OFFICE OF SPECIAL FUNDED PROJECTS

INFORMATION AND PROCEDURES GUIDE

CHAPTER 5: CONSTRUCTION

STRUCTURES & ENGINEERING SERVICES
DIVISION OF ENGINEERING SERVICES
DEPARTMENT OF TRANSPORTATION
STATE OF CALIFORNIA

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Updates and information concerning the contents of this guide may be obtained from:

Office of Special Funded Projects and Structure Local Assistance (OSFP/SLA) page
or
Contact the Caltrans, Office of Special Funded Projects, American Council of Engineering Companies (ACEC) representative.

The Office of Special Funded Projects has prepared the contents of this guide. When necessary, revisions are made and posted on the web site listed above. It is the responsibility of all that use this guide to verify it is current and appropriateness for the use intended, to obtain the revisions, and to disregard obsolete or inapplicable information.

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INDEX TO ABBREVIATIONS:

AAA	Advertise, Award and Administer
AASHTO	AASHTO LRFD Bridge Design Specifications
ACEC	American Council of Engineering Companies
A&E	Architectural and Engineering Contract
APS	Advance Planning Study
BLCCA	Bridge Life-Cycle Cost Analysis
BD	Bridge Design
BDD	Bridge Design Detail
BDM	Bridge Design Memo
BDP	Bridge Design Practice
CA	California Amendments to AASHTO LRFD Bridge Design Specifications
CMGC	Construction Manager/General Contractor
DB	Design Build
DES	Division of Engineering Services
DRP	Draft Project Report
EE	Earthquake Engineering
GS	Geotechnical Services
MTD	Bridge Memos to Designers
OC	Overcrossing
OH	Overhead (railroad)
OSFP	Office of Special Funded Projects
PDPM	Project Development Procedures Manual
PDT	Project Development Team
PID	Project Initiation Document
POC	Pedestrian Overcrossing
PM	Project Manager
RP	Project Report
PS&E	Plans, Specifications and Estimate
PUC	Pedestrian Undercrossing
QC	Quality Control
SC	Structures Construction
SDC	Caltrans Seismic Design Criteria
SM&I	Structures Maintenance and Investigations
SOE	Structure Office Engineer
SFP	Special Funded Projects
STP	Structure Technical Policies
UC	Undercrossing
UP	Underpass (railroad)
VECP	Value Engineering Change Proposal

5 CONSTRUCTION

5.1 ROLES & RESPONSIBILITIES

This section outlines roles and responsibilities after the construction contract has been awarded and executed. This section supplements Section 1-2 “Roles and Responsibilities” which outlines general responsibilities and explanations that apply to the full life of the project.

Many different construction offices and agencies or other entities may be involved in any given construction project. When several entities are involved in a construction issue, it is important to recognize that the official lines of communication must be maintained. To ensure that clear direction is given to the Prime Contractor or any sub-contractor, the direction must come only from the Resident Engineer/Structure Representative. Communications protocol must be consistent with that established by the Resident Engineer prior to the start of work. During the course of any construction support, if contact is made with contractor or sub-contractor forces by the design consultant or OSFP staff, it should be made clear that any approval or direction of the work must come from the Resident Engineer. Any contacts with contractor forces would normally be very limited and made with the full knowledge of the Structures Representative.

Following is a list of roles and responsibilities associated with the main project stakeholders involved in Special Funded Projects. The list is not all-inclusive and is meant to briefly capture roles and responsibilities as they relate to projects that involve OSFP oversight. Additional roles and responsibilities are listed under other sections of this Guide as they relate specifically to different issues.

5.1.1 THE RESIDENT ENGINEER

- Is the primary point of contact and the responsible party for a construction contract.
- Is a Caltrans employee on a State administered construction contract and is usually a consultant on a contract administered by a Local Agency.
- Establishes the communications protocol for those involved with the contract work.

5.1.2 THE STRUCTURES REPRESENTATIVE

- May or may not be the Resident Engineer.
- Is a Caltrans employee on a State administered construction contract and is usually a consultant on a contract administered by a Local Agency.
- Is the point of contact for structure issues on a construction contract.
- Establishes the communications protocol for those involved in structure work.
- Coordinates as necessary with the Caltrans Structure Construction Oversight Engineer for non-State administered construction contracts.
- Coordinates as necessary to ensure a timely and complete review process involving VECPs, CCOs, and working drawing submittals.
- Completes the As-Built plans submittal.

5.1.3 STRUCTURE CONSTRUCTION OVERSIGHT ENGINEER

- Is the Caltrans Construction Engineer responsible for oversight of the structure contract work on non-State administered construction contracts.
- Reviews structure related CCOs and other construction changes.
- Ensures As-Built plan submittals have been completed.

5.1.4 CALTRANS OFFICE OF STRUCTURE CONSTRUCTION

- Is the unit that receives, distributes, and maintains the file copies of working drawing submittals.

5.1.5 SPONSORING AGENCIES

- Ensure design consultant availability through construction completion, including construction support and completion of project As-Builts.
- Provides construction administration staff for locally administered projects.

5.1.6 CALTRANS DISTRICTS

- Provides the Resident Engineer for State administered projects.
- Provides the Construction Oversight Engineer for locally administered projects.

5.1.7 OFFICE OF SPECIAL FUNDED PROJECTS

- Provide Liaison & Oversight to each District and sponsoring agencies for Special Funded Projects
- Establish and maintain a liaison relationship with the construction stakeholders.
- Provide design support to Districts, Design Consultants, Structure Representatives, and Agencies.
- Provide support on structure issues for Request for Information (RFI)
- Review and approve any structure related Addendums required.
- Review and give technical approval for any structure related Value Engineering Change Proposals (VECP).
- Review and give technical approval for any structure related Contract Change Orders.
- Provide support and review of working drawings.
- Visit project sites as necessary.
- Ensure As-built plans have been completed by the Design Consultant and submitted. For locally advertised projects the construction redlines to as-builts are submitted to the Caltrans Construction Oversight Structure Representative.

5.1.8 DESIGN CONSULTANTS

During the construction phase of the project, the Design Consultant (Including Sub-Design Consultant such as Electrical, Mechanical, Geotechnical, Structural, etc.) must be retained to perform or take part in the following:

- Develop responses for request for information when requested.
- Perform any work required including redesign and plan details for any necessary Addendums.
- Attend the pre-construction meeting with the construction contractor upon request.
- Review or develop contract change orders and supporting documents.
- Review and evaluate Value Engineering Change Proposals (VECP).
- Correct errors or omissions in contract drawings or special provisions.
- Review and approve working drawings and submittals by the construction contractor.
- Design additional related structural engineering work that the Local agency, Structure Representative, Structure Construction Oversight Engineer, or OSFP Liaison Engineer may request.

- Help resolve all discrepancies in the contract documents and visit the job site as required to address construction problems when requested by the construction contract administrator (Resident Engineer) or Caltrans SFP Liaison Engineer.
- Conduct any necessary direct communication with field construction personnel in accordance with the provisions of Structure Construction Manual.
- Prepare and submit the As-built structure plans.
- Be aware of conflict of interest issues concerning working relationships as restricted by Public Contract Code.

5.2 CONTRACT CHANGE ORDERS

Contract Change Orders (CCOs) change the requirements of construction contracts that were previously reviewed and approved through the project development stages of projects.

The appropriate project development units must review and approve CCOs before being issued. For CCOs that are structure related, the OSFP Liaison Engineer must review and provide technical design approval in writing prior to the CCO receiving final approval in conformance to departmental policies.

This section outlines the coordination and preparation required to develop structure related CCOs and the reviews necessary to obtain design approval by the OSFP Liaison Engineer.

Sponsoring agencies and consultants should establish contingencies in budgets and schedules for unexpected capital costs and for the engineering to prepare and support contract changes since CCOs can be expected as projects are constructed.

5.2.1 CHANGE ORDER COORDINATION

Structure Representatives and consultants must notify the Liaison Engineer of potential changes to contract requirements as soon as possible to discuss the need for a CCO and the parameters that will be involved. Some major factors that must be discussed are as follows: the scope of changes to the structure elements and overall project, design approaches, documents that must be prepared, reviews that will be required, and time schedule constraints.

Once the parameters are reconciled and CCO development is underway, the Structure Representative and consultant must communicate the status of the development and coordinate issues that arise with the Liaison Engineer to ensure subsequent timely reviews and approval. The exact coordination and lines of communication depends on whether the construction contract is administered by Caltrans or by others as described below.

5.2.2 PROJECTS ADMINISTERED BY CALTRANS

For construction projects administered by Caltrans, communication between the Caltrans Structure Representative and the consultant is through the Liaison Engineer. When a potential change is identified, the Structures Representative or consultant must notify the Liaison Engineer who then coordinates with the consultant or Structure Representative, respectively.

The Liaison Engineer coordinates with the consultant to obtain the necessary structural analysis and CCO documents. Once the consultant prepared documents are reviewed and approved, the Liaison Engineer transmits the appropriate CCO documents with an approval letter to the DES Office of Structure Construction who in turn writes an approval letter to the Structure Representative for executing the CCO.

In cases where the Structure Representative or contractor prepares the CCO details and the related support documents, the Liaison Engineer will coordinate the necessary technical reviews from the consultant.

When revised, supplemental, or additional electronic (DGN) plan detail sheets required for the CCO are prepared, reviewed and approved, the originals electronic (DGN) plans will be stored within DES and approved copies will be distributed per DES policy.

5.2.3 PROJECTS ADMINISTERED BY OTHERS

For construction projects administered by others, the preparation of CCOs, reviews, and approval are conducted in the same manner as for projects advertised by Caltrans except as follows: 1) the Structure Representative and consultant may communicate directly; 2) the Structures Construction Oversight Engineer must also review and approve any changes before the Liaison Engineer provides design approval; and 3) the Liaison provides written approval for the changes directly to the Structures Construction Oversight Engineer.

Once the CCO is issued, the Liaison Engineer must be provided with the electronic (PDF) revised plans, special provisions and other documents as requested for distribution within DES. The consultant or Structure Representative must distribute to all others as necessary.

5.2.4 PREPARATION AND REVIEW OF CHANGE ORDER DOCUMENTS

The types of documents that must be prepared and submitted to the Liaison Engineer for review depend on the scope of changes involved. The documents must consist of plan details, specifications, calculations, reports, and others as necessary to construct and support the change. The exact types of documents will be as determined by the Liaison Engineer.

The documents must meet the same quality standards as for documents prepared in the project development phases and as described below. All documents must be stamped and signed by a registered engineer when required.

5.2.5 PLAN DETAILS

There are several different methods that can be used in CCOs to modify the contract plan details, and the following criteria should be used to help select the most appropriate: 1) The method must delineate the change clearly, concisely, and with no ambiguity, 2) The method must be an effective way to record the particular change in the as-builts, and 3) Provided the previous two criteria are met, the method used should be one that is the most expeditious.

Simple changes to plan details can be made with a sketch that shows the plan revisions. This method requires the Structure Representative (and ultimately the consultant) to make the corresponding corrections to the as-built drawings and should not be used for complex detail changes.

Changes of increased complexity must be made by one of the following methods that conforms to the *Bridge Design Details* manual: 1) revisions to the original plan sheets, 2) replacement plan sheets, 3) supplemental plan sheets, or 4) additional plan sheets. All plan sheets must be prepared on formatted sheets as described in “Plans” elsewhere in this Guide. Each of these methods produces plan detail sheets that are essentially “as-built ready”.

For plan sheets prepared in accordance with the *Bridge Design Details* manual, the Liaison Engineer provides an oversight approval signature directly on each plan sheet. To revise the original plan sheets, the consultant must contact the Liaison Engineer to determine how the “original” sheets (electronic DGN files for

State AAA projects) will be obtained or generated, ensuring that the oversight signature is left blank.

5.2.6 CONTRACT SPECIFICATIONS

For simple changes, the Structure Representative may write the specifications changes directly into the text body of the CCO. For extensive, complex, or lengthy specification changes, attachments to a CCO are usually required that consist of edited Standard Structure Specifications (SSPs) or “all new” specifications all of which must conform to “Contract Special Provisions” elsewhere in this Guide.

5.2.7 STRUCTURE CALCULATIONS

Structure design calculations and independent design check calculations must conform to “Structure Calculations” elsewhere in this Guide. Structure design and independent check calculations must document the analysis for the direct structure changes that are made and must analyze and document changes in forces and capacities of all structure elements that could potentially see an influence as a result of the change. Calculations must incorporate the most recent design specifications and policies unless otherwise approved by the Liaison Engineer.

5.2.8 QUANTITY CALCULATIONS AND COST ESTIMATES

The need for quantity calculations and cost estimates is based the needs of the Structure Representative. If required, quantity calculations and check quantity calculations must be prepared and conform to “PS&E Estimates” elsewhere in this Guide.

5.2.9 FOUNDATION REPORT

A foundation report that conforms to “Foundation Report” elsewhere in this Guide is required when foundations are affected.

5.2.10 HYDRAULICS REPORT

A hydraulics report that conforms to “Hydraulics Report” elsewhere in this Guide is required for changes that affect the encroachment that was originally planned on waterways.

Review durations for the first submittal will be dependent on the changes involved in the CCO. Review durations may range from a few days for the simplest changes and up to six weeks for complex changes.

Review durations for subsequent submittals will be substantially shorter than for the first review provided the comments from the first review are thoroughly addressed. For complex changes, the minimum review duration should be assumed not less than two weeks.

5.3 VALUE ENGINEERING CHANGE PROPOSAL

Construction contractors can propose Value Engineering Change Proposals (VECP) on Special Funded projects in accordance to the Standard Specifications and other contract documents to potentially reduce construction costs, construction activity duration, traffic congestion, right-of-way delay, and public impact.

Although VECP proposals can potentially reduce construction costs, VECPs have true economic merit for a project only when there is still a savings after development and review costs are factored in. VECPs become especially unviable from an economic viewpoint when the sponsoring agency's review costs exceed their portion of the construction savings.

VECPs must undergo thorough reviews before being approved and implemented since they revise contract work previously reviewed and approved through the project development process. Construction administration personnel must review VECPs for constructability and for conformance to the construction contract. Project development personnel must review VECPs for conformance to design standards and project objectives.

Structure related VECPs on Special Funded Projects require review and approval by the OSFP Liaison Engineer.

5.3.1 THE PURPOSE OF THIS GUIDE SECTION IS AS FOLLOWS

- Address the roles, standards, and procedures required to obtain OSFP's input, review, and approval in a timely manner.

- Define how OSFP involvement fits into the framework that Resident Engineers/Structure Representatives use to process VECPs as outlined in the VECP Guidance Manual.

To achieve this purpose, this Guide expands upon the principles described in the VECP Guidance Manual for processing VECPs. And, like the VECP Guidance Manual, this section is not to establish terms of the construction contract but is to inform those involved with VECPs of the requirements to make for efficient development and review.

5.3.2 ROLES AND RESPONSIBILITIES

Listed below are the primary representatives and their roles in developing structure related VECPs on Special Funded Projects. The role descriptions are those as it relates to OSFP's goal in the VECP process to provide timely input, reviews, and approvals. The roles do not address the involvement of other units as required by their own procedures.

5.3.2.1 CONTRACTOR:

- Conceptualizes and proposes VECPs.
- Extensively coordinates VECP proposals with the Resident Engineer/Structure Representative.
- Develops the necessary documents to support and construct the change.
- Provides the design construction support for the change.
- Reimburses sponsoring agencies for review costs.

5.3.2.2 RESIDENT ENGINEER/STRUCTURE REPRESENTATIVE

- Coordinates with the Liaison Engineer.
- Coordinates with the Caltrans Project Manager (for projects administered by Caltrans).
- Coordinates with the Sponsoring Agency.
- Reviews VECP for feasibility, constructability and conformance to the construction contract.
- Leads, coordinates, and facilitates VECP development and reviews with the contractor and the Liaison Engineer.
- Arranges and facilitates meetings between affected parties.
- Determines if a VECP is cost effective.
- Takes the necessary steps to administratively recover review costs.
- Provides the final VECP approval in the form of a contract change order.

5.3.2.3 CALTRANS STRUCTURE CONSTRUCTION OVERSIGHT ENGINEER (FOR LOCALLY ADMINISTERED PROJECTS)

- Coordinates with the Liaison Engineer.
- Coordinates with the Caltrans Project Manager.
- Reviews the Structure Representative's procedures.
- Reviews VECPs for feasibility, constructability, cost effectiveness, and conformance to construction standards.

5.3.2.4 CALTRANS PROJECT MANAGER

- Coordinates with sponsoring agency.
- Works with the local agency to revise the Cooperative Agreement, if necessary, especially relative to the reimbursement of Caltrans review costs.
- Ensures project objectives are attained.

5.3.2.5 SPONSORING AGENCY

- Provides concurrence with the general nature of VECP changes and the impacts on project costs and schedules.
- Engages the design consultant to review VECP.
- Reimburses Caltrans for review costs.

5.3.2.6 LIAISON ENGINEER

- Coordinates with the Resident Engineer/Structure Representative.
- Coordinates with the Caltrans Structure Construction Oversight Engineer (for locally administered projects)
- Leads structure design reviews and approvals.
- Provides input relative to feasibility and cost effectiveness of the proposed VECP.
- Obtains reviews and concurrences from designers of record.
- Provides oversight and quality assurance through the necessary DES units.
- Provides the final structure design approval.

5.3.2.7 DESIGNERS OF RECORD (ORIGINAL)

- Provides input to the Liaison Engineer relative to feasibility and cost effectiveness.

- Reviews VECPs for structural integrity, impacts to the original design, and ensures conformance to project development standards.

5.3.2.8 VECP DEVELOPMENT AND REVIEW

The VECP Guidance Manual outlines incremental stages of VECP development. For the purposes of this section, the stages are summarized as follows:

- Conceptual Stage
- Preliminary Stage
- Final Stage

VECP development must proceed through the above incremental stages. In each stage, the contractor develops and submits the proposals to the Resident Engineer/Structure Representative for input and review (the remainder of this Guide section will assume the Structure Representative is the key contract administrator). If the Structure Representative determines the proposals warrant further review, the proposals must be submitted to the Liaison Engineer for review.

VECP development should not proceed to the next stage until concurrence is obtained from the Liaison Engineer.

The discussion below briefly describes the proposal stages and the procedures, requirements, and considerations necessary to obtain the Liaison Engineer's review and approval. Upon request, in all stages, the Liaison Engineer will meet with the Structure Representative, contractor, and other key representatives as necessary to discuss and resolve issues. The designers of record must attend the meetings upon request.

5.3.2.9 CONCEPTUAL STAGE

At the Conceptual Stage, the contractor informs the Structure Representative of a potential VECP and the general parameters the VECP will involve. In this stage, the Liaison Engineer requires the following information:

- The potential structural changes and the purpose
- The identity of the designers who will develop the VECP
- The desired schedule to implement the change.

To warrant further consideration, the Conceptual proposal must meet the following:

- The concept must appear to be potentially structurally feasible, cost effective, and have merit.
- The contractor must not intend to directly employ the designers of record, or their sub-consultants, to prepare the VECP (per Section 2-1.056 of the Standard Specifications and for conflict of interest reasons. However, the Sponsoring Agency may directly employ the designers of record to develop the VECP).
- The designers of record must recommend concurrence with the concept.
- The designers of record must be available to perform reviews in a timely manner.
- The pertinent DES units must recommend concurrence with the concept.
- The sponsoring agency and contractor must concur with potential schedule changes.
- The sponsoring agency must be willing to pay for VECP reviews by the designers of record and reimburse Caltrans for review costs incurred.

The duration for this review will be a minimum of two weeks.

As a part of the Conceptual Stage, the Structure Representative should lead a meeting that includes the Liaison Engineer, contractor, and others as appropriate to discuss the concept and considerations to develop the VECP further. The meeting should address the following:

- Procedural requirements to develop the VECP further
- Design criteria—ordinarily, the most recent current design standards and practices are required
- Reports and documents the contractor must prepare
- Review times
- Schedule for further VECP development
- Review costs
- Method of reimbursement for review costs

5.3.2.9 PRELIMINARY STAGE

At the Preliminary stage, the contractor further develops the VECP and identifies the nature of all changes and shows the changes will have merit. In this stage, the Liaison Engineer requires the following:

- Preliminary details that identify the structural modifications
- Preliminary analysis that show the general design approach and general effects on all affected structure elements

- Preliminary estimate of construction cost savings
- Preliminary estimate of the review costs
- Net savings the VECP will achieve

The contractor must develop this proposal up to the point of preparing final analysis, design, and details as part of the following Final Stage.

The Preliminary proposal must show or meet the following to warrant further consideration:

- The changes can be designed to be structurally adequate, will be based on the proper parameters, will be constructible, and will conform to standards.
- The necessary supporting reports and documents, including plan details, calculations, foundation reports, hydraulic reports, etc. will be prepared.
- The designers of record and pertinent internal DES units concur with the proposal.
- The VECP will affect a cost savings after review costs are considered.

The duration for this review will be a minimum of two weeks.

At this stage, all parties should understand the following:

- Procedural requirements to develop the VECP further
- Design criteria and the extent of analysis that must be performed
- Reports and documents the contractor must prepare
- Review times
- Review costs
- Schedule for further VECP development
- Who will be the designers of record for the different portions of the structure design and who will provide the associated construction support
- Who will prepare as-built plans

If necessary to discern these issues, the Structure Representative should lead a meeting that includes the Liaison Engineer, contractor, and others as appropriate.

5.3.2.10 FINAL STAGE

At the Final stage, the contractor prepares the final design, details, and supporting documents necessary to support the change. In this stage, the Liaison Engineer requires the following:

- Final plan details that show the changes
- Complete analysis and calculations that support the structural modifications
- Reports and other documentation necessary to support the change
- Final cost estimates and savings the VECP will achieve

The Final stage proposal must meet the following to warrant approval of the VECP by the Liaison Engineer:

- Plans, calculations, and other documents must fully address the changes proposed and conform to the requirements outlined later in this Guide section.
- The changes must be structurally adequate, based on the proper parameters, are constructible, and conform to the appropriate standards.
- The designers of record and pertinent internal DES units must concur with the proposal.
- The VECP must affect a net cost savings.

The approximate duration to perform the reviews and quality assurance is 4 to 6 weeks.

The conclusion of this stage should result in the approval of the VECP (if warranted), a calculation of the final cost savings performed by the Structure Representative, and the issuance of a contract change order.

5.3.2.11 STRUCTURE RELATED VECP DOCUMENTS

The following documents must be developed as necessary to support the VECP:

- Plan Details
- Contract Specifications
- Structure Calculations
- Quantity Calculations and Cost Estimates
- Foundation Report
- Hydraulics Report
- Other documents as required

The documents must meet the same quality standards as for documents prepared in the project development phases and must conform to the requirements in “Contract Change Orders” elsewhere in this Guide. Documents that are sub-standard will not be accepted. Reviews will not commence until documents of enough quality are submitted.

For scheduling purposes, the review times for the First Complete Submittal may be assumed to be 6 weeks.

Review times for subsequent submittals are dependent on the adequacy of the preceding submittal. For scheduling purposes, the minimum review period for subsequent submittals should be assumed to be not less than 2 weeks.

5.4 WORKING DRAWINGS AND SUBMITTALS

The contract documents require the construction contractor to provide working drawings for specific items of work to supplement the contract plans. The working drawings must be submitted directly to the Engineer (Structure Representative or Resident Engineer) or to the Structure Construction Office Associate Mailbox.

When the Contractor is required to submit working drawings to the Structure Construction Office Associate Mailbox (sc.office.associates@dot.ca.gov), the Contractor must do so, even for locally administered projects. Failure to comply usually results in extended review times. The Standard Specifications and the Contract Special Provisions indicate requirements for the working drawing submittal. Deviation from the specified submittal process must be approved in advance by the Liaison Engineer through a contract change order.

5.4.1 TYPES OF WORKING DRAWINGS

The following types of working drawings are examples of those that require submission to the Engineer for approval. The Engineer reviews and approves these working drawings at the “field level”.

- Temporary Facilities
- Shoring and Cofferdam Systems
- Structure Mounted Utilities
- Standard Piles
- Falsework and Forming Systems
- Sign Structures
- Temporary Supports
- Bridge Removal Plans
- Precast Concrete Box Culverts
- Soundwalls
- Slip Forms for Retaining Walls
- Permanent Railing

The following types of working drawings are examples of those that require submission to the Structure Construction Office Associate Mailbox:

5.4.1.1 BRIDGE RELATED

- Prestressing Systems
- Structural Steel
- Temporary Support of Casing
- Test Borings
- Micropile Systems
- Proprietary Piling Systems
- Precast Concrete Bridge Members
- PTFE Bearings
- Alternative Joint Seal Assemblies (MR ≤ 4 inches)
- Joint Seal Assemblies (MR > 4 inches)
- Asphaltic Plug Joint Seal Systems

5.4.1.2 WALL RELATED

- Proprietary Earth Retaining Systems
- Soil Nail Wall Systems
- Tieback Anchor Systems
- Proprietary Soundwall Systems

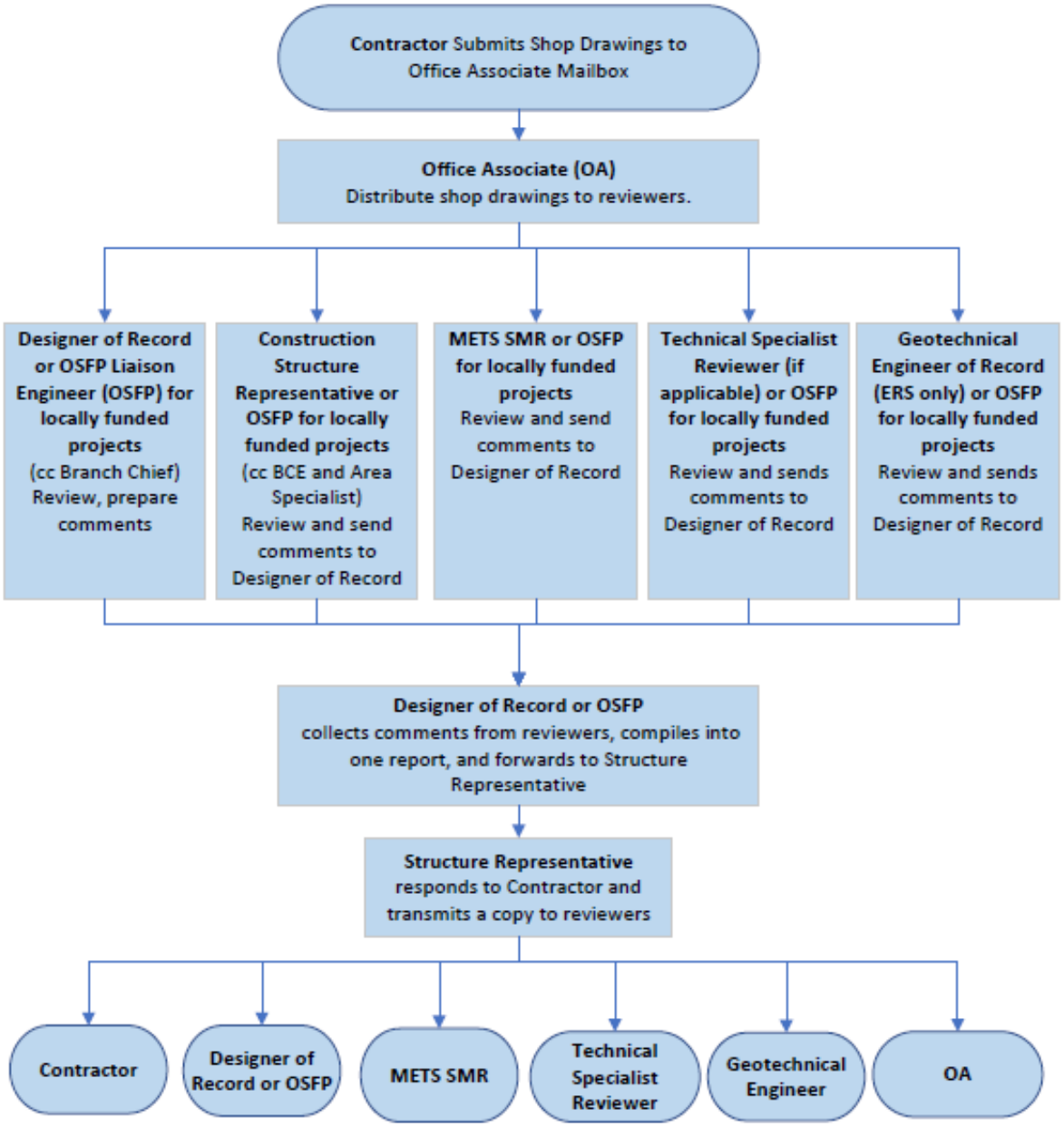
Working drawings related to buildings and pump plants are not covered in this section. For working drawings affiliated with pump plants, see the “Pump Plant” section elsewhere in this guide. For buildings, the responsible OSFP Structure Liaison should be contacted for guidance.

The remainder of this section will refer to working drawings that require submittal to the Structure Construction Office Associate Mailbox.

1. The Contractor submits working drawings to the Structure Construction Office Associate Mailbox.
2. The Structure Construction Office Associate will distribute the working drawings to the OSFP Liaison, Structure Representative, METS, Technical Specialists and Geotechnical Engineer.
3. The OSFP Liaison will forward the working drawings to the consultant designer / Engineer of Record.
4. The OSFP Liaison will collect review comments from OSFP reviewer, Structure Representative, METS, Technical Specialists and Geotechnical

Engineer. The OSFP Liaison will forward the comments to the consultant designer / Engineer of Record.

5. The consultant designer / Engineer of Record will collate all comments onto the working drawings and forward to the OSFP Liaison.
6. The OSFP Liaison will forward the collated comments on a set of working drawing to the Structure Representative.
7. The Structure Representative will respond to the Contractor and transmit a copy to technical reviewers.


Contractor Submits Shop Drawings to Office Associate Mailbox
Office Associate (OA) Distribute shop drawings to reviewers.
Designer of Record or OSFP Liaison Engineer (OSFP) for locally funded projects (cc Branch Chief) Review, prepare comments
Construction Structure Representative or OSFP for locally funded projects (cc BCE and Area Specialist) Review and send comments to Designer of Record
METS SMR or OSFP for locally funded projects Review and send comments to Designer of Record
Technical Specialist Reviewer (if applicable) or OSFP for locally funded projects Review and sends comments to Designer of Record
Geotechnical Engineer of Record (ERS only) or OSFP for locally funded projects Review and sends comments to Designer of Record
Designer of Record or OSFP collects comments from reviewers, compiles into one report, and forwards to Structure Representative
Structure Representative responds to Contractor and transmits a copy to reviewers
Contractor
Designer of Record or OSFP
METS SMR
Technical Specialist Reviewer
Geotechnical Engineer
OA

5.5 STRUCTURE AS-BUILT PLANS

Structure As-Built Plans (As-Builts) are required for bridge and transportation related structures that are constructed within the State right-of-way and other structures for which the State has maintenance responsibilities. As-Builts provide historical records of improvements made and are essential to the long-term operation and improvement of the State transportation system.

Sponsoring agencies are responsible for ensuring that acceptable structure As-Builts are submitted to the Office of Special Funded Projects (OSFP). Structure As-Builts consist of all plan details prepared using structure formatted border sheets that were reviewed and approved by OSFP (signed by Liaison) during the PS&E development phase of the project.

As-Builts for all other plan sheets are Roadway As-Builts Plans and shall be submitted to the appropriate District office in which the project was developed.

5.5.1 PROCESSING STRUCTURE AS-BUILT PLANS

Within sixty (60) days following completion and acceptance of the project construction contract, the responsible agency shall furnish acceptable structure As-Builts to OSFP. As-Builts must be submitted and approved by the OSFP Liaison Engineer within this timeframe, so all involved parties must complete their portion of the As-Built process in a timely manner.

The following procedures shall be used to facilitate the timely processing of structure As-Builts.

5.5.1.1 STATE ADVERTISED PROJECTS

1. Caltrans Structure Representative – Compile all structure revisions, including supplemental plan sheets and Contract Change Orders. Deliver the field office set of red-marked As-Built prints to the Office of Structure Construction, Sacramento.
2. Office of Structure Construction, Sacramento – Deliver the field office set of red-marked As-Built prints to OSFP.
3. Office of Special Funded Projects – Obtain the set of original drawings (DGN files without Liaison signatures) and forward them to the sponsoring agency's Design Consultant along with the field office set of red-marked As-Built prints.
4. Design Consultant for the Sponsoring Agency – Make As-Built corrections. Deliver the final As-Builts and field office set of red-marked As-Builts to OSFP.

5. Office of Special Funded Projects – Review the final As-Builts for acceptance. Return As-Builts to the Design Consultant for any corrections necessary. When found acceptable:

    - For structures with a Caltrans Bridge Number, deliver the final As-Builts to Structure Maintenance and Investigations (SM&I) for final processing into the As-Built database.
    - For structures without a Caltrans Bridge Number, deliver the final As-Builts to the local District office for final processing into their database.

5.5.1.2 LOCALLY ADVERTISED PROJECTS

1. Construction Contract Administrator/Structure Representative – Review structure As-Built changes with the Caltrans Oversight Structure Representative and ensure that all structure revisions, including supplemental plan sheets and Contract Change Orders, have been compiled. The Caltrans Oversight Structure Representative will deliver the field office set of red-marked As-Built files to the Office of Structure Construction, Sacramento.
2. Office of Structure Construction, Sacramento – Deliver the field office set of red-marked As-Built files to OSFP.
3. Office of Special Funded Projects – Forward the field office set of red-marked As-Built prints to the sponsoring agency's Design Consultant.
4. Design Consultant for the Sponsoring Agency – Obtain the set of original drawings from the sponsoring agency that advertised the project. Make As-Built corrections to the signed contract plans. Deliver the final As-Builts and field office set of red-marked As-Built files to OSFP.
5. Office of Special Funded Projects – Review the final As-Builts for acceptance. Return As-Builts to the Design Consultant for any corrections necessary. When found acceptable:

    - For structures with a Caltrans Bridge Number, deliver the final As-Builts to SM&I for final processing into the As-Built database.
    - For structures without a Caltrans Bridge Number, deliver the final As-Builts to the local District office for final processing into their database.

5.5.1.3 STRUCTURE AS-BUILT PLAN CORRECTIONS

As-Built corrections shall be made to the original plan drawings in accordance to the Caltrans *Bridge Design Details* manual.

The final As-Builts shall be prepared by or under the authority of the registered engineer whose stamp is on the original design plans.

When making As-Built corrections, the Design Consultant shall be aware of the following procedures that are routinely overlooked:

- As-Built corrections must be made on the **original signed drawings**. The original drawings are the dated, signed and approved drawings used in printing the as-advertised contract plans.
- The Design Consultant shall place the “As-Built” stamp, as shown in the *Bridge Design Details* manual, on each sheet, including the “Log of Test Boring” sheets and sheets with no changes. Black ink shall be used to apply the stamp.
- If no changes are shown on a sheet, a stamp or decal indicating “No As-Built Changes” shall be placed above the “As-Built” stamp. Black ink shall be used to apply the stamp.
- In making as-build changes to the Contract Plans, the plan sheets, details, and notes shall not be deleted. Instead, draw a line through the item in such a manner that it will not be obliterated.
- No changes or stamps shall be shown in red pencil or ink.