

The Design-Builder shall submit to ICTC all manufacturers' warranties, guarantees, instruction sheets, parts lists, and other product information at least twenty (20) Days before installation of the items to which they relate. The Design-Builder shall ensure that the product information is organized and indexed in a manner to allow easy retrieval. Product information is not subject to the Approval requirements described above.

6.5.2 As-Built Documents

The Design-Builder shall submit As-Built Documents to ICTC for review and Approval. The As-Built Documents shall depict the actual condition of the final completed Project, including all changes from RFC Documents and data showing all items, such as the electrical systems, drainage systems, lighting systems, underground and overhead Utilities, traffic controls and striping, signing placement, highway alignment and grade revisions, typical sections, and all other relevant data, including any operations and maintenance manuals for mechanical and electrical systems. The As-Built Documents shall include the As-Built Schedule in accordance with Section 4.2.5.4 and as-built geotechnical reports in accordance with Section 16.3.5.

The Design-Builder shall ensure that the As-Built Documents meet the requirements of the RFC Documents, the Caltrans *CADD User's Manual,* Section 4.3, "As-Built Plans," and the Caltrans *Construction Manual,* and comply with GSA requirements.

The as-built plans shall be a complete, conformed set of plans for the Project. As-built plans that consist of a collection of RFC packages will not be allowed. The Project Manager shall sign and date the title sheet of the as-built plans in accordance with the Caltrans *User's Manual*, Chapter 4.3, "As-Built Plans."

As-Built Documents shall include all base mapping (topography) and electronic CADD data.

The Design-Builder shall submit structural As-Built Documents to ICTC, as applicable to the structure, within sixty (60) Days after the completion of the structure. The structural As-Built Documents shall also be incorporated into this As-Built Documents submittal. The structural As-Built Documents shall comply with the requirements in this Section and shall also include the following completed forms and documents:

- Report of Completion
- Pile driving logs and pile layout at the completion of the operation for the bridge and ERSs walls
- Joint movement calculations for type "B" seals and joint seal assemblies
- Complete Bridge Load Rating Reports

The Design-Builder shall submit As-Built Documents to ICTC for Approval. ICTC will advise the Design-Builder of the status of their Approval of the As-Built Documents within thirty (30) Working Days of receiving them. ICTC Approval of the As-Built Documents shall be obtained before Final Acceptance.

6.5.3 Final Acceptance Submittal

ICTC Approval of the Final Acceptance Submittal is a condition of Final Acceptance. The Design-Builder shall submit the following items for review and Approval by ICTC at least thirty (30) Days before Final Acceptance:

- Project DCS records. The Design-Builder shall submit a complete download of the DCS on USB flash drives or external hard drives, filed in accordance with Chapter 7, "Uniform File System," of the Caltrans *Project Development Procedures Manual* for design and the Caltrans *Construction Manual* for construction.
- Post-construction maintenance surveys.
- All necessary documentation and approvals from each local agency for those improvements that will have maintenance and operational control relinquished back to GSA, CBP, or other local agency, if applicable.

7 ENVIRONMENTAL COMPLIANCE

7.1 General

The Design-Builder shall perform all Work necessary to meet the requirements for environmental compliance as set forth in the Caltrans *Standard Environmental Reference,* the Environmental Document for the Project, and the Reference Information Documents.

7.2 Administrative Requirements

7.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 7-1: Environmental Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Standard Environmental Reference*
2	Caltrans	Standard Special Provisions
3	Caltrans	*Standard Specifications**
4	Caltrans	*Standard Plans*
5	Caltrans	*Highway Design Manual*
6	Caltrans	*Project Development Procedures Manual*
7	Caltrans	*Field Guide to Construction Site Dewatering*
8	Caltrans	*Traffic Noise Analysis Protocol*
9	Caltrans	*Technical Noise Supplement to the Traffic Noise Analysis Protocol*
10	Caltrans	*Surveys Manual*
11	Caltrans	*Construction Manual*

*Document modified for design-build.

7.2.2 Reserved

7.2.3 Permits, Licenses, Agreements, and Certifications (PLCAs)

The Design-Builder shall secure all PCLAs included in the RFQ, as Amended. Unless otherwise indicated in the RFQ, as Amended or this Section 7, all required PLACs shall be the responsibility of the Design-Builder. Any PLACs provided by ICTC or Caltrans that must be amended or renewed as a result of the Design-Builder's Work or due to lapse in time shall be the responsibility of the Design-Builder. The Design-Builder shall submit to ICTC for review, comment, and Approval copies of all applications,

drawings, correspondence, and environmental management plans at least three (3) Days before submitting them to the agency responsible for approval.

If the Design-Builder's design requires a modification of PLACs obtained, it is the Design-Builder's responsibility to obtain all necessary agency approvals for PLAC modifications. Modifications of PLACs previously obtained shall be subject to ICTC Approval before submission to the agency responsible for the approval.

7.2.4 Mitigation Measures

The Design-Builder shall be responsible for the design, implementation, and maintenance of all mitigation measures through Final Acceptance. Mitigation measures include those identified in Environmental Management Plan, the Environmental Commitment Record, Categorical Exemption/Categorical Exclusion (CE/CE) environmental analysis documentation included in the Reference Information Documents, the Preliminary Engineering Drawings, these Project Requirements, and any additional measures resulting from PLAC requirements. The Design-Builder shall ensure the Project design is in compliance with all applicable Governmental Rules and shall prepare plans and procedures to ensure compliance, where required.

Mitigation measures are subject to Inspections by ICTC, GSA, CBP, and other environmental regulatory agencies.

The Design-Builder shall follow the terms and conditions of all PLACs pertaining to requirements for the protection or mitigation of impacts on environmentally sensitive areas.

7.2.5 Environmental Management Plan

The Design-Builder shall submit an Environmental Management Plan that describes the Design-Builder's approach, based on the Environmental Commitment Record, the CE/CE environmental analysis documentation and its attachments, and the materials provided in the Reference Information Documents, for avoiding, minimizing, and mitigating environmental impacts and that contains the following elements:

- Environmental personnel and training certificates and/or licenses.
- Environmental Notification Contact List.
- Schedule of Environmental Management Plan activities.
- List of mitigation and monitoring actions.
- Environmental Monitoring Plan and monthly reporting.
- Spill Containment and Countermeasure Plan.
- Noise Control and Monitoring Plan.
- Vibration Monitoring and Mitigation Plan.
- Air Quality Management Plan.
- Asbestos Control Management Plan.
- Lead-Based Paint Control Management Plan.
- Aerially Deposited Lead Soils Management Plan.

All plans and memoranda shall be developed by the Design-Builder and reviewed and Approved by ICTC and approved by the appropriate jurisdictional agency, if any.

7.2.5.1 Environmental Personnel and Training

7.2.5.1.1 Environmental Personnel

The Design-Builder shall designate an environmental team that consists of those individuals responsible for permitting, environmental compliance, environmental monitoring, and Hazardous Materials.

7.2.5.1.2 Permitting Specialist

The Design-Builder shall provide a Permitting Specialist to supervise the Work necessary to acquire the PLACs required for the Project, including PLACs that must be modified as a result of the Design-Builder's Work. The Permitting Specialist shall supervise the Work necessary to develop all applications, drawings, correspondence, and environmental management plans. This Work shall include assembling an application package as required by each agency. The Permitting Specialist shall also ensure that the Design-Builder is complying with all requirements of the PLACs. The status of applications and PLAC compliance shall be reported in each Environmental Management Plan.

7.2.5.1.3 Environmental Protection Training

The Design-Builder shall design and implement an environmental protection training program for all of the Design-Builder's employees and Subcontractors (including truck drivers and equipment operators). Every employee of the Design-Builder who works on the Project (management through workers, including each new employee who starts working after the Project begins) and all of the Design-Builder's Subcontractors shall participate in an environmental protection training program. The training program shall orient employees and Subcontractors to the following:

- Overall importance of environmental issues in achieving a successful Project.
- Particular environmental sensitivities of the Project.
- Proper procedures for spill containment.
- Proper procedures in the event that unanticipated Hazardous Materials or asbestos are encountered.

Assistance will be provided regarding clarification and understanding of ICTC environmental goals and policies. The Design-Builder shall notify ICTC Project staff of the training sessions and invite them to participate.

7.2.5.2 Environmental Notification Contact List

The Design-Builder shall prepare and submit to ICTC an Environmental Notification Contact List that includes all contact people and reporting and notification requirements for unforeseen potential environmental impacts encountered during the course of the Project. The Environmental Notification Contact List shall:

- Include all contact people representing the Design-Builder, GSA, CBP, governmental entities, and regulatory agencies regarding environmental matters.
- Specify the chain of contact and timing of each contact.
- Include for each contact the individual's name; agency or corporate affiliation; address; e-mail address; home, cellular, and office telephone numbers; and fax number (if applicable).
- Specify, at a minimum, the appropriate contact people for reporting and notification of the following events:
    - Design-Builder–caused Hazardous Material spill.
    - Discharge to groundwater.
    - Discovery of:
        - Active bird nest (with eggs or young)
        - Regulated wildlife species
        - Cultural or historic artifacts

- Human bones or remains
- Wildlife injured during construction activities
- Hazardous Materials
- Disturbance of any regulated species or its habitat
- NPDES Inspections by the RWQCB
- Illicit discharges of water or sediment leaving the Site

- Occurrence of Project activities:
  - Outside the planned R/W limits
- Violation of PLACs, laws, and regulations, such as:
  - RWQCB Section 401—Certification
  - RWQCB Section 402—National Pollutant Discharge Elimination System
  - California Department of Fish and Wildlife 1600 Streambed Alteration Agreement
  - California Rules and Statutes
  - Local watershed district or water management organization requirements
- Any pollution issue not covered in items listed above.

The Design-Builder shall determine the appropriate first point of contact for other environmental issues.

The Environmental Notification Contact List shall be current at all times. Updated copies shall be submitted to ICTC as required.

7.2.5.3 Schedule of Environmental Management Plan Activities

The Design-Builder shall include with the Environmental Management Plan a schedule of activities for environmental mitigation related to Project phasing.

The schedule shall include implementation of the environmental protection training program and training sessions at key times including before starting construction in potentially sensitive areas or construction timing restrictions to protect regulated species to update workers on specific restrictions, conditions, concerns, or requirements.

7.2.5.4 List of Mitigation and Monitoring Actions

The Design-Builder shall include with Environmental Management Plan a detailed list of mitigation and monitoring actions required and assignment of responsibility for each action. The list shall include environmental requirements, watershed and local government consent conditions, recognition of Project-specific issues, procedural steps for mitigation, and particular actions planned to comply with the governing regulations.

7.2.5.5 Environmental Monitoring Plan and Monthly Reporting

The Design-Builder shall include an Environmental Monitoring Plan in the Environmental Management Plan that indicates times, locations, and other monitoring parameters.

7.2.5.5.1 Monthly Report

The Design-Builder shall provide a monthly report that summarizes the month's environmental monitoring activities and submit for Approval. The content of the monthly reports shall document evidence of the Design-Builder's performance and include the following:

- Date of monitoring.
- Weather conditions.
- Location.
- Resource(s) addressed.
- Locations and nature of violations.
- Recommended remedial actions, action implementation schedule, and status of remedial actions.
- Representative photographs.
- Name and signature of environmental monitoring Inspector certifying the accuracy of the report.

7.2.5.5.2 Reserved

7.2.5.6 Spill Containment and Countermeasure Plan

The Design-Builder shall include a Spill Containment and Countermeasure Plan in the Environmental Management Plan. The Spill Containment and Countermeasure Plan shall describe the Design-Builder's plans to prevent, contain, clean up, remove, dispose of, and mitigate all regulated material spills caused by the Design-Builder or any Design-Builder–Related Entities. The plan shall be in accordance with the July 2002 EPA update and shall include a notification list for containing and reporting.

7.2.5.7 Noise Control Plan

The Design-Builder shall include a Noise Control Plan in the Environmental Management Plan. The plan shall be prepared by an Acoustical Analyst meeting the qualifications specified in Section 3, "Type I: New Construction or Reconstruction," of the Caltrans *Traffic Noise Analysis Protocol*. The Design-Builder shall reevaluate the Noise Control Plan with each RFC Documents submittal and update the plan as necessary.

The Noise Control Plan shall include calculated noise levels for various construction phases and a detailed list of mitigation measures that will be used during daytime and nighttime hours to meet the Project specifications. Potential noise mitigation measures are listed in Section 7.4.1.3.

7.2.5.8 Noise Monitoring Plan

The Design-Builder shall include a Noise Monitoring Plan in the Environmental Management Plan. The plan shall be prepared by an Acoustical Analyst meeting the qualifications specified in Section 3, "Type I: New Construction or Reconstruction," of the Caltrans *Traffic Noise Analysis Protocol*.

The Noise Monitoring Plan shall describe noise monitoring procedures at predetermined noise-sensitive sites.

7.2.5.9 Vibration Monitoring and Mitigation Plan

The Design-Builder shall include a Vibration Monitoring and Mitigation Plan in the Environmental Management Plan. The plan shall be prepared by a qualified vibration analyst with experience preparing pile driving operation vibration analyses.

The Vibration Monitoring and Mitigation Plan shall describe vibration monitoring procedures at predetermined vibration-sensitive sites. The Plan shall include calculated vibration levels for various construction phases and a detailed list of mitigation measures that will be used to meet the Project specifications. Potential vibration mitigation measures are listed in Section 7.4.1.3.

7.2.5.10 Air Quality Management Plan

The Design-Builder shall prepare an Air Quality Management Plan in compliance with Caltrans Standard Specification requirements.

7.2.5.11 Asbestos Control Management Plan

The Design-Builder shall prepare an Asbestos Control Management Plan in compliance with Caltrans Standard Specification requirements.

7.2.5.12 Lead-Based Paint Control Management Plan

The Design-Builder shall prepare a Lead-Based Paint Control Management Plan in compliance with Caltrans Standard Specification requirements.

7.2.5.13 Aerially Deposited Lead Soils Management Plan

The Design-Builder shall prepare a Aerially Deposited Lead Soils Management Plan in compliance with Caltrans Standard Specification requirements.

7.2.6 Coordination with Other Agencies and Disciplines

ICTC will assist in the coordination and resolution of all environmental issues with affected interests and regulatory agencies. The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda for the record. The Design-Builder shall document the PLAC requirements and contacts with the agencies.

7.2.7 Environmental Reevaluation

The Design-Builder shall make every effort to avoid changes that would require an environmental reevaluation. An environmental reevaluation may be required if the Project limits are extended beyond those identified on the map in the Approved PR and its Attachments or if there are changes to the impacts described in the CE/CE. Any such changes the Design-Builder makes during the design or construction phase shall be reviewed by ICTC and Caltrans to determine the need to obtain an environmental reevaluation.

7.3 Design Requirements

The Design-Builder shall design all elements of the Project related to environmental compliance in accordance with all the standards and regulations listed in these Project Requirements.

7.4 Construction Requirements

7.4.1 Mitigation Measures

No additional construction mitigation measures in addition to those presented in the Approved PR and its Attachments, the CE/CE and its supporting documentation, and the Reference Information Documents are anticipated.

7.4.1.1 Environmentally Sensitive Areas

No environmentally sensitive areas are noted in the Project area. Documentation is included in the Reference Information Documents.

7.4.1.2 Hazardous Materials

7.4.1.2.1 Removal, Handling, and Transportation of Hazardous Materials

The Design-Builder shall be responsible for the removal, handling, transportation, and disposal, if any, of Hazardous Materials resulting from the Project, including asbestos, naturally occurring asbestos, treated wood waste, electrical waste requiring special handling, yellow striping, lead paint, and aerially deposited lead–contaminated soil.

7.4.1.2.2 Aerially Deposited Lead

Aerially deposited lead well below 50mg/kg, resulting in a characterization of "clean soil," is present within the planned R/W limits as indicated in the Aerially Deposited Lead Survey Report included in the Reference Information Documents.

Caltrans entered into agreement Docket No. ESPO-SMA 15/16-001 Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils with the Department of Toxic Substances Control regarding the management of regulated material. As the responsible entity and the generator of waste, only Caltrans determines material classification. The Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils is available at the following Web site:

> https://dot.ca.gov/programs/environmental-analysis/hazardous-waste/contaminants-waste/aerially-deposited-lead

The Design-Builder shall comply with the Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils in handling soils containing aerially deposited lead material.

The Design-Builder shall comply with the requirements for managing, handling, removing, and disposing of material containing aerially deposited lead.

The Design-Builder shall notify ICTC and Caltrans ten (10) days before excavating at each excavation site.

7.4.1.2.3 Soil and Groundwater

The Design-Builder shall review all documents included in the Reference Information Documents and shall prepare soil and groundwater special provisions in compliance with all applicable laws and regulations.

7.4.1.2.4 Removal of Traffic Stripe and Pavement Marking

The removal of existing traffic stripe and pavement marking may expose workers to health hazards that the Design-Builder shall address in the Lead Compliance Plan. For striping and pavement marking to be removed containing lead at concentrations below hazardous waste levels, include and comply with SSP 84-9.03B of the Caltrans Standard Special Provisions. If it cannot be demonstrated that all yellow striping and pavement markings contain lead at concentrations below hazardous waste levels, the Design-Builder shall remove and dispose of those striping and pavement markings in conformance with Section 14-11.12, "Removal of Yellow Traffic Stripe and Pavement Marking with Hazardous Waste Residue," of the Caltrans *Standard Specifications*, and the Caltrans Standard Special Provisions.

If grinding or cold planing will be performed that will result in residue containing lead from paint and thermoplastic and the average lead concentrations in the residue will be less than 1,000 mg/kg total lead and 5 mg/L soluble lead, use and comply with SSP 36-4 of the Caltrans Standard Special Provisions. If grinding or cold planing will be performed that has the potential to result in residue containing lead from paint and thermoplastic and the average lead concentrations in the residue may be equal to or greater than 1,000 mg/kg total lead or 5 mg/L soluble lead, remove yellow stripe and pavement marking prior to grinding or cold planing in conformance with Section 14-11.12, "Removal of Yellow Traffic Stripe and Pavement

Marking with Hazardous Waste Residue," of the Caltrans *Standard Specifications*, and the Caltrans Standard Special Provisions.

7.4.1.2.5 Asbestos-Containing Construction Material and Regulated Waste

The Design-Builder shall procure all necessary PLACs and pay all fees related to asbestos-containing construction materials and regulated waste.

7.4.1.3 Noise and Vibration

7.4.1.3.1 Reserved

7.4.1.3.2 Construction Noise and Vibration

The Design-Builder shall perform Work within the permissible noise and vibration levels, GSA and CBP Work schedule limitations, and procedures provided for in this Section and applicable federal, State, county, and municipal codes, regulations, and standards.

The noise level requirement shall apply to the equipment on the job or related to the job, including trucks, transit mixers, or transient equipment that may or may not be owned by the Design-Builder. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

Possible construction noise mitigation methods could include:

- Limiting the time and duration of the noisiest construction activities.
- Implementing methods to reduce pile driving noise levels.
- Constructing temporary noise barriers or curtains around stationary Equipment or other noise-producing construction activities that must be located close nearby sensitive receptors.
- Provide at least seven (7) Days' notice to GSA and CBP for any necessary loud construction activities, such as pile driving or jack hammering and coordinate timing with their operations.
- Fit all internal combustion motors with mufflers and other noise control equipment as specified by the manufacturer.
- Turn off construction equipment during prolonged periods of nonuse to eliminate noise.
- Maintain all equipment and train its equipment operators in good practices to reduce noise levels.
- Use ambient-sound-sensing backup alarms that could reduce disturbances from backup alarms during quieter construction periods.
- Locate stationary equipment away from GSA and CBP properties to decrease noise.
- Be responsible, at all times, for addressing the noise-related concerns and policies of ICTC, GSA, CBP, and FHWA throughout the design and construction of the Project.
- Implement a training program to ensure all employees and Subcontractors are educated as to the construction noise abatement requirements.

The Design-Builder shall consider the following to minimize the potential impacts from construction vibration:

- Hours of vibration-intensive activities, such as vibratory rollers, are restricted to minimize adverse impacts to the CBP border inspection station.

- The Design-Builder shall coordinate with GSA and CBP to prepare a preconstruction building inspection to document the preconstruction condition of the structure.

The Design-Builder shall conduct vibration monitoring during vibration-intensive activities.

7.4.1.4 Air Quality

The Design-Builder shall mitigate construction and grading activities that disrupt ground cover by controlling fugitive dust emissions and other airborne particulates in accordance with the Caltrans *Standard Specifications* and these provisions, including measures such as applying water to exposed soils and limiting the extent and duration of exposed soil conditions.

As a minimum, the Design-Builder shall use the following procedures and techniques:

- Cover trucks transporting soil, sand, other excavated, or backfill materials to or from the Site with a tarpaulin from the point of origin to the point of unloading. Install wheel/undercarriage washing equipment, or a functional equivalent, at excavation locations as the first method by which to ensure that haul trucks have clean wheels and undercarriages before entering the roadway.
- Daily, or more frequently if necessary, water down and sweep roadways around and near the Site that have adjacent sidewalks and heavy volumes of construction vehicles carrying debris and excavated materials.
- Establish regular cycles and locations for cleaning trucks that haul soil from the Site.
- Water down construction Site as required to suppress dust during grading, handling of excavation soil or debris, or demolition.

Burning of waste is prohibited. The Design-Builder shall remove scrap and waste material and dispose of it in accordance with laws, codes, regulations, ordinances, and PLACs.

The Design-Builder shall use construction equipment designed and equipped to prevent or control air pollution in conformance with all applicable regulations of EPA, State, and local authorities. Maintain evidence of such design and equipment and make available for Inspection.

The Design-Builder shall establish and maintain records of routine maintenance program for internal combustion engine powered vehicles and equipment used on the Project and shall keep records available for Inspection.

During excavation, gases may be released from soil and from underground reservoirs. Gases may contain methane, other more complex hydrocarbons, or hydrogen sulfide, and may present hazards due to flammability or toxicity. Safety during construction is covered by regulations of OSHA and Cal/OSHA. Although composition, quantity, and concentration of gases that might be released are unknown, release of gases into the atmosphere may be subject to control by the California Air Resources Board.

The Design-Builder shall, at all times, be responsible for responding to the air quality concerns and policies of the EPA, FHWA, GSA, CBP, and local governments throughout the design and building of the Project.

In the event that the scope or design of the Project is altered during the design-build process, the Design-Builder shall evaluate the necessity for further air quality analysis.

7.4.1.5 Water Quality and Non-stormwater Management

Non-stormwater generated by the Project shall comply with Section 13, “Water Pollution Control,” of the Caltrans *Standard Specifications* and may require additional permits based on the local RWQCB requirements. Dewatering, groundwater seeps, truck wash-down and other equipment wash water, or other construction-generated wastewater will either need to be disposed of in a sanitary sewer or the

Design-Builder shall obtain permits for discharge. The Design-Builder shall coordinate all potential stormwater and non-stormwater discharges described in this Section that may occur as the result of Project activities, with ICTC to verify compliance with the Construction General Permit and the Caltrans MS4 NPDES Permit. The Design-Builder shall also coordinate with the local jurisdiction, if required, for construction-related waste discharges into combined sanitary sewer systems.

The Design-Builder may discharge non-stormwater if the Design-Builder complies with the following requirements and pays all fees:

- Obtain a permit from the local RWQCB based on the source and quality of the water and in compliance with the Basin Plan and water quality standards. This may require additional permits and Waste Discharge Requirements, which are the responsibility of the Design-Builder to obtain.
- Obtain a Discharge Permit from Imperial County for any discharges to sanitary sewers and comply with all terms and conditions of the permit, including discharge limitations.
- Obtain applicable NPDES Permit and comply with all terms and conditions of the permit. Discharges to the storm drain shall be in compliance with the NPDES Permit. Coordinate with ICTC to obtain all required NPDES Permits.
- Sample and test effluent quality for the parameters and at the frequency required by permit. Record daily discharged quantities. Submit certified monthly reports to ICTC no later than seven (7) Days after the end of the month detailing the daily flows and the testing data. The Design-Builder shall bear any fines incurred as a direct result of permit violations.

The Design-Builder shall not discharge pollutant wastes such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful wastes onto the land; into or alongside the All-American Canal; nor into gutters, storm drains, or channels leading thereto. The Design-Builder shall pay special attention to not discharge any pollutants into the All-American Canal.

The Design-Builder shall control use of lubricating oils, hydraulic fluids, greases, and other such products. The Design-Builder shall promptly clean up and properly dispose of materials contaminated by spillage or leakage of products. The Design-Builder shall comply with storage and containment requirements of these materials in accordance with federal, State, or local stormwater permit regulations.

7.4.1.6 Dewatering

For available depth groundwater data, refer to the Boring Logs provided in the Approved PR and its Attachments. If the Design-Builder chooses to dewater during construction at the bridge abutments, the Design-Builder shall collect groundwater samples and analyze them for contaminants of concern. Before starting dewatering operations, the Design-Builder shall submit for Approval a Dewatering Plan meeting appropriate regulatory requirements.

7.4.1.7 Wells

No well are indicated at the Project site.

7.4.1.8 Waters and Wetlands

The Design-Builder shall comply with all regulatory requirements related to waters and wetlands as stated in the PLACs and the CE/CE and its documentation reports included in the Reference Information Documents. No permanent or temporary jurisdictional waters impacts are anticipated.

7.4.1.9 Wildlife and Vegetation

The Design-Builder shall identify impacts, develop mitigation measures, and implement mitigation measures to minimize unavoidable construction and long-term impacts of the Project on wildlife and vegetation. Wildlife and vegetation mitigation measures shall include demarcation of sensitive wildlife and vegetation areas, protection of any state or federally listed plants or animals, active bird nests, and control of invasive plant species being introduced or being spread. The Design-Builder shall provide notification if any of the following occur:

- Species are discovered within the Project area that are identified in the Project's Environmental Document and supporting memoranda included in the Reference Information Documents, particularly the Natural Environmental Study.
- New regulated species are listed or discovered within the Project area.

The Design-Builder shall comply with the requirements presented in the Natural Environment Study and the Environmental Commitments Record included in the Reference Information Documents. protect migratory and nongame birds as described in Section 14-6.03B, "Bird Protection," of the Caltrans *Standard Specifications*, the Reference Information Documents, and these Project Requirements. The Design-Builder shall:

- Perform migratory and nongame bird surveys at required Project locations before starting construction. The surveys shall include documentation identifying the number of active and inactive nests and whether they need to be removed. The Design-Builder shall submit a copy of these surveys to ICTC.
- Provide a Biologist to conduct the surveys. The Biologist shall possess a degree in biological natural sciences from an accredited college or university and have one (1) year of experience in performing bird nesting surveys or as Approved by ICTC.
- Provide notification at least fifteen (15) Days before starting Work that disturbs structures, the ground, or vegetation.

7.4.1.10 Visual Setting

The Work is anticipated to impact the visual setting of the border crossing. Measures shall be implemented as required by the Visual and Landscape Impact Assessment included in the Reference Information Documents and GSA and CBP to minimize visual impact to existing facilities.

7.4.1.11 Cultural Resources

The Design-Builder shall comply with all regulatory requirements related to cultural resources as stated in the CE/CE and its attachments included with the Approved PR and its Attachments.

If archaeological resources are discovered within or near the job Site, immediately notify ICTC and comply with Section 14-2.03A, "General," of the Caltrans *Standard Specifications.*

7.5 Submittals

7.5.1 Environmental Management Plan

The Design-Builder shall submit an Environmental Management Plan at least ninety (90) Days before starting construction. The Environmental Management Plan shall be Approved before starting construction. ICTC will respond to the Environmental Management Plan submittal within fifteen (15) Days.

7.5.2 Environmental Compliance Documentation

The Design-Builder shall submit completed PLAC applications with associated documents and the PLACs as issued and shall receive Approval before starting construction.

The Design-Builder shall submit a copy of migratory and nongame bird nesting surveys in accordance with Section 7.4.1.9.

The Design-Builder shall submit a copy of any required asbestos notification forms and attachments filed by the Design-Builder.

The Design-Builder shall submit certified monthly reports of non-stormwater discharge daily flows and the testing data in accordance with Section 7.4.1.5.

The Design-Builder shall submit the following documents for Approval:

- Lead Compliance Plan in conformance with the Caltrans *Standard Specifications*, Section 7-1.02K(6)(j)(ii), "Lead Compliance Plan," The Design-Builder shall submit the Plan for Approval at least two (2) weeks before starting removal or excavation Work.
- Wastewater Management Plan.
- Dewatering and Discharge Work Plan.

8 STORMWATER

8.1 General

The Design-Builder shall conduct all Work necessary to meet the requirements associated with stormwater and water quality related to stormwater, including permanent and temporary BMPs, structural pollution control devices, conveyances, protection of downstream water bodies, sampling, PLAC compliance, and overall water quality protection in accordance with all applicable State and federal regulations.

8.2 Administrative Requirements

8.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 8-1: Stormwater Standards and Requirements

Priority	Organization	Title
1	Caltrans	California Amendments to the AASHTO *LRFD Bridge Design Specifications* (8th Edition)
2	AASHTO	*LRFD Bridge Design Specifications* (8th Edition)
3	Caltrans	Standard Special Provisions
4	Caltrans	*Standard Specifications**
5	Caltrans	*Standard Plans*
6	Caltrans	*Project Planning and Design Guide*
7	Caltrans	*Highway Design Manual*
8	Caltrans	*Treatment BMP* design guidance, plan details, and specifications
9	Caltrans	*Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual*
10	Caltrans	*Construction Site Best Management Practices (BMP) Manual*
11	Caltrans	*Construction Site Stormwater Quality Sampling Guidance Manual*
12	Caltrans	*Construction Site Monitoring Program Guidance Manual*
13	FHWA	*Hydraulic Engineering Circular No. 15, Design of Roadside Channels with Flexible Linings*
14	United States Department of Agriculture	Revised Universal Soil Loss Equation, Version 2 (RUSLE2)
15	Caltrans	*Construction Manual*

Table 8-1: Stormwater Standards and Requirements

Priority	Organization	Title
16	AASHTO	*Roadside Design Guide*

*Document modified for design-build.

8.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for designing and constructing the stormwater systems.

Table 8-2: Stormwater References

Agency	Title
AASHTO	*AASHTO Drainage Manual*
California Stormwater Quality Association	*Construction BMP Online Handbook*

8.2.3 Permits, Licenses, Agreements, and Certifications (PLACs)

The Design-Builder shall comply with the requirements of the following PLACs in addition to the PLACs listed in the RFQ, as Amended:

- Caltrans NPDES Statewide Storm Water Permit, Order No. 2012-0011-DWQ as amended (hereafter referred to as Caltrans NPDES Permit) or as updated
- NPDES General Permit For Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ (hereafter referred to as Construction General Permit)
- Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ (hereafter referred to as Industrial General Permit)
- Project-specific USACE 404 Permit requirements related to stormwater
- Project-specific RWQCB 401 Certification requirements related to stormwater
- Project-specific California Department of Fish and Wildlife, Fish & Game Code § 1602 requirements related to stormwater

8.2.4 Software

The Design-Builder shall submit all electronic drawings in MicroStation and PDF format. The Storm Water Data Report shall be submitted in Microsoft Word, Microsoft Excel, and PDF formats.

8.2.5 Coordination with Other Agencies and Disciplines

The Design-Builder shall coordinate all stormwater issues with ICTC, GSA, CBP, local agencies, affected interests, and regulatory agencies. The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda.

The Design-Builder shall comply with and document the PLAC requirements, modifications, and contacts with the permitting agencies. The stormwater design shall be based on Caltrans, ICTC, and GSA standards, plans, specifications, guidance, and PLACs.

8.2.6 Qualifications, Certifications, and Training

The Design-Builder shall provide staff with qualifications and certifications related to development of Plans, specifications, reports, and construction-related stormwater requirements in ICTC, GSA, local, State, federal, and Caltrans provisions. These qualifications and certifications include:

- California-registered Civil Engineer for all engineering calculations.
- California-registered Civil Engineer for sealing and signing the final Storm Water Data Report.
- Water Pollution Control Manager for developing the SWPPP.
- Qualified SWPPP Developer in accordance with the Construction General Permit, Section VII, "Training Qualifications and Certification Requirements."

The Design-Builder shall provide a Water Pollution Control Manager who complies with the qualifications and responsibilities described in Section 13-1.01D(4), "Water Pollution Control Manager," of the Caltrans *Standard Specifications*. The Water Pollution Control Manager shall be responsible for preparation and compliance with the Caltrans NPDES Permit and the Construction General Permit.

The Water Pollution Control Manager shall:

- Comply with the requirements provided in the Construction General Permit for Qualified SWPPP Developer.
- Complete the stormwater management training described at the following Web site:

  https://dot.ca.gov/programs/construction/storm-water-and-water-pollution-control

The Qualified SWPPP Developer shall be registered in the State Water Resources Control Board Stormwater Multiple Application and Report Tracking System (SMARTS).

The Design-Builder shall provide water pollution control training for all employees and subcontractors before they start work at the Project Site. The training shall comply with Section 13-1.01D(3), "Training," of the Caltrans *Standard Specifications*. The training program shall also include the following:

- Construction General Permit NPDES training in accordance with the SWPPP, including the functions and proper installation of BMPs to be implemented on the Project.
- Training on compliance with the Construction General Permit and Caltrans NPDES Permit.

8.3 Design Requirements

The Design-Builder shall determine the stormwater design using information from and in compliance with the requirements in the Environmental Document, the Approved PR and its Attachments, PLACs, Drainage Report (as described in Section 9), geotechnical report, other Project information pertinent to the stormwater design, ICTC and Caltrans design guidance, and Section 9. The calculations for drainage design and stormwater shall be consistent in methodologies for hydrology and hydraulics, though there may be some additional storm frequencies and durations needed for the design of BMPs. If alternative methods are used to determine flows due to PLAC requirements, the Design-Builder shall clearly document the assumptions. To establish a stormwater drainage system that complies with the requirements and accommodates the historical hydrologic flows, the Design-Builder shall calculate the pre-Project and post-Project hydrology for all sub watersheds within the Project Site.

8.3.1 Stormwater Pollution Prevention Plan

The Design-Builder shall prepare a SWPPP in compliance with the Caltrans *Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual* and Section 13, "Water Pollution Control," of the Caltrans *Standard Specifications*. The Design-Builder shall prepare the SWPPP using the latest template posted on the following Web site:

https://dot.ca.gov/programs/construction/storm-water-and-water-pollution-control

8.3.2 Storm Water Data Report

The Design-Builder shall use information from the Approved PR and its Attachments to develop a final Storm Water Data Report, signed by a California-registered Civil Engineer, that complies with the requirements for the PS&E-level Storm Water Data Report in the Caltrans *Project Planning and Design Guide*. The Storm Water Data Report shall include all the pertinent stormwater information required in the Caltrans *Project Planning and Design Guide*, including the Summary Spreadsheets for tracking BMPs for design compliance monitoring (two (2) spreadsheets) and the Attachment for input to the State Water Resources Control Board Stormwater Multiple Application and Report Tracking System (SMARTS). The summary spreadsheets and attachment templates are available from Caltrans upon request.

The Storm Water Data Report shall be a record of all the stormwater drainage computations, both hydrologic and hydraulic, and all support data and shall describe all water-quality-related environmental requirements and commitments. The Storm Water Data Report shall include both permanent and temporary BMPs necessary to protect water quality. Permanent BMPs used for post-construction requirements of the Caltrans NPDES Permit shall be tracked for permit requirements for compliance with Total Maximum Daily Load credits.

The Design-Builder shall map the drainage area and shall incorporate into the Storm Water Data Report the sub water shed areas, flows, and volumes used to design and size BMPs.

8.3.3 Surface Hydrology

8.3.3.1 Design Frequencies

The design frequencies for the drainage systems shall meet the requirements of Section 9. Stormwater treatment BMP design shall use the frequencies recommended in the Caltrans *Project Planning and Design Guide*. Design pollution prevention BMPs shall use appropriate frequencies for the function of the BMP and in accordance with methodologies in the Caltrans *Highway Design Manual*.

8.3.3.2 Hydrologic and Hydraulic Methods

The Design-Builder shall perform hydrologic and hydraulic analyses and follow design methodology as prescribed by the Caltrans *Highway Design Manual* and Section 9. These methods shall be used for the drainage design and for the BMP design for the bypass, flood control, and shear stress equations.

The Design-Builder shall comply with the stormwater BMP hydrologic sizing methods described in the Caltrans NPDES Permit, the Caltrans *Stormwater Management Plan*, and the Caltrans *Project Planning and Design Guide*. The Design-Builder shall size BMPs for water quality volume, water quality flow, or a combination of these, in accordance with the Caltrans *Project Planning and Design Guide* and the Caltrans *Treatment BMP* design guidance, plan details, and specifications. The Design-Builder shall calculate the water quality volume using the Small Storm Hydrology Method in accordance with the Caltrans *Project Planning and Design Guide*.

8.3.4 Permanent Stormwater Treatment Systems

The Design-Builder shall design stormwater treatment systems to meet requirements for water quality, water quantity, and rate control, as determined by the Caltrans NPDES Permit, the Caltrans *Stormwater Management Plan*, the Caltrans *Project Planning and Design Guide*, and applicable Caltrans *Treatment BMP* design guidance, plan details, and specifications.

Treatment BMP design shall follow the Caltrans *Project Planning and Design Guide* and the Caltrans *Treatment BMP* design guidance, plan details, and specifications. The Design-Builder may use the plans and specifications developed by Caltrans or choose to develop a special design to fit the Project needs with coordination with and Approval of ICTC and GSA. The Design-Builder is allowed some flexibility in the size or shape of the approved BMPs, but the Design-Builder shall not use proprietary devices unless they are on the Caltrans Authorized Material List. To propose the addition of a new product to the Authorized Material List, the Design-Builder shall follow the procedure described in Section 5.3.3. The stormwater design shall include a feasibility analysis of BMPs to document that the Caltrans NPDES Permit threshold for compliance to the Maximum Extent Practicable has been met.

8.3.5 BMP Structures

8.3.5.1 Modified Treatment BMP Structures

For all treatment BMP structures for which the Design-Builder chooses to use a modified version of the standard BMP, the Design-Builder shall submit to ICTC for Approval a special design and structural analysis complying with the AASHTO *LRFD Bridge Design Specifications* (8th Edition), including California Amendments, and signed and sealed by a California-registered Civil Engineer. Include with the submittal a letter requesting the modification and stating the need for the change. The submittal shall also include all hydraulic calculations for the modified BMP. The Design-Builder shall design the modified BMP to meet the requirements in the Caltrans *Highway Design Manual* for bypass of flows above the water quality volume or flow or local regulations when applicable. The stormwater design flows shall be included to demonstrate the amount of treatment for the water quality volume or the water quality flow, as applicable.

8.3.5.2 Reserved

8.3.5.3 Conveyances

Many stormwater conveyances also function as design pollution prevention BMPs and shall be designed to meet the standards of the Caltrans *Highway Design Manual* and the Caltrans *Project Planning and Design Guide*, particularly Appendix A. Stormwater conveyances shall be documented in the Storm Water Data Report since they protect water quality, prevent erosion, and provide a water quality benefit.

8.3.5.4 Biofiltration Swales and Roadside Open Channels

The Design-Builder may use biofiltration swales, which are open channels, if they meet the design criteria for shear stress provided in Section 9 of the Caltrans *Highway Design Manual,* and *Hydraulic Engineering Circular No. 15, Design of Roadside Channels with Flexible Linings*. Biofiltration swales are an approved treatment BMP, but care shall be taken in the design to provide a stable facility beyond the life of temporary BMPs such that a long-term erosion problem does not occur.

8.4 Construction Requirements

The stormwater construction requirements shall be in accordance with the Caltrans NPDES Permit, the Construction General Permit, the Caltrans *Construction Site Best Management Practices (BMP) Manual*, the Caltrans *Construction Site Stormwater Quality Sampling Guidance Manual*, the Plans, the Caltrans

Standard Specifications, the Caltrans Special Provisions, and the Caltrans *Construction Manual*. The Design-Builder shall meet any construction-related provisions that are included in Project-specific PLACs.

The Design-Builder shall accommodate construction staging in the stormwater design. Staging Plans shall show stormwater details for each stage of construction. The design shall include temporary BMPs to comply with the Construction General Permit, and the SWPPP shall be amended and submitted to the State Water Resources Control Board Stormwater Multiple Application and Report Tracking System (SMARTS) as the construction proceeds.

8.5 Submittals

8.5.1 Construction General Permit

As part of compliance with the Construction General Permit, the Design-Builder shall:

- File all permit registration documents with the State Board in the State Water Resources Control Board Stormwater Multiple Application and Report Tracking System (SMARTS) including:
  - Notice of Intent
  - Risk assessment (Construction General Permit, Section VIII, "Risk Determination")
  - SWPPP (Construction General Permit, Section XIV, "SWPPP Requirements")
  - Site maps showing discharge points
  - Identification of the Qualified SWPPP Developer
  - Signed certification statement (Construction General Permit, Section IV.J, "Certification")
- Submit to ICTC a Rain Event Action Plan as required in Section 13-3, "Stormwater Pollution Prevention Plan," of the Caltrans *Standard Specifications.*
- Submit to ICTC and file with the board all monitoring reports as required in Section 13-3, "Stormwater Pollution Prevention Plan," of the Caltrans Standard Specifications.
- Submit to ICTC all required SWPPP amendments.
- Submit to ICTC the stormwater annual report.
- Pay the annual fees.
- Submit to ICTC and file with the board the notice of termination at the completion of the Project.

The Design-Builder shall provide copies of the above documents to ICTC.

8.5.2 Water Pollution Control Plans

Temporary BMPs shall be included in quantity tables on the Temporary Water Pollution Control Plan in compliance with the Caltrans *Standard Plans* and Caltrans *Construction Site Best Management Practices (BMP) Manual*. If there are non-standard BMPs or non-standard applications of temporary BMPs, they shall be identified in the construction details.

All permanent BMPs shall be shown on the Water Pollution Control Plans, including areas used for infiltrating stormwater water quality volume for PLAC compliance. The Design-Builder shall label alignments, stationing, walls, bridges, sidewalks, R/W and easements, existing drainage structures and pipes, proposed drainage structures and pipes, surface flow arrows, riprap locations, silt fences, rolled erosion control products, mulch areas, and other erosion control items. Plans shall also include high and low point station and elevation, ponds, normal water line, high water line, coordinate grid ticks and labels (minimum of three (3) per sheet), land feature changes, erosion control features, and notes.

8.5.3 nSSPs

Many of the treatment BMPs in the Caltrans *Project Planning and Design Guide* require nSSPs. For nSSPs related to stormwater, the Design-Builder shall obtain ICTC Approval using the Caltrans request memo. The Design-Builder shall include with the memo an electronic copy of the completed design spreadsheet from the Caltrans *Treatment BMP* design guidance, plan details, and specifications and an electronic pdf copy of only the plan sheets that pertain to the nSSP.

8.5.4 Storm Water Data Report

The Design-Builder shall submit to ICTC a Storm Water Data Report in compliance with Section 8.3.2.

9 DRAINAGE AND HYDRAULICS

9.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with drainage, including extending the existing culvert, bridge hydraulics, roadway ditches, retention/detention facilities, relocating or replacing the existing stormwater lift pump station, and closed storm drain systems.

9.2 Administrative Requirements

9.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 9-1: Drainage Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Highway Design Manual*
2	Caltrans	California Amendments to the AASHTO *LRFD Bridge Design Specifications* (8th Edition)
3	AASHTO	*LRFD Bridge Design Specifications* (8th Edition)
4	Caltrans	*Structure Hydraulics & Hydrology Procedures Manual*
5	Caltrans	*Memo to Designers*
6	Caltrans	*Bridge Design Aids*
7	Caltrans	*Bridge Design Details*
8	Caltrans	Standard Special Provisions
9	Caltrans	*Standard Specifications**
10	Caltrans	*Standard Plans*
11	Caltrans	*Construction Manual*
12	Caltrans	Design Information Bulletin 83: Caltrans Supplement to FHWA Culvert Repair Practices Manual
13	FHWA	*Hydraulic Engineering Circular No. 15, Design of Roadside Channels with Flexible Linings*
14	FHWA	*Hydraulic Engineering Circular No. 18, Evaluating Scour at Bridges*
15	FHWA	*Hydraulic Engineering Circular No. 21, Design of Bridge Deck Drainage*

Table 9-1: Drainage Standards and Requirements

Priority	Organization	Title
16	FHWA	*Hydraulic Engineering Circular No. 23, Bridge Scour and Stream Instability Countermeasures*

*Document modified for design-build.

9.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the drainage systems analysis and design.

Table 9-2: Drainage References

Agency	Title
Caltrans	*Bridge Design Practice*
AASHTO	*AASHTO Drainage Manual*

9.2.3 Software

The Design-Builder shall choose drainage design software from the drainage software packages listed in Table 808.1, "Summary of Related Computer Programs and Web Applications," of the Caltrans *Highway Design Manual* for analyzing and designing all systems.

The Design-Builder shall submit all electronic drawings in MicroStation format and supporting electronic design data in Civil 3D format. Software shall comply with Section 6.3.4.

9.2.4 Data Collection

To establish a drainage system that complies with the requirements and accommodates the historical hydrologic flows in the Project limits, the Design-Builder is responsible for collecting all necessary data, including the elements described below.

The Design-Builder shall identify all water resources issues using available data, including water quality requirements as imposed by local, State, and federal government regulations; National Wetlands Inventory and other wetland/protected waters inventories; and official documents concerning the Project, such as the environmental studies. The Design-Builder shall also acquire local agency drainage and stormwater management plans and records of citizen concerns.

Water resources issues include areas with historically inadequate drainage (flooding or complaints), environmentally sensitive areas, localized flooding, and maintenance problems associated with drainage and areas known to contain Hazardous Waste. The Design-Builder shall also determine watershed boundaries, protected waters, canal, and ditches applicable to the Project design.

The Design-Builder shall acquire existing storm drain plans and survey data, including all data on culverts, drainage systems, the existing lift pump station adjacent to the north access tunnel, and storm sewer systems within the Project area. The Design-Builder shall also determine existing drainage areas that contribute to the roadway drainage system and the estimated runoff used for design of the existing system.

The Design-Builder shall collect any data and information required for the hydraulics analysis.

9.3 Design Requirements

The Design-Builder shall remove the existing drainage facilities, where necessary, within the Project limits and design and construct new drainage facilities to accommodate Project and off-Site drainage and meet all applicable requirements. Drainage facilities shall be compatible with existing and proposed drainage systems in adjacent properties and shall preserve existing drainage patterns. Where drainage patterns must be changed from existing patterns, the Design-Builder shall secure all permits, drainage easements, local agency approval, and ICTC and GSA Approval before starting construction of any drainage facilities.

No ponding problems are known to exist at the Project Site.

9.3.1 Surface Hydrology

9.3.1.1 Design Frequencies

The drainage design frequencies shall be as indicated by the Caltrans *Highway Design Manual,* but in no instance shall the storm sewer system be designed for a frequency less than the ten (10)-year rainfall event.

The Design-Builder shall use rainfall intensity and design storm criteria specified in the Caltrans *Highway Design Manual*. The Design-Builder shall evaluate flood potential for extreme storms, including areas inundated and flow routes for water leaving GSA and CBP facilities.

9.3.1.2 Hydrologic Methods

The Design-Builder shall perform hydrologic analyses and follow design methodology as prescribed by the Caltrans *Highway Design Manual*.

For design rainfall total amounts, the Design-Builder shall use the Caltrans *Highway Design Manual*. The drainage areas shall be modeled to include future development and increased runoff associated with development. Flood damage potential for the completed Project shall not exceed pre-Project conditions.

9.3.1.3 Calculations

The Design-Builder shall document all the hydrology and hydraulic calculations for drainage design and permanent stormwater design. If a drainage system contains a treatment BMP, the Design-Builder shall provide calculations for both the applicable flood control hydrology and hydraulics based on the Caltrans *Highway Design Manual* and also for the stormwater hydrology and hydraulic event sized for NPDES treatment BMP requirements.

9.3.1.4 Project Drainage Overview Map

The Design-Builder shall develop a Project Drainage Overview Map that shall serve as the base plan for final drainage design and shall comply with permit or local agency requirements. The Project Drainage Overview Map shall show the existing drainage features and proposed Project drainage master plan, including drainage areas, contributing flows of existing and proposed drainage, and treatment BMPs. The Project Drainage Overview Map shall also show impacts from the Project and proposed mitigation within the map extents or waters receiving Project runoff.

9.3.2 Hydraulic Structures

For the bridge crossing, the Design-Builder shall complete a bridge Hydraulics Recommendation Letter and supporting hydraulic computations. These documents shall be submitted to the ICTC for Approval.

The Design-Builder shall prepare a Drainage Report for the bridge widening that shall be included in the Final Hydraulic Report. The Drainage Report shall include:

- For hydrology:
  - Hydrologic calculations (where computer software is used, both hardcopy and electronic input and output files).
  - Historical or Site data used to review computed flows.
- For hydraulics and recommended waterway opening and/or structure:
  - Photographs of Site.
  - General plan, profile, and elevation of recommended waterway opening and/or structure.
  - Calculations – hardcopy of output, electronic input and output files for all computer models used for final analysis or for permit request, and a summary of the models used.
  - Cross-sections of waterway. The Design-Builder shall provide a hardcopy plot and any electronic data used. If Civil 3D is used to develop cross-sections, the Design-Builder shall include elevation model and location of cross-sections.
  - Profiles of channel.
- For scour analysis for the bridge:
  - Channel cross-section at bridge showing predicted scour.
  - Calculations and summary of calculations clearly showing predicted scour and assumptions regarding bridge opening used to calculate predicted scour (where computer software is used, both hardcopy and electronic input and output files).
  - Discussion of review of long-term degradation/aggradation and effects.
  - Recommendation for abutment protection.
- Discussion about the hydrologic and hydraulic analysis and reasons for the design recommendations.

9.3.2.1 Culverts

The Design-Builder shall analyze the existing culvert extension and drainageways impacted, replaced, extended, or created by the Project design for any localized flooding problems. The Design-Builder shall design the culvert extension to meet the requirements of the local watershed management organization and the local agency's stormwater management criteria or master drainage plans.

Design computations and risk assessments shall be completed by the Design-Builder for the culvert extension.

The Design-Builder shall design the culvert extension to convey a minimum of 100-year frequency. The Design-Builder shall also analyze the overtopping flood and the 500-year event.

9.3.2.2 Bridge

All hydraulic computations, designs, and recommendations for the bridge widening shall consider past studies and projects in the area by the IID and other State or federal agency studies and projects.

9.3.2.2.1 Method Used to Estimate Flow

Canal flows and related information shall be obtained from IID.

9.3.2.2.2 Design Frequency

The Design-Builder shall consider any local agency requirements for design frequency for a particular Site.

9.3.2.2.3 Hydraulic Analysis

Bridge scour shall be analyzed using Hydraulic Engineering Circular No. 18, Evaluating Scour at Bridges.

Rock slope protection at abutments shall be designed in accordance with Chapter 870, "Bank Protection - Erosion Control," of the Caltrans *Highway Design Manual* and the procedures outlined in Hydraulic Engineering Circular No. 23, Bridge Scour and Stream Instability Countermeasures.

9.3.2.2.4 Bridge Waterway Design

The bridge widening shall be designed such that it does not cause any increase in the headwater elevation from the existing condition.

Bridge waterway design shall maintain the existing channel morphology through the structure.

The Design-Builder shall follow recommendations and provide sufficient clearance in accordance with IID requirements.

The Design-Builder shall prepare the Hydrologic Summary Table and the Scour Data Table in accordance with Caltrans *Memo to Designers* 16-1, "Hydraulic Design For Structures Over Waterways," and submit them to ICTC. The tables shall also be placed on the Foundation Plan.

9.3.2.2.5 Bridge Deck Drainage

Runoff from bridge decks shall be carried off the bridge and into the adjacent roadway drainage system. The roadway drainage design shall include bridge approach drains to intercept gutter flow at both ends of the bridge. These drains, or temporary drains, shall be constructed at the time of bridge deck placement to prevent erosion. Stormwater flowing toward the bridge shall be intercepted before reaching the approach slab. Bridge deck drainage shall be routed through a pond or other Approved stormwater management system before discharge to the natural waters of the State. The Design-Builder shall comply with bridge deck drainage design as outlined in *Hydraulic Engineering Circular No. 21, Design of Bridge Deck Drainage.* Drainage design frequencies for bridge deck drainage shall comply with Table 831.3, "Desirable Roadway Drainage Guidelines," of the Caltrans *Highway Design Manual.*

9.3.2.3 Storm Drains and Sewer

The storm sewer system design shall include:

- Drainage area maps for each storm drain inlet with pertinent data, such as boundaries of the drainage area, topographic contours, runoff coefficients, times of concentration, and land use with design curve number and/or design runoff coefficient.
- Location and tabulation of all existing and proposed pipe and drainage structures, including all pipe and drainage structures proposed to be removed or abandoned. These shall include size, class or gauge, catch basin spacing, detailed structure designs, and any special designs.
- Complete pipe profiles, including pipe size, type, and gradient; station offsets from the centerline of the roadway; gutter spread calculations; length of pipe; class/gauge of pipe; and numbered drainage structures with coordinate location and elevations.

The minimum longitudinal slope shall be such that, when flowing half full, a self-cleaning velocity of three (3) feet per second is attained.

9.3.2.4 Roadside Open Channels

Roadside open channels shall not be used on this Project unless Approved by ICTC, GSA, CBP, and IID. If used, the Design-Builder shall design roadside channels as specified in the Caltrans *Highway Design Manual*. The Design-Builder shall use equations from the Caltrans *Highway Design Manual* and *Hydraulic Engineering Circular No. 15*, *Design of Roadside Channels with Flexible Linings*, to determine shear stress for designing and evaluating channel linings.

9.3.2.5 Existing Lift Pump Station

The existing stormwater lift pump station located northeast of the existing bridge shall be relocated, rehabilitated, or replaced as required to accommodate the bridge widening. The existing lift pump station removes collected stormwater from the north access tunnel. The existing stormwater connection from the north tunnel floor drain shall be extended to connect to the new lift pump station location. The lift pump station outlet shall be connected to the existing outfall. As part of the Proposal development, the Design-Builder shall review the existing lift pump station condition and recommend if the existing lift pump station can be reused in its relocated position or if it should be rehabilitated or replaced as part of the Project Work. If the lift pump station is to be replaced, a similar lift pump station of the same pumping discharge and stormwater storage capacity shall be provided connecting to the existing drainage system. During construction, the Design-Builder shall provide temporary stormwater collection and pumping to avoid flooding in the north tunnel.

9.4 Construction Requirements

The Design-Builder shall accommodate construction staging in the drainage design. Staging Plans shall show drainage details for each stage of construction.

The Design-Builder shall obtain ICTC, GSA, CBP, and IID Approval for abandonment methods for all existing drainage features that the Design-Builder is abandoning with this Project.

Storm sewer construction shall occur by either open cut or trenchless methods.

Existing sanitary sewer and water main Utilities shall remain in place and active.

The Design-Builder shall coordinate all construction activities with GSA and CBP.

All surfaces impacted by construction shall be restored.

9.5 Submittals

9.5.1 Project Drainage Overview Map, Preliminary Calculations, and Drainage Models

The Design-Builder shall submit a Project Drainage Overview Map in MicroStation format, preliminary drainage calculations, and drainage models to the ICTC for Approval before starting detailed design.

9.5.2 Drainage Plans

Drainage Plans shall comply with the following requirements:

- Provide drainage structure data (type, location, diameter, length, and class tabulations) and details and a complete set of roadway cross-sections to show the construction staging and associated temporary drainage.

- Label alignments, stationing, walls, bridges, sidewalks, R/W and easements, existing drainage structures, proposed drainage structures, surface flow arrows, rock slope protection locations, and ditch blocks.
- Show existing and proposed contours, high and low point station and elevation, roadway cross slope and superelevation, ponds, normal water line, high water line, and coordinate grid ticks and labels (minimum of three (3) per sheet).
- Show dimensions for roadways and shoulders.

9.5.3 Drainage Profiles

Drainage Profiles shall comply with the following requirements:

- Label elbows, bends, reducers, existing and proposed ground lines, Utilities adjacent to structures or pipes, pipe data (type, diameter, length, and class), and structure numbers.
- At any grade change, junction, or pipe size change, include existing and proposed invert elevations of inlet, outlet, and surface.
- Show existing structures or pipes and existing and proposed ground lines. Show existing as dashed.

9.5.4 Drainage Quantities

Drainage Quantities shall provide structure/pipe data (type, diameter, length, class, structure numbers, guidepost locations, station, and offset) for aprons, pipes, and structures.

9.5.5 Drainage Design Documentation

The Design-Builder shall provide ICTC with drainage design documentation, signed and sealed by a California-registered Professional Civil Engineer, which shall be a compilation of all drainage computations, both hydrologic and hydraulic, and all support data. The documentation shall include:

- Hydraulic notes, models, and tabulations.
- Culvert designs, reports, and memoranda.
- Complete set of calculations and detailed drainage area maps.
- Summary of the lift pump station condition assessment and recommendations.
- Correspondence file.
- Preliminary and final Drainage Reports.

10 LAND SURVEYING

10.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with land surveying, including supplemental horizontal and vertical control surveys, subsequent mapping and topographic surveys, bridge site surveys, Utility surveys, soils surveys, construction surveys, and all other land surveying services necessary to complete the Project in an accurate, neat, and timely fashion. When ICTC standards exist for survey activities, such surveying shall be done in accordance with the ICTC standards.

ICTC will perform primary and Project horizontal and vertical control surveys, R/W surveys, R/W engineering, and all land surveying associated with R/W engineering close-out activities and R/W monumentation required in support of the Work.

All land surveying required as part of the Project shall be in full compliance with all State and local laws.

10.2 Administrative Requirements

10.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from the ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 10-1: Land Surveying Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Surveys Manual*
2	Caltrans	*Standard Special Provisions*
3	Caltrans	*Standard Specifications**
4	Caltrans	*Standard Plans*
5	Caltrans	*CADD User's Manual*
6	Caltrans	*Plans Preparation Manual*
7	Federal Geographic Data Committee	*Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy*

*Document modified for design-build.

10.2.2 Survey Quality Management Plan

The Design-Builder shall develop a Survey Quality Management Plan that includes the complete description of the QC and QV activities for the Project surveying. The Survey Quality Management Plan shall be written to achieve the following:

- All individuals responsible for land surveying know what constitutes quality survey products.

- All individuals responsible understand the specifications, standards, and legal requirements for the survey products.
- Clearly defined QC Plan and QV Plan for each survey product.

The Design-Builder shall obtain ICTC Approval of the Survey Quality Management Plan before starting any survey Work. The ICTC will perform Owner Verification for the resultant survey products.

10.2.3 Survey Data Provided to the Design-Builder

The Design-Builder shall verify and confirm the location, accuracy, and datum of all land surveying data provided to the Design-Builder, regardless of the source of the information. The Design-Builder shall document all forms of data verification. If the Design-Builder identifies any discrepancy, the discrepancy shall be reported in writing to ICTC for review. ICTC will respond to the discrepancy within ten (10) Working Days.

10.2.4 ICTC Supplied Information

Existing design and layout information may be available on the GSA as-built plan information. The Design-Builder shall comply with the GSA Controlled Unclassified Information (CUI) Guide as required by the RFQ, as Amended to request access to the existing Project Site materials. The following land surveying data may be available at the Design-Builder's request:

- Existing centerline roadway alignments.
- Engineering survey data.
- Photogrammetric mapping.
- R/W mapping.
- Land net retracement mapping.
- Existing Utility location information.

10.2.5 Safety and Security Requirements

The Survey Manager and all staff performing land surveying tasks for this Project shall have a thorough knowledge and understanding of all the relevant safety and security practices and procedures as outlined in the Safety and Security Management Plan and the Caltrans *Surveys Manual*. The Design-Builder's land surveying staff shall be properly outfitted with the necessary safety equipment to perform any surveying as part of this Project.

10.3 Design Requirements

10.3.1 Survey Control Requirements

10.3.1.1 Survey Control Adjustments and Accuracy

The Design-Builder shall document the use of present survey control networks and the establishment of any subsequent survey control networks that will be used in conjunction with the Project. These records shall include survey control monument locations, types, accuracy values, adjustment results, and establishment methods.

The accuracy standard for any subsequent control networks established by the Design-Builder shall be in conformance with Chapter 5, "Classifications of Accuracy and Standards," and Figure 5.1, "Caltrans Orders of Accuracy," of the Caltrans *Surveys Manual* and all other specifications described in the Caltrans *Surveys Manual*.

10.3.1.2 Survey Control Datum

The horizontal survey datum used for the Project shall be the California Coordinate System of 1983 (CCS83) as described in the Public Resources Code § 8801 et seq., and using the zone and epoch designated by ICTC.

The vertical survey datum shall be the California Orthometric Heights of 1988 (COH88) as described in the Public Resources Code § 8890 et seq.

10.3.2 Preservation of Survey Monuments

The Design-Builder shall locate and preserve all previously established public and private land survey monuments located within the Project in accordance with the Business and Professions Code § 8771.

10.3.3 Prepare Base Maps and Plan Sheets

The Design-Builder shall conduct all tasks necessary to complete all mapping for the Project, including all planimetric, topographic, photogrammetric, design, Utility, centerline alignment, engineering survey, and base maps necessary to complete the Project.

Photogrammetric maps and products shall conform to Chapter 13, "Photogrammetry Surveys," of the Caltrans *Surveys Manual*.

Engineering survey maps and products shall conform to Chapter 11, "Engineering Surveys," of the Caltrans *Surveys Manual*.

Engineering surveys using stationary or mobile LiDAR scanners shall conform to the specifications within Chapter 15, "Terrestrial Laser Scanning Specifications," of the Caltrans *Surveys Manual*.

10.3.4 Survey Records and Reports

The Design-Builder shall maintain neat, accurate, and complete documentation for all land survey Work performed for this Project. These records shall include all calculations, mapping, staking notes, and field crew daily diaries. The Design-Builder shall prepare a formal survey report for all survey calculations related to survey control networks, design surveys, and construction surveys. The intent of each report is to document and perpetuate the information and rationale used to perform the land surveying task.

10.4 Construction Requirements

The Design-Builder shall perform all construction surveying necessary to facilitate all construction operations for the duration of the Project and shall conform to the specifications within Chapter 12, "Construction Surveys," of the Caltrans *Surveys Manual*.

10.5 Submittals

10.5.1 General Requirements

The Design-Builder shall index and submit all calculations, notes, computer files, raw data, Project reports, meeting notes, correspondence, digital images, maps, corner records, records of survey, aerial photogrammetric products, centerline alignment maps, and other maps and related items as part of the Work.

The Design-Builder shall deliver submittals in both hardcopy, where appropriate for items such as electronic measurement raw data shall only be provided in electronic format, and electronic formats at the completion of each activity. Electronic data submitted shall be compatible with ICTC software and operating systems. Mapping shall conform to the Caltrans *Plans Preparation Manual* and the Caltrans

CADD User's Manual. GIS submittals shall conform to the Federal Geographic Data Committee *Geospatial Positioning Accuracy Standards* and the National Spatial Data Infrastructure requirements.

Photogrammetric products shall conform to the specifications within Chapter 13, "Photogrammetry Surveys," of the Caltrans *Surveys Manual*.

Acceptance of the survey portion of the Work will not be given until all survey submittals have been Approved by ICTC. ICTC shall have ten (10) Calendar Days to complete its review of the Design-Builder's survey submittals.

10.5.2 Survey Quality Management Plan

The Design-Builder shall submit a Survey Quality Management Plan for ICTC Approval as described in Section 10.2.2.

10.5.3 Survey Records

The Design-Builder shall submit survey records at the time of Substantial Completion unless requested by ICTC at an earlier time.

10.5.4 Survey Reports

The Design-Builder shall submit each survey report to ICTC within thirty (30) Calendar Days of the completion of each survey regardless of the type of survey performed.

The reports shall include information related to the source data used, the calculations performed, and the data produced as part of the survey process. ICTC will provide the format specifications of each report type. Each report shall be reviewed and signed by either (a) a California Professional Land Surveyor or (b) a California-registered Civil Engineer licensed before January 1, 1982.

10.5.5 As-Built Reports and Data

The Design-Builder shall submit as-built reports and as-built data documenting the location of the as-built alignments, profiles, structure locations, and Utilities. The as-built reports shall include descriptive statements for any survey methods used to determine the as-built location of the feature being surveyed. The as-built data shall include the coordinate types (*x, y,* and/or *z*) and feature codes in the same format in which the preliminary construction data was generated. Where data has been provided to the Design-Builder from GSA or ICTC in an *x, y*–only or *z*-only coordinate format, the Design-Builder shall provide ICTC with data in the same coordinate format. The as-built reports and data shall be submitted within thirty (30) Working Days of Substantial Completion of the Project.

10.5.6 Survey Base Map

The Design-Builder shall provide to ICTC a survey base map file in MicroStation format that includes the survey data from the surveying activities performed by the Design-Builder.

The Design-Builder shall provide an XML file written in the latest version of Schema as confirmed by ICTC containing coordinate geometry and feature code information.

The survey base map shall be submitted within thirty (30) Working Days after Substantial Completion of the Project.

11 RIGHT OF WAY

11.1 General

All Project Work shall be completed within existing R/W. If any additional R/W is required, ICTC will be responsible for performing and paying for R/W acquisitions and temporary construction easements.

11.2 Administrative Requirements

11.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 11-1: Right of Way Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Right of Way Manual*
2	Caltrans	*Surveys Manual*
3	Caltrans	Standard Special Provisions
4	Caltrans	*Highway Design Manual*
5	Caltrans	*Project Development Procedures Manual*
6	Caltrans	*Standard Specifications**
7	Caltrans	*Standard Plans*

*Document modified for design-build.

The Design-Builder shall comply with the procedures, guidelines, and standards set forth in the Caltrans *Right of Way Manual* regardless of whether the procedures, guidelines, or standards are written as mandatory requirements. If there are any questions regarding the scope of the Design-Builder's obligations pursuant to the Caltrans *Right of Way Manual*, the Design-Builder shall be responsible for requesting clarification from ICTC. ICTC makes the determination as to whether an obligation is mandatory.

11.2.2 Reserved

11.2.3 Software Requirements

If required, the Design-Builder shall submit all electronic drawings in MicroStation format and supporting electronic design data in Civil 3D format. All reports and documents shall be submitted in Microsoft Word format. Software shall comply with Section 6.3.4.

11.2.4 ICTC's Right of Possession

Right of possession of the R/W and, upon Final Acceptance, the improvements made thereon by the Design-Builder shall remain at all times with GSA. The Design-Builder's right to enter and use of the Site arises solely from permission granted by GSA through ICTC under the Contract, and as directed.

11.2.5 Negotiation of the Purchase or Lease of Property or Property Rights

ICTC will acquire all R/W, permanent or temporary, necessary for the Project in accordance with the Caltrans *Right of Way Manual*. The Design-Builder shall not enter into negotiations for purchase or lease of any property or property rights required to construct the Project. The Design–Builder, at its sole cost, may directly negotiate permits to enter private property for temporary use that would facilitate the design or construction of the Project, if it is determined by the Design-Builder, and agreed upon in writing by ICTC and GSA, that these properties would not otherwise be a Project R/W requirement but are for the sole benefit of the Design-Builder.

11.2.6 Right of Way Requirements Maps and Certificates of Sufficiency

If any Additional Properties are required or a designated R/W line is moved or deleted, the Design-Builder shall provide R/W modification information as described in Chapter 14, Section 2, Article 5, "Right-of-Way Submittal," of the Caltrans *Project Development Procedures Manual,* and submit the R/W requirements information to ICTC.

The Design-Builder shall certify that the designated R/W lines shown on the R/W requirements information are sufficient to construct the Project by completing the Certificate of Sufficiency provided in Section 6, "Right of Way Engineering," of the Caltrans *Right of Way Manual* and returning it to ICTC. Additional Certificate of Sufficiency submittals are required for any subsequent R/W changes. The Certificate of Sufficiency is required before ICTC proceeds with the acquisition.

11.2.7 Identification of Additional Properties

Additional Properties are not anticipated. However, if the Design-Builder determines that Additional Properties are necessary or required as a result of a design change or construction Change Order, the Design-Builder shall prepare and submit a written request to ICTC for consideration. The Additional Properties request shall include:

- Assessor's parcel number assigned to the requested parcel.
- Analysis regarding the need to acquire the parcel and the property interest necessary, including analysis regarding alternatives to the acquisition.
- Duration of need for the parcel, if for temporary use.
- Design plan of sufficient detail to initiate R/W engineering.
- Whether request is related to a value engineering change proposal.
- Proposed date of need.
- Any additional information as requested by ICTC.

ICTC will review the request and will determine whether the acquisition is reasonable, necessary, and within the scope of the Environmental Document. If it is determined by the Design-Builder and agreed to by ICTC that the requested Additional Properties are necessary for the Project, ICTC will accomplish all acquisition activities unless otherwise specified herein.

ICTC will notify the Design-Builder in writing regarding the schedule and processes required to complete the acquisition. Depending on parcel complexity, the time required by ICTC to certify the parcel(s) for access may be up to eighteen (18) calendar months from the date the Certificate of Sufficiency is received from the Design-Builder. Schedule implications shall be incorporated into the Design-Builder's schedule and ICTC shall not be responsible for any construction delays resulting from the acquisition and clearance

of such Additional Properties. Access to the Additional Properties will not be allowed until ICTC has notified the Design-Builder in writing that it is available for use.

11.2.8 Reduction of Acquisitions

If, during the execution of the Work, any portion of the planned R/W limits or previously requested Additional Property is no longer required by the Design-Builder, ICTC is not obligated to acquire such parcels. The Design-Builder shall notify ICTC in writing that the property is not required. Any and all cost savings resulting from the reduction of acquisitions is for the benefit of ICTC and will not be credited to the Design-Builder.

11.2.9 Payment Responsibility

ICTC will be responsible for payments to all property owners for purchase of temporary R/W, unless otherwise specified in the Contract. All costs of the Design-Builder's activities in support of R/W Work shall be included in the Design-Builder's Proposal Price.

11.2.10 Reserved

11.2.11 Early Access

Where early access (rights of entry, permits for testing, or similar permissions) is requested by the Design-Builder for any Additional Properties intended to be used temporarily or permanently, the Design-Builder may request in writing that ICTC negotiate with property owners or occupants for early access provided there is no violation of law. Early access is not permitted for parcels within the planned R/W limits. The Design-Builder shall in no event use its own forces to negotiate for early access within the Project limits whereas any violations of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended may jeopardize Project funding. If the Design-Builder's request for early access is Approved by ICTC, such activities are subject to the provision that ICTC may withdraw from such activities at any time.

11.2.12 Reserved

11.2.13 Reserved

11.2.14 Property Commitments and Conditions

The Design-Builder shall comply with all conditions of the agreements for the R/W acquired by ICTC. The Design-Builder shall comply with the conditions for each TCE before the expiration of the easement.

The Design-Builder shall submit a written TCE Area Work Request for review and Approval by ICTC a minimum of forty-five (45) Days before beginning any Work within TCEs. The request shall include all information necessary for ICTC to Approve Work within the TCE.

The Design-Builder shall be responsible for the following requirements within TCE areas:

- Maintaining all existing drainage during construction and restoring pre-existing drainage patterns and/or systems.
- Examining and maintaining pre-existing irrigation systems to ensure that during construction they function in a manner that does not cut-off or restrict irrigation of areas outside the TCE.
- Replacing removed pavement in kind, including asphalt, concrete aprons, and driveways, unless identified otherwise in the Property Commitments.
- Restoring TCE area to grade.

11.2.15 Reserved

11.2.16 Final Monumentation

ICTC will monument the final R/W in accordance with the Business and Professions Code and ICTC policy. The Design-Builder shall notify ICTC when the locations to be monumented are prepared in accordance with the Caltrans *Surveys Manual*. The cost of any re-monumenting necessitated by the Design-Builder's operations subsequent to ICTC's monumentation shall be deducted from the most current partial payment due the Design-Builder.

12 UTILITIES

12.1 General

There are no known public service Utilities within the Project area. Identified Utilities are noted in the Approved Project Report and its Attachments and the documents included in the Reference Information Documents. If any Unidentified Utilities are encountered during the Project design and preliminary Work, the Design-Builder shall immediately stop work within the vicinity of the Unidentified Utilities, protect the Work area, and contact ICTC for direction.

12.2 Administrative Requirements

12.2.1 Reserved

12.2.2 Reserved

12.2.2.1 Reserved

12.2.2.2 Relocation Schedules

No utility relocations are anticipated.

12.2.3 Reserved

12.2.3.1 Reserved

12.2.3.2 Reserved

12.2.3.3 Reserved

12.2.3.4 Reserved

12.2.4 Reserved

12.2.5 Reserved

12.2.5.1 Investigations

12.2.5.1.1 General

The Design-Builder shall take all actions necessary to identify and confirm the existence and exact location, size, and type of all Utility facilities, including Service Lines and service laterals, within the R/W or otherwise potentially impacted by the Project construction. Such actions shall include making diligent inquiry at the offices of the Utility Owners, consulting public records, conducting field studies such as potholing, and coordinating with GSA and CBP related to potential Site Utility service links, taking into consideration the possibility that Utility Owners may provide inaccurate or inexact information with regard to their facilities.

If the Design-Builder's investigations identify Utilities, the Design-Builder shall notify ICTC immediately upon discovery for resolution.

12.2.5.1.2 Reserved

12.2.5.1.3 Potholing

If the Design-Builder identifies any potential Utilities within the R/W, the Design-Builder shall accurately determine the type and location of all Utilities. The Design-Builder shall include potholing in its investigation as required by the Caltrans *Project Development Procedures Manual*, Chapter 17, "Encroachments and Utilities."

12.2.5.1.4 Reserved

12.2.5.2 Utility Conflict Maps

If Utilities are identified, the Design-Builder shall prepare Utility Conflict Maps for each Utility facility in conflict and participate in discussions regarding proposed resolutions for Utility conflicts with ICTC and the Utility Owner regardless of who is doing the Utility Work.

The Design-Builder shall prepare the Utility Conflict Maps in accordance with the Caltrans *Project Development Procedures Manual*, Chapter 17, "Encroachments and Utilities."

The Design-Builder shall submit two (2) copies of the Utility Conflict Maps to ICTC at least two (2) Working Days before any meetings to discuss the conflicts and determine protect in place or Relocation requirements.

12.2.5.3 Utility Agreement and Notice To Owner

If Utility Relocation is required, ICTC will determine the cost liability and issue a NTO to require the performance of the physical Relocation. The Design-Builder shall coordinate with the respective Utility Owner and ICTC to develop pertinent information required for the UA and NTO. The Design-Builder shall cooperate with ICTC at the Design-Builder's expense in connection with developing UAs.

ICTC and the Utility Owner will then enter into a two-party UA to define and order the performance by the responsible party of the Utility Work at the specific conflict location. The UA will also describe applicable terms and conditions for the Utility Work. The Design-Builder shall not have the authority to enter into any UAs with any Utility Owners on ICTC's behalf. The Design-Builder shall perform all tasks, obligations, and duties assigned to the Design-Builder in the UA.

ICTC will prepare and issue NTOs for all known Utilities affected by this Project. ICTC will forward a copy of the NTOs to the Design-Builder.

12.2.6 Coordination and Cooperation

The Design-Builder shall coordinate and cooperate with ICTC and the Utility Owners to ensure that all Utility Work, whether performed or furnished by the Utility Owners or by the Design-Builder, is performed promptly and in close coordination with the Design-Builder's performance of the Project, duplication of Work is reduced to a minimum, and services rendered by Utility Owners are not unnecessarily interrupted.

12.2.6.1 Reserved

12.2.6.2 Reserved

12.2.7 Cost Estimates and Overrun of Estimated Cost

12.2.7.1 Cost Estimates

If the Design-Builder performs design or physical Utility Relocation Work under a Work Order, the Design-Builder shall submit to ICTC a cost estimate in compliance with Book 1, Section 13.4.2.2, "Cost Estimate."

12.2.7.2 Reserved

12.2.7.2.1 Reserved

12.2.7.2.2 Reserved

12.2.8 Reserved

12.2.9 Dispute Resolution Procedures

Any Disputes that arise between ICTC and the Design-Builder shall be subject to the dispute resolution provisions set forth in Book 1, Section 19.2, "Dispute Resolution Procedures"; however, if the Dispute involves a Utility Owner, the dispute resolution provisions set forth in Book 1 shall be modified to include participation by the Utility Owners, or shall be in accordance with a modified dispute resolution process agreed to by the Design-Builder, ICTC, and the Utility Owner in the UA or a separate agreement.

12.2.10 Reserved

12.3 Design Requirements

12.3.1 General

All designs furnished by the Design-Builder and all reviews and approvals by the Design-Builder of designs furnished by the Utility Owners shall be in full compliance with the requirements of the applicable UAs, the Contract Documents, the CE/CE and its Attachments, and the Reference Information Documents.

12.3.2 Design by Design-Builder

The Design-Builder shall furnish the design of all the Utility Work that the Design-Builder is responsible for designing as stated in the UAs.

The Design-Builder shall furnish designs that are in full accordance with the requirements of the Contract Documents applicable to the Utility Work and the design requirements, including format, of the applicable UAs.

12.3.3 Reserved

12.3.4 Reserved

12.3.5 Reserved

12.4 Construction Requirements

12.4.1 Construction by Design-Builder

In each instance where the Design-Builder performs the construction of the Utility Work, the Design-Builder shall be responsible for obtaining written standards and specifications, current at the time of the Utility Work, from the Utility Owner and for verifying that they are consistent and compatible with the Design-Builder's overall Project design.

The Design-Builder shall provide to ICTC a Construction Inspection Approval Letter from the Utility Owner indicating the Utility Owner's approval of the Utility Work.

12.4.2 Construction by Utility Owner

The Design-Builder shall inspect all Utility Work performed by Utility Owners and their Subcontractors in order to verify compliance with the Project Requirements. The Design-Builder shall approve the construction performed by each Utility Owner.

12.4.3 Incidental Utility Work

The Design-Builder shall be responsible for performing all Incidental Utility Work without regard to the allocation of responsibility for Utility Work. The Design-Builder shall make all arrangements and perform all Utility Work necessary in order to accomplish the Incidental Utility Work, including locating existing Utilities, identifying conflicts, performing any necessary coordination with Utility Owners and property owners, furnishing design, performing construction as necessary, and obtaining and complying with all applicable legal requirements and required Governmental Approvals.

12.4.3.1 Protection of Utilities

The Design-Builder shall be responsible for the protection of Utilities impacted by the Project as necessary to ensure their continued safe operation and structural integrity. The Design-Builder shall use methods of protecting Utilities that are approved by the Utility Owner.

The Design-Builder shall notify all affected Utility Owners at least forty-eight (48) hours before starting any operations that affect a Utility, unless otherwise agreed to in a UA.

The Design-Builder shall mark the proposed excavation before contacting Underground Service Alert. The Design-Builder shall call Underground Service Alert at least forty-eight (48) hours (excluding Saturdays and Holidays) before starting excavation operations.

12.4.3.2 Abandonment of Utilities

The Design-Builder shall not abandon any Utilities.

12.4.3.3 Removal of Utilities

The Design-Builder shall be responsible for the removal of any existing Utilities that are required to be removed in order to accommodate or allow construction of the Project. The removal of Utilities consists of all Utility Work necessary to remove such existing Utilities.

12.4.3.4 Construction Surveying for Utility Work

The Design-Builder shall perform all construction surveying necessary to facilitate all Utility Work for the duration of the Project and shall conform to the specifications within Chapter 12, "Construction Surveys," of the Caltrans *Surveys Manual*.

12.4.4 Temporary Traffic Control

The Design-Builder shall provide temporary traffic control for Utility Work regardless of which party is performing the Utility Work. The Design-Builder shall be responsible for review and approval of traffic control Plans prepared by Utility Owners and shall submit them to ICTC.

12.4.5 Maintenance of Utility Service

The Design-Builder shall take appropriate measures to ensure that all Utilities remain fully operational during all phases of construction to the greatest extent practicable. Necessary interruptions of service shall be subject to the approval of the Utility Owner.

The Design-Builder's proposals for shutdowns and temporary diversions of affected Utility facilities, if approved by the Utility Owner, shall be included in the RFC Documents.

12.4.6 Newly Discovered Utilities

If the Design-Builder discovers Utilities not identified or not identified with "reasonable accuracy" as defined in Book 1, Section 6.2.1.1, ""Reasonable Accuracy" Defined," the Design-Builder shall immediately notify ICTC and the Utility Owner.

12.4.7 Work Near Electrical Power Lines

When the Design-Builder works near electrical power lines, the Design-Builder shall do one of the following:

- Work with the lines energized if the Work can be done safely.
- Make arrangements with the power company, at the Design-Builder's sole expense, to do one of the following:
  - Temporarily shut off the power.
  - Temporarily insulate the lines.
  - Bypass the power from the Work area.
  - Make other arrangements necessary for a safe workplace.

ICTC makes no warranty, guarantee, promise, or representation as to whether the Utility Owner will temporarily shut off power, insulate its lines, or charge the Design-Builder a fee for preparing a safe Work area for the Design-Builder.

12.4.8 Damage to Utilities by Design-Builder

In performing the Work, the Design-Builder shall require its Subcontractors, employees, and agents to exercise due precaution and care to avoid causing damage to the Utility Owner's facilities, Persons, and property.

The Design-Builder shall be responsible for all costs and schedule impacts associated with any and all damage caused by the Design-Builder's Subcontractors, employees, or agents to the property, facilities, structures, or Persons of the Utility Owner.

12.5 Submittals

12.5.1 Verification Maps

The Design-Builder shall submit to ICTC final Verification Maps of any Utilities discovered in the Project site.

12.5.2 Pothole Information and Updated Utility Plan Sheets

The Design-Builder shall submit to ICTC pothole information and updated Utility Plan Sheets. The electronic version of the Utility Plan Sheets shall be submitted in MicroStation and PDF formats.

12.5.3 Reserved

12.5.4 Reserved

12.5.5 Reserved

12.5.6 Reserved

12.5.7 Reserved

13 RESERVED

14 LANDSCAPE

14.1 General

The Design-Builder shall perform all Work necessary to meet the requirements for landscape, including erosion control, protection of existing trees and planting, irrigation systems and miscellaneous roadside treatments, preservation and protection of existing irrigation facilities and existing vegetative assets, weed control, and worker and traveler safety. Miscellaneous roadside treatments include paving, use of inert materials, treatment under guardrail and adjacent to fences, and other treatments to reduce maintenance activities and worker exposure to traffic.

The Design-Builder shall design and construct the landscape in accordance with the requirements of the Contract Documents.

As noted in the Visual and Landscape Impact Assessment Memo in the Reference Information Documents, landscaping Work is minimal and consists generally of protecting and preserving existing trees and returning any disturbed areas to their existing conditions following construction.

14.2 Administrative Requirements

14.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 14-1: Landscape Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Highway Design Manual*
2	Caltrans	Standard Special Provisions
3	Caltrans	*Standard Specifications**
4	Caltrans	*Standard Plans*
5	Caltrans	*Construction Site Best Management Practices (BMP) Manual*
6	Caltrans	*Stormwater Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual*
7	Caltrans	*Project Planning and Design Guide*
8	Caltrans	*Plant Setback and Spacing Guide*
9	Caltrans	*Landscape Architecture PS&E Guide*
10	Caltrans	*Project Development Procedures Manual*
11	Caltrans	*Construction Manual*
12	Caltrans	*Maintenance Manual*

Table 14-1: Landscape Standards and Requirements

Priority	Organization	Title
13	Caltrans	Deputy Directive 13, Water Conservation

*Document modified for design-build.

14.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the design and construction of the landscaping and irrigation elements.

Table 14-2: Landscape References

Organization	Title
Caltrans	Landscape Architecture Program Website
Caltrans	TransPLANT - Caltrans Highway Planting Database and Specification Tool
International Society of Arboriculture	*Guide for Plant Appraisal*
AASHTO	*A Guide for Transportation Landscape and Environmental Design*
FHWA	23 CFR 752, Landscape and Roadside Development
California Department of Food and Agriculture	California State Noxious Weeds List

14.2.3 Reserved

14.2.3.1 Reserved

14.2.3.2 Reserved

14.2.4 Software

The Design-Builder shall submit all electronic drawings in MicroStation format and supporting electronic design data in Civil 3D format. Software shall comply with Section 6.3.4.

14.3 Design Requirements

14.3.1 Landscape Concept Meeting

The Design-Builder shall prepare an inventory and evaluation of all the existing landscape elements in the Project. The Design-Builder shall schedule and participate in a landscape concept meeting to present to ICTC a layout of the existing and proposed landscape elements on the Project. The Design-Builder shall describe how the Work will accommodate the requirements of the Visual and Landscape Impact Assessment Memo included in the Reference Information Documents.

The Design-Builder shall use the meeting to determine the permanent landscape needs of the Project.

14.3.2 Requirements

The Design-Builder shall preserve and construct landscape elements to meet the following requirements:

- Provide a natural, pleasing appearance without decreasing worker and traveler safety.
- Are maintainable and prevent soil erosion.
- Preserve and protect the existing landscaping, particularly adjacent trees during the Work.

14.3.3 Vegetation Inventory, Protection, and Removal

The Design-Builder shall prepare a brief Vegetation Inventory and Protection Memorandum. These plans shall be submitted for ICTC's Approval before starting Work.

The Vegetation Inventory and Protection Memorandum shall show the locations of all trees and vegetation to be protected during construction and how the protection will be accomplished.

14.3.4 Weed Control

The Design-Builder shall prepare a brief Weed Control Memorandum. The Memorandum shall identify and map areas of weeds, including noxious and invasive weeds, to be removed or controlled in accordance with the requirements established by ICTC, the California Department of Food and Agriculture, and other local jurisdictions. The Memorandum shall define methods used to control noxious weeds at each location. The Weed Control Memorandum shall be prepared by a California-licensed Pest Control Advisor. Chemicals used to control weeds are restricted to those allowed by the Caltrans *Standard Specifications*.

14.3.5 Erosion Control

The Design-Builder shall design temporary and permanent erosion and sediment control methods complying with all applicable laws, including the Construction General Permit and the Caltrans NPDES Permit, in a manner that will not prohibit or compromise the installation, effectiveness, health, or design intent of vegetation. The design shall include plans to treat all disturbed slopes immediately after construction to reduce erosion.

14.3.6 Temporary Construction Easements

The Design-Builder shall re-establish areas within any TCEs to original condition or better. The Design-Builder shall provide grading and plant material as needed. The Design-Builder shall obtain property owner approval on the final condition of the TCE Site.

14.3.7 Planting

The Design-Builder shall prepare Planting Plans indicating the location, species, size, and root condition of plants and details related to any plant installation. The Planting Plans shall be prepared by a California-licensed Landscape Architect and shall demonstrate that the landscape design concept can be implemented without conflict with other constructed improvements, above and below grade, existing or proposed.

If any planted areas shown on the Preliminary Engineering Drawings or Vegetation Inventory and Protection Memorandum to be protected and maintained are damaged during construction, the Design-Builder shall replace the damaged plantings.

14.3.8 Irrigation Inventory, Protection, Removal, Salvage, and Relocation

The Design-Builder shall prepare an Irrigation Inventory, Protection, Removal, Salvage, and Relocation Memorandum indicating the extent of any existing irrigation system and the requirements to extend the

existing irrigation system to meet Project requirements after construction. This Memorandum shall be submitted for ICTC Approval before clearing and grubbing activities.

The Memorandum shall include all existing irrigation identifying all existing irrigation equipment that is suitable for reuse. The Memorandum shall also identify maintenance agreements by number and physical limits.

14.3.9 Reserved

14.4 Construction Requirements

14.4.1 Vegetation Protection and Removal

The Design-Builder shall place temporary fencing according to the Caltrans *Standard Specifications* and the Caltrans Standard Special Provisions at environmentally sensitive areas to protect plants, areas, or trees designated to be preserved and protected in the Vegetation Inventory and Protection Memorandum. The Design-Builder shall remove the fencing and restore any disturbed areas when the Project has reached Final Acceptance.

The Design-Builder shall identify and mark in the field all existing trees, shrubs, and groundcovers within the R/W of the Project, both within and outside the construction limits, that are to be preserved. Vegetation outside the R/W that may be impacted by construction activities shall be identified. The Design-Builder shall maintain field markings and fencing to protect existing plant materials until Final Acceptance. Field markings and fencing shall be removed and any disturbed areas restored following construction.

14.4.2 Existing Irrigation Facilities

The Design-Builder shall not perform clearing and grubbing, roadside clearing, and earthwork operations in areas where existing irrigation facilities are to remain in place until the Design-Builder has checked the existing irrigation facilities for proper operation in conformance with the provisions in the Caltrans *Standard Specifications*, Section 20-10.02C(2), "Check and Test Existing Irrigation Facilities."

14.4.3 Weed Control

The Design-Builder shall remove weeds or treat areas designated for weed control to eliminate weeds. The Design-Builder shall create and maintain a map indicating areas of weed control.

The Design-Builder shall record chemicals used to control weeds on the Report of Chemical Spray Operations (Form LA0017) as described in Section 4-2002C (2), "Pesticides," of the Caltrans *Construction Manual*.

14.4.4 Reserved

14.5 Submittals

14.5.1 Landscape Concept Plan

The Design-Builder shall prepare a Landscape Concept Memorandum that includes erosion control, planting, irrigation, and miscellaneous roadside treatments and shall submit it to ICTC for Approval within sixty (60) Working Days after the landscape concept meeting. Landscape Work shall conform to ICTC and Caltrans standards and comply in concept with the Department of Water Resources' current version of the Model Water Efficient Landscape Ordinance. Irrigation components are to be located and clustered in locations safely accessible for highway maintenance workers.

14.5.2 Vegetation Inventory and Protection, Vegetation Removal, and Weed Control Plans

The Design-Builder shall prepare a brief Vegetation Inventory and Protection Memorandum, a brief Vegetation Removal Memorandum, and a brief Weed Control Memorandum. These Memoranda shall be submitted for ICTC's Approval before starting construction activities.

14.5.3 Report of Chemical Spray Operations

The Design-Builder shall submit the Report of Chemical Spray Operations (Form LA0017) to ICTC as described in Section 4-2002C (2), "Pesticides," of the Caltrans *Construction Manual*.

14.5.4 Reserved

14.5.5 Reserved

14.5.6 Reserved

14.5.7 Final Irrigation Plans and Controller Schedules

The Design-Builder shall laminate a copy of the final irrigation Plans and controller schedules and place them in each irrigation controller enclosure, as appropriate.

15 VISUAL QUALITY MANAGEMENT

15.1 General

The Design-Builder shall perform all Work necessary to meet the requirements for visual quality management as noted in the Visual and Landscape Impact Assessment Memo in the Reference Information Documents to ensure informed visual quality decisions and to produce an ongoing Record of Recommendations and Decisions Memorandum.

The Design-Builder shall design and construct the Project in accordance with the requirements of the Contract Documents.

15.2 Administrative Requirements

15.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 15-1: Visual Quality Management Standards and Requirements

Priority	Organization	Title
1	Caltrans	Highway Design Manual
2	Caltrans	*Project Development Procedures Manual*
3	Caltrans	Design Information Bulletin 88: Wall Structure Aesthetic Guidelines
4	Caltrans	*Standard Environmental Reference*
5	AASHTO	A Policy on Geometric Design of Highways and Streets

15.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the design and construction of the visual quality treatment requirements.

Table 15-2: Visual Quality Management References

Organization	Title
Caltrans	Director's Policy No. 22, Context Sensitive Solutions
FHWA	Flexibility in Highway Design

15.2.3 Visual Quality Management Memorandum

The Design-Builder shall develop a brief Visual Quality Management Memorandum in accordance with the requirements of this Section and submit it for Approval within sixty (60) Days after NTP1. The Visual Quality Management Memorandum shall define the qualifications, responsibilities, and authority of the

Project team members as related to addressing the requirements of the Visual and Landscape Impact Assessment Memorandum included in the Reference Information Documents.

15.2.3.1 Reserved

15.2.3.1.1 Reserved

15.2.3.1.2 Reserved

15.2.3.1.3 Reserved

15.2.3.2 Reserved

15.2.3.2.1 Reserved

15.2.3.2.2 Reserved

15.2.3.2.3 Reserved

15.2.4 Reserved

15.2.5 Visual Quality Management Concept Meeting

Based on the Visual and Landscape Impact Assessment Memorandum, the Design-Builder shall take an inventory of all the existing visual elements in the corridor and prepare the inventory in a format acceptable to ICTC. The Design-Builder shall schedule and participate in a visual quality management concept meeting to present to ICTC a layout of the in-place and proposed visual quality elements on the Project.

The Design-Builder shall use this meeting to determine the permanent visual quality needs of the Project.

15.3 Design Requirements

The design of visual quality elements shall:

- Be based on criteria in this Section.
- Integrate landscaping and aesthetic treatments.
- Include aesthetic treatments that are aesthetically pleasing and fit the neighboring environment.

15.3.1 Visual Impact Assessment

The Design-Builder shall determine, document, and summarize the existing visual quality of the affected natural, cultural, and Project environments as it would be defined by the affected population of neighbors and travelers. The Visual Impact Assessment shall conform to the requirements in the Caltrans *Standard Environmental Reference*.

15.3.2 Reserved

15.3.3 Visual Quality Elements

The Design-Builder shall develop designs for all visual quality elements of the Project in compliance with the Visual and Landscape Impact Assessment Memorandum included in the Reference Information Documents.

The designs shall respond to the Project's context and shall maintain or enhance existing visual quality such that it creates visual harmony with the natural environment, visual order with the site, and design coherence within the Project Site.

15.4 Construction Requirements

15.4.1 Reserved

15.4.1.1 Lighting

The Design-Builder shall provide a sample of each lighting standard, fixture, and luminaire to match any lighting elements to be replaced or added.

15.5 Reserved

15.5.1 Reserved

15.5.2 Reserved

15.5.3 Reserved

16 GEOTECHNICAL

16.1 General

The Design-Builder shall perform all Work necessary to meet the requirements of geotechnical subsurface investigation, analysis, design, and construction in accordance with the requirements of the Contract Documents. The Preliminary Foundation Report is included with the Approved Project Report and its Attachments.

16.2 Administrative Requirements

16.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 16-1: Geotechnical Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Seismic Design Criteria*
2	Caltrans	California Amendments to the AASHTO *LRFD Bridge Design Specifications* (8th Edition)
3	AASHTO	*LRFD Bridge Design Specifications* (8th Edition)
4	Caltrans	Standard Special Provisions
5	Caltrans	*Standard Specifications**
6	Caltrans	*Standard Plans*
7	Caltrans	*Memo to Designers*
8	Caltrans	*Geotechnical Manual*
9	Caltrans	*OSFP Information and Procedures Guide*
10	Caltrans	*Bridge Design Aids*
11	Caltrans	*Corrosion Guidelines*
12	Caltrans	*Bridge Construction Records and Procedures Manual*
13	Caltrans	*Independent Assurance Manual*
14	Caltrans	*Foundation Manual*

*Document modified for design-build.

16.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the geotechnical subsurface investigation, analysis, design, and construction.

Table 16-2: Geotechnical References

Organization	Title
Caltrans	*Bridge Design Practice*
Caltrans	*Code of Safe Drilling Practices*
Caltrans	*Soil and Rock Logging Manual*

16.2.3 Software Requirements

The Design-Builder shall submit Boring Records in gINT (or a compatible computer program) format and PDF format. The Design-Builder shall submit all electronic drawings and Log of Test Borings in MicroStation format. Software shall comply with Section 6.3.4.

16.3 Design Requirements

16.3.1 Geotechnical Execution Plan

The Design-Builder shall prepare a Geotechnical Execution Plan and a list of geotechnical milestones and scheduled meetings associated with the milestones.

The Geotechnical Execution Plan shall identify required geotechnical efforts for the design and construction of the Project.

The Geotechnical Execution Plan shall include:

- Geotechnical design and construction issues.
- Assessment of potential bridge foundation and ERS types.
- Planned Site and subsurface investigation program.
- Planned geotechnical design methodologies and schedule.
- Planned instrumentation and monitoring programs.
- Backfilling of holes, including borings, test pits, and cone penetration test holes.

The Design-Builder shall submit the draft Geotechnical Execution Plan to ICTC for review. The Design-Builder shall schedule a meeting with ICTC within fifteen (15) Days of the submittal of the draft Geotechnical Execution Plan to present and discuss the geotechnical needs of the Project, the draft Geotechnical Execution Plan, and the meeting schedule.

The Design-Builder shall submit the final Geotechnical Execution Plan to ICTC for Approval.

16.3.2 Geotechnical Subsurface Investigation

16.3.2.1 Pre-Contract Geotechnical Subsurface Exploration

Pre-contract geotechnical subsurface exploration has been performed for the Project to reduce unknowns and uncertainties. Geotechnical subsurface information obtained is provided in the Preliminary Foundation Report included in the Approved Project Report and its Attachments. This geotechnical subsurface information shall be considered part of the Contract Documents only to the extent that it is used to represent soil conditions at the depths indicated within the respective borings drilled at the locations shown. Presentation of this information in no way implies that subsurface conditions are the same at other locations.

16.3.2.2 Minimum Geotechnical Subsurface Investigation Requirements

The Design-Builder shall obtain geotechnical subsurface information by performing geotechnical subsurface investigation necessary for the geotechnical design and construction of the Project. The Design-Builder's subsurface investigation and testing program shall be sufficient such that the Design-Builder is satisfied as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Notwithstanding, the subsurface investigation shall, at a minimum, also include the following requirements:

- At each bridge support location, the Design-Builder shall perform a minimum of one (1) boring. and two (2) cone penetration tests.
- For each ERS, the Design-Builder shall perform a minimum of one (1) boring and/or cone penetration test spaced every 250 feet. The Design-Builder shall perform a minimum of one (1) boring and/or cone penetration test for wall lengths less than 150 feet and perform a minimum of two (2) borings and/or cone penetration tests for wall lengths between 150 feet and 500 feet.
- For the culvert extension, the Design-Builder shall perform a minimum of one (1) boring and/or cone penetration test spaced every 100 feet.
- Borings shall be to depths of at least twenty (20) feet below the maximum depth of proposed foundations or as required in the Caltrans *Geotechnical Manual*.

If the geotechnical subsurface information provided in the Approved Project Report and is Attachments includes adequate information at a location specified in the minimum requirements above, the Design-Builder with ICTC's approval may use this information to satisfy the minimum requirement at that location.

16.3.2.3 Drilling

The Design-Builder shall perform drilling for subsurface investigation in compliance with ASTM and AASHTO standards.

16.3.2.4 Cone Penetration Test

The Design-Builder shall perform cone penetration tests in compliance with ASTM D5778. Data to be collected includes raw and corrected tip resistance, side friction and excess pore water pressure. This data shall be collected electronically and presented in graphical format that includes an interpretation of the soil behavior type index and soil behavior type.

16.3.2.5 Test Equipment Calibration

Electronic cone penetration test cones and standard penetration test hammers shall be calibrated in accordance with the Caltrans *Independent Assurance Manual*.

Electronic cone penetration test cones shall have been calibrated not more than twelve (12) months before use.

Standard penetration test hammers shall have been tested for energy efficiency not more than twelve (12) months before use, and the energy efficiency ratio shall be reported in the boring logs and boring records.

16.3.2.6 Reserved

16.3.2.7 Geotechnical Laboratory Testing

The Design-Builder shall perform geotechnical laboratory testing as required in the Caltrans *Geotechnical Manual*. The Design-Builder shall comply with California Test Methods or with ASTM standards if there is no applicable California Test Method.

16.3.2.8 Reserved

16.3.3 Geotechnical Subsurface Information

The Design-Builder shall record and report the subsurface information in accordance with the Caltrans *Geotechnical Manual* and Data Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS) schemas and data dictionaries.

The Design-Builder shall submit subsurface information along with the applicable geotechnical reports. The subsurface information shall include:

- Boring and sampling:
  - Boring Record for each bore hole in DIGGS format.
  - Log of Test Borings sheets for the bridge and ERS.
  - Test report of energy efficiency ratio of standard penetration test hammer for each drill rig used to drill the bore holes.
- Cone penetration test sounding:
  - Electronic copy of the cone penetration test raw data in DIGGS and CSV formats and hardcopy cone penetration test logs for each cone penetration test performed.
  - Data complying with the requirements in Section 16.3.2.4.
  - Calibration report of electronic cone penetration test cone.
- Results of geotechnical in-situ instrumentation tests performed.
- Results of geophysical tests performed with interpretation report.
- Results of laboratory tests performed.
- Survey data of bore hole, cone penetration test, in-situ instrumentation, and geophysical test locations, including surface elevation, coordinates in the California Coordinate System, latitude and longitude, and station and offset.

16.3.4 Reserved

16.3.5 Geotechnical Reports

The Design-Builder shall prepare geotechnical reports in compliance with the Caltrans *Geotechnical Manual*.

The Design-Builder shall prepare a separate Preliminary Foundation Report and Foundation Report for the bridge and any ERS. Each wall section with assigned wall number or different wall type shall have a separate report.

The Preliminary Foundation Report and the Foundation Report shall include Log of Test Borings from prior project as-built documents, if available, and Log of Test Borings of boreholes and cone penetration tests completed for this Project.

For nonstructural or roadway Project elements requiring geotechnical reports, the Design-Builder shall prepare a Preliminary Geotechnical Design Report and Geotechnical Design Report.

The Design-Builder shall include with the geotechnical reports a copy of the calibration for the standard penetration test hammer and cone penetration test cone.

The Design-Builder shall submit an As-Built Foundation Report for the bridge or any ERS. The As-Built Foundation Reports shall include the Foundation Report used in the design and construction of the bridge or ERS and amendments to the Foundation Report made during construction.

The Design-Builder shall submit As-Built Geotechnical Design Reports that include all amendments made to the Geotechnical Design Report during construction.

16.4 Reserved

16.4.1 Reserved

16.4.2 Reserved

16.4.3 Reserved

16.4.4 Reserved

16.5 Submittals

16.5.1 Geotechnical Subsurface Information

The Design-Builder shall submit geotechnical subsurface information in accordance with Section 16.3.3.

16.5.2 Geotechnical Reports and Documentation

The Design-Builder shall submit all geotechnical reports and documentation, including Geotechnical Execution Plan; Preliminary Geotechnical Design Reports, Geotechnical Design Reports, Preliminary Foundation Reports, and Foundation Reports; pile load testing plans, load test results, and revisions to the specified pile tip elevations; and as-built geotechnical reports, in accordance with Section 16.3.

16.5.3 Reserved

16.5.4 Reserved

17 STRUCTURES

17.1 General

The Design-Builder shall conduct all Work necessary to meet the requirements of permanent and temporary structures, including the bridge, earth-retaining structures (ERSs), and lighting structures. The bridge and any new, replaced, or modified structures shall comply with the requirements of the Contract Documents and these Project Requirements.

17.2 Administrative Requirements

17.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 17-1: Structure, Structural Appurtenance, and ERS Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Seismic Design Criteria*
2	Caltrans	*Seismic Design Specifications for Steel Bridges*
3	Caltrans	California Amendments to the AASHTO *LRFD Bridge Design Specifications* (8th Edition)
4	AASHTO	*LRFD Bridge Design Specifications* (8th Edition)
5	AASHTO	*LRFD Guide Specifications for the Design of Pedestrian Bridges*
6	Caltrans	Standard Special Provisions
7	Caltrans	*Standard Specifications**
8	Caltrans	*Standard Plans*
9	Caltrans	*Memo to Designers*
10	Caltrans	*Bridge Design Aids*
11	Caltrans	*Highway Design Manual*
12	Caltrans	*Bridge Design Details*
13	Caltrans	*Bridge Standard Detail Sheets* (XS Sheets)
14	Caltrans	*OSFP Information and Procedures Guide*
15	Caltrans	*Plans Preparation Manual*
16	Caltrans	*Construction Manual*
17	Caltrans	*Bridge Construction Records and Procedures Manual*
18	Caltrans	*Outline of Field Construction Practices*

Table 17-1: Structure, Structural Appurtenance, and ERS Standards and Requirements

Priority	Organization	Title
19	Caltrans	*Trenching and Shoring Manual*
20	Caltrans	*Foundation Manual*
21	Caltrans	*Bridge Deck Construction Manual*
22	Caltrans	*Local Agency Structure Representative (LASR) Guidelines*

* Document modified for design-build

Table 17-2: Sign and Lighting Structure Standards and Requirements

Priority	Organization	Title
1	AASHTO	*Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*

17.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the design and construction of structures.

Table 17-3: Structures References

Agency	Title
Caltrans	*Bridge Design Practice*

17.2.3 Type Selection Meeting

The Design-Builder shall schedule the type selection meeting to take place after ICTC has Approved the Project geometrics and a minimum of five (5) Working Days after receipt of a complete Structure Type Selection submittal. The type selection meeting shall be scheduled for a minimum of two (2) hours. The meeting shall be held at ICTC's offices or the Project meeting space addressed in Section 2.3.2.4. The Design-Builder's Structure Design Lead Engineer (Engineer of Record) shall attend the type selection meeting in person. Other Design-Builder personnel may attend in person or by video conference.

At the type selection meeting, the Design-Builder shall present the structure widening approach and shall briefly discuss issues pertinent to the structure type, particularly requirements for foundations, hydraulics, construction, seismic design, aesthetics, traffic handling, and other information needed to present the structure type.

The Design-Builder shall prepare and submit meeting minutes to ICTC within three (3) Working Days of the meeting.

17.2.4 Reserved

17.2.5 Bridge Load Rating

The Design-Builder shall load rate the bridge by the load and resistance factor rating method in accordance with the AASHTO *Manual for Bridge Evaluation* and the AASHTO *LRFD Bridge Design Specifications* (8th Edition) with California Amendments. The ratings shall consider effects of construction staging and be based on the final as-built configuration of the bridge. Complete and detailed as-built structural models shall be provided to ICTC for the bridge structure. The load rating models shall be developed by a California-licensed Civil Engineer and checked by a California-licensed Civil Engineer. The bridge load ratings shall use the AASHTOWare Bridge Rating (BrR) for the two-dimensional analysis model. Three-dimensional analysis shall be conducted using analysis software such as MIDAS or CSiBridge. Analysis software shall use the latest released version. Load rating results from the model shall be generated for superstructure and abutment elements of the bridges that carry live loads for HL-93 and Permit Design Loads.

Each bridge component, segment, or element that is constructed or modified under this Project shall be rated and reported to ICTC in a Bridge Load Rating Report. At a minimum, ratings shall be computed for moment and shear at the one-tenth points of the bridge span.

The overall rating shall be the lowest rating of any individual component, segment, or type. The final rating and each component rating shall be accompanied by the location of the rating, the limit state, and the impact factor.

The Bridge Load Rating Report shall include all the assumptions used in the analysis and a summary of load rating results for all structural elements of the bridge. The Bridge Load Rating Report shall also include the load rating analysis computer model electronic files as an attachment.

17.2.6 Personnel Requirements

This Section specifies the personnel requirements not covered in Section 2.

Structure designers shall each have a minimum of ten (10) years of relevant bridge and structure design experience and shall have a minimum of five (5) years of relevant bridge and structure design experience in California. Structure designers shall each have had a California Professional Civil Engineer license for at least five (5) years.

Independent design checkers shall each have a minimum of ten (10) years of relevant bridge and structures design experience and shall have had a California Professional Civil Engineer license for at least five (5) years. The independent design checkers shall not have any involvement in the design work of the structure and shall report to the Design Quality Validation Manager.

The structure specifications engineer that prepares and develops the special provisions shall have a minimum of five (5) years of relevant specifications development experience and shall have had a California Professional Civil Engineer license for at least five (5) years.

17.3 Design Requirements

17.3.1 General Bridge and ERS Design Requirements

17.3.1.1 Design and Analysis Methodology

The Design-Builder shall provide all new structural components necessary for a complete structural system that provides functionality, durability, ease of maintenance, safety, and visual quality.

Any future loadings and force and displacement effects shall be incorporated in all applicable service, strength, and extreme limit state combinations as defined in the AASHTO *LRFD Bridge Design Specifications* (8th Edition) with California Amendments.

17.3.1.1.1 Service

The proposed bridge shall be designed and constructed to accommodate future overlay loads of 35 psf.

17.3.1.1.2 Seismic - General

The Caltrans *Seismic Design Specifications for Steel Bridges* applies.

The bridge widening shall have adequate connection details to achieve a capacity protected design.

The Approved Project Report and its Attachments provide geotechnical information required for the seismic analysis and design.

The Design-Builder shall use CSiBridge, or equivalent software as Approved by ICTC, to generate the seismic bridge analysis and design model.

The analysis shall be in accordance with the Caltrans *Seismic Design Criteria*.

17.3.1.1.3 Seismic - Soil-Structure Interaction

Soil-structure interaction shall be included in the seismic demand and capacity analyses (nonlinear static pushover analysis and nonlinear time-history analysis) for pile foundations as specified in the Caltrans *Seismic Design Criteria*.

17.3.1.1.4 Seismic - Demand and Capacity Analysis

For capacity analysis and linear elastic response spectrum demand analysis, analysis shall be conducted using effective section properties for steel components per the Caltrans *Seismic Design Specifications for Steel Bridges,* and explicit soil-structure interaction foundation models with p-y, t-z, and q-z inelastic springs.

The appropriate methods shall be applied as specified in the Caltrans *Seismic Design Criteria* and the Caltrans *Seismic Design Specifications for Steel Bridges.* The Final Design shall be based on the maximum demand response obtained from each controlling response.

17.3.1.1.5 Reserved

17.3.1.1.6 Seismic - Ground Motions

Ground motions for use in seismic analysis of the bridge structure shall be taken from the Project geotechnical reports. See the Approved Project Report and its Attachments for preliminary site geotechnical information.

The design ground motions shall be reviewed and Approved by ICTC before application to analysis and design.

17.3.1.2 Bridge Widening

The Design-Builder shall ensure that the existing structures to be widened are seismically evaluated and retrofitted in accordance with all applicable Caltrans requirements and standards, including Caltrans *Seismic Design Criteria,* Caltrans *Seismic Design Specifications for Steel Bridges*, and Caltrans *Memo to Designers*. Structure widening shall require seismic evaluation and retrofit assessment in accordance with Caltrans *Memo to Designers* 20-12, "Site Seismicity for Temporary Bridges and Stage Construction." The Design-Builder shall perform a seismic study on the combined bridge structure and a seismic study for both

the existing bridges and widened bridge and shall retrofit the existing bridge structure if required from the seismic study and as Approved by ICTC.

Abutment seats at widenings shall have a minimum thirty (30)-inch width based on Section 7.8.3, "Abutment Seat Width," of the Caltrans *Seismic Design Criteria* and existing inadequate abutment seats shall be retrofitted with seat extenders and catchers, as Approved by ICTC.

17.3.1.3 Vertical and Horizontal Clearances

Permanent and temporary minimum vertical and horizontal clearances for bridges and ERSs shall meet the standards contained in the Caltrans *Highway Design Manual*.

17.3.1.4 Reserved

17.3.1.5 Substructures

Seat type abutments shall be used for the bridge widening.

17.3.1.6 Bridge Foundations

The final foundation design for structure shall be based on the Approved Foundation Reports. The Preliminary Foundation Reports, Geotechnical Design Reports, and Foundation Reports shall conform to Section 16.

Pile tip grouting shall not be included in the nominal tip bearing resistance calculations.

17.3.1.7 Bridge Decks

The deck overhang shall have a length as shown in the Approved Project Report and its Attachments.

The final bridge deck shall be cast-in-place concrete.

The existing Bridge decks that require treatment shall be cleaned and treated with high molecular weight methacrylate.

The Design-Builder shall check the live load capacity of the existing bridges requiring overlays. Overlays on existing bridge decks shall be polyester concrete. Asphalt concrete shall not be used for bridge deck overlays.

Deck overlays shall not reduce bridge rail heights to less than the required minimum. If this is not possible for a specific location, the overlay shall taper down from the edge of travelled way to the minimum overlay thickness and shall terminate a minimum of three (3) feet from the traffic face of the bridge rail. If the rail height for a new bridge or bridge rail replacement is required to provide for future overlays, the Design-Builder shall use a bridge rail that is taller than the required minimum height.

The closure pour width shall be constant throughout the length of the bridge. For the widened structure, the deck segment that connects to the existing girder shall have a length of no more than fifty (50) percent of the back span between the new interior girders.

17.3.1.8 Bridge Bearings and Joint Seals

For the widened structure, the Design-Builder shall match the joint locations of existing structures and shall replace the joint seals on the existing structures to match the new joint types.

Longitudinal joints are not allowed.

17.3.1.9 Railings and Barriers

Bridge railing and barrier systems, including chain link railings, tubular hand railings, and pedestrian and bicycle railings, shall conform to Caltrans standards.

Metal guardrail systems shall not be used as bridge rails.

Cable barriers shall not be used on bridge decks.

17.3.1.10 Sidewalks

Bridge sidewalks shall comply with the requirements in Section 20.

17.3.1.11 Deck Drains

Bridge deck drains shall be provided when drainage design requires drain inlets located on the bridge superstructure and shall conform to the deck drainage requirements in Section 9.3.3. Bridge deck drains shall be part of a closed drainage system and shall drain into a water quality system or a storm drainage system. Closed drainage systems shall include piping hidden from view. Exposed piping on exterior girders or open drainage system shall not be used. Drainage shall be designed to prevent staining of the structure.

17.3.1.12 Approach Slabs

The new approach slab limit shall match new lane lines and shall incorporate the lanes that are on existing asphalt pavement and the existing shoulders.

17.3.1.13 Slopes

Abutment end slopes beneath bridges shall match the existing end slope. Specific structure architectural treatment requirements are specified in Section 15.

17.3.2 Existing Utilities

No known underground Utilities exist on or adjacent to the existing structure. Potholes may be needed to confirm the exact location of any unidentified underground Utility lines the Design-Builder identifies during design. The existing overhead power line shall be protected during construction Work as required.

The Design-Builder shall comply with the requirements in Section 12.2.5.1.

The Design-Builder shall not place Utility conduits along exterior bridge railings unless Approved by ICTC and GSA.

17.3.3 Reserved

17.3.4 Miscellaneous Structures

Miscellaneous structures include culverts and drainage structures

Miscellaneous structures shall be designed in accordance with the Project Requirements and Caltrans standards.

Submittals are generally the same for miscellaneous structures as for bridge structures and shall meet the requirements in these Project Requirements. Any variations from these requirements including submittal requirements and review duration will be authorized only by written permission from ICTC

17.3.5 Structure Types Restricted from Use

The following structure types shall not be used on the Project for permanent structures:

- Precast concrete substructures.

- Seismic dampers or seismic isolation bearings.
- Deep foundation system types other than those described in Caltrans *Memo to Designers* 3-1, "Deep Foundations," are not allowed . Timber piles and grouted-in- place piles are not allowed. Micropiles and auger-cast piles are not allowed.
- Soil nail walls and MSEs supporting superstructure loading.
- Structure backfill with contamination from crushed, ground, or otherwise recycled pavement or building material used with ERSs.
- ERSs and other structural elements that are not preapproved by ICTC or are not currently allowed in the Caltrans standards.
- Lightweight cellular concrete used as structural backfill behind bridge abutments, as part of the structural system, or as part of a load path for ERSs.
- Systems incorporating false or secondary facings over the load-carrying facing, such as two-stage MSE, where the false facing prevents maintenance activities on the load-carrying facing.
- Any shallow-founded ERS with different performance or maintenance requirements than a deep- founded ERS.

17.3.6 ERSs

17.3.6.1 Permanent ERSs

Based on the Approved Project Report and its Attachments, the Design-Builder shall determine the locations and types of ERSs needed on the Project. The Design- Builder shall minimize the need for and visual impacts of all ERSs on the Project by using ERS profiles and alignments that blend with the natural terrain.

Where side slopes would exceed the R/W, an ERS shall be used.

ERS type selection and design by the Design-Builder shall meet all applicable Caltrans requirements, including those related to differential settlement, visual quality management, Utilities, lighting, signage, drainage, and landscaping. The Design-Builder shall notify ICTC of any potential R/W conflicts at the type selection stage.

Where possible, an ERS shall be interconnected or curved into the existing or finished grade to eliminate blunt ends and avoid the use of guardrails, attenuators, or other safety devices at the end of the ERS. Long vertical curves shall be used at the top of the ERS profile to avoid abrupt tangents and chords.

The Design-Builder shall evaluate the applicability of the preapproved proprietary ERSs on the Caltrans Authorized Material List at the following Web site:

https://dot.ca.gov/programs/engineering-services/authorized-materials-lists

ERS types to be used at bridge abutments and approach embankments will require Approval during the type selection phase.

The Design-Builder shall not use sheet pile, timber, or recycled material for permanent ERSs or ERS foundations.

Unless specified otherwise herein or in the standards, the permissible total and differential settlement and lateral displacement and rotation of ERSs shall be based on the ERS design and site-specific requirements determined by the Geotechnical Engineer.

The Design-Builder shall not change or intermix wall types within an uninterrupted ERS segment.

17.3.6.2 Design Loads

The Design-Builder shall design for all applicable load cases, including live load surcharges, in accordance with AASHTO *LRFD Bridge Design Specifications* (8th Edition) with California Amendments. All ERSs shall be designed for seismic loads. ERSs included in the Caltrans *Bridge Standard Detail Sheets* (XS- Sheets) and Caltrans *Standard Plans* have been designed for a maximum seismic load of Kh=0.2. Special designs are required for ERSs at locations where the site adjusted or applied Kh will exceed 0.2. If the Design-Builder deviates from the Caltrans *Standard Plans* load cases in any way, the Design-Builder shall follow the submittal process for a special design ERS.

17.3.6.3 Plan Submittal and Approval

For ERSs on spread footings using Standard Plans without modifications, the Design-Builder shall follow the roadway submittal process described in Section 6. For ERSs that require special design, the Design-Builder shall follow the structural submittal process described in Section 6.

17.3.6.4 Geotechnical Requirements

The Design-Builder shall provide a Preliminary Geotechnical Design Report and a Geotechnical Design Report for standard ERSs unchanged from the Caltrans *Standard Plans*. For modified standard walls and all other types of ERSs, the Design-Builder shall provide a Preliminary Foundation Report with the Structure Type Selection submittal and a Foundation Report with the Intermediate Design submittal. The Preliminary Geotechnical Reports, Geotechnical Design Reports, Preliminary Foundation Reports, and Foundation Reports shall conform to Section 16.

17.3.7 Structure Hydraulics

A hydrologic/hydraulic investigation including scour analysis and structure hydraulics report is required for the bridge which may affect the structure design or construction. The Design-Builder shall comply with the requirements in Section 9.

17.3.8 Structure Aesthetics

For aesthetic treatment and design requirements for structures and ERSs, the Design-Builder shall comply with Section 15 and the following requirements:

- Widened abutment alignment shall match existing abutment alignment.

17.3.9 Inspection and Maintenance Access

The design shall allow all widened portions of the bridge superstructure, joints, and bearings to be accessible for long-term inspection and maintenance.

17.3.10 Bridge Structure Element Products

All manufactured bridge structure element products such as bearings and joint seal assemblies shall comply with Caltrans standards. If the Design-Builder proposes to use any products that do not meet the Caltrans *Standard Specifications* and are not on the Caltrans Authorized Material List, the Design-Builder shall comply with Section 5.3.3.

17.3.11 Bridge-Specific Requirements

No additional bridge-specific requirements are noted.

17.3.12 Pump Station Requirements

No additional pump stations are required in addition to the lift pump station addressed in Section 9.

17.4 Construction Requirements

17.4.1 Bracing

Temporary wind bracing shall be required during construction in accordance with the Caltrans *Standard Specifications*.

17.4.2 Surface Finishes

All concrete surfaces shall receive a surface finish in accordance with the Caltrans *Standard Specifications* and Visual and Landscape Impact Assessment Memorandum included in the Reference Information Documents. All steel surfaces shall be finished following the Caltrans standard painting specifications found in the Caltrans *Standard Specifications*. Finish colors shall comply with Section 15. "Sacking" shall not be used to achieve a Class 1 surface finish.

17.4.3 Bridge Decks

Bridge deck construction shall comply with the Caltrans *Standard Specifications*, the Caltrans *Bridge Deck Construction Manual*, and the Caltrans *Bridge Construction Records and Procedures Manual*. Permanent control points shall be marked on the concrete barrier along the exterior edges of bridges at mid span and at each abutment. Locations of these points with their as-built elevations shall be shown on the as-built plans.

17.4.4 Reserved

17.4.5 Structure Demolition

Demolition and removal plans and calculations and temporary bridge support plans, if necessary to accommodate the bridge widening, shall be approved by the Design-Builder's California-registered Civil Engineer. Demolition and removal plans shall show the location of the equipment used for demolition and removal, sequence of removal, equipment specifications including their weight, and any other material, that will be placed on the existing bridges during or before demolition. A California-registered Civil Engineer shall be present on Site during demolition and removal operations.

17.4.6 Qualification Audits of Facilities

Steel pipe pilings shall be fabricated at a facility on the Caltrans Authorized Facility Audit List at the following Web site:

https://dot.ca.gov/%20programs/engineering-services/authorized-facility-audit-list

17.5 Submittals

17.5.1 Non-Standard Designs and Details

Any non-standard designs or details other than those Approved by ICTC will require Approval before being used for design or the preparation of structure Plans. The Design-Builder is required to submit any non-standard designs, details, or documents to ICTC for review and Approval as soon as the need is identified.

17.5.2 Reserved

18 EARTHWORK

18.1 General

The Design-Builder shall perform all Work necessary to meet the requirements of earthwork, including clearing and grubbing; excavation and embankment; removal of pavement, pavement markings, and miscellaneous structures; subgrade preparation and stabilization; and dust control in accordance with the requirements of this Section 18 and the standards below.

18.2 Administrative Requirements

18.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 18-1: Earthwork Standards and Requirements

Priority	Organization	Title
1	Caltrans	Standard Special Provisions
2	Caltrans	*Standard Specifications**
3	Caltrans	*Standard Plans*
4	Caltrans	*Highway Design Manual*
5	Caltrans	*Project Planning and Design Guide*
6	Caltrans	Design Information Bulletin 84: Guidance for Projects Involving Portland Cement Concrete Pavement Grooving or Grinding
7	Caltrans	*Geotechnical Manual*
8	Caltrans	*Construction Manual*

*Document modified for design-build.

18.3 Design Requirements

18.3.1 Grading Concept Meeting

The Design-Builder shall schedule and participate in a grading concept meeting to present to ICTC a layout of the in-place and proposed grading on the Project. The Design-Builder shall use the outcome of the meeting to finalize the grading needs of the Project.

18.3.2 Grading Requirements

The Design-Builder shall provide grading Plans and shall be responsible for ensuring that the final grading is consistent with all Contract requirements, including environmental, landscape, visual quality, stormwater, roadway design, and geotechnical requirements. Erosion control and Site protection treatments shall be provided by the Design-Builder for all areas where grading is performed.

18.3.3 Slope Rounding

Slope rounding is required on all cut slopes and fill slopes. Grading contours shall blend with the natural contours of the Site. Landforming shall be incorporated, avoiding distinct edges and feathering fill areas into existing contours.

18.4 Construction Requirements

The Design-Builder shall remove all existing pavement, curb and gutter, sidewalk, steps, drainage facilities, soil, rock, and other obstructions within the Project limits necessary to construct the Project. The Design-Builder shall remove all pavements and sidewalks within the Project limits that are not incorporated in the Final Design. When removing such items, the Design-Builder shall saw cut the pavement or sidewalk with neat lines at the removal terminations.

18.4.1 Reserved

18.4.2 Removal of Miscellaneous Objects

The Design-Builder shall remove and properly dispose of all objects encountered within the R/W that are not otherwise designated for removal, salvage, or reuse.

18.4.3 Disposal of Materials

Disposal of surplus excavated material on the Project R/W may be allowed on a case-by-case basis, with prior approval of ICTC, GSA, and CBP. The Design-Builder shall develop, implement, and maintain a Disposal Site Memorandum showing grading and restoration of any such areas.

Topsoil and duff shall not be removed from the Site. Topsoil and duff shall be stripped, stockpiled, and reused within the Project limits.

18.4.4 Mining

Mining of material within the Project R/W is not allowed without prior ICTC, GSA, and CBP Approval. To request Approval, the Design-Builder shall develop, implement, and maintain a Mining Memorandum that addresses Site restoration, environmental impacts, material management, and other pertinent information.

18.4.5 Imported Borrow

The Design-Builder shall sample and analyze imported borrow from (a) noncommercial sources and (b) commercial sources located outside of the State:

- Before bringing the borrow to the job Site
- As described in the Borrow Site Memorandum
- Under US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)

The sample collection shall be designed to generate a data set representative of the entire volume of proposed imported borrow.

Before excavating at the (a) noncommercial source or (b) commercial source located outside the State; the Design-Builder shall collect the minimum number of samples and perform the minimum number of

analytical tests for the corresponding maximum volume of imported borrow as shown in the following table:

Table 18-2: Borrow Source Sampling Requirements

Maximum volume of imported borrow (cu yd)	Minimum number of samples and analytical tests
< 1,000	4
1,000–5,000	4 for the first 1,000 cu yd plus 1 for each additional 500 cu yd or portion thereof
5,000–10,000	12 for the first 5,000 cu yd plus 1 for each additional 1,000 cu yd or portion thereof
10,000–20,000	17 for the first 10,000 cu yd plus 1 for each additional 2,500 cu yd or portion thereof

The Design-Builder shall not collect composite samples or mix individual samples to form a composite sample.

The Design-Builder shall analyze the samples using the US EPA's ProUCL software with a 95 percent upper confidence limit. The laboratory performing the analyses shall be certified by the SWRCB's Environmental Laboratory Accreditation Program for all analyses to be performed.

The analytical test results shall demonstrate that the imported borrow:

- Is not a Hazardous Waste.
- Has a pH above 5.0.
- Has a total lead concentration at or below 80 mg/kg.
- Is free of possible contaminants identified in the imported borrow plan.
- Complies with the RWQCB's basin plan for the job Site location.
- Complies with the RWQCB's water quality objectives for the job Site location.

Imported borrow placed within four (4) feet of the finished grade shall have an R-value of at least six (6).

The Design-Builder shall strip materials that adversely affect the imported borrow properties.

The Design-Builder shall not place imported borrow until authorized by ICTC. If ICTC determines the appearance, odor, or texture of any delivery of imported borrow suggests possible contamination, the Design-Builder shall sample and analyze the delivered borrow. The Design-Builder shall dispose of noncompliant imported borrow at an appropriately permitted CA Class I, CA Class II, or CA Class III facility.

18.5 Submittals

18.5.1 Reserved

18.5.2 Disposal Site Memorandum

If the Design-Builder proposes to dispose of surplus excavated material, the Design-Builder shall submit a Disposal Site Memorandum to ICTC and GSA for Approval. ICTC and GSA will respond within ten (10) Working Days of receipt of the plan. The Disposal Site Memorandum shall include a Site plan, including

Site limits, final grading plan, and access roads. The Design-Builder shall obtain ICTC Approval before disposing of any material inside or outside the Project R/W and shall submit the following with its request:

- GSA agreement, including release of liability if disposing outside the Project R/W.
- Environmental compliance documentation prepared by an appropriately qualified environmental specialist.
- All necessary PLACs.
- SWPPP.

18.5.3 Borrow Site Memorandum

If imported borrow material is required for the Project, the Design-Builder shall submit a Borrow Site Memorandum to ICTC for Approval and shall receive ICTC Approval before using the imported borrow material. ICTC will respond within ten (10) Working Days of receipt of the plan. The Borrow Site Memorandum shall be sealed and signed by a California-registered Professional Civil Engineer, a California-licensed Professional Geologist, or a California-certified engineering geologist. The Borrow Site Memorandum shall include:

- Certification signed by the Design-Builder and a California-registered Professional Civil Engineer, a California-licensed Professional Geologist, or a California-certified Engineering Geologist that states the following:
    - I am aware that (a) noncommercial sources for imported borrow and (b) commercial sources for imported borrow located outside of the State shall be sampled and analyzed for pH and lead and may require sampling and analysis under Caltrans *Standard Specifications* Section 19-7, "Borrow Material," for other constituents of concern based on the land use history. I am aware that imported borrow sources shall not contain aerially deposited lead at concentrations greater than 80 mg/kg total lead or 5 mg/L extractable lead as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II. I am aware that a maximum quantity of material may be excavated at the site based on the minimum number of samples taken before excavating at the site under Caltrans *Standard Specifications* Section 19-7, "Borrow Material,".
- Land use history of the borrow location and surrounding property.
- Sampling protocol.
- Number of samples per volume of imported borrow.
- Quality requirements and procedures.
- Qualifications of sampling personnel.
- Contact information of the analytical laboratory performing the analyses.
- Analyses to be performed for lead and pH.
- Other analyses to be performed for possible hazardous constituents based on job Site history, adjacent land use, and constituents of concern in the groundwater basin where the job Site is located.

At least fifteen (15) days before placing imported borrow, the Design-Builder shall submit analytical test results for each noncommercial imported borrow source and each commercial imported borrow source located outside of the State. The analytical test results shall include:

- Certification letter signed by the Design-Builder and a California-registered Professional Civil Engineer, a California-licensed Professional Geologist, or a California-certified Engineering Geologist that states the following:
    - The analytical testing described in the Borrow Site Memorandum has been performed. I performed a statistical analysis of the test results using the US EPA's ProUCL software with the recommended 95 percent upper confidence limit. I certify that (a) the material from the imported borrow source is suitable for unrestricted use at the job Site and (b) when the material is placed at the job site, it has a pH above 5.0, does not contain lead in concentrations considered to be hazardous waste, does not contain lead in concentrations above 80 mg/kg total lead, is free from all other contaminants identified in the Borrow Site Memorandum, and will comply with the job site's basin plan and water quality objectives of the RWQCB.
- Chain of custody of the sample.
- Analytical results that are no older than one (1) year.
- Statistical analysis of the data using US EPA's ProUCL software with a 95 percent upper confidence limit.
- Comparison of the sample results to the Hazardous Waste concentration thresholds and the RWQCB's basin plan requirements and water quality objectives for the job Site location.
- Verification that imported borrow has a pH above 5.0, has a total lead concentration at or below eighty (80) mg/kg, and is suitable for placement at the job Site.

18.5.4 Solid Waste Disposal and Recycling Reports

The Design-Builder shall submit the Solid Waste Disposal and Recycling Reports to ICTC no later than February 1st of each year or within fifteen (15) Days after receiving the final report. Contact information for Caltrans and statewide recycling coordinators is available at the following Web site:

https://construction.onramp.dot.ca.gov/district-recycling-coordinators-0

19 ROADWAYS

19.1 General

The Design-Builder shall perform all Work necessary to meet the requirements of the new approach roadways.

19.2 Administrative Requirements

19.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 19-1: Roadway Standards and Requirements

Priority	Organization	Title
1	Caltrans	*California Manual on Uniform Traffic Control Devices*
2	Caltrans	*Highway Design Manual*
3	Caltrans	*Traffic Safety Systems Guidance*
4	AASHTO	*A Policy on Geometric Design of Highways and Streets* (Greenbook)
5	AASHTO	*A Policy on Design Standards – Interstate System*
6	Caltrans	Standard Special Provisions
7	Caltrans	*Standard Specifications**
8	Caltrans	*Standard Plans*
9	Transportation Research Board	*Highway Capacity Manual*
10	AASHTO	*Roadside Design Guide*
11	Caltrans	*Project Development Procedures Manual*
12	AASHTO	*Manual for Assessing Safety Hardware*

*Document modified for design-build

19.2.2 Reserved

19.2.3 Software

The Design-Builder shall submit all electronic drawings in MicroStation format and supporting electronic design data in Civil 3D format. Software shall comply with Section 6.3.4.

19.3 Design Requirements

19.3.1 Design Standards

The Design-Builder shall design and construct all roadway elements according to the standards listed in Section 19.2.1. This includes horizontal alignment, vertical alignment, superelevation, cross slopes, lane widths, shoulder widths, clear zone, side slopes, and cut and fill slopes.

The Design-Builder shall identify and correct all clear zone deficiencies on the roadway facility for all areas adjacent to new construction.

The Design-Builder shall design any required temporary roadway facilities to comply with the same design and construction requirements as for the permanent roadway facilities. Design-Builder shall furnish all necessary Design Documents and obtain all necessary permits for temporary traffic Work required for Project construction. Design-Builder shall coordinate the design of these elements with ICTC, GSA, CBP, and affected local agencies.

The Design-Builder shall prepare all necessary engineering studies and applicable design reports to justify all roadway elements used in the Project.

The Design-Builder shall determine the construction limits of all improvements required on all roadways and include said limits in the Design Documents.

The Design-Builder shall obtain Approval from ICTC, GSA, and CBP before constructing any temporary roadway Work and perform any associated engineering, documentation, and coordination.

The Preliminary Engineering Drawings included in the Approved Project Report and its Attachments and in the Reference Information Documents show typical roadway sections. These include the number of lanes, shoulders, curb and gutter, sidewalks, and other cross-section elements. The Design-Builder shall extend the pavement structure for the entire width of all paved shoulders. The pavement includes the roadway pavement; and incidental shoulder paving.

The Design-Builder shall follow the Project-specific design standards for specific roadways shown in the following tables:

Table 19-2: Project Specific Design Standards

Roadway: Calexico East Port of Entry Bridge Widening Location: Calexico East Port of Entry	
Design Standards	**Approach Roadway**
Jurisdictional System	Imperial County, GSA, and CBP
Functional Class	Local rural road
Access Control	Full
Highway Type	Multi-lane divided, rural section
Terrain	Desert
Traffic Volumes AADT Year 2020	See Approved Project Report and its Attachments and the Project Traffic Report Memorandum included in the Reference Information Documents

Table 19-2: Project Specific Design Standards

Roadway: Calexico East Port of Entry Bridge Widening Location: Calexico East Port of Entry	
Design Standards	**Approach Roadway**
Traffic Volumes Projected AADT Year 2045	See Approved Project Report and its Attachments and the Project Traffic Report Memorandum included in the Reference Information Documents
Projected Posted Speed	15 mph; the Design-Builder shall verify with GSA and CBP
Proposed Design Speed	15 mph; the Design-Builder shall verify with GSA and CBP
Shoulder Bus Use	No
Median Type	Concrete median barrier

19.3.1.1 Slopes

Embankment (fill) slopes being modified shall be 1:2 (V:H) or flatter. All side slope designs steeper than 1:2 (V:H) require ICTC Approval using a Caltrans Design Standard Decision Document.

19.3.1.2 Traffic Safety Systems

The Design-Builder shall meet the requirements for the use of concrete traffic barrier set forth in Section 15.

19.3.1.3 Retaining Walls

The Design-Builder shall construct retaining walls in accordance with Section 17 and the Caltrans *Highway Design Manual*.

19.3.1.4 Clearing and Grubbing

Clearing and grubbing Work shall not start without an Approved SWPPP; an Approved Vegetation Inventory and Protection Memorandum; an Approved Vegetation Removal Memorandum; an Approved Irrigation Inventory, Protection, Removal, Salvage, and Relocation Memorandum; and an Approved Transportation Management Memorandum. Refer to Section 9, Section 14, and Section 25.

19.3.2 Exceptions to Design Standards

A summary of Non-standard Features is included in the Approved Project Report and its Attachments.

These non-standard features apply only at the locations specified in the Approved Project Report and its Attachments. The Design-Builder shall not create additional non-standard features as part of the Project design.

ICTC may consider further exceptions from standards or criteria on a case-by-case basis at specific locations where the Design-Builder demonstrates that substantial benefit to the ICTC, GSA, or CBP would accrue from the recommendation. The Design-Builder shall obtain ICTC Approval of any such changes to the standards or criteria.

The Design-Builder shall design all the elements associated with the Project in accordance with the criteria established in the Contract Documents. Some elements of the design developed in the preliminary design

may not meet these design requirements as noted in this Section. The Design-Builder shall submit the final exceptions to design standards for Approval by ICTC.

The Design-Builder is discouraged from creating additional non-standard features, since there is no assurance that they will be Approved; however, elimination of existing non-standard features by the Design-Builder is encouraged.

19.4 Construction Requirements

Construction shall be in accordance with the requirements of the Caltrans *Standard Specifications* and the Caltrans Standard Special Provisions.

19.5 Submittals

19.5.1 Design Calculations

Design calculations shall include the following:

- Horizontal sight distance
- Vertical sight distance: stopping and decision sight distance
- Clearances
- Superelevation
- Traffic safety systems, including rails, barriers, and guardrail
- Retaining wall
- Earthwork

The Design-Builder shall prepare and submit bound design calculations and Project documentation. These submittals shall be in indexed paper or electronic format, organized by design topic.

19.5.2 Reports and Project Documentation

The Design-Builder shall submit a detailed design justification and design calculations for all traffic safety system installations. This shall accompany any Final Design submittals involving roadway grading or traffic barrier. Documentation may be computer generated or handwritten, though hardcopies and electronic versions shall be submitted. Design justifications shall clearly identify the following:

- Design issue
- Items requiring consideration
- Basis for evaluation
- Final decision and justification

20 BICYCLE AND PEDESTRIAN FACILITIES

20.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with bicycle and pedestrian facilities for the Project. The Design-Builder shall ensure the bicycle and pedestrian facilities of this Project support ICTC's commitment to integrate bicycle and pedestrian travel into Project development.

The Design-Builder shall design and construct bicycle and pedestrian facilities in accordance with the requirements of the Contract Documents.

The Design-Builder shall maintain safe and convenient access for pedestrians through and around work zones. This includes the bicycle and pedestrian facilities impacted during construction.

The Design-Builder shall coordinate with ICTC, GSA, and CBP for facilities within their jurisdiction to ensure that the appropriate design methods, procedures, submittals, Plan preparation, analysis methodology, review and comment processes, approval procedures, specifications, and construction requirements are met.

20.2 Administrative Requirements

20.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 20-1: Bicycle Facilities Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Highway Design Manual*
2	Caltrans	*California Manual on Uniform Traffic Control Devices*
3	Caltrans	*Project Development Procedures Manual*
4	AASHTO	A *Policy on Geometric Design of Highways and Streets*
5	Caltrans	Standard Special Provisions
6	Caltrans	*Standard Specifications**
7	Caltrans	*Standard Plans*
8	Caltrans	*Traffic Manual*, Chapter 9, "Traffic Signals and Lighting"
9	AASHTO	*Roadside Design Guide*

*Document modified for design-build.

Table 20-2: Pedestrian Facilities Standards and Requirements

Priority	Organization	Title
1	Caltrans	Design Information Bulletin 82: Pedestrian Accessibility Guidelines for Highway Projects
2	Caltrans	*Highway Design Manual*
3	Caltrans	*California Manual on Uniform Traffic Control Devices*
4	Caltrans	*Project Development Procedures Manual*
5	AASHTO	*A Policy on Geometric Design of Highways and Streets*
6	Caltrans	Standard Special Provisions
7	Caltrans	*Standard Specifications**
8	Caltrans	*Standard Plans*
9	Caltrans	*Traffic Manual*, Chapter 9, "Traffic Signals and Lighting"
10	AASHTO	*Roadside Design Guide*

*Document modified for design-build.

20.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the design and construction of the bicycle and pedestrian facilities.

Table 20-3: Bicycle and Pedestrian Facilities References

Organization	Title
AASHTO	*Guide for the Planning, Design, and Operation of Pedestrian Facilities*
AASHTO	*Guide for Development of Bicycle Facilities*
FHWA	*Pedestrian Facilities Users Guide*
FHWA	*How to Develop a Pedestrian and Bicycle Safety Action Plan*
FHWA	*Bikeway Selection Guide*
Caltrans	*Permanent Pedestrian Facilities ADA Compliance Handbook*
Caltrans	*Temporary Pedestrian Facilities Handbook*
IES	*Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting*
AASHTO	*Roadway Lighting Design Guide*
National Association of City Transportation Officials	*Urban Bikeway Design Guide*

20.2.3 Software Requirements

The Design-Builder shall submit all electronic drawings in MicroStation format and supporting electronic design data in Civil 3D format. Software shall comply with Section 6.3.4.

20.2.4 Coordination with Other Agencies

The Design-Builder shall comply with requirements for the design of bicycle and pedestrian facilities with GSA and CBP.

The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda for the Project record. The Design-Builder shall document any permit requirements and contacts with permitting agencies.

20.3 Design Requirements

20.3.1 Bicycle and Pedestrian Concept Meeting

The Design-Builder shall take an inventory of all the existing bicycle and pedestrian facilities in the Project. The Design-Builder shall schedule and participate in a bicycle and pedestrian concept meeting to present to ICTC, GSA, and CBP a layout of the in-place and proposed bicycle and pedestrian elements on the Project. The presentation shall also address those elements of the roadway design that impact bicycle and pedestrian safety and mobility needs. The Design-Builder shall use the outcome of the meeting to finalize the bicycle and pedestrian needs of the Project.

20.3.2 Bicycle Facilities

Design-Builder's bicycle facilities shall be consistent with the region's bicycle plan if one exists, comply with the Environmental Document and the Approved Project Report and its Attachments, and accommodate existing bicycle paths and sidewalks. The Design-Builder shall restore bicycle facilities impacted by the Project within the planned R/W limits and bring them up to current standards.

20.3.2.1 Grades

The Design-Builder shall design and construct grades for bicycle facilities that comply with requirements in the Caltrans *Highway Design Manual*.

20.3.2.2 Reserved

20.3.2.3 Reserved

20.3.3 Pedestrian Facilities

The Design-Builder's pedestrian facilities shall be consistent with the Project Requirements, comply with the Environmental Document, meet the layout provided in the Approved Project Report and its Attachments, and accommodate existing pedestrian paths and crossings. The Design-Builder shall restore pedestrian facilities impacted by the Project within the planned R/W limits and bring them up to current standards.

20.3.3.1 Grades, Width, and Separation

The Design-Builder shall design and construct grades, width, and separation for pedestrian facilities in accordance with the Caltrans *Highway Design Manual* and Design Information Bulletin 82.

20.3.3.2 Roadways

The Design-Builder shall design and construct pedestrian facilities to comply with requirements in the Caltrans *Highway Design Manual* and Design Information Bulletin 82.

20.3.3.3 Bridges

The Design-Builder shall design and construct width and separation on the bridge for pedestrian facilities to comply with the Approved Project Report and its Attachments and the requirements in the Caltrans *Highway Design Manual* and Design Information Bulletin 82.

20.3.4 Exceptions to Design Standards

If it is found that an accessibility design standard cannot be fully incorporated in a design, an exception to Design Information Bulletin 82 is required. The Design-Builder shall comply with the exception procedure described in Design Information Bulletin 82.

The Design-Builder is discouraged from creating additional exceptions to accessibility design standards, since there is no assurance that they will be Approved by ICTC as necessary; however, elimination of existing exceptions to accessibility design standards by the Design-Builder is encouraged.

For exceptions to design standards in the Caltrans *Highway Design Manual*, the Design-Builder shall comply with the procedure described in Section 19.3.

20.3.5 Illumination Requirements

The Design-Builder shall comply with the illumination requirements in the Caltrans *Traffic Manual*, Chapter 9, "Traffic Signals and Lighting."

20.3.6 Lighting Fixtures

The Design-Builder shall coordinate with ICTC, GSA, and CBP for lighting fixtures.

20.3.7 Bicycle and Pedestrian Facilities Memorandum

The Design-Builder shall prepare a Bicycle and Pedestrian Facilities Memorandum that includes the following design features:

- Alignment
- Profile
- Cross-section
- Materials of bicycle and pedestrian facilities
- Points of connection to existing bicycle and pedestrian facilities
- Signing and pavement markings
- Separation between bicycle or pedestrian facilities and the nearest travel lane
- Where applicable, the methods of illumination by indicating light fixture locations and types and demonstration through photometric analysis that the illumination meets the stated requirements

The Design-Builder shall prepare all necessary engineering studies and applicable design reports to justify the bicycle and pedestrian facilities used in the Project.

20.3.8 Reserved

20.3.9 Reserved

20.4 Construction Requirements

The Design-Builder shall be responsible for construction of all Work described in this Section 20.

20.5 Submittals

The Design-Builder shall submit Final Design Plans to ICTC, GSA, and CBP for review as required.

21 PAVEMENTS DESIGNED BY CALTRANS

21.1 General

The Design-Builder shall perform all Work necessary to meet the requirements to design and construct pavement for all roadways in accordance with the requirements of the Contract Documents.

The Design-Builder shall coordinate with the ICTC, GSA, CBP, and all local agencies for facilities within their jurisdiction to ensure that the appropriate design methods, procedures, submittals, Plan preparation, analysis methodology, review and comment processes, approval procedures, specifications, and construction requirements are met.

The Design-Builder shall comply with the pavement design recommendations provided in the Approved Project and its Attachments and the Reference Information Documents.

21.2 Administrative Requirements and Guidelines

21.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 21-1: Roadway Pavement Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Highway Design Manual*
2	Caltrans	*Life Cycle Cost Analysis Procedures Manual*
3	Caltrans	Standard Special Provisions
4	Caltrans	*Standard Specifications**
5	Caltrans	*Standard Plans*

*Document modified for design-build.

21.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the roadway pavement analysis and design.

Table 21-2: Roadway Pavement References

Organization	Title
Caltrans	*Concrete Pavement Guide*
Caltrans	*Maintenance Technical Advisory Guide, Volume 1*

Table 21-2: Roadway Pavement References

Organization	Title
Caltrans	*Guidelines for Identifying and Repairing Localized Areas of Distress in Asphalt Concrete Pavements Prior to Capital Preventive Maintenance or Rehabilitation Repairs*
Caltrans	Pavement Web site
Caltrans	Pavement Policy Bulletin 09-02: Quieter Pavement Strategies for Noise Sensitive Areas
Caltrans	*Tack Coat Guidelines*
Caltrans	*Guidelines for the Design of Asphalt Concrete Smoothness*
Caltrans	*Guidelines for Concrete Pavement Smoothness Requirements*
AASHTO	*Guide for Design of Pavement Structures* and 1998 Supplement

21.2.3 Engineering Documents

The Pavement Recommendations for the Calexico East Port of Entry Memorandum included with the Approved Project Report and its Attachments show the required pavement designs for the Project prepared by Caltrans. The Design-Builder shall verify all information before use. Any information that would require modifying the required pavement designs, such as changes to the traffic projections, equivalent single axle load projections, or pavement standards and policies, shall be brought to the attention of ICTC for resolution before starting Work.

The Design-Builder shall not make Project changes that alter the essential functions and characteristics of the Project, such as safety, Site security, pavement design life, traffic operations, durability, desired appearance, maintainability, environmental protection, drainage, and other permitted constraints, without obtaining the prior Approval of ICTC, including any necessary design exception or exemptions. The Design-Builder shall perform the Work in accordance with the standards and requirements set forth in these Project Requirements unless the Design-Builder obtains a deviation or exception to those standards or requirements in accordance with the design review process set forth in the Contract Documents.

21.2.4 Software Requirements

Where prescribed in the Caltrans *Highway Design Manual*, Caltrans *Standard Specifications*, or Caltrans Special Provisions, the Design-Builder shall analyze and develop details for the required pavement designs in the Pavement Recommendations Memorandum using the statewide authorized roadway pavement software listed in the following Caltrans Web site and in accordance with the user's manuals:

https://dot.ca.gov/programs/maintenance/pavement/software

The Design-Builder shall submit all electronic drawings in MicroStation format and supporting electronic design data in Civil 3D format. Software shall comply with Section 6.3.4.

21.2.5 Equipment Requirements

The Design-Builder shall use inertial profilers and falling weight deflectometers for field measurements of pavement. Inertial profiler equipment shall meet the requirements of AASHTO R56, AASHTO R57, AASHTO M328, and California Test 387. Falling weight deflectometer equipment shall meet the

requirements of California Test 356. Inertial profilers and falling weight deflectometers shall be calibrated in relation to Caltrans equipment.

21.2.6 Personnel Requirements

The Design-Builder shall provide a Pavement Engineer who performs pavement calculations and develops pavement structure recommendations, details, or Plans. The Pavement Engineer shall be a California-registered Civil Engineer and shall have a minimum of five (5) years of experience in structural pavement design.

21.2.7 Coordination with Other Agencies and Disciplines

ICTC will assist in the coordination and resolution of all roadway pavement issues with GSA, CBP, affected interests, local agencies, and regulatory agencies. The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda for the record. The Design-Builder shall document the permit requirements and contacts with the permitting agencies.

21.3 Design Requirements

21.3.1 Roadway Pavement Concept Meeting

The Design-Builder shall schedule and participate in a roadway pavement concept meeting to present to ICTC the strategy for the proposed pavement structure recommendations on the Project. The Design-Builder shall use the outcome of the meeting to finalize the pavement needs of the Project.

21.3.2 Roadway Pavement Analysis and Design

For any modifications to the design or for locations not covered in the required pavement designs in the Pavement Recommendations Memorandum, the Design-Builder shall design pavement and prepare pavement Plans and specifications that follow all standards and guidance listed in this provision and as described in the Caltrans *Highway Design Manual* (particularly Chapters 600–670, "Pavement Engineering"). The Design-Builder shall provide a pavement design that is based on the required pavement designs in the Pavement Recommendations Memorandum and that meets the following requirements:

- Provide a pavement design life per Chapter 610, "Pavement Engineering Considerations," of the Caltrans *Highway Design Manual.*
- Provide a durable, maintainable pavement system that meets or exceeds pavement design life criteria with the specified structural capacity, coefficient of friction, and smoothness requirements.
- Provide pavement transition where there is a change in pavement type, elevation, thickness, or between a pavement and a structure in accordance with Chapter 670, "Tapers and Shoulder Backing," and Index 622.5, "Transitions Panels, Terminal Joints and Anchors," of the Caltrans *Highway Design Manual*.
- Minimize rutting and maximize maintainability.
- Provide lateral support for lanes supporting truck traffic or provide at least two (2) feet extended monolithic pavement structure into the outside shoulder, one (1) foot extended monolithic pavement structure into the inside shoulder, and, for widenings and rehabilitations, 0.5 foot extended monolithic pavement structure into existing non-truck-supporting lanes.
- Provide structure approach slabs at the bridge per Topic 209, "Structure Approach Slabs," of the Caltrans *Highway Design Manual* and Caltrans *Memo to Designers* 5-3, "Structure Approach."

- Provide free-draining pavement sections both above and beneath the pavement surface for pavement constructed on this Project. Do not exacerbate subgrade moisture below existing pavement that is left in place.
- Provide finished pavement that conforms to the Caltrans *Standard Specifications* and the Caltrans *Standard Plans.*

The Design-Builder shall analyze and prepare separate pavements designs, as applicable, for locations not covered in the required pavement designs in the Pavement Recommendations Memorandum such as areas where temporary pavement is used.

21.3.3 Pavement on Local Roads

The Design-Builder shall design any miscellaneous local or access roadways adjacent to the Project to carry projected traffic loads in conformance with ICTC, GSA, and CBP standards.

21.3.4 Special Pavement Designs

Special roadway pavement designs shall be fully justified and submitted for Approval. Special roadway pavement designs are defined as those that meet either of the following criteria:

- Involve products, methods, or strategies that reduce the structural thickness to less than what is determined by the standards and procedures set forth in the Caltrans *Highway Design Manual* and these Project Requirements.
- Use experimental products or procedures not covered in the engineering tables or methods found in the Caltrans *Highway Design Manual* and these Project Requirements.

The Design-Builder shall submit to ICTC special designs for Approval in accordance with the process described in Topic 82, "Application of Standards," and Topic 606, "Research and Special Designs," of the Caltrans *Highway Design Manual*. The Design-Builder shall allow 120 Days for ICTC's review.

To propose the addition of a new product to the Authorized Material List, the Design-Builder shall follow the procedure described in Section 5.3.3.

21.3.5 Pavement Recommendation Report and Materials Report

For any modifications to the design or for locations not covered in the required pavement designs in the Pavement Recommendations Memorandum, the Design-Builder shall prepare a Pavement Recommendation Report and, where applicable, a Materials Report and shall submit the reports to ICTC for Approval. The Design-Builder shall prepare the Pavement Recommendation Report in accordance with Index 604.2, "Pavement Recommendations," of the Caltrans *Highway Design Manual*. The Design-Builder shall prepare the Materials Report in accordance with Topic 114, "Materials Report," of the Caltrans *Highway Design Manual.*

21.3.6 Supplemental Pavement Requirements

21.3.6.1 Pavement Compaction

Pavement compaction shall be in accordance with the Caltrans Standard Special Provisions and the Caltrans *Standard Specifications*.

21.3.6.2 Pavement Profile Smoothness

The Design-Builder shall profile the pavement surface in accordance with the pavement smoothness requirements in the Caltrans Standard Special Provisions and the Caltrans *Standard Specifications*.

21.3.6.3 Tapers and Transitions

The Design-Builder shall design and construct tapers and transitions in accordance with Chapter 670, "Tapers and Shoulder Backing," of the Caltrans *Highway Design Manual.*

Where the Project abuts a previously overlaid segment of roadway, the taper of the Project shall overlay the taper placed on the previous overlay to provide a smooth transition.

21.3.6.4 Pavement Widening

Pavement widening design shall be in accordance with Indices 603.2, "Widening," and 612.3, "Widening," of the Caltrans *Highway Design Manual*.

21.3.6.5 Reserved

21.3.6.6 Expansion Joints for Terminal Joints

For the continuously reinforced concrete pavement, the Design-Builder shall design and use a series of expansion joints for terminal joints instead of using wide flange beams per Caltrans *Standard Plans* and Caltrans *Standard Specifications*. The Design-Builder shall use the Revised Caltrans Standard Plans for terminal joints and expansion terminal joint systems on continuously reinforced concrete pavement.

21.4 Construction Requirements

21.4.1 Pavement Evaluation on Smoothness and Coefficient of Friction

The Design-Builder shall evaluate smoothness in accordance with the Caltrans *Standard Specifications* and the Caltrans Standard Special Provisions. The Design-Builder shall supply the inertial profiler and the Certified Qualified Operator–certified results. ICTC will use the Certified Qualified Operator–certified results to determine Substantial Completion of pavement Work. ICTC may conduct a verification of the smoothness and will evaluate coefficient of friction. Existing coefficient of friction on concrete pavement that remains in place shall not be reduced. Concrete pavements placed by the Design-Builder shall provide a coefficient of friction value that complies with the requirements in the Caltrans *Standard Specifications*.

21.4.2 Removal of Pavement

Existing concrete and asphalt pavement to be removed from the roadway or shoulders shall be removed without affecting the adjacent pavement to remain. If material underlying removed pavement is disturbed, it shall be recompacted to a relative compaction of at least 95 percent.

21.4.3 Local Standards

For roadways adjacent to and crossing the Project that are disturbed by the construction activities, the Design-Builder shall match the in-place surface type and structure of the existing roadways, unless otherwise specified in these Project Requirements. The Design-Builder shall design and construct all tie-in Work to avoid differential problems, accounting for such factors as total surfacing thickness, minimum structural requirements, and unbound base/subbase thickness. The Design-Builder shall reconstruct the disturbed areas based on ICTC standards and specifications.

21.5 Submittals

21.5.1 Pavement Recommendation Report and Materials Report

The Design-Builder shall submit for ICTC Approval one (1) hardcopy of the documentation for the Pavement Recommendation Report and Materials Report and any subsequent updates of construction changes to the pavement structure.

The documentation for the Materials Report shall include:

- Unified soil classification of the subgrade soil. For asphalt pavements, include the California R-value.
- Strength properties for the materials selected for the subbase and/or base layers as outlined in Chapter 660, "Pavement Foundations" of the Caltrans *Highway Design Manual*.

The documentation for the Pavement Recommendation Report shall include:

- Pavement design life, including both the construction year and design year.
- Traffic index for each pavement structure.
- Depth and type of pavement.
- Depth and type of subbase and/or base layers.

The Design-Builder shall include the Project design designation information on the first sheet of the Project Typical Cross Sections Plan sheets in accordance with Topic 103, "Design Designation," of the Caltrans *Highway Design Manual.*

21.5.2 Reserved

21.5.3 Inertial Profiler Data and Data Cores

The Design-Builder shall submit inertial profiler data and data cores as completed in accordance with the Caltrans *Standard Specifications*, Sections 36-3, "Pavement Smoothness," 39, "Asphalt Concrete," and 40, "Concrete Pavement," and associated Caltrans Standard Special Provisions.

21.5.4 Quality Control Documents

The Design-Builder shall submit QC reports and test results as completed in accordance with the Caltrans *Standard Specifications* and associated Caltrans Standard Special Provisions.

22 SIGNING, PAVEMENT MARKING, SIGNALIZATION, AND LIGHTING

22.1 General

The Design-Builder shall perform all Work necessary to meet the requirements for permanent signing, permanent pavement marking, temporary and permanent signalization, and temporary and permanent lighting for the Project.

The Design-Builder shall coordinate with ICTC, GSA, and CBP for facilities within their jurisdiction to ensure that the appropriate design methods, procedures, submittals, Plan preparation, analysis methodology, review and comment processes, approval procedures, specifications, and construction requirements are met.

22.2 Administrative Requirements

22.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 22-1: Permanent Signing Standards and Requirements

Priority	Organization	Title
1	Caltrans	Traffic Operations Policy Directive 14-02, Revision 1, "Overhead and Roadside Signs Policy on the State Highway System"
2	Caltrans	*California Manual on Uniform Traffic Control Devices*
3	Caltrans	*Highway Design Manual*
4	Caltrans	Standard Special Provisions
5	Caltrans	*Standard Specifications**
6	Caltrans	*Standard Plans*
7	Caltrans	*California Sign Specifications*
8	FHWA	*Standard Highway Signs*
9	AASHTO	*A Policy on Geometric Design of Highways and Streets*
10	AASHTO	*Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*
11	AASHTO	*Roadside Design Guide*

*Document modified for design-build.

Table 22-2: Pavement Delineation Standards and Requirements

Priority	Organization	Title
1	Caltrans	*California Manual on Uniform Traffic Control Devices*
2	Caltrans	*Highway Design Manual*
3	Caltrans	Standard Special Provisions
4	Caltrans	*Standard Specifications**
5	Caltrans	*Standard Plans*
6	Caltrans	*California Sign Specifications*
7	AASHTO	*A Policy on Geometric Design of Highways and Streets*
8	AASHTO	*Roadside Design Guide*

*Document modified for design-build.

Table 22-3: Permanent Lighting Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Traffic Manual*, Chapter 9, "Traffic Signals and Lighting"
2	Caltrans	*Signal, Lighting and Electrical Systems Design Guide*
3	Caltrans	Standard Special Provisions
4	Caltrans	*Standard Specifications**
5	Caltrans	*Standard Plans*
6	Caltrans	*Highway Design Manual*

*Document modified for design-build.

22.2.2 References

The Design-Builder may use the references listed below as supplementary guidelines for the design and construction of signing, pavement marking, signalization, and lighting.

Table 22-4: Signing, Pavement Marking, Signalization, and Lighting References

Organization	Title
Caltrans	Reference Sheets for Structural Design Aids Overhead and Roadside Signs
Illuminating Engineering Society	*Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting*
AASHTO	*Roadway Lighting Design Guide*
EIA	Electronics Industries Alliance (EIA) standards

Table 22-4: Signing, Pavement Marking, Signalization, and Lighting References

Organization	Title
AASHTO	*Manual for Assessing Safety Hardware*
NEMA	National Electrical Manufacturers Association (NEMA) standards
TIA	Telecommunications Industry Association (TIA) standards
National Fire Protection Association	*NFPA 70: National Electrical Code*

22.2.3 Reserved

22.2.4 Software Requirements

The Design-Builder shall submit drawings in MicroStation format and supporting electronic design data in Civil 3D format, in addition to other software used by the Design-Builder as the drafting and design software.

The Design-Builder shall submit sign design data in GuideSIGN by Transoft Solutions, Inc., format.

Software shall comply with Section 6.3.4.

22.2.5 Coordination with Other Agencies and Disciplines

ICTC will assist in the coordination and resolution of all signing, pavement marking, and lighting issues with GSA, CBP, local agencies, affected interests, and regulatory agencies. The Design-Builder shall document the resolutions of issues for the correspondence file, including meeting minutes and memoranda for the record. The Design-Builder shall document the permit requirements and contacts with the permitting agencies.

22.3 Design Requirements

22.3.1 Permanent and Temporary Signing

The Design-Builder shall design all temporary signing systems to comply with the same design and construction requirements as for the permanent signing systems.

The Design-Builder shall prepare all necessary engineering studies and applicable design reports to justify all the signing elements used in the Project.

The Design-Builder shall design, furnish, and install all components of a sign system necessary to provide a complete and functional system that meets the following requirements, as applicable:

- Complies with State requirements for all temporary and permanent traffic control devices.
- Complies with Traffic Operations Policy Directive 14-02, Revision 1, “Overhead and Roadside Signs Policy on the State Highway System.”
- Provides for the orderly and predictable movement of all traffic, including bicycles and pedestrians.
- Provides guidance and warnings needed to ensure the safe and informed operation of individual elements of the traffic stream.

The Design-Builder shall supply all sign panels.

22.3.1.1 Signing Concept Meetings

The Design-Builder shall take an inventory of all in-place signing in the Project. The Design-Builder shall schedule and participate in a signing concept meeting within thirty (30) Days after NTP1 to present to ICTC a layout of the in-place and proposed signing on the Project. The Design-Builder shall use the outcome of the meeting to finalize the signing needs of the Project.

22.3.1.2 Signing Plan Requirements

The Design-Builder shall develop signing Plans for the Project that comply with the following requirements:

- If permanent signing is erected by the Design-Builder that could be used for motorist guidance, continue to display such signing during the remaining construction of the Project.
- Maintain existing guide signs for warning and regulatory signs during all phases of construction.
- Replace all existing signs within the planned R/W limits that do not meet current standards.
- Identify modifications to any signage both inside and outside the planned R/W limits that are rendered inaccurate, ineffective, confusing, or unnecessary for the Project. The modifications shall include the addition, removal, or alteration of signs and appurtenances.
- Include all necessary guide, warning, supplemental, sequential, and regulatory signs for any other roadways affected by the Project. Guide signs shall include route marker assemblies and directional, distance, and information signs.
- Locate signs in such a manner that they do not conflict with other signs, vegetation, or structures and are clearly visible according to *California MUTCD* standards.
- Design and install guide signs and trailblazer signs outside of the final R/W for the Project. The scope of the Work for signs located outside of the final R/W includes new signs and modifications to existing sign panels and structures.
- Install signs located outside of the final R/W in existing R/W controlled by other agencies. The Design-Builder shall coordinate with the applicable local agency for the design and installation of the guide and trailblazer signs outside of the final R/W.

The signing Plans shall include sign locations and panel legends.

22.3.1.3 Reserved

22.3.1.3.1 Reserved

22.3.1.3.2 Reserved

22.3.1.4 Sign Requirements

Signs shall comply with the following requirements:

- Roadside signs, except metal barrier- or rail-mounted signs, shall be mounted on wood posts.
- Milepost posts shall be replaced per ICTC, GSA, and CBP standards.

22.3.2 Permanent Pavement Marking

Pavement delineation Work shall include designing, installing, modifying, or removing striping and pavement markings. All pavement delineation shall conform to the *California MUTCD*, Caltrans *Standard Plans*, and Caltrans *Standard Specifications*. The Design-Builder shall prepare Pavement Delineation Plans

that show edge striping, lane line striping, arrows, legends, and pavement markings consistent with the needs of the Project. The Design-Builder shall design all temporary pavement delineation to comply with the same design and construction requirements as for the permanent delineation. The Design-Builder shall prepare all necessary engineering studies and applicable design reports to justify all the pavement delineation elements used in the Project.

The Design-Builder shall design, furnish, and install all components of a pavement delineation system necessary to provide a complete and functional system that meets the following requirements:

- Match existing CBP inspection station guide signage.
- Provide for the orderly and predictable movement of all traffic.
- Provide such guidance and warnings as are needed to ensure the safe and informed operation of individual elements of the traffic stream.

The Design-Builder shall design and install both temporary and permanent pavement delineation as required to complete the Work. Pavement delineation shall be in accordance with applicable ICTC, GSA, CBP, Caltrans, and *California MUTCD* standards. The scope of the pavement delineation includes striping, raised pavement markers, and roadway delineators.

22.3.2.1 Pavement Delineation Concept Meetings

The Design-Builder shall take an inventory of all in-place pavement delineation elements in the Project. The Design-Builder shall schedule and participate in a pavement delineation concept meeting to present to ICTC a layout of the in-place and proposed pavement delineation on the Project. The Design-Builder shall use the outcome of the meeting to finalize the pavement delineation needs of the Project.

22.3.2.2 Pavement Delineation Plans

The Pavement Delineation Plans (permanent or temporary) shall include:

- Plan view of the entire Project or roadway segment to have pavement delineation.
- All existing pavement delineation for a minimum of 500 feet past the limits of construction and adequate transition and tapers to maintain traffic at the design speed.
- Existing pavement delineation identified by material type, color, and width and completely dimensioned pavement delineation across the roadway.
- Identification of pavement delineation to be removed.
- All new pavement delineation identified by material type, color, line width, and completely dimensioned pavement delineation across the roadway, tying the pavement delineation to a construction centerline or monument line.
- Location by station or dimension lines of all proposed pavement arrows, legends, crosswalks, and other pertinent features.
- Design drawings other than Caltrans standard drawings that show details of pavement delineation, tapers, and transitions.

22.3.2.3 Pavement Delineation Material Requirements

The Design-Builder shall provide permanent or temporary pavement delineation that complies with Caltrans *Standard Specifications*. The permanent pavement markings shall be uniform in type, color, dimensions, location, and reflectivity as if in new condition.

22.3.2.4 Striping and Pavement Markings

All striping details shall conform to the *California* MUTCD, Caltrans *Standard Plans*, Caltrans Standard Specifications, and Caltrans *High Occupancy Vehicle Guidelines for Planning, Design, and Operations.*

All striping and pavement markings shall be thermoplastic. All markers shall conform to Caltrans *Standard Plans*.

Striping and pavement marking modifications that may be required on adjacent roadways and access roadways shall conform to ICTC, GSA, and CBP standards.

22.3.3 Reserved

22.3.3.1 Reserved

22.3.3.2 Reserved

22.3.3.2.1 Reserved

22.3.3.2.2 Reserved

22.3.3.2.3 Reserved

22.3.3.2.4 Reserved

22.3.3.2.5 Reserved

22.3.3.2.6 Reserved

22.3.4 Lighting

The Design-Builder shall design, furnish, and construct all components of the roadway lighting system necessary to provide a complete and functional system that meets the following requirements:

- Maintains current levels of roadway illumination for all roadway segments that are currently lit.
- Provides the current levels of roadway illumination for new roadways constructed for the Project.
- Provides good uniformity along the new and existing roadway to create a safe and comfortable environment for those who use the facility.
- Provides only lighting units that are breakaway or protected from crash potential in the clear recovery zone.
- Avoids light pollution and light trespass outside of the corridor.
- Minimizes glare to users.
- Provides for ease of maintenance and of servicing.

As a minimum, the Design-Builder shall provide lighting design and installation at all locations as specified in this Section.

The Design-Builder shall design the lighting system to minimize lane closures during post-construction maintenance.

The Design-Builder shall design all new permanent lighting systems to be single phase 120/240 volts.

The Design-Builder shall provide temporary lighting for any location that currently has lighting that is removed for roadway construction or locations that are required to facilitate MOT.

The Design-Builder shall design temporary lighting systems to comply with the same design and construction requirements as for the permanent systems. The Design-Builder shall design temporary lighting Plans and provide all materials and equipment for temporary lighting installations, using either screw-in bases and poles or wooden poles.

The Design-Builder shall prepare all necessary engineering studies and applicable design reports to justify all the lighting system elements used in the Project.

During the course of the Contract, the Design-Builder shall respond to ICTC, GSA, and CBP complaints and take necessary measures to mitigate any issues resulting from the new lighting system.

22.3.4.1 Lighting Concept Meeting

The Design-Builder shall take an inventory of all the existing lighting elements in the Project. The Design-Builder shall schedule and participate in a lighting concept meeting to present to ICTC a layout of the in-place and proposed lighting system on the Project.

The Design-Builder shall use the outcome of the meeting to finalize the lighting system needs of the Project.

22.3.4.2 Photometric Analysis

The Design-Builder shall complete a photometric analysis that includes the following:

- Lighting intensities and uniformity, light pole locations and heights, luminaire types, wattage and brightness, and quantities of each.
- Lighting calculations accounting for the anticipated loss of light due to lamp lumen depreciation and lamp dirt depreciation.
- Consideration of roadway safety, ease and cost of maintenance, cost of construction, consistency with adjacent roadway lighting designs, annual energy costs, and provision for future lighting needs.
- Lighting distances from the light source at the following lighting levels: 1.0 foot-candle, 0.5 foot-candle, and 0.2 foot-candle for all edges of pavements, shoulder lines, lane lines, R/W, and 150 feet outside of R/W.

The Design-Builder shall evaluate the three-dimensional aspects of the roadway with respect to the positioning of the illumination assemblies.

22.3.4.3 Reserved

22.3.4.4 Placement of Lighting Poles

When encountering a retaining wall during placement of the lighting poles, the Design-Builder shall mount the pole on the retaining wall and adjust the length of the pole to maintain the appropriate mounting height.

The Design-Builder shall consider locations of nearby guardrail, retaining walls, Utilities, and overhead power lines when placing light poles. The Design-Builder shall install electroliers with slip bases within the clear recovery zone unless otherwise protected by Midwest guardrail system or concrete barrier.

22.3.4.5 High Mast Lighting

High mast lighting shall not be used on this Project.

22.3.4.6 Reserved

22.3.4.7 Sign Lighting

If sign lighting is required, the Design-Builder shall:

- Provide a fused disconnect switch for ease of maintenance.
- Mount disconnect switch on the sign structure pole.
- Make wire splices in the junction box, or the splice box located behind the sign.
- Not use wire splices within the sign structure.

22.3.5 Reserved

22.4 Construction Requirements

Welded steel for welded steel poles for lighting structures shall be fabricated at a facility on the Caltrans Authorized Facility Audit List.

The Design-Builder shall use materials listed on the Caltrans Authorized Material List.

22.4.1 Permanent Signing

The Design-Builder shall mark in the field locations of the proposed signs and conduct a construction design review with ICTC before installation.

The Design-Builder shall obtain ICTC, GSA, and CBP authorization of all sign locations in the field before installation.

22.4.2 Pavement Markings

All pavement markings, permanent or temporary, where no longer required for traffic demarcation shall be completely removed.

22.4.3 Signalization and Lighting

22.4.3.1 Reserved

22.4.3.2 Lighting

Temporary lighting shall be installed and operational before removal of the existing lighting systems.

If screw-in bases and poles are used for temporary lighting, the bases, poles, and accessories shall be salvaged after the Project construction and delivered to ICTC. These salvaged items shall become the property of ICTC. If wooden poles are used, the Design-Builder shall remove the poles before Final Acceptance. The wooden poles shall remain the property of the Design-Builder.

The Design-Builder shall provide maintenance for permanent and temporary lighting installations within the Project limits from the first day of construction until Substantial Completion.

22.4.3.3 Power Service

The Design-Builder shall coordinate with the local power supplier to provide the power service connections to the lighting and signal systems. Unless otherwise specified, the Design-Builder shall pay all costs charged by the electric power companies for providing power connections. The Design-Builder shall be responsible for contacting the electric Utility Owner to determine the source of power and to obtain exact locations of power poles and stub-outs for the permanent and temporary installations.

ICTC will pay for existing power for the lighting as long as the existing lighting is in use. Notify ICTC at least seven (7) Calendar Days before disconnecting the existing lighting from power.

At each location where temporary lighting is provided, the Design-Builder shall pay the temporary lighting electric bills until the final facilities are in place and have been accepted. The existing entity will then resume payment responsibility for power for the final facilities.

22.5 Submittals

22.5.1 Electrical Concept Plan

The Design-Builder shall submit the Electrical Concept Plan (permanent or temporary) with incorporated comments received at the electrical concept meeting to ICTC within sixty (60) Days after the concept meeting.

22.5.2 Lighting Concept Plan

The Design-Builder shall submit the Lighting Concept Plan (permanent or temporary) with incorporated comments received at the lighting concept meeting to ICTC within sixty (60) Days after the concept meeting.

22.5.3 Signing Concept Plan

The Design-Builder shall submit the Signing Concept Plan (permanent or temporary) with incorporated comments received at the signing concept meeting to ICTC within sixty (60) Days after the concept meeting.

22.5.4 Signing Plans

The Design-Builder shall submit preliminary traffic signing Plans with the Conceptual Design Plans. The Design-Builder shall get Approval for all signing Plans.

23 RESERVED

24 RESERVED

25 MAINTENANCE OF TRAFFIC

25.1 General

The Design-Builder shall perform all Work necessary to meet the requirements associated with MOT in accordance with the requirements of the Contract Documents, the Approved Project Report and its Attachments, the Reference Information Documents, and these Project Requirements. This Work includes providing for the safe and efficient movement of people, goods, and services around the Project while minimizing impacts to GSA and CBP operations, commuters, and businesses.

25.2 Administrative Requirements

25.2.1 Standards

The Design-Builder shall perform the Work in accordance with the requirements of the standards listed below. The standards are listed in priority order as a guide to the relative importance of each standard. In the event of conflicting standards, the Design-Builder shall obtain clarification from ICTC before proceeding with design or construction. The Design-Builder shall request ICTC's determination in writing respecting the order of precedence among conflicting standards upon becoming aware of any such conflict.

Table 25-1: Maintenance of Traffic Standards and Requirements

Priority	Organization	Title
1	Caltrans	*Transportation Management Plan Guidelines*
2	Caltrans	*California Manual on Uniform Traffic Control Devices*
3	Caltrans	Standard Special Provisions
4	Caltrans	*Standard Specifications**
5	Caltrans	*Standard Plans*
6	Caltrans	*Highway Design Manual*
7	Caltrans	*Traffic Safety Systems Guidance*
8	AASHTO	*A Policy on Geometric Design of Highways and Streets*
9	AASHTO	*Roadside Design Guide*
10	Transportation Research Board	*Highway Capacity Manual*

*Document modified for design-build.

25.2.2 References

25.2.3 Transportation Management Memorandum

The Design-Builder shall develop, implement, and maintain a Transportation Management Memorandum that complies with the Caltrans *Transportation Management Plan Guidelines* and includes the following:

- Descriptions of the duties of the Traffic Manager, Traffic Control Supervisor, and other personnel with MOT responsibilities.

- Consideration of the elements listed on the Transportation Management Plan Data Sheet in Appendix F of the Caltrans *Transportation Management Plan Guidelines* for minimizing the traffic impact of the planned Work.
- Procedures to identify and incorporate the needs of GSA, CBP, emergency service providers, law enforcement entities, local governments and agencies, and other related corridor users.
- Procedures to address special circumstances such as equipment malfunctions, traffic incidents, and special events.
- Procedures to modify the Transportation Management Memorandum as needed to adapt to current Project circumstances.
- Procedures to communicate Transportation Management Memorandum information to the Design-Builder's public and stakeholder information personnel and ICTC's public and stakeholder information staff, and to notify the public of MOT issues in conjunction with the requirements of Section 3.

25.2.4 Reserved

25.2.4.1 Reserved

25.2.4.2 Reserved

25.2.5 Reserved

25.3 Design Requirements

The Design-Builder shall use the procedures in the Transportation Management Memorandum to develop Plans, specifications, and details to address all construction-related traffic control issues, including construction area signs, stage construction, and traffic handling.

25.3.1 Project-Specific Requirements

The Design-Builder shall provide Sign Detail Plans showing how to fabricate any sign not detailed in the *California MUTCD*, including sign dimensions, message, lettering sizes, and colors.

25.3.2 Haul Roads

The Design-Builder shall have its haul roads pre-Approved by ICTC, GSA, and CBP. The Design-Builder shall be responsible for maintenance of haul roads during construction and restoration of haul roads to levels specified by ICTC, GSA, and CBP.

25.3.3 Pedestrian Access

If closure of an existing pedestrian route is required during the course of the Work, the Design-Builder shall design, construct, maintain, and remove a temporary pedestrian access route in compliance with Caltrans *Standard Specifications*, Section 12-4.04, "Temporary Pedestrian Access Routes," the Caltrans *Standard Plans,* and GSA and CBP Site security requirements.

25.3.4 Reserved

25.3.5 Reserved

25.4 Construction Requirements

The Design-Builder shall be responsible for all Project MOT. All traffic control devices shall be continually and adequately monitored and maintained to ensure proper placement and function and the safe and efficient flow of all construction traffic into and out of the Project. Such responsibility and maintenance shall continue until Final Acceptance and when such traffic control devices are no longer required as determined by ICTC.

25.4.1 Temporary Traffic Control Devices

The Design-Builder shall provide temporary traffic control devices in conformance with the provisions in the *California MUTCD,* the Caltrans *Standard Specifications*, Section 12-3, "Temporary Traffic Control Devices," and these Project Requirements.

If requested by ICTC, the Design-Builder shall submit self-certification for crashworthiness of Category 1 temporary traffic control devices and a list of proposed Category 2 temporary traffic control devices in accordance with Section 12-3.01A(3), "Submittals," of the Caltrans *Standard Specifications.*

25.4.1.1 Portable Changeable Message Signs (CMSs)

The Design-Builder shall furnish, place, operate, maintain, and remove portable CMSs.

Portable CMSs shall comply with the Caltrans *Standard Specifications*, Section 12-3.32, "Portable Changeable Message Signs."

The Design-Builder shall display only the messages ordered by ICTC, GSA, CBP, or specified in these Project Requirements.

The Design-Builder's representative shall be available by cell phone during operations that require portable CMSs. The Design-Builder's representative shall change the displayed message immediately when requested by ICTC. The Design-Builder may operate the sign with a 24-hour timer control or remote control if Approved.

The Design-Builder shall place one (1) portable CMS in advance of the first warning sign for each stationary lane closure, off-ramp closure, connector closure, shoulder closure, and speed reduction zone and as required for any traffic diversions or motorist information plans.

25.4.1.2 Reserved

25.4.2 Maintaining Traffic

Maintaining traffic shall conform to the provisions in the Caltrans *Standard Specifications*, Section 7-1.03, "Public Convenience," Section 7-1.04, "Public Safety," and Section 12-4, "Maintaining Traffic," and these Project Requirements.

Personal vehicles of the Design-Builder's employees shall not be parked on the Traveled Way or shoulders, including sections closed to public traffic.

25.4.2.1 Closure Requirements and Conditions

Closure of existing access roadway lanes and GSA and CBP Site service roadways is not allowed.

25.4.2.1.1 Closure Schedule

Closure of existing access roadway lanes and GSA and CBP Site access roadways is not allowed.

25.4.2.1.2 Reserved

25.4.2.1.3 Late Reopening of Closures

Closure of existing access roadway lanes is not allowed.

25.4.2.1.4 Reserved

25.4.2.2 Reserved

25.4.3 Pavement Markings During Construction

For temporary lane lines or centerlines on pavement that will not be overlaid or replaced, the Design-Builder shall use temporary pavement markers. The Design-Builder shall inspect pavement markings daily and shall clean or replace any pavement markings that are damaged, missing, or have lost reflectivity.

25.4.4 Access

At a minimum, the Design-Builder shall provide:

- Access for emergency vehicles to the CBP inspection station and businesses at all times.
- Access to properties for GSA and CBP operations during construction by the end of each Day.
- Temporary access where needed to maintain access to properties.

25.5 Submittals

25.5.1 Transportation Management Memorandum

The Transportation Management Memorandum shall be Approved before issuance of NTP2. The Transportation Management Memorandum shall be sealed and signed by the Traffic Manager. ICTC will respond to the submittal within five (5) Working Days.